

## **NOTICE OF OPEN MEETING**

### **REGIONAL WATER PLANNING GROUP-NETRWPG**

**Wednesday, October 30, 2024 – 1:00 p.m.**

**Region 8 Education Service Center  
4845 US 271 N  
Pittsburg, TX 75686**

In compliance with the Texas Open Meetings Act, Chapter 551, of the Texas Government Code, the Regional Water Planning Group D issues this public notice. On October 30, 2024, at 1:00 P.M., the North East Texas Regional Water Planning Group (NETRWPG) will meet in-person. The meeting will be held at the Region 8 Education Service Center, 4845 US 271 N, Pittsburg, TX 75686. The NETRWPG will consider and act on the following items:

1. Recognitions. Roll call.
2. Marvin Nichols Reservoir Project Presentation to be made by Region D Technical Consultant.
  - Discussion and Comments from Region C WPG.
  - Discussion and Comments from Region D WPG.
3. Discussion of Region D letter in response to the TWDB Draft Marvin Nichols Reservoir Project Feasibility Review public comment period.
4. Public Comment/participation. (Limited to 5 minutes per speaker)
5. Adjourn.

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Additional information may be obtained from the Administrative Agency for NETRWPG: Riverbend Water Resources District, 228 Texas Avenue, Suite A, New Boston, Texas 75570; Office Telephone: (903) 831-0091; Office Fax: (903) 831-0096; E-mail: [kyledooley@rwr.org](mailto:kyledooley@rwr.org); Website: <https://rwr.org/region-d/>; Attn: Kyle Dooley, P.E., Executive Director

**MEETING OF THE  
North East Texas Regional Water Planning Group  
WEDNESDAY, October 30, 2024**

**Agenda Item 2  
Marvin Nichols Reservoir Project  
Presentation - Region D Technical  
Consultant**

# NETRWPG- Region D Regional Water Planning

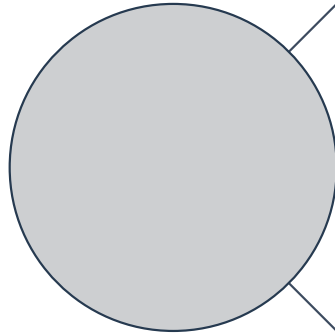
Item 8

Regional Planning Update



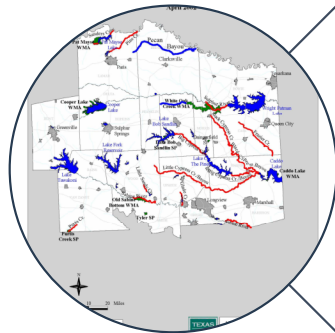
PITTSBURG, TX    OCTOBER 30, 2024

# Review of DRAFT 2026 Region D Plan Material



## Chapter 6

- Impacts of Regional Water Plan
- Discussion on Impacts of Marvin Nichols Reservoir Strategy



## Chapter 8

- Unique Reservoir Sites
- Regional Policy Issues
  - **Marvin Nichols Reservoir Content**

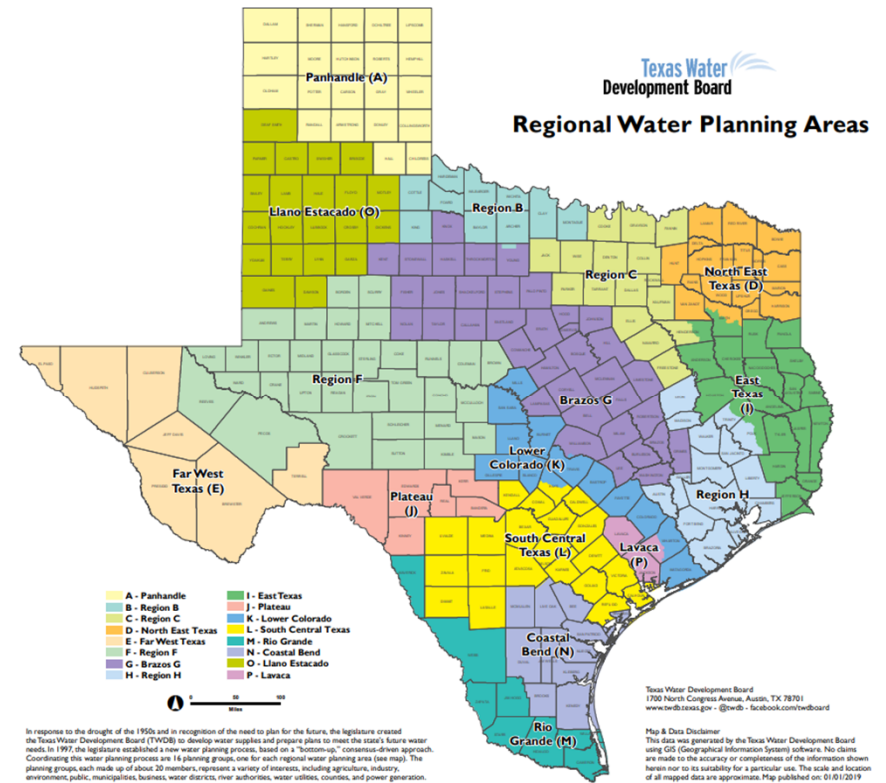
Substantive changes tracked, focus upon content  
Focus today is on elements relating to Region C Marvin Nichols Strategy  
More opportunities for final approval

6\*

\*Impacts of  
Marvin Nichols Reservoir

# 10 Sections in Chapter 6

1. Impacts on Water Quality Parameters
2. Impacts from Moving Water from Rural to Urban Areas
3. Socioeconomic Impacts of Unmet Needs
4. Impacts of Marvin Nichols Reservoir proposed by Region C in Protecting Region D Resources
5. Consistency with Protection of Water Resources
6. Consistency with Protection of Agricultural Resources
7. Consistency with Protection of Natural Resources
8. Consistency with State Water Planning Guidelines
9. Marvin Nichols Reservoir and Impacts on Water Resources, Agricultural Resources and Natural Resources
10. Conclusion



## Section 6.4 - Impacts of Marvin Nichols Reservoir proposed by Region C in Protecting Region D Resources

While not a strategy of the NETRWPG, it should be noted that Region C may propose construction of Marvin Nichols Reservoir in the NETRWPA. Transfer of water from Marvin Nichols to the Dallas-Ft. Worth Metroplex would constitute the moving of water from rural and agricultural areas. The impact of this project, particularly on the timber industry, has been the focus of previous studies. All studies not prepared on behalf of the proponents of Marvin Nichols Reservoir, including studies and reviews by independent government agencies including the U.S. Department of Interior, Texas Parks and Wildlife Department, U.S. Fish and Wildlife Service, and the Texas Forest Service, have indicated substantial negative impacts to the timber industry in Region D. Potential impacts of the Marvin Nichols project are further discussed later in this chapter.

## 6.9 - Marvin Nichols Reservoir and Impacts on Water Resources, Agricultural Resources and Natural Resources

### Introduction

- Necessity for review of any configuration of the strategy would have in Region D area.
- True to spirit of localized approach to planning process.
- Has been and continues to be the position of the NETRWPG that Marvin Nichols Reservoir should not be included in any regional plans as a WMS and not be included in the 2027 State Water Plan as a WMS.

### NETRWPG opposes any Marvin Nichols type reservoir.

- “Total acreage that would be flooded if all recommended WMSs from the 2021 Region C Water Plan were implemented is almost 131,000 acres, with almost half of that being from the proposed Marvin Nichols Reservoir.” – from 2021 Region C Plan.
- Position that all Region C Marvin Nichols Reservoir proposals are based on impoundment and use of water that NETRWPG needs to protect these downstream agricultural and natural resources.
- No present agreement between Region and C for purposes of 2026 Region D Plan.



## 6.9.1 - Impacts on Agricultural Resources

### Flood area

- 66,103 acres
- Mainly in Red River County, & portions of Titus, Franklin, Delta, and Lamar Counties
- 1,532,000 ac-ft of storage

### Land cover types potentially useful as agricultural resources (from Region C)

- Timberlands – 42,823 acres;
- Active/Potential Agricultural and Pasture Lands – 18,947 acres;
- Non-Agricultural Lands – 4,333 acres

### Uncertainty in impacts

- Mitigation requirements anticipated to impact agricultural resources.

### Citations

- Trungale (2014) impacts on priority bottomland hardwoods;
- Mattox (2014) discussion on 2008 Mitigation Rule.

## 6.9.2 - Impacts on Timber Industry

### Texas Forest Service Study (2002)

- Inundation and mitigation.
- Economic impacts.

### Significant local impacts

- Significant losses due to substantial reduction in timber supply.
- Inundation and mitigation impacts.
- Impacts tend to focus on inundated area, as mitigation is uncertain.

## 6.9.3 - Impacts on Farming, Ranching, & Other Related Industries

### Production

- Wheat
- Cotton
- Rice
- Milo
- Hay
- Soybean
- Alfalfa

### Livestock

- Beef Cattle
- Dairy Cattle
- Poultry
- Hog

## 6.9.4 - Impacts on Natural Resources

### Lignite, Oil, & Gas Reserves

### Economic losses from

- Hunting leases
- Grazing leases
- Timber sales.

### Footprint located on outcrop of Nacatoch Aquifer

- Concerns expressed on settling of heavy metals contaminating aquifer below.

## 6.9.5 – Impacts on Environmental Factors

Wetlands

Wildlife

- Threatened/Endangered Species
- Federal/State

Instream uses

## 6.10 – Conclusion on NETRWPG Position

### Significant negative impacts

- Agricultural and natural resources
- Timber industry
- Rural areas
- Environmental factors

Any configuration of the Marvin Nichols Reservoir WMS should not be included as a WMS in any regional water plan or the State Water Plan

- No present agreement between Region and C for purposes of 2026 Region D Plan.

Reallocation of Wright Patman Reservoir provides a viable potential WMS to assist in meeting Region C needs.

- Less potential impacts to agricultural/natural resources
- Greater socioeconomic benefits.

# 8

## Regional Policy Issues: Marvin Nichols Reservoir

# 4 Sections in Chapter 8

## 1. Ecologically Unique Stream Segments

- *Criteria*
- *Candidate segments*
- *Conflicts with WMSs*
- *Recommendations*
- *Considerations*

## 2. Voluntary Instream Flow Goals and Proposals

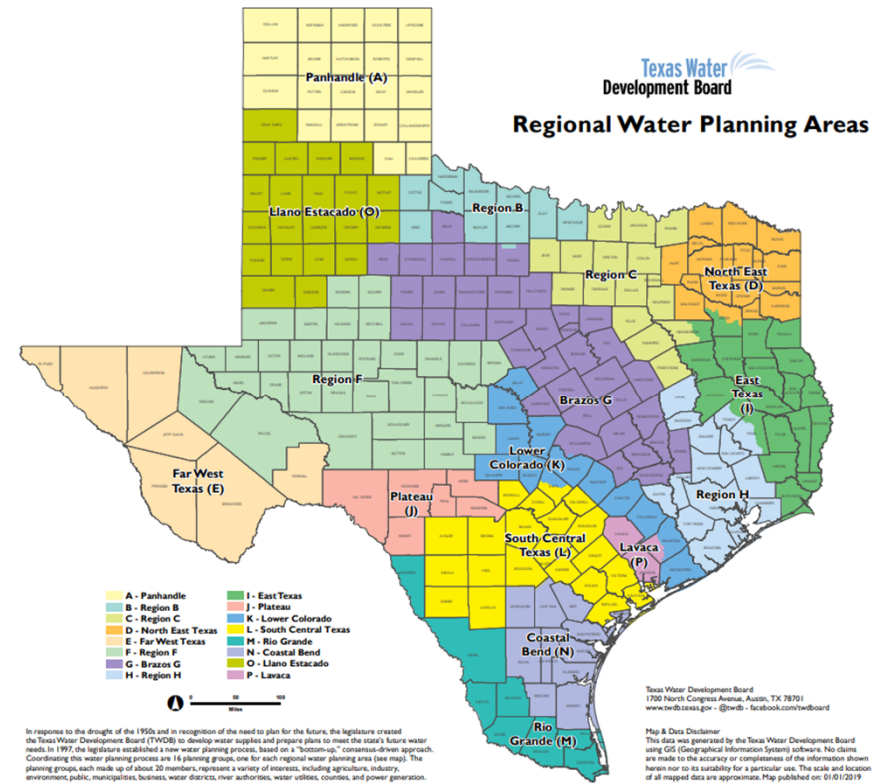
- *Cypress Creek*
- *Sulphur*

## 3. Unique Reservoir Sites

- ÷ *By Basin*
- ÷ *Recommendations*
- ÷ *EPA and USACE*
- ÷ *Environmental Flows*

## 4. Legislative Recommendations

- *Marvin Nichols*
- *Regulatory*
- *Administrative*
- *Planning*
- *Conservation*





## Designation of Reservoir Sites

Region D does not recommend the designation of unique reservoir sites:

- Marvin Nichols I, IA, or II;
- George Parkhouse I
- George Parkhouse II

Exception (confirmed with SRA):

- Endorsement of recommendation in the adopted Comprehensive Sabine Watershed Management Plan that Sabine River Authority develop Prairie Creek Reservoir.

## Opposition for these reservoirs includes:

- Potential impacts on environmental flow needs;
- Agricultural and natural resources;
- Mitigation; and
- Impacts to significant bottomland hardwoods and other floodplain forests.

# Overall Recommendations on Unique Reservoir Site Identification, Development, and Reservoir Site Preservation

<p><b>On TAC with regard to Reservoir Development</b></p>	<p>Position that there will be unavoidable impacts on agricultural resources should there be further development of new reservoirs in the Sulphur River Basin, and such new reservoirs would not be protective of the agricultural and natural resources in the region. Indicates this violates TAC Guidance Principles pertaining to planning. Opposes development of such reservoirs unless it is demonstrated that there will be no significant adverse impacts on the water, agricultural, and environmental resources within the North East Texas Region and the state.</p>	
<p><b>On Unique Reservoir Site Identification and Preservation</b></p>	<p>Recommends that any new reservoirs in Region D be pursued only after all other viable alternatives have been exhausted. <b>Recommends no reservoir sites in the North East Texas Region be designated as unique reservoir sites in this plan or in the 2022 State Water Plan, <del>excepting that the NETRWPG does not challenge Marvin Nichols Reservoir as a unique reservoir site for the purposes of this Plan and the 2027 State Water Plan.</del></b></p> <p>Includes recommendations for items to be instituted when a unique reservoir site is considered, and supports full application of criteria for evaluating authorization of interbasin transfers contained in current state law. Recommends a portion of the firm yield of projects in Region D contemplating interbasin transfers be reserved for future use within the basin of origin.</p> <p>Endorses SRA development of Prairie Creek Reservoir.</p>	<p>Revised from 2021 Region D Plan.</p>
<p><b>On EPA and USACE</b></p>	<p>Recommends the Wetlands Compensatory Mitigation Rule be closely followed to minimize any impact on the region through the consideration of reservoirs and the mitigation thereof. Strongly supports "avoid, minimize, and compensate" should any new reservoirs in Region D be pursued.</p>	

# Summary of Legislative Recommendations relevant to Marvin Nichols

<p><b>Marvin Nichols Reservoir Sites</b></p>	<p>Based on the reasons set forth..., it has been the position of the NETRWPG that Marvin Nichols reservoir should not be included in the 2022 State Water Plan as a water management strategy. Region D continues to oppose Marvin Nichols Reservoir, but is willing to work with other regions to obtain water supplies from the Sulphur River Basin that do not involve new reservoir construction. <del>As noted previously, the NETRWPG does not challenge Marvin Nichols Reservoir as a unique reservoir site for the purposes of this Plan.</del></p>	
<p><b>Concerning Mitigation</b></p>	<p>Recommends that any planning group or entity proposing a new reservoir or any other water management strategy should address the subject of mitigation in conjunction with any and all feasibility studies.</p> <p>Provides discussion on evolving rules and methods for accomplishing mitigation.</p> <p>Further recommends that future mitigation strongly consider utilization of land that may have previously been a functional wetland. An emphasis on restoration of wetland functions can be of more significant benefit than preservation of existing functions, and could be accomplished through the use of marginal farmland or low-lying areas for mitigation purposes.</p>	<p>Revised from 2021 Region D Plan.</p>

# Summary of Legislative Recommendations relevant to Marvin Nichols

<b>Future Interbasin Transfers from the North East Texas Region</b>	Presents discussion on consideration of impacts to <u>basin</u> and <u>region</u> of origin during the evaluation of interbasin transfers of water.	Language consistent with 2021 Region D Plan.
<b>Future Water Needs</b>	Discusses potential policy recommendation regarding the definition of "need" in the basin of origin being broadened to testing for need throughout the region of origin, not just the basin of origin.	
<b>Economic and Environmental Impacts</b>	Recommends considering potential economic and environmental impacts associated with reservoir development.	
<b>Compensation for Reservoir Development and Interbasin Transfers</b>	Given the significance and implications of new reservoir development and future interbasin transfers across regional lines, the NETRWPG should consider adopting a policy statement addressing the issue of future water needs within the basins of origin and/or within the North East Texas Region as a whole, economic and environmental impacts of reservoir development, and inter-regional equity and compensation issues. It should be noted the issue of compensation is applicable to all reservoir development whether an interbasin transfer is contemplated or not.	
<b>Wright Patman Lake/Reservoir</b>	Recommends that before any new reservoirs are planned in the North East Texas Water Planning Area, the alternative of raising the level of the Wright Patman Lake/Reservoir be considered.	

# Summary

**No formal action requested on Chapter Language**, but continuing to seek input.

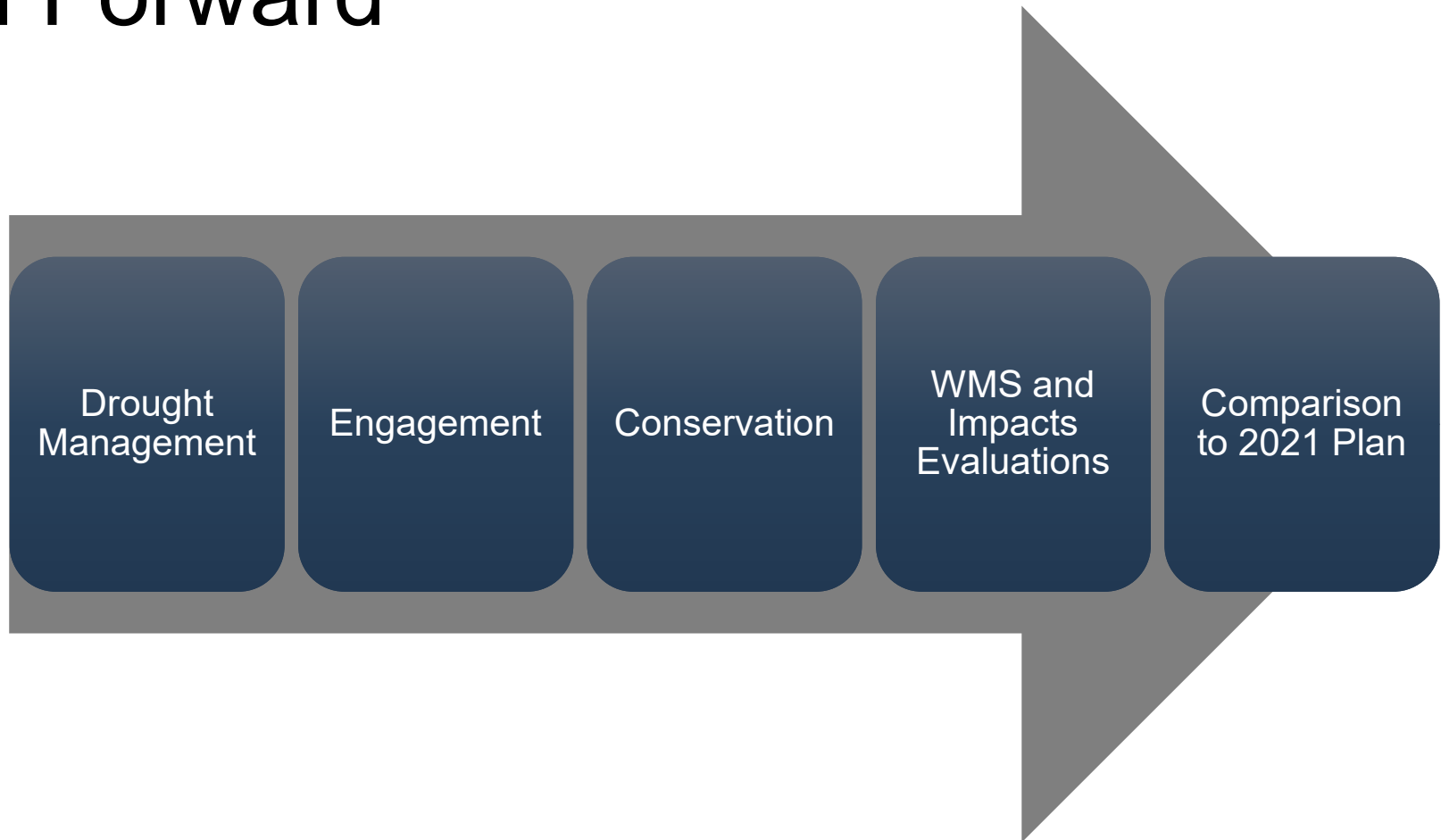
Note that:

Language and data regarding recommendations may be revised by NETRWPG action at a later date;

Pending consideration and approval of the Initially Prepared Plan and Final 2026 Region D Water Plan

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# Path Forward



Tony L. Smith, P.E.  
TLSmith@carollo.com





**MEETING OF THE  
North East Texas Regional Water Planning Group  
WEDNESDAY, October 30, 2024**

**Chapter 6 - DRAFT Language**

## Chapter 6

### **IMPACTS OF THE REGIONAL WATER PLAN, AND DESCRIPTION OF HOW THE REGIONAL WATER PLAN IS CONSISTENT WITH THE LONG TERM PROTECTION OF THE STATE'S WATER, NATURAL, AND AGRICULTURAL RESOURCES, AND THE IMPACTS OF MARVIN NICHOLS I RESERVOIR PROPOSED BY REGION C IN PROTECTING THESE RESOURCES**

31 TAC §357.40 requires that regional water plans describe various anticipated impacts of the Regional Water Plan (RWP), including potential impacts on water quality, navigation, and impacts of moving water from agricultural to rural areas. Also required is a description of how the RWP is consistent with the long-term protection of Texas' water, agricultural, and natural resources, including the requirement that planning analyses and recommendations honor all existing water rights and contracts.

The primary purpose of this chapter is to describe the impacts of the 2026 North East Texas Regional Water Plan (NETRWP), and provide a description as to how this plan is consistent with the long-term protection of the State's water resources, agricultural resources, and natural resources. This description will include a discussion of the goals of and proposals for restoration and protection of instream flows that are viewed as important to the region and how those goals and proposals are consistent with the long-term protection of Texas' water, agricultural, and natural resources.

Additionally, this chapter also addresses the potential impact of the Marvin Nichols I Reservoir on the long-term protection of the State's water resources, agricultural resources, and natural resources, and those of this Region. The Marvin Nichols I Reservoir is a proposed water management strategy of Region C in the 2022 State Water Plan. The Marvin Nichols I Reservoir, if constructed, would be located in the North East Texas Region, as would the mitigation land that would be required. It will also change the pattern of flow of the Sulphur River. Because of the resulting impacts of removing and degrading productive agricultural lands, it has been the position of the NETRWPG that inclusion of the Marvin Nichols I Reservoir, or any similarly located reservoir, is not consistent with the long-term protection of the State's water resources, agricultural resources, and natural resources, and those of Region D.

The NETRWPG takes the position for the 2026 regional water planning process that, from the information made available by Region C to Region D in late 2024, the Marvin Nichols Reservoir strategy does not satisfy the requirements of the current Texas Water Development Board (TWDB) rules to evaluate the impacts on state and regional agricultural, natural, and water resources. Moreover, the NETRWPG continues to oppose the Marvin Nichols reservoir [strategy](#) on the basis of the impacts described within this chapter and in Chapter 8 of this Plan.

#### **6.1 Impacts of Water Management Strategies on Key Water Quality Parameters in the State**

#### **6.2 Impacts of Moving Water from Rural and Agricultural Areas**

#### **6.3 Socioeconomic Impacts of Unmet Needs**

#### **6.4 Impacts of Marvin Nichols I Reservoir proposed by Region C in Protecting Region D Resources**

While not a strategy of the NETRWPG, it should be noted that Region C may propose construction of Marvin Nichols Reservoir in the NETRWPA. Transfer of water from Marvin Nichols to the Dallas-Ft. Worth Metroplex would constitute the moving of water from rural and agricultural areas. The impact of this project, particularly on the timber industry, has been the focus of previous studies. All studies not prepared on behalf of the proponents of Marvin Nichols Reservoir, including studies and reviews by independent government agencies including the U.S. Department of Interior, Texas Parks and Wildlife Department, U.S. Fish and Wildlife Service, and the Texas Forest Service, have indicated substantial negative impacts to the timber industry in Region D. Potential impacts of the Marvin Nichols project are further discussed later in this chapter.

#### **6.5 Consistency with Protection of Water Resources**

#### **6.6 Consistency with Protection of Agricultural Resources**

#### **6.7 Consistency with Protection of Natural Resources**

#### **6.8 Consistency with State Water Planning Guidelines**

#### **6.9 Marvin Nichols I Reservoir and Impacts on Water Resources, Agricultural Resources and Natural Resources**

Marvin Nichols I Reservoir was [first included in the State Water Plan in 1968. More recently, it has been](#) a recommended water management strategy for Region C in 2011, 2016, [and 2021](#), and was included in the 2012, [and 2017, and 2022](#) State Water Plans. A larger Marvin Nichols reservoir has also been included in Region C's drafts as a proposed water management strategy [for this in previous rounds](#) of planning. Since all proposals for Marvin Nichols reservoirs would be located exclusively in the North East Texas Region, and the impacts to agricultural and natural resources would be greatest in this Region, the NETRWPG feels it is important and necessary to review the impacts that any such Marvin Nichols reservoir would have to this area. This is particularly true since the spirit of Texas' regional water planning process includes a ground up, localized approach to the planning process. The discussion below will apply to the Marvin Nichols I/IA Reservoir, since it was included in the [2017-2022](#) State Water Plan, but the approach applies to any proposed reservoir in the Sulphur River Basin.

Based on the reasons set forth below, it has been and continues to be the position of the NETRWPG that Marvin Nichols I Reservoir should not be included in any regional plans as a water management strategy and not be included in the ~~2027~~ State Water Plan as a water management strategy. The NETRWPG continues to oppose any Marvin Nichols type reservoir. The NETRWPG also has not yet seen an adequate evaluation by Region C of the impacts of such a reservoir on water, agricultural and natural resources of the state and on Region D. [As noted in the 2021 Region C Water Plan, "\[t\]he total acreage that would be flooded if all recommended water management strategies from the 2021 Region C Water Plan were implemented is almost 131,000 acres, with almost half of that being from the proposed Marvin Nichols Reservoir."](#) The NETRWPG supports its positions with both the facts set out in its previous 2011, [and 2016, and 2021](#) Region D Plans, including information provided again below that have come from evaluations of the needs for

instream flows to protect flood plain forests that exist downstream of the proposed reservoir. It is the position of the NETRWPG that all proposals for Marvin Nichols reservoirs developed by Region C are based on the impoundment and use of water that NETRWPG needs to protect these downstream agricultural and natural resources.

