LCRA
ENERGY • WATER • COMMUNITY SERVICES

January 30, 2015

**Via electronic mail to wras@tceq.texas.gov**

Dr. Kathy Alexander
Texas Commission on Environmental Quality
P.O. Box 13087, MC 160
Austin, Texas 78711-3087

**RE: Application of the Lower Colorado River Authority to Amend its Water Management Plan (WMP) for Lakes Buchanan and Travis**

Dear Dr. Alexander:

In response to the public comments made at the meeting on January 7, LCRA submits its preliminary comments regarding the interplay between the Water Management Plan and Drought Contingency Plan for the staff's consideration.

If you have any questions, please call me at (512) 578-3378, or Greg Graml at (512) 730-6849.

Sincerely,

**Lyn Clancy**
Managing Associate General Counsel & Sr. Water Policy Advisor
Lower Colorado River Authority

**Greg Graml**
Attorney II
Lower Colorado River Authority

cc: Kellye Rila, TCEQ
Robin Smith, TCEQ

**LCRA'S COMMENTS IN SUPPORT OF SEPARATE DEVELOPMENT OF DROUGHT CONTINGENCY PLAN**

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**1. Introduction.**

Contrary to firm customer comments at the January 7, 2015 public meeting related to the Lower Colorado River Authority's (LCRA's) pending Water Management Plan (WMP), LCRA should not be required to include its Drought Contingency Plans (DCPs) for firm and interruptible customers in the WMP. Rather, for purposes of the DCPs, LCRA should be treated like all other water rights holders in the state. As discussed in more detail below, *mandatory* inclusion of the DCPs in the WMP and associated contested case hearing process is unnecessarily burdensome and contrary to law. Moreover, affected persons have adequate remedies should LCRA's DCP fail to comply with the law.

**2. The WMP defines allocation of supplies *between* firm and interruptible customers.**

During the adjudication of LCRA's and others' water rights in the lower Colorado River basin, LCRA sought and obtained permission to develop a reservoir operations plan for lakes Buchanan and Travis that would allow it to continue to supply stored water for irrigated agriculture in the lower basin in amounts that would, in some years, mean use of more stored water than the combined firm yield of the two lakes. This reservoir operations plan is the Water Management Plan. The requirements that apply to the WMP's development can be found in the

1988 Final Judgment and Decree[1] (commonly referred to as the "Adjudication Order") and subsequent orders of the Texas Commission on Environmental Quality (TCEQ or "Commission") and its predecessors.

The Adjudication Order allows LCRA to provide water for irrigated agriculture on an "interruptible" basis when firm demand is less than the firm yield of lakes Buchanan and Travis.[2] The supply of interruptible water is to be curtailed to the extent necessary to allow LCRA to satisfy firm water demands.[3] The WMP must include information necessary to demonstrate LCRA's compliance with the conditions in the Adjudication Order.[4] As discussed further herein, the WMP demonstrates such compliance by including procedures for curtailing and cutting off interruptible stored water based on a curtailment curve developed using historic hydrology and a procedure for responding to a drought more severe than the Drought of Record that cuts off all interruptible stored water prior to and during any mandatory pro rata curtailment of firm customers.

In 1989, the Texas Water Commission (predecessor to TCEQ) approved the first WMP.[5] The 1989 WMP included a rule curve that defined the ability to supply demands in excess of the firm yield and was to be used to determine how much stored water could be allocated for interruptible uses on an annual basis.[6] LCRA was also required to develop a "Drought Management Plan" within one year, subject to Commission review and approval.[7] In December 1991, the Texas Water Commission approved LCRA's Drought Management Plan.[8] That plan addressed the allocation of stored water between firm and interruptible uses by providing for the curtailment of interruptible stored water below a combined storage trigger.[9] The plan also provided that, in the event of a drought more severe than the drought of record, all interruptible

[1] In re *The Exceptions of the Lower Colorado River Authority and the City of Austin to the Adjudication of Water Rights in the Lower Colorado River Segment of the Colorado River Basin*, No. 115, 414-A-1 (264th Dist. Ct., Bell County, Tex. April 20, 1988), (herein "Adjudication Order").
[2] *Id.* Lake Buchanan Finding of Fact No. 19(e); Lake Travis Finding of Fact No. 26(e).
[3] *Id*. Lake Buchanan Finding of Fact No. 19(f), Conclusion of Law No. 4(g); Lake Travis Finding of Fact No. 26(f), Conclusion of Law No. 6(g).
[4] *Id.* Lake Buchanan Finding of Fact No. 19(a), Conclusion of Law No. 4(a); Lake Travis Finding of Fact No. 32(a), Conclusion of Law No. 6(a).
[5] TEX. COMM'N ENVTL. QUAL., *Order Approving Lower Colorado River Authority's Water Management Plan and Amending Certificate of Adjudication Nos. 14-5478 and 14-5482* (Sept. 20, 1989).
[6] *Id.* Finding of Fact Nos. 48-56.
[7] *Id.* Finding of Fact No. 61, Ordering Provision No. 1(g).
[8] TEX. COMM'N ENVTL. QUAL., *Order Approving Lower Colorado River Authority's Drought Management Plan* (Dec. 23, 1991).
[9] *Id.* Finding of Fact Nos. 5, 6 and Ordering Provision No. 1.h.

stored water would be cut off prior to and during any pro rata curtailment of firm water customers.[10]

Subsequent amendments to LCRA's Water Management Plan and Drought Management Plan occurred in 1992 and 1999. The 1992 plan included criteria for implementing and cancelling a declaration of a drought worse than the drought of record (DWDR).[11] The 1999 WMP (based on an application filed by LCRA in 1997) further revised the allocation of stored water between interruptible and firm uses, updated the criteria for declaring a DWDR, added a requirement that LCRA develop a firm customer curtailment plan to be approved by the LCRA Board and TCEQ, and also included changes to the manner in which LCRA was to provide water for environmental flow needs.[12]

When LCRA sought further amendments to the WMP in 2003, it once again requested changes to the method used to allocate stored water between interruptible and firm users, and changes related to environmental flow obligations.[13] In addition, as a matter of convenience for its customers, it incorporated into Chapter 4 of the WMP the Drought Contingency Plan for firm and interruptible customers that it had previously prepared as a stand-alone document, in accordance with newly-enacted Texas Water Code § 11.1272 and the TCEQ's rules, 30 Tex. Admin. Code Ch. 288.[14]

When the TCEQ finally approved changes to the WMP amendments in 2010, it expressly recognized that certain aspects of Chapter 4 were subject only to the requirements of the law and rules governing DCPs.[15] Specifically, the Commission recognized that LCRA could modify the elements of its DCP that do not change the triggers or amount of curtailment of interruptible supply or the triggers related to instream flows and bay and estuary inflows consistent with Chapter 288 rules without a full-blown WMP amendment process requiring notice and opportunity for contested case hearing.[16] Further, changes to other portions of the DCP, including changes to targets for water use reductions may be made in accordance with Chapter

[10] *Id.* 1991 Drought Management Plan, page 41.
[11] TEX. COMM'N ENVTL. QUAL., *Agreed Order Approving Amendments to Lower Colorado River Authority's Water Management and Drought Management Plans*, (Dec. 18, 1992), Finding of Fact Nos. 13, 14.
[12] TEX. COMM'N ENVTL. QUAL., Docket No. 98-1387-WR, *Order Approving Amendments to Lower Colorado River Authority's Water Management Plan including its Drought Management Plan*, (Mar. 1, 1999). Finding of Fact Nos. 9, 13, 15, 17.
[13] TEX. COMM'N ENVTL. QUAL., *Agreed Order Approving Amendments to Lower Colorado River Authority's Water Management Plan*, (Jan. 27, 2010), Finding of Fact Nos. 9-13.
[14] *Id.* Finding of Fact No. 16.
[15] *Id.* Conclusion of Law No. 1(g).
[16] *Id.*

288 rules.[17] As required by the 1999 WMP order, the Commission retained the requirement that LCRA develop a specific plan for curtailing firm customers under Texas Water Code § 11.039 that must be reviewed and approved by the TCEQ prior to implementation.[18] In December 2011, LCRA received approval of its pro rata curtailment plan for firm customers at a public meeting of the Commission.[19]

**3. DCPs have independent legal significance from the WMP.**

In 1997, on the heels of a major drought, the Texas Legislature enacted Senate Bill 1 – landmark legislation that overhauled many aspects of state water planning and management. Recognizing the need to more deliberately plan for drought response, Senate Bill 1 required certain water rights holders and water suppliers to develop and implement drought contingency plans.[20] The Texas Natural Resources Conservation Commission (predecessor to TCEQ) adopted rules, which became effective in February 1999, and required major water rights holders across the state, including LCRA, to develop DCPs by September 1, 1999.[21] The Legislature subsequently passed H.B. 2663, which added the requirement that all DCPs be revised by May 1, 2005, to include "specific, quantified targets for water use reductions to be achieved during periods of water shortages and drought."[22] Per the Commission's interpretation of this statute through its rules, these goals are not enforceable.[23]

As is clear from a review of the statute and rules, the DCPs required by state law and TCEQ's rules apply to allocation of supplies within water use categories, and in this regard are *in addition to* and significantly different than the allocation of stored water between interruptible and firm customers required by the Adjudication Order to be addressed in LCRA's WMP. The firm-interruptible allocation aspects of the WMP in the form of curtailment curves and response to a drought that may be more severe than the Drought of Record indeed provide an important framework within which LCRA must develop the DCPs required by Water Code § 11.1272 and TCEQ rules. However, the additional requirements for DCPs should not be bootstrapped back

[17] *Id.*
[18] *Id.*
[19] TEX. COMM'N ENVTL. QUAL., Docket No. 2011-2097-WR, *Order Approving the Lower Colorado River Authority's Water Curtailment Plan for its Firm Water Customers* (Dec. 12, 2011), (herein "2011 Firm Water Curtailment Plan Order.")
[20] Tex. S.B.1, Act of Sept. 1, 1997, 75th Leg., R.S., 1997 Tex. Gen. Laws 3610, 3616, ch. 1010, Sec. 1.03 (codified at Tex. Water Code § 11.1272.).
[21] *See* 24 Tex. Reg. 949, 950 (Feb. 12, 1999) (codified at 30 Tex. Admin. Code ch. 288).
[22] Tex. H.B. 2663, Act of June 20, 2003, 78th Leg., R.S., 2003 Tex. Gen. Laws 2119, ch. 290, Sec. 1 (Tex. Water Code § 11.1272(c)), (herein "H.B. 2663").
[23] *See*, *e.g.*, 30 Tex. Admin. Code §§ 288.20(a)(F); *see also* 29 Tex. Reg. 9384, 9386 (Oct. 1, 2004).

into a more onerous legal process for review and approval simply because certain elements must first be approved as amendments to the WMP. For example, the Chapter 288 rules require at least three stages of drought response with target water use reductions, whereas nothing in the Adjudication Order or TCEQ WMP orders require this level of specificity be included in the WMP.[24]

Even though LCRA was arguably ahead of many water rights holders in having a Drought Management Plan prior to adoption of Texas Water Code § 11.1272, nothing in that statute or the TCEQ's implementing rules exempted LCRA from the more extensive DCP requirement. In 1999, LCRA submitted its first Drought Contingency Plan under the chapter 288 rules. This was a stand-alone document that was prepared and submitted following a public input process separate from that which had taken place as part of the development of the 1999 WMP.[25] As appropriate, the DCP incorporated the key elements of the Water Management Plan in place at the time related to the allocation of interruptible supply between firm and interruptible customers. The 1999 WMP also included a mechanism for allocating interruptible supply between different irrigation operations that was imported into LCRA's first DCP for interruptible irrigation customers. The DCP further added the methods for allocating water between individual customers within each of LCRA's irrigation operations.[26] As required by the TCEQ's Chapter 288 rules, the DCP included three stages of drought response for firm customers. LCRA had included similar stages in its Drought Management Plan, having long recognized that response in the early stages of drought is important because it is impossible to know when a drought will be more severe than the Drought of Record.[27] In 2003, when LCRA filed its application to amend the WMP, it included within Chapter 4 of the WMP the drought contingency plan elements required under Chapter 288 rules, as a matter of convenience for its customers.

Shortly after LCRA filed its requested amendments in 2003, H.B. 2663 was enacted and TCEQ adopted implementing rules that required DCPs to be revised by May 1, 2005 to add targets for water use reductions.[28] In April 2005, the LCRA Board approved DCP changes to implement these requirements and submitted to TCEQ conforming revisions to Chapter 4 of the pending WMP. Although the WMP amendments remained pending, to the extent that it was not in conflict with the allocation of firm and interruptible water under the then-effective 1999

[24] 30 Tex. Admin. Code § 288.22.
[25] 2000 LCRA Water Conservation and Drought Contingency Plan, p.15.
[26] *Id.* p.17.
[27] 1991 Drought Management Plan, p 40.
[28] H.B. 2663, s*upra* note 22.

