



September 15, 2015

VIA E-MAIL TO [stacy.pandey@lcra.org](mailto:stacy.pandey@lcra.org)

Ms. Stacy Pandey, Region K Administrative Agent  
P.O. Box 220  
Austin, Texas 78767

Re: Comments on Lower Colorado Regional Water Planning Group (Region K)  
Initially Prepared Plan (IPP)

Dear Ms. Pandey:

On behalf of the Central Texas Water Coalition (CTWC), we appreciate the opportunity to provide the attached comments on the Initially Prepared Plan (IPP) drafted by the LCRWPG for the current regional water planning cycle. We also want to take this opportunity to thank all of the members of the LCRWPG who have spent so many hours putting together the IPP.

Many of our comments reflect the same theme: going forward, we believe the Region K Plan should place more emphasis on conservation by all user groups basin-wide. There is a great opportunity to reduce our water supply shortages by using water more carefully and investing in efforts to increase efficiency. Members of CTWC put a great deal of time and thought into these comments and thank you in advance for your review and consideration of them.

We are happy to answer any questions that members of the LCRWPG have regarding these comments and recommendations. Feel free to contact me at 512.755.4805.

Sincerely,

*Jo Karr Tedder*

Jo Karr Tedder, President  
Central Texas Water Coalition

cc: Mr. John Burke, LCRWPG Chair  
Ms. Jaime Burke, AECOM

Attachment: CTWC Comments on Region K IPP

# CTWC Comments on Region K IPP

September 15, 2015

## CHAPTER 1

**CONCERN 1:** Texas Water Development Board (TWDB) rules require that the regional water plan include a description of the regional water planning area including, among other things, social and economic aspects of a region such as information on current population, economic activity and economic sectors heavily dependent on water resources. This information belongs in Chapter 1. However, the in-depth description of the importance of Matagorda Bay is currently placed in Chapter 2, information about the impacts of rice farming is peppered throughout the IPP, and comprehensive information regarding the economic and social impacts of the Highland Lakes in Central Texas is lacking. Considering the enormous impacts of the Highland Lakes on the Central Texas economy, this omission must be remedied. To be complete and balanced, discussions of the economic and social aspects with respect to each of the three of the major Region K interests – Highland Lakes users, lower basin irrigators, and bay and estuary interests – should be included in Chapter 1.



**RECOMMENDATION 1:** In the Final Plan, move IPP Section 2.4.1, which is entitled “The Story/History of Matagorda Bay,” into a new appendix to Chapter 1. Add to Chapter 1 the attached suggested appendix entitled “The Highland Lakes: History and Social and Economic Importance.” These appendices can be described as “Background Information Provided by Interest Groups within Region K.”


In the IPP, references to the history, economics, and importance of agriculture and its water needs appear to be inserted and emphasized throughout the document, while other water users may not be mentioned. Rather than embarking on an extensive revision of the Plan’s text at this time, we encourage the LCRWPG to consolidate the information on the history and social and economic importance of agricultural irrigation that is now scattered throughout the IPP into a third new appendix to Chapter 1, and to enlist the expertise of lower basin irrigators and other interested persons to develop this new appendix for inclusion in the Plan for the next planning cycle. This appendix would also be introduced within the text of the Plan as “Background Information Provided by Interest Groups within Region K.”

**CONCERN 2:** Currently, Section 1.2.5.3 describes the minimum legal requirements for water conservation plans and drought contingency plans. These requirements only apply to water suppliers and water right holders. However, the need for water conservation in Region K is universal and applies to all users. This section misses an opportunity to emphasize the importance of conservation efforts by all users, beyond the minimum legal requirements for some users.




**RECOMMENDATION 2:** In the Final Plan, add statements regarding the universal need for conservation, across all user groups. Metrics are needed to monitor and measure the efficacy of conservation measures taken by *all users*.

**CONCERN 3:** Public water suppliers supplying potable water audit their systems for water loss, such as losses due to leaks in pipes that deliver water. Section 1.2.5.4 includes a description of current use of water audits in Region K and includes a table entitled “Water Loss Audit Summary for Region K.” This table is incomplete in that it fails to report one of the major areas of water loss: conveyance systems for agricultural irrigation water. In recommendations for Chapter 5, CTWC proposes that agricultural irrigators and the Lower Colorado River Authority (LCRA) should be subject to a requirement to audit water losses in their conveyance systems (which are currently substantial), in a manner similar to public water suppliers. The results of those audits should be reported here, alongside audits for potable water systems.

 **RECOMMENDATION 3:** In future Plans, provide a complete description of water losses in distribution and conveyance systems in Region K in Section 1.2.5.4 by adding results of water loss audits from agricultural irrigation water users and LCRA-owned conveyance systems.

**CONCERN 4:** Chapter 1 is intended to describe the region, providing important context for the rest of the regional plan. However, there are several critical climatological phenomena and trends that act upon Region K and influence water supplies and availability that are not mentioned in the IPP. Chapter 1 would benefit from inclusion of information regarding these phenomena and trends, including:


- Changes in climate and rainfall as one moves from west to east across the basin;
- Climatology related to the Balcones Escarpment and the so-called “I-35 Curse”;
- The overall drying trend across the state; and
- The influence of the Atlantic Multi-Decadal Oscillation (AMO) and Pacific Decadal Oscillation (PDO).

 **RECOMMENDATION 4:** In the Final Plan, add a brief discussion of current research on the effect of the Balcones Escarpment on rainfall, sometimes referred to as the “I-35 Curse,” to Sections 1.2.1.1 and/or 1.2.1.2 on Geology and Climate. LCRA’s Bob Rose helped explain this phenomenon in a Weather Channel segment in 2014. This natural feature is shown in Figure 1.4 in the Geology Section 1.2.1.1, but its substantial impact on rainfall is not addressed in Section 1.2.1.2 on Geology and Climate. This important natural feature often acts as a “natural boundary” that channels rainfall up the I-35 corridor and east of I-35, and often inhibits rainfall from reaching the watershed area to the northwest. It should be identified in Chapter 1 as a factor that adversely affects the inflows into the Highland Lakes.