~~Per the terms of agreement set forth from the October 5, 2015 mediation between Regions C and D and ratified by the NETRWPG at its October 21, 2015 meeting, the NETRWPG does not challenge Marvin Nichols Reservoir as a unique reservoir site for the purposes of this Plan.~~ At the time of publication of this Regional Water Plan, no agreement has been made between Regions C and D for the purposes of the 2026+ Region D Plan.

### **6.9.1 Impacts on Agricultural Resources**

Agriculture as a whole and timber in particular are vital and important industries throughout the NETRWPA, as illustrated in Chapter 1, Figure 1.11, wherein timber is listed in 12 of the 19 counties as a principal crop.

Estimates developed for the USACE and Sulphur River Basin Authority (SRBA 2013) reflect that Marvin Nichols I Reservoir would flood 66,103 acres, mainly in Red River County and including portions of Titus, Franklin, Delta, and Lamar Counties. Within that study, a high-level desktop analysis using available land coverage data from the TPWD Ecological Systems Classification, and EPA concluded that included in the flooded acreage would be 31,600 acres of forest lands, including an approximation of 10,156 acres of Priority 1 bottomland hardwoods potentially classified as waters of the U.S. (SRBA Environmental Evaluation Interim Report, Sulphur River Basin Comparative Assessment, 2014). Specifically to differentiate bottomland hardwood forest by that area potentially characterized as “waters of the U.S.,” dubbed “Forested Wetland,” an extra GIS filter was employed using the U.S. Fish and Wildlife Service National Wetlands Inventory data coverage.

While the SRBA study suggests that the amount of bottomland hardwood forest characterized as waters of the U.S., i.e., “Forested Wetland” potentially impacted by the proposed Marvin Nichols reservoir is 10,156 acres, the amount reported in the TWDB 2008 Reservoir Site Protection Study is reported as 26,309 acres (Table 5-37, pg. 100, utilizing a methodology performed by the Texas Parks and Wildlife Department, TPWD, described in Appendix C of that report). A possible reason for this significant difference may be the extra filtering noted above to differentiate between bottomland hardwood forest, and “Forested Wetland,” which is used for their calculation of “waters of the U.S.” While the difference in the overall acreage between the 2008 TWDB study and the more recent SRBA study is less than 2%, the reported difference in impacts on potentially mitigable bottomland hardwoods has decreased by approximately 16,153 acres, or more than 60%.

More recent analyses performed for the SRBA (as reported in Timberland and Agricultural Land Impact Assessment for Selected Water Resource Options in the Sulphur River Basin, SBG 2015) have indicated the impacted acreage from the Marvin Nichols Reservoir project to be 66,216 acres, assuming a reservoir elevation of 328 ft-NGVD. Additional information developed for the SRBA in early 2015 indicated that, “recent droughts had impacted the estimated firm yield of reservoirs within the Sulphur Basin to a greater extent than anticipated and that a larger scope of the Marvin Nichols project should be evaluated.” This more recent study thus adopted a “more refined”

approach to evaluate timber resources. The results indicated that approximately 42,019 acres of timber, 22,854 acres of agriculture, and 1,343 acres of “other” wildlife area would be impacted by the Marvin Nichols Reservoir project. The estimated value of these impacts totals approximately \$28.3 million (\$24.7 million timber value, \$3.6 million agricultural value).

[More recent draft information presented by the Region C RWPG at its meeting on September 30, 2024, indicates a surface area for Marvin Nichols Reservoir of 66,103 acres, with storage of 1,532,000 ac-ft of storage. This acreage is consistent with that previously reported in the 2021 Region C Water Plan. Within Appendix J of the 2021 Region C Plan, available data on land cover types potentially useful as agricultural resources were adapted from the \*Environmental Evaluation Interim Report – Sulphur River Basin – Comparative Assessment\*. Estimated amounts of inundated area were Timberlands \(42,823 acres\), Active/Potential Agricultural and Pasture Lands \(18,947 acres\), and Non-Agricultural Lands \(4,333 acres\). It is further noted therein that the “most significant impacts to agricultural resources relative to the resources of Region D and of Texas are on resources that could potentially be useful to the silviculture industry,” which is discussed in greater detail below.](#)

Ultimately, these studies provide a useful example of the uncertainty underlying the planning-level characterization of the significance of impacts from the Marvin Nichols I Reservoir on the timber industry in the North East Texas Region, and the importance of field verification and further detailed analysis.

In addition to the timber and agricultural land lost as a result of the reservoir, mitigation requirements are anticipated to significantly impact agricultural resources. [It has been acknowledged that mitigation is intended to offset impacts to natural resources, but may increase impacts to agricultural resources.](#) The [recent SRBA \(2014\)](#) study of the Sulphur River Basin (specifically the Cost Rollup Report) concluded that approximately 47,060 acres would be necessary for mitigation. This methodology was based upon the application of a 2:1 ratio applied to the aforementioned calculated acreage of 23,530 acres of “water of the U.S.” within the footprint of the proposed reservoir. This information was then incorporated into the 2016 Region C Water Plan.

The results of the SRBA Study were used as the basis for the 2014 analysis for Region C entitled, “Analysis and Quantification of the Impacts of the Marvin Nichols Reservoir Management Strategy on the Agricultural and Natural Resources of Region D and the State.” This analysis compiled information developed during the SRBA study for use in the TWDB’s conflict resolution process between Region C and Region D performed for the purposes of the 2016 regional water planning process.

Region D prepared a three-part response to [the Region C RWPG’s](#) analysis. In the first part of this response, [Trungale \(2014\)](#) concluded that the impacts on priority bottomland hardwoods due to the reservoir and its impacts on flows would be significant:

*“Development of the Marvin Nichols Reservoir project as proposed in the Region C water plan would permanently flood a large proportion of the last remaining intact bottomland hardwoods (BLH) in East Texas. It would also result in a massive reduction in flows remaining in the river downstream of the proposed reservoir project which would result in significant, likely catastrophic, harm to an even larger bottomland hardwood forest area. As*

*the plan acknowledges “Marvin Nichols Reservoir will have significant environmental impacts.” (Region C 2011, p 4D.11)”*

These bottomland hardwoods habitats are important natural resources that are dependent on maintenance of instream flows.

*“Floodplains with BLH and other ecologically important habitats are one of most altered and imperiled ecosystems on Earth (Opperman et al. 2010). The unique importance of this BLH ecosystem is largely based on its extensive swamp communities sustained by an active regime of high and overbank flows. More than any other factor, the sustainability of ecosystem processes within floodplains depends upon the longitudinal and lateral hydrologic connections that would be severed by the proposed reservoir.”*

Trungale (2014) further concluded based on analysis of modeling provided by the Region C RWPG that operation of Marvin Nichols as proposed by the Region C Plan would not protect these important natural resources.

*“As currently modeled, the proposed Marvin Nichols I reservoir will not provide sufficient frequency and duration of high and overbank flows to sustain downstream BLH forest....Analysis of results generated by the water availability modeling (WAM), developed to evaluate this reservoir project, indicate that the flows needed to maintain these forests would be severely diminished, if not entirely eliminated. The environmental flow requirements used to evaluate the Marvin Nichols Reservoir Water Supply Project are based on an approach developed in the 1990’s called the “Consensus Criteria”. Unlike the more recent environmental flow criteria developed as part of SB3, there are no requirements, under the consensus criteria, to pass any high flow pulse flows. The maximum pass through for the proposed Marvin Nichols Reservoir Project, as required by consensus criteria, would be 514 cfs in May and then only if the reservoir is greater than 80% full.*

*The clearest problem with the Region C report is that it contains no analysis or quantification of downstream impacts. Data and methodologies to perform this type of analysis, even at a planning level, are readily available. In 2004, the TWDB and the U.S. Army Corps of Engineers (USACE) conducted a study on the Sulphur River (TWDB 2004). Direct observations and technical evaluations reported in this study indicate that flows in the range of 862 cfs (approximately 50,000 ACFT per month) are transitional between in-channel and overbank flow.*

*An analysis of the outputs from the water availability model, developed by Region C to evaluate the Marvin Nichols project, show that under existing conditions, there is only one year, out of the 57-year record, in which flows did not exceed this threshold volume in at least one month. When the proposed reservoir is included in the simulation, this number jumps to 29 years (more than half of the time) when no overbank events occur. The longest duration of time in which no over bank event occur under the without project scenario is 16 months; the flow regime resulting from the proposed reservoir indicates that at two separate times in the record, the river would go 80 months (almost 7 years) without overbank flow events. These flow rates, based on the 7Q2 water quality target, are intended to sustain the river during brief, infrequent and severe droughts, but with the Marvin Nichols project as*

*proposed and modeled by Region C, these extremely low flows would occur much more frequently.”*

The impact of flow alteration due to the Marvin Nichols Reservoir on downstream forests does not appear to have been considered in those recent Region C analyses. These losses, as well as the losses within the reservoir footprint, represent a significant impact on natural resources in Region D. From Trungale (2014):

*“The lack of seasonal flooding identified in the water availability results indicates BLH forests cannot be maintained downstream of the proposed Marvin Nichols reservoir. When the effect on flows and the loss of episodic inundation are added to the impacts resulting within the reservoir footprint, the impacts from the Proposed Marvin Nichols Reservoir Project are huge. In the Sulphur basin 44% of the Forested Wetland area and 17% of the Bottomland Hardwood Forests would be at significant risk. By completely ignoring the largest and most significant impacts to natural resources resulting from the Marvin Nichols Reservoir Water Supply project, the Region C report does not meet the requirements of the TWDB order.”*

In a separate section of Region D’s 2014 response to the 2014 Region C analysis, Sharon Mattox, Ph.D., J.D., concluded that the Region C report “fails to provide reasonable quantification of impacts.” This report cites a relatively recent major change in the means of determining mitigation, identifying that the U.S. Army Corps of Engineers and the U.S. EPA published their final rule, “Compensatory Mitigation for Losses of Aquatic Resources,” better known as the “2008 Mitigation Rule.” As noted in Mattox (2014):

*“The policies and procedures laid out in the 2008 Mitigation Rule render it improper and utterly illogical to conduct an analysis of a future project based solely on historical information (even if Region C had gathered accurate and relevant historical data). Under well-developed tools and practices stemming from the 2008 Mitigation Rule, losses of functions and values are the emphasis and simple ratios are not the touchstone. If a ratio is used, that ratio should be in the range of 3:1 to 10:1.”*

Mattox (2014) further notes:

*“Initially, the Report estimates impacts only for the inundation area of the Reservoir itself – that is, the footprint of reservoir. The Report fails to estimate jurisdictional areas for the 2,751 acres of “ancillary facilities” recognized in the [2011] Region C Plan. The ancillary facilities must be part of the USACE permit, which must assess the complete project. In addition, the Report fails to include any estimates for lands used during the construction process. The estimate also fails to include any estimate of critical secondary impacts to waters of the U.S., which will also require mitigation if losses of waters of the U.S. result. One example of a secondary impact that would likely have a material impact is wetlands adjacent to the Sulphur River downstream of the proposed dam that will no longer be inundated by frequent flood events.”*

Mattox (2014) summarizes the characterization of potential mitigation thusly:

*“The 23,530 acre estimate of jurisdictional areas is not consistent even with the data on land coverage types... Based on my review of the EEIR-SRBCA, I would include the estimated acreages for bottomland hardwoods, forested wetlands, herbaceous wetlands, open water, and shrub wetland. In addition other habitat types identified ... as subtypes under Grassland/Old Field, Shrubland, and Upland Forests that are not broken out but likely qualify as waters of the U.S., include Pineywoods: Bottomland Wet Prairie, Pineywoods: Small Stream and Riparian Wet Prairie, Pineywoods: Small Stream and Riparian Evergreen Successional Shrubland, and Pineywoods: Small Stream and Riparian Temporarily Flooded Mixed Forest.*

*The total of only the habitat types listed Table 2 of the Report is 35,411 acres, which I believe to be a more realistic estimate of the number of acres that require mitigation, if one is limited to the numerical data provided in the Report. This number, however, still excludes the additional habitat types given above, which will also contain jurisdictional areas. It further excludes the small, but identifiable wetlands, streams, and other waters that are certainly present in other habitat categories. Although no data on these omitted waters is included, it would certainly increase the realistic minimum number of jurisdictional waters of the U.S. For planning purposes, an estimate of at least 40,000 jurisdictional acres is reasonable.”*

Noting that historically, all required mitigation has occurred in the watershed of the reservoir, Mattox (2014) indicates that, “given that the watershed approach is a central focus of the 2008 rule, all mitigation required for the [Marvin Nichols I] strategy must certainly occur within Region D,” ultimately opining:

*“...[T]he mitigation required for the [Marvin Nichols I] strategy will require at least 3 times as much land as the acres of jurisdictional waters, and potentially much more. Any of the reasonable estimates suggest the mitigation land required for the [Marvin Nichols I] strategy will exceed 100,000 acres...”*

Another previous study by the Texas Parks and Wildlife Department (TPWD)/United States Fish and Wildlife Service (USFWS) concluded a minimum of 163,620 acres would be required for mitigation and that number could be as high as 648,578 acres. “The Economic Impact of the Proposed Marvin Nichols I Reservoir to the Northeast Texas Forest Industry” prepared by the Texas Forest Service dated August 2002 estimated that the total acres affected by Marvin Nichols I Reservoir could be as low as 258,000 acres or as high as 820,000 acres. “The Economic, Fiscal and Developmental Impacts of the Proposed Marvin Nichols Reservoir Project” dated March 2003 by Weinstein and Clower prepared for the SRBA stated a lower acreage loss, estimating agricultural land loss of 165,000 to 200,000 acres.

It is understood that the exact amount and location of the mitigation acreage is unknown. However, in analyzing impacts to agricultural and natural resources in the NETRWPG area, it is clear that vast amounts of agricultural acreage will be removed from production due to flooding and mitigation requirements associated with Marvin Nichols I Reservoir. These impacts are corroborated in “Table P.1: Summary of Evaluation of Water Management Strategies” as follows: “Agricultural Resources/Rural Areas” are rated high” and “Possible Third Party” are rated “high”. Third Party impacts are considered to be social and economic impacts resulting from redistribution of water.



## **6.9.2 Impacts on Timber Industry**

The Texas Forest Service Study dated August 2002 estimated that the forest industry and local economies would incur significant losses due to a substantial reduction in timber supply from the reservoir project and required mitigation. The study further detailed that manufacturing facilities such as paper mills located near the proposed site which are dependent on hardwood resources would be impacted the most. The NETRWPG has previously received oral and written commentary from Graphics Packaging International, (formerly International Paper Company), which operates a paper mill in Cass County, Texas, and from numerous other timber companies, logging contractors and related industries stating that Marvin Nichols I Reservoir and the mitigation associated with the project would place their industries in peril due to the loss of hardwood timber supplies.

The Texas Forest Service Study estimated forest industry losses based on three (3) separate mitigation options. The low end impacts were estimated to be an annual reduction of \$51.18 million output, \$21.89 million value-added, 417 jobs and \$12.93 million labor income. The high end impacts were estimated to be annual loss of \$163.91 million industry output, \$70.10 million value-added, 1,334 jobs and \$41.4 million labor income.

The Weinstein and Clower Study dated March 2003 estimated as much as 200,000 acres of agricultural land, including 150,000 acres of timberland, could be removed from production. However, the study opined that based on assessment U.S. Forest Service inventories, those inventories along with growth could offset the loss of timberland due to reservoir impoundment and mitigation. The study also indicated that the loss to the timber industry should be limited to additional transportation costs associated with assessing new regional sources of timber.

The Weinstein and Clower Study has been criticized on the following grounds:

1. The Weinstein and Clower Study used total U.S. Forest Service timber inventories throughout the region in arriving at its conclusion that the inventories together with the growth of those inventories would offset any losses due to reservoir impoundment and mitigation. It did not take into account that large amounts of this acreage is unharvestable because it is located in wildlife management areas, streamside management zones, parks, housing areas and other areas which cannot be harvested. In addition, it is well documented that hardwood acreage throughout Northeast Texas as well as the State as a whole is decreasing due to development, conversions of hardwood areas to production of pine plantation acreage, and inundation for water development projects. See "An Analysis of Bottomland Hardwood Areas" report to TWDB dated February, 1997.
2. The Weinstein and Clower Study fails to distinguish between timber inventories as a whole (which includes more pine than hardwood) and hardwood timber inventories. Many of the timber industries in Northeast Texas, such as paper mills and hardwood sawmills, are dependent upon a reliable and affordable supply of hardwood timber. Hardwood timber grows predominantly in bottomlands and thus would be more severely impacted by the reservoir project and required mitigation than other timber species.
3. The Weinstein and Clower Study acknowledges that transportation costs would be greater with Marvin Nichols I in place as timber companies would be required to purchase timber

from farther distances. These additional costs would have a huge impact on the timber industry in Northeast Texas. Timber is a heavy product and the transportation cost of timber is a substantial factor, particularly taken in conjunction with the current high cost of fuel. The industries involved compete in a global market. Additional transportation costs and additional costs in obtaining raw materials will jeopardize their ability to compete in this global market. This is particularly important considering the number of manufacturing jobs already lost due to rising costs of manufacturing products in the United States.

4. The Weinstein and Clower Study used a mitigation factor of 1.54 to 1, citing that ratio as the mitigation required by the most recently developed reservoir in Texas. It is widely believed that the estimates by the TPW/USFWS Study and the TFS Study are more accurate estimates based on the detailed analysis of the actual acreage to be mitigated rather than a recent mitigation requirement from a totally different type of habitat. In addition, Cooper Lake in Northeast Texas had 5,900 acres of bottomland hardwood and required total mitigation of 31,980 acres throughout Northeast Texas.
5. Finally, additional skepticism of the Weinstein and Clower Study is based on the knowledge that funding for the Study came from Dallas-Fort Worth entities which would benefit from and utilize the water supplies from Marvin Nichols I Reservoir.

As noted previously, results from SBG (2015) developed for the SRBA indicated that approximately 42,019 acres of timber, 22,854 acres of agriculture, and 1,343 acres of “other” wildlife area would be impacted by the Marvin Nichols Reservoir project. The estimated value of these impacts totals approximately \$28.3 million (\$24.7 million timber value, \$3.6 million agricultural value). [The 2016 2021 Region C Water Plan \(Appendix J\)](#) similarly reported potential impacted acreage of timberland ([composed of Bottomland Hardwood Forest, Forested Wetland, and Upland Forest cover types](#)) to be approximately 42,823 acres. However, it is noted that both of these analyses focused upon the acreage potentially inundated within the reservoir, and did not include an analysis of acreage impacted by potential mitigation.

### **6.9.3 Impacts on Farming, Ranching and other Related Industries**

The studies cited above deal only with the timber industry in Northeast Texas. Marvin Nichols I Reservoir and required mitigation would also impact areas which produce wheat, cotton, rice, milo, hay, soybean, and alfalfa. In addition, acreage currently being utilized for beef cattle, dairy cattle, poultry and hog production would be affected. The NETRWPG has received numerous oral and written comments from individuals involved in the production of these agricultural commodities, along with others in agribusiness industries, reflecting negative impacts from the potential development of Marvin Nichols I Reservoir.

### **6.9.4 Impacts on Natural Resources**

Additional commentary has been previously received from the NETRWPG concerning negative impacts on natural resources such as lignite and oil and gas reserves located in and near the reservoir site. See Chapter 1 Figures 1.7 and 1.9 for maps of oil and gas as well as lignite resources. [“Table G.3 Evaluation Matrix” as presented in the 2021 Region C Plan corroborates the negative impacts of Marvin Nichols \(328’\) upon “Other Natural Resources” in its rating of 2 \(out of 5\).](#) [“Table P.3: Strategy Evaluation Matrix” as presented in the 2016 Region C Plan corroborates the negative impacts of Marvin Nichols I upon “Other Natural Resources” in its rating of “medium high.”](#)

Additional concerns have been expressed from landowners regarding economic losses from hunting leases, grazing leases and timber sales. These impacts are again corroborated in the aforementioned table from the 2021 Region C Plan, rating the impacts of Marvin Nichols (328') upon Agricultural Resources/Rural Areas with a score of 1 (out of 5). These impacts are again corroborated in the aforementioned table from the 2016 Region C Water Plan, rating the impacts of Marvin Nichols upon "Agricultural Resources/Rural Areas" as "high" and "Possible Third Party" as high.

In addition, if Marvin Nichols Reservoir is built the footprint will sit squarely on top of the outcrop of the Nacatoch Aquifer. Local residents report there are dozens of springs and thousands of sand boils. Man-made alterations include water wells, undocumented seismograph holes and unplugged oil wells. Residents' concern is that heavy metals settling to the bottom of the reservoir will contaminate the aquifer below.

#### **6.9.5 Impacts on Environmental Factors**

Region C's 2016 planning process provides a summation of significant negative environmental impacts in "Table P.4: Environmental Quantification Matrix." Marvin Nichols Reservoir would cause "High" habitat impacts, "Medium High" impacts to cultural resources, and "Medium" impacts to environmental water needs. "High" is the highest category for negative impacts given to any strategy. This includes 24,093 acres of wetlands impacted and 23 threatened/endangered species.

Although the NETRWPG opposes any Marvin Nichols type reservoir, the NETRWPG notes that other potentially feasible alternatives, such as reallocation of flood pool storage in Wright Patman Reservoir, do exist in the Sulphur River Basin. Evaluations considering the feasibility of this strategy have been performed as part of the aforementioned SRBA Sulphur River Basin Feasibility Study, an ongoing effort on the part of the USACE and SRBA to evaluate potential water supply alternatives in the Sulphur River Basin.

A modified WAM for the Sulphur River Basin, and conditions representing full demands of existing water rights with no discharges (i.e., Run 3), was used in ~~this that~~ study to evaluate three reallocation scenarios with conservation elevations of 232.5 ft., 242.5 ft., and 252.5 ft. The results from ~~these~~ analyses conclude that the available firm supply from reallocation of Wright Patman reservoir ranges from 415,000 ac-ft/yr, to 730,400 ac-ft/yr, and up to 1,004,100 ac-ft/yr, depending upon the amount reallocated from flood storage<sup>1</sup>. It is noted, however, that more recent modeling reflecting updated hydrology may has been adopted by TCEQ that decreases these amounts due impacts from a more recent drought of record in the Sulphur River Basin.

Analyses of potential unit costs of alternative water supplies from the Sulphur River Basin are presented within the *Cost Rollup Report – Final* for the SRBA study. Through a series of planning level analyses, the study identified 12 alternatives having unit costs under \$650 per acre-foot during debt service (after debt service, these 12 most cost effective alternatives remain the least expensive). These seven alternatives are comprised of some combination of the following components:

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<sup>1</sup> Taken from *Technical Memorandum on Hydrologic Yields – Sulphur River Basin Feasibility Study*, 08/26/2014.

- Marvin Nichols 328'
- Marvin Nichols 313.5'
- Wright Patman 232.5'
- Wright Patman 242.5'
- Talco 350' – Configuration 1
- Talco 370' Configuration 1
- Parkhouse I
- Parkhouse II

It is then concluded that “[i]n general, the larger Marvin Nichols scales, the smaller Wright Patman scales, and the Talco alternatives appear to merit further consideration, at least on the basis of unit costs.”

As noted in the SRBA’s Socioeconomic Study of the Sulphur River Basin, “the analysis of socioeconomic resources identifies those aspects of the social and economic environment that are sensitive to change and that may be affected by actions associated with the development of water resources in the Sulphur Basin.” Regional economic development effects were estimated using the MIG, Inc. IMPLAN modeling software for the construction and operation of alternative reservoir scenarios, with all costs and impacts expressed in 2014 dollars. Study areas for each of 12 reservoir scenarios were defined via the adjacent counties to each reservoir alternative. The resultant comparisons between modeled estimates of employment and labor income generated during construction and during project operations demonstrate that the considered Wright Patman Reservoir scenario offers the greatest induced, indirect, and direct effects of all the scenarios analyzed.

The *Environmental Evaluation Interim Report, Sulphur River Basin, Comparative Assessment* produced as part of the SRBA Sulphur River Feasibility Study provides consideration of potential environmental concerns associated with the development of additional water supply within the Sulphur River Basin. Preliminary environmental analyses were performed to, “...help with the identification of potential impacts and constraints...” to the considered potential reservoir sites under evaluation. Readily available information regarding land cover/resources, wetlands, bottomland hardwoods, water quality, archeological resources, instream uses, groundwater, and state and federally listed threatened or endangered species was gathered and reviewed. This information was analyzed within the footprint of each alternative reservoir site to develop a structured assessment. Rankings were then developed based on the identified impacts/constraints. With regard to the Marvin Nichols and Wright Patman reservoir scenarios, the report states:

*“The Marvin Nichols project is representative of a more downstream location for new storage within the Sulphur River Basin. At least five locations for this dam have been considered in previous studies. In general, these alternative sites represent an attempt to locate the impoundment so as to avoid conflicts with Priority 1 bottomland hardwood habitats and oilfield activity while maintaining yield. A potential reservoir at the Marvin Nichols 1A site ...was identified as a recommended strategy for [the North Texas Municipal Water District, Upper Trinity River Water District, and the Tarrant Regional Water District] in*

the 2006 and 2011 [Region C] plan. The Marvin Nichols 1A site is also recommended for protection in the Reservoir Site Protection Study.”

and

“Wright Patman Lake is an existing reservoir located on the Sulphur River in Bowie and Cass Counties, Texas. The top of Wright Patman Dam is at elevation 286 ft. msl. In terms of normal operations, elevation 259.5 ft. msl is considered the top of the flood control pool. At this elevation, Wright Patman Lake would have a cumulative storage capacity of 2,659,000 acre-feet. Theoretically, reallocation of almost any portion of that flood storage is possible. In a practical sense, reallocations are typically limited by either the need to maintain a large amount of flood control storage in order to protect downstream lives and properties, or the constraint on the increase in dependable yield that can be obtained as a result of limited water rights availability, or both. For the purposes of this analysis, the assessment of potential impacts to resources was estimated for two scenarios: 1) the portion of the flood pool from the existing top-of-conservation-pool elevation of 227.5 ft msl\* up to 237.5 ft. msl. (i.e., an increase of 10 ft. msl. in the conservation pool) and 2) the entire flood pool from the existing top-of-conservation-pool elevation of 227.5 ft. msl. up to 259.5 ft. msl.

\* The existing top-of conservation-pool elevation of 227.5 ft. msl. was determined by calculating an average for seven years of daily water surface elevations recorded by the USGS Gage (Wright Patman Lk nr Texarkana, TX) located at Wright Patman Lake from February 2006 to February 2013.”

Based on the SRBA study’s review of cultural resource records and environmental data, it is reported that the Lake Jim Chapman reallocation and Lake Wright Patman minimum reallocation (237.5 ft. msl.) have the “Lowest Impacts”, while the Parkhouse I, Parkhouse II, and Wright Patman maximum reallocation (259.5 ft. msl.) have “Moderate Impacts.” Significantly, the Talco and Marvin Nichols 1A scenarios were determined to have the “Highest Impacts.”

