

**TO:** Board Members

**THROUGH:** Darrell Nichols, Assistant Executive Administrator  
Les Trobman, General Counsel  
Jeff Walker, Deputy Executive Administrator, Water Supply & Infrastructure

**FROM:** Matt Nelson, Director, Water Use, Projections, & Planning

**DATE:** May 11, 2016

**SUBJECT:** Adoption of the 2017 State Water Plan

## **ACTION REQUESTED**

Briefing and discussion on comments received on the draft 2017 State Water Plan and consider adoption of the 2017 State Water Plan.

## **BACKGROUND**

Every five years, the Texas Water Development Board (TWDB) is required by Texas Water Code §16.051(a) to adopt a comprehensive state water plan that incorporates the approved regional water plans. The state water plan is to

- provide for the orderly development, management, and conservation of water resources,
- prepare for and respond to drought conditions, and
- make sufficient water available at a reasonable cost to ensure public health, safety, and welfare and further economic development while protecting the agricultural and natural resources of the entire state.

The 2017 State Water Plan must be adopted no later than January 5, 2017 and will be the fourth state water plan developed through the regional water planning process as mandated by Senate Bill 1 in 1997 and Texas' tenth state water plan developed since 1957.

At the end of each five-year regional water planning cycle, the Executive Administrator compiles information from the Board-approved regional water plans and other sources to develop the state water plan, which is published for public comment and, after consideration of public comments, adopted by the Board. Once adopted, the state water plan is submitted to the Governor, Lieutenant Governor, Speaker of the Texas House of Representatives, and the appropriate legislative committees.

### **Our Mission** : **Board Members**

To provide leadership, information, education, and support for planning, financial assistance, and outreach for the conservation and responsible development of water for Texas

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: Bech Bruun, Chairman | Kathleen Jackson, Board Member | Peter Lake, Board Member  
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In addition to incorporating the approved regional water plans, the state water plan, as formally adopted by the Board, serves as: a guide to state water policy; includes legislative recommendations that the Board believes are needed and desired to facilitate more voluntary water transfers; and, identifies river and stream segments of unique ecological value and sites of unique value for the construction of reservoirs that the Board recommends for protection.

### **KEY ISSUES**

The Board authorized publishing the draft 2017 State Water Plan document, together with the draft 2017 Interactive State Water Plan (ISWP) website, for public comment at its March 3, 2016 meeting. The public comment period extended from March 8 to April 25, 2016. Notice of the public comment period, public hearing, and the Board's intent to adopt the 2017 State Water Plan was published in the *Texas Register* on March 18, 2016.

The TWDB held a public hearing on April 18, 2016, 6:00 pm, at the Stephen F. Austin Building in Austin, Texas to receive comments on the draft 2017 State Water Plan, including the draft 2017 ISWP website. A total of 11 people attended the public hearing, with three organizations providing oral comments. The TWDB also received written comments from 18 organizations and 10 individuals during the comment period.

The TWDB expresses appreciation to all the stakeholders who participated in and provided input to, the development of the 16 regional water plans and this state water plan. The TWDB appreciates all the comments that were submitted.

Many of the public comments addressed more than one issue. The issues raised were grouped into the following general categories:

- General comments
- Transparency
- Policy recommendations
- Water demand projections
- Climate
- Water availability models
- Environmental flows
- Desired future conditions
- Recommended water management strategies and water management strategy projects
- Rainwater harvesting
- Unmet needs
- Summary of regional water planning data
- Editorial corrections/additions

Recommended responses have been prepared for each relevant issue raised by the comments, including a recommended change to the plan, where changes were warranted. A summary of the comments received and TWDB responses are included as Attachment A.

Additionally, minor editorial corrections, including numerical corrections, have been made to the draft document.

**RECOMMENDATION**

The Executive Administrator recommends the Board's adoption of the 2017 State Water Plan, including the changes described herein and with the incorporation of the online 2017 ISWP website, and with the understanding that the plan, as adopted today, will initially be posted online only as a transitory document that, prior to January 5, 2017, will be replaced by a graphically enhanced version for the purpose of final publication and distribution.

This recommendation has been reviewed by legal counsel and complies with applicable statutes and Board rules.

Attachments:

- A. Summary of comments received on the draft 2017 State Water Plan and TWDB responses to the comments

**Summary of comments received on the draft 2017 State Water Plan  
and TWDB responses to the comments**

**An asterisk \* indicates a comment that warranted a change to the water plan document**

**General comments**

***Comment:** The Central Texas Water Coalition commented that regional and state water plans should represent new, creative, and open-minded work conducted during the planning cycles instead of largely edited versions of prior plans. Additionally, the Central Texas Water Coalition encourages the TWDB to continue improving upon the data that forms the basis of the water demands, water supplies, water needs (shortages), and water management strategies to satisfy those needs.*

**Response:** The content of regional and state water plans are bound by requirements in Texas Water Code (TWC) Chapter 16 and 31 Texas Administrative Code (TAC) Chapters 357 and 358. Although there may be varying amounts of water plan content that appears similar between different five-year plans, each regional water plan represents a stand-alone, five-year plan that is based on a set of water demand projections, which is developed for each five-year planning cycle. The 2016 regional water plans and the 2017 State Water Plan includes many “firsts” in the planning process, as noted in Chapter 1.

Based on its available resources, the TWDB updates and makes available, and will continue to make available each planning cycle, relevant planning data including, for example, population estimates and water demand data, based on Water Use Survey data and other data sources. Existing water supplies, water needs, and water management strategy data are all based on evaluations and data generated by regional water planning groups. Hydrologic data associated with surface water models is maintained and updated by the Texas Commission on Environmental Quality. No changes have been made in response to these comments.

***Comment:** The Central Texas Water Coalition encourages the TWDB to provide technical and regulatory support for regional water planning groups.*

**Response:** The TWDB continues to provide technical and administrative assistance to regional water planning groups; however the TWDB does not have the authority to provide regulatory support. No changes have been made in response to this comment.

***Comment:** The Farm and Ranch Freedom Alliance commented that 50 years is not an adequate time-frame for state water planning, provides examples of water transfers and water markets, and recommends that the water plan consider the planning ramifications on a much longer time frame.*

**Response:** Planning rules require that the plan include a 50-year period which is considered a reasonable time-frame for the purpose of developing a state water plan and has been used since

the development of the 1968 State Water Plan. Regional water planning groups are required to consider a variety of types of water management strategies and evaluate each potentially feasible strategy under specific criteria including cost, quantity, reliability, and impacts on environmental, agricultural, and water resources, pursuant to 31 TAC §357.34. While some projects recommended in the water plan, especially those projects considered for implementation in later planning decades, may provide water supplies beyond the 50-year planning horizon, it would be difficult to develop credible water plans for periods greater than 50 years and would require additional planning resources. Additionally, planning groups are required to consider a variety of types of water management strategies under TWC §16.053(e)(5) including transactions through voluntary transfers, sales, and leases. The decision whether to recommend a particular water management strategy or water management strategy project lies with the regional water planning groups. The regional and state water plans adhere to all existing water laws including those that govern transactions. No changes have been made in response to this comment.