As part of the drought cycle discussion on Page 1-12, present and address recent scientific research results regarding the fundamental drivers of long-term weather patterns that have been linked to long-term (20-30 year) naturally-occurring ocean surface temperature cycle climatology-related factors such as the PDO and AMO, and their effects on long-term drought patterns. These major driving factors, as identified by State Climatologist Dr. John Nielsen-Gammon, LCRA’s meteorologist Bob Rose, and TWDB’s Robert Mace, should be included in the drought cycle discussion as these

factors represent significant risks to water availability and associated water planning during long-term drought cycles.

**CONCERN 5:** Section 1.2.4.2 presents “Threats Due to Water Quantity Issues,” but does not include any discussion of the major socioeconomic impacts of low reservoir water levels upon Region K. Sustained low reservoir levels beginning in 2011 resulted in major adverse socioeconomic impacts on tourism, business, jobs and property values in the Highland Lakes area of Region K. Failure to address this threat represents a major gap in the Plan, as economic losses such as decreases in lake-area property values can be in the billions of dollars, and the associated decline in tax revenues impacts the entire State.

 **RECOMMENDATION 5:** In the Final Plan, add text to Section 1.2.4.2 to present “Threats Due to Low Reservoir Levels.” Consider referencing the proposed appendix entitled “The Highland Lakes: History and Social and Economic Importance,” as appropriate. The full picture should be quantified in order to capture one of the biggest threats due to water quantity issues – a threat that became a reality in the Highland Lakes area during this planning cycle.

## **CHAPTER 2**

**CONCERN 1:** Review of some portions of the IPP has raised serious concerns about the basis for the numbers proposed to be used for agricultural irrigation demands, supplies, and needs in the next cycle of regional water planning within this Region. More specifically, the methods for arriving at these numbers, and the justifications and explanations for the numbers, appear to rely upon some assertions and conclusions that are fundamentally flawed or that ignore available information and research in a manner that leads to larger agricultural irrigation water demands, lower estimates of available water supplies, and higher projected needs (shortages) for the next 50 years. This trend toward increasing water demand for agricultural irrigation in the rice-growing counties along the Texas coast is clearly in conflict with the legal and scientific expectations for rice farming in this river basin.

The Region K records indicate that the LCRWPG received proposed non-municipal water demand numbers from the TWDB that were significantly lower than the Region is now using in the 2016 Regional Water Plan. In addition, Region K’s demand numbers for this planning cycle are approximately *71,000 acre-feet higher* than the irrigation demands for the lower three counties that Region K used in its 2011 Plan. Looking forward, Region K also proposes to use a projected rate of decadal reduction in agricultural demand of only 2.69% (rather than a 3-4% or more decadal decrease in agricultural demands over the years ahead). All of these decisions have significant and critical importance in this planning process.

### Issues Raised by Agricultural Demand Numbers

1. Choice of Datasets. At the outset, the choice of the datasets used to arrive at the agricultural irrigation demand numbers raises questions. According to the document entitled “Region K’s Recommended Modifications to TWDB’s 2017 Non-Municipal Draft Demand Projections” dated October 10, 2012, the irrigation demands for Colorado, Matagorda, and Wharton Counties were calculated using three sources of information:

A. The historic surface water use for agricultural purposes at LCRA-affiliated irrigation operations based on LCRA Annual Water Use Reports for 1992-2011. The first source of information is LCRA's annual water use reports for 1992-2011 for the four LCRA-affiliated irrigation operations (located in Colorado, Wharton, and Matagorda Counties). From the set of 20 numbers, the 90<sup>th</sup> Percentile was chosen as the Demand, then it was adjusted downward for Garwood (from 103,992 acre-feet/year to 100,000 acre-feet/year) and for Pierce Ranch (from 39,275 acre-feet/year to 30,000 acre-feet/year). The choice of the 90<sup>th</sup> Percentile for this set of data means that the historic surface water use between 1992 and 2011 would be met 90% of the time. Looking at the historic usage numbers, using the 103,992 AF/year 90<sup>th</sup> Percentile for Garwood, Garwood's demands were met in every year except 1996 (when it used 107,223 AF) and 2011 (when it used 117,667 AF).

Gulf Coast's demands were met in every year except 1998 and 2009.

Lakeside's demands were met in every year except 1998.

Pierce Ranch's demands were met in every year except 1992 and 1994.

Using the total demands, 1998 was the only year where the 90<sup>th</sup> Percentile number was not reached.

Using the total historic use numbers, adjusted downward by contract limitations for Garwood and Pierce Ranch, the 90<sup>th</sup> Percentile demand number was not reached in 1998 (479,976 AF) or in 2011 (464,314 AF).

B. TCEQ Water Use Reports for all surface water rights other than LCRA, STPNOC, and Corpus Christi for the years 2000-2011:

AECOM calculated the 90<sup>th</sup> Percentile of the historic uses of water in the three downbasin counties for these selected years and added them to the demand, by county.

C. Estimates of Groundwater Agricultural Use in the Portions of Colorado, Wharton and Matagorda counties within Region K for the year 2009:

AECOM estimated groundwater use for the year 2009 and added this to the demand, by county.


2. Choice of Years included in Datasets. There are three different sets of years included for historic use purposes: the years 1992-2011; the years 2000-2011; and the year 2009. It is difficult to understand how this random compilation of historic water use information provides a strong foundation for the Agricultural Irrigation Demands utilized in the 2016 IPP.