The comparative environmental assessment performed for the Sulphur River Basin Feasibility Study provides a structured comparative assessment of the potential impacts associated with the alternative reservoirs considered. Significant questions remain regarding the specifics of the methods employed in deriving the impacts on archeological resources, bottomland hardwoods, wetlands, the overall rankings, and the individual weight of each ranking in contributing to the overall rankings. However, although such questions remain, the results of the analysis are informative. A comparison is summarized and presented in the SRBA study via a matrix of rankings, presented in [Table X](#).

Although the full reallocation of Wright Patman Reservoir is presented as having the greatest overall ranking (7 = most impact), it is noteworthy that the lower reallocation of Wright Patman (237.5 ft. msl.) is considered to have a lesser impact than that of Marvin Nichols 1A.

**Table X** Summary/Comparison Matrix of the Potential Impacts of the Alternative Reservoir Sites

Reservoir Site	T&E Impacts	Archeological Resources Impacts	Bottomland Hardwood Impacts	Wetlands	Water Quality	Overall Ranking
WRIGHT PATMAN (259.5)	7	3	7	7	7	7
MARVIN NICHOLS 1A	6	4	6	6	4	6
WRIGHT PATMAN (237.5)	4	2	5	5	6	5
TALCO	5	4	4	4	5	4
PARKHOUSE I	3	3	3	3	3	3
PARKHOUSE II	2	3	2	2	2	2
JIM CHAPMAN (446.2)	1	1	1	1	1	1

Source: *Environmental Evaluation Interim Report, Sulphur River Basin, Comparative Assessment, SRBA, June 2013.*

### 6.10 Conclusion

It has been and continues to be the position of the NETRWPG that due to the significant negative impacts upon environmental factors, agricultural resources/rural areas, other natural resources, and third parties, Marvin Nichols Reservoir should not be included as a water management strategy in any regional water plan or the State Water Plan. In referencing Marvin Nichols, the NETRWP incorporates Marvin Nichols I, Marvin Nichols IA, and any major dam sites on the main stem of the Sulphur River.

~~Per the terms of agreement set forth from the October 5, 2015 mediation between Regions C and D and ratified by the NETRWPG at its October 21, 2015 meeting, the NETRWPG does not challenge Marvin Nichols Reservoir as a unique reservoir site for the purposes of this Plan.~~ At the time of publication of this Regional Water Plan, no agreement has been made between Regions C and D for the purposes of the 2026+ Region D Plan.

Considering the aforementioned information, it is further the position of the NETRWPG that the reallocation of Wright Patman Reservoir provides a viable potential water management strategy to assist in meeting the needs for Region C. Although the approach may be potentially more expensive to Region C (in terms of the unit costs of water) to meet that region’s growing needs, the reallocation of Wright Patman may produce less of a potential impact to the agricultural and natural resources of Region D, while providing greater socioeconomic benefits to North East Texas.

**MEETING OF THE  
North East Texas Regional Water Planning Group  
WEDNESDAY, October 30, 2024**

**Chapter 8 – DRAFT Language**

## CHAPTER 8 UNIQUE STREAM SEGMENTS, RESERVOIR SITES, AND LEGISLATIVE RECOMMENDATIONS

The Texas Administrative Code (TAC) allows for the Regional Water Planning Groups (RWPGs) to include legislative recommendations in the regional water plan with regard to legislative designation of ecologically unique river and stream segments, unique sites for reservoir construction, and legislative recommendations (31 TAC, §357.43). RWPGs may include in the adopted regional water plans recommendations for all or parts of river and stream segments of unique ecological value located within the regional water planning area. The 77th Texas Legislature clarified that the designation of unique stream segments solely means that a state agency or political subdivision of the state may not finance the actual construction of a reservoir in a designated stream segment of unique ecological value. It does not affect the analysis to be made by the Planning Groups. The RWPGs are also authorized to make recommendations of unique sites for reservoir construction and prepare specific legislative recommendations in these two areas. The North East Texas Regional Water Planning Group (NETRWPG) has elected to make comments in these two areas and in specific cases has elected to forward several recommendations to the legislature, which are presented in this chapter.

**Commented [TS1]:** All costs being updated to Sept. 2023 dollars.

### 8.1 Legislative Designation Of Ecologically Unique Stream Segments

In the regional water planning process, the planning group is given the opportunity to make recommendations for designation of ecologically “unique stream segments.” This process involves multiple steps with the NETRWPG, the Texas Parks and Wildlife Department (TPWD), the Texas Water Development Board (TWDB) and, ultimately, the Texas Legislature each having a role. 30 TAC 357.43(b) states:

*“Regional water planning groups may include in adopted regional water plans recommendations for all or parts of river and stream segments of unique ecological value located within the RWPA by preparing a recommendation package consisting of a physical description giving the location of the stream segment, maps, and photographs of the stream segment and a site characterization of the stream segment documented by supporting literature and data.”*

As stated above, the 77th Texas Legislature clarified that the designation of unique stream segments solely means that a state agency or political subdivision of the state may not finance the actual construction of a reservoir in a stream segment designated of unique ecological value.

TWDB rules provide that the planning group forward any recommendations regarding legislative designation of ecologically unique streams to the TPWD and include TPWD’s written evaluation of such recommendations in the adopted regional water plan. The planning group’s recommendation is then to be considered by the TWDB for inclusion in the state water plan. Finally, the Texas Legislature will consider



any recommendations presented in the state water plan regarding designation of stream segments as ecologically unique.

## 8.2 Criteria for Designation of Ecologically Unique Stream Segments

TAC §358.2 also specifies the criteria that are to be applied in the evaluation of potentially ecologically unique river or stream segments. These are:

- **Biological Function:** Stream segments which display significant overall habitat value including both quantity and quality considering the degree of biodiversity, age, and uniqueness observed and including terrestrial, wetland, aquatic, or estuarine habitats;
- **Hydrologic Function:** Stream segments which are fringed by habitats that perform valuable hydrologic functions relating to water quality, flood attenuation, flow stabilization, or groundwater recharge and discharge;
- **Riparian Conservation Areas:** Stream segments which are fringed by significant areas in public ownership including state and federal refuges, wildlife management areas, preserves, parks, mitigation areas, or other areas held by governmental organizations for conservation purposes, or stream segments which are fringed by other areas managed for conservation purposes under a governmentally approved conservation plan;
- **High Water Quality/Exceptional Aquatic Life/High Aesthetic Value:** Stream segments and spring resources that are significant due to unique or critical habitats and exceptional aquatic life uses dependent on or associated with high water quality; or
- **Threatened or Endangered Species/Unique Communities:** Sites along stream where water development projects would have significant detrimental effects on state or federally listed threatened and endangered species; and sites along streams significant due to the presence of unique, exemplary, or unusually extensive natural communities.

## 8.3 Candidate Stream Segments

The TPWD prepared and published in May of 2000 a report entitled *Ecologically Significant River and Stream Segments of Region D, Regional Water Planning Area* which identified 14 stream segments within the region that meet one or more of the criteria for designation as ecologically unique. Those 14 segments are listed in [Table 8.1](#)~~Table 8.1~~ (the report actually listed 15 segments but the Quail Creek segment is located within Region I). Figure 8.1 shows the location, in red line, of all 14 segments located within Region D. Particulars of these river and stream segments may be found in either the TPWD report or the 2006 Region D Plan.

During the development of the 2011 Region D Plan, the NETRWPG received presentation of two additional stream segments for consideration as Unique Stream Segments. These are White Oak Creek in the Sulphur River Basin in Titus and Morris Counties and Pecan Bayou in the Red River Basin in Red River County. These two stream segments are shown in blue line in Figure 8.1 and in Figures 8.3, 8.4 and 8.5. They are also described in [Table 8.2](#)~~Table 8.2~~.

Table 8.1 TPWD Identified Ecologically Unique Stream Segments – Region D (North East Texas)

Name	Description
BIG CYPRESS BAYOU/CREEK	From a point 7.6 miles downstream of SH 43 in Marion/Harrison County upstream to Ferrell's Bridge Dam in Marion County (TCEQ classified stream Segment 0402).
	Biological function - priority bottomland hardwood habitat displays significant overall habitat value (USFWS, 1985).
	Riparian conservation area - Caddo Lake State Park and Wildlife Management Area.
	Threatened or endangered species/unique communities - Paddlefish (SOC/St. T) (Pitman, 1991; TPWD, 1998).
BIG CYPRESS CREEK	From a point 0.6 mile downstream of US 259 in Morris/Upshur County upstream to Fort Sherman Dam in Camp/Titus County (TCEQ classified stream segment 0404).
	Threatened or endangered species/unique communities - paddlefish (SOC/St.T) (Pitman, 1991; TPWD, 1998).
BLACK CYPRESS CREEK	From the confluence with Black Cypress Bayou east of Avinger in south Cass County upstream to its headwaters located four miles northeast of Daingerfield in the eastern part of Morris County.
	Biological function - priority bottomland hardwood habitat displays significant overall habitat value (USFWS, 1985).
	High water quality/exceptional aquatic life/high aesthetic value - ecoregion stream; diverse benthic macroinvertebrate and fish communities (Bayer et al., 1992; Linam et al., 1999).
	Threatened or endangered species/unique communities - paddlefish (SOC/St.T) (Pitman, 1991).
BLACK CYPRESS BAYOU	From the confluence with Big Cypress Bayou in south central Marion County upstream to the confluence of Black Cypress Creek east of Avinger in south Cass County.
	Biological function - priority bottomland hardwood habitat displays significant overall habitat value (USFWS, 1985).
	Threatened or endangered species/unique communities - paddlefish (SOC/St.T) (Pitman, 1991).
FRAZIER CREEK	From the confluence with Jim Bayou in Marion County upstream to its headwaters located three miles north of Almira in west Cass County.
	High water quality/exceptional aquatic life/high aesthetic value - ecoregion stream; diverse fish community (Bayer et al., 1992; Linam et al., 1999).
GLADE CREEK	From the confluence with the Sabine River in the northwestern corner of Gregg County near Gladewater upstream to its headwaters located about five miles southwest of Gilmer in Upshur County.
	Biological function - Swamp/bog habitat displays significant biodiversity and overall habitat value (Bauer et al., 1991).
	Threatened or endangered species/unique communities - unique swamp/bog community (Bauer et al., 1991).

Name	Description
LITTLE CYPRESS BAYOU	From the confluence with Big Cypress Bayou in Harrison County to a point 0.6 mile upstream of FM 2088 in Wood County (TCEQ classified stream segment 0409).
	Biological function - priority bottomland hardwood habitat displays significant overall habitat value (USFWS, 1985).
	High water quality/exceptional aquatic life/high aesthetic value - ecoregion stream; diverse benthic macroinvertebrate community (Bayer et al., 1992).
	Threatened or endangered species/unique communities - bluehead shiner (SOC/St.T), creek chubsucker (SOC/St.T) (SOC/St.T), and blackside darter (SOC/St.T) (Bauer et al., 1991).
LITTLE SANDY CREEK	From Lake Hawkins upstream to its headwaters in Wood County.
	Biological function - priority bottomland hardwood habitat displays significant overall habitat value (Bauer et al., 1991).
	Riparian conservation area - Little Sandy National Wildlife Refuge High water.
	Threatened or endangered species/unique communities - unique swamp/bog community (Bauer et al., 1991); rough-stemmed aster (SOC) (J. Poole, 1999, pers. comm.).
PINE CREEK	From the confluence with the Red River in Red River County upstream to Crook Lake Dam in Lamar County.
	Threatened or endangered species/unique communities - one of two sites in Texas where Ouachita rock-pocketbook freshwater mussel (Fed.E) has been collected (Howells, 1995; Howells et al., 1997).
PURTIS CREEK	From the Van Zandt/Henderson County line upstream to its headwaters in Van Zandt County.
	Riparian conservation area - Purtis Creek State Park.
SABINE RIVER	From US 59 in south Harrison County upstream to Easton on the Rusk/Harrison County line (within TCEQ classified stream segment 0505).
	Biological function - Texas Natural Rivers System nominee, diverse riparian assemblage including hardwood forest and wetlands, and significant natural areas (NPS, 1995); priority bottomland hardwood habitat displays significant overall habitat value (USFWS, 1985).
	High water quality/exceptional aquatic life/high aesthetic value - exceptional aesthetic value (NPS, 1995).
	Threatened or endangered species/unique communities - Paddlefish (SOC/St.T) (Pitman, 1991; TPWD, 1998).
SABINE RIVER	From FM 14 in Wood/Smith County upstream to FM 1804 in Wood/Smith County (within TCEQ classified stream segment 0506).
	Biological function - priority bottomland hardwood habitat displays significant overall habitat value (USFWS, 1985).
	Riparian conservation area - Old Sabine Bottom Wildlife Management Area; Little Sandy National Wildlife Refuge.
	Threatened or endangered species/unique communities - Paddlefish (SOC/St.T) (Pitman, 1991; TPWD, 1998).

Name	Description
SANDERS CREEK	From the confluence with the Red River in Lamar County upstream to the confluence of Spring Branch in Lamar County, excluding Pat Mayse Reservoir.
	Riparian conservation area - Pat Mayse State Wildlife Management Area. Threatened or endangered species/unique communities - one of two sites in Texas where Ouachita rock-pocketbook freshwater mussel (Fed.E) has been collected (Howells, 1995; Howells et al., 1997).
SULPHUR RIVER	From a point 0.9 miles downstream of Bassett Creek in Bowie/Cass County upstream to the IH 30 bridge in Bowie/Morris County.
	Biological function - priority bottomland hardwood habitat displays significant overall habitat value (USFWS, 1985) Threatened or endangered species/unique communities - Paddlefish (SOC/St.T) (Pitman, 1991; TPWD, 1998)

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Table 8.2 NETRWPG Identified Ecologically Unique Stream Segments – Region D (North East Texas)

Name	Description
WHITE OAK CREEK	From just east of US 271 in western Titus County downstream to IH 30 in Western Morris County approximately 18 miles. The site, including bottomland forest, encompasses approximately 27,000 acres (Fig. 8.2). The entirety of the segment is within the White Oak Creek Wildlife Management Area.
	Biological Function - Extensive mature bottomland hardwood forest, Water oak-Willow oak association ( <i>Quercus nigra</i> - <i>Q. phellos</i> G4S3) (U.S. Fish and Wildlife Service, 1985) Emergent wetland (PEM1), Shrub-Scrub wetland (PSS1), and Forested wetland (PFO1) (U.S. Fish and Wildlife Service, 2009) Intact natural hydrologic regime. No modification to stream. (U.S. Fish and Wildlife Service, 1985);
	Riparian conservation area - White Oak Creek Wildlife Management Area; and
	Threatened or endangered species/unique communities - Wintering area for bald eagle (U.S. Fish and Wildlife Service, 1985). High value habitat for migratory birds. (U.S. Fish and Wildlife Service, 1985).
PECAN BAYOU	This Red River Basin Stream extends from two miles south of Woodland in northwestern Red River County east to the Red River approximately one mile west of the eastern Bowie County line (Texas Historical Association, 2009). The site, including bottomland forest, encompasses approximately 958 sq. mi. (Fig. 8.3 & Fig. 8.4). It represents one of the largest undammed watersheds in northeast Texas; and supports multiple large examples of mature bottomland hardwood forest, and rare and endangered species (Zwartjes, et al, 2000).
	Biological function - Extensive bottomland hardwood forest supporting multiple occurrences of rare plant life, including:
	Arkansas meadowrue ( <i>Thalictrum arkansanum</i> G2QS1) (Sanders, 1994);
	Southern lady's slipper orchid ( <i>Cypripedium kentuckiense</i> G3S1) (Sanders, 1994);
	Old growth Shortleaf Pine-Oak forest ( <i>Pinus echinata-Quercus sp.</i> G4S4) (Sanders, 1994); and
	Water oak-Willow oak association ( <i>Quercus nigra-Q. phellos</i> G4S3) (Sanders, 1994).
	Hydrologic function - Represents one of the largest undammed watersheds in northeast Texas, natural hydrologic regime is assumed intact. Flood attenuation, flow stabilization and impacts on groundwater recharge have not been quantified.
	Riparian conservation areas - No public conservation areas however significant private conservation area (Fig. 8.4) The Nature conservancy, Texas Chapter owns 1334 acres within a 6,960 acre site protecting examples of the preceding conservation elements although they are extensive within the watershed. The preserve, Lennox Woods, is located approximately 1.5 miles south of the community of Negley. The land protects approximately 2.6 miles of Pecan Bayou.
	High water quality/exceptional aquatic life - Insufficient data
	Threatened and endangered species/unique communities -
American Burying Beetle ( <i>Nicrophorus americanus</i> G2 Federally listed Endangered) (Godwin, 2005);	
Black Bear ( <i>Ursus americanus</i> G5 State Threatened, ssp. <i>luteolus</i> Federally listed Threatened) (Garner, personal communication, 2007); and	
Timber Rattlesnake ( <i>Crotalus horridus</i> G4 State Threatened).	

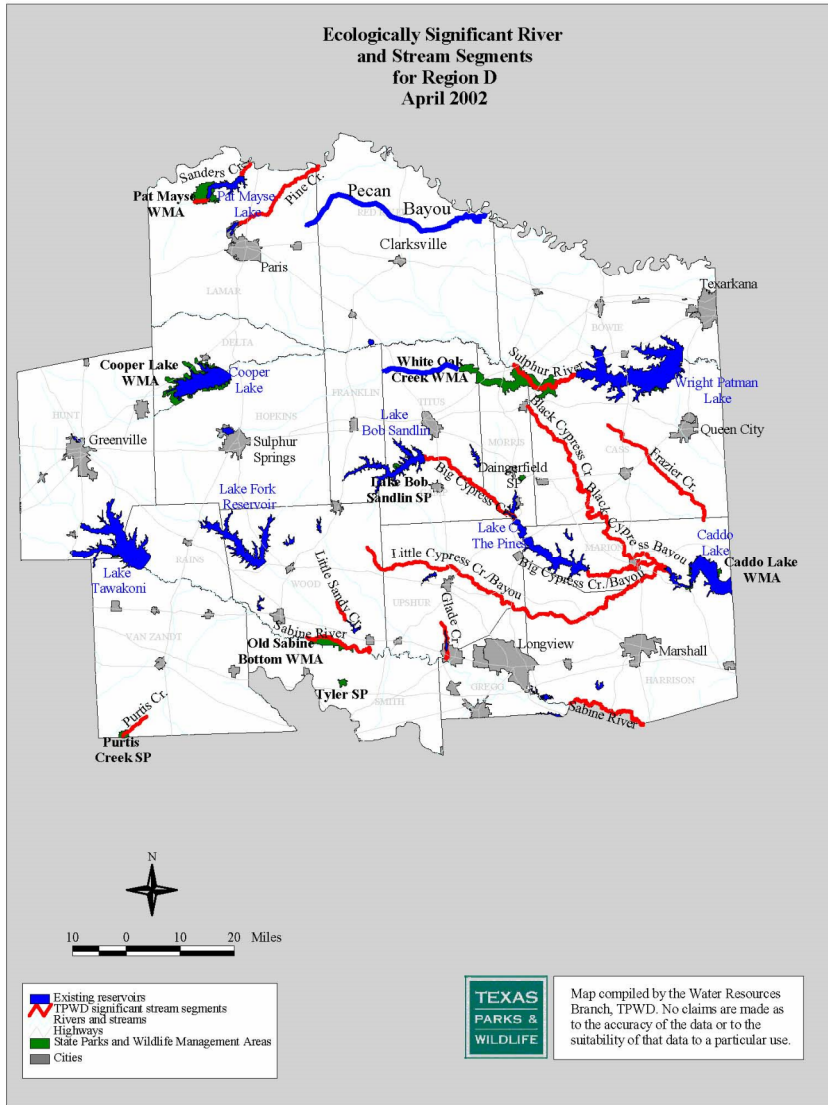


Figure 8.1 Ecologically Significant River and Stream Segments (from TPWD, 2000)

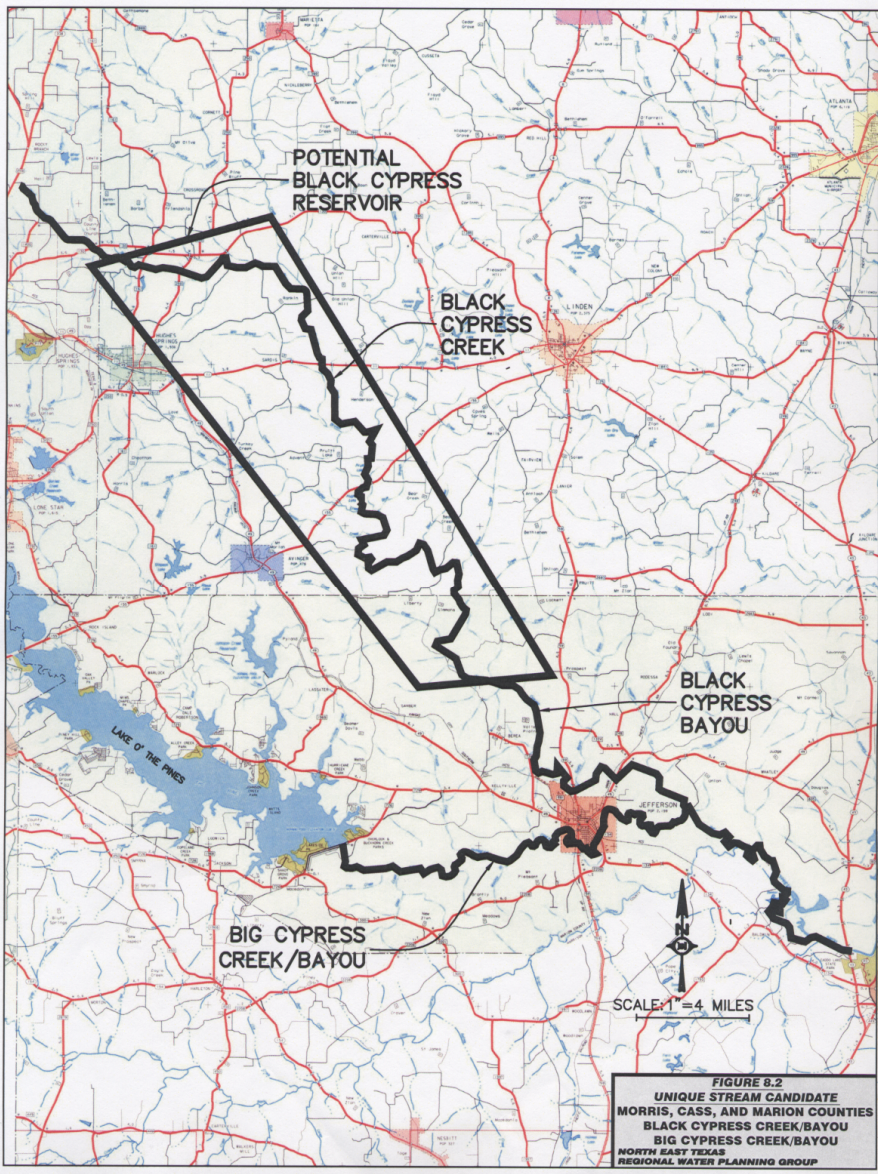


Figure 8.2 Black Cypress Creek/Black Cypress Bayou

## 8.4 Conflicts With Water Management Strategies

As a part of the planning effort, the TPWD candidate streams from the TPWD report and the more recent suggestions were compared to reservoir sites which have been suggested previously in the region. Further, the candidate streams which border on other regions were compared against the recommendations of that region.

The following TPWD suggested segments conflict with the proposed location of Black Cypress Reservoir or the Caddo Lake enlargement. Neither of these projects were supported by the NERWPG in previous rounds of planning:

- **Black Cypress Creek** (Cass County)
- **Black Cypress Bayou** (Marion County)
- **Big Cypress Bayou/Creek** (Marion County)

The following TPWD suggested segments are contiguous with Region C or I:

- **Purtis Creek** (Region C) (Van Zandt County)

The following TPWD suggested segments do not appear to conflict with Region D recommended water management strategies provided the stated conditions are met:

- **Sanders Creek** (Lamar County) provided there is no interference with the operation or maintenance of Pat Mayse Reservoir.
- **Pine Creek** (Lamar County) provided that there is no interference with the operation and maintenance of Lake Crook, or the City of Paris wastewater treatment plant.
- **Big Cypress Bayou/Creek** (Marion County) provided that there is no interference with the operation and maintenance of Lake O' the Pines.
- **Glade Creek** (Upshur County) provided there is no interference with the operation or maintenance of Lake Gladewater.
- **Big Cypress Creek** (Titus, Morris, and Camp Counties) provided there is no interference with the operation and maintenance of Lake Bob Sandlin or Lake O' the Pines.
- **Pecan Bayou** (Red River County) provided there are no interference with operation and maintenance of any local entities.

The following suggested segments have one or more conflicts with potential Region D reservoirs or other regional plans:

- **Sabine River from US 59 upstream to Easton** (Harrison County). This segment includes the potential Carthage Reservoir site. Additionally, it abuts Region I, which has not designated it as a unique segment. A possible impact may exist on the operation or maintenance of Lake Cherokee.
- **Sabine River from FM 14 to FM 1804** (Wood/Smith Counties). This segment includes the potential Waters Bluff Reservoir site.
- **Little Cypress Creek/Bayou** (Harrison, Upshur, Wood Counties). This segment includes the potential site of the Little Cypress Reservoir.



- **Sulphur River from a point 0.9 miles downstream of Bassett Creek upstream to the IH 30 bridge** (Bowie, Morris, Cass Counties). This segment lies downstream of the proposed Marvin Nichols reservoir and upstream of existing Wright-Patman Reservoir. Designation of this segment could impact strategies which involve raising the level or changing the operations strategy in Wright Patman, and could impact the potential Marvin Nichols Reservoir.
- **White Oak Creek from US 271 east to IH 30 (Titus and Morris Counties)**. This segment lies upstream of the existing Wright-Patman Reservoir. Designation of this segment could impact strategies which involve raising the level or changing the operations strategy in Wright Patman, or other potential water management strategies located on White Oak Creek under consideration.
- **Pecan Bayou (Red River County)**. This segment extends from two miles south of Woodland in northwestern Red River County, east to the Red River approximately one mile west of the eastern Bowie County line. Designation of this segment could impact strategies including the potential Dimple Reservoir site, or other potential water management strategies located upstream of Pecan Bayou.

## 8.5 Recommendations for Designation of Ecologically Unique Stream Segments

The North East Texas Regional Planning Group does not recommend that any stream segment be unconditionally designated as Ecologically Unique in this region.