***Comment:** The Farm and Ranch Freedom Alliance commented that the state water plan should recognize research done by private and government entities on water impacts of healthy soil and recognize and support efforts related to tools to improve soil organic matter.*

**Response:** It is not within the scope of the state water plan which is established in TWC §16.051, to promote particular technology, research, or tools. The TWDB supports irrigation conservation technologies by providing grants to political subdivisions to implement conservation programs. Brush control is a water management strategy that may be considered potentially feasible by regional water planning groups. The decision whether to recommend a particular water management strategy or water management strategy project lies with the regional water planning groups. No changes have been made in response to this comment.

***Comment:** One individual commented on whether the plan includes provisions for water banking in times of floods.*

**Response:** The state water plan includes water supply from reservoirs that capture and store large volumes of water during high flow events, including when flooding occurs, and using that water at other times, including during times of drought. No changes have been made in response to this comment.

***Comment:** One individual commented on poor surface water quality in Texas and asked the Board to insist on clean water regarding water resources in the state.*

**Response:** During development of the regional water plans, regional water planning groups must describe the major impacts of recommended water management strategies on key water quality parameters and how the plans are consistent with the long-term protection of the state's water resources, pursuant to 31 TAC §357.40 and §357.41. Development of water management strategies for drinking water supply are subject to the Texas Commission on Environmental Quality's Public Drinking Water and Water Quality standards, and other requirements or methods used by that agency to address water quality issues related to water supply. Through the Texas Clean Rivers Program, the Texas Commission on Environmental Quality works in partnership with state, regional, and federal entities to coordinate water quality monitoring,

assessment, and stakeholder participation to improve the quality of surface water within each river basin. No changes have been made in response to this comment.

**Comment:** *One individual commented on issues related to water reuse, treatment, pollution, and water quality testing in the oil and gas industry.*

**Response:** This comment addresses an issue that is not within the 2017 State Water Plan's scope, which is established in TWC §16.051. The TWDB does not have any authority to address regulatory matters in the oil and gas industry. No changes have been made in response to this comment.

**Comment:** *No Colorado River Dam Inc. and Texas Parks and Wildlife Department encouraged enhanced coordination with other agencies, including the Texas Commission on Environmental Quality, the Texas Parks and Wildlife Department, and other resource agencies.*

**Response:** The TWDB will continue to coordinate with other state agencies. No changes have been made in response to this comment.

**Comment:** *No Colorado River Dam Inc. requested that 30 TAC §295.16 be clarified so the TCEQ has a defensible basis to cease processing a water rights application.*

**Response:** 30 TAC §295.16 is an administrative rule for the Texas Commission of Environmental Quality and the TWDB does not have authority to revise this rule. Whether a project is in a regional or state water plan or not, it must adhere to all applicable federal or state permitting requirements. No changes have been made in response to this comment.

**Comment:** *Sierra Club commended the TWDB for the creation and implementation of the interactive State Water Plan website. The Sierra Club stated that the interactive site greatly improves public access to planning data and the usefulness of the plan to Texans, and that the interactive State Water Plan is a model for other state agencies to follow in providing information to the public. The Central Texas Water Coalition commended the interactive State Water Plan website, stating that it is a wonderful tool for researching and understanding the information in the plan. Freese and Nichols Inc. commented that both the draft State Water Plan and the interactive site increase the accessibility to regulators, water industry professionals, and the public.*

**Response:** The TWDB appreciates these comments.

**Comment:** *The Texas Conservation Alliance commented that water planning in Texas is economically inefficient, due to the absence of economic incentives of a water market.*

**Response:** Regional water planning groups are required to consider a variety of types of water management strategies under TWC §16.053(e)(5) including transactions through voluntary transfers, sales, and leases. The decision whether to recommend a particular water management strategy or water management strategy project lies with the regional water planning groups. The

regional and state water plans adhere to all existing water laws including those that govern transactions. No changes have been made in response to this comment.

**Comment:** *The Texas Conservation Alliance suggested reforms to the planning process including not allowing consulting firms that work on recommended water supply projects to also be the firms which provide input on development of the regional water plans.*

**Response:** The process of consultant selection and procurement is a decision that lies with the regional water planning groups and not with the TWDB. The procurement of professional services must be in accordance with the Texas Government Code Chapter 2254 and 31 TAC §355.92(c). No changes have been made in response to this comment.

**Comment:** *The Texas Conservation Alliance commented that reuse and recycling is generally the lowest cost option for non-consumptive water uses.*

**Response:** Regional water planning groups are required to consider costs in their evaluations of potentially feasible water management strategies and the decision whether to recommend a particular water management strategy or water management strategy project lies with the regional water planning groups. No changes have been made in response to this comment.

**Comment:** *The Texas Conservation Alliance commented that specific principles should be applied for lawn watering.*

**Response:** The suggested principles regarding lawn watering might be incorporated into a water conservation strategy. The TWDB encourages the commenter to direct their recommendations regarding lawn watering to regional water planning groups. No changes have been made in response to this comment.

**Comment:** *Texas Parks and Wildlife Department commended the TWDB for producing a concise, thorough, and well organized document, and appreciates the acknowledgment of Texas Parks and Wildlife Departments staff participation in the regional water planning process. Save our Springs Alliance commented that the draft 2017 State Water Plan is an improvement over the 2012 State Water Plan in many ways.*

**Response:** The TWDB appreciates these comments.

## Transparency

**Comment:** *One individual commented that there is a lack of transparency associated with the 2016 Region L Regional Water Plan; that this will affect the integrity of the 2017 State Water Plan; and that there is a breach of Region L planning group bylaws and conflict of interest and urged the TWDB to investigate. The commenter states that the Region L planning group did not address all of the public comments it received on the regional water plan and that Appendices K and L of the 2016 Region L Regional Water Plan are not available on the TWDB website.*

**Response:** TWDB does not have authority to regulate regional water planning groups. The development of regional water plans includes numerous public meetings, hearings, and public comment processes that are all subject to the Texas Open Meetings Act. The Region L Regional Water Planning Group considered all public comments received, as summarized in Volume I, Appendix O of the adopted 2016 Region L Regional Water Plan, which was approved by the TWDB on December 14, 2015, and was found to comply with all applicable statute and rules. No changes have been made in response to this comment. (The TWDB has made the technical Appendices K and L available through its website.)

***Comment:** One individual asked the Board to insist on public transparency and high ethics levels regarding water resources in the state.*

**Response:** The development of regional water plans includes numerous public meetings, hearings, and public comment processes that are all subject to the Texas Open Meetings Act. The TWDB's release of the 2017 Interactive State Water Plan website, as a component of the 2017 State Water Plan, is an effort to increase public transparency and make the state water plan data easily accessible to the public. No changes have been made in response to this comment.

***Comment:** Wilson County Water commented that they object to the Region L component of the 2017 State Water Plan because: public comment was mischaracterized and ignored by the Region L planning group; the 2016 Region L Regional Water Plan did not represent a consensus; and, that the Region L planning group is weighted toward larges users and water purveyors.*

**Response:** 31 TAC §357.11 specifies the requirements of interest group categories that must be represented on the regional water planning groups. The TWDB encourages that at least one member of each interest category be a voting member at the time of the regional water plan adoption; however TWDB does not have authority to regulate planning group membership or how it addresses temporary membership vacancies or how it makes decisions. The development of regional water plans includes numerous public meetings, public hearings, and public comment processes that are all subject to the Texas Open Meetings Act. The Region L Regional Water Planning Group considered all public comments received, as summarized in Volume I, Appendix O of the adopted 2016 Region L Regional Water Plan, which was approved by the TWDB on December 14, 2015, and was found to comply with all applicable statute and rules. No changes have been made in response to this comment.