3. Total Disconnect between Number of Acres Irrigated and Amount of Water Used or Needed. Discussions with representatives of the LCRA and the Region K consultant have confirmed that the number of irrigated acres is NOT a part of the demand equation in this IPP. The demand numbers were calculated using the three datasets above, without considering the number of acres that were irrigated, the crops that were grown, or the 5.25 acre-feet/acre duty that formed the basis for the surface water rights issued by the State for agricultural irrigation of rice in the Lower Colorado River Basin. Without connecting the number of acres irrigated to the volume of water used for irrigation, there are no metrics for assessing the water use per acre and no metrics for evaluating the effectiveness of conservation projects. Under Texas law, water rights for irrigation uses are attached to the land and are based, in large part, on the total acreage to be irrigated (*see* Texas Water Code §11.124). The methodology used for the IPP demand

numbers assumes that the number of irrigated acres is irrelevant, and such an assumption leads to calculations and planning decisions that lack the technical and legal foundations to support them.


4. Use of Historic Numbers as a Predictor of Future Agricultural Irrigation Demands. In view of the evolving nature of the agricultural business along the Texas Gulf Coast, and the number of variables influencing a farmer's choice to plant certain crops (such as crop insurance and federal subsidies), along with the lingering drought conditions in recent years, it seems illogical to use selected historic years of water use as the basis for predicting and planning near-term and long-term water use demands for this user group.

In sum, the agricultural irrigation demand numbers included in the IPP appear to be derived from a random assortment of historic water use reports for the non-municipal users in the basin, using a methodology that assures that the demands of these users remain at historically high levels, regardless of improvements or advancements in the farming industry over the years. CTWC disagrees with Region K's decision to reject the TWDB's estimate of water needs for agricultural irrigation in the region and instead use estimates based on flawed methodology.

 **RECOMMENDATION 1:** In the Final Plan, remove the current water demand numbers for agricultural irrigation in the three lower basin counties (Colorado, Wharton, Matagorda) and replace them with numbers based upon a scientifically sound, justified, and reasonable methodology for calculating water demands. This methodology should employ a standard metric to calculate water needs, such as acre-feet per acre irrigated for each crop type.


In the alternative, decline to adopt the dramatically increased non-municipal demand numbers proposed in the IPP at this time and utilize the TWDB's estimated non-municipal demand numbers for the Final Plan. Commit to developing and implementing a scientifically sound methodology that employs standardized metrics for estimating future non-municipal demands, and commit to using the new method in the next planning cycle. Include a footnote to the agricultural irrigation demand numbers for the three lower basin counties (Colorado, Wharton, Matagorda) stating that comments were filed questioning the basis of the numbers and that they will be re-evaluated during the next planning cycle.

**CONCERN 2:** As noted in Chapter 1 comments, the discussion of Matagorda Bay contained in Section 2.4.1 belongs in Chapter 1, which describes the planning area, including social and economic impacts, as opposed to Chapter 2, which describes water demands. A parallel discussion of the social and economic impacts of the Highland Lakes region should be included alongside the Matagorda Bay description within Chapter 1.

 **RECOMMENDATION 2:** Move the discussion of Matagorda Bay contained in Section 2.4.1 to Chapter 1 or append it to Chapter 1.


### **CHAPTER 3**

**CONCERN:** In four of the five years within the 2011-2015 planning cycle, the majority of Region K’s surface water supplies have been governed by emergency orders issued by the Texas Commission on Environmental Quality (TCEQ) to authorize the LCRA to vary from the terms of its 2010 Water Management Plan for the operation of Lakes Buchanan and Travis due to dangerously low stored water supplies. Although the LCRA has applied for amendments to its Water Management Plan, the extended drought and its impacts on water in the Highland Lakes have demonstrated an urgent need for improvements in the quantification of the firm yield for these reservoirs.

 **RECOMMENDATION:** The identification of currently available water supplies contained in Chapter 3 should emphasize the need to immediately re-visit the firm yield calculations for Lakes Buchanan and Travis, and should assess whether the firm supply of the Highland Lakes is sufficient for current and future demands.

### **CHAPTER 4**

**CONCERN:** As a result of the flawed methodology for computing demands, discussed under Chapter 2, above, needs (shortages) for agricultural irrigation are artificially inflated.

 **RECOMMENDATION:** The needs (shortages) for the three lower basin counties (Colorado, Wharton, Matagorda) should be re-calculated after applying a scientifically-sound methodology to arrive at demands.

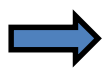
In the alternative, needs (shortages) should be recalculated using the TWDB’s estimates of non-municipal demands. Commit to developing and implementing a scientifically-sound methodology that employs standards metrics for estimating future non-municipal demands and adjusting needs (shortages) based upon revised demand numbers during the next planning cycle. Include a footnote to the agricultural irrigation needs (shortages) for the three lower basin counties (Colorado, Wharton, Matagorda) stating that comments were filed questioning the basis of the numbers and that they will be re-evaluated during the next planning cycle.

### **CHAPTER 5**

**CONCERN 1:** One of the main charges of a Regional Water Planning Group is to “consider water conservation practices, including potentially applicable best management practices, for each identified water need.” (31 Tex. Admin. Code § 357.34(f)). Water conservation measures include “practices, techniques, and technologies that will reduce the consumption of water, reduce the loss or waste of water, or improve the efficiency in the use of water.” (31 Tex. Admin. Code § 357.10(26)). However, the IPP fails to include one of the most proven, effective, low-cost water management strategies available, which incentivizes attainment of all three of these goals: appropriate water pricing. Water pricing should be included in Chapter 5 as a water management strategy for all user groups.

A discussion of the impacts of water pricing should also be included as part of the conservation water management strategy discussion because the price of water is a primary driver for conservation. Perhaps more than any other factor, the price paid for water influences people's choices to either consume or conserve. Cities use tiered pricing as a water management strategy to effectively discourage waste. Similar strategies should be applied to water pricing for agricultural irrigation users. At the very least, water should *never* be sold for less than the cost of conserving it. It must be priced such that a cost/benefit analysis does not result in a business decision to waste cheap water rather than invest in conservation measures and take care that each acre-foot is used as efficiently as possible.