## 8.6 Considerations for Ecologically Unique Stream Segment Recommendations

After considering available information the NETRWPG elected not to recommend unconditionally that any stream segments from the TPWD (2000) report entitled *Ecologically Significant River and Stream Segments of Region D, Regional Water Planning Area*, nor did they recommend the White Oak Creek segment presented in the previous regional planning round for ecologically unique status. Reasons for this decision include the following:

1. The Regional Water Planning Group believes that there exists a lack of clarity as to the effects of designation with respect to private property takings issues.
2. The Regional Water Planning Group does not wish to infringe upon the options of individual property owners to utilize stream segments adjacent to their property as they deem appropriate. For example, if reservoirs cannot be built in unique segments, will these become prime candidates for mitigation sites acquired by eminent domain?
3. Despite previous legislative clarification, there remains uncertainty as to the myriad ways in which the designation may ultimately be construed.
4. Where overlap occurs between unique stream candidates and water management strategies, sufficient information to express preference for one use to the exclusion of another is not available at this time.
5. The White Oak Creek segment could possibly be in the proposed inundated area should the level of Wright-Patman Reservoir be raised. At this time sufficient information is not available for a proper evaluation of the White Oak Creek segment.

The NETRWPG further elected to conditionally recommend to the Legislature that the Pecan Bayou stream segment in the Red River Basin and the Black Cypress Bayou and Black Cypress Creek in the Cypress Creek Basin be identified as Ecologically Unique Stream Segments. It is believed that these three segments exhibit sufficient ecological features and meet the TAC criteria for such designation. Because the consequences of such designation by the Legislature are not well understood, this recommendation is conditioned upon legislation providing for such designation to contain the following clarifying provisions:

1. A provision affirming that the only constraint that may result from the ecologically unique stream segment designation is that constraint described in the Texas Water Code (TWC), Subsection 16.051(f), which prohibits a state agency or political subdivision of the state from financing the construction of a reservoir in a designated stream segment.
2. A provision stating that the constraint described in Subsection 16.051(f) Water Code does not apply to a weir, diversion, flood control, drainage, water supply, or recreation facility currently owned by a political subdivision.
3. A provision stating that this designation will not constrain the permitting, financing, construction, operation, maintenance, or replacement of any water management strategy recommended, or designated as an alternative, to meet projected needs for additional water supply in the 2026 Regional Water Plan for the North East Texas Water Planning Region.
4. A provision affirming that this designation is not related to the "wild and scenic" federal program or to any similar initiative that could result in "buffer zones," inadvertent takings, or overreaching regulation.
5. A provision stating that all affected landowners shall retain all existing private property rights.
6. A provision recognizing that the unique ecological value of the designated segment is due, in part, to the conscientious, voluntary stewardship of many landowners on the adjoining properties.

Supporting material on these stream segments from the 2011 Region D Water Plan is presented in Appendix C8 for the purposes of the 2026 Region D Water Plan. The conditional recommendations herein are those as presented in the previously adopted 2011 and 2016 Region D Water Plans. The information required in 31 TAC §357.43(b) is presented herein as part of the conditional recommendations proffered in this Plan. The TPWD has had the opportunity to review this information as part of their review of the Region D IPP. Comments from TPWD on the 2021 Region D IPP stated "TPWD staff applauds the planning group for making this recommendation." A separate, standalone package reflecting these recommendations was submitted to the TPWD by the NETRWPG on September 4, 2020.

There are no recommended strategies in the 2021 Region D Water Plan that impact the conditionally recommended ecologically unique stream segments.

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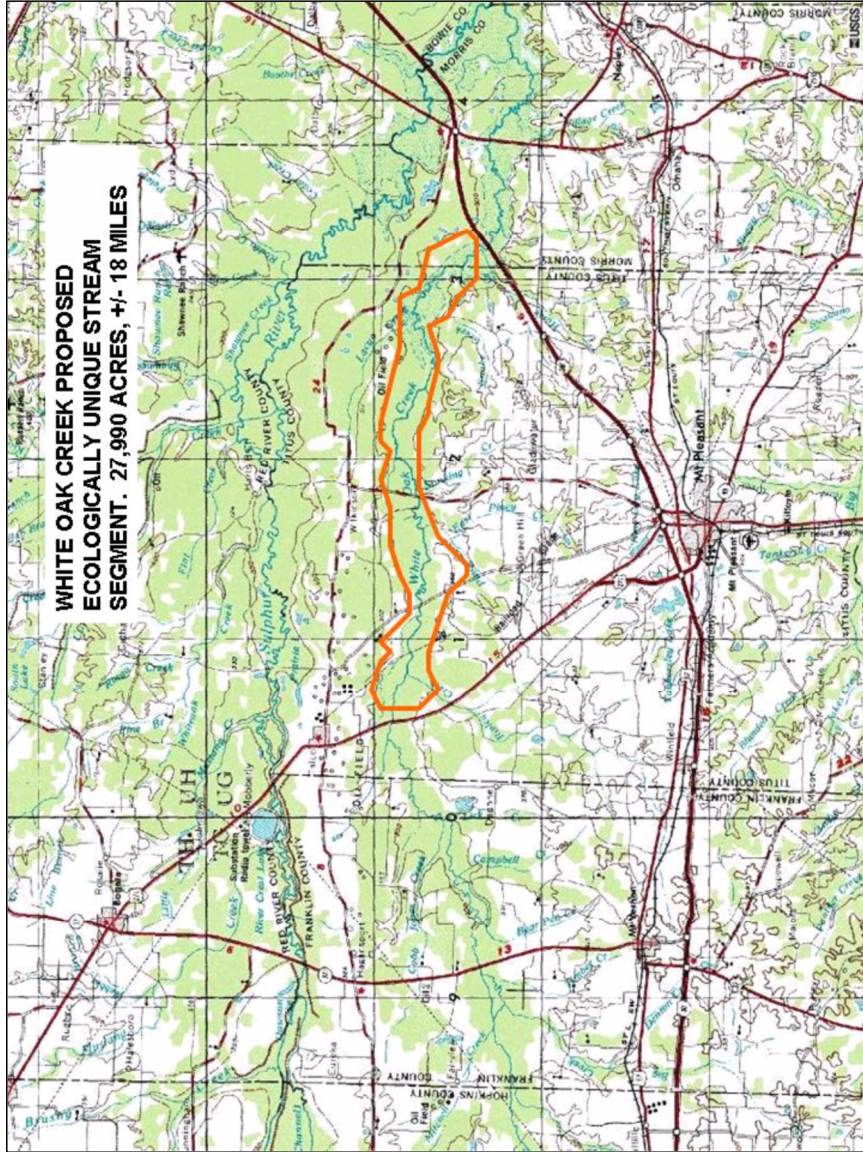


Figure 8.3 White Oak Creek Proposed

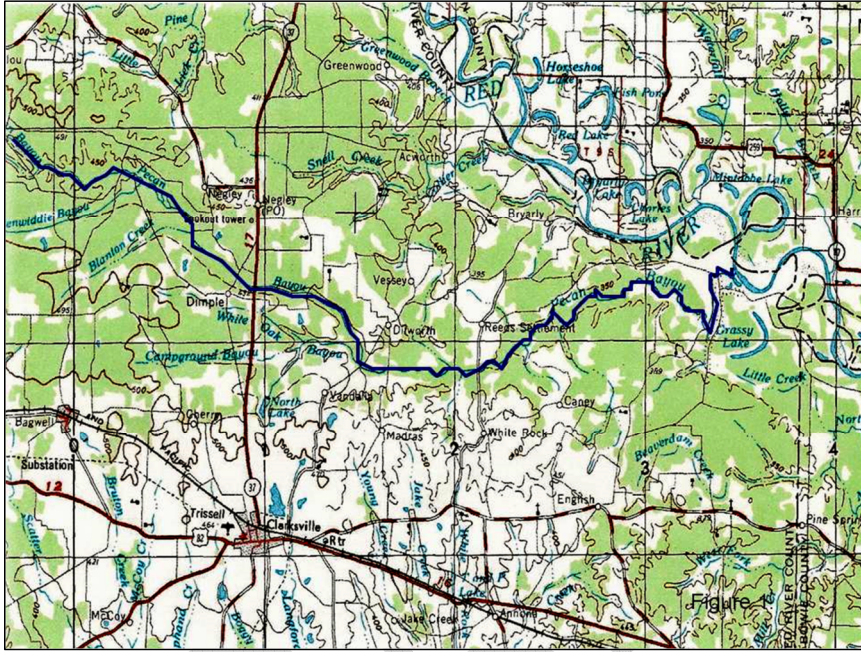


Figure 8.4 Reach of the Pecan Bayou in Red River County

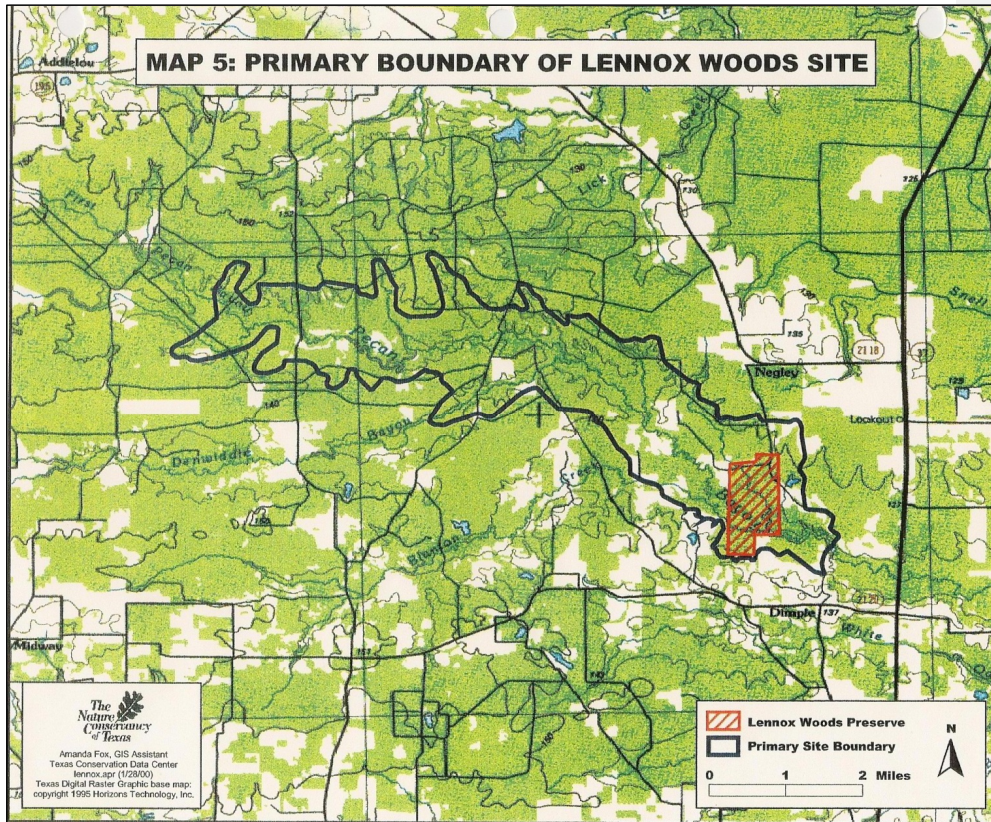


Figure 8.5 Primary Boundary of Lennox Woods Site

## 8.7 Voluntary Instream Flow Goals and Proposals

Since 1997, the Senate Bill 1 water planning process has required protection of agricultural and natural resources as the state determines how to meet future water needs. For example, the basic directive of the legislature in Senate Bill 1 is:

"The state water plan shall provide for the orderly development, management and conservation of water resources and preparation for and response to drought conditions, in order that sufficient water will be available at a reasonable cost to ensure public health, safety and welfare, further economic development and protection of agricultural and natural resources of the entire state." (TWC, Section. 16.051.)

One of the "Guiding Principles" as adopted by the Texas Water Development Board (TWDB) for the 2027~~2~~ State Water Plan is:

(23) Consideration of **environmental water needs, including instream flows** and bay and estuary inflows, including adjustments by the [Regional Water Planning Groups] to water management strategies to provide for environmental water needs including instream flows and bay and estuary needs. Consideration shall be consistent with the Commission's adopted environmental flow standards under 30 TAC Chapter 298 in basins where standards have been adopted. (31 TAC §358.3(23), emphasis added.)

Moreover, the legislature has enacted two other laws that focus on protecting environmental water needs: Senate Bill 2 in 2001 and Senate Bill 3 in 2007. These laws recognized the important role that water left in rivers plays in conserving fish and wildlife habitat, protecting healthy timber and agricultural lands, providing recreational opportunities and sustaining economic and cultural values. Even the value of private property along a river and associated riparian rights can vary significantly with the flow conditions in the river.

Texas law and TWDB's Guiding Principle 23 (TAC §358.3) provide authority for regional water planning groups to focus some of their work on "environmental water needs." TWDB defines "environmental flows" as the flow of water (both quantity and timing of flow) needed to maintain ecologically healthy streams and rivers," as described at the following location:

<http://www.twdb.texas.gov/surfacewater/flows/index.asp>.

Within Senate Bill 3, the term "environmental flow regime" is defined as:

(16) "Environmental flow regime" means a schedule of flow quantities that reflects seasonal and yearly fluctuations that typically would vary geographically, by specific location in a watershed, and that are shown to be adequate to support a sound ecological environment and to maintain the productivity, extent, and persistence of key aquatic habitats in and along the affected water bodies. Section 11.002, Tex. Water Code.

TWDB has further provided guidance on the value and role of environmental flows on its aforementioned website.

Meeting environmental flow goals can be compatible while meeting other water needs. Most of the needs presently addressed in the regional plans and state water plan are for "consumptive uses," that is, water diverted from a river, stream or lake and used for drinking water, agricultural and industrial uses. A percentage of that water is returned to the river.

In contrast, most environmental water needs are non-consumptive, such as flows in the river to provide for fish and wildlife. Moving water downstream in a way that mimics natural flows can meet environmental flow goals while providing water for consumptive use downstream.

In the 2011 Region D Regional Water Plan, as well as in ~~the subsequent 2016 Plans~~, the NETRWPG stated that it was taking steps to protect environmental flow goals, such as instream flows. In section 1.5 (a) Historical and Current Water Use, the 2011 Region D plan states:

"Historical and current uses in the North East Texas Region include municipal, manufacturing, recreation, irrigation, mining, power generation and livestock. . . .

In addition to these uses, which are mostly consumptive uses, there are non-consumptive uses such as flows in rivers, streams, and lakes that have been relied upon to maintain healthy ecological conditions, navigation, recreation and other conditions or activities that bring benefit to the Region. These historic non-consumptive uses and future needs have not yet been the subject of detailed consideration in the State's Senate Bill 3 planning process, but are discussed in *Section 2.3.7 Regional Environmental Flow Demand Projections* and will be addressed in more detail in Round 4 of the planning process. . . .

The 2011, 2016, and 2021-Plan-and-2016-Plans each presented past considerations of the NETRWPG for both the Cypress and Sulphur River Basins, stating:

**"CYPRESS CREEK BASIN**

It is the position of the North East Texas Water Planning Group that there will be unavoidable negative impacts to the integrity of the ecological environment of the water bodies of the Cypress River Basin and especially Caddo Lake, should there be development of new reservoirs in the Cypress River Basin or transfer of water out of the basin, unless such new reservoirs or transfers do not conflict with the environmental flow needs for the water in the North East Texas Region. Those flow needs are defined as the low, pulse and flood flows needed for a sound ecological environment in Senate Bill 3, 2007 Regular Session of the Texas Legislature (SB-3).

Those flow needs have been identified initially by the process of obtaining recommendations from scientists and stakeholders for the flow regimes for the Cypress Basin through a process initiated in 2004 and summarized in the draft Report on Environmental Flows for the Cypress Basin, updated May 2010 and provided as Appendix to the May 31, 2010 Comments of the Caddo Groups to the Region D IPP and referred to as the *Cypress Basin Flow Project Report*. . . .

Proposals for new reservoirs or interbasin transfers can be made consistent with the environmental flow needs in the Cypress Basin only after final decisions have been made to determine those needs and sources to fill them. Until then, however, no water should be proposed for a new reservoir or for uses in other regions unless the proposals in other regional plans explicitly recognize the environmental flow needs for Region D and that the amount, timing, diversion rate and other characteristics must be consistent with the needs..."

And

**"SULPHUR RIVER BASIN**

. . . It is the position of the North East Texas Regional Water Planning Group that there be no development of new reservoirs in the Sulphur River Basin within Region D nor transfer of water out of the basin for that part that is within Region D until the flow needs for a sound ecological environment are defined for the Sulphur River Basin through the process established in Senate Bill 3, 2007 Regular Session of the Texas Legislature. Those flow needs are defined as the low, pulse, and flood flows.

The flow needs assessment for the Sulphur River has not yet begun. No development should take place until the State has identified the flow needs for the Sulphur River and established a demand for the environmental flows for the basin..."

The NETRWPG recommended that no new reservoirs be constructed on Black Cypress based in part on data from the *Cypress Basin Flow Project Report*, but did not make any other specific recommendations.

Senate Bill 3 provided for development of environmental flow "standards" for a number of river basins, but did not include an established schedule for the Cypress, Red, or Sulphur River basins. Senate Bill 3 does, however, provide that in those basins not listed, voluntary development of environmental flow goals and proposals can proceed.<sup>1</sup> That voluntary approach is taking place in the Cypress Creek Basin.

### 8.7.1 Cypress Creek Basin

Over the past 15 years, a number of stakeholders have worked with the U.S. Army Corps of Engineers (USACE) and the Northeast Texas Municipal Water District (NETMWD) to develop a set of environmental flow regimes in the Cypress Creek Basin. Over the past 9 years, USACE and NETMWD have worked to meet those flow regimes through voluntary changes in the water release patterns from Lake O' the Pines. Because of the success of this project to date, the NETRWPG considers those regimes as voluntary goals for instream flows for the purposes of this 2026+ Region D Plan. The NETRWPG recognizes that, as with other aspects of the planning process, new information in the future may change the position of the NETRWPG on these instream flow goals. The strategies to meet future water needs of regional water plans and the State Water Plan are not to be limited by these voluntary goals for instream flows. Rather, such goals are presented herein as a point of reference for the consideration of whether water strategies are consistent with the protection of the agricultural and natural resources of the Cypress Creek Basin and the state that rely upon such flows.

Details on the voluntary environmental flow goals (i.e., the recommended "flow regimes" in that study) and proposals to meet those goals are set out in detail in "Summary of Development of Environmental Flow Regimes for the Cypress Creek Basin and Caddo Lake Watershed as of 2012, with 2015 Update," available at <https://caddolakeinstitute.org/documents/#major>.

In addition to identifying environmental flow regimes for the rivers and streams, the Cypress Summary Report (2012, with 2015 update) discusses proposals to reach such goals over time where they are not being met. One example involves enhancement of the instream flows below Lake O' the Pines to Caddo Lake by increasing the period of the recreational pool to provide additional water for release downstream. The State's Science Advisory Commission, first created by statute in 2003, published a report giving a number of other options for protecting and restoring environmental flows goals.<sup>2</sup>

The flow regimes for the Cypress Basin report are incorporated in this regional water plan as the voluntary goals for instream flows in that basin.

<sup>1</sup> See Section 11.02362(e), Tex. Water Code, the Senate Bill 3 provision for the "voluntary consensus-building process" for basins not scheduled for the formal environmental flow process.

<sup>2</sup> Final Report, Science Advisory Committee Report on Water for Environmental Flows, Chapter 7, October 26, 2004, Prepared for the Study Commission on Water for Environmental Flows.



## 8.7.2 Sulphur River Basin

While a process similar to that used in the Cypress Basin has not yet been developed for the Sulphur Basin, a potential first step has been taken that is important to the NETRWPG. This step is described in more detail in Trungale (2015) located at:

[https://caddolakeinstitute.org/docs/flows/RegionD\\_Sulphur\\_eflows\\_20150409%20%281%29.pdf](https://caddolakeinstitute.org/docs/flows/RegionD_Sulphur_eflows_20150409%20%281%29.pdf)As noted in Trungale (2015), the identified flow regime therein “reflects the historic instream flow conditions that continue to exist today.” The regime has not, however, been subject to review and revision by scientists or stakeholders to determine the extent of this flow regime that is needed to maintain the ecological health of the fish and wildlife habitat and the economic and other values currently provided. Thus, this flow regime serves as only a first attempt at identifying voluntary instream flow goals for the Sulphur River Basin. The NETRWPG proposes and supports the development of a stakeholder process, similar to that of the Cypress Creek Basin, to develop such goals in the future.

Although the flows identified in Trungale (2015) are not presented herein as requirements to be implemented on regional water management strategies, the flow regime identified therein does provide additional information for consideration of potential impacts on the agricultural and natural resources of the region and the state. This initial work provides a point of reference for considering the pulse flows previously discussed in Chapter 6 as necessary for the floodplain forests below the Marvin Nichols reservoir site.

It is the position of the NETRWPG that there be no development of new reservoirs in the Sulphur River Basin within Region D nor transfer of water out of the basin for that part that is within Region D until the flow needs for a sound ecological environment are defined for the Sulphur River Basin through the process established in Senate Bill 3, 2007 Regular Session of the Texas Legislature. Those flow needs are defined as the low, pulse, and flood flows.

The flow needs assessment for the Sulphur River has not yet begun. No development should take place until the State has identified the flow needs for the Sulphur River and established a demand for the environmental flows for the basin. The NETRWPG recognizes that other regional water planning groups may include recommendations for new reservoirs in the Sulphur River Basin or for the transfer of water out of the Sulphur River Basin to basins in other regions, as part of their recommended water management strategies or as alternate strategies. It is the position of the NETRWPG that such proposed reservoirs or transfers include explicit recognition that the needs for environmental flows in the North East Texas Region must be satisfied first consistent with Senate Bill 3.

## 8.8 Reservoir Sites

Rules for regional water planning (31 TAC§ 357.43) state that a regional water planning group “...*may recommend sites of unique value for construction of reservoirs by including descriptions of the sites, reasons for the unique designation and expected beneficiaries of the water supply to be developed at the site.*” The criteria used to determine if a site is unique for reservoir construction are specified in Section §358.2(7), and are as follows:

- (1) *Site-specific reservoir development is recommended as a specific water management strategy or as a unique reservoir site in an adopted regional water plan; or*

- (2) *The location, hydrologic, geologic, topographic, water availability, water quality, environmental, cultural, and current development characteristics, or other pertinent factors make the site uniquely suited for reservoir development to provide water supply for:*
- a) *The current planning period; or*
  - b) *Where it might reasonably be needed to meet needs beyond the 50-year planning period.”*

In the preparation of the 2011 Region D Plan, the NETRWPG conducted a “reconnaissance-level” assessment of previously identified reservoir sites in the region. This assessment was based on a review and limited update of information contained in previous studies for 17 reservoir sites. It should be noted that the “proposed” and “potential” designations used here and in the *Reservoir Site Assessment Study* (Appendix B), *2001 North East Texas Regional Water Plan*, were made only to assist in the planning process and are not intended to convey a relative priority among the various reservoir sites.

The 1997 State Water Plan recommended development of two new reservoirs within the North East Texas Region – the George Parkhouse II reservoir project (Lamar County) and the Marvin Nichols I reservoir project (Red River, Franklin, Morris and Titus counties), both of which are located within the Sulphur River Basin. It is noted in the 1997 State Water Plan that development of the Nichols I reservoir could eliminate or significantly delay the need for the Parkhouse II reservoir. Also, the *Comprehensive Sabine Watershed Management Plan* includes a recommendation that the Sabine River Authority develop the Prairie Creek Reservoir and Pipeline Project (Gregg and Smith counties) to supply projected needs within portions of the North East Texas Region. It should be noted that the Prairie Creek Reservoir and Pipeline Project is not being pursued at this time because of the federal fish and wildlife conservation easement limitation on the Waters Bluff reservoir site. If the conservation easement were removed, the Waters Bluff reservoir could be a priority project of the Sabine River Authority’s to meet projected water needs in the upper Sabine River Basin.

In addition to the Marvin Nichols I, George Parkhouse II, and Prairie Creek reservoir sites, available information on 14 other reservoir sites within the North East Texas Region were also reviewed. These are:

**Cypress Creek**

Little Cypress (Harrison)

**Sabine River Basin**

Big Sandy (Wood and Upshur)

Carl Estes (Van Zandt)

Carthage (Harrison)

Kilgore II (Gregg and Smith)

Waters Bluff (Wood)

Grand Saline Creek (Van Zandt)

**Basin Red River Basin**

Barkman (Bowie)

Big Pine (Lamar and Red River)

Liberty Hills (Bowie)

Pecan Bayou (Red River)

Dimple (Red River)

**Sulphur River Basin**

George Parkhouse I (Delta and Lamar)

George Parkhouse II (Lamar)

Marvin Nichols I/IA

Marvin Nichols II (Titus)

Figure 8.6 shows the approximate location of the previously proposed and potential reservoir sites in the region, as delineated in the *Reservoir Site Assessment Study* (Appendix B), *2001 North East Texas Regional Water Plan*. The *Reservoir Site Assessment Study* (Appendix B), *2001 North East Texas Regional Water Plan*, provided information on various characteristics of each reservoir site, including:

- Location.
- Impoundment size and volume.
- Site geology and topography.
- Dam type and size.
- Hydrology and hydraulics.
- Water quality.
- Project firm yield for water supply.
- Other potential benefits (e.g., flood control, hydro power generation, recreation).
- Land acquisition and easement requirements, and potential land use conflicts.
- Environmental conditions and impacts from reservoir development.
- Local, state, and federal permitting requirements.
- Project costs updated to third quarter (September) 2018 price levels using the Engineering News Record Construction Cost Index (ENR) from the original ENR values of the second quarter (June) of 1999.
- Annualized costs include reservoir debt service with an interest rate of 3.5% over a period of 40 years as these are the current default values in the TWDB's Unified Costing Model (UCM).