## **Policy recommendations**

***Comment:** The Chair of the Region C Regional Water Planning Group commented that the 2016 Region C Regional Water Plan recognized actions taken by sponsors of unique reservoir sites that satisfy the requirements under TWC §16.051(g-1) for continued designation of those sites as unique for reservoir construction; that no further legislative action is required to sustain the associated site designations; and, that, accordingly, the Lake Ralph Hall, Lower Bois d'Arc Creek Reservoir, Marvin Nichols Reservoir, Lake Tehuacana, and Lake Fastrill Reservoir sites should not be recommended in the plan for designation as unique by the Texas Legislature.*

**\*Response:** The Lake Ralph Hall, Lower Bois d'Arc Creek Reservoir, Marvin Nichols Reservoir, Lake Tehuacana, and Lake Fastrill Reservoir sites have been removed from unique reservoir site policy recommendations in the Executive Summary and Chapter 2. Additionally, the reservoirs have been removed from the associated figure showing locations of reservoirs sites that are recommended for unique designation by the Texas Legislature.

***Comment:** The City of Abilene commented that the City has taken action to pursue water rights for the Cedar Ridge Reservoir project, including feasibility and impact evaluations and other federal and state permitting activities, which meet the requirements under TWC §16.051(g-1) to maintain the unique reservoir site designation for Cedar Ridge Reservoir. The City states that a re-designation or further action by the Texas Legislature regarding the Cedar Ridge Reservoir site is not necessary.*

**\*Response:** The Cedar Ridge Reservoir has been removed from unique reservoir site policy recommendations in the Executive Summary and Chapter 2. Additionally, the reservoir has been removed from the associated figure showing locations of reservoirs sites that are recommended for unique designation by the Texas Legislature.

***Comment:** The City of Marlin commented that the City has taken actions that are legally sufficient to maintain the designation of the Brushy Creek Reservoir project as a unique reservoir site pursuant to TWC §16.051(g-1) without the need for further action by the Texas Legislature. The City indicated that it has obtained a water right permit from the Texas Commission on Environmental Quality, acquired land for the reservoir, and completed engineering and legal studies. The City does not believe that it is necessary for the Texas Legislature to re-designate the Brushy Creek Reservoir site, and requested that the state water plan reflect that the City believes they have taken sufficient action to maintain the designation under Texas Water Code §16.051(g-1).*

**\*Response:** The Brushy Creek Reservoir has been removed from unique reservoir site policy recommendations in the Executive Summary and Chapter 2. Additionally, the reservoir has been removed from the associated figure showing locations of reservoirs sites that are recommended for unique designation by the Texas Legislature.

***Comment:** The Palo Pinto County Municipal Water District No. 1 commented that the district has moved forward and been successful with permitting of the Turkey Peak Reservoir project. Accordingly, the Palo Pinto County Municipal Water District No. 1 requested that the TWDB not recommend the Turkey Peak Reservoir site for designation as a unique reservoir site in the water plan.*

**\*Response:** The Turkey Peak Reservoir has been removed from unique reservoir site policy recommendations in the Executive Summary and Chapter 2. Additionally, the reservoir has been removed from the associated figure showing locations of reservoirs sites that are recommended for unique designation by the Texas Legislature.

**Comment:** *The Tarrant Regional Water District commented that the sponsors of five of the Region C reservoirs that were previously designated as unique by the legislature, including the Tehuacana Reservoir site, have taken actions that meet the requirements under TWC §16.051(g-1) to sustain the unique reservoir site designations and that the associated sponsor actions are documented in the 2016 Region C Regional Water Plan. The Tarrant Regional Water District requested that the TWDB not pursue any additional legislative action regarding reservoir sites located within Region C that have been previously designated by the Texas Legislature as unique reservoir sites.*

**\*Response:** The Tehuacana Reservoir has been removed from unique reservoir site policy recommendations in the Executive Summary and Chapter 2. Additionally, all five of the reservoir sites associated with Region C, including Tehuacana Reservoir, have been removed from the associated figure showing locations of reservoirs sites that are recommended for unique designation by the Texas Legislature.

**Comment:** *The Texas Farm Bureau commented that they oppose the State Water Plan's identification of unique reservoir sites; that such designations can negatively impact landowners' property values and infringe on their ability to sell and/or develop land; that unique reservoir designations are ineffective at accomplishing the intended goal; and, that it is not the intent of the legislature to preserve the designated sites that lost their unique designation on September 1, 2015, indefinitely.*

**Response:** Reservoir site protection is important to meeting the state's future water supply needs throughout and beyond the current planning horizon. Pursuant to TWC §16.053(e)(6) and 31 TAC §357.43, regional water planning groups are required to identify sites of unique value for construction of reservoirs that the planning group recommends for protection. Texas Water Code §16.051(e) also requires that the state water plan identify sites of unique value for the construction of reservoirs that the TWDB recommends for protection. Designation of a unique reservoir site does not prohibit the ongoing use of or further development of the associated land by private interests. Based on all comments received on the water plan, none of the three sites of unique value for the construction of reservoirs being recommended in the state water plan were previously designated by the Texas Legislature. No changes have been made in response to this comment.

**Comment:** *Texas Parks and Wildlife Department endorses the draft plan's recommendation of five river or stream segments of unique ecological value.*

**Response:** The TWDB appreciates this comment.

## Water demand projections

**Comment:** *The Central Texas Water Coalition suggested developing a uniform metric for the surface water component of the irrigation water use category; that the metric should decline over time due to efficiency gains; and, that the methodology should account for real world constraints.*

**Response:** The irrigation water demands in the current water plan considered historical surface water use. The TWDB has recently hired a consultant to conduct an external peer review of the methodologies used to develop electric power generation, manufacturing, and irrigation projections for state water planning. If the peer review and subsequent stakeholder input identify specific improvements to a methodology(ies) that can be implemented by the TWDB, it is anticipated that the improved methodology will be used to develop projections for the 2017-2021 regional water planning cycle on which the 2022 State Water Plan will be based. No changes have been made in response to this comment.

***Comment:** The Central Texas Water Coalition commented that regional and state water plans should apply uniform standards for measuring and reporting water use among all water user groups so that data can be clearly explained, easy to calculate, consistent, and can be compared including calculations of municipal gallons per capita per day.*

**Response:** TWDB collects water use data in a consistent manner for all water users in each water use survey category. Municipal water demands developed for all municipal water user groups in the regional and state water plans were projected by TWDB using a consistent methodology for calculating gallons per capita per day based on historical annual water use reported to TWDB. No changes have been made in response to this comment.