WMP, the April 2005 submission was LCRA's then-effective DCP. Shortly after the 2010 WMP was approved, in June 2010, LCRA again updated its DCP through a process separate and apart from the WMP process, changing the target reduction goals for firm water demands with approval by the LCRA Board followed by submission of the updates to TCEQ.

These actions demonstrate TCEQ's and customers' recognition that LCRA can and must be allowed modify its DCP when necessary and appropriate, and to comply with changes in the law or TCEQ rule, based on the schedule and process required by Chapter 288, and not subject to a contested case process so long as those changes do not affect the allocation of stored water between firm and interruptible customers. The five-year update cycle for DCPs and the potential for changes to the DCP requirements with every legislative session demonstrate the very practical difficulties in updating a DCP that is embedded in the WMP – it simply does not align with the process for revising and amending WMPs, which, over time, has been driven primarily by changes in firm demands and new environmental science and occurs on an irregular schedule.

**4. Drought response measures for firm customers prior to a DWDR declaration are not required elements of the WMP.**

Drought response stages and measures for firm customers prior to a declaration of Drought Worse than Drought of Record are obvious elements of the DCPs required by the TCEQ's chapter 288 rules. As discussed above, those rules call for wholesale water suppliers to have at least three stages of drought response with corresponding reduction targets and measures including but not limited to pro rata curtailment.[29] However, these steps are not required elements of the WMP under the Adjudication Order for the obvious reason that they don't address the allocation of water between firm and interruptible customers.

**5. Outdoor watering restrictions are not pro rata curtailment.**

The TCEQ should reject the argument that LCRA's outdoor watering restrictions – adopted as an emergency amendment to its DCP in light of the current drought – are "curtailment by another name." Instead, these drought response measures were appropriately adopted pursuant to the requirements of Chapter 288 and do not require a specific amount of water to be saved.[30] This rule helps prevent the waste of water, particularly during times of drought – even if

[29] 30 Tex. Admin. Code § 288.22.

[30] 30 Tex. Admin. Code § 288.22(6). Outside of pro rata curtailment, the Commission's rules recognize that water savings targets in DCPs are a goal, but not enforceable —prior to pro rata curtailment, firm customers are not limited to allotments with required percentage reductions in water use.

the drought does not rise to the level of a drought worse than the Drought of Record – consistent with LCRA's rights and obligations as a regional water supplier.[31]

By contrast, LCRA's pro rata curtailment plan requires specific reductions in water use and allots a specific amount of water to each customer. The Water Code requires that, in times of shortages in supply, water is allocated on a pro rata basis.[32] LCRA's pro rata curtailment plan for firm customers, required by prior WMP orders, is triggered only upon a declaration of Drought Worse than Drought of Record (and after all interruptible supply is cut off).[33] The TCEQ approved LCRA's pro rata curtailment plan for firm customers at a public meeting, after LCRA worked through a detailed process with its customers to develop the plan and implement rules.[34] Under LCRA's current firm customer curtailment plan, LCRA would implement pro rata curtailment by requiring firm customers to reduce their water use by an equal percentage from their reasonable demand.[35] Customers would be limited to an allotment of water under pro rata curtailment that reflects the required percentage reduction in use.[36] Failure to reduce water use as required in a pro rata curtailment subjects a customer to surcharges based the amount of water that was used in excess of the customer's pro rata allotment of water.[37]

**6. LCRA's DCP should not be subject to a different process than DCPs of other water right holders.**

The TCEQ's rules specify a process for LCRA and other water suppliers to follow in developing and updating drought contingency plans. The rules require a public input process and submission of the plan to the TCEQ, with required updates every five years.[38] Changes to the DCPs are not subject to review through a contested case hearing process and do not, by themselves, constitute amendments to water rights. By contrast, changes to LCRA's WMP are treated as an amendment to its water rights for lakes Buchanan and Travis and are subject to a contested case hearing process. Clearly, LCRA cannot amend its WMP through the DCP revision process and must ensure that its DCP uses the allocation of supply between firm and interruptible customers dictated by the WMP. Further, should LCRA want to change the pro rata curtailment aspects of the DCP, it must first receive approval from TCEQ of changes to the

[31] *See generally* Tex. Water Code § 11.037.
[32] Tex. Water Code § 11.039.
[33] 2010 Water Management Plan, page 4-32.
[34] 2011 Firm Water Curtailment Plan Order.
[35] *Id.* LCRA Firm Water Customer Curtailment Plan, Section II.
[36] *Id.*
[37] *Id.* Section IV.
[38] 30 Tex. Admin. Code §§ 288.22, 288.30.

LCRA's pro rata curtailment plan for firm customers. It is neither necessary nor appropriate to subject LCRA's entire Drought Contingency Plan to a contested case hearing process as part of a WMP amendment simply because certain elements of the DCP must first receive approval through a more rigorous public process.

**7. Firm customers are not without an appropriate legal remedy.**

Appropriately, the contested case hearing process or other more rigorous legal review process is not available to customers who simply want to challenge the efficacy of particular drought response measures in the DCP. However, customers are not without an appropriate legal remedy if the DCP includes an unenforceable or illegal provision. TCEQ's acceptance of a DCP that includes such a provision would be subject to judicial review. *See* Tex. Water Code § 5.351. Further, should LCRA seek to enforce a DCP provision that runs afoul of a contractual right or obligation, customers may pursue appropriate civil remedies.

At a basic level, customers are ignoring the fact that several of the building blocks of the DCP will necessarily be drawn directly from LCRA's WMP and LCRA's pro rata curtailment plan, both of which provide for a higher level of review and public participation at the Commission level prior to approval. LCRA cannot unilaterally amend the required elements of its WMP or its pro rata curtailment plan simply by including provisions in its DCP that are inconsistent with those approved plans. Again, such action would be subject to judicial review. *See* Tex. Water Code § 5.351. Further, if LCRA were to include requirements in its DCP that should first be included in the WMP or pro rata curtailment plan, affected persons could request the TCEQ to require LCRA to amend those other plans, which provide opportunities for a more rigorous review and public input process.

City of Austin
Austin Water P.O. Box 1088 Austin, Texas 78767 (52) 972-0101

January 30, 2015

Dr. Kathy Alexander
Texas Commission on Environmental Quality (TCEQ)
P.O. Box 13087, MC 160
Austin, TX 78711-3087

Re: LCRA's Application to Amend Its Water Management Plan; Permit No. 5838, Amended and Restated Filing Oct. 2014

Dear Dr. Alexander:

Attached is the City of Austin, Austin Water's submittal of public comments regarding the Lower Colorado River Authority's (LCRA) October 31, 2014 application to amend its Water Management Plan (WMP).

We appreciate the opportunity to provide comments. If you have any questions, or need any additional information, I can be reached at 512-972-0108.

Sincerely,

Greg Meszaros, Director
Austin Water
City of Austin

Attachments

**Comments submitted by the City of Austin**
**to the Texas Commission on Environmental Quality**
**Regarding LCRA's Application to Amend Its Water Management Plan; Permit No. 5838, Amended and Restated Filing Oct. 2014**

**January 30, 2015**

## I. Introduction

The City of Austin submits these public comments on the Lower Colorado River Authority's ("LCRA") Water Management Plan ("WMP"), Application No. 5838A submitted to the Texas Commission on Environmental Quality ("TCEQ") on October 31, 2014. The City is overall supportive of the newly proposed WMP which has been designed generally to be in alignment with the framework provided by TCEQ. The City does have a few key concerns which it has expressed throughout the process which the City believes can be addressed in a simple manner as follows:

(1) The Drought Contingency Plan ("DCP") for firm customers must remain in the WMP for all of the technical, legal, and policy decisions discussed in these comments. An appendix with the proposed changes to the WMP necessary to include the firm customer DCP is provided.
(2) Any order approving amendments to the 2010 WMP must include a provision prohibiting LCRA from imposing mandatory restrictions or curtailments *in any form* on its firm customers except through an amendment to the WMP. A proposed ordering provision for this purpose is provided herein.
(3) Any order approving amendments to the 2010 WMP must include an ordering provision designed to ensure data based on changes in hydrologic conditions is incorporated into the WMP within a reasonable timeframe.
(4) The legal and technical underpinnings of using the 600,000 acre-feet ("AF") combined storage floor for simulations of the period of record should be included in the WMP or an ordering provision in any order approving it.

The City's core comments are that, unless certain safeguards are put in place, one particular change in LCRA's proposed WMP revisions, which was not requested by TCEQ in the TCEQ May 2014 Report,[1] is expected to result in both:

- non-compliance with the terms of the 1988 Adjudication[2] and LCRA's permits for lakes Travis and Buchanan,[3] and

[1] Draft Naturalized Streamflow Updates and Modeling Report, Colorado River Basin, Water Availability Division, Texas Commission on Environmental Quality, May 16, 2014 (herein "TCEQ May 2014 Report".)

- a failure in the technical operation of the plan to provide proper protection to firm customers as envisioned in the TCEQ May 2014 Report.

LCRA proposes moving portions of the WMP related to firm customer curtailment and restrictions into a separate LCRA Drought Contingency Plan ("DCP") such that there is no oversight by TCEQ over these provisions in the WMP process. Both the serious permit compliance problems and technical failures of the WMP expected to result from this proposal are discussed in detail in these comments, along with the necessity of TCEQ retaining direct oversight and affected firm customers continuing to have basic due process rights, including the right to a contested case hearing, regarding these provisions.

Currently LCRA, through what it terms a temporary amendment of its DCP, has placed mandatory restrictions on firm customers while, among other things, fully supplying some interruptible customers without any curtailment. This stands in direct contradiction to LCRA's permit requirements.[4] Firm curtailment provisions, like interruptible curtailment provisions, are fundamental to the operation and effectiveness of the WMP, and both must be assessed in conjunction with each other *in the WMP* to determine whether LCRA is complying with its lake permits. Unilateral actions by the LCRA Board restricting firm customers can greatly alter the expected operation of the WMP by, for example, triggering large interruptible releases not anticipated by model simulations and thus potentially dropping water supplies below emergency levels, triggering a Drought Worse than a Drought of Record declaration and seriously undermining intended protections for firm water supplies. The City understands the intent of the TCEQ May 2014 Report and the new framework proposed to be aimed at completely avoiding this kind of result. Stripping out these essential provisions related to firm customers can be expected to create these types of serious legal and operational issues.

The City, however, believes the compliance concerns regarding LCRA's proposed WMP revisions can be resolved in a straight forward manner by continuing to keep the provisions related to firm customer curtailments, restrictions or drought measures in any form in the WMP, as these have been in some form since the early days of the plan. This does not prevent LCRA from proposing the inclusion in the WMP of mandatory curtailments or usage restrictions on firm customers. It simply assures that any such proposals can be assessed in context to the operation of the entire plan and the necessary compliance with LCRA's permits. In addition the

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[2] *In re The exceptions of the Lower Colorado River Authority and the City of Austin to the Adjudication of Water Rights in the Lower Colorado River Segment of the Colorado River Basin*, No. 115, 414-A-1 (264th Dist. Ct., Bell County, Tex. April 20, 1988) (herein "1988 Adjudication").

[3] Certificates of Adjudication Nos. 14-5478 (as amended) and 14-5482 (as amended) (herein "lake permits").

[4] In addition, as discussed below, consistent with the 1988 Adjudication and terms of LCRA's lake permits, TCEQ recognized in the 1989 WMP Order that a firm demand is a contractual obligation that LCRA must meet 100% of the time through the drought of record. LCRA, however, is now placing restrictions on firm water usage—and thus, LCRA as a result of its own actions, is not meeting firm demand 100% of the time through the drought of record(i.e. prior to declaring a Drought Worse than a Drought of Record.) Such WMP compliance problems would be expected to continue under LCRA's proposal without TCEQ oversight.

City requests an Ordering Provision in the Order, as suggested below in these comments, to be issued with the revised WMP stating that all mandatory drought measures for firm customers of any type must be included in the WMP and mandatory curtailment of or restrictions on firm customers *in any form* may not be implemented by LCRA until all interruptible supply is cut-off and a drought worse than a drought of record ("DWDR") has been declared. The City has understood this to already be the case in the current plan and prior versions of the WMP.

As detailed in these comments the City has a serious commitment to conservation and water savings through drought measures.

## II. Firm Water Drought Measures an integral aspect of WMP and must remain under TCEQ's purview to assure proper operation of plan as a whole

Before taking up discussion of the permit compliance problems with LCRA's proposal, the serious operational problems threatened by LCRA's proposal which can result in a failure of the plan to protect firm customers as TCEQ suggests in the TCEQ May 2014 report should be considered.

The regulation of *both* firm and interruptible water supply is a fundamental and integral part of LCRA's Water Management Plan. LCRA suggests that only regulation of interruptible supply management is fundamental to the WMP,[5] but firm water management, which LCRA proposes to manage entirely under a separate DCP, is not necessary to include in the plan at all. This assertion cannot stand up to even the most casual analysis. Firm water drought measures are inextricably intertwined with the operations and results of the WMP. Any type of restriction on firm water supply, demand or usage affects the amount of combined storage in the lakes, and at times significantly. Triggers for releases of interruptible supply are based on the amount of combined storage. So, put simply, if an action regarding firm customers affects the amount of combined storage, it affects an interruptible release trigger.