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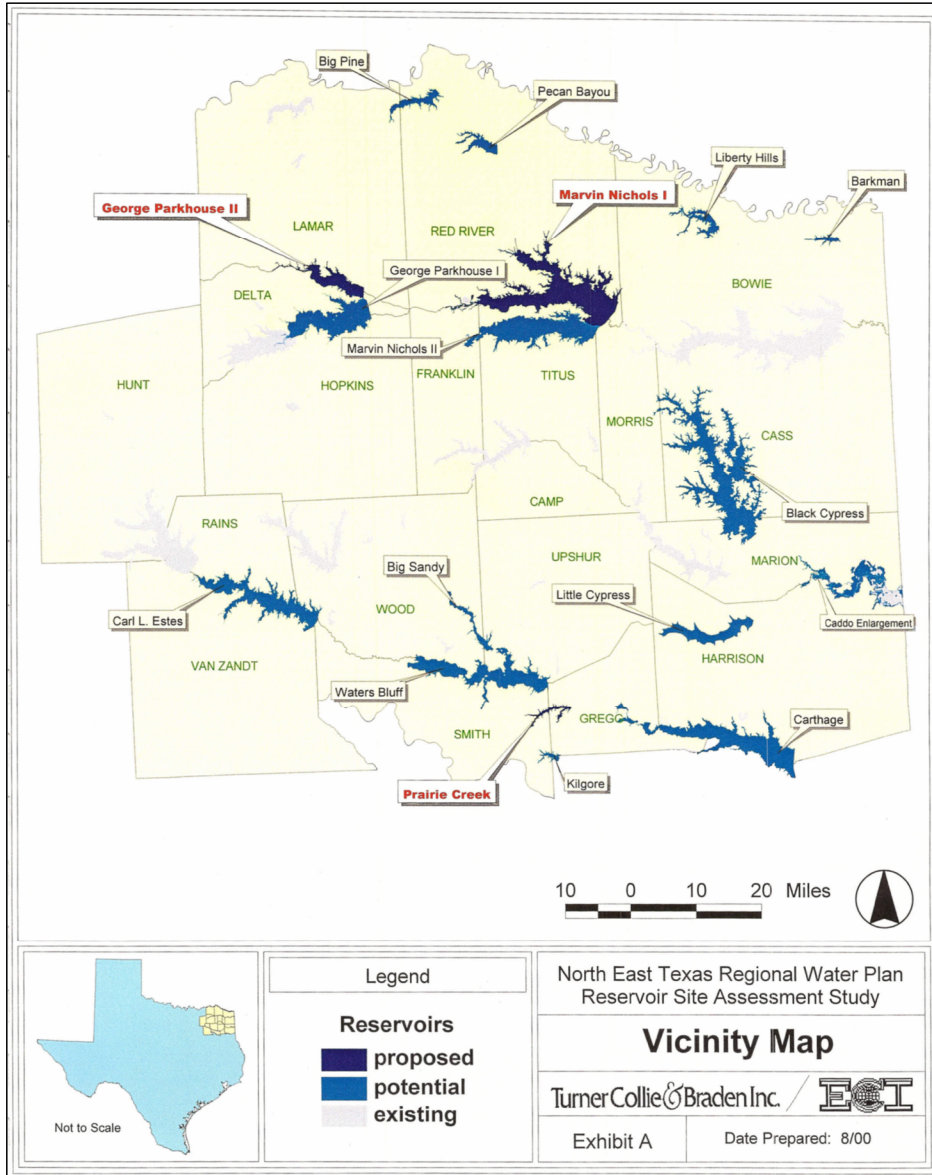


Figure 8.6 Potential Reservoir Vicinity Map, Site Assessment Study (2000)

## 8.9 Cypress Creek Basin

It is the position of the NETRWPG that there will be unavoidable negative impacts to the integrity of the ecological environment of the water bodies of the Black Cypress portion of the Cypress Creek Basin and especially Caddo Lake, should there be development of new reservoirs or transfer of water out of the basin, unless such new reservoirs or transfers do not conflict with the environmental flow needs for the water in the North East Texas Region. Those flow needs are defined as the environmental flows necessary to maintain a sound ecological environment in Senate Bill 3, 2007 Regular Session of the Texas Legislature (SB-3).

It is the position of the NETRWPG that such proposed reservoirs or transfers include explicit recognition that the needs for environmental flows in the North East Texas Region must be satisfied first consistent with the legislative intent of Senate Bill 3 with regard to maintaining an environmental flow regime necessary for a sound ecological environment.

The Cypress Basin lies entirely in the North East Texas Region (Region D). The amount of needs in the Cypress Basin for environmental flows is not fully or finally determined. Once the State has set aside water for such needs, the State will have made its determination on such needs. Proposals for new reservoirs or interbasin transfers can be made consistent with the environmental flow needs in the Cypress Basin only after final decisions have been made to determine those needs and sources to fill them.

As indicated above, three potential reservoir sites in the Cypress Creek Basin were included in the *Reservoir Site Assessment Study* (Appendix B), *2001 North East Texas Regional Water Plan* for the North East Texas Region – Black Cypress, the enlargement of Caddo Lake, and Little Cypress. However the 2001 plan did not recommend the Black Cypress and the Caddo Lake enlargement, therefore, the Little Cypress is the only one included here and is briefly described below.

### 8.9.1 Little Cypress

The Little Cypress reservoir site is located approximately nine miles northwest of the City of Marshall, within Harrison County. The dam site is at River Mile 21.3 on the Little Cypress Bayou. Previous studies have evaluated a reservoir with a conservation pool elevation of 233.1 feet msl, with a storage capacity of 217,234 ac-ft. The maximum design water surface elevation would be 252.0 feet msl. An earth fill dam 58 feet high and with a crest length of 7,000 feet would be constructed to form the reservoir. The dam would have an ogee weir type spillway with a crest elevation of 233.1 and a 400 foot crest length. The outlet works would consist of a single conduit with a 10 foot diameter and two 4.5 foot by 10 foot gates.

Previous studies of the Little Cypress reservoir site have evaluated a project with a firm yield of 144,900 ac-ft/yr. In current dollars (2018/2023), the total cost to develop the reservoir is estimated to be approximately \$537.9 million with an annualized cost of nearly \$33.3 million. The unit cost of water from the project on an annualized basis would be \$230 per ac-ft (\$0.71/1,000 gallons) of firm yield. Potential beneficiaries of the project include municipal and industrial users within the Cypress Creek Basin and/or water users outside of the basin. In addition to water supply, other potential benefits of the project could include recreation and some amount of flood control.

Based on readily available information, there are no potential ecologically unique stream segments of high importance, wetland mitigation banks, or conservation easements within or adjacent to the reservoir site. The potential Little Cypress reservoir is within and adjacent to the Little Cypress Bayou site and listed

as priority two: good quality bottomlands with moderate waterfowl benefits. Analyses indicate that there are no municipal solid waste landfill sites, Superfund sites, permitted industrial or hazardous waste locations, or air quality monitoring stations in or near the reservoir site. State and federal agency listings for threatened, endangered, or rare plant or animal species indicate that several species potentially occur or have habitat in or near the project location. Available data indicates that there are five hydric soil associations within the reservoir site. The number of hydric soil associations does not indicate the number of potential wetlands, but rather that a wetland area could occur where these hydric soil associations exist.

A summary of key characteristics of the reservoir site that were examined in the Cypress Creek Basin is provided in Table 8.3.

Table 8.3 Potential Reservoir Sites in the Cypress Creek Basin

Reservoir Site	Conservation Storage (ac-ft)	Surface Area (acres)	Firm Yield (ac-ft/yr)	Total Project Development Cost (\$1,000)	Annualized Cost Per ac-ft
LITTLE CYPRESS	217,324	15,763	144,900	\$537,900	\$230

The North East Texas Regional Water Planning Group does not recommend the designation of the potential Little Cypress reservoir site as a unique reservoir site.

## 8.10 Red River Basin

The scope of work for the *Reservoir Site Assessment Study* (Appendix B), 2001 North East Texas Regional Water Plan identified Barkman, Liberty Hills, Big Pine and Pecan Bayou as potential reservoir sites within the portion of the Red River Basin that lies within the North East Texas Region. These sites are also listed in the 1997, 2001 and the 2006 State Water Plan as potential sites. However, a thorough search for previous studies and reports on these sites found little documentation on the Barkman and Liberty Hills sites. The Liberty Hill site is also located in Bowie County. Also within the portion of the Red River Basin within the North East Texas Region is a potential site for Dimple Reservoir, studied by HDR (1986) for the Red River Authority and participating entities at that time.

Potential beneficiaries of new reservoirs in the Red River Basin portion of the North East Texas Region include municipal, industrial, and irrigation users within the basin and/or users outside of the basin. Other potential benefits include recreation, hydroelectric power generation, and flood control.

### 8.10.1 Barkman

The Barkman site is located near the City of Texarkana in Bowie County. This site has apparently not been studied in detail as no information was found with regard to type and size of the dam, project firm yield, or costs.

The U.S. Fish and Wildlife Service (USFWS) and TPWD combined lists for threatened, endangered, or rare species identify seven birds, six fish, one mammal, and three reptiles to potentially occur or have habitat within the potential Barkman reservoir project location. Natural Resource Conservation Service (NRCS) data shows six hydric soil associations are within the potential Barkman reservoir footprint. The number of hydric soil associations does not indicate the number of potential wetlands, but rather that a wetland area could occur where these hydric soil associations exist. There are no known existing or proposed wetland mitigation bank projects, no designated bottomland hardwood areas, no high importance ecologically

unique stream segments, and no conservation easements that are located near or adversely affected by the potential Barkman reservoir. The analyses indicate that there are no recorded Superfund sites, municipal solid waste landfill sites, permitted industrial and hazardous waste locations, or air quality monitoring stations located within reservoir study area.

The North East Texas Regional Water Planning Group does not recommend the designation of the potential Barkman reservoir site as a unique reservoir site.

### 8.10.2 Liberty Hill

The Liberty Hill site is also located in Bowie County on Mud Creek. The preferred alternative site is located about three miles upstream of the authorized site, near the Davenport Road crossing at river mile 7.8. This site has apparently not been studied in detail as no information was found with regard to type and size of the dam, project firm yield or costs.

The U.S. Fish and Wildlife Service (USFWS) and TPWD combined lists for threatened, endangered, or rare species identify seven birds, six fish, one mammal, and three reptiles to potentially occur or have habitat within the potential Liberty Hills project location. There are no known existing or proposed wetland mitigation bank projects, no designated bottomland hardwood areas, no high importance ecologically unique stream segments, and no conservation easements that are located near or adversely affected by the potential Liberty Hill site. The analyses indicate that there are no recorded Superfund sites, municipal solid waste landfill sites, permitted industrial and hazardous waste locations, or air quality monitoring stations located within reservoir study area. Current NRCS (Natural Resource Conservation Service) data shows that there is a hydric soil association within the potential Liberty Hills reservoir footprint. The number of hydric soil associations does not indicate the number of potential wetlands, but rather that a wetland area could occur where these hydric soil associations exist.

The North East Texas Regional Water Planning Group does not recommend the designation of the Liberty Hill possible reservoir site as a unique reservoir site.

### 8.10.3 Big Pine

The Big Pine site is located on Pine Creek primarily in Red River County with a small portion of the reservoir area located in Lamar County. The land area required for the reservoir is 9,200 acres. No information was found regarding the type and size of the dam. The project has an estimated firm yield of 35,840 ac-ft/yr and a project development cost of approximately \$97 million dollars. The cost per ac-ft of firm yield on an annualized basis is \$167 (\$0.52/1,000 gallons). This site has apparently not been studied in detail as no information was found with regard to type and size of the dam.

The USFWS and TPWD combined lists for threatened, endangered, or rare species lists eight birds, five fish, one mammal, three reptiles, one insect and one mollusk to potentially occur or have habitat within the potential project location. There are no known existing or proposed wetland mitigation bank projects, ecologically unique stream segments of high importance, and no conservation easements that are located near or adversely affected by the potential Barkman reservoir. The analyses indicate that there are no recorded Superfund sites, municipal solid waste landfill sites, permitted industrial and hazardous waste locations, or air quality monitoring stations located within reservoir study area. NRCS (Natural Resource Conservation Service) data shows that there are hydric soil associations within the potential Big Pine reservoir footprint. The number of hydric soil associations does not indicate the number of potential

wetlands, but rather that a wetland area could occur where these hydric soil associations exist. The potential Big Pine reservoir is located within the Red River basin, which represents a negligible quantity of the remaining bottomland hardwood in Texas. The potential Big Pine reservoir is within and adjacent to the Sulphur River Bottom West site and listed as priority one: excellent quality bottomlands of high value to waterfowl.

The North East Texas Regional Water Planning Group does not recommend the designation of the potential Big Pine reservoir site as a unique reservoir site.

#### 8.10.4 Pecan Bayou

The Pecan Bayou reservoir site is located in Red River County on Pecan Bayou, which is a tributary of the Red River. Previous studies have examined 20 alternative sites, of which three were chosen for evaluation. The alternative that would produce the greatest firm yield would have a storage capacity of 688 ac-ft and a surface area of 122 acres. This alternative would have an earthen dam approximately 2,950 feet long with a top elevation of 384 feet msl. The estimated firm yield of the project is 1,866 ac-ft/yr. The total cost to develop the project would be \$25.7 million. The unit cost of water from the reservoir would be \$852 per ac-ft of firm yield (\$2.62/1,000). Potential beneficiaries of this project include municipal and industrial water users in the vicinity of the site in Red River County.

Based on a review of readily available information, there are potential ecologically unique streams of high importance, bottomland hardwoods, wetland mitigation banks, or conservation easements within or adjacent to the reservoir site. Analyses also indicate that there are no Superfund sites, municipal solid waste landfill sites, permitted industrial and hazardous waste locations, or air quality monitoring stations located within or adjacent to the reservoir study area. However, state and federal agency listings for threatened, endangered, or rare plant or animal species lists eight birds, five fish, one mammal, three reptiles, one insect and one mollusk that potentially occur or have habitat in or near the project location. Also, available data indicates that there are hydric soil associations within the reservoir site. The number of hydric soil associations does not indicate the number of potential wetlands, but rather that a wetland area could occur where these hydric soil associations exist.

The North East Texas Regional Water Planning Group does not recommend the designation of the potential Pecan Bayou reservoir site as a unique reservoir site.

A summary of key characteristics of the potential Pecan Bayou and Big Pine reservoir sites that were examined in the Red River Basin is provided in Table 8.4. Similar data for the others in the Red River Basin were not available.

#### 8.10.5 Dimple Reservoir

The Dimple reservoir site is located in Red River County on White Oak Bayou, which is a tributary of Pecan Bayou, which is a tributary to the Red River. Previous studies have examined this site (HDR 1986). The studied storage capacity of the reservoir is 28,541 ac-ft and a surface area of 2,130 acres. This alternative would have an earthen dam approximately 1,000 feet long with a top elevation of 425 feet msl. The calculated firm yield of the project is 10,200 ac-ft/yr, utilizing the latest TCEQ Water Availability Model (Run 3) for the Red River Basin, and employing consensus planning criteria to account for environmental needs. The total cost to develop the project would be approximately \$46 million, including pipeline. If the entirety of the firm yield is utilized, the unit cost of water from the reservoir would be \$326 per ac-ft of



firm yield (\$1.01/1,000 gal). Potential beneficiaries of this project include municipal and irrigation water users in the vicinity of the site in Red River County.

Based on a review of readily available information, there are potential ecologically unique streams of high importance, bottomland hardwoods, wetland mitigation banks, or conservation easements within or adjacent to the reservoir site. The site lies upstream of Pecan Bayou, which is conditionally recommended herein as an ecologically unique stream segment, as it has been identified by the Texas Parks and Wildlife Department. State and federal agency listings for threatened, endangered, or rare plant or animal species lists eight birds, five fish, one mammal, three reptiles, one insect and one mollusk species that potentially occur or have habitat in or near the project location. Also, available data indicates that there are hydric soil associations within the reservoir site. The number of hydric soil associations does not indicate the number of potential wetlands, but rather that a wetland area could occur where these hydric soil associations exist.

The North East Texas Regional Water Planning Group does not recommend the designation of the potential Dimple reservoir site as a unique reservoir site.

A summary of key characteristics of the potential Pecan Bayou, Big Pine, and Dimple reservoir sites that were examined in the Red River Basin is provided in Table 8.4. Similar data for the others in the Red River Basin was not available.

Table 8.4 Potential Reservoir Sites in the Red River Basin

Reservoir Site	Conservation Storage (ac-ft)	Surface Area (acres)	Firm Yield (ac-ft/yr)	Total Project Development Cost (\$1,000)	Annualized Cost Per ac-ft
PECAN BAYOU	688	112	1,866	\$25,700	\$852
BIG PINE	N/A	9200	35,840	\$97,000	\$167
DIMPLE	28,541	2,130	10,200	\$53,800	\$326

## 8.11 Sabine River Basin

A number of potential reservoir sites in the upper portion of the Sabine River Basin have been previously studied and were reviewed in the *Reservoir Site Assessment Study (Appendix B), 2001 North East Texas Regional Water Plan*. These are the Big Sandy, Carl Estes, Carthage, Kilgore II, Prairie Creek, and Waters Bluff sites, each of which is described below.

### 8.11.1 Big Sandy

The Big Sandy reservoir site is located in Upshur and Wood counties at River Mile 10.6 of the Big Sandy Creek north of the City of Big Sandy. At an elevation of 336 feet msl, the conservation storage capacity of the reservoir would be 69,300 ac-ft and it would cover 4,400 surface acres. An earth fill dam 54 feet high and with a crest length of 2,175 feet would be constructed to create the impoundment. The outlet works would consist of a 10 foot diameter conduit controlled by two 4.5 foot by 10 foot gates.

The estimated firm yield of the Big Sandy Reservoir would be 46,600 ac-ft/yr. Total cost to develop the project is estimated to be \$147.4 million. The annualized cost per ac-ft of firm yield would be \$196 (\$0.61/1,000 gallons). Potential beneficiaries of the project include municipal and industrial water users

within the upper portion of the Sabine River Basin and/or water users outside of the basin. Recreation is another potential benefit of the project.

Based on available information, there are no potential ecologically unique streams of high importance, wetland mitigation banks, or conservation easements within or adjacent to the site. Analysis also indicates that there is one municipal solid waste landfill site and no Superfund sites, permitted industrial and hazardous waste locations, or air quality monitoring stations located within or adjacent to the reservoir study area. State and federal agency listings for threatened, endangered or rare species lists eight birds, three fish, one mammal, five mollusks, and five reptiles to potentially occur or have habitat within the proposed project location. The reservoir site is also within and adjacent to two areas that have been classified by the U.S. Fish & Wildlife Service as having good quality bottomlands with moderate waterfowl benefits. The marsh area has previously been identified as a significant stream segment by TPWD. Also, NRCS data indicates that there are hydric soil associations within the reservoir site. The number of hydric soil associations does not indicate the number of potential wetlands, but rather that a wetland area could occur where these hydric soil associations exist.

The North East Texas Regional Water Planning Group does not recommend the designation of the potential Big Sandy reservoir site as a unique reservoir site.

### 8.11.2 Carl Estes

The Carl L. Estes reservoir site is located on the main-stem of the Sabine River at River Mile 479.7, approximately eight miles west of the City of Mineola. The reservoir would inundate land in portions of Rains, Wood, and Van Zandt Counties. The conservation storage capacity of the reservoir at an elevation of 379.0 feet msl would be 393,000 ac-ft and the reservoir would inundate 24,900 surface acres. The reservoir would have a flood pool elevation of 403.0 feet msl, which would store 1,205,200 ac-ft with a surface area of 44,000 acres. The dam would be approximately 15,800 feet in length and constructed of compacted earth fill. The flood spillway would be an uncontrolled ogee shaped spillway with a crest elevation of 403.0 feet msl. The outlet works for the dam would consist of a multilevel opening to a 180 inch diameter conduit through the dam and a stilling basin.

The optimal project size in terms of unit costs of water would provide a firm yield of 95,630 ac-ft/yr. The estimated cost to develop the reservoir is \$693.4 million. The project would provide water at a unit cost of approximately \$448 per ac-ft (\$1.38 /1,000 gallons) of firm yield. Estimated costs may not accurately reflect bottomland hardwood mitigation costs. Potential beneficiaries of the project include municipal and industrial water users within the upper portion of the Sabine River Basin and/or water users in the Trinity River Basin. In addition to water supply, other potential benefits of the project include recreation, hydroelectric power generation, and flood control.

Based on readily available information, there are no potential ecologically unique streams of high importance or conservation easements within or adjacent to the reservoir site. The potential Carl Estes reservoir is within and adjacent to the Sulphur River Bottom West site and is listed as Priority 2 bottomland hardwoods: good quality bottomlands with moderate waterfowl benefits. There is a proposed wetland mitigation bank project that is located near the reservoir site. Analysis also indicates that there are two municipal solid waste landfill sites but no Superfund sites, permitted industrial and hazardous waste locations, or air quality monitoring stations located within or adjacent to the reservoir study area. State and federal agency listings for threatened, endangered, or rare plant or animal species indicate that

nine birds, two fish, one mammal, five mollusk, and three reptile species potentially occur or have habitat in the project location. Also, available data indicates that there are hydric soil associations within the reservoir site. The number of hydric soil associations does not indicate the number of potential wetlands, but rather that a wetland area could occur where these hydric soil associations exist. The project may negatively impact two downstream reaches of the Sabine River identified by TPWD as “significant stream segments” due to unique federal holdings and the bottomland hardwood.

The North East Texas Regional Water Planning Group does not recommend the designation of the potential Carl Estes reservoir site as a unique reservoir site.

### 8.11.3 Carthage

The Carthage reservoir site is located on the main stem of the Sabine River immediately upstream of the U.S. Highway 59 crossing and downstream of the City of Longview. The reservoir site is located in portions of four counties: Gregg, Harrison, Panola, and Rusk counties. At an elevation of 244 feet msl, the reservoir would have a conservation storage capacity of 651,914 ac-ft and surface area of 41,200 acres. The estimated firm yield of the project is 537,000 ac-ft/yr and the total cost to develop the project is approximately \$855.3 million. On an annualized basis, the unit cost of water from the project would be approximately \$98 per ac-ft of firm yield (\$0.31/1,000 gallons). The potential beneficiaries of the project are municipal and industrial water users in the upper portions of the Sabine Basin and/or users outside of the basin. Other potential benefits include recreation, hydroelectric power generation, and flood control.

Based on available information, there are no conservation easements within or adjacent to the reservoir site. There is one existing mitigation bank consisting of 175 acres that is located near the reservoir site. The potential Carthage reservoir is within and adjacent to the Lower Sabine River Bottom West site listed as priority one bottomland hardwood area described as excellent quality bottomlands of high value to waterfowl. There is one potential ecologically unique stream segment that was included on the TPWD list of candidate segments that would be impounded by the reservoir. Analyses also indicates that there are four municipal solid waste landfill sites, one Superfund site, and two permitted industrial and hazardous waste locations within or adjacent to the reservoir study area. There are no air quality monitoring stations in the area. State and federal agency listings for threatened, endangered, or rare plant or animal species lists seven birds, five fish, three mammals, five mollusk, three reptiles, one amphibian, and two vascular plant species that potentially occur or have habitat in or near the project location. Also, available data indicates that there are hydric soil associations within the reservoir site. The number of hydric soil associations does not indicate the number of potential wetlands, but rather that a wetland area could occur where these hydric soil associations exist.

The North East Texas Regional Water Planning Group does not recommend the designation of the potential Carthage reservoir site as a unique reservoir site.

### 8.11.4 Grand Saline Creek

The City of Canton has identified a feasible strategy to meet future water supply needs as being the construction of a new 1,845 acre (24,980 ac-ft) reservoir on Grand Saline Creek, a tributary of Sabine River. This reservoir project was originally described in a 2008 report from Gary Burton Engineering, Inc. to the City of Canton, entitled Long-Term Water Study Surface Water Supply. The 2008 report identifies the

project site, reservoir surface area, drainage area, and estimated construction costs for the reservoir, intake structure, transmission pipeline and water treatment plant expansion. From Burton (2008):

The proposed reservoir is located within the Gulf Coastal Plain Region. The land surface is generally flat along the flood plains of the major streams, but is gently rolling otherwise. A heavy cover of soft (pine) and hardwoods are predominant in this area.

The normal annual average runoff is approximately 10 inches per year or 550 acre-feet per square mile of basin drained. The annual average gross lake surface evaporation rate from 1950 - 1979 was approximately 54 inches, and the monthly average equaled or exceeded rainfall 5 months out of the year. The major aquifers are the [Carrizo-Wilcox]. The Queen City is a minor aquifer underlying the region. Groundwater recharge is from the infiltration of rainfall and runoff on the outcrop areas and direct charging from the streams and lakes. The groundwater is discharged naturally and artificially. Natural processes include springs, seeps, evaporation or movement of perched (shallow) ground water, and transpiration by trees and plants whose roots reach the water table. Artificial processes include pumping from water wells. The artificial processes are usually several times the natural processes. The surrounding lakes are Lake Fork, Lake Tawakoni, Lake Palestine, and Cedar Creek Lake.

The land use for the study area consists of developed and undeveloped areas. The developed areas are primarily low density residential, with some light commercial and light industrial. Land use in the undeveloped areas includes agriculture (improved pasture), forestry, tree farming, and oil and gas production. The developed and undeveloped areas are both within and outside of the City limits. Historical development and land use trends have been influenced by three primary factors: (1) the oil and gas industry; (2) First Monday Trades Day; and (3) Dallas suburban expansion.

Based on readily available information, there are no potential ecologically unique streams of high importance, wetland mitigation banks, or conservation easements within or adjacent to the reservoir site. Analysis also indicates that there are no Superfund sites, municipal solid waste landfill sites, permitted industrial and hazardous waste locations, or air quality monitoring stations located within or adjacent to the reservoir site. Native prairie remnants and bottomland hardwood communities within the vicinity have been noted (Burton 2008). State and federal agency listings for threatened, endangered, or rare plant or animal species indicate there is the potential for the area to contain threatened and endangered species and their respective critical habitat(s). Aerial photographic interpretation of the region indicates there are forested and emergent wetlands approximate to these water bodies that are associated primarily with the floodplains of these streams. Streams associated with this site are considered waters of the United States, as defined in Chapter 33 of the Code of Federal Regulations Part 328.3(a) and are subject to jurisdiction of the USACE; therefore, coordination with the USACE would be necessary to obtain a Clean Water Act, Section 404 permit were this site to be developed.

The North East Texas Regional Water Planning Group does not recommend the designation of the potential Grand Saline Creek reservoir site as a unique reservoir site.

### 8.11.5 Kilgore II

The Kilgore II reservoir site is located on a tributary of the Sabine River, the upper portion of Wilds Creek near the City of Kilgore. The reservoir site is located within portions of Gregg, Rusk, and Smith counties. With a conservation pool elevation of 398 feet msl, the reservoir would have a conservation storage capacity of 16,270 ac-ft and a surface area of 817 acres. The estimated firm annual yield of the project is

5,500 ac-ft. Previous studies examined as part of the *Reservoir Site Assessment Study* (Appendix B), *2001 North East Texas Regional Water Plan* did not include cost estimates from which to prepare updated costs of reservoir development. The reservoir site has been previously studied as a potential local water supply source for the City of Kilgore.

Based on readily available information, there are no potential ecologically unique streams of high importance, bottomland hardwoods, wetland mitigation banks, or conservation easements within or adjacent to the reservoir site. Analysis also indicates that there are no Superfund sites, municipal solid waste landfill sites, permitted industrial and hazardous waste locations, or air quality monitoring stations located within or adjacent to the reservoir site. However, state and federal agency listings for threatened, endangered, or rare plant or animal species indicate that seven birds, two fish, one mammal, five mollusks, and five reptile species potentially occur or have habitat in or near the project location. Available data indicates that there are no hydric soil associations (i.e., potential wetlands) within the reservoir site.

The North East Texas Regional Water Planning Group does not recommend the designation of the potential Kilgore II reservoir site as a unique reservoir site.

#### 8.11.6 Prairie Creek

As indicated previously, the Prairie Creek Reservoir is included as a recommended project in the Sabine River Authority's Comprehensive Sabine Watershed Management Plan. Development of the project would provide additional water supplies to municipal and industrial water users within the upper portion of the Sabine River Basin, particularly the Longview area. The reservoir site is located approximately 11 miles west of the City of Longview in Gregg and Smith counties. The location of the dam site is immediately upstream of the FM 2207 crossing of Prairie Creek, which is a tributary of the Sabine River. With a conservation pool elevation of 318.0 feet msl, the storage capacity and surface area of the reservoir would be 45,164 ac-ft and 2,280 acres, respectively. At the probable maximum flood (PMF) elevation of 339.5 feet msl, the reservoir surface area would be 4,282 acres.