***Comment:** Environmental Defense Fund indicated that water needs for the steam-electric water user group are over-estimated in multiple planning decades and requests the TWDB factor the trend of clean energy growth in Texas into its future state water plans.*

***Comment:** The Texas Center for Policy Studies commented that the steam electric power projections are too high and that demand will likely fall, not rise.*

***Comment:** Sierra Club requested that the plan acknowledge that steam electric power needs will be declining in the future, not increasing.*

**Response:** The TWDB has recently hired a consultant to conduct an external peer review of the methodologies used to develop electric power generation, manufacturing, and irrigation projections for state water planning. The review includes consideration of ways to better estimate future power generation demands and associated water demands. This process will require developing updated estimates of the future mix of power generation facilities, including the relative share associated with clean energy. If the peer review and subsequent stakeholder input identify specific improvements to a methodology(ies) that can be implemented by the TWDB, it is anticipated that the improved methodology will be used to develop projections for the 2017-2021 regional water planning cycle on which the 2022 State Water Plan will be based. No changes have been made in response to these comments.

***Comment:** Environmental Defense Fund commented that: they would like to see energy-water issues included in the 2017 and future state water plans; they recommend that strategy evaluations for highly energy intensive strategies such as those that use groundwater and seawater desalination should include an evaluation of energy and water intensity; and, a more*

*comprehensive approach towards the energy-water nexus could enable statewide improvements in both energy and water demand.*

**Response:** The costs of water management strategies in the plan include energy costs associated with development of water, conveyance of water, and treatment of water supply. The estimated costs, including energy costs, of water management strategies, as well as any other factors deemed relevant by the planning groups (31 TAC §357.34(d)) are considered when recommending water management strategies. Planning rules do not require that regional water planning groups perform a separate evaluation of energy intensity. No changes have been made in response to this comment.

*Comment: Freese and Nichols Inc. commented that water demands and supplies associated with purely saline supplies, including seawater use along the coast, are generally excluded from regional and state water plans and requested that the plan note this exclusion.*

**\*Response:** A statement has been included at the end of the Chapter 5 “water demand projections” section and a footnote will be added to the appropriate groundwater and surface water existing supply summary tables and charts in Chapter 6 and Appendix B.

*Comment: One individual commented that the draft plan may not encompass plans being made by Chevron related to hydraulic fracturing.*

**Response:** Mining demand projections in the draft 2017 State Water Plan are based on the 2012 Bureau of Economic Geology report “Oil and gas water use in Texas – Update to the 2011 mining water use report”, which included an updated estimate of current and future mining water use in response to the changes occurring in the oil and gas industry. Regional water planning groups may request revisions to water demand projections at any time based on local information and amend their plan accordingly. No changes have been made in response to this comment.

*Comment: No Colorado Dam Inc. commented that projected demand in the 2017 State Water Plan is understated for domestic and livestock uses, and that there is justification for a separate category for this class of users.*

**Response:** There are six water use categories specified in 31 TAC §357.31 for which TWDB develops water demand projections including municipal, manufacturing, irrigation, steam electric power generation, mining, and livestock, which are all considered consumptive uses. Domestic and livestock demands are both included, albeit separately, in the water plan projections. Aggregated rural water demand is categorized under a sub-set of municipal water demands referred to as “county-other” for planning purposes and includes these domestic uses. Detailed projections for the county-other and livestock water user groups can be found on the 2017 Interactive State Water Plan website. Estimates of county-other and livestock water demands are considered reasonable for planning purposes. No changes have been made in response to this comment.

*Comment: Save our Springs (and The League of Independent Voters of Texas and Neighbors for Neighbors, Inc.) commented that the plan overestimates municipal water demand.*

**Response:** To estimate total municipal water demands, the TWDB multiplied the projected per capita water use during a historical dry year by the projected populations. The per capita water use is based on annual Water Use Survey data for each water user group. The municipal water demand projections are considered a reasonable estimate of water demands under drought conditions. No changes have been made in response to this comment.

***Comment:** Sierra Club requested that the plan include more explanation for the basis of the calculation of gallons per capita per day (gpcd) that is compared to the statewide goal of 140 gpcd including the role of industrial water use.*

**\*Response:** The calculation in the draft plan was based on dividing the total statewide municipal demand by the total population and, for 2070 only, also subtracting future municipal conservation strategy volumes. We acknowledge that the gpcd calculation did not include the volumes associated with some industrial water sales by municipalities that the 2004 Water Conservation Implementation Task Force (WCITF) gpcd includes, which would result in an increase of the calculated gpcd. We also note that the calculation of gpcd in the plan did not exclude the volumes of municipal non-potable uses or existing reuse supplies which the WCITF gpcd excludes, which would, in contrast, decrease this calculated gpcd. The calculation in the plan also did not reduce the calculated 2070 gpcd by removing the future reuse supply volumes associated with recommended strategies. The calculation has been refined to more closely align it with the WTCIF methodology which results in adjusted 2020 and 2070 gpcds of 163 and 124 gallons per capita per day, respectively. The associated description in Chapter 8 has been rewritten to reflect these adjusted values and to more clearly explain the basis for the calculations.

***Comment:** The Texas Center for Policy Studies requested that TWDB add a statement to the plan that the steam electric power generation projections are based on evaluations made in 2003 that did not contemplate the changes that have occurred and are expected to occur over the next 50 years in electric power generation and also recommends that the next planning cycle focus more attention on supplies and demands for electric power generation. The Sierra Club commented that they support the Texas Center for Policy Studies comments questioning the basis for the steam electric demand projections.*

**Response:** The steam electric power projections in the plan are not based on evaluations made in 2003. The steam electric projections are based upon the 2008 “Water Demand Projections for Power Generation in Texas” report, which is cited in Chapter 5 as the basis for steam electric demand projections. This 2008 report, and subsequent adjustments based on plant announcements, retirements, and regional input did incorporate updated information to the steam electric power demands that were then used in the plans. No changes have been made in response to these comments.

***Comment:** The Texas Center for Policy Studies recommended that TWDB should engage experts to evaluate current use and supplies for steam electric power generation to determine how the TWDB surveys this sector and work with TCEQ to improve its water rights use reporting, that TWDB should require all regional water planning groups to start over on demand and supply*

*projections for power generation instead of using existing projections, and that TWDB could encourage the use of low water use electric power generation by supporting low interest loans for these technologies.*

**Response:** The TWDB surveys power generation facilities annually to collect water use data that assists in the development of planning water use projections. The current methodology for estimating annual water use in power generation is available on the TWDB website. The TWDB has recently hired a consultant to conduct an external peer review of the methodologies used to develop electric power generation projections for state water planning. If the peer review and subsequent stakeholder input identify specific improvements to the methodology that can be implemented by the TWDB, it is anticipated that the improved methodology will be used to develop projections for the 2017-2021 regional water planning cycle on which the 2022 State Water Plan will be based. Working with the Texas Commission on Environmental Quality to improve its water rights use reporting addresses an issue that is not within the 2017 State Water Plan's scope, which is established in TWC §16.051. The TWDB is not authorized under statute to fund power generation facilities. No changes have been made in response to this comment.

***Comment:** The Texas Conservation Alliance recommended improving the water planning process for economically efficient water development, including: updating the water demand projections of steam-electric power to reflect the recent and anticipated changes in power generation and changing the methodology for developing manufacturing water demand projections to more accurately reflect those demands.*

**Response:** The TWDB has recently hired a consultant to conduct an external peer review of the methodologies used to develop electric power generation, manufacturing, and irrigation projections for state water planning. If the peer review and subsequent stakeholder input identify specific improvements to a methodology(ies) that can be implemented by the TWDB, it is anticipated that the improved methodology will be used to develop projections for the 2017-2021 regional water planning cycle on which the 2022 state water plan will be based. No changes have been made in response to this comment.