An example from the current plan can help illustrate this basic point. A new aspect in the proposed WMP, generally agreed upon by the participating stakeholders, is the use of what is termed a look ahead test. At the time of an Evaluation Date, such as March 1 or July 1, for determining whether there is sufficient combined storage for an interruptible stored water release, a simulation is run to "look ahead" and determine what the effect of a release could be over the next year. Specifically the test looks to determine whether the combined storage would

[5] LCRA in a December 23, 2014 application to TCEQ "Application of the Lower Colorado River Authority for Emergency Authorization related to Water Management Plan," states on page 8 of the document that, "[b]ecause the curtailment provisions of the DCP related to **interruptible supplies** are one of the most fundamental principles underlying the WMP, LCRA cannot unilaterally alter through changes to the DCP that which it cannot alter under the WMP without TCEQ's permission (emphasis added)." LCRA, in this statement, does not recognize DCP provisions related to *firm* supplies a fundamental aspect of the WMP, although, as discussed herein, it is.

fall below 900,000 acre-feet in the upcoming crop season, or whether the lakes would fall below 600,000 acre-feet within twelve months.

For purposes of the simulation, LCRA used a proxy combined storage of 1.22 MAF for the look ahead on March 1. In other words, if the combined storage of the lakes was below 1.22 MAF on March 1 there would be no release of stored water for interruptible customers (except for Garwood Irrigation Division). In the model results provided by LCRA, there are two years in the period of record in which the combined storage is not far below 1.22 MAF. In the simulation results provided by LCRA for the proposed new plan during the September 2014 stakeholder process, the combined storage levels at the end of February in 1950 and 2009 respectively are 1,152,626 AF and 1,194,936 AF.[6] See table attached as Appendix 1.

Savings that result from restrictions on firm customers can change the model results in a drastic manner. A relatively small increase in combined storage due to firm customer restrictions can result in this example in a combined storage above the 1.22 MAF in the two years 1950 and 2009.[7] Instead of those being cut off years, they become years with a large release of interruptible stored water. In either instance there is the potential that the additional releases could drive the combined storage of the lakes below the 600,000 AF emergency level.

The big take away, is that small changes in firm demand can have profound effects on the operation and effect of LCRA's Water Management Plan and therefore any type of regulation of firm water should be under TCEQ's purview as part of the WMP. A more concerning aspect of this fact is that an LCRA Board action with no overview by TCEQ could implement certain firm restrictions to produce a certain desired result with regard to interruptible supply. In short, firm restrictions could be put in place to benefit interruptible water supply—the exact opposite of what is required by LCRA's lake permits in accordance with the 1988 Adjudication, as discussed in more detail below.

An example can again be found with the look-ahead test. If a simulation on the March 1 evaluation date shows that lakes would dip below 900,000 AF during a crop season requiring a cut off of all interruptible supply, then the LCRA, having full authority over firm restrictions/curtailments could require firm customer restrictions sufficient to keep the combined storage above 900,000 AF during the crop year. Firm customers could be cut back to allow for the use of interruptible water in contradiction to LCRA's lake permit requirements. Even if a DWDR is not triggered, significant drops in combined storage can result from the overall effect

[6] http://www.lcra.org/water/water-supply/Documents/CONSOLIDATED-RUN-MONTHLY-FORMATTED-OUTPUT.pdf (last visited 1/29/2015) See page 1 for table of monthly combined storages through period of record from LCRA WAM simulation of the proposed WMP.

[7] Note in particular that on the eve of the March 1 Evaluation Date in 2009 that combined storage is only 25,064 AF below the 1,220,000 AF trigger. Requirements for additional drought savings by all municipal firm customers could relatively easily push combined storage above the trigger resulting in a large interruptible release.

of firm customer drought measures as described. Such potentially serious impacts to combined storage should be reviewed by TCEQ as part of the WMP.

In sum, firm water management, in *any* form, is integral to the Water Management Plan as it necessarily affects the operation of the plan. Those effects may be very significant and can also cause the plan to fail to meet the basic framework intended to protect firm water customers, such as dropping combined storage below 600,000 AF.

### A. Outside of TCEQ's purview, LCRA Board motion in November 2013 sought to eliminate certain outdoor water uses as amendment to LCRA's DCP, with profound impacts to the WMP

At the November 19, 2013 LCRA Board meeting, an LCRA Director made a motion to be effective immediately that would have, among other measures, required municipal customers to take measures to eliminate, what the motion characterized as, "all nonessential uses of water such as landscape irrigation."[8] This motion (which was a proposed amendment to another motion amendment) gained six votes in favor. The motion essentially calling for complete cut off of all outdoor watering was just two votes short of passage on LCRA's 15 member Board. There was no discussion on this item with regard to the profound consequences it would have on firm customers, or that it would, by effect, significantly amend and alter the Water Management Plan without any application to TCEQ. The City disputes that LCRA could enforce such a measure. To cut back firm customers to the benefit or advantage of interruptible customers, simply does not comply with LCRA's permit conditions. This instance points up the need for firm customer DCP provisions to remain <u>fully</u> under TCEQ's purview.

## III. LCRA Permit Conditions

### A. Restricting firm customer supply while fully supplying interruptible customer is <u>opposite</u> to requirements in LCRA's permits

LCRA's lake permit condition which defines the relationship between firm and interruptible water supply (LCRA must curtail interruptible supply to the extent necessary to allow LCRA to

[8] From video recording of November 19, 2013 LCRA Board meeting provided to the City of Austin. Note that the City of Austin submitted comments to TCEQ on February 11, 2014 regarding the TCEQ Executive Director's Emergency Order of January 27, 2014 modifying the LCRA WMP explaining there are numerous negative consequences that can follow from a long-term cut off of outdoor irrigation. This should be a drought measure employed only in extremely dire circumstances. The City of Austin is currently working with citizens to make recommendations for an appropriate combined storage level for the implementation of such a drought measure, which is expected to be well below 600,000 AF. On November 19, 2013 the proposed date for this motion to take immediate effect, the combined storage volume in the lakes was just under 728,000 AF.

satisfy all firm demands)[9] does not provide for an exception or departure from that relationship in times of drought.

In fact, the condition is especially designed or intended to define the relationship in times of drought or shortage. The fundamental concept regarding "interruptible" customers is that these customers can be cut back or cut off *first*—particularly in times of shortage. The permit condition does not authorize this condition to be reversed in times of shortage and it would not make logical sense to do so. That is, in times of shortage, LCRA would do the *opposite* of what their permit condition requires by placing restrictions on firm customer usage while providing a full supply to an interruptible customer.[10] That, however, is what LCRA is doing currently through a "temporary" modification to their DCP and can further implement, possibly in a much more stringent manner, through LCRA's proposal to separate out from the WMP all provisions concerning firm curtailment or restrictions.[11]

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[9] LCRA's lake permits require:

> LCRA shall interrupt or curtail the supply of water under this certificate or under Certificate of Adjudication 14-5482 pursuant to commitments that are specifically subject to interruption or curtailment, to the extent necessary to allow LCRA to satisfy all demands for water under such certificates pursuant to all firm, uninterruptible commitments.

Certificate of Adjudication No. 14-5482 (as amended), p. 4, 2.B.7. Note that Certificate of Adjudication No. 14-5478 (as amended) has the same condition, changing only the number of the Certificate of Adjudication referenced.

[10] Although TCEQ Emergency Orders in 2012, 2013, and 2014 resulted in the cutoff of interruptible stored water supply to three of the irrigation divisions, during these years the Garwood Irrigation Division has continued to receive interruptible stored water supply.

[11] Regarding its Drought Contingency Plan, LCRA explains on its website that:

> Until TCEQ approves amendments to the Water Management Plan, LCRA's Drought Contingency Plan (DCP) can be found in Chapter 4 of LCRA's Water Management Plan (WMP). In November 2013, the LCRA Board adopted a temporary amendment to the DCP to help address the severe drought. The amendment required firm customers such as cities to implement maximum once-a-week watering schedules. Once the amended WMP is approved by the TCEQ, LCRA will develop conforming, stand-alone Drought Contingency Plans for its customers consistent with TCEQ's rules (including those related to public input) and the revised WMP.

http://www.lcra.org/water/water-supply/water-management-plan-for-lower-colorado-river-basin/Pages/default.aspx
Note that developing a DCP consistent with TCEQ rules does not include the kind of direct oversight that TCEQ has over the WMP. Also, the TCEQ Ch. 288 public input opportunities provided with regard to LCRA's temporary amendment to its DCP (which the City believes is not authorized under LCRA's permits) have been very limited. Most recently LCRA posted the item reconfirming this temporary DCP amendment with notice to the public only a few days prior to the November 2014 LCRA Board meeting where it was adopted.

### B. Per LCRA's permits, if all firm demand is not satisfied, interruptible supply must be further curtailed

Based on LCRA's permit conditions, which are at the very core of LCRA's Water Management Plan (WMP) and whether the WMP is doing its job to meet this condition,[12] is an inquiry that starts with whether all firm demand is being satisfied. As a general rule, assuming correct assumptions and data are used in the models, if firm demand is being fully satisfied in model simulations which repeat the hydrology of the period of record to test the effect of proposed curtailment curves, then with regard to establishing the interruptible curtailment curves in the WMP, further curtailment of interruptible supply generally is not necessary.[13] If however, firm demand is not being fully satisfied and models also indicate that it will not be fully satisfied through a repeat of the historic hydrology, then this permit condition calls on LCRA and the WMP to further curtail interruptible supply even to the point of full cut off if necessary.

### C. LCRA acting to restrict firm supply, while fully supplying interruptible customers

Placing mandatory restrictions on firm customers while continuing to supply interruptible customers fails to curtail interruptible supply in the manner required to protect firm supply under LCRA's permits. Important to note is that LCRA is taking action which causes firm demand to not be fully satisfied, while at the same time fully satisfying an interruptible demand. During the mandatory restriction on firm customers imposed under LCRA's Nov. 19, 2013 Board resolution, LCRA has continued to supply interruptible stored water to the Garwood Irrigation Division.[14] If operating in compliance with its lake permits, LCRA lacks the authority to take

[12] The 1988 Adjudication of LCRA's water rights requires as a special condition the preparation of a reservoir operation plan—the WMP—"which shall . . .demonstrate LCRA's compliance with, and its ability to comply with, these special conditions (the "Management Plan"). *Modified Final Determination for Lake Buchanan,* Conclusion of Law No. 4.a. These special conditions which LCRA must demonstrate its ability to comply with through the WMP includes the special condition requiring curtailment of interruptible supply to the extent necessary to allow LCRA to satisfy all demands for firm water under LCRA's lake permits. *Modified Final Determination for Lake Buchanan,* Conclusion of Law No. 4.g

[13] Note that there can be other circumstances besides establishing the curtailment curves in the WMP when this permit condition regarding firm and interruptible supply must be considered, such as in necessary departures from the WMP in Emergency Orders issued by TCEQ. Essentially any decision or policy concerning the allocation of water supply from Lakes Travis and Buchanan must consider this permit condition. Also, in the situation of an ongoing drought, there is the issue as to whether a margin of safety should be factored into the amount of interruptible curtailment needed to satisfy firm demand, when inclusion of new data from continuing unprecedented drought conditions may ultimately require additional curtailment to assure firm demands are satisfied.

[14] LCRA Board Resolution, Nov. 19, 2013, Resolution of the Board of Directors of the Lower Colorado River Authority Regarding Drought Management Actions in Response to Current Drought. Item 2 provides that, "[t]he LCRA Drought Contingency Plan is temporarily amended to provide for additional regulation of water use by firm water customers . . ." The item requires that "[f]irm customers *shall* adopt and implement watering restrictions (emphasis added) . . . )" limiting landscape irrigation to once a week if combined storage is below 1.1 MAF on March 1, 2014 and interruptible stored water to all divisions except Garwood have been cut off. The LCRA Board

this action. LCRA can only place such restrictions on firm customers to the extent that the conditions in the lake permits, along with other contractual obligations to firm customers, have been met. For these reasons all DCP provisions concerning firm and interruptible customers need to remain in the WMP and be subject to review by TCEQ with public notice and an opportunity for a contested case hearing. By keeping all DCP provisions in the WMP, LCRA is not impeded from seeking changes to firm curtailments or restrictions. LCRA, through a WMP amendment, can seek such modifications. Whatever changes are made to firm customers' DCPs, they should be able to survive scrutiny at TCEQ regarding permit compliance or in a contested case process.