Strategic water pricing is proven to be effective at modifying behavior and increasing conservation. Moreover, it is highly cost-effective because it does not require the massive capital outlays of other conservation strategies that often require building new infrastructure or implementing expensive technology. It does not make sense that the IPP contains conservation strategies that cost hundreds of millions of dollars and strategies that cannot be implemented because funding is not available, but leaves out the less expensive, low-hanging fruit of appropriate water pricing.

 **RECOMMENDATION 1:** The LCRWPG has the authority and duty to recommend strategies for water conservation. Because it is a proven, efficient method to modify behavior and leads to significant water savings, water pricing should be included in the Final Plan as a recommended water conservation measure for all water suppliers and all types of water uses.

**CONCERN 2:** Section 5.2.2 of the IPP includes information on water conservation and recommended conservation-related strategies. Notably, it includes specific, quantitative targets for municipal per capita water conservation. Using quantifiable targets and the metric of gallons per capita per day (gpcd), the municipalities of Central Texas have made and continue to make excellent progress in water conservation – Austin has reduced its per capita use by 30% over the past decade. However, cities' conservation efforts alone are not enough to ensure water supplies for all water user groups over the planning period. Other users must do their part by setting similar quantitative conservation goals, taking action to meet those goals, and tracking their progress by a standardized metric. It is especially critical that these principles be applied in agricultural irrigation – the single largest use category in Region K.


The IPP contains a number of strategies for reducing water usage in the irrigation districts of the lower three counties in the lower Colorado River basin, as well as estimates of their possible water savings and costs. However, there is no commitment to achieving any quantifiable conservation goals, no timeframe for meeting conservation goals, and no tracking, monitoring, or reporting of progress toward goals. Without any of these critical programmatic components, these conservation strategies are unlikely to come to fruition, much less achieve conservation savings of a magnitude to consider them water management strategies. This is especially true for those strategies that appear to be cost-prohibitive on their face, with astronomical price tags and no potential funding source.



In order to make these strategies meaningful, the Plan must include programmatic components similar to those used so effectively for municipal conservation efforts. First, quantitative conservation targets must be put in place for per-acre usage for rice farming, with reasonable, concrete timeframes for achievement. Many rice farmers have made excellent progress; however, some still use in excess of 5.25 acre-feet of water per acre of rice (which TCEQ considers a waste of water). Recent comments from the Texas agriculture commissioner indicate that Texas agriculture is using on average 1.5 acre-feet of water per acre at a 98% efficiency level. Using this as a target, the agricultural irrigators of Region K have significant room to improve their conservation record.

Second, provisions must be in place to demonstrate the achievement of conservation targets. The success of agricultural conservation efforts must be monitored, tracked, and reported over time to ensure meaningful progress. This is precisely the type of accountability that ensures that cities meet their goals, and it should be applied to the other large user group – agriculture – for the same reason. Without it, we have not seen the progress in conservation that was expected from the agricultural sector. The 1989 order approving LCRA’s Water Management Plan includes an expectation that on-farm water usage would be reduced by 25-30% as time went by. And yet 25 years later, it appears that no progress has been made. According to LCRA records, the average usage per acre, including canal losses, actually increased from 5.3 acre-feet per acre to 5.5 acre-feet per acre from 1990 to 2011.

Finally, water suppliers should adopt policies for enforcement of conservation targets. Without any consequences in place for failure to meet conservation goals, water users will be much less likely to apply the effort necessary to achieve them.


 **RECOMMENDATION 2:** Chapter 5 of the Plan needs to be updated with realistic, quantitative conservation targets for agricultural irrigators; set, reasonable timeframes for achieving targets; and provisions for monitoring, tracking and reporting levels of conservation achievement. Results of agricultural irrigators’ conservation efforts should be reported in the Region K Plan using a standardized metric such as acre-feet of water used per acre. CTWC recognizes that this recommendation would require significant revision of the Plan, and therefore suggests that these revisions be developed and added to the Plan during the next regional planning cycle.

**CONCERN 3:** Public water suppliers supplying potable water audit their systems for water loss, such as losses due to leaks. (*See* IPP Section 1.2.5.4 for a description of current use of water audits in Region K). Using these audits, public water suppliers analyze the amount of water lost within their distribution systems and are held accountable for reducing that waste by repairing leaks or otherwise minimizing water loss. This tool should be applied equally to agricultural irrigation users and the LCRA so that the amount of water lost within their conveyance systems can be quantified, monitored, and reduced. Water losses should be monitored and quantified for *all* water distribution systems.


 **RECOMMENDATION 3:** Add to Section 5.2.2.4, Recommended Water Management Strategies related to Irrigation Conservation, a recommendation that agricultural

irrigation water users and the LCRA develop a system to monitor water losses in their conveyance systems on a regular basis and publicly report the raw data.


**CONCERN 4:** The statement “the flood culture is not required to grow rice, but is currently the only practical method for maintaining the required saturated soil conditions,” is an unsupported statement of fact. (See Section 5.2.2.4.1, p. 5-20).

 **RECOMMENDATION 4:** In the Final Plan, remove the statement “the flood culture is not required to grow rice, but is currently the only practical method for maintaining the required saturated soil conditions” from Section 5.2.2.4.1 (p. 5-20).


**CONCERN 5:** Water management strategies for agricultural irrigation should include the use of brackish groundwater, drip irrigation, and any other supplies and methods supported by current agricultural research. Considering the fact that agricultural irrigation is the number one water use in Region K, the LCRWPG should encourage agricultural users to develop and implement cutting-edge irrigation methods rather than endorse entrenchment in unsustainable irrigation methods.

 **RECOMMENDATION 5:** In the next planning cycle, encourage increased dialogue between academic institutions, industry representatives, government officials, and local farming communities regarding tools, technology, methods and new supplies and with potential application to agricultural irrigation.