***Comment:** The Texas Conservation Alliance commented that for planning purposes, consumptive and non-consumptive water use should be evaluated separately.*

***Comment:** The Central Texas Water Coalition commented that RWPGs should recognize the importance of non-consumptive water uses including maintaining minimum lake levels.*

**Response:** There are six water use categories specified in 31 TAC §357.31 for which TWDB develops water demand projections including municipal, manufacturing, irrigation, steam electric power generation, mining, and livestock, which are all considered consumptive uses. Non-consumptive uses are not considered demands in regional and state water plans, however planning groups may choose to include in the regional water plans discussion of issues such as non-consumptive uses and, when evaluating water management strategies, planning groups may consider factors deemed relevant by the planning group including recreational impacts pursuant to 31 TAC §357.34(d)(10). No changes have been made in response to these comments.

## Climate

**Comment:** *Environmental Defense Fund commented that there is no indication that robust climate models were used systematically across regions in the development of regional water plans.*

**Response:** Water demands, water supplies, water needs, and water management strategies were evaluated under drought of record conditions in accordance with regional and state water planning rules (31 TAC §357.34(d)). Planning groups may also address uncertainty and risks, for example, to address a drought worse than the drought of record, when developing their plans. No changes have been made in response to this comment.

**Comment:** *Central Texas Water Coalition suggested adding a section to the plan that discusses climate-related differences, drivers, and impacts within a region.*

**Response:** Regional and state water planning rules do not require regional water plans or the state water plan to include descriptions of climate by region. The new drought chapter (Chapter 3) of the state water plan discusses drought and climate in Texas. No changes have been made in response to this comment.

## Water availability models

**Comment:** *No Colorado Dam Inc. commented that it is unreasonable to assume that water rights holders would divert 100 percent of their water right under drought conditions and that actual needs and supply numbers for the City of Goldthwaite appear inconsistent with modeling projections and recommends statically validating the model using past projections with documented numbers.*

**Response:** The assumption that water right holders will attempt to divert their full water right amount is in accordance with Texas' prior appropriation doctrine but does not guarantee that under those conditions the full amount of water will be available to a water right holder. The regional and state water plans were developed in accordance with existing surface water rights laws and regulations. The water supplies and water needs of the City of Goldthwaite were evaluated in accordance with planning rules by the regional water planning group. No changes have been made in response to this comment.

## Environmental flows

**Comment:** *Sierra Club commented that environmental flow needs should be considered a water need in the regional and state water planning process, as municipal, industrial, agricultural, and other needs are identified, and strategies to meet environmental flow needs should be evaluated and recommended, as strategies to meet those other needs are evaluated and recommended.*

**Response:** There are six water use categories specified in 31 TAC §357.31 for which TWDB develops water demand projections including municipal, manufacturing, irrigation, steam electric

power generation, mining, and livestock, and for which needs are identified and water management strategies recommended. Environmental uses are not considered by the rule as a water user group. Environmental factors and other factors deemed relevant by the regional water planning groups (e.g., recreation) are considered when evaluating plan strategies. TWDB rules (31 TAC §358.3(22)) require that environmental flow standards adopted by the Texas Commission on Environmental Quality must be accommodated by recommended strategies in the regional water plans, where applicable, or in basins where standards are not available or have not been adopted, information from existing site-specific studies or state consensus environmental planning criteria are used. Implementation of all projects must comply with any permitting requirements related to the environment. No changes have been made in response to this comment.

***Comment:** The Texas Center for Policy Studies provided a recommendation that TWDB should advise regional water planning groups and the Legislature of the opportunities to address environmental water needs with some surplus waters from steam electric power generation facilities.*

**Response:** There are six water use categories specified in 31 TAC §357.31 for which TWDB develops water demand projections including municipal, manufacturing, irrigation, steam electric power generation, mining, and livestock, and for which needs are identified and water management strategies recommended. Environmental uses are not considered by the rule as a water user group. Environmental factors and other factors deemed relevant by the regional water planning groups (e.g., recreation) are considered when evaluating plan strategies. The TWDB encourages the commenter to direct their recommendation to regional water planning groups. No changes have been made in response to this comment.

***Comment:** Texas Parks and Wildlife Department requested that the plan explain that the environmental flow standards adopted by TCEQ balance water supply needs with those of the environment.*

**\*Response:** Clarifying language has been added to the section of the plan in Chapter 6 that discusses environmental flow standards including to explain that environmental flow standards balance uses and that other approaches were previously used for the same purpose.

## Desired future conditions

***Comment:** Texas Parks and Wildlife Department commented that adopted desired future conditions for most aquifers in Texas do not address protection of springs or groundwater surface water interaction and would like to see desired future conditions adopted to protect these important features and resources.*

**Response:** Desired future conditions are defined by participating groundwater conservation districts within a groundwater management area as part of the groundwater joint planning process. Desired future conditions established after September 2011 are required to consider other environmental impacts, including impacts on spring flow and other interactions between

groundwater and surface water, pursuant to TWC §36.108. No changes have been made in response to this comment.

**Comment:** *Wilson County Water commented that they object to the Region L component of the 2017 State Water Plan because sustainability of the Carrizo-Wilcox Aquifer is threatened by the number and scope of projects in the plan that do not conform to statute regarding desired future conditions and that have zero firm yield, and that local control of groundwater resources is challenged by the Region L plan.*

**Response:** The TWDB does not have authority to regulate aquifers or groundwater production. That responsibility remains the purview of local groundwater conservation districts that are responsible for issuing groundwater production permits. The TWDB performed a detailed, statewide accounting of water assigned in all the regional water plans and determined that the recommended water management strategies in the regional water plans and state water plan do not over allocate any water sources. Whether a project is in a regional or state water plan or not, it must adhere to any federal, state, or local statutes and permitting requirements. No changes have been made in response to this comment.

## Recommended water management strategies and water management strategy projects

**Comment:** *The Central Texas Water Coalition commented that regional and state water plans should include water management strategies that go beyond the strategies identified in previous plans, and include water pricing as a demand management strategy, as a separately listed strategy, and that the TWDB should provide guidance on water pricing as a strategy and encourage RWPGs to specifically address water pricing for all water users.*

**Response:** The recommendation of water management strategies, including those associated with conservation pricing measures, are made by regional water planning groups. By its approval of each of the regional water plans, the TWDB has included all water management strategies and water management strategy projects recommended by the planning groups in the 2017 State Water Plan. The TWDB encourages the commenter to direct their recommendations regarding water pricing to regional water planning groups. No changes have been made in response to this comment.

**Comment:** *The Chair of the Region C Regional Water Planning Group commented that the Toledo Bend project is shown in the state water plan as online in 2070 but that the 2016 Region C Regional Water Plan shows the project coming online in 2060, and this change to the 2060 decade was precipitated by the Mediation Agreement Resolving the Conflict between Regions C and D.*

**\*Response:** The TWDB notes that the project online dates included in the approved 2016 Region C Regional Water Plan that begin on page U.123 indicate that the online date of the Toledo Bend project is 2070. However, because the online date was intended to be changed in a manner that is related to the mediation agreement and the modified online date of 2060 was

actually included in another location in the approved 2016 Region C Regional Water Plan, the online date, and associated strategy volume, of that one project will be modified in the state water plan accordingly. The changes may impact the Chapters 4 and 8 water management strategy summaries related to the timing of capital costs and water volumes.