A proper and necessary reading of this permit condition requires LCRA to not restrict firm usage while providing *any* interruptible supply. LCRA imposed firm customer restrictions, while supplying interruptible stored water to the Garwood Irrigation Division in 2014 for first and second crop. Thus far, LCRA has indicated it would only stop providing interruptible stored water to Garwood if a DWDR is declared. Firm supply, however, is being restricted by LCRA before a DWDR is declared. Until the current WMP proposal, LCRA previously has been careful in crafting the WMP (including the current plan) to make sure firm customer drought contingency provisions are *voluntary* before the declaration of a DWDR. This arrangement generally meets LCRA's permit conditions.[15]

For example, LCRA's current WMP states that, "[w]henever total storage in Lakes Buchanan and Travis is at or below 1.4 million acre-feet, LCRA *requests* its firm water customers implement the voluntary drought restrictions contained in the drought contingency plans . . . (emphasis added)."[16] Also, at 900,000 AF "LCRA will *ask* all its firm water customers to implement mandatory water use reduction measures in their Drought Contingency Plans (emphasis added)."[17] Note that LCRA is asking firm customers at 900,000 AF to voluntarily place mandatory restrictions on their own customers—this is not a mandatory restriction on the firm customers themselves.

In the 2010 WMP when lake storage falls below 600,000 AF and the LCRA Board determines all criteria for a DWDR have been met, then a mandatory pro rata curtailment of LCRA's firm customers' demands will be implemented.[18] Further, upon this occurrence, "[a]ll uses of interruptible stored water will be totally cutoff prior to and during any pro rata curtailment of

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on November 19, 2014 adopted a resolution stating that the drought response measures for firm customers adopted in the November 2013 resolution remain in effect. Although two years before this resolution the City initiated one-day-per-week watering restrictions, the City has objected to the mandatory imposition of this requirement by LCRA prior to the declaration of a DWDR and cut off of all interruptible customers.

[15] Although it should be noted that designing a WMP that provides interruptible supply in a manner that frequently drives lake storage down to levels where firm customers would be required to implement DCP restrictions on a voluntary basis could raise the question as to whether this complies with LCRA's permit conditions.

[16] Water Management Plan for the Lower Colorado River Basin, Effective September 20, 1989, Including Amendments through January 27, 2010 (herein "2010 WMP"), p. 4-32.

[17] *Id.*

[18] *Id.*

firm stored water supplies."[19] The current WMP provides as well that, "LCRA cannot invoke mandatory curtailments of firm water demand unless a particular drought event is determined to be more severe than the Drought of Record or some other water emergency that drastically reduces the available firm water supply."[20]

In LCRA's October 31, 2014 application to TCEQ to amend the WMP, LCRA strips out all of these provisions concerning firm customer voluntary and mandatory curtailment and provides only a single paragraph.[21] The first two sentences of this paragraph might lead one to think that LCRA will adhere to the proper policy required by LCRA's permits. Stated, however, in the third sentence, is LCRA's intention to require actions by its firm customers, ostensibly under some contracting authority. Based on current experience these can be expected to include mandatory restrictions on its firm customers while interruptible customers continue to be supplied and before a DWDR is declared. LCRA does not have the authority to require contracts to provide water in a manner that does not comply with its water rights permits. TCEQ oversight through the WMP over any mandatory restrictions on or curtailments of firm customers is essential to assuring permit compliance.

In 1989 the Texas Water Commission, predecessor agency to TCEQ, issued an Order approving the first Water Management Plan. A Finding of Fact in this 1989 Order states, "[a] 'firm' demand is a contractual obligation or other commitment of LCRA's which must be met 100% of the time through the drought of record."[22] (Note that the Commission's finding elaborates on the meaning of the term "firm, *uninterruptible* commitments (emphasis added)" in the 1988 Adjudication and LCRA's permits.) The Commission recently reaffirmed this in the February 27, 2014 Emergency Order, which stated in Conclusion of Law No. 3 that:

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[19] *Id.*
[20] *Id.*
[21] In LCRA's application on page 4-18 of the draft WMP it states:

> Consistent with state law, LCRA will not invoke mandatory curtailments of Firm Water demand unless a particular drought is declared to be a Drought Worse than the Drought of Record, or some other water emergency exists that drastically reduces the available Firm Water supply. However, consistent with state law and Commission rules regarding drought contingency planning, LCRA will engage its Firm Water customers and seek voluntary reductions of Firm Water use in the early stages of a drought through its adoption and implementation of a separate Drought Contingency Plan (DCP). Moreover, as part of its contracts, LCRA will continue to require each of its Firm Water customers to prepare and adopt a legally enforceable local drought contingency plan consistent with LCRA's rules and state law.

LCRA's Application to Amend Its Water Management Plan; Permit No. 5838, Certificate of Adjudication No. 14-5478, as amended and Permit No. 5838, Certificate of Adjudication No. 14-5482, as amended, Amended and Restated Filing Oct. 2014, p. 4-18. http://www.lcra.org/water/water-supply/water-management-plan-for-lower-colorado-river-basin/Documents/2014-wmp-application-files/Exhibit-A_ProposedWMP_2014Oct31_stamped.pdf

[22] Texas Water Commission (now Texas Commission on Environmental Quality) Order Approving Lower Colorado River Authority's Water Management Plan and Amending Certificates of Adjudication Nos. 14-5478 and 14-5482, Sept. 20, 1989, p. 15, Finding of Fact No. 81.

> LCRA is obligated under a 1988 court order and Certificates of Adjudications Nos.14-5478 and 14-5482 to meet the demands of its firm, non-interruptible water supply customers 100% of the time without shortage through a repeat of the conditions in the Drought of Record.[23]

In essence, LCRA must manage supply under the WMP so as to meet firm water demand 100% of the time without any shortage through a repeat of the drought of record. The curtailment of interruptible supply must be established in a manner to achieve this result. The City of Austin during this drought has, of course, cut back its demand significantly through conservation and drought measures. LCRA meeting firm demand 100% of the time through a repeat of the drought of record should not, however, be achieved by or based on mandatory curtailments or restrictions imposed on firm customer demand by LCRA that simply reduces firm demand. LCRA rather should meet this by assuring interruptible supply is sufficiently curtailed and that not more than the Combined Firm Yield is committed, among other things.

Regarding LCRA's temporary amendment to its DCP in November 2013, the City objected to this in multiple conversations with LCRA legal staff and the City has registered its concerns and issues in this regard in letters to LCRA on November 15, 2013, March 31, 2014 and September 15, 2014. Also the City spoke to TCEQ staff in December 2013 to indicate an application for an emergency order departing from the WMP, as sent to the Commission in late 2013 and early 2014 by LCRA, was not the appropriate place to address this important WMP/DCP issue. The matter would likely require legal analysis beyond the scope of what could be processed in an emergency hearing. Instead, the City requested and TCEQ granted a finding of fact that TCEQ made no determination addressing this rule.[24] TCEQ understood that LCRA had already applied for revisions to the entire WMP and that there would be a process to address many issues related to the WMP. That time has arrived. The City hopes that by raising these issues early in the process and providing the analysis and suggestions herein that a hearing on this issue of critical importance to firm customers can be avoided.

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[23] *TEX. COMM'N ENVTL. QUAL., Docket No. 2014-0124-WR, Order Affirming in Part, and Modifying in Part, the Executive Director's Emergency Order Authorizing the Lower Colorado River Authority to Amend its Water Management Plan (Feb. 27, 2014)* at http://www.tceq.texas.gov/assets/public/agency/LCRA-commission-order.pdf

[24] In a February 27, 2014 Commission Order, TCEQ stated in Finding of Fact 57:

> 57. The LCRA Board approved a no more than once per week watering restriction that would take effect in March 2014 if combined storage is below 1.1 million AF and interruptible stored water to the Gulf Coast and Lakeside irrigation divisions and Pierce Ranch has been cut off. **LCRA has not requested TCEQ approval of this action and this order does not address such action** (emphasis added).*Id.*

### D. Permit conditions dictate how LCRA can contract with Firm and Interruptible Water Supply Contracts

With regard to the obligations the Commission puts on LCRA as far as the manner LCRA must contract with its firm and interruptible customers, it is worth some time to look closer at the specific language of the permit condition for lakes Travis and Buchanan which stems from the 1988 Adjudication. The permits state:

> LCRA **shall interrupt** or curtail the supply of water under this certificate or under Certificate of Adjudication 14-5482 pursuant to ***commitments*** that are specifically **subject to interruption** or curtailment, to the extent necessary to allow LCRA **to satisfy** all demands for water under such certificates pursuant to all **firm**, uninterruptible ***commitments*** (emphasis added).[25]

In case there is any doubt that the term "commitments" in this permit condition refers to contracts, the next sentence in that same paragraph leaves no room for doubt stating expressly that:

> **Commitments** to supply water on a non-firm, interruptible basis may be interrupted or curtailed as necessary either as a pro-rata basis or in accordance with a system of priorities, as may be set forth in various ***contracts*** and resolutions **that define such commitments** (emphasis added).[26]

In essence, this permit condition requires that supply of water pursuant to interruptible *contracts* must be curtailed to the extent necessary that all demands for water pursuant to firm *contracts* are satisfied. All interruptible contracts must squarely fit within the parameters of this permit condition and be interpreted in a manner that complies with this condition. No interruptible contract can be so different that it can disregard these basic permit requirements for interruptible contracts. Similarly LCRA must also contract with *firm* customers in a manner consistent with this condition. Thus in requiring firm customers by contract to adhere to DCP provisions, those DCP provisions must still comply with LCRA's permit requirements.

## IV. Denial of Due Process—LCRA seeks an approach that would deny process to firm customers and provide superior legal rights to interruptible customers

The 1988 Adjudication requires that:

[25] Certificate of Adjudication No. 14-5482 (as amended), p. 4, 2.B.7. Note that Certificate of Adjudication No. 14-5478 (as amended) has the same condition, changing only the number of the Certificate of Adjudication referenced.
[26] *Id.*

> The initial proceeding to consider the adoption of the Management Plan, and any major amendment thereof, shall be pursuant to contested case procedures. Any proceeding to consider the adoption or major amendment of the Management Plan shall be preceded by notice and opportunity to request a hearing in accordance with the Commission's regulations applicable to water rights permitting proceedings. *Modified Final Determination for Lake Buchanan* Finding of Fact No. 25.a. (emphasis added).

LCRA proposes a system whereby its interruptible customers would have vastly superior legal rights than their firm customers. Interruptible customers would continue to have the right to dispute proposed amendments to interruptible curtailment in a contested case hearing. Despite impacts to the entire operation of the WMP from firm restrictions that are "major," as discussed above, firm customers would not, in LCRA's request, have any rights to seek a contested case hearing at TCEQ with regard to restrictions or curtailments of firm customers. (*Any* provision proposing to change either firm or interruptible curtailment or restrictions in any manner should be considered major as these actions go to the very heart of the plan.) This contradicts the 1988 Adjudications provision for contested case procedures with regard to these WMP revisions. Further, there is nothing in the 1988 Adjudication or any law that would suggest that interruptible customers can be placed in a far superior position relative to firm customers.

Separating out the firm customer DCP provisions from the WMP deprives firm customers of a contested case process to challenge these provisions which are integral to the operation of the WMP. LCRA's proposal would place these provisions under a very different type of process under TCEQ's rules in Chapter 288, which is merely any opportunity for public input (see eg. 30 TAC 288.22(a)(1)—and as experienced at LCRA with regard to the "temporary" amendment to the DCP, that opportunity may be very limited. More importantly, the Chapter 288 process does not offer any contested case process wherein proposed actions can be challenged.

## V. LCRA's request places limitations on TCEQ's jurisdiction and purview in contradiction to prior Commission Orders

Another concerning aspect of LCRA's proposal to remove the firm customer DCP from the WMP are the inherent and intended limits it would place on TCEQ's jurisdiction. The Commission, from the beginning, intended to retain the broadest possible jurisdiction concerning issues related to the WMP is clear under 1989 WMP Ordering Provision (n):

> The Commission **retains jurisdiction to resolve any and all disputes regarding the allocation of stored water from Lakes Travis and Buchanan**, notwithstanding the procedures and guidelines set forth in the Water Management Plan.

"[A]ll disputes regarding the allocation of stored water" is extremely broad jurisdiction and would include disputes concerning virtually any action taken concerning this allocation. Most certainly it would include curtailments or restrictions upon firm customer use of water from this supply—this is an allocation issue. This also suggests that the Commission would still have jurisdiction over a dispute regarding an LCRA Board action on firm water supply despite what is in, or not in, the WMP. Due to LCRA's request, we would, however, ask TCEQ to reaffirm its jurisdiction.

### A. The Commission realized potential for drought measures to impact WMP and expressly included Ordering provisions to assure TCEQ's jurisdiction over these and other measures

Because the TCEQ (as its predecessor agency Texas Water Commission (TWC)) realized the potential to affect the operation of the WMP through drought measures on firm customers, TCEQ Orders issuing the WMP have expressly retained TCEQ's jurisdiction over disputes regarding allocation of stored water from the lakes. The Commission also went to some lengths to assure that it retained jurisdiction over not just the WMP but any related drought plans—whether incorporated or separate from the WMP. The 1989 Commission Order makes reference to a pre-Chapter 288 "drought contingency plan." The original "drought contingency plan" was clearly subject to the Commission's jurisdiction. Ordering provision (g) required that:

> LCRA shall submit a drought contingency plan within one year from the date the Commission signs this order approving the Water Management Plan. Such plan shall be subject to the review and approval of the Commission.