**CONCERN 6:** CTWC opposes the proposed LCRA “Enhanced Recharge” project cited as an alternative water management strategy in Section 5.3.1.7 of the IPP (p. 5-152) to benefit agricultural users in the lower Colorado River basin. This project proposes diverting surface water from the Colorado River and dumping it into recharge basins to allow it to leach into the ground. The water would then be available to groundwater users in the area and to wells that could augment irrigation canal flows. In short, this project proposes to convert state water, which is owned by the state and held in trust for the people of the State of Texas, into the private property of rice farmers. This proposal is contrary to the concept of the public trust and therefore contrary to public policy.

 **RECOMMENDATION 6:** In the Final Plan, remove the LCRA “Enhanced Recharge Project” because it is contrary to public policy and therefore should be considered infeasible.

**CONCERN 7:** CTWC opposes inclusion of the Goldthwaite Channel Dam as a water management strategy because it is unsupported by technical information or need from a municipal user.

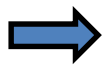
 **RECOMMENDATION 7:** CTWC understands that after careful consideration by the LCRWPG, the Goldthwaite Channel Dam will not be included as a recommended water strategy at this time. CTWC supports the LCRWPG’s decision in this regard.

## **CHAPTER 6**

**CONCERN:** Section 6.3.1 of the IPP states, in part:

LCRA's water rights in these counties used for rice farming are some of the most senior rights within the entire Colorado River Basin. However, the irrigators using these water rights do not have a sufficiently reliable supply of water under drought-of-record (DOR) conditions.

This language implies that rice farmers are entitled to use LCRA's senior downstream water rights or that those water rights are earmarked or set aside for rice farming. Many members of the public continue to mistakenly believe that rice farmers own these senior water rights or are otherwise legally entitled to water under senior water rights. This language supports that misconception and should be eliminated to avoid perpetuating confusion.




**RECOMMENDATION:** In the Final Plan, adopt a revised version of the quoted portion of Section 6.3.1, as follows:

~~LCRA's water rights in these counties used for rice farming are some of the most senior rights within the entire Colorado River Basin. However, the irrigators in the lower three counties using these water rights do not have a sufficiently reliable supply of water under drought-of-record (DOR) conditions.~~

## **CHAPTER 7**


**CONCERN:** Chapter 7 covers drought planning and response by wholesale and retail water suppliers and customers, including preparations for alternate supplies and strategies for reducing municipal water demands during drought. The discussion in Chapter 7 also refers the reader to Section 5.2.4.8 for details on drought management strategies for irrigators in Colorado, Matagorda and Wharton counties. However, the only strategy presented for rice farming is a very simplistic assumption of only producing a first crop for all producers. Given the recent history of Emergency Orders for the last four years, it would appear that a more comprehensive drought plan is needed to address the potential of much more limited surface water releases than would be required to support an entire first crop for all three of these counties. It also would appear that the drought management strategies for rice farming should recognize and incorporate the extensive utilization of supplemental water supply from groundwater wells, which does not appear to be addressed in Chapter 5 or 7. The basis for the unit costs for drought management presented by county in Chapter 7 is also unclear, particularly when utilization of groundwater is considered. This is problematic because as stated in the Plan, "(r)ice production in the lower three counties of the Lower Colorado Regional Water Planning Area is the agricultural resource most dependent upon a reliable, extensive water supply." (IPP Section 6.3.1, p. 6-2). And, their interruptible supply of surface water is particularly vulnerable to drought emergencies, as experienced over the past few years. It is logical that the regional plan would include much more comprehensive strategies for water demand reduction and alternate supplies for agricultural users, as well as municipal users, to cope with drought emergencies.

 **RECOMMENDATION:** In the next planning cycle, the LCRWPG should emphasize the importance of comprehensive drought planning for *all* user groups.


## **CHAPTER 8**

**CONCERN 1:** There were numerous concerns regarding the draft of Chapter 8 presented in the IPP, as originally published. However, these concerns have largely been addressed in the revised version of Chapter 8 that is presented on the Region K website at [http://www.regionk.org/wp-content/uploads/2015/05/Region\\_K\\_Ch\\_8\\_2016\\_Plan\\_IPP\\_plus\\_new\\_edits\\_052915.docx](http://www.regionk.org/wp-content/uploads/2015/05/Region_K_Ch_8_2016_Plan_IPP_plus_new_edits_052915.docx).

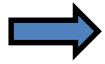
CTWC especially supports the recommendation in Section 8.1.6.3 that the TCEQ, TWDB, and Texas Legislature play leadership roles in the development of water use metrics, efficiency standards, and best management practices, including monitoring and delivery systems basin-wide. All users throughout the basin must understand their own water use, identify inefficiencies, and use every tool available to ensure the efficient use of water.

 **RECOMMENDATION 1:** CTWC supports the adoption of the revised version of Chapter 8 that is presented on the Region K website and recommends that the revised version be incorporated into the Final Plan rather than the draft Chapter 8 presented in the IPP.

**CONCERN 2:** In recent drought years, inflows to the Highland Lakes have been historically low. Precipitation events in the watershed have not translated into the volume of inflows expected based upon historical observations. CTWC is very concerned about this observed significant decrease in inflows. Because of the importance of the Highland Lakes to the Region K water supply, this trend must be studied and its causes understood and addressed as appropriate. The IPP contains a placeholder for a section for additional recommendations regarding *Inflows to Highland Lakes* (at Section 8.1.9). The revised draft of Chapter 8 that is presented at the Region K web site includes a new proposed section 8.1.10 addressing this concern and calling for hydrologic study of this issue.

 **RECOMMENDATION 2:** Add new Section 8.1.10, *Inflows to Highland Lakes*, as presented in the revised version of Chapter 8 that is presented on the Region K web site, to the Final Region K Plan.