Previous studies of the Prairie Creek site envision a compacted earth fill dam, approximately 3,000 feet in length with a maximum height of 87 feet, which corresponds to an elevation of 245.0 feet msl. The spillway for the dam would be ogee shaped with a crest elevation of 300 feet msl with two 20 foot by 20 foot tainter gates for controlled floodwater releases. The outlet works would consist of a multilevel opening with a 66-inch diameter conduit through the dam and a stilling basin.

As part of the *Reservoir Site Assessment Study* (Appendix B), *2001 North East Texas Regional Water Plan*, the firm yield of the proposed Prairie Creek Reservoir was re-evaluated using the TWDB Daily Reservoir Analysis Model. This was performed to determine the firm yield of the project with consideration of the environmental pass-through requirements contained in the State Consensus Environmental Guidelines Planning Criteria. Previous studies estimated a firm yield of the project of 19,700 ac-ft/yr. Consideration of the environmental pass-through requirements reduced the estimated yield to 17,215 ac-ft/yr.

The Sabine River Authority has considered the Prairie Creek Reservoir as the first component of a larger project that would be developed in phases. The second phase would include diversion of flows from the Sabine River to the reservoir to develop a firm yield of approximately 29,685 ac-ft/yr and, ultimately, construction of a 90 inch pipeline from the Toledo Bend Reservoir to develop a total firm yield of 115,000 ac-ft/yr. The cost to develop the reservoir as a stand-alone project is estimated to be \$104.4 million, which would provide water at an annualized cost of \$375 per ac-ft of firm yield (\$1.16/1,000 gallons). The

diversion of flows from the Sabine River would increase the project development costs to \$126.4 million and would reduce the unit cost of water to \$263 per ac-ft (\$0.81/1,000 gallons) of firm yield. The addition of supplies delivered to the Prairie Creek Reservoir from the Toledo Bend Reservoir would provide water supply at a unit cost of \$175 per ac-ft of firm yield (\$0.54/1,000 gallons).

Based on available information, there are no potential ecologically unique streams of high importance, wetland mitigation banks, or conservation easements within or adjacent to the site. There are no USFWS priority designated bottomland hardwood areas located within or adjacent to the proposed Prairie Creek reservoir; however, TPWD has estimated 12 percent of the area is of this habitat type. Analysis also indicates that there are no Superfund sites, municipal solid waste landfill sites, permitted industrial and hazardous waste locations, or air quality monitoring stations located within or adjacent to the reservoir study area. However, state and federal agency listings for threatened, endangered, or rare plant or animal species indicate that seven birds, three fish, two mammals, five mollusk, five reptiles, one amphibian, and one vascular plant species potentially occur or have habitat in or near the project location. Also, available data indicates that there are hydric soil associations within the reservoir site. The number of hydric soil associations does not indicate the number of potential wetlands, but rather that a wetland area could occur where these hydric soil associations exist.

The North East Texas Regional Water Planning Group supports the proposal of the Sabine River Authority to build Prairie Creek Reservoir, if used in conjunction with a pipeline from Toledo Bend, to supply water to both Region D and Region C.

### 8.11.7 Waters Bluff

The Waters Bluff reservoir site is located on the main stem of the Sabine River approximately 3.5 miles upstream of the U.S. Highway 271 crossing and approximately four miles west of the City of Gladewater. The reservoir site lies within portions of Smith, Upshur, and Wood counties. The reservoir would have a conservation storage capacity of 525,163 ac-ft at a conservation pool elevation of 303 feet msl and would cover 36,396 surface acres. The maximum flood pool elevation would be 314.7 feet msl. The dam for the Waters Bluff Reservoir would be a homogeneous earthen embankment 70 feet high with a crest elevation of 320 feet msl and a crest length of 11,000 feet. The spillway would be a concrete gravity ogee with a crest elevation of 276.0 feet msl, with eleven 40 foot wide by 28 foot high tainter gates for control.

As reported from previous studies, the estimated firm yield of Waters Bluff Reservoir would be 324,000 ac-ft/yr. Updated estimates of the costs to develop the reservoir are \$863 million, with an annualized unit cost of water of \$165 per ac-ft of firm yield (\$0.51/1,000 gallons). The potential beneficiaries of the project are municipal and industrial water users in the upper portions of the Sabine Basin and/or users outside of the basin. Other potential benefits include recreation, hydroelectric power generation, and flood control.

There are two stream segments in or near the Waters Bluff reservoir site that the TPWD has identified as potential ecologically unique streams. There are also four existing or proposed wetland mitigation banks and two existing conservation easements within or near the reservoir site. The U.S. Fish & Wildlife Service has also identified areas within or near the site that are classified as having excellent quality bottomlands of high value to waterfowl habitat and good quality bottomlands with moderate waterfowl benefits. In addition, analyses indicate that there are six municipal solid waste landfill sites, but no Superfund sites, permitted industrial and hazardous waste locations, or air quality monitoring stations located within or adjacent to the reservoir study area. State and federal agency listings for threatened, endangered, or rare

plant or animal species lists eight birds, two fish, one mammal, five mollusks, and five reptile species that potentially occur or have habitat in or near the project location. Also, available data indicates that there are hydric soil associations within the reservoir site. The number of hydric soil associations does not indicate the number of potential wetlands, but rather that a wetland area could occur where these hydric soil associations exist.

The North East Texas Regional Water Planning group does not recommend the designation of the potential Waters Bluff reservoir site as a unique reservoir site. A summary of key characteristics of the seven reservoir sites that were examined in the Sabine River Basin is provided in Table 8.5.

Table 8.5 Potential Reservoir Sites in the Sabine River Basin

Reservoir Site	Conservation Storage (ac-ft)	Surface Area (acres)	Firm Yield (ac-ft/yr)	Total Project Development Cost (\$1,000)	Annual Cost Per ac-ft
BIG SANDY	69,300	4,400	46,600	\$147,400	\$196
CARL ESTES	393,000	44,900	95,630	\$693,400	\$448
CARTHAGE	651,914	41,200	537,000	\$855,300	\$98
GRAND SALINE	24,980	1,845	1,810	NA	NA
KILGORE II	16,270	817	5,500	NA	NA
PRAIRIE CREEK	45,164	2,280	17,215	\$104,400	\$375
PRAIRIE CREEK WITH DIVERSION	45,164	2,280	29,685	\$126,400	\$263
PRAIRIE CREEK WITH PIPELINE	45,164	2,280	115,000	\$325,500	\$175
WATERS BLUFF	525,163	36,396	324,000	\$863,000	\$165

## 8.12 Sulphur River Basin

Five reservoir sites in the Sulphur River Basin were examined as part of the *Reservoir Site Assessment Study* (Appendix B), *2001 North East Texas Regional Water Plan*: Marvin Nichols I, Marvin Nichols II, George Parkhouse I, and George Parkhouse II. Each is described below.

As discussed in Chapter 6, Section 6.9, and will be expanded below, the NETRWPG opposes the reservoirs listed below and others similarly situated. The opposition includes the potential impacts of such reservoirs on the environmental flow needs, as well as the impact on agricultural and other natural resources that would result from the creation of the reservoir, the mitigation that would be required for creation of the reservoir, and the impacts on downstream flows to significant bottomland hardwoods and other flood plain forests.

### 8.12.1 Marvin Nichols I/IA

In the interim since the 2001 plan there have been ~~three~~ four identified studies concerning the Marvin Nichols site. The Texas Forest Service produced the “The Economic Impact of the Proposed Marvin Nichols I Reservoir to the Northeast Texas Forest Service” in August 2002. In March of 2003 the Sulphur River Basin Authority (SRBA) had prepared “The Economic, Fiscal, and Developmental Impacts of the Proposed Marvin Nichols Reservoir Project”. More recently, the Sulphur River Basin Feasibility Study ~~has been an~~

ongoing study was performed for the SRBA and U.S. Army Corps of Engineers (USACE) by Freese and Nichols, Inc. and MTG Engineers and Surveyors (referred to hereafter as the 2014 SRBA Study). As part of this effort, the USACE produced the report Sulphur River Basin – Socio-Economic Assessment. More recently, an updated socio-economic study entitled, *The Economic, Fiscal and Developmental Impacts of the Proposed Marvin Nichols Reservoir* was conducted in April 2020 by Clower & Associates. Over time, these three studies, along with previous efforts, have been previously presented to the NETRWPG and reviewed (results of the more recent SRBA study have been were reviewed as information became available). The results of the studies present varying views of effects on the area concerning reservoir development in the Sulphur River Basin.

As noted in the Watershed Overview, SRBA (2014):

*“The Marvin Nichols project is representative of a more downstream location for new storage within the Sulphur River Basin. At least five locations for this dam have been considered. The Marvin Nichols project has been evaluated as an impoundment at multiple locations on White Oak Creek and multiple locations on the Sulphur River (FNI, 2000). In general, these alternative sites represent an attempt to locate the impoundment so as to minimize conflicts with Priority 1 bottomland hardwood habitats and oilfield activity while maintaining yield. A reservoir at the Marvin Nichols IA site is a recommended strategy for North Texas Municipal Water District, the Upper Trinity Regional Water District, and Tarrant Regional Water District in the 2006 and 2011 Region C Regional Water Plan and an alternative strategy for Dallas Water Utilities and the City of Irving in the 2011 plan.”*

The Marvin Nichols I reservoir site is located on the main stem of the Sulphur River at River Mile 114.7. The dam site is located upstream of the confluence of the Sulphur River and White Oak Creek. The reservoir site is located in Red River and Titus Counties about 120 miles east of the City of Dallas and about 45 miles west of the City of Texarkana. According to the 1997 State Water Plan, the potential beneficiaries of the Marvin Nichols I reservoir include municipal and industrial water users in the vicinity of the project within the Sulphur River Basin, water users in the Cypress Creek Basin, and/or water users in the Dallas-Ft. Worth Metroplex. Other potential benefits include recreation, hydroelectric power generation, and flood control.

With a conservation pool elevation of 312.0 feet msl, the conservation storage capacity of the Marvin Nichols I reservoir would be 1,369,717 ac-ft and the surface area would be 62,128 acres. At the probable maximum flood (PMF) elevation of 319.1 feet msl, the reservoir would store 1,864,788 ac-ft and have a surface area of 77,612 acres.

As envisioned in previous studies of the site, the dam for the Marvin Nichols I reservoir would consist of a 25,000 foot long earthen embankment dike built along the low stream divide between the Sulphur River and the White Oak Bayou. In addition, four dikes would be required at low points along the stream divide varying in length from 2,000 feet to 8,000 feet. The main dam would have a maximum height of 71 feet at the flood plain crossing. The flood spillway crest would be 940 feet long and would include nineteen 40 foot by 40 foot gates at a crest elevation of 285 feet msl.

Previous studies of the Marvin Nichols I site have estimated the firm yield of the project to be 624,000 ac-ft/yr. However, additional yield studies were performed as part of the *Reservoir Site Assessment Study* (Appendix B), *2001 North East Texas Regional Water Plan* using the recently completed TCEQ Water Availability Model (WAM) for the Sulphur River Basin and the TWDB Daily Reservoir Analysis Model.



Reservoir operations simulations performed with these models, and with environmental releases as specified in the Consensus Environmental Guidelines Planning Criteria, indicated a firm yield of 550,842 ac-ft/yr for the Marvin Nichols I reservoir.

The yield for Marvin Nichols I Reservoir differs from the value given in the 2016 Region C report, which is 619,000 acre-feet per year. The difference in yield is the result of different assumptions with regards to the operation of the project:

- The North East Region's yield of 550,842 acre-feet is based on the assumption that Marvin Nichols I will impound only available unallocated flows, after satisfying the environmental flow requirements in accordance with the Consensus Water Planning (CWP) criteria. This assures that Wright Patman Reservoir, with a senior water right downstream of Marvin Nichols I, is full before Marvin Nichols I can impound any water.
- Region C's yield of 619,100 acre-feet per year is based on an assumption that Marvin Nichols I could impound inflows so long as the ability to divert water from Lake Wright Patman is protected.

The yield simulation previously performed for the NETRWPG for the 2011 Region D Plan involved application of TCEQ's Sulphur River Basin WAM, which considers the seasonal variation of conservation storage in Lake Wright Patman, and a daily reservoir operations model used by the TWDB (SIMDLY), which allows passage of environmental flows in accordance with the state's criteria. The assumption used by Region C would require the negotiation of a written agreement between the operators of Marvin Nichols I and Wright Patman reservoirs (including the City of Texarkana, the water rights holder) before any application can be filed with the TCEQ for water rights for Marvin Nichols I Reservoir. Should that agreement happen in the future, it will enhance the yield of Marvin Nichols I Reservoir.

The estimated cost to develop the Marvin Nichols I reservoir, updated to September 2018 dollars, was \$825.9 million. The total annualized cost of the reservoir (alone), including debt service and operations and maintenance costs, was \$51.1 million, which resulted in a unit cost of roughly \$93 per ac-ft of firm yield (\$0.29/1,000 gallons).

More recently available information from the SRBA's 2014 Sulphur River Basin Feasibility Study is presented over the course of multiple reports, specifically:

1. Final Watershed Overview Report.
2. Comparative Environmental Assessment Report.
3. Socioeconomic Report.
4. Cost Rollup Report.
5. International Paper Impact Analysis.
6. Hydrologic Yields Report.

Regarding Marvin Nichols IA, per the SRBA Watershed Overview (2014):

*"The Marvin Nichols IA project would be located on the Sulphur River and Red River and Titus counties approximately halfway between the cities of Clarksville and Mount Pleasant. The top of the conservation pool would be at elevation 328 feet NGVD. At this elevation, the reservoir would have a storage capacity of 1,532,031 acre-feet. At this location, the reservoir would have a total drainage area of 1,889 square miles (of which 479 square miles are above Jim Chapman Lake.)*

*The Marvin Nichols IA project would inundate 66,103 acres..."*

A thorough suite of yield estimates for the Marvin Nichols IA project have been developed over the course of the SRBA (2014) study. Over the course of the analyses presented in the aforementioned reports, yields for various configurations of Marvin Nichols have been developed utilizing a modified version of the TCEQ WAM in which Lake Ralph Hall has been implemented, considering future sedimentation conditions and mitigated sediment conditions, employing alternative periods of record using a USACE model for comparative purposes, and considering alternative implementations of potential environmental flow requirements (i.e., no requirements or with criteria developed utilizing the Lyons method). Resultant firm yields from these analyses range from 193,800 ac-ft/yr, to 676,000 ac-ft/yr. The estimated total yield for Marvin Nichols 1A at an elevation of 328.0 ft. NGVD is 590,000 acre-feet/yr, although with environmental flows considered this yield decreases to 571,710 acre-feet/yr.

From the SRBA Cost Rollup Report (2014), comprehensive cost estimates for a suite of alternatives, including various configurations of Marvin Nichols project, have been developed. The methods for evaluating the costs are reportedly consistent with TWDB guidance on Regional Water Planning, which includes consideration of Interest During Construction (IDC) added to the estimated capital costs for the reservoirs as well as for the transmission systems (using a 6% annual interest rate on total borrowed funds, less a 4% rate of return on investment of unspent funds).

From this study, the estimated total capital cost to develop the Marvin Nichols IA reservoir, at elevation 328 ft. msl., at 2018 dollars, is \$1.249 billion. Including transmission, the total capital cost of the project is \$5.003 billion. The total annualized cost of the project, during debt service is \$309.3 million, and after debt service is \$75 million. Resultant unit costs developed for the SRBA study are presented for both with- and without environmental flow restrictions (developed from using the Lyons methodology). Without environmental flows, the unit cost during debt service is roughly \$524 per ac-ft of firm yield (\$1.61/1,000 gallons), and after debt service is approximately \$127 per ac-ft of firm yield (\$0.40/1,000 gallons). Unit costs with environmental flow requirements based on the Lyons method in place during debt service is roughly \$541 per ac-ft of firm yield (\$1.67/1,000 gallons). After debt service, unit costs considering environmental flows is approximately \$131 per ac-ft of firm yield (\$0.41/1,000 gallons).

If, along with impacts from meeting environmental flow needs, the contractual relationship between the Metroplex members of the Joint Committee for Program Development (JCPD) and the SRBA is considered, whereby 20% of project yields would be dedicated to in-basin needs at no cost to SRBA, the unit costs to the Metroplex JCPD members based on their anticipated portion of the yield vary from those detailed above. During debt service, the unit cost is approximately \$676 per ac-ft of firm yield (\$2.08/1,000 gallons). After debt service, the unit cost is roughly \$164 per ac-ft of firm yield (\$0.51/1,000 gallons).

Based on available information, depending upon the configuration of Marvin Nichols under consideration, there do not appear to be potential ecologically unique streams of high importance, wetland mitigation banks, or conservation easements within or adjacent to the sites under consideration. However, two reaches of the Sulphur River within the project boundary have previously been identified by TPWD as significant stream segments based on the presence of unique federal holdings and a USFWS priority 1 bottomland woodland site. Additionally, TPWD has included one of these reaches on a recommended list of ecologically unique streams segments.

A review of available information also indicates that there are no Superfund sites, municipal solid waste landfill sites, permitted industrial and hazardous waste locations, or air quality monitoring stations located within or adjacent to the reservoir study area. However, state and federal agency listings for threatened, endangered, or rare plant or animal species identify eight birds, five fish, one mammal, three mollusks,

three reptiles, and one insect that potentially occur or have habitat in or near the project location. The reservoir site is also within and adjacent to the Sulphur River Bottom west site, which is listed by the U.S. Fish & Wildlife Service as having excellent quality bottomlands of high value to waterfowl. Also, available data indicates that there are hydric soil associations within the reservoir site. The number of hydric soil associations does not indicate the number of potential wetlands, but rather that a wetland area could occur where these hydric soil associations exist.

The SRBA (2014) Comparative Environmental Assessment Report presents the results of a comparative environmental assessment that includes Marvin Nichols IA. This assessment considered potential impacts to land resources, federal and state listed threatened and endangered species, cultural resources, and water quality. As detailed in Chapter 6 herein, the Marvin Nichols IA project was determined to have the highest impact on cultural resources, and was ranked the second highest overall in terms of environmental impacts when compared to the remaining alternative reservoir sites under consideration in that study.

The North East Texas Regional Water Planning Group does not recommend the designation of the potential Marvin Nichols I or Marvin Nichols IA reservoir sites as a unique reservoir site.

### 8.12.2 Marvin Nichols II

The Marvin Nichols II reservoir site is located on White Oak Creek, which is a tributary of the Sulphur River located primarily in Titus County. The site is immediately south of the proposed Marvin Nichols I reservoir site described above. Potential beneficiaries of the project include municipal and industrial water users in the vicinity of the project within the Sulphur River Basin, water users in the Cypress Creek Basin, and water users in the Dallas-Ft. Worth Metroplex. Other potential benefits include recreation, hydroelectric power generation, and flood control.

From the 2011 Region D Plan, at an elevation of 312.0 feet msl, the reservoir would have conservation storage capacity of 772,000 ac-ft and a surface area of 35,900 acres. The estimated firm yield of the project is 280,100 ac-ft/yr and the cost to develop the reservoir (alone) was determined to be approximately \$463.2 million in 2018 dollars.

The SRBA (2014) Sulphur River Basin Feasibility Study has not explicitly evaluated the Marvin Nichols II reservoir site. Rather, this study considered potentially suitable dam locations and configurations further upstream on White Oak Creek. In particular, a site upstream of the City of Talco near the Talco gage was identified as an opportunity for an on-channel reservoir that could be hydraulically connected to the main stem of the Sulphur River, to take advantage of flows from both the White Oak Creek and Sulphur River watersheds.

Based on readily available information, there do not appear to be potential ecologically unique streams of high importance, or wetland mitigation banks, within or adjacent to the site. There is one conservation easement located within or adjacent to the footprint of the potential Marvin Nichols II reservoir. A review of available information also indicates that there are no Superfund sites, municipal solid waste landfill sites, permitted industrial and hazardous waste locations, or air quality monitoring stations located within or adjacent to the reservoir study area. However, state and federal agency listings for threatened, endangered, or rare plant or animal species lists eight birds, five fish, one mammal, three mollusks, three reptiles, and one insect that potentially occur or have habitat in or near the project location. The reservoir site is also within and adjacent to the Sulphur River Bottom west site, which is listed by the U.S. Fish &

Wildlife Service as having excellent quality bottomlands of high value to waterfowl. Also, available data indicates that there are hydric soil associations within the reservoir site. The number of hydric soil associations does not indicate the number of potential wetlands, but rather that a wetland area could occur where these hydric soil associations exist.

The North East Texas Regional Water Planning Group does not recommend the designation of the potential Marvin Nichols II reservoir site as a unique reservoir site.

### 8.12.3 George Parkhouse I

The George Parkhouse I reservoir site is located approximately 18 miles northeast of the City of Sulphur Springs, on the South Fork of the Sulphur River, which forms the border between Delta and Hopkins Counties. The dam site would be located at River Mile 3.0 downstream of the existing Cooper Reservoir. Potential beneficiaries of the project include municipal and industrial water users within the Sulphur River Basin and/or water users in the Dallas-Ft. Worth Metroplex. Other potential benefits include recreation, hydroelectric power generation, and flood control.

From the SRBA (2014) Watershed Overview:

*"The top of the conservation pool would be at elevation 401 feet NGVD. At this elevation, the reservoir would have a storage capacity of 651,712 acre-feet. At this location, the reservoir would have a total drainage area of 654 square miles (of which 479 square miles are above Jim Chapman Lake.)"*

The reservoir would inundate 28,362 acres. From the 2011 Region D Plan, the dam would consist of a 20,000 foot long earthen embankment constructed across the South Sulphur River with an additional half mile long earthen dike built across the low stream divide between the North Sulphur River and the South Sulphur River. The dam would have a gated ogee shaped flood spillway with a crest elevation of 390.0 feet msl and four 40 foot gated bays to discharge flood flows.

The estimated firm yield of the Parkhouse I reservoir is 124,300 ac-ft/yr, although with environmental flow needs this yield decreases to 118,707 ac-ft/yr. Costs presented herein are adjusted from the original July 2013 estimates reported by SRBA (2014) to September 2018 costs using the ENR Construction Cost Index. The total capital cost to develop the project, including the dam and spillway, land acquisition, conflict resolution, mitigation, permitting, transmission, and interest during construction, would be \$1.53 billion. The project would provide water at a total annual cost, during debt service, of \$94.6 million, and \$23 million after debt service. Resultant unit costs developed for the SRBA study are presented for both with- and without environmental flow restrictions (developed from using the Lyons methodology). Without environmental flows, the unit cost during debt service is roughly \$761 per ac-ft of firm yield (\$2.34/1,000 gallons), and after debt service is approximately \$185 per ac-ft of firm yield (\$0.57/1,000 gallons). Unit costs with environmental flow requirements (based on the Lyons method) during debt service is roughly \$797 per ac-ft of firm yield (\$2.45/1,000 gallons). After debt service, unit costs with environmental flows applied are approximately \$193 per ac-ft of firm yield (\$0.60/1,000 gallons).

If, along with impacts from meeting environmental flow needs, the contractual relationship between the Metroplex members of the Joint Committee for Program Development (JCPD) and the SRBA is considered, whereby 20% of project yields would be dedicated to in-basin needs at no cost to SRBA, the unit costs to the Metroplex JCPD members based on their anticipated portion of the yield vary from those detailed

above. During debt service, the unit cost is approximately \$996 per ac-ft of firm yield (\$3.06/1,000 gallons). After debt service, the unit cost is roughly \$242 per ac-ft of firm yield (\$0.75/1,000 gallons).

Based on available information, there are no potential ecologically unique streams of high importance, bottomland hardwoods, wetland mitigation banks, or conservation easements within or adjacent to the reservoir site. Analyses also indicates that there are no Superfund sites, municipal solid waste landfill sites, permitted industrial and hazardous waste locations, or air quality monitoring stations located within or adjacent to the reservoir study area. However, state and federal agency listings for threatened, endangered, or rare plant or animal species lists seven birds, four fish, one mammal, one mollusk, and two reptiles that potentially occur or have habitat in or near the project location. Also, available data indicates that there are hydric soil associations within the reservoir site. The number of hydric soil associations does not indicate the number of potential wetlands, but rather that a wetland area could occur where these hydric soil associations exist.

The SRBA (2014) Comparative Environmental Assessment Report presents the results of a comparative environmental assessment that includes Parkhouse I. This assessment considered potential impacts to land resources, federal and state listed threatened and endangered species, cultural resources, and water quality. The Parkhouse I project was ranked third lowest overall in terms of environmental impacts when compared to the total seven alternative reservoir sites under consideration in that study.

The North East Texas Regional Water Planning Group does not recommend the designation of the potential George Parkhouse I reservoir site as a unique reservoir site.

#### 8.12.4 George Parkhouse II

The George Parkhouse II reservoir site is located on the North Sulphur River at River Mile 5.0. The impoundment is approximately 15 miles southeast of the City of Paris, and would straddle the county line between Delta and Lamar Counties. The Parkhouse II site was recommended for development in the 1997 *State Water Plan*, and was a reservoir site recommended in the 2017 and 2022 *State Water Plans* for designation as unique. Potential beneficiaries of the project include municipal and industrial water users within the Sulphur River Basin and/or water users in the Dallas-Ft. Worth Metroplex. Other potential benefits include recreation, hydroelectric power generation, and flood control. It should be noted that the development of the Marvin Nichols I reservoir would significantly delay or eliminate the need for this reservoir as a supply source for the Dallas-Ft. Worth Metroplex.

Previous studies have investigated a reservoir with a conservation pool elevation of 401.0 feet msl, which would have a conservation storage capacity and surface area of 243,600 ac-ft and 12,300 acres, respectively. With a probable maximum flood elevation of 415.7 feet msl, the Parkhouse II reservoir would have a surface area of 17,400 acres. The dam would have a gated ogee shaped flood spillway with a crest elevation of 390.0 feet msl. Flood discharges would be through eight 40 foot gated bays.

From the SRBA (2014) Watershed Overview:

*"The top of the conservation pool would be at elevation 410 feet NGVD. At this elevation, the reservoir would have a storage capacity of 330,871 acre-feet. At this location, the reservoir would have a total drainage area of 421 square miles, of which approximately 101 square miles is above the proposed Lake Ralph Hall. The Parkhouse II project would inundate 15,359 acres."*

Previous studies of the George Parkhouse II reservoir site estimated the firm yield of the project to be 136,700 ac-ft without consideration of potential environmental pass-through requirements. A reevaluation of the project firm yield using the TCEQ WAM for the Sulphur River Basin and the TWDB Daily Reservoir Analysis Model performed for the 2011 Region D Plan indicated a firm yield with environmental releases of 131,850 ac-ft. At a cost of approximately \$296.7 million to develop the reservoir, the annualized cost of water from the project would be \$139 per ac-ft of firm yield (\$0.43/1,000 gallons).