**Comment:** *The Farm & Ranch Freedom Alliance, the League of Independent Voters of Texas (and Neighbors for Neighbors, Inc.), and Save Our Springs commented that they oppose the Vista Ridge Pipeline and related integration projects.*

**Comment:** *One individual commented that they oppose planning for the Hays County Facilities Expansion project.*

**Comment:** *One individual commented that they oppose the Cibolo Valley Local Government Corporation Wilson County Carrizo project, the Schertz-Seguin Local Government Corporation Expanded Carrizo project, and the Schertz-Seguin Local Government Brackish Wilcox Expansion project.*

**Comment:** *One individual commented that they oppose building the Marvin Nichols Reservoir and that there are other options Texas can use to meet future water supplies.*

**Comment:** *One individual commented that rainwater systems are much less expensive and more efficient than desalination and pipelines.*

**Comment:** *The League of Independent Voters of Texas (and Neighbors for Neighbors, Inc.) commented that its members are opposed to any hugely expensive projects that involve reservoirs or mass movement of water until we do a better job of reducing demand through conservation.*

**Comment:** *Save our Springs (and The League of Independent Voters of Texas and Neighbors for Neighbors, Inc.) urges the TWDB to consider more innovative solutions to water needs including to first reduce demand.*

**Response:** The recommendation of water management strategies and water management strategy projects are made by regional water planning groups, which are required to consider a variety of types of water management strategies and evaluate each potentially feasible strategy under specific criteria including cost, quantity, reliability, and impacts on environmental, agricultural, and other water resources, pursuant to 31 TAC §357.34. The decision whether to recommend a particular water management strategy or water management strategy project lies with the regional water planning groups and not with the TWDB. By its approval of each of the regional water plans, the TWDB has included all water management strategies and water management strategy projects recommended by the planning groups in the 2017 State Water Plan. The TWDB encourages commenters to direct their concerns on water management strategies to regional water planning groups. No changes have been made in response to these comments.

**Comment:** *One individual commented that with the states' projected population growth, conservation without building new lakes will not solve Texas' future water problems and needs.*

**Response:** The recommendation of water management strategies and water management strategy projects are made by regional water planning groups. By its approval of each of the regional

water plans, the TWDB has included all water management strategies and water management strategy projects recommended by the planning groups in the 2017 State Water Plan. Water management strategies recommended in this plan include the development of 26 new major reservoirs that would provide water to 12 of the 16 regional water planning areas. No changes have been made in response to this comment.

***Comment:** One individual commented that the draft 2017 State Water Plan does not include specific water management strategies.*

**Response:** Specific recommended water management strategies and water management strategy projects may be found on the 2017 Interactive State Water Plan website which is integral to the state water plan. No changes have been made in response to this comment.

***Comment:** The League of Independent Voters of Texas (and Neighbors for Neighbors, Inc.) commented that the water plan “reads like a wish list.”*

**Response:** The recommendation of water management strategies and water management strategy projects are made by regional water planning groups, which are required to consider a variety of types of water management strategies and evaluate each potentially feasible strategy under specific criteria including cost, quantity, reliability, and impacts on environmental, agricultural, and other water resources, pursuant to 31 TAC §357.34. The decision whether to recommend a particular water management strategy or water management strategy project lies with the regional water planning groups and not with the TWDB. By its approval of each of the regional water plans, the TWDB has included all water management strategies and water management strategy projects recommended by the planning groups in the 2017 State Water Plan. Additionally, the inclusion of a recommended water management strategy or project in a 50-year plan does not offer any guarantee that the strategy or project will be implemented. No changes have been made in response to this comment.

***Comment:** Save our Springs (and The League of Independent Voters of Texas and Neighbors for Neighbors, Inc.) commented that the planning process doesn’t balance the needs of ecosystems, communities, and future generations and includes a “wish-list” of projects, many of which are not vetted before being recommended and are not supported by communities at the supply point.*

**Response:** The decision whether to recommend a particular water management strategy or water management strategy project lies with the regional water planning groups and not with the TWDB. By its approval of each of the regional water plans, the TWDB has included all water management strategies and water management strategy projects recommended by the planning groups in the 2017 State Water Plan. Recommended water management strategies in the regional water plans met planning requirements which included consideration of strategy costs, impacts on water quality, quantification of impacts to environmental factors, and third-party social and economic impacts resulting from voluntary redistributions of water including analysis of third-party impacts of moving water from rural and agricultural areas, and other factors deemed relevant by the planning groups per 31 TAC §357.34(d). Additionally, the inclusion of a recommended water management strategy or project in a 50-year plan does not offer any

guarantee that the strategy or project will be implemented. No changes have been made in response to this comment.

**Comment:** *Save our Springs (and The League of Independent Voters of Texas and Neighbors for Neighbors, Inc.) commented that the Vista Ridge water pipeline and integration projects may over allocate the source based on current contracts and uses water from a different region and that the projects will discourage conservation, place an unnecessary burden on tax payers, and violate local groundwater pumping standards.*

**Response:** The TWDB does not have authority to regulate aquifers or groundwater production. That responsibility remains the purview of local groundwater conservation districts that are responsible for issuing groundwater production permits. The TWDB performed a detailed, statewide accounting of water assigned in all the regional water plans and determined that the recommended water management strategies in the regional water plans and state water plan do not over allocate any water sources. The recommendations of water management strategies and water management strategy projects that are part of regional and the state water plan are made by regional water planning groups and are not limited to any specific geographic area. If implemented, projects must adhere to all applicable federal, state, or local permitting requirements. No changes have been made in response to this comment.

**Comment:** *Save our Springs (and The League of Independent Voters of Texas and Neighbors for Neighbors, Inc.) commented that the plan does not include the “hidden costs” of large projects including energy and other operation and maintenance costs required to pump and treat water supply and wastewater.*

**Response:** The costs associated with water management strategies, including capital costs associated with construction, and operation and maintenance costs, which include energy costs, must be quantified and reported in the plans. Costs associated with development of water, conveyance of water, and treatment of water supply at the water user group level must be estimated and are calculated as unit costs of water per acre-foot per year that include annual cost of debt service. The estimated costs of strategies are considered by planning groups when recommending water management strategies. In accordance with planning rules (31 TAC §357.34(d)(3)(a)), the plans do not include retail distribution within a water user group and do not include the costs associated with wastewater collection or treatment. No changes have been made in response to this comment.

**Comment:** *Save our Springs (and The League of Independent Voters of Texas and Neighbors for Neighbors, Inc.) commented that the plan does not calculate the risks that the most expensive projects in the plan will fail when they are needed the most, during a drought worse than the drought of record.*

**Response:** The regional and state water plans were developed to serve as long-term water supply plans under drought of record conditions in accordance with statute (TWC §16.051(a)) and planning rules (31 TAC §358.3(2)). Recommended strategies included both demand management and additional water supply. Some regional water planning groups chose to

consider and address conditions worse than the drought of record when developing their plans. No changes have been made in response to this comment.

