

NORTH EAST TEXAS REGIONAL WATER PLANNING GROUP - D

Executive Committee

November 11, 2021

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Mr. J. Kevin Ward
Chair, Region C Water Planning Group
Trinity River Authority of Texas
P.O. Box 60
Arlington, Tx 76004-0600
wardk@trinityra.org

Dear Mr. Ward:

The North East Texas Regional Water Planning Group (Region D) has authorized the submission of this letter to you as Chair of the Region C Water Planning Group to notify the Region C Planning Group of a potential conflict between our two plans and to enhance interregional coordination efforts going forward.

Obviously, we are at the beginning of the planning cycle and very early on in the process. However past experiences between our Regional Water Planning Groups regarding conflicts and potential conflicts have shown that early identification and discussions of any potential conflicts can be helpful. The Interregional Planning Council Report to The Texas Water Development Board dated October 16, 2020 stressed the importance of identifying issues and potential interregional conflict concerns at the beginning and throughout the planning cycle.

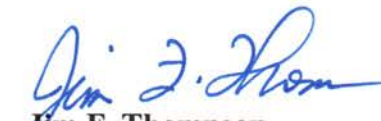
We realize that final decisions on potential projects for the upcoming Regional Water Plan have not occurred. However, we are also aware that Region C has consistently included the potential Marvin Nichols Reservoir as a future water supply source in its Plans. We also know that for at least the last twenty (20) years, Region D has included language in its Plans that expressly states that Marvin Nichols Reservoir should not be included in the State Water Plan or any Regional Water Plan because it does not protect the economic, agricultural and natural resources of the region and of Texas and that the development of this project would have a substantial adverse effect on our region as a result of the impacts the reservoir would cause. I have attached with this letter Section 6.9 and Section 6.10 of the most recent approved Region D Water Plan which details the concerns our Region has regarding the proposed Marvin Nichols Reservoir.

It is certainly our hope that our two groups can avoid a conflict on this issue. We are willing to take all reasonable measures to do so. Those efforts could include coordinating and exploring other viable measures to increase water supply sources for Region C in the future as well as decreasing future demand, including but not limited to fully utilizing water supplies in existing reservoirs, potential reallocation of water resources in existing reservoirs, additional reuse beyond what is proposed in the Region C Water Plan, and increased water conservation.

We are sending a copy of this letter to representatives of the Texas Water Development Board. It is our desire that a conflict be avoided if at all possible and hopefully, both regions can work toward that goal.

Thank you for your consideration.

Very truly yours,



Jim F. Thompson
Chair, Region D
Water Planning Group

cc: Mr. Jeff Walker
Executive Administrator
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6.7.2 Navigation

As noted in Chapter 1, while the lack of perennial streams limits the viability of navigation projects in northeast Texas, there are several notable navigation projects either in the region or affected by streamflows from the region. None of the recommended water management strategies proffered herein are expected to exhibit impacts on navigation within the region. Conservation, groundwater wells, reuse, and contractual strategies will not impact navigation of surface waters, and the recommended surface water strategies considering development of infrastructure utilize existing surface water supplies and not affect navigation of streams in the region.

6.7.3 Parks and Public Lands

The NETRWPA contains numerous state parks, forests, and wildlife management areas. In addition, there are a number of city parks, recreational facilities, and public lands located throughout the region. None of the water management strategies evaluated for the 2021 NETRWP are expected to adversely impact parks or public land. The development of additional groundwater resources could ultimately reduce the reliance on water from surface water resources. Where possible, reducing the need for diversions from surface water sources may enhance recreational opportunities.

6.7.4 Energy Reserves

Numerous oil and gas wells are located within the NETRWPA, including the Hawkins Oil Field and the majority of the East Texas Oil Field. In addition, significant lignite coal resources can be found in the NETRWPA under portions of 15 counties. These resources represent an important economic base for the region. None of the water management strategies recommended by the NETRWPG are expected to significantly impact oil, natural gas, or coal production in the NETRWPA.

6.8 Consistency with State Water Planning Guidelines

To be considered consistent with long-term protection of the State's water, agricultural, and natural resources, the NETRWP must be determined to be in compliance with Texas Administrative Code (TAC) 31, Chapters 357.40, 357.41, 358.3(4) and (9).

The information, data evaluations, and recommendations included in Chapters 1 through 12 of the NETRWP collectively comply with these regulations.

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

Although not a recommended water planning strategy for the NETRWPG for this round of planning, Marvin Nichols I Reservoir was a recommended water management strategy for Region C in 2011 and 2016, and was included in the 2012 and 2017 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 round 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 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 2022 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. The NETRWPG supports its positions with both the facts set out in its previous 2011 and 2016 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 2021 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).

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. The recent SRBA 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 Region C’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 Region C 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 the 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 Region C Water Plan similarly reported potential impacted acreage of timberland 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 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 2016 Region C Water Plan, rating the impacts of Marvin Nichols I upon "Agricultural Resources/Rural Areas" as "high" and "Possible Third Party" as high.

In addition, if Marvin Nichols I 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 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 storage². It is noted, however, that more recent modeling reflecting updated hydrology may decrease these amounts due to 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:

- 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."

² Taken from *Technical Memorandum on Hydrologic Yields – Sulphur River Basin Feasibility Study*, 08/26/2014.

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 6.17.

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 6.17 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 I Reservoir should not be included as a water management strategy in any regional water plan or the State Water Plan. In referencing Marvin Nichols I, 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 2021 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.