**CONCERN 3:** Current water planning constructs include a specific set of water user groups or “WUGs”. It is the aim of water planning to help ensure that water is available to each of these water user groups. They include municipal users, agricultural irrigators, industry, mining, and others. However, there are no water user groups representing the needs of the environment or recreational users, including recreational business and industry, leaving these important user groups without adequate planning to provide water for their needs. In fact, the planning process appears to support only consumptive uses without regard for those uses that would be supported by leaving water in place in the source of supply. Water needed to support the environment and recreation is critical to the quality of life and economy of the State of Texas. Addition of the environment and recreation as water user groups would give these needs the seat at the water planning table that they deserve.



**RECOMMENDATION 3:** The LCRWPG should adopt into Section 8.1.11 the following recommended improvement to the regional water planning process for submission to the Texas Water Development Board and Texas Legislature:

The LCRWPG would support action by the TWDB to revise its rules to enumerate the environment and recreational users, including recreational business and industry, as water user groups (“WUGs”) for which water demands and water supplies will be identified and analyzed and for which plans will be developed to meet water needs (*see* 30 Tex. Admin. Code § 357.10(29)). If direction from the Texas Legislature is necessary to initiate this rule change, the LCRWPG recommends that the Texas Legislature take the necessary action to direct the TWDB to revise its rules.

The revised draft of Chapter 8 that is presented at the Region K web site contains a recommendation to recognize environmental flows as a formal category of water use to be planned for (*see* Section 8.1.2.2, item 4). CTWC supports the addition of environmental use, but recommends the broader language above to include protection of recreational use and recreational business and industry, which, similar to environmental flows, are largely in-place water uses and are critical to Texas’ economy and quality of life.

**CONCERN 4:** Water rights permits issued by the TCEQ must be consistent with Regional Water Plans (*see* 30 Tex. Admin. Code § 295.16). However, regional water planning groups are not consulted in this determination by TCEQ and often do not even know when an application has been filed for a permit that could impact or be impacted by the Regional Water Plan. Regional water planning groups should be provided with notice of such applications and application information, such as technical memoranda, so that they can provide input to the TCEQ in the permit application process.



**RECOMMENDATION 4:** The LCRWPG should adopt into Section 8.1.11 the following recommended improvement to the regional water planning process for submission to the TCEQ:

A TCEQ water right permit must address a water supply need in a manner that is consistent with the state water plan and the relevant approved regional water plan (Tex. Water Code § 11.134(b)(3)(E)). The LCRWPG requests that the TCEQ provide notices of water right permit applications, draft permits, and staff memoranda to the applicable regional water planning groups for each new water right or water right amendment application. This will enable regional water planning groups to analyze each proposed permit’s consistency with the regional water plan.

## **CHAPTER 11**

**CONCERN:** As discussed fully under Chapter 2, above, CTWC questions the huge increases in agricultural irrigation demand numbers compared to the prior (2011) Regional Water Plan.



**RECOMMENDATION:** Revise the text and tables in Section 11.2.2 (pages 11-2 to 11-4) and the tables and graphs in Appendix 11B to maintain consistency with either recommended change to Chapter 4. At a minimum, include a footnote to Section 11.2.2 and the Irrigation Water Demand Comparison, and Colorado, Wharton, and Matagorda County Total Water Demand Comparison charts in Appendix 11B stating that comments were filed questioning the basis of the numbers and that they will be re-evaluated during the next planning cycle.

*APPENDIX \_\_\_\_*

*THE HIGHLAND LAKES: HISTORY AND SOCIAL AND ECONOMIC IMPORTANCE*

## **Brief History of the Highland Lakes System**

The Highland Lakes system is comprised of two water storage reservoirs, Lakes Buchanan and Travis, and four pass-through reservoirs, Lakes Inks, LBJ, Marble Falls and Austin. During the construction of the dams and development of the Highland Lakes system, the Lower Colorado River Authority (LCRA) acquired large tracts of land that surround the reservoir system. LCRA is authorized to develop, manage, and promote the use of these lands for parks, recreational facilities and natural science laboratories and to promote the preservation of fish and wildlife. LCRA must also provide public access to, and use of, its lakes and lands for recreation.

In the early years of LCRA's existence, the predominant priorities in water resources management were to moderate and control the floods and droughts in the Lower Colorado River Basin. This was accomplished through the construction of dams in the Texas Hill Country west of Austin, which created the Highland Lakes. Due to the Highland Lakes, the ravages of floodwaters on the lower Colorado River have largely been controlled. The Highland Lakes have historically also provided a dependable source of water supply for municipal, industrial, agricultural, and mining uses. Additionally, the Highland Lakes provided the source of inexpensive, renewable electrical energy, and recreational opportunities for the citizens and communities of Central Texas. In sum, the work of LCRA in its early years provided the foundation on which much of the present day population and economy of Central Texas now depend. The rapidly-increasing population of Austin and surrounding Central Texas communities requires additional water resources for drinking water and to sustain business and industry. Tourism and recreation became significant industries, both on the Highland Lakes and lower Colorado River.

## **Tourism and Recreational Demands**

The use of water for recreation and tourism is closely linked to the population of an area, location of the recreational opportunity and ease of access, and the value of the resource to recreational users. Recreational users are interested in qualities including: full lakes, flowing rivers, clean water, and aesthetics. In many areas, recreational uses of the waterways are increasing steadily. The entire Highland Lakes area, from Lake Austin to Lake Buchanan, receives a great deal of recreational use from boaters, park visitors, swimmers and anglers from all over Texas and the Southwestern United States.

Recreation and tourism in the Highland Lakes area are important contributors to local economies. The recreation industry associated with the Highland Lakes experienced phenomenal growth from 2000-2010 and became the major economic stability factor in many of the counties surrounding the Highland Lakes. However, the viability of this recreational industry is strongly tied to the level of water in the reservoirs, with the Conservation Base recreational levels of Lake Travis defined as 660 feet above mean sea level (msl) and of Lake Buchanan as 1,012 feet msl. In the pass through lakes—Inks, LBJ, Marble Falls, and Austin—little impact is felt from variations in the levels of Lakes Buchanan and Travis.