**Comment:** *Sierra Club commented that they appreciated that there were more drought management water management strategies recommended than in the previous state water plan but disapproved of the plan's explanation for why more planning groups did not also recommend drought management strategies in their plans.*

**Comment:** *The Farm and Ranch Freedom Alliance commented that there should be a greater emphasis on demand management in the state water plan.*

**Comment:** *The Save our Springs (and The League of Independent Voters of Texas and Neighbors for Neighbors, Inc.) commented that the plan does not include enough drought management.*

**\*Response:** The explanation in Chapter 3 for why planning groups often did not recommend drought management strategies was accurate but incomplete. Additional language has been added to further explain why drought management was not often considered feasible by regional water planning groups or was not recommended. The decision whether to recommend a particular water management strategy or water management strategy project lies with the regional water planning groups and not with the TWDB. By its approval of each of the regional water plans, the TWDB has included all water management strategies and water management strategy projects recommended by the planning groups in the 2017 State Water Plan.

**Comment:** *The Farm and Ranch Freedom Alliance commented that the demand management approach exemplified by Wichita Falls should be instituted statewide and not left to the local government's decision.*

**Response:** Neither the TWDB nor the regional water planning groups have authority to mandate the implementation of drought contingency measures. Drought contingency plans, which are subject to Texas Commission on Environmental Quality requirements, are implemented at the local level. In the case of Wichita Falls, their recent reliance on demand management was actually in response to a drought worse than the drought of record on which their associated regional water plan was based. No changes have been made in response to this comment.

**Comment:** *Save our Springs (and The League of Independent Voters of Texas and Neighbors for Neighbors, Inc.) commented that over planning puts fish and wildlife at risk due to the potential for de-watering our aquifers and rivers for unneeded projects.*

**Response:** Environmental factors and other impacts deemed relevant by the regional water planning groups (e.g., recreation) are considered when evaluating plan strategies. TWDB rules (31 TAC §358.3(22)) require that environmental flow standards adopted by the Texas Commission on Environmental Quality be accommodated by recommended water management strategies in the regional water plans, where applicable. In basins where standards are not available or have not been adopted, information from existing site-specific studies or state consensus environmental planning criteria are used.

Modeled available groundwater (groundwater availability) is determined from desired future conditions, which are defined by participating groundwater conservation districts within a groundwater management area as part of the groundwater joint planning process. Desired future conditions established after September 2011 are required to consider other environmental impacts, including impacts on spring flow and other interactions between groundwater and surface water, pursuant to TWC §36.108. Modeled available groundwater volumes are based on the desired future conditions and provide the basis for groundwater availability that must be used by regional water planning groups under planning rules.

Implementation of all projects must comply with any permitting requirements related to the environment. Neither the TWDB rules nor statute prohibit recommended water management strategies that, if implemented, may provide water volumes in excess of projected needs. The new “management supply factor” that is now required to be calculated and reported for each water user group, as required under 31 TAC §357.35(g), provides information regarding how much water supply each water user group has been assigned. This new information may support dialogue within a planning group regarding how best to balance recommendations for additional supplies with various risks and uncertainties. No changes have been made in response to this comment.

***Comment:** Sierra Club commented that the 2017 State Water Plan advances water conservation, but that conservation should and could play a more prominent role in addressing future water demands than it does in the plan; the TWDB should be more pro-active in encouraging regional water planning groups to take advantage of updated best management practices for water conservation; that the TWDB should make the planning groups aware of new initiatives such as the PACE (Property Assessed Clean Energy) opportunity to fund energy and water efficiency improvements; and, that the TWDB should encourage planning groups to recommend more conservation strategies.*

***Comment:** The Save our Springs (and The League of Independent Voters of Texas and Neighbors for Neighbors, Inc.) commented that the plan does not include enough conservation.*

**Response:** The TWDB supports all conservation efforts and will continue to make an effort to disseminate relevant conservation information to planning groups for their consideration. Planning rules (31 TAC §357.34(f)) require that regional water planning groups consider water conservation practices, including best management practices, for each identified water need. If water conservation strategies are not recommended to meet an identified need, the planning group had to document the reason why. As long as regional water planning groups meet the planning requirements, the decision to recommend conservation strategies lies with the planning group. No changes have been made in response to these comments.

***Comment:** Sierra Club commented that they are concerned that recommended water management strategies in some regions provide a volume of water that is far in excess of the estimated water needs. Sierra Club cites this occurrence in several regions, primarily in Region H.*

**Comment:** *Save our Springs (and The League of Independent Voters of Texas and Neighbors for Neighbors, Inc.) commented that the recommended water management strategies would provide far more water than needed because of over planning.*

**Response:** The recommendation of water management strategies and water management strategy projects are made by regional water planning groups. As long as the potentially feasible water management strategies are evaluated in compliance with the specific criteria listed in 31 TAC §357.34, including cost, quantity, reliability, and impacts on environmental, agricultural, and other water resources; the decision whether to recommend a particular water management strategy or water management strategy project lies with the regional water planning groups. Neither the TWDB rules nor statute prohibit recommended water management strategies that, if implemented, may provide water volumes in excess of projected needs. Additionally, the inclusion of a recommended water management strategy or project in a 50-year plan does not offer any guarantee that the strategy or project will be implemented. The new “management supply factor” that is now required to be calculated and reported for each water user group, as required under 31 TAC §357.35(g), provides information regarding how much water supply each water user group has been assigned. This new information may support dialogue within a planning group regarding how best to balance recommendations for additional supplies with various risks and uncertainties, for example, including that some projects may not be permitted or implemented. The TWDB performed a detailed, statewide accounting of water assigned in all the regional water plans and determined that the recommended water management strategies in the regional water plans and state water plan do not over allocate any water sources. No changes have been made in response to these comments.

**Comment:** *Texas Parks and Wildlife Department commented that aquatic invasive and exotic species adversely affect current and future water management supplies, and recommends that transport from water bodies where these species are known to occur should be avoided.*

**Response:** The TWDB encourages the commenter to direct their recommendation on aquatic invasive and exotic species to regional water planning groups. No changes have been made in response to this comment.

## Rainwater harvesting

**Comment:** *Two individuals commented that rainwater harvesting was mischaracterized in the draft 2017 State Water Plan and that, for example, water supplies from rainwater harvesting as a water management strategy can be accurately quantified and requested that the description of rainwater harvesting be reconsidered.*

**\*Response:** The Chapter 8 sections referring to rainwater harvesting have been modified to more accurately describe rainwater harvesting as a strategy.

**Comment:** *Three individuals commented that rainwater harvesting is not given enough attention in the draft plan, and that the TWDB appears to not seriously consider rainwater harvesting as a water management strategy.*

**Response:** Rainwater harvesting is a potentially feasible water management strategy that regional water planning groups may consider, pursuant to 31 TAC §354.34. The recommendation of water management strategies and water management strategy projects are made by regional water planning groups. The decision whether to recommend a particular water management strategy or water management strategy project lies with the regional water planning groups and not with the TWDB. By its approval of each of the regional water plans, the TWDB has included in the 2017 State Water Plan all water management strategies and water management strategy projects recommended by the planning groups. Based on the water management strategies recommended by the planning groups, the volume of water from recommended rainwater harvesting strategies, about 17,000 acre-feet per year, provides approximately 0.2 percent of the total volume of recommend strategies. The state water plan does not attempt to emphasize any one technology over another, but generally reports strategy information in proportion to its relative volume in the plan. Similar to other types of strategies, rainwater harvesting is briefly mentioned in the water management strategy descriptions. The TWDB will continue to promote rainwater harvesting, for example, through the annual Texas Rain Catcher Awards. No changes have been made in response to these comments.