Even though that early "drought contingency plan" may have changed form over the years, this fundamental principle of providing for Commission oversight over such a plan should not change. Just as such oversight was needed in 1989, it is needed today. No doubt the Commission could see then that such a drought contingency plan would influence the operation of the WMP, possibly in very significant ways, and is inextricably intertwined with the WMP. It remains so today—perhaps even more so. Although the Drought Contingency Plan is subject to new rules, it does not change the general purpose of keeping the DCP under TCEQ's jurisdiction.

The Commission continued with this principle in subsequent Orders. In the December 23, 1991 Order the Commission approved a Drought Management Plan but expressly provided in Ordering Provisions (b) and (c) that:

> The Drought Management Plan shall be subject to the continuing right of supervision of the Commission, and the Commission, on its own motion, may reconsider any element of the plan at any time in the future (emphasis added).
>
> LCRA's responsibility and authority under the Drought Management Plan is limited to the operational control of the Highland Lakes and LCRA's facilities downstream, and is limited by the terms of this Order and the Commission's September 7, 1989 Order.

Clearly the Commission intended such plans to remain under its jurisdiction and to make LCRA's authority under such plans limited in scope and subject to the ordering provisions related to the Water Management Plan which are based on effectuating and showing compliance with LCRA's permit conditions.

Similar to Ordering Provision (n) from the 1989 WMP Order quoted above, the 1991 Order continues in this manner providing, significantly, in Ordering Provision (j) that the Commission retains jurisdiction notwithstanding procedures or guidelines in either the WMP or DMP stating:

> The Commission retains jurisdiction to resolve any and all disputes regarding the allocation of stored water from Lakes Travis and Buchanan, notwithstanding the procedures and guidelines set forth in the Water Management Plan and/or the Drought Management Plan (emphasis added).

Certainly the Commission could see the potential for such disputes and that these needed to remain under its jurisdiction. The Commission, in this Order, approved LCRA's Drought Management Plan. Clearly then, the Commission's concerns about a "dispute regarding the allocation of stored water" from the lakes included issues arising from the Drought Management Plan that the Order approved. The Commission with this provision recognized the necessary interrelatedness of the drought plan and the WMP as they touch on the same fundamental issue—the allocation of stored water. Further, the Commission is stating that although these two plans had "procedures and guidelines" (i.e. authority to take actions related to the allocation of stored water), that authority was not intended to be beyond the reach of the Commission's authority and jurisdiction. Again, the Commission no doubt saw the potential for the plan to be implemented in a manner that did not adhere to the fundamental principles of the 1988 Adjudication and LCRA's permit conditions. That same need for oversight remains today.

### B. The City Proposes Draft Revisions to WMP and Ordering Provision

See attached Appendix 2, showing the changes to the text of LCRA's October 2014 Amended Application that would be needed to implement the City's request that the firm customer DCP provisions remain in the WMP. The City has replaced the October 2014 Application's Section

4.6 Curtailment of Firm Water Demands with the LCRA's May 2012 Application's Section 4.7 Curtailment of Firm Water Demands, insofar as those provisions address firm water customers. The numbering has been changed and conforming changes have been made to the tables of content and two summary paragraphs, which are identified by the page numbers on which they appear in the October 2014 Application. Note that as this section, which is related to curtailment of firm water demands, is interrelated with other sections and other documents and involves important policy considerations, the City reserves the right to make further comment or suggest additional changes regarding this section.

Below is the City's proposed Ordering Provision concerning imposition of mandatory actions on firm customers:

> Any imposition of mandatory actions on firm customers as a result of drought or any other conditions must be incorporated into the Water Management Plan and can only be changed by amendment of the Water Management Plan. Such mandatory actions on firm customers include but are not limited to any type of mandatory restrictions on watering or water use, mandatory curtailment of firm water use or demand, mandatory regulation of water use, or mandatory Drought Contingency Plan provisions by LCRA concerning firm water use, supply or demand. The establishment of such mandatory actions on firm customers requires review and approval by the Commission and requires notice and an opportunity for public comment and contested case hearing. None of the above actions can be taken without the LCRA Board first declaring a Drought Worse than a Drought of Record based on the criteria in the Water Management Plan and the complete cut off of all stored water supplies to LCRA interruptible water customers. To the extent that ordering provision 1.g. in the 2010 WMP Order is not consistent with this ordering provision, this ordering provision controls.

### C. LCRA suggests change not requested by TCEQ which threatens to undermine changes proposed by TCEQ

It is critical to note that the changes LCRA has proposed to TCEQ regarding the DCP for firm customers are not changes that TCEQ requested in the TCEQ May 2014 Report or related correspondence. LCRA has taken the opportunity to suggest a major change which threatens to undermine the other changes TCEQ requested, as mandatory restrictions or curtailments on firm customers can change storage levels and in turn trigger large interruptible releases not contemplated in the simulations of the plan.

### D. LCRA, in effect, currently imposes pro-rata curtailment without the declaration of a DWDR, in contradiction to the WMP and the 1988 Adjudication and without any oversight by TCEQ

Note that the one-day a week watering schedule for some firm customers is the primary drought measure needed to meet the initial pro-rata cut back required by LCRA. At a firm customer meeting in June 2014, LCRA noted the need for customers to make plans to meet the mandatory pro-rata provisions. LCRA suggested means for meeting the initial 20% curtailment. The LCRA presentation states:

> Minimum recommended measures at 20%
>
> - Municipal
>
> - Landscape irrigation allowed, limit to once/week or less, very limited hours.
>
> - Other outdoor restrictions: fountains, vehicle washing, washing buildings.[27]

What LCRA's presentation conveys is that for some municipal firm customers most of the savings required to meet a 20% cut back from the reference year is achieved by imposing one-day a week outdoor watering restrictions. By requiring this one day a week watering schedule through a temporary amendment to its WMP, LCRA has, in effect, implemented pro-rata curtailment on these firm customers long before declaring a drought worse than a drought of record which the WMP requires before mandatorily imposing such restrictions. LCRA's Firm Watering restrictions are essentially mandatory firm curtailment by another name.

## VI. TCEQ May 2014 Report

### A. New WMP framework and flowdata update essential to effective plan

TCEQ also asked for comments regarding the TCEQ May 2014 Report. The City of Austin wants to express its appreciation to the TCEQ for the guiding framework established by the TCEQ May 2014 Report on LCRA's WMP. In addition, the City believes that the update of the naturalized streamflows through 2013 in the TCEQ May 2014 Report are essential to the effectiveness of the WMP in protecting firm water supplies. The streamflow data update also

[27] http://www.lcra.org/water/water-supply/water-supply-contracts/Documents/2014-June-5-Pro-Rata-Curtailment-Update.pdf (last visited January 28, 2015)

sets a positive standard for future updates of hydrology necessary to keep the WMP properly protective.

The TCEQ May 2014 Report, through its framework, incorporates essential principles for protecting firm water supply. TCEQ's WMP framework provides a floor of 600,000 acre-feet combined storage (or 30% capacity) of Lakes Travis and Buchanan below which storage will not drop in the modeling at any time in the period of record.[28]

### B. Request to identify essential principles supporting 600,000 AF floor

Behind this 600,000 AF floor for combined lake storage are some important principles that should also be *expressly* incorporated into the WMP to the extent they are not already. A key principle behind TCEQ's framework and the 600,000 AF floor is that interruptible stored water supply should not cause firm customers to be driven into curtailment, consistent with LCRA's lake permit conditions as discussed below. This is also the combined storage level at which almost certainly a Drought Worse than a Drought of Record (DWDR) would be declared by the LCRA Board.[29] At 600,000 AF, when a DWDR is declared, curtailment of firm customers begins with an initial curtailment of 20% of demand. If a model simulation of the WMP shows in a repeat of the period of record for Lakes Travis and Buchanan that combined storage falls below 600,000 AF, then this has happened because interruptible stored water supply has not been sufficiently curtailed in the plan. The principle that firm customers should not be driven into mandatory curtailment by interruptible is consistent with and flows from LCRA's lake permit conditions established initially in the 1988 Adjudication of LCRA's water rights.

Regarding the City's request that TCEQ identify the core principles supporting the 600,000 AF floor, support for those are also found throughout LCRA's submittal for the plan revision generally and in the recent Emergency Order submittal. P. 4-2 of the draft WMP states:

> When determining available Interruptible Stored Water supplies, it is essential that Firm Water demands be protected during a repeat of the historic 1950s Drought of Record (DOR).

[28] Note that this 600,000 AF floor can also be changed in a WMP amendment process. A report commissioned by LCRA by Freese and Nichols found that over time as firm demands on the combined storage of Lakes Travis and Buchanan increase that the protections for firm customers diminish and this storage content criteria in future plans should be reevaluated. The report states, "[a]s firm demands increase over time, the reservoir content tends to go down faster after it has reached 600,000 acre-feet. As a result, the 600,000 acre-foot storage trigger for declaring a drought worse than the drought of record will afford less protection over time." Revised Report – Method to Determine Drought Worse than the Drought of Record, April 2012 prepared for: LCRA by Freese and Nichols, Inc., pages 18 and 19.

[29] In LCRA's WMP three criteria must be triggered for the LCRA Board to declare a DWDR. Two of those criteria have already been triggered—drought for more than 24 months and inflows worse than the Drought of Record. Falling below 600,000 AF combined storage is the third criteria. LCRA 2010 WMP.

This sentence cites as support in a footnote LCRA's lake permit conditions. Taken together with the permit condition this "essential" protection of Firm Water demands through a repeat of the DOR is achieved by maintaining the combined storage above 600,000 AF through a DOR, as storage below 600,000 AF is expected to trigger a declaration of a DWDR and the initial curtailment of firm demands.

In the December 23, 2014 Emergency Order application LCRA states another key principle on page 2:

> This relief is the most practicable alternative to addressing the emergency conditions faced by the lower Colorado River basin by better ensuring that firm customer demands are not curtailed while the drought continues because of releases of interruptible water for irrigated agriculture (emphasis added).

Another basic principle is that a Water Management Plan, by design, should not plan on managing such that storage levels fall below emergency levels. The 600,000 AF combined storage level is rightfully classified as an emergency condition.[30] This is good planning and common sense. These are important under-pinnings for the framework proposed by TCEQ. The framework as well as these *key principles behind the framework should be acknowledged and incorporated into the WMP*. The City asks that TCEQ include a paragraph to the WMP that captures these fundamental principles supporting the 600,000 AF floor.

### C. Stages for Drought Management

Development of three stages of drought management appears to be a reasonable approach *when paired with the principle that water will be managed to stay above the 600,000 AF combined storage level through a simulated repeat of the period of record*. Nonetheless, as such a plan is tested with time, some portions may need to be revisited. Events that depart from the historic record will continue to occur. The basin, for example, can return to extraordinary drought at any time, so there could be a shift from "normal" conditions to extraordinary drought after a release under the normal conditions. Also, a need for emergency orders may continue even for a well thought through plan.

## VII. 2014 flow data—identifying a reasonable timeframe for incorporation into WMP

Provisional data shows 2014 surpassing 2013 as the second lowest year for inflows into the Highland Lakes. This data is significant as 2014 now extends the current drought for another

[30] See http://www.lcra.org/water/water-supply/drought-update/Documents/Water_Supply_Dashboard.pdf (last visited Dec. 31, 2014)

entire year of extremely low inflow. An already unprecedented drought has in this manner become much worse. Regarding this kind of very significant additional hydrological data from 2014, the 1989 Order in FOF 51 states that the "rule curve" in the WMP:

> will be modified as firm demands increase, and as hydrologic conditions change in the Colorado River Basin (emphasis added).

Those conditions have changed with 2014 ending as the second lowest year for inflows and extending the period of this unprecedented drought for another year. It is another year that simulations of the period of record need to show that water supplies can be maintained to keep combined storage above 600,000 AF. Now a reasonable timeframe for incorporating this significant data needs to be identified. As of yet the naturalized flow data for 2014 is not yet available, but it is possible that it could be available for use in simulations sometime in 2015, so it is both realistic and appropriate to consider incorporating such data sometime before any WMP revision related to incorporate the operation of a new downstream off-channel reservoir. The City is prepared to assist in that effort in whatever way it can. The City believes that waiting for a plan amendment related to the incorporation of downstream off-channel reservoir operation, that may not be finalized until 2020 or later, for example, would not incorporate this data and make any necessary adjustments to assure the operation of the plan to meet the new framework in a reasonable timeframe.

## VIII. City of Austin conservation savings and drought savings have helped prevent storage levels from falling below 600,000 AF

The City of Austin estimates, based on information provided by LCRA, that just since September 2011 when the City starting implementing a one-day a week watering schedule that these drought measures, along with other conservation and reuse savings have saved a total of more than 160,000 AF. These savings, the City believes have saved the combined storage from dipping below 600,000 AF in September 2013 when combined storage reached 637,000 AF, but also has prevented the reservoirs from falling below 600,000 AF currently and for a large portion of 2014.