An expected annual cycle includes the filling of the conservation storage space in the winter and spring months of the year to be drawn down by water uses during the summer months. The



recreational users of these reservoirs are accustomed to a certain amount of variation in the lake levels. However, extreme variations can have an adverse impact on recreational and tourism interests.

## **Lake Travis**

Lake Travis is a 19,000-acre lake with over 270 miles of shoreline located in Texas within Travis and Burnet Counties. Formed in 1937 with the creation of the Marshall Ford Dam, Lake Travis has been and continues to be an important force in the economic growth and sustainability of the region. Lake Travis is the source of water and electricity for its surrounding communities, including but not limited to the municipalities of Briarcliff, Lakeway, Lago Vista, Jonestown, Point Venture, The Hills of Lakeway, Volente, and Austin (currently, 23 municipalities rely on Lake Travis for water). The lake is a recreational destination for boaters and other water enthusiasts throughout the state, and is an important component of the region's tourism economy. Businesses of all sizes depend upon Lake Travis for their operations, including restaurants, hotels, boat rentals, marinas, golf courses, scuba operators, and real estate brokers and developers. Companies, including Samsung, Freescale, AMD, and 3M, rely upon Lake Travis for their manufacturing operations as well. Finally, the lake is an amenity to the surrounding households. Since 1990, the size of the population living within 30 miles of Lake Travis has more than doubled to over 1.5 million people according to the U.S. Census. Communities such as Lakeway, Lago Vista, Jonestown, Point Venture, Briarcliff, and Village of the Hills were founded around Lake Travis in the 1960s and have grown to a total population of almost 22,000 as of 2010.

Lake Travis is a controlled-flow lake, with water coming in through rainfall and inflows from area creeks, rivers, and streams, and water going out to serve the demand of surrounding cities, water utilities, irrigation needs for the downstream industrial and agricultural users, and flows sufficient to maintain downstream instream flow needs and bay and estuary health. The lake is considered full at an elevation of 681.1 feet ("full pool") above mean sea level (msl), and lake levels have fluctuated from a low of 614 feet in 1951 to a high of 710 feet in 1991. In addition to its use for flood control, hydroelectric power, water supply, and water quality, Lake Travis supports broad recreational tourism and diverse fish and wildlife habitats. Drought, increased water use, downstream demands, and reduced inflows all cause water levels in Lake Travis to fall. Conversely, during flood events, businesses surrounding the lake may be forced to close for extended periods of time.

An economic impact study by consulting firm RCLCO in 2011 used historical data and econometric models to assess the financial impact low lake levels or poor water quality have on the region. This study established a baseline to measure the fiscal and economic impacts associated with Lake Travis in 2010, and found that a full Lake Travis generates revenues from property, sales, hotel and mixed beverage taxes that buys ambulances, maintains schools and provides state government with needed funding.

Some key data defining the 2010 baseline of the Lake Travis economic engine include:

- \$207.2 million in revenue for state and local governments from property taxes (\$158.4 million), sales taxes (\$45.2 million), hotel occupancy and mixed beverage taxes;

- \$8.4 billion in assessed property value (\$4.353 billion in lake-related homes and land property value in 2010 from Travis County Appraisal District);
- \$3.6 million in hotel and mixed beverage taxes;
- 3,900 commercial businesses in study area, which contribute \$45.2 million in sales taxes; and
- Lake related activity in 2010 base case:
  - Total visitor-related spending creates 1,607 jobs, \$34.6 million in direct wages, and \$90.5 million in value added to the local economy; and
  - Boat sales spending creates 309 jobs, \$12.2 million in direct wages and \$22.1 million in total value added to the economy.

The study found that adverse economic impacts begin when lake levels remain below 660 feet, and significant economic impacts occur when lake levels fall below 650 feet. Some specific effects that the study predicted include:

- 350,000 – 375,000 fewer park visits;
- 29 lost jobs for each 10% drop in park visits;
- \$23.6 million to \$38.8 million reductions in visitor spending; and
- Up to 241 lost jobs and \$6.1 million in lost wages.

The study also found significant annual fiscal impacts could occur, including:

- \$21.9 million in total fiscal revenues lost versus the 2010 base case; and
- \$1.7 million lost sales tax revenues.

As a result of the extended severe drought that began in 2008 and large interruptible water releases under the Water Management Plan during the severe drought in 2011, Lake Travis lake levels fell to the 620-630 foot elevation and remained there from 2001 until May of 2015. As a result, many of the predicted impacts became reality. Public access to Lake Travis was severely impaired below 630 feet, and the lake also became much more dangerous to navigate as the lake levels fell. With loss of access, tourism greatly declined and many lake-related businesses and restaurants closed, and continue to close, including high-profile ones that have been in business for many years. Marina businesses are also struggling, as occupancy rates and jobs are down by 35-40%, and profitability is being severely impacted.

Low lake levels also impacted the real estate sector of the economy. While the Austin metropolitan area is enjoying significant growth and increased property values, lake-related property values greatly suffered, both with homes and unimproved land values. The following results have been compiled by the real estate industry for the 2009-2014 timeframe:

- Median sales price decline of waterfront/view homes down 29.5% since 2011
- \$/sq. ft. average price decline 33.9% since 2009
- Median undeveloped waterfront/view land price down 36.8% since 2009
- Real estate inventory levels are a very strong indicator of the health of a real estate market. While the residential market across the 5-county Austin metropolitan area had less than three months' supply as of December 2014, active listing inventory for homes with Lake Travis frontage will last more than two years at the Dec. 2014 pace of sales. There is more than three years of listing inventory for unimproved lots on Lake Travis.

These declines in water-related home and land values have a significant aggregate effect, both on the homeowners and on the taxing districts that rely on property taxes. According to data provided by the Travis County Appraisal District, waterfront market values on Lake Travis were about \$2.428 billion in 2010, and related subdivisions that were not waterfront accounted for about \$1.925 billion in market values, or a total of \$4.353 billion. Based on analysis from real estate sales data, property value declines since 2010 are in the 10-30%+ range, and as such, the total impact on lake-related properties on Lake Travis in Travis County could be in the \$400 million to over \$1 billion range, as of the end of 2014.