From the SRBA (2014) Cost Rollup Report, the estimated total yield of the Parkhouse II reservoir alternative would be 124,200 ac-ft/yr, although with environmental flow needs this yield decreases to 121,343 ac-ft/yr. The total capital cost to develop the project, including the dam and spillway, land acquisition, conflict resolution, mitigation, permitting, transmission, and interest during construction, would be \$1.4 billion. The project would provide water at a total annual cost, during debt service, of \$87.2 million, and \$21.2 million after debt service. Resultant unit costs developed for the SRBA study are presented for both with- and without environmental flow restrictions (developed from using the Lyons methodology). Without environmental flows, the unit cost during debt service is roughly \$702 per ac-ft of firm yield (\$2.16/1,000 gallons), and after debt service is approximately \$170 per ac-ft of firm yield (\$0.53/1,000 gallons). Unit costs with environmental flow requirements (based on the Lyons method) during debt service is roughly \$718 per ac-ft of firm yield (\$2.21/1,000 gallons). After debt service, unit costs with environmental flows applied are approximately \$174 per ac-ft of firm yield (\$0.54/1,000 gallons).

If, along with impacts from meeting environmental flow needs, the contractual relationship between the Metroplex members of the JCPD and the SRBA is considered, whereby 20% of project yields would be dedicated to in-basin needs at no cost to SRBA, the unit costs to the Metroplex JCPD members based on their anticipated portion of the yield vary from those detailed above. During debt service, the unit cost is approximately \$898 per ac-ft of firm yield (\$2.76/1,000 gallons). After debt service, the unit cost is roughly \$218 per ac-ft of firm yield (\$0.67/1,000 gallons).

Based on available information, there do not appear to be major natural resource conflicts at the reservoir site. There are no potential ecologically unique streams of high importance, wetland mitigation banks, priority designated bottomland hardwoods, or conservation easements within or adjacent to the site. A review of available information also indicates that there are no Superfund sites, municipal solid waste landfill sites, permitted industrial and hazardous waste locations, or air quality monitoring stations located within or adjacent to the reservoir study area. However, state and federal agency listings for threatened, endangered, or rare plant or animal species identify seven birds, six fish, one mammal, one insect, and three reptile species that potentially occur or have habitat in or near the project location. Also, available data indicates that there are hydric soil associations within the reservoir site. The number of hydric soil associations does not indicate the number of potential wetlands, but rather that a wetland area could occur where these hydric soil associations exist.

The SRBA (2014) Comparative Environmental Assessment Report presents the results of a comparative environmental assessment that includes Parkhouse II. This assessment considered potential impacts to land resources, federal and state listed threatened and endangered species, cultural resources, and water quality. The Parkhouse II project was ranked second lowest overall in terms of environmental impacts when compared to the total seven alternative reservoir sites under consideration in that study.

The North East Texas Regional Water Planning Group does not recommend the designation of the potential George Parkhouse II reservoir site as a unique reservoir site.

A summary of key characteristics of the four reservoir sites that have been examined in the Sulphur River Basin is provided in Table 8.6.

Table 8.6 Potential Reservoir Sites in the Sulphur River Basin

Reservoir Site	Conservation Storage (ac-ft)	Surface Area (acres)	Firm Yield (ac-ft/yr)	Reservoir Development Cost (\$ Millions)	Total Capital Cost (\$ Millions)	Unit Cost, with environmental flows (\$/ac-ft)	
						During Debt Service	After Debt Service
MARVIN NICHOLS I*	1,369,717	62,128	550,842	\$825.9	Not Analyzed	87	Not Analyzed
MARVIN NICHOLS IA	1,532,031	66,103	571,710	\$1,249	\$5,002.7	676	164
MARVIN NICHOLS II*	772,000	35,900	280,100	\$463.2	Not Analyzed	Not Analyzed	Not Analyzed
PARKHOUSE I	651,712	28,362	118,707	\$540	\$1,530	996	242
PARKHOUSE II	330,871	15,359	121,343	\$440	\$1,410	898	218

### 8.13 Recommendations for Unique Reservoir Site Identification, Development and Reservoir Site Preservation

#### 8.13.1 Comments on the Texas Administrative Code With Regard to Reservoir Development

The NETRWPG has previously received comments concerning the protection of natural resources as they relate to the building of new reservoirs in the Sulphur River Basin within the North East Texas region. Rule 358.3 (4) and (9) of the Texas Administrative Code (TAC), relating to Guidance Principles, would be violated in regard to the protection of the natural resources should reservoir development take place in the Sulphur River Basin within the North East Texas region. Specifically, the new reservoirs being contemplated in the North East Texas Region within the Sulphur River Basin would not be protective of the agricultural and natural resources in the region. This is germane since the region has more than adequate surface water supply within the basin to meet all of the needs within the Sulphur River Basin in the North East Texas Region as projected for the next 50 years.

It is the position of the North East Texas Water Planning Group that there will be unavoidable impacts on agricultural resources should there be further development of new reservoirs in the Sulphur River Basin within the North East Texas Region. TAC Rule 357.34(d)(3) cited above includes the requirement that the regional water planning group evaluate all water management strategies to determine the potential of feasibility by including quantitative reporting of several specific factors as follows:

1. The net quantity, reliability, and cost of water delivered and treated for the end user's requirements during drought of record conditions, taking into account and reporting anticipated strategy water losses, incorporating factors used calculating infrastructure debt payments and may include present costs and discounted present value costs. Costs do not include distribution of water within a WUG after treatment.
2. Environmental factors including effects on environmental water needs, wildlife habitat, cultural resources, and effect of upstream development on bays, estuaries, and arms of the Gulf of Mexico.

Evaluations of effects on environmental flows will include consideration of the Commission's adopted environmental flow standards under 30 TAC Chapter 298 (relating to Environmental Flow Standards for Surface Water). If environmental flow standards have not been established, then environmental information from existing site-specific studies, or in the absence of such information, state environmental planning criteria adopted by the Board for inclusion in the state water plan after coordinating with staff of the Commission and the Texas Parks and Wildlife Department to ensure that water management strategies are adjusted to provide for environmental water needs including instream flows and bays and estuaries inflows.

3. Impacts on agricultural resources.

Therefore, the North East Texas Regional Planning Group recognizes that there may be the possibility of recommendations from other planning groups that include further development of additional reservoirs in the Sulphur River Basin as a recommended water management strategy or as an alternative strategy. The NETRWPG opposes the development of such reservoirs unless it is demonstrated that there will be no significant adverse impacts on the water, agricultural and environmental resources within the North East Texas Region and the State. Furthermore, due to foreseeable detrimental impacts, the NETRWPG asserts strongly that the option of pursuing new major reservoirs in the Sulphur River Basin as a water management strategy or an alternative strategy should be viewed as inconsistent with the protection of natural resources within the region.

### 8.13.2 Recommendations for Unique Reservoir Site Identification and Preservation

The NETRWPG recommends that any new reservoirs in Region D be pursued only after all other viable alternatives have been exhausted. The NETRWPG further recommends that no reservoir sites in the North East Texas Region be designated as unique reservoir sites in this plan or in the 202~~2~~<sup>7</sup> State Water Plan, ~~excepting that per the terms of agreement set forth from the October 5, 2015 mediation between Regions C and D and ratified by the NETRWPG at its October 21, 2015 meeting, the NETRWPG does not challenge Marvin Nichols Reservoir as a unique reservoir site for the purposes of this Plan.~~ At the time of publication of this Regional Water Plan, no agreement has been made between Regions C and D for the purposes of the 202~~6~~<sup>4</sup> Region D Plan.

The NETRWPG recognizes that there are 16 locations in NETRWPG area where the topography is such that the area could be classified as uniquely suitable as a reservoir site. The NETRWPG recognizes that the waters of the State of Texas belong to the citizens of Texas for their specific use, but it is also recognized that the properties rights belong to individuals. Local government should be recognized for the effect that major alterations to the local economy, such as the development of a unique reservoir site, will have on them. To address the issue of unique reservoirs and the accompanying property owners, industry, and local government concerns the NETRWPG would recommend that the following be instituted when a unique reservoir site is being considered and included in planning studies:

- The required mitigation area is to be acquired from the water planning region requesting the reservoir or other such region willing to provide the mitigation area.
- At the identification of a unique reservoir site as a water planning strategy, the property owners in the area of the unique reservoir site and the accompanying mitigation site or sites must be notified by the requesting entity of such intent.



- At the initiation of the appropriate studies for the identified unique reservoir site, a mitigation site study shall be completed as soon as possible to identify and preliminarily map the mitigation area.
- Property owners should be afforded compensation based on replacement value to the maximum allowed by law in addition to a fair market value approach.
- Property owners whose properties are directly inundated by a reservoir constructed for the purpose of interbasin transfers shall have the right to receive royalties for the water stored over the property taken as an ongoing compensation.
- Local government and other taxing entities shall have the right to direct payments in lieu of taxation for property lost and per ac-ft for waters stored in the reservoirs constructed in the NETRWPG area for transfer to other basins to replace the taxation lost due to property removed directly from the tax rolls. Direct payment in lieu of taxation may differ on stored water and transferred water.
- Local government, school districts, and industry affected directly by the development of a reservoir proposed for interbasin transfer shall be aided and supported by the production of planning and remuneration for direct reduction of economic activity, resources, and jobs.
- The NETRWPG area will retain a portion of the impounded water of the developed reservoir for future use by the region.

The development of reservoirs in the NETRWPG area as a future water source for other portions of the state would require interbasin transfer authorizations from the Texas Commission on Environmental Quality (TCEQ). Among its many provisions, SB 1 includes provisions (TWC, Section 11.085) requiring the TCEQ to weigh the benefits of a proposed new interbasin transfer to the receiving basin against the detriments to the basin supplying the water. SB 1 also established the following criteria to be used by the TCEQ in its evaluation of proposed interbasin transfers:

- The need for the water in the basin of origin and in the proposed receiving basin based on the period for which the water supply is requested, but not to exceed 50 years;
- Factors identified in the applicable approved regional water plans which address the following:
  - » the availability of feasible and practicable alternative supplies in the receiving basin to the water proposed for transfer;
  - » the amount and purposes of use in the receiving basin for which water is needed;
  - » proposed methods and efforts by the receiving basin to avoid waste and implement water conservation and drought contingency measures;
  - » proposed methods and efforts by the receiving basin to put the water proposed for transfer to beneficial use;
  - » the projected economic impact that is reasonably expected to occur in each basin as a result of the transfer; and
  - » the projected impacts of the proposed transfer that are reasonably expected to occur on existing water rights, instream uses, water quality, aquatic and riparian habitat, and bays and estuaries that must be assessed under Sections 11.147, 11.150, and 11.152 of [the TWC] in each basin. If the water sought to be transferred is currently authorized to be used under an existing permit, certified filing, or certificate of adjudication, such impacts shall only be considered in relation to that portion of the permit, certified filing, or certificate of adjudication proposed for transfer and shall be based on historical uses of the permit, certified filing, or certificate of adjudication for which amendment is sought;

- Proposed mitigation or compensation, if any, to the basin of origin by the applicant;
- The continued need to use the water for the purposes authorized under the existing permit, certified filing, or certificate of adjudication, if an amendment to an existing water right is sought; and
- The information required to be submitted by the applicant.

The NETRWPG supports the full application of the criteria for authorization of interbasin transfers contained in current state law. With regard to compensation to the basin of origin, the NETRWPG recommends that a portion of the firm yield of projects developed in the NETRWPG basins for interbasin transfer, be reserved for future use within the basin of origin. The specific terms of such compensation, along with other issues associated with development of the project (e.g., financing, operation of the reservoir, etc.), should be addressed by the appropriate representatives of the authority within the basin of origin, in coordination with the water districts and the entities in receiving regions and within the North East Texas Region that are seeking the additional water supply.

The NETRWPG also endorses the recommendation contained in the adopted *Comprehensive Sabine Watershed Management Plan* that the Sabine River Authority (SRA) develop the Prairie Creek Reservoir. Located centrally in the upper portion of the Sabine Basin, the proposed reservoir would enable the SRA to supply projected future manufacturing needs in Harrison County. As previously noted, the Prairie Creek Reservoir and Pipeline Project is not being pursued by the Sabine River Authority at this time due to the conservation easement limitation on the Waters Bluff reservoir site. If the conservation easement were removed, the Water Bluff Reservoir would become the Sabine River Authority's top priority project to meet projected water needs in the upper Sabine River Basin.

The NETRWPG also has definite concerns about local property owners who would be directly impacted by reservoir construction. A particular concern is that landowners be compensated fairly for the value of any land acquired for reservoir development.

### 8.13.3 Environmental Protection Agency and Corps of Engineers

In March of 2008, the EPA and the COE *announced innovative new standards to promote no net loss of wetlands by improving wetland restoration and protection policies, increasing the effective use of wetland mitigation banks and strengthening the requirements for the use of in-lieu fee mitigation. The new standards clearly affirm the requirement to adhere to the "mitigation sequence" of "avoid, minimize and compensate"*. The NETRWPG recommends that the Wetlands Compensatory Mitigation Rule be closely followed to minimize any impact on the region through the consideration of reservoirs and the mitigation thereof. The group strongly supports the requirement of the mitigation sequence of "avoid, minimize and compensate" should any new reservoirs in Region D be pursued.

### 8.13.4 Environmental Flows

It is the position of the NETRWPG that there be no development of new reservoirs in the Black Cypress portion of the Cypress Creek Basin or the entire Sulphur River Basin within Region D, nor transfer of water out of these basins for that part that is within Region D until the flow needs for a sound ecological environment are defined for these basins through the process established in Senate Bill 3, 2007 Regular Session of the Texas Legislature. Those flow needs are defined as the low, pulse, and flood flows. No additional development should take place until the State has identified the environmental flows necessary

to maintain the Black Cypress and Sulphur Rivers, and their tributaries, and established standards for the environmental flows for these basins.

The NETRWPG recognizes that other regional water planning groups may include recommendations for new reservoirs in the Sulphur River basins, or for the transfer of water out of these basins to basins in other regions, as part of their recommended water management strategies or as alternate strategies. It is the position of the NETRWPG that unless such proposed reservoirs or transfers include explicit recognition that the needs for environmental flows in the North East Texas Region must be satisfied first consistent with Senate Bill 3, that these strategies are inconsistent with the legislative mandate established by Senate Bill 3 and are inadequate in addressing the required quantitative reporting of environmental factors including effects on environmental water needs, such as required in TAC 357.34(d)(3).

Development of new reservoirs prior to determination of the water needs for environmental flows in the Sulphur River Basin would be premature. It is the position of the NETRWPG that proposed reservoirs or transfers need to be consistent with the protection of significant agricultural and natural resources of Region D and the State. The impacts from such projects' effects on environmental flows could further affect downstream operations, such as those in and downstream of Wright Patman Lake.

#### 8.14 Legislative Recommendations

TWDB rules for the 2026<sup>4</sup> regional water planning activities (31 TAC Chapter 357.43(a), (d), (e), and (f) also provide that:

*(a) The RWP shall contain any regulatory, administrative, or legislative recommendations developed by the RWPGs.*

*(d) Any other recommendations that the RWPG believes are needed and desirable to achieve the stated goals of state and regional water planning including to facilitate the orderly development, management, and conservation of water resources and prepare for and respond to drought conditions. This may include recommendations that the RWPG believes would improve the state and regional water planning process.*

*(e) RWPGs may develop information as to the potential impacts of any proposed changes in law prior to or after changes are enacted.*

*(f) RWPGs should consider making legislative recommendations to facilitate more voluntary water transfers in the region.*

The approved scope of work for the development of the 2026<sup>4</sup> Region D Plan includes development of legislative recommendations for ecologically unique stream segments, ecologically unique reservoir sites and general recommendations to the state legislature on water planning activities as well as issues in the North East Texas Region.

Throughout the 2026<sup>4</sup> planning process, the one major policy issue that remained dominant during the meetings of the NETRWPG and received the most comment from the public during the public comment

portion of the regular meetings was the designation of the Marvin Nichols reservoir site in the Sulphur River Basin as a water management strategy for providing water outside the Region. Issues that remained from the 2011, ~~and 2016~~, ~~and 2021~~ Region D Plans are future interbasin transfers from the North East Texas Region; conversion from groundwater to surface water supplies; various regulatory policies of the TCEQ; and, improvements to the regional water supply planning process. Each of these issues is briefly discussed in the section below. Also presented are the recommendations adopted by the NETRWPG on each issue.

#### 8.14.1 Recommendation: Marvin Nichols Reservoir Sites

The Marvin Nichols Reservoir Sites (including but not limited to I, IA and II) in the Sulphur River Basin as designated in the 2001 plan has remained of great concern in the 202~~6~~<sup>4</sup> Plan preparation. In December 2002 the NETRWPG amended the 2001 plan to change the designation of the sites from proposed sites to potential sites, but the issue has remained at each of the subsequent planning meetings.

In May 2005, the NETRWPG voted to completely remove the Marvin Nichols I site from the Region D Water Plan. The 2006 and 2011 Region D Plans state that the Marvin Nichols I reservoir should not be included in any regional water plan as a water management strategy and not be included in the State Water Plan as a water management strategy. For the purposes of the 2016 ~~and 2021~~ Region D Plans, Region D continued to oppose Marvin Nichols Reservoir, but did not challenge Marvin Nichols Reservoir as a unique reservoir site for the purposes of ~~that those plans~~. The NETRWPG stated that the Marvin Nichols I Reservoir was not consistent with protecting the timber, agricultural, environmental and other natural resources as well as third parties in the Region D area. Among the specific issues are basic rights of the property owners and the local governmental entities.

Based on the reasons set forth in Section 6.9 of this regional plan, it has been the position of the NETRWPG that Marvin Nichols reservoir should not be included in the ~~2022-2027~~ State Water Plan as a water management strategy. Region D continues to oppose Marvin Nichols Reservoir, but is willing to work with other regions to obtain water supplies from the Sulphur River Basin that do not involve new reservoir construction. ~~As noted previously, per the terms of agreement set forth from the October 5, 2015 mediation between Regions C and D and ratified by the NETRWPG at its October 21, 2015 meeting, the NETRWPG does not challenge Marvin Nichols Reservoir as a unique reservoir site for the purposes of this Plan.~~ At the time of publication of this Regional Water Plan, no agreement has been made between Regions C and D for the purposes of the ~~2021-2026~~ Region D Plan.

Subject to the comments in Chapter 6, the following recommendations should apply to all reservoirs considered in NETRWPG area:

- All other alternatives such as conservation, alternate available water supply sources and water resources in existing reservoirs must be exhausted prior to consideration of new reservoir development.
- New mitigation rules must be considered, such as, requiring the mitigation area to be acquired from the basin or region requesting the new reservoir. It is believed to be too harsh a requirement to take property from a basin for a reservoir and then acquire more property from the same basin to mitigate the property taken for the new reservoir especially at a requirement of 2-10 times the reservoir property.

- Property owners must be afforded more rights when confronted with acquisition of their property. These rights should include, but not be limited to, proper notification of the consideration of acquisition in a timely manner; extent of considered acquisition; the maximum compensation possible including compensation based on replacement value; royalties for water stored above acquired properties as compensation for yielding ongoing earnings potential; and the additional rights for use of mitigation lands.
- Local governmental taxing agencies, including school districts, should receive direct payments in lieu of taxation for waters stored in the NETRWPG area reservoirs for transfer to other regions. This is considered partial replacement value for lost revenue for the local agencies.
- Local government, school districts, and economic areas affected directly by the consideration of development of a reservoir site shall receive assistance for the recapture of lost resources, jobs, or income.
- The NETRWPG area will retain a portion of the impounded water of the developed reservoir for future use by the region.

Concerning the potential Marvin Nichols reservoir sites (including but not limited to I, IA and II) the NETRWPG does not recommend any of the potential reservoir sites for designation as a Unique Reservoir Site. Also, the potential Marvin Nichols reservoir site as described in the Reservoir Site Protection Study, TWDB Report 370, published July 2008, is not recommended by the NETRWPG for designation as a unique Reservoir Site. ~~As noted previously, per the terms of agreement set forth from the October 5, 2015 mediation between Regions C and D and ratified by the NETRWPG at its October 21, 2015 meeting, the NETRWPG does not challenge Marvin Nichols Reservoir as a unique reservoir site for the purposes of this Plan.~~ At the time of publication of this Regional Water Plan, no agreement has been made between Regions C and D for the purposes of the ~~2021-2026~~ Region D Plan.

#### 8.14.2 Recommendation: The Growth of Giant Salvinia

The NETRWPG received a report from Lee Thomas, Northeast Municipal Water District, in October of 2009, concerning the presence of Giant Salvinia within the NETRWP Area.

Giant Salvinia is an invasive floating aquatic weed and presents a significant threat to the state resources because of its severe impacts in freshwater ecosystems. It adversely affects the biodiversity and functioning of wetlands and riparian ecosystems, water quality, water storage and distribution infrastructure, recreation and amenity values. It has often been described as one of the “world’s worst weeds.” Production losses combined with the control and management costs it has incurred annually reach a multi-billion dollar figure worldwide. The environmental costs will never be fully known but is well in excess of the management costs in dollar terms.

Specifically, Giant Salvinia is a free-floating, sterile aquatic fern that reproduces by vegetative growth and fragmentation. Under normal conditions, up to three lateral buds may develop on each node. Salvinia typically passes through three vegetative growth forms starting with the primary juvenile or invasive form, followed by the secondary then tertiary forms. As growth progresses through each phase, the leaves become larger, begin to fold upwards and the plants become more compact. While the primary phase is easily distinguished from the tertiary, there are many factors that can affect the development of Giant Salvinia. In a rapidly expanding population, it is quite easy to find all three forms present. Under ideal

growth conditions, it has been reported that Giant Salvinia can achieve extraordinary growth rates, doubling its biomass in as little as two days.

#### 8.14.2.1 Background on Giant Salvinia

The NETRWPG was informed of the presence of Giant Salvinia (*Salvinia molesta*) within the region by the October report. In that report it was stated that the presence of Giant Salvinia in the region is a relatively recent development but it has been noted to be expanding specifically in the Cypress Creek Basin. Giant Salvinia is a noxious, invasive aquatic plant that has significant adverse effects on affected wetlands and related environments and is an increasing threat to water quality.

Giant Salvinia has been found to be present in both Louisiana and Texas. In Texas it is present in Caddo Lake in the Cypress Creek Basin which is in the eastern most portion of the North East Texas Regional Water Planning Area. There are significant control measures underway in relation to Giant Salvinia infestations in Caddo Lake.

The impacts of Giant Salvinia are many and varied but essentially it reduces aquatic biodiversity by removing light from the water body. The removal of light kills all submerged plants and eventually their associated fauna below the floating infestation.

To maintain the health of our waterways by limiting the impact and restricting the spread of Giant Salvinia, community understanding about the dangers of Giant Salvinia must be raised in order to mitigate existing conditions and prevent further impact, introduction, and spread to surrounding aquatic habitats. Environmental impacts such as increased runoff, sedimentation and leaching of fertilizers can dramatically increase the establishment and spread of aquatic weed species. The possession of all species of the genus *Salvinia* is prohibited under Texas State law. Despite this law, the transportation of Giant Salvinia from one water body to another continues.

Control of Giant Salvinia is very difficult, especially in high value wetlands which may contain endangered species. While integrated use of biological control and herbicides is successfully used in some locations, there are fewer effective options in riverine and wetland habitats. Most efforts, therefore, involve methods that are time consuming, intensive and expensive.

#### 8.14.2.2 Environmental, Social and Economic Impacts of Giant Salvinia

Public safety and health are endangered by the presence of Giant Salvinia, as it is known to encourage breeding of disease-carrying pests by providing a perfect habitat for larval development; these include mosquito vectors of malaria and West Nile virus. The development of thick floating mats can provide a dangerous platform for children and animals. Animals frequently mistake the dense carpets of Giant Salvinia for firm ground and fall into the water body underneath.

Giant Salvinia greatly reduces the aesthetic value of water bodies by an accumulation of litter, water stagnation and development of foul odors. Increased numbers of mosquitoes and midges, aside from any public health issue, can severely reduce visitor numbers and length of stay at aquatic venues.

Giant Salvinia disrupts use of waterways for recreation, boating, fishing and swimming. Heavy infestations prevent access by boats and recreational fishing is impeded. Swimming is dangerous, if not impossible, in dense infestations.

The presence of Giant Salvinia impacts water storage facilities and distribution infrastructure. These facilities have been adversely affected through the blocking of irrigation channels and pump intakes. Blockage of channels and pumps can increase pumping times and costs, and can lead to expensive repairs or significantly reducing the time between planned maintenance events. By accelerating the amount of water removed from storage through plant transpiration, the presence of Giant Salvinia can have a significant effect on water quantity.

Giant Salvinia modifies the environment by shading out submerged aquatic plants and lowering oxygen levels causing animal deaths, some of which may be endangered species. Dense infestations could eventually kill most plant life normally found below water level and much aquatic life will either die out or relocate. This loss of aquatic biodiversity could be devastating to the environmentally unique areas. General water quality is also degraded through decomposing plant material and dramatically increasing water loss through transpiration. Giant Salvinia has negatively impacted at least one RAMSAR wetland (Caddo Lake) in addition to thirteen major reservoirs in Texas.

The direct costs of control of the menace and the associated management activities are affecting many governmental as well as private budgets. Chemical and mechanical costs incurred by local, state, and federal government agencies along with private control programs are likely to be in excess of \$250,000 per year per water body. Some government authorities keep breeding tanks of the leaf eating weevil called Salvinia weevil (*Cyrtobagous salviniae*) to assist in dealing with Giant Salvinia infestations in their region. This may help reduce the long-term cost in controlling Giant Salvinia, but colonies of the weevil have yet to be established in the North East Texas Water Planning Region due to the colder climate.

The education and outreach to the public is an ongoing effort. It is important to educate the public of the threat Giant Salvinia on the water resources of the State and how to identify Giant Salvinia. Hopefully, the public can lower the rate of spread of infestation and will report possible new infestations and assist with methods of mitigation. This is an area where efforts need to be extended by government and industry in the State.

#### 8.14.2.3 Local, State, and Federal Government Efforts

The NETRWPG recommends that available State funds be dedicated to the control of Giant Salvinia and that governmental sources provide additional resources when available, such as enactment of complementary legislation to support control efforts and prevent distribution of Giant Salvinia. The Texas Legislature is also recommended to approve legislation that will assist local and state officials in controlling the spread and elimination of existing infestations of the plant.

It is further recommended by the NETRWPG that the local and state governments adopt the following:

- Continue to research and develop efficient, effective and appropriate control techniques.
- Provide extension and education services to urban and industry stakeholders.
- Support enforcement of legislation and control measures.
- Ensure that Giant Salvinia is identified in local, regional, and State level pest management plans.
- Coordinate with landholder, community and industry interest groups to cooperatively manage and control Giant Salvinia infestations.
- Research and develop best management practices.
- Monitor water pollution.

- Periodically inspect all water bodies for Giant Salvinia.
- Promote reporting of new Giant Salvinia infestations.

The NETRWPG also recommends that the appropriate State and Federal governmental departments adopt the following actions:

- Develop awareness campaigns to discourage the transportation and/or possession of Giant Salvinia.
- Eradicate infestations where feasible, and ensure Giant Salvinia control is undertaken on all federally managed land.