## IX. Conclusion

LCRA's proposal to move all provisions related to firm customer curtailment and/or restrictions into a separate stand-alone Drought Contingency Plan essentially beyond TCEQ's purview for the WMP threatens to greatly disrupt the basic assumptions the model results are based upon and result in non-compliance with LCRA's permit conditions. This is especially true when mandatory drought measures are imposed on firm customers while interruptible customers continue to receive a full supply. The City proposes to keep the firm customer DCP in the WMP and additionally the City has proposed Ordering Provision language herein which it hopes will

address the issues raised. Also the City requests that a reasonable timeframe be identified for incorporating the flow data for 2014 as it represents a significant extension of the current drought which must be considered in the WMP models to assure adequate protections of firm water supplies. In addition, the City asks that a brief statement of the fundamental principles underpinning the 600,000 acre-foot floor be included in the WMP to assure the maintenance of these principles over time.

The City appreciates this opportunity to provide comments during this informal public comment period. These comments are generally focused on critical high-level points. The City anticipates providing additional detailed comments as the process continues.

# Appendix 1

## *CONSOLIDATED RUN - MONTHLY DETAILED OUTPUT*

09/06/2014
05:21 PM

LCRA SYSTEM END OF MONTH STORAGE

***bold/italic*** lt 900K storage

| |
|---|
| NORMAL |
| LESS THAN SEVERE |
| EXTRAORDINARY(rule) |
| LOOK AHEAD |

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | AVERAGE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1940 | 1,950,854 | 1,952,555 | 1,930,751 | 1,932,790 | 1,917,015 | 1,964,429 | 1,958,753 | 1,899,227 | 1,804,887 | 1,780,397 | 1,873,641 | 1,937,111 | 1,908,534 |
| 1941 | 1,932,556 | 1,933,820 | 1,947,529 | 1,952,422 | 1,964,429 | 1,964,429 | 1,939,637 | 1,851,186 | 1,816,460 | 1,929,533 | 1,912,567 | 1,897,263 | 1,920,153 |
| 1942 | 1,878,748 | 1,862,670 | 1,837,909 | 1,962,738 | 1,964,429 | 1,900,856 | 1,793,008 | 1,772,369 | 1,790,287 | 1,954,864 | 1,952,570 | 1,949,895 | 1,885,029 |
| 1943 | 1,934,841 | 1,914,101 | 1,896,452 | 1,867,229 | 1,770,183 | 1,711,516 | 1,640,223 | 1,511,282 | 1,463,305 | 1,433,197 | 1,415,228 | 1,415,163 | 1,664,393 |
| 1944 | 1,471,930 | 1,536,472 | 1,599,701 | 1,586,533 | 1,912,830 | 1,833,473 | 1,708,593 | 1,712,148 | 1,683,754 | 1,693,032 | 1,701,079 | 1,765,681 | 1,683,769 |
| 1945 | 1,889,417 | 1,961,053 | 1,957,770 | 1,962,937 | 1,905,859 | 1,816,466 | 1,796,980 | 1,689,863 | 1,659,141 | 1,668,482 | 1,656,425 | 1,660,352 | 1,802,062 |
| 1946 | 1,686,291 | 1,727,703 | 1,741,578 | 1,796,313 | 1,913,805 | 1,788,848 | 1,661,202 | 1,539,329 | 1,533,084 | 1,536,297 | 1,572,939 | 1,605,100 | 1,675,207 |
| 1947 | 1,757,891 | 1,778,562 | 1,825,271 | 1,836,980 | 1,774,072 | 1,654,097 | 1,529,307 | 1,415,682 | 1,320,372 | 1,288,736 | 1,263,661 | 1,261,415 | 1,558,837 |
| 1948 | 1,245,649 | 1,237,527 | 1,221,946 | 1,208,084 | 1,187,510 | 1,254,068 | 1,247,376 | 1,162,643 | 1,110,208 | 1,079,450 | 1,052,411 | 1,034,545 | 1,170,118 |
| 1949 | 1,030,221 | 1,070,752 | 1,113,816 | 1,247,603 | 1,329,671 | 1,316,800 | 1,262,627 | 1,210,845 | 1,175,655 | 1,166,959 | 1,147,143 | 1,143,071 | 1,184,597 |
| 1950 | 1,135,964 | 1,152,626 | 1,122,966 | 1,132,655 | 1,132,930 | 1,086,321 | 1,036,920 | 976,524 | 963,513 | 929,203 | 904,915 | 887,566 | 1,038,509 |
| 1951 | 875,545 | 863,937 | ***846,462*** | ***822,105*** | ***882,176*** | 985,338 | 916,393 | ***852,860*** | ***807,715*** | ***764,488*** | 737,875 | 721,822 | 839,726 |
| 1952 | 704,995 | 690,392 | ***665,066*** | ***712,136*** | ***814,915*** | ***772,818*** | ***722,648*** | ***649,517*** | 1,591,265 | 1,550,816 | 1,561,583 | 1,680,927 | 1,009,757 |
| 1953 | 1,712,299 | 1,721,237 | 1,705,072 | 1,684,378 | 1,758,745 | 1,593,125 | 1,477,807 | 1,388,946 | 1,312,196 | 1,352,250 | 1,325,420 | 1,305,484 | 1,528,080 |
| 1954 | 1,291,565 | 1,261,629 | 1,221,446 | 1,296,481 | 1,369,861 | 1,293,261 | 1,226,933 | 1,158,289 | 1,103,709 | 1,077,418 | 1,078,458 | 1,060,300 | 1,203,279 |
| 1955 | 1,062,150 | 1,063,711 | 1,028,885 | 994,285 | 1,383,537 | 1,460,982 | 1,451,627 | 1,432,778 | 1,558,192 | 1,553,356 | 1,529,179 | 1,505,643 | 1,335,360 |
| 1956 | 1,484,039 | 1,473,443 | 1,427,735 | 1,400,642 | 1,577,387 | 1,451,729 | 1,352,236 | 1,252,016 | 1,167,077 | 1,132,572 | 1,109,234 | 1,090,509 | 1,326,552 |
| 1957 | 1,070,941 | 1,060,656 | 1,080,799 | 1,663,586 | 1,954,101 | 1,947,368 | 1,900,015 | 1,849,069 | 1,835,291 | 1,956,864 | 1,960,073 | 1,955,386 | 1,686,179 |
| 1958 | 1,956,703 | 1,959,303 | 1,957,166 | 1,956,998 | 1,964,429 | 1,964,429 | 1,882,266 | 1,802,543 | 1,797,313 | 1,813,678 | 1,815,152 | 1,802,931 | 1,889,409 |
| 1959 | 1,790,235 | 1,783,615 | 1,768,762 | 1,809,633 | 1,739,129 | 1,873,906 | 1,906,287 | 1,835,833 | 1,772,363 | 1,964,429 | 1,964,429 | 1,962,889 | 1,847,626 |
| 1960 | 1,960,462 | 1,960,419 | 1,956,676 | 1,951,082 | 1,877,677 | 1,736,821 | 1,665,630 | 1,745,333 | 1,691,722 | 1,787,447 | 1,812,681 | 1,926,283 | 1,839,353 |
| 1961 | 1,961,285 | 1,960,415 | 1,951,542 | 1,929,948 | 1,843,909 | 1,946,804 | 1,964,429 | 1,884,992 | 1,872,930 | 1,878,614 | 1,885,381 | 1,886,672 | 1,913,910 |
| 1962 | 1,880,558 | 1,864,396 | 1,841,277 | 1,826,463 | 1,731,214 | 1,643,316 | 1,555,403 | 1,441,093 | 1,383,930 | 1,369,405 | 1,358,419 | 1,348,020 | 1,603,625 |
| 1963 | 1,331,876 | 1,326,804 | 1,297,477 | 1,267,256 | 1,241,828 | 1,167,802 | 1,075,069 | 1,026,715 | 989,809 | 967,879 | 991,265 | 989,841 | 1,139,468 |
| 1964 | 997,721 | 1,021,580 | 1,045,264 | 1,050,154 | 1,012,010 | 957,044 | ***894,040*** | ***862,058*** | 1,293,340 | 1,324,875 | 1,384,753 | 1,392,842 | 1,102,973 |
| 1965 | 1,410,541 | 1,586,532 | 1,602,710 | 1,582,377 | 1,964,429 | 1,935,627 | 1,831,775 | 1,713,270 | 1,677,322 | 1,660,459 | 1,663,384 | 1,700,888 | 1,694,110 |
| 1966 | 1,710,057 | 1,723,056 | 1,733,135 | 1,758,644 | 1,800,975 | 1,686,176 | 1,560,999 | 1,511,865 | 1,509,407 | 1,485,066 | 1,464,317 | 1,450,232 | 1,616,161 |
| 1967 | 1,433,498 | 1,418,899 | 1,388,624 | 1,356,315 | 1,304,957 | 1,142,810 | 1,065,153 | 1,012,250 | 1,028,928 | 1,044,315 | 1,073,862 | 1,077,464 | 1,195,590 |
| 1968 | 1,696,432 | 1,792,072 | 1,957,771 | 1,961,072 | 1,964,429 | 1,949,920 | 1,908,403 | 1,802,101 | 1,746,420 | 1,713,494 | 1,704,001 | 1,695,121 | 1,824,270 |
| 1969 | 1,679,613 | 1,670,487 | 1,666,958 | 1,746,580 | 1,763,148 | 1,641,561 | 1,526,954 | 1,447,447 | 1,406,891 | 1,834,557 | 1,928,209 | 1,962,890 | 1,689,608 |
| 1970 | 1,960,463 | 1,960,415 | 1,957,769 | 1,953,143 | 1,964,429 | 1,905,581 | 1,802,719 | 1,699,515 | 1,657,692 | 1,640,225 | 1,617,503 | 1,600,915 | 1,810,031 |
| 1971 | 1,581,955 | 1,564,552 | 1,535,124 | 1,494,233 | 1,384,364 | 1,215,818 | 1,219,195 | 1,496,370 | 1,623,947 | 1,964,429 | 1,964,429 | 1,962,889 | 1,583,942 |
| 1972 | 1,960,464 | 1,960,424 | 1,932,239 | 1,903,746 | 1,937,344 | 1,822,134 | 1,715,147 | 1,643,868 | 1,590,015 | 1,573,383 | 1,574,237 | 1,567,988 | 1,765,082 |
| 1973 | 1,580,312 | 1,615,610 | 1,635,174 | 1,667,279 | 1,610,944 | 1,571,650 | 1,577,130 | 1,531,838 | 1,494,710 | 1,944,651 | 1,964,429 | 1,962,893 | 1,679,718 |
| 1974 | 1,960,461 | 1,951,446 | 1,929,278 | 1,898,049 | 1,956,277 | 1,812,960 | 1,696,075 | 1,964,429 | 1,964,429 | 1,964,429 | 1,964,429 | 1,962,890 | 1,918,763 |
| 1975 | 1,960,465 | 1,960,418 | 1,949,957 | 1,947,951 | 1,964,429 | 1,964,429 | 1,940,521 | 1,876,585 | 1,830,092 | 1,805,357 | 1,782,804 | 1,769,599 | 1,896,051 |
| 1976 | 1,751,767 | 1,732,009 | 1,713,324 | 1,747,581 | 1,703,839 | 1,629,305 | 1,849,398 | 1,757,895 | 1,729,705 | 1,758,326 | 1,796,047 | 1,828,873 | 1,749,839 |
| 1977 | 1,861,743 | 1,894,841 | 1,948,948 | 1,963,738 | 1,964,429 | 1,869,178 | 1,765,472 | 1,660,603 | 1,590,794 | 1,565,310 | 1,551,909 | 1,533,580 | 1,764,212 |
| 1978 | 1,528,795 | 1,534,651 | 1,513,935 | 1,486,694 | 1,391,577 | 1,271,469 | 1,155,463 | 1,502,872 | 1,567,683 | 1,550,687 | 1,570,116 | 1,581,537 | 1,471,290 |
| 1979 | 1,613,412 | 1,685,268 | 1,775,914 | 1,801,986 | 1,827,416 | 1,849,309 | 1,812,263 | 1,768,609 | 1,694,661 | 1,654,407 | 1,636,744 | 1,629,308 | 1,729,108 |
| 1980 | 1,624,871 | 1,620,070 | 1,601,630 | 1,570,804 | 1,592,937 | 1,442,861 | 1,314,748 | 1,211,912 | 1,525,088 | 1,533,009 | 1,536,102 | 1,549,419 | 1,510,288 |
| 1981 | 1,544,584 | 1,540,760 | 1,529,159 | 1,565,658 | 1,538,022 | 1,887,469 | 1,829,099 | 1,753,476 | 1,715,883 | 1,964,429 | 1,964,429 | 1,962,892 | 1,732,988 |
| 1982 | 1,958,384 | 1,955,330 | 1,947,938 | 1,929,329 | 1,940,620 | 1,926,806 | 1,848,165 | 1,736,715 | 1,664,552 | 1,632,689 | 1,622,509 | 1,611,518 | 1,814,546 |
| 1983 | 1,600,813 | 1,596,127 | 1,616,011 | 1,581,161 | 1,583,252 | 1,514,273 | 1,414,861 | 1,332,903 | 1,267,248 | 1,241,139 | 1,229,590 | 1,213,708 | 1,432,591 |
| 1984 | 1,202,708 | 1,182,437 | 1,165,969 | 1,130,804 | 1,075,410 | 1,005,584 | 941,874 | ***880,674*** | ***833,169*** | 980,651 | 984,773 | 1,184,127 | 1,047,348 |
| 1985 | 1,357,406 | 1,421,393 | 1,518,628 | 1,532,068 | 1,468,247 | 1,401,605 | 1,299,336 | 1,191,829 | 1,132,121 | 1,349,038 | 1,365,400 | 1,396,458 | 1,369,461 |
| 1986 | 1,392,637 | 1,453,751 | 1,430,959 | 1,405,841 | 1,418,924 | 1,672,608 | 1,561,324 | 1,465,004 | 1,442,295 | 1,686,597 | 1,763,984 | 1,962,887 | 1,554,734 |
| 1987 | 1,960,465 | 1,960,417 | 1,952,211 | 1,941,886 | 1,964,429 | 1,964,429 | 1,961,589 | 1,881,691 | 1,865,911 | 1,834,463 | 1,831,284 | 1,824,052 | 1,911,902 |
| 1988 | 1,807,624 | 1,793,477 | 1,774,597 | 1,743,768 | 1,678,796 | 1,591,389 | 1,601,148 | 1,495,294 | 1,432,518 | 1,401,409 | 1,378,471 | 1,365,324 | 1,588,651 |
| 1989 | 1,374,803 | 1,398,764 | 1,384,876 | 1,360,425 | 1,412,976 | 1,407,562 | 1,308,865 | 1,217,913 | 1,151,251 | 1,121,402 | 1,105,236 | 1,090,813 | 1,277,907 |
| 1990 | 1,078,444 | 1,082,653 | 1,129,861 | 1,378,834 | 1,713,234 | 1,685,733 | 1,716,469 | 1,692,659 | 1,747,989 | 1,739,986 | 1,739,983 | 1,729,097 | 1,536,245 |
| 1991 | 1,773,050 | 1,791,156 | 1,775,860 | 1,775,266 | 1,713,834 | 1,670,328 | 1,577,128 | 1,479,836 | 1,451,665 | 1,486,526 | 1,502,349 | 1,962,883 | 1,663,323 |
| 1992 | 1,960,459 | 1,960,411 | 1,957,769 | 1,950,770 | 1,964,429 | 1,964,429 | 1,928,145 | 1,845,902 | 1,809,856 | 1,780,658 | 1,798,790 | 1,814,018 | 1,894,636 |
| 1993 | 1,810,853 | 1,835,324 | 1,903,083 | 1,953,487 | 1,903,626 | 1,806,876 | 1,694,792 | 1,557,666 | 1,507,694 | 1,486,898 | 1,481,000 | 1,479,052 | 1,701,696 |
| 1994 | 1,477,195 | 1,493,843 | 1,478,322 | 1,457,233 | 1,657,455 | 1,549,062 | 1,432,990 | 1,347,531 | 1,314,468 | 1,342,101 | 1,373,490 | 1,456,024 | 1,448,310 |
| 1995 | 1,487,809 | 1,501,094 | 1,563,041 | 1,660,653 | 1,758,400 | 1,704,359 | 1,603,875 | 1,500,560 | 1,460,870 | 1,432,773 | 1,420,534 | 1,418,292 | 1,542,688 |
| 1996 | 1,406,248 | 1,388,363 | 1,366,517 | 1,333,244 | 1,243,072 | 1,161,613 | 1,084,759 | 1,093,353 | 1,127,023 | 1,355,058 | 1,398,580 | 1,458,006 | 1,284,653 |
| 1997 | 1,464,645 | 1,879,186 | 1,957,771 | 1,961,444 | 1,964,429 | 1,964,429 | 1,964,429 | 1,921,844 | 1,855,697 | 1,837,455 | 1,825,189 | 1,830,713 | 1,868,936 |
| 1998 | 1,833,008 | 1,875,813 | 1,957,774 | 1,964,429 | 1,855,428 | 1,693,814 | 1,618,198 | 1,580,993 | 1,555,071 | 1,654,139 | 1,735,098 | 1,778,543 | 1,758,526 |
| 1999 | 1,800,966 | 1,795,422 | 1,829,595 | 1,827,640 | 1,798,641 | 1,675,295 | 1,571,599 | 1,448,532 | 1,368,049 | 1,335,337 | 1,307,072 | 1,288,641 | 1,587,232 |
| 2000 | 1,268,833 | 1,256,111 | 1,238,270 | 1,213,743 | 1,153,812 | 1,117,980 | 1,029,783 | 969,596 | 932,291 | 1,049,427 | 1,791,534 | 1,834,171 | 1,237,963 |
| 2001 | 1,925,368 | 1,960,420 | 1,957,761 | 1,955,343 | 1,942,674 | 1,810,454 | 1,705,038 | 1,631,272 | 1,610,017 | 1,616,495 | 1,945,207 | 1,958,213 | 1,834,855 |
| 2002 | 1,960,465 | 1,960,422 | 1,953,250 | 1,928,381 | 1,836,344 | 1,757,427 | 1,964,429 | 1,893,135 | 1,856,279 | 1,914,224 | 1,955,661 | 1,962,889 | 1,911,909 |
| 2003 | 1,960,464 | 1,960,413 | 1,953,503 | 1,922,747 | 1,838,138 | 1,803,585 | 1,715,831 | 1,618,740 | 1,592,395 | 1,581,236 | 1,567,890 | 1,551,156 | 1,755,508 |
| 2004 | 1,559,556 | 1,575,669 | 1,606,667 | 1,783,823 | 1,751,419 | 1,964,429 | 1,915,964 | 1,955,638 | 1,889,642 | 1,884,053 | 1,936,084 | 1,936,108 | 1,813,254 |
| 2005 | 1,935,663 | 1,937,401 | 1,945,807 | 1,946,119 | 1,920,135 | 1,815,488 | 1,717,667 | 1,679,546 | 1,590,874 | 1,556,768 | 1,535,684 | 1,516,559 | 1,758,143 |
| 2006 | 1,499,854 | 1,485,520 | 1,470,294 | 1,455,126 | 1,435,218 | 1,321,348 | 1,228,661 | 1,136,339 | 1,082,829 | 1,069,000 | 1,043,798 | 1,030,235 | 1,271,519 |
| 2007 | 1,058,179 | 1,046,792 | 1,323,226 | 1,410,881 | 1,891,012 | 1,948,163 | 1,952,691 | 1,949,270 | 1,947,032 | 1,938,370 | 1,930,097 | 1,927,707 | 1,693,618 |
| 2008 | 1,918,057 | 1,899,969 | 1,883,566 | 1,861,085 | 1,768,082 | 1,603,828 | 1,490,855 | 1,389,321 | 1,309,890 | 1,280,019 | 1,254,840 | 1,234,001 | 1,574,459 |
| 2009 | 1,212,986 | 1,194,936 | 1,191,874 | 1,226,794 | 1,200,127 | 1,131,316 | 1,068,804 | 1,012,708 | 1,014,891 | 1,229,456 | 1,316,306 | 1,357,795 | 1,179,833 |
| 2010 | 1,512,557 | 1,813,344 | 1,871,027 | 1,914,368 | 1,878,820 | 1,743,352 | 1,688,367 | 1,574,124 | 1,630,377 | 1,590,004 | 1,565,413 | 1,547,014 | 1,694,064 |
| 2011 | 1,536,274 | 1,522,171 | 1,485,215 | 1,434,579 | 1,329,553 | 1,174,996 | 1,095,643 | 1,025,352 | 961,016 | 939,991 | 917,405 | 908,135 | 1,194,194 |
| 2012 | 910,834 | 973,387 | 1,084,542 | 1,069,660 | 1,088,756 | 1,031,252 | 988,603 | 928,441 | 902,543 | ***877,611*** | 847,639 | 822,863 | 960,511 |
| 2013 | 819,190 | 799,591 | ***772,450*** | ***769,762*** | ***767,618*** | ***709,794*** | ***682,079*** | ***620,465*** | ***605,169*** | ***643,339*** | 658,662 | 658,904 | 708,919 |
| AVG | 1,576,756 | 1,595,973 | 1,605,530 | 1,622,135 | 1,641,547 | 1,594,296 | 1,533,917 | 1,477,472 | 1,469,782 | 1,506,474 | 1,525,040 | 1,541,838 | 1,557,563 |
| MAX | 1,961,285 | 1,961,053 | 1,957,774 | 1,964,429 | 1,964,429 | 1,964,429 | 1,964,429 | 1,964,429 | 1,964,429 | 1,964,429 | 1,964,429 | 1,962,893 | 1,920,153 |
| MIN | 704,995 | 690,392 | 665,066 | 712,136 | 767,618 | 709,794 | 682,079 | 620,465 | 605,169 | 643,339 | 658,662 | 658,904 | 708,919 |