At the same time, a real estate analysis of the Austin metropolitan area shows that it has enjoyed about 40% appreciation in residential values and 50% in lot values over the past six years, in stark contrast to property with Lake Travis views and/or frontage, which have actually lost approximately 10-30% in value since 2010. As such, property tax appraisals from TCAD have not increased and the associated tax base has lost tax receipts that could have occurred on a lost potential basis, had these lake-related properties appreciated in a similar manner as the rest of the Austin area. By again utilizing the 2010 appraised value for these lake-related properties of \$4.353 billion, this likely represents as much as another \$1.5 to 2 billion in lost taxable appreciation values on lake-related properties, and the associated loss in tax base revenues. Combining both the loss in value and the lack of appreciation on these lake-related properties creates a total adverse property value estimated impact from very low lake levels of \$2-3 billion, and the associated loss of annual property tax revenues that support schools and county services. Given the very strong and on-going population growth in the area, and the magnitude of the lost tax revenues from lake-related properties, the shortfalls will likely have to be borne by the rest of the taxpayers to meet required service needs.

### **Upper Highland Lakes and Burnet and Llano Counties**

Located along the Colorado River, both Burnet and Llano counties have strong agricultural and ranching sectors combined with tourists seeking water-related recreational opportunities. The tourism sector is the largest employer in the region with visitors spending millions of dollars each year at hotels, restaurants, and shops. In addition, the price premium waterfront properties command creates local property tax revenue. However, in 2014, responding to the multiple years of low lake levels in Lake Buchanan and its negative impact on property values, the Burnet County Appraisal District took action to reduce the market value of properties on Lake Buchanan by approximately \$33,000,000 [Source: Chief Appraiser, Burnet County Appraisal District; March 2015].

In 2011, in a joint effort to measure the contribution of the upper Highland Lakes to the regional and state economies, Burnet and Llano Counties retained a project team to perform an economic impact analysis. The project team of TXP, Inc., Concept Development and Planning, LLC, and Diverse Planning and Development conducted the assessment for Burnet and Llano Counties that was completed in the fall of 2012. The study area for the project included Burnet and Llano Counties as well as the properties at nearby Lake Buchanan, Inks Lake, Lake LBJ, Lake Marble Falls, and Lake Travis (only the portion in Burnet County).

Over the past two decades, communities adjacent to the lakes have been the fastest growing in the two-county area. Since 2000, the majority of new homes built in the Upper Highland Lakes Region have been lake-adjacent. Nearly three-quarters of all homes built in the two counties in the past decade were within two miles of the lakes. Hotel occupancy tax revenue generated by properties in the Upper Highland Lakes Region has more than doubled since 2000. Over 81.1 percent of Burnet and Llano Counties' accommodation and lodging businesses are within two miles of the lakes.

In 2011, direct spending by all visitors to Burnet and Llano Counties resulted in the following:

- \$161.3 million in direct economic activity;
- \$58.9 million in earnings for employees and business owners;
- 3,125 jobs (or 25.9 percent of total regional employment);
- \$3.46 million in local tax revenue excluding property taxes; and
- \$9.2 million in state tax revenue.

### **Economic Activity & Tax Revenue Attributable to the Upper Highland Lakes**

In the Upper Highland Lakes Region, the properties around the lakes are among the most valuable in the area. Lake-related properties in this region account for just 1.9 percent of the geographic area of the counties, but a disproportionately large 46.7 percent of their total taxable value.

The average taxable value of a home on the lakes is substantially greater than the countywide averages – ranging from approximately 70 percent higher around Lake Buchanan to more than 3.5 times the average home price in Burnet and Llano Counties around Lake LBJ and Lake Marble Falls.

The proportion of taxable hotel room revenue attributable to lake-related hotel properties is approximately 75 percent of total Upper Highland Lakes Region hotel sector activity. Lake-related hotel activity generates about \$1 million in tax revenues for the State of Texas each year.

In 2011, direct purchases (based on room capacity and hotel occupancy tax receipts) by lake-related visitors to Burnet and Llano Counties resulted in the following:

- \$122.5 million in direct economic activity;
- \$45.3 million in earnings for employees and businesses owners;
- 2,454 jobs;
- \$2.6 million in local tax revenue excluding property taxes; and
- \$7.0 million in state tax revenue.

The total economic impact in 2011 of lake-related visitor spending in the Upper Highland Lakes, including indirect positive effects on support services and businesses, were described as follows:

- \$185.5 million in total economic activity;
- \$81.7 million in earnings for employees and businesses owners; and

- 3,648 jobs.

### **Long-term Low Lake Level Implications for the Upper Highland Lakes Region**

Some of the key findings from the study include:

- The Highland Lakes community's overwhelming concern is that overall economic activity in the region will not return to its pre-drought growth rate because of the prolonged low lake levels.
- Low lake levels could adversely impact development of 5,799 undeveloped, lake-related acres, with an additional 1,180 underdeveloped acres that have a potential taxable property value of \$1.4 billion around the lakes. Low lake levels correspond to a significant decline in tourism and visitor spending, with the decline increasing as levels further decline.

Since the drought began in 2008, Lake Buchanan has primarily been at levels below the conservation level of 1,012 feet above msl. The situation worsened significantly in the summer of 2011, when lake levels fell below 995 feet and continued to fall. At these low levels, lake access was very restricted and public boat ramps were closed, and tourism around the lake was adversely impacted. Numerous tourism-related businesses suffered or closed, such as restaurants, grocery stores and resorts, and associated job losses have been significant. For example, at the time of the study, charter fishing trips were down over 80%.

Sustained low lake levels also allowed the salt cedar population to dramatically overgrow the very large areas of exposed lake bed, creating a whole host of emerging problems.