### 8.14.3 Recommendation: Toledo Bend Reservoir and Pipeline

At the previous request of the Sabine River Authority, the NETRWPG recommends that the Toledo Bend Reservoir be designated a supply strategy for meeting the upper Sabine Basin needs within the NETRWPG area and a supply option for Region C. This reservoir along, with the proposed pipeline from Toledo Bend to the Prairie Creek Reservoir will eventually be used as a supply source for the upper Sabine Basin.

### 8.14.4 Recommendation: Concerning Oil and Gas Wells

The NETRWPG recommends that the Texas Railroad Commission review the practices and regulations concerning the protection of the fresh water supply located in the aquifers that supply much of East Texas with fresh water as to the regulation of the drilling, maintaining and plugging of oil or gas wells with regards to public fresh water supply wells.

In a report presented December 9, 2004, by Mr. Tommy Konezak, Kilgore, Texas, and summarized here, the NETRWPG heard that approximately 40,000 wells have been drilled in the East Texas Field since it opened. Since these production wells penetrate some of the essential aquifers that supply much of the east Texas fresh water there is adequate opportunity for contamination of the fresh water supply. Current regulations require public water supply wells to have a 150 foot sanitary easement in relation to a petroleum well, but there is no similar requirement for the drilling of an oil or gas well as regards to public water supply wells. The initial drilling of a petroleum well allows for the placement of 100 feet of surface pipe on a well even though the aquifer may have 800 feet of formation. The plugging of wells termed dry holes has not kept up with the times and the existing regulations should be enforced strictly.

### 8.14.5 Recommendation: Concerning Mitigation

The NETRWPG recommends that any planning group or entity proposing a new reservoir or any other water management strategy should address the subject of mitigation in conjunction with any and all feasibility studies. As evidenced in Section 6.9 of this plan, a study on possible mitigation effects should be undertaken and completed in conjunction with any and all feasibility studies. Information should include estimates of mitigation, predication ratios, and other information useful to landowners potentially affected by mitigation requirements. Also, any new reservoir proposed by a planning group must be accompanied by a map of the proposed reservoir and a map of the land proposed to be mitigated, including proposed acreage.

The NETRWPG recognizes that the rules concerning mitigation and the method of accomplishing mitigation have evolved. Some suggested references for updated mitigation rules and information are the *National Wetlands Mitigation Action Plan*



(<https://www.epa.gov/cwa-404/national-wetlands-mitigation-action-plan>), the EPA *Mitigation Banks under CWA Section 404* (<https://www.epa.gov/cwa-404/mitigation-banks-under-cwa-section-404>), the EPA *Background about Compensatory Mitigation Requirements under CWA Section 404* (<https://www.epa.gov/cwa-404/background-about-compensatory-mitigation-requirements-under-cwa-section-404>) and the *Corps Regulatory Program* (<https://www.usace.army.mil/missions/civil-works/regulatory-program-and-permits/>). The following information was derived in part from these references.

The preference for Mitigation Banking was first conceived in 1983 when the U. S. Fish and Wildlife Service supported their establishment. This program was well positioned to provide easier monitoring, long-term stewardship, and unambiguous transfer of liability for success from the permittee to the banker. The EPA in the *Mitigation Banks under CWA Section 404* has stated that the advantages of the mitigation-banking program are to:

- Reduce uncertainty over whether the compensatory mitigation will be successful in offsetting project impacts.
- Assemble and apply extensive financial resources, planning and scientific expertise not always available to many permittee responsible compensatory mitigation proposals.
- Reduce processing times and provide more cost effective compensatory mitigation opportunities.
- Enable the efficient use of limited agency resources in the review and compliance monitoring of compensatory mitigation projects because of consolidation.

The EPA and the USACE announced in March of 2008 new standards to promote the “no net loss of wetlands” by improving wetland restoration and protection policies, increasing the effective use of wetland mitigation banks and strengthening the requirements for the use of in-lieu fee mitigation. These standards clearly affirm the requirement to adhere to the “mitigation sequence” of “avoid, minimize and compensate.” The permittee must first avoid and minimize the impact on the wetland and then compensate for unavoidable impacts. The term here “to compensate” is specifically directed at the wetland or other aquatic feature being impacted.

A mitigation bank may be created when a government agency, private corporation, non-profit organization, or other entity undertakes the prescribed activities required under a formal agreement with a regulatory agency. The value assigned to a mitigation bank is through “compensatory mitigation credits.” The bank’s instrument identifies the number of credits available for sale and requires the use of ecological assessment techniques to certify that those credits provide the required ecological functions. The Compensatory Mitigation Rule identifies and clarifies the consideration of watershed scale factors in the selection of appropriate mitigation sites. Mitigation credits utilized by “banks” now allow for a more varied use of options. Mitigation proposals may use on-site (i.e., located close to the impact) and in-kind (i.e., replacement of the same ecological type as the impacted resource). In addition the rule clarifies the consideration of watershed-scale factors in the selection of appropriate mitigation sites. This clarification may increase the practical viability of mitigation proposals involving off-site or out-of-kind replacement with the regard to use of “compensatory mitigation credits”. These replacement processes will still provide appropriate resource replacement in ways that are beneficial to the watershed. The USACE is the final decision maker regarding whether a proposed compensatory mitigation option provides appropriate compensation to receive a permit.

The USACE has adopted a “watershed approach” to compensatory mitigation as stated in [the Watershed Approach to Compensatory Mitigation Projects](#) (<https://www.usace.army.mil/Media/Fact-Sheets/Fact-Sheet-Article-View/Article/1088740/watershed-approach-to-compensatory-mitigation-projects/>). A watershed approach is an analytical process for making compensatory mitigation decisions that support sustainability or improvement of aquatic resources in a watershed (33 CFR 332.2). The ultimate goal of a watershed approach is to maintain and improve the quality and quantity of aquatic resources through strategic selection of compensatory mitigation sites. A watershed approach must be used, to the extent appropriate and practicable, for siting compensatory mitigation projects for Department of the Army permits. The watershed approach applies to all mitigation banks, in-lieu fee programs, and permittee responsible compensatory mitigation. As noted by the USACE, a watershed plan for the purpose of compensatory mitigation is a plan developed by any government or appropriate non-governmental organization for the purpose of aquatic resource restoration, establishment, enhancement, or preservation, in consultation with stakeholders. If there is no appropriate, available watershed plan, there is no requirement to develop a watershed plan, however. Without a watershed plan, other landscape-level information may be used to appropriately select compensatory mitigation sites.

The affected stakeholders include the local sponsors and landowners of the proposed project and the proposed mitigation sites. Project sponsors are tasked with making a reasonable effort, commensurate with the scope and scale of the project and impacts, to obtain as much information as possible prior to the design of the compensatory mitigation project.

The design of compensatory mitigation projects does involve a case-by-case decision making process. This is due to the variables that are encountered on the different projects. While decision-making relies on the scientific expertise of wetlands program staff and broad based stakeholder participation, project sponsors may propose compensatory mitigation based on the watershed approach using information from other sources. Such information includes: current trends in habitat loss or conversion; sources of watershed impairments; cumulative impacts of past development activities; current development trends; presence and habitat requirements of sensitive species; site conditions that favor or hinder the success of compensatory mitigation - including the contribution upland/riparian resources have on aquatic resource functions; requirements of regulatory/non-regulatory programs; chronic environmental problems such as flooding or poor water quality; and comprehensive treatment of all aquatic resource functions.

The NETRWPG further recommends that future mitigation strongly consider utilization of land that may have previously been a functional wetland. An emphasis on restoration of wetland functions can be of more significant benefit than preservation of existing functions, and could be accomplished through the use of marginal farmland or low-lying areas for mitigation purposes.

#### 8.14.6 Recommendation: Future Interbasin Transfers from the North East Texas Region

The North East Texas Region currently supplies surface water to other areas of the state through interbasin transfers and is identified in the current state water plan as a likely source of additional future water supply for various entities in Region C. Specifically, the 1997 State Water Plan includes recommendations that one or more new reservoirs be developed in the Sulphur River Basin as a source of future water supply for the Dallas-Ft. Worth Metroplex. In addition to potential future water transfers from the North East Texas Region to Region C, there may also be water management strategies for meeting

needs within the North East Texas Region that will involve conveyance of supplies from one river basin to another within the region.

Among its many provisions, State Bill (SB) 1 included provisions (TWC, Section 11.085) requiring the TCEQ to weigh the benefits of a proposed new interbasin transfer to the receiving basin against the detriments to the basin supplying the water. However, these provisions relate only to river basins of origin, not to the water planning regions of origin. SB 1 established the following criteria to be used by the TCEQ in its evaluation of proposed interbasin transfers:

- The need for the water in the basin of origin and in the proposed receiving basin based on the period for which the water supply is requested, but not to exceed 50 years.
- Factors identified in the applicable approved regional water plans which address the following:
  - » the availability of feasible and practicable alternative supplies in the receiving basin to the water proposed for transfer
  - » the amount and purposes of use in the receiving basin for which water is needed
  - » proposed methods and efforts by the receiving basin to avoid waste and implement water conservation and drought contingency measures
  - » proposed methods and efforts by the receiving basin to put the water proposed for transfer to beneficial use
  - » the projected economic impact that is reasonably expected to occur in each basin as a result of the transfer
  - » the projected impacts of the proposed transfer that are reasonably expected to occur on existing water rights, instream uses, water quality, aquatic and riparian habitat, and bays and estuaries that must be assessed under TWC Sections 11.147, 11.150, and 11.152 in each basin. If the water sought to be transferred is currently authorized to be used under an existing permit, certified filing, or certificate of adjudication, such impacts shall only be considered in relation to that portion of the permit, certified filing, or certificate of adjudication proposed for transfer and shall be based on historical uses of the permit, certified filing, or certificate of adjudication for which amendment is sought.
- Proposed mitigation or compensation, if any, to the basin of origin by the applicant.
- The continued need to use the water for the purposes authorized under the existing permit, certified filing, or certificate of adjudication, if an amendment to an existing water right is sought.
- The information required to be submitted by the applicant.

As an added protection to water rights and water users in a basin of origin, SB 1 also included a requirement that amending an existing water right for a new interbasin transfer would result in the water right acquiring a new priority date. The effect of this requirement is to give all other water rights in the basin of origin a higher priority than the amended right.

Current state law and policy regarding interbasin transfers of surface water provide a useful starting point for inter-regional discussions on the development of a new reservoir in the Sulphur River Basin. Several of the criteria that TCEQ is to consider in its review of interbasin transfers are of particular relevance, including:

- Future needs for water supply in the Sulphur River Basin.
- Economic impacts of future reservoir development and interbasin transfer on the Sulphur River Basin.
- Environmental impacts.
- Mitigation of impacts to Sulphur River Basin and compensation for the interbasin transfer.

### 8.14.7 Recommendation: Designation of Wholesale Water Providers

The NETRWPG supports the designation of a Wholesale Water Provider (WWP) as described in the Texas Administrative Code §357.10(44~~3~~) as:

“Any person or entity, including river authorities and irrigation districts, that delivers or sells water wholesale (treated or raw) to WUGs or other WWPs or that the RWPG expects or recommends to deliver or sell water wholesale to WUGs or other WWPs during the period covered by the plan. **The RWPGs shall identify the WWPs within each region to be evaluated for plan development.**”

The NETRWPG supports the granting of a designation of WWP for an entity within Region D depending upon a written request from that entity to the NETRWPG that demonstrates said entity has entered or the RWPG expects or recommends to enter into contracts to sell more than 1,000 acre-feet of water wholesale during the period covered by the plan, including the designation of expected demand and the expected supply. Without a request that includes sufficient identification of expected contractual demand and expected supply, the NETRWPG cannot plan for such an entity. With this noted, Region D expects that the water supply out of Lake Wright Patman will continue to be with Texarkana and Riverbend Water Resources District control as WWPs.

### 8.14.8 Recommendation: Future Water Needs

A widely held view within the North East Texas Region is that future water needs within the region must be assured before additional interbasin transfers are permitted. Many residents of the region express support for future reservoir development and interbasin transfers provided the region’s long term water demands are met. This sentiment is supported by TWDB rules for regional water planning, which require that the evaluation of interbasin transfer options include consideration of “...the need for water in the basin of origin and in the proposed receiving basin.”

The results of the supply and demand assessment for the North East Texas Region indicate that at the regional level, currently legally available surface and groundwater sources are adequate to meet projected needs through 2070. This conclusion also applies for each of the river basins within the region. More importantly, however, the supply and demand assessment indicates that numerous individual water user groups are projected to experience shortages during the planning period, including several in the Sulphur River Basin. However, a majority of these shortages are projected to occur in small communities and rural areas and it is generally believed that local water supply options will be the preferred strategy for meeting those needs.

The issue of how much water is needed in the North East Texas Region for local use is not as simple as just comparing estimates of existing water supply to projections of future water demand. It should be remembered that the water demand projections adopted by the NETRWPG and the TWDB for development of the regional plan are based largely on an extrapolation of past growth trends. While this is a common and accepted method for forecasting future conditions, there are nonetheless significant uncertainties in the projections.

Shifting demographics and economic and technological change could result in substantially higher demand for water in the North East Texas Region than is currently projected. For example, there is an observed trend over the past decade in many areas of the U.S. of higher population growth in small and medium sized cities and rural areas. This has been attributed in part to advancements in

telecommunications and the evolving information and service based economy, which no longer requires a concentration of labor in large cities. Another factor is the aging of the population and the trend toward retirement in rural areas. Also, development of a new reservoir in the Sulphur Basin could, itself, act as a significant catalyst for economic development and growth in the area. In fact, some in the planning region have expressed interest in building reservoirs as part of an overall regional economic development strategy. Results from the SRBA (2014) Sulphur River Basin Feasibility Study suggest a wide variety of potential demands in the region, many significantly higher than those estimates developed for regional planning.

Such factors suggest that the NETRWPG may want to review a possible policy recommendation regarding the definition of "need" in the basin of origin. Some members have also suggested broadening the test of need for interbasin transfers to consideration of projected needs throughout the *region* of origin, not just the basin of origin.

#### 8.14.9 Recommendation: Economic and Environmental Impacts

The NETRWPG recommends considering potential economic and environmental impacts associated with reservoir development. For example, a significant amount of taxable private property could be removed from local tax rolls thereby increasing the tax burden on other property owners. The effects of new development are uncertain and likely include both negative and positive consequences.

Reservoir development would also alter the natural environment, perhaps resulting in significant losses of ecologically valuable wetlands and riparian areas. However, state and federal regulations require that such impacts be minimized and mitigated to the extent possible, often through the set-aside and protection of other valuable ecological resources. Some water planners in the region have expressed the concern that mitigation requirements for large reservoirs in one basin might have to be met by restricting uses of riparian areas in other basins, thus limiting future possibilities for development at those sites.

#### 8.14.10 Recommendation: Compensation for Reservoir Development and Interbasin Transfers

Perhaps the most important consideration in inter-regional discussions regarding reservoir development and interbasin transfers is the question of compensation. A common view is that future interbasin transfers should be of direct benefit to both the basin-of-origin and the receiving basin. As noted in the case of future water needs, RWPG members have also expressed strong interest in the distribution of benefits to the region as well as the basin of origin. In essence, it is a question of equity or fairness. There are several ways that compensation for the transfer of additional water supplies from the Sulphur Basin could be approached. Examples include:

- Retaining ownership of water rights by an entity in the basin of origin with a portion of the water transferred out of basin under long term contract.
- Reserving some portion of the yield of a new reservoir for future use within the basin of origin.
- Setting rates on water sales sufficient to cover both the costs of developing and operating a new reservoir plus additional revenues for other purposes (e.g., supporting the functions of the local project sponsor).
- Direct payments to the governmental entities in the impacted area.

Given the significance and implications of new reservoir development and future interbasin transfers across regional lines, the NETRWPG should consider adopting a policy statement addressing the issue of future water needs within the basins of origin and/or within the North East Texas Region as a whole, economic and environmental impacts of reservoir development, and inter-regional equity and compensation issues. It should be noted the issue of compensation is applicable to all reservoir development whether an interbasin transfer is contemplated or not.

#### **8.14.11 Recommendation: Conversion of Public Water Supplies to Surface Water from Groundwater**

Many water suppliers in the North East Texas Region rely solely on local groundwater supplies. Most of these suppliers will likely continue to use groundwater for future needs. However, in some areas, groundwater supplies will not be adequate to meet future needs and alternative sources of supply need to be considered. Also, in many areas of the region, groundwater supplies are of poor quality and do not meet current state and federal drinking water standards. Where groundwater supplies are available but are of poor quality, one supply strategy could be to develop additional groundwater with advanced treatment. However, because of the cost of treatment, and particularly the cost of disposal of the waste streams, acquisition of surface water supplies may be the most economically viable alternative.

Acquisition of surface water supplies would require that there be both legal and physical access to surface water supplies. Some communities may be in relatively close proximity to an existing surface water source but do not have access to those supplies because the water is fully committed to other users. In other cases, the physical infrastructure required to transport surface water from its source to a user does not exist and may be too costly.

Building regional water supply systems may offer the potential for significant cost savings in acquiring new water supplies and improving the reliability and quality of supplies. For some small water systems, regional approaches to water supply may be the only economically viable approach to conversion from groundwater to surface water. Connecting a number of independent systems can take many forms. It can include the development of regional water supply facilities, the physical consolidation or interconnection of two or more existing water systems or the management of two or more independent systems by a single entity. Some local water providers and customers may object to loss of direct local control over the system, or they may feel that cost sharing formulas are unfair. For such reasons, each proposal for a regional system must be considered on a case-by-case basis.

#### **8.14.12 Recommendation: Texas Commission on Environmental Quality Regulations**

The TCEQ minimum requirement of 0.6 gallons per minute per connection for public drinking water systems is a significant issue for many water providers in the North East Texas Region. Currently, this requirement is not directly reflected in TWDB rules relating to regional water planning. Many providers indicate that this requirement exceeds the real needs of water users and would require major additions to supplies, storage, and delivery capacities. In areas of marginal groundwater quantity, numerous wells may be required. Well spacing of approximately one half mile between wells means new well fields would occupy extensive geographic areas. In order to protect the investment in a new field from the effects of the rule of capture, providers must also purchase enough land to provide a buffer around the targeted

supply. These new well fields might have to be located at remote sites, possibly triggering complaints, common in other parts of the state, of one population mining groundwater at the expense of the exporting area. Costs of new pipeline construction are also a major concern.

Methyl Tertiary Butyl Ether (MTBE) and other contaminants pose a significant threat to water supply sources in the North East Texas Region, as has happened in the past at Lake Tawakoni. There are two dimensions to this issue. On the one hand, the NETRWPG has urged TCEQ to phase out the use of MTBE specifically, and both the state and federal regulators across the country are looking for substitute components for reformulated gasoline. Aside from the regulatory imposition of the use of MTBE (and this is only one of many potential contaminants that can find their way into drinking water sources), there is the additional lesson from the Tawakoni experience that those providers with more than one water source were best able to deal with that crisis. It is desirable for water user groups with vulnerable sources to plan on emergency access to backup supplies.

TCEQ regularly updates its list of streams, lakes and other water bodies that fail to meet the water quality standards established for specific water uses. Many of these water bodies are drinking water sources. This issue differs from the MTBE contamination episode at Lake Tawakoni, which was an accidental spill that was removed from the system in a matter of weeks. That temporary circumstance did not have a long term effect on overall water quality of the lake. The planning process needs to take account, however, of continuing problems in drinking water sources that may lead to placement on the state list such as: low dissolved oxygen levels, excessive waste loads, mercury and other contaminants, etc.

The NETRWPG has adopted the following recommendations with regard to TCEQ regulatory policies:

- There should be consistency between TWDB rules for regional water supply planning and TCEQ rules for drinking water systems with regard to minimum requirements for water supply.
- TCEQ should expedite the effort to replace MTBE in reformulated gasoline with additives that do not pose a risk to drinking water supplies.

#### 8.14.13 Recommendation: Improvements to the Regional Water Planning Process

1. The NETRWPG believes that the regional water planning process should provide greater flexibility in development of water demand projections. TWDB rules and guidelines regarding population and water demand projections tend to confine rural and smaller urban areas to past rates of growth without allowing for consideration of alternative scenarios for future growth and economic development initiatives. Because the region has a relatively small population and water demands, the impact of a major new water user, such as a paper mill or a power plant, could dramatically alter the water supply and demand equation at a county or even basin level. There is no mechanism in the current process to provide for these potential increases, until the five year review period.

TWDB rules also build into municipal water demand projections conservation assumptions which may be unrealistic. In rural areas that already have low rates of per capita use, there often is an increase in per capita use as development occurs in the area. Assumptions about conservation in these areas that already use far less on a per capita basis than the very large and rapidly growing urban areas could have the effect of limiting future development. There are more than 40 water user groups in the North East Texas Region with per capita usage levels well below the 115 gallons per capita per day (gpcd) level set as the "floor" by the NETRWPG. Some usage rates are

in the 70-80 gpcd range, a sharp contrast with large urban areas where 200 gpcd or more is not uncommon. Landscape watering, a prime target for urban water conservation programs, is much less prevalent in rural areas. Further, the housing stock is not undergoing rapid growth or replacement, thus reducing the potential impact of plumbing fixture efficiency standards.

The NETRWPG recommends that the TWDB should revise procedures for calculating water demand reduction projections contained in its conservation scenarios by recognizing a floor for the application of demand reduction for rural and small city areas where the per capita water consumption levels are already very low.

2. Further, for the present round of planning, the TWDB established a floor for water demand at 60 gpcd. In previous rounds, the RWPGs were allowed the capability to establish individual floors, whereby Region D used an amount of 115 gpcd. It appears inappropriate to assume that usage less than 115 gpcd can be sustained over the long-term planning horizon. For those communities using in excess of 250 gallons per day, it should be noted that TWDB planning rules for this current round of planning are enabling 50 year forecasts for systems using 4 times or more than another community. This rule, as applied, is inherently unfair, and eliminates small per capita usage systems from ever having a normal usage, as it basically confines that system to always serving an area that is constraining growth. The growth cannot be higher usage (water usage generally increases as disposable income per household increases) with the TWDB methodology as presently applied, which appears to contradict the inherent conservatism generally embedded within the State water planning process.

The NETRWPG recommends that the TWDB allow the RWPGs to establish individual regional thresholds of gpcd for a given region, as this provides a more equitable solution for the establishment of future demands in the region.

3. The NETRWPG recommends additional funding is made available to allow for greater scrutiny of rural water supply entities at the Sub-Water User Group (Sub-WUG) level. As in the previous round of regional water planning, such entities are aggregated and represented within the Plan as a "County-Other" WUG. Where necessary, extra effort has been given to identify and evaluate the needs for entities within this "County-Other" category, but with limited funding in the present round as compared to previous rounds the level of overall effort to distinguish these entities has been necessarily diminished. Additional funding affords the capability to more rigorously evaluate these smaller, rural entities, which comprise a significant portion of the Region D population, as was done in previous rounds of regional planning.
4. *Analyses in the Sulphur River Basin (SRBA Watershed Study, 2014) suggest that although the historic Drought of Record for the basin is 1951 to 1956, a more significant drought occurs between 2002 and 2006. As a result, the SRBA study suggests the official TCEQ "Sulphur WAM misses the critical drought" that forms the basis for calculations of firm supply, since the official TCEQ WAM for the Sulphur River Basin is based upon historic data from 1940 to 1996. Indeed, an effort is already underway to update the hydrology for Sulphur River Basin WAM that is being funded by the Riverbend Water Resources District. While this effort has not produced a model in time for the purposes of the 2021 Region D Plan, it is likely that the result of this effort will be considered in the next round of water planning for Region D. Further, during the most recent legislative session The passage of HB 723 was passed requiring requires the TCEQ to obtain or develop updated water availability models for the Red River Basin and Neches River Basins, within Region D, as well as the Brazos and Rio Grande River Basins.*



Given the proximity of these river basins to the remaining river basins within the North East Texas Region, it is not unreasonable to consider similar hydroclimatologies existing in the remaining basins. If a worse drought exists than the current Drought of Record utilized in the official TCEQ WAMs, this poses additional uncertainty with regard to the modeled firm yields and reliabilities upon which water supplies in the North East Texas Region are based. [More recently, an updated model has been officially adopted for the Sulphur River Basin, and a similarly updated model is in the process of development for the Cypress Basin.](#)

Thus, the NETRWPG recommends that the legislature initiate a process through TCEQ to appropriately update the Sabine, ~~and Cypress~~ Water Availability Models (WAMs) in a manner consistent with these WAMs' original development, to reflect more recent information on the hydroclimatology of the river basins in the North East Texas Region, and provide additional certainty to resultant calculations of firm supplies in the Region.

5. It is recommended that the groundwater availability determination of the NETRWPG for the purposes of the 2026 Region D Water Plan be incorporated into the determination of Desired Future Conditions (DFCs) for GMA 8 and GMA 11. Model results developed by the TWDB as well as the local hydrogeological assessment performed by the NETRWPG contains relevant information of potential utility to the ongoing DFC process. Consideration of this information could improve and enhance the efficacy of the regional planning process.
6. It is recommended that the Joint Planning Process representing the coordination between GMAs 8 and 11 and the NETRWPG incorporate the information regarding groundwater availabilities (as well as amounts identified by the NETRWPG) as appropriate to make adjustments to better address the identified limitations in the MAG amounts relating to actual and planned legal pumping activities. Such coordination could further consider the protection of springs and groundwater surface water interaction.
7. It is recommended that the TWDB consider revising its analytic approach to identifying allowable groundwater availabilities to more adequately address the legal capabilities of WUGs currently using or planning to use groundwater as a WMS within Region D, to better align with the intent of the aforementioned SB 1101.

#### 8.14.14 Recommendation: Wright Patman Lake/Reservoir

The NETRWPG recommends that before any new reservoirs are planned in the North East Texas Water Planning Area, the alternative of raising the level of the Wright Patman Lake /Reservoir be considered.

#### 8.14.15 Recommendation: Standardize Statistics Used For Conservation Assessments

The NETRWPG recommends that the Texas Legislature standardize the method used to derive the statistic known as "gpcd" (gallons per capita per day) and also known as "municipal per capita usage". ~~Recently,~~ ~~†~~The TWDB ~~previously~~ funded the Statewide Water Conservation Quantification Project (Averitt & Associates, 2017). This research project observed the difficulty for utilities to identify the gpcd used for regional planning purposes, which is defined as the annual volume of water pumped, diverted, or purchased minus the volume exported (sold) to other water systems or large industrial facilities divided by the permanent resident population of the municipal water user group in the regional water planning process divided by 365. However, utilities are noted to use a different formula for deriving gpcd, as

defined in the TWDB water conservation plan annual report as the Total Gallons in System divided by the Permanent Population divided by 365.

While the move to utility-based planning for the ~~present~~-previous round of regional water planning ~~has~~ ~~was~~been a positive move towards more consistency, the uncertainties regarding the methods used to define gpcd remain. The justification for this recommendation is demonstrated by the need to have a successful conservation program in areas that are projected to need water management strategies. The NETRWPG supports conservation as a water management strategy for any entity that has a gpcd ratio greater than the goal of 140 gpcd. Assessing the progress of communities engaged in conservation will be more reliable with a standardized method for comparison.

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