# Appendix 2

# APPENDIX 2

## TABLE OF CONTENTS:

**Chapter 4 ~~DETERMINATION OF INTERRUPTIBLE STORED WATER AVAILABILITY AND WATER FOR ENVIRONMENTAL FLOW NEEDS~~ALLOCATION OF STORED WATER SUPPLIES, FIRM CUSTOMER DROUGHT CONTINGENCY PLAN, AND AGRICULTURAL CUSTOMER DROUGHT CONTINGENCY PLAN**

## PAGE ES – 3:

***Other Key Changes:***

- The Combined Firm Yield of Lakes Buchanan and Travis has been recalculated, and reflects a reduction from 445,266 acre-feet per year to 434,154 acre-feet per year. Out of concern for the future needs of the many areas in LCRA's 35-county water service area, including areas now using ground water supplies that are becoming depleted or are of poor water quality, the LCRA Board continues to maintain its reservation of 50,000 acre-feet of the Combined Firm Yield;
- Revised criteria for declaration and cancellation of a Drought Worse than Drought of Record are included;
- ~~Those elements of LCRA's Raw Water Drought Contingency Plan (DCP) that are required by TCEQ's rules (30 Tex. Admin. Code ch. 288), but not required by prior WMP orders, are removed from the WMP. Instead, once this amendment to the WMP is approved by the TCEQ, LCRA will develop conforming, stand-alone DCPs for its customers consistent with TCEQ's DCP rules (including those related to public input) and this revised WMP, which will address required elements of TCEQ's DCP rules that are not otherwise required as part of the WMP.;~~ and
- The plan includes a revised definition of "emergency shortage of electricity" to better align with new ERCOT protocols.

## PAGE 4-3: FINAL PARAGRAPH

~~This WMP revision does not incorporate LCRA's Raw Water Drought Contingency Plans (DCPs) for its Firm Water customers or its downstream agricultural operations. While those DCPs will take into account elements of this WMP revision, they are developed and approved pursuant to a separate process consistent with Texas Water Code § 11.1272 and TCEQ's rules (30 Tex. Admin. Code Ch. 288).~~

## PAGE 4-1:

# CHAPTER 4

# ~~DETERMINATION OF INTERRUPTIBLE STORED WATER AVAILABILITY AND WATER FOR ENVIRONMENTAL FLOW NEEDS~~ALLOCATION OF STORED WATER SUPPLIES, FIRM CUSTOMER DROUGHT CONTINGENCY PLAN, AND AGRICULTURAL CUSTOMER DROUGHT CONTINGENCY PLAN

4.8.4. Individual Lake Storage and Elevations

## PAGE 4-18:

~~4.6 CURTAILMENT OF FIRM WATER DEMANDS~~

~~Pursuant to its water rights for lakes Buchanan and Travis, LCRA must follow reservoir operations procedures to ensure that it can meet Firm Water demands during a repeat of the Drought of Record.~~

~~Consistent with state law, LCRA will not invoke mandatory curtailments of Firm Water demand unless a particular drought is declared to be a Drought Worse than the Drought of Record, or some other water emergency exists that drastically reduces the available Firm Water supply. However, consistent with state law and Commission rules regarding drought contingency planning, LCRA will engage its Firm Water customers and seek voluntary reductions of Firm Water use in the early stages of a drought through its adoption and implementation of a separate Drought Contingency Plan (DCP). Moreover, as part of its contracts, LCRA will continue to require each of its Firm Water customers to prepare and adopt a legally enforceable local drought contingency plan consistent with LCRA's rules and state law.~~

~~It is not possible to determine with absolute certainty whether a particular drought event is more or less severe than the Drought of Record until the event has concluded. However, LCRA has developed a "drought monitoring procedure" for identifying when a drought may become worse than the Drought of Record for the Highland Lakes watershed. (*See* Section 4.7.) When these conditions are reached, the LCRA Board of Directors will declare a Drought Worse than the Drought of Record (DWDR) (as described in Section 4.7) and LCRA will curtail and distribute the available supply of stored water among its Firm Water supply customers on a pro rata basis according to the amount of water to which they are legally entitled, consistent with the Pro Rata Plan for Firm Water Demands approved by TCEQ. (*See* Appendix C-7.) All releases of Interruptible Stored Water will be cut off prior to and during any mandatory pro rata curtailment of Firm Water supplies. Following a DWDR declaration, if conditions improve, pro rata curtailment of Firm Water customers will be lifted consistent with criteria determined by the LCRA Board.~~

4.6 CURTAILMENT OF FIRM WATER DEMANDS

4.6.1 Introduction

Pursuant to its water rights for lakes Buchanan and Travis, LCRA must follow water supply allocation procedures to ensure that there is sufficient stored water to meet firm demands during a repeat of the Drought of Record. This WMP revision includes procedures intended to ensure that firm demands can be met without shortage through year 2020 under a repeat of the Drought of Record.