**Comment:** *One individual commented that they presented a proposal at a Region K Regional Water Planning Group meeting that was a request for Region K and the TWDB to create a “Rainwater Initiative Fund – the Rain Fund.”*

**Response:** This comment addresses an issue that is not within the 2017 State Water Plan’s scope, which is established in TWC §16.051. No changes have been made in response to this comment.

## Unmet needs

**Comment:** *The Farm and Ranch Freedom Alliance commented that the draft 2017 State Water Plan “makes agriculture the loser,” because irrigation represents the vast majority of unmet needs in the plan; that it’s unclear whether livestock needs will be met; that the plan presents these shortfalls as a matter of technological and financial feasibility; and, that this reflects a decision to value urban interests over rural interest.*

**Response:** Unmet irrigation needs exist in the plan because the regional water planning groups were not able to identify and recommend economically feasible water management strategies to fully meet those needs. A share of livestock needs in 2070 (32,000 acre-feet per year) are unmet by the plan in 2070 (21,000 acre-feet), representing approximately 6.5 percent of the total 2070 livestock demand of 325,000 acre-feet per year. An unmet need in a regional plan does not prevent an associated entity from pursuing development of additional water supplies. The decision whether to recommend a particular water management strategy or water management strategy project lies with the regional water planning groups and not with the TWDB. Each planning group consists of members that represent 12 statutorily required interest categories, including agriculture. Planning rules (31 TAC §357.34) require planning groups to consider conservation practices for each water user group with a need, including irrigation and livestock water user groups.

In the draft 2017 State Water Plan, the volume of water associated with recommended irrigation conservation strategies, including irrigation best management practices, is the second largest share of recommended strategies and accounts for approximately 16 percent of the total volume recommended water management strategies in 2070. Water user groups in 12 of the 16 regional water planning groups will rely on this type of strategy. No changes have been made in response to this comment.

**Comment:** *Freese and Nichols Inc. commented that unmet needs associated with Region H are a result of the use of modeled available water supplies during peak drought conditions and requested that the plan include additional explanatory language to acknowledge this issue and to indicate that Region H does not anticipate unmet municipal needs in practice.*

**\*Response:** A statement has been added to the Chapter 7 section addressing water needs not met by the plan to acknowledge that unmet municipal needs may, in practice, be significantly less, based on policy and regulatory decisions.

## Summary of regional water planning data

**Comment:** *The Chair of the Region C Regional Water Planning Group commented that the 2070 annual volume of recommended water management strategies shown in the state water plan is less than what is described in the 2016 Region C Regional Water Plan. They are concerned that the “reserve” volumes associated with larger projects developed by wholesale water providers, and that are not fully required or utilized in the early planning decades, are not reflected in the plan and that this could impact permitting or funding of projects.*

**\*Response:** The Executive Summary and Chapter 8 include language that notes the water management strategy volumes presented in the draft plan are directly associated with water user groups. There is also discussion in Chapter 8 regarding the assignment of strategy and project supply volumes that recognizes these types of reserve volumes. Language has been added to the Executive Summary and the Chapter 8 discussion of unassigned water to make it clear that the state water plan incorporates the full capacity of all strategies and projects that were recommended in the approved regional water plans.

**Comment:** *The Chair of the Region C Regional Water Planning Group commented that Table 7.4 in the state water plan only shows unmet municipal needs in 2070, however the Region C Regional Water Plan indicated an unmet need in both 2060 and 2070.*

**Response:** The approved 2016 Region C Regional Water Plan, pages U.179 and U.180, indicates that unmet municipal needs only occur in 2070. No change has been made in response to this comment.

**Comment:** *Freese and Nichols Inc. commented that the number of water management strategies in Table 8.1 does not match the state water planning database output tables and data from the 2017 Interactive State Water Plan site.*

**Response:** The count of water management strategies in the plan remains correct based on the intended approach of counting unique combinations of water management strategies and whole entities. No changes have been made in response to this comment.

*Comment: Freese and Nichols Inc. commented that it would be beneficial to add a footnote to Table 8.1 and other relevant tables and figures clarifying that the decadal values of water management strategy supply listed in Table 8.1 represents the volume allocated to water user groups.*

**\*Response:** The Executive Summary and Chapter 8 include language that notes the water management strategy volumes in the draft plan are directly associated with water user groups. There is discussion in Chapter 8 regarding the assignment of strategy and project supply volumes that refer to strategy reserve volumes. Language has been added to the Executive Summary and the Chapter 8 discussion of unassigned water to make clear that the state water plan incorporates all projects and strategies recommended in the approved regional water plans including their full capacities as shown in the regional water plans.

*Comment: Freese and Nichols Inc. commented that they believe there is an inconsistency in date standards for decadal time steps between the requirements applied to the regional water plans and what is presented in parts of the state water plan regarding the rounding of water management strategy online dates.*

**Response:** Some inconsistent interpretation between regions of how intra-decadal years would be grouped and summarized in the state water plan data does not impact the overall plan content. Detailed guidance regarding how intra-decadal years should be treated during the fifth cycle of regional water planning will be provided to the regional water planning groups to ensure greater consistency in the 2021 regional water plans. No changes have been made in response to this comment.

## Editorial corrections/additions

*Comment: The Central Texas Water Coalition commented that the discussion on groundwater management in Texas does not include recent case law and encouraged the TWDB to review the narrative portions of the plan and double-check factual and legal statements.*

**\*Response:** The draft 2017 State Water Plan has been thoroughly reviewed by agency staff. The state water plan is not intended to be either a comprehensive or authoritative review of Texas water law. This is particularly true for areas of groundwater law where on-going litigation may make any statement quickly out-of-date. Accordingly we have deleted references to specific court cases and have added a note about the dynamic nature of groundwater regulation in Texas to Appendix A.1.

*Comment: The Chair of the Region C Water Planning Group, Freese and Nichols Inc., and the Texas Parks and Wildlife Department provided corrections to misspellings.*

**\*Response:** The TWDB has revised the plan, where applicable.

***Comment:** Freese and Nichols Inc. commented that the values in Table 7.4 were rounded to different degrees and recommended presenting the values in Table 7.4 in either unrounded form or with uniform rounding.*

**\*Response:** The TWDB has revised this table to round all numbers in a uniform manner.

***Comment:** Texas Parks and Wildlife Department requested glossary definition additions and revisions for “estuary”, “instream flows”, “environmental flows”, and “firm yield”.*

**\*Response:** The TWDB has added a definition of environmental flows based on the Texas Commission on Environmental Quality’s terminology, which aligns with the agency’s environmental flow standards, and replaced the definition of estuary with an expanded definition. No changes were made to “firm yield”. The definition for firm yield is directly from 31 TAC §357.10(13).