LCRA cannot determine with absolute certainty whether a particular drought event will be more or less severe than the Drought of Record until the event has concluded. Therefore, LCRA will

engage its firm customers and seek voluntary reductions of firm demands from its customers in the early stages of a drought, as more specifically described below.

Consistent with state law, LCRA cannot invoke mandatory curtailments of firm water demand unless a particular drought is declared to be a Drought Worse than the Drought of Record, or some other water emergency exists that drastically reduces the available firm water supply. LCRA has developed a "drought monitoring procedure" for identifying when a drought may become worse than the Drought of Record for the Highland Lakes watershed. (See Section 4.7.)

4.6.2 LCRA drought response measures for firm water demands

LCRA's drought response measures for firm water demands are as follows:

- LCRA will encourage its firm water customers to implement long-term water conservation measures year-round to meet the goals included in their water conservation plans. LCRA will, as needed, implement a public awareness program on water use and conservation.
- Drought Contingency Plan, Stage 1. If the total combined storage in lakes Buchanan and Travis drops below 1.4 MAF and interruptible stored water supplies to the irrigation operations are being curtailed, LCRA will request its firm water customers to implement drought response measures in their individual drought contingency plans with a target demand reduction goal of 5 percent. In this stage, at a minimum, firm water customers should implement voluntary drought response measures. If the combined storage in lakes Buchanan and Travis subsequently increases, the request will be withdrawn on a schedule determined by the LCRA Board.
- Drought Contingency Plan, Stage 2. If the total combined storage in lakes Buchanan and Travis drops below 900,000 acre-feet and interruptible stored water supplies to the irrigation operations are being curtailed, LCRA will request its firm customers to implement additional drought response measures in their individual drought contingency plans with a target demand reduction goal of 10 to 20 percent. In this stage, firm customers should implement mandatory water use reduction measures. At this stage LCRA will also implement an aggressive public information campaign to provide up-to-date information on water supply conditions and promote voluntary action to reduce water use. If the combined storage in lakes Buchanan and Travis subsequently increases, the request will be withdrawn or replaced by Stage 1 measures on a schedule determined by the LCRA Board.
- Drought Contingency Plan, Stage 3. If the LCRA Board of Directors declares a Drought Worse than the Drought of Record, LCRA will curtail and distribute the available supply of stored water among its firm water supply customers on a pro rata basis according to the amount of stored water to which they are legally entitled consistent with the Pro Rata Plan for Firm Water Demands previously approved by TCEQ. (See Appendix C-7.) All uses of interruptible stored water will be cut off prior to and during any mandatory pro rata curtailment of firm water supplies. The initial curtailment of firm

demands under pro rata will be 20 percent, unless the LCRA Board determines an alternative percentage reduction prior to or at the time of a declaration of Drought Worse than Drought of Record. LCRA's firm water contract rules[1] include specific procedures and requirements related to a pro rata curtailment of firm demands. If the combined storage in lakes Buchanan and Travis continues to decrease after the declaration of a Drought Worse than Drought of Record, the LCRA Board may increase the mandatory pro rata curtailment percentage. In the event that a declaration of a Drought Worse than Drought of Record is cancelled, a mandatory pro rata curtailment would be lifted. The LCRA Board may also set additional criteria for ending or easing pro rata curtailment, such as combined storage increasing to a given level.

4.6.3 Monitoring and enforcement

LCRA will monitor firm customers' compliance with LCRA's Drought Contingency Plan requirements. Monitoring and enforcement of water-use restrictions at the end-user level generally will be the customers' responsibility. Customers who exceed their allotted supply during a pro rata curtailment will be subject to excess use rates or surcharges, to be specified by the LCRA Board, in addition to LCRA's firm water rate.

4.6.4 Variances to firm water pro rata curtailment

LCRA's General Manager may, in writing, grant a temporary variance to the pro rata water allocation requirement in Section 4.6.2 if it is determined that failure to grant such a variance would cause an emergency condition adversely affecting the public health, welfare or safety, and if one or more of the following conditions are met:

(1) Compliance with the requirement cannot be technically accomplished during the duration of the water supply shortage or other condition for which the plan is in effect; and/or
(2) Alternative methods can be implemented that will achieve the same level of reduction in water use.

Details regarding the procedures by which a customer may seek a variance are found in LCRA's firm water contract rules.

4.6.5 Firm customer drought contingency plans

As part of its contracts, LCRA will continue to require its firm water customers to prepare and adopt a legally enforceable local drought contingency plan that specifies the actions to be taken to comply with this Drought Contingency Plan regarding the curtailment of firm supplies. Such

[1] The most current version of LCRA's water contract rules may be found at: http://www.lcra.org/water/water-supply/water-supply-contracts/Pages/default.aspx [Note the number of this footnote will need to be modified to fit the sequence of footnotes in the actual chapter, which would currently make this footnote 7.]

plans should be developed pursuant to LCRA guidelines and submitted for LCRA review and acceptance within a reasonable time.

#### 4.6.6 Notification of TCEQ Executive Director

The LCRA General Manager will notify the TCEQ Executive Director of implementation of any mandatory provisions related to the supply of firm water.


January 30, 2015

*VIA E-MAIL to wras@tceq.texas.gov*

Dr. Kathy Alexander
Office of Water
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, TX 78711-3087

RE: LCRA WMP – Comments on the Application by the Lower Colorado River Authority to Amend Water Use Permit No. 5838

Dear Dr. Alexander:

On behalf of the Central Texas Water Coalition, Inc. (CTWC), a non-profit organization concerned with the protection of the Highland Lakes as the critical drinking water supply for over one million Central Texans, we respectfully request your consideration of these comments regarding the application by the Lower Colorado River Authority (LCRA) for an amended Water Management Plan (WMP) under Water Use Permit No. 5838 (the "Application"). This Application was filed with the Texas Commission on Environmental Quality (TCEQ) on October 31, 2014.

**CTWC Generally Supports the Application.**

The current, 2010 WMP has proven to be critically flawed. In combination with unprecedented drought, massive releases of stored water from the Highland Lakes as allowed under the LCRA's 2010 WMP led to the dangerously-low reservoir levels we see today. As of the date of this letter, Lakes Travis and Buchanan remain at a combined storage level of only thirty-five percent (35%). CTWC hopes that the Application will continue to move forward without delay so the basin will never again be governed by the flawed 2010 WMP and rule by Emergency Order can end.

Although CTWC generally supports the Application, concerns remain which must be clearly and directly addressed either in the proposed WMP (Exhibit A of the Application – the "Proposed WMP") or within the Commission Order approving the Application. CTWC's two primary concerns relate to the proposal to remove Drought Contingency Plans (DCPs) from the WMP and the need for re-evaluation of some basic underpinnings of the WMP in the immediate future due to the ongoing historic drought.

**Drought Contingency Plans Should Remain Part of the WMP.**

Currently, the Drought Management and Drought Contingency Plans are contained in Chapter 4 of the WMP. In its Application, the LCRA proposes to remove these from the WMP and into stand-alone documents. *See* Proposed WMP, pp. ES-3, 4-3. For technical and legal reasons, the DCPs should not be removed from the WMP – these DCPs are integral to it. CTWC agrees with what LCRA itself has said regarding the interaction between DCP curtailment provisions and the WMP at least three times in the past few years:

> **"Because the curtailment provisions of the DCP related to interruptible supplies are one of the most fundamental principles underlying the WMP, LCRA cannot unilaterally alter through changes to the DCP that which it cannot alter under the WMP without the TCEQ's permission."**
>
> **-** *LCRA Request for Drought Relief from 2010 WMP, Dec. 2014, p. 8; LCRA Request for Drought Relief from 2010 WMP, July 2013, p. 5, incorporated by reference into July 26, 2013 TCEQ Order granting emergency relief, TCEQ Docket No. 2013-0225-WR; LCRA Request for Drought Relief from 2010 WMP, Nov. 2012, p. 7.*

A change to *any* DCP curtailment provision impacts the WMP. In addition to impacting curtailment provisions, changes to the DCP alter the modeling that provides the basis for a variety of the key provisions of the WMP. Altering a DCP alters the WMP. Allowing them to be considered separately by different governing agencies under different proceedings at different times is likely to result in a DCP that does not comport with the governing documents: the WMP, the LCRA's Certificates of Adjudication for Lakes Buchanan and Travis, and the 1988 Final Judgment and Decree regarding LCRA's water rights in the Highland Lakes.

Further, removing the DCPs from the WMP removes the procedural due process to which those affected by the WMP are entitled. This is a fundamental change – not a matter of mere administrative efficiency. Once removed from the WMP, the Water Code and TCEQ rules provide for minimal oversight and public participation for DCP amendment, and no opportunity for administrative appeal. The LCRA would only have to provide an opportunity for public comment on a new or amended DCP; then, the DCP would be placed on file with the TCEQ. This is in stark contrast to the current process in which, as part of the WMP, changes to the DCPs are subject to review and approval by the TCEQ and requests for contested case hearing by affected persons. CTWC urges the TCEQ not to cede its legal authority to administer and enforce the water rights governing LCRA's management of state water.

CTWC is concerned that by removing the DCPs from the WMP, the LCRA Board could vote to require curtailment of firm customers in a manner that does not fit with the approved WMP or comply with the 1988 Final Judgment and Decree. In fact, the LCRA Board may have already done so. An amendment to the firm customer DCP adopted by the Board in November 2013 and reaffirmed in November 2014 imposes a mandatory cutback on the use of firm water for landscape watering, but continues to allow releases of interruptible water supplies to one of the four irrigation districts. This appears to be contrary to the LCRA's legal requirement under the

1988 Final Judgment and Decree to provide for all firm customer commitments in their entirety before releasing water for interruptible water users. CTWC supports conservation measures by all water users, including firm water users such as residents of Central Texas urban areas – a group of customers which has demonstrated its commitment to conservation by reducing water usage dramatically in recent years. However, CTWC cannot support mandatory restrictions that appear to conflict with the LCRA's governing permits and court orders. Without TCEQ oversight or the procedures required for a permit amendment under administrative law, the checks and balances are removed from the process.

Given the inextricable relationship between the DCPs and the WMP, we urge the TCEQ to require the reinstatement of LCRA's DCP provisions into the WMP. If there are provisions of TCEQ's rules governing drought contingency plans (30 Texas Admin. Code Chapter 288) that raise questions or concerns for LCRA's water management under the terms of its WMP, we would not be opposed to regulatory changes or a TCEQ ordering provision in the agency's approval of the next WMP to acknowledge that LCRA has satisfied its regulatory obligations under Chapter 288 with the inclusion of DCPs in its WMP. The TCEQ rules expressly contemplate a circumstance in which DCPs are part of another water management document. *See* "drought contingency plan" definition in 30 Texas Admin. Code §288.1(6).

**The TCEQ Should Provide a Date-Certain by which the Next WMP Revision Will Occur.**

Although CTWC generally supports the Application and urges the TCEQ to continue toward issuance of a revised WMP, we are concerned that it is not based upon critical, very recent data. Additionally, research is underway to better understand the causes of the current hydrological drought and how it is impacting watersheds and reservoir inflows. The TCEQ is committed to using the best science to inform its decisions. As part of that commitment, it should require that the LCRA return by a date certain in the near future with a revised WMP that incorporates 2014 data, at a minimum, and considers the results of recent research on the hydrology of the watershed.

Several key portions of the WMP are likely to be affected by the use of 2014 data. For example, using data through 2013, the Proposed WMP presents a plan that, as modeled, keeps the combined storage of Lakes Travis and Buchanan above 600,000 acre-feet – thus avoiding the declaration of a "drought worse than the drought of record" – by a razor-thin margin. But as we all now know, inflows to those lakes in 2014 were the second-lowest ever in history. We are concerned that with the addition of 2014 hydrological data, the Proposed WMP will result in combined storage falling below 600,000 acre-feet, thus failing the Executive Director's minimum combined storage requirements. As the Executive Director indicated in his May 2014 report, the WMP cannot be designed to manage the lower Colorado River into a drought worse than the drought of record. As soon as the 2014 data is finalized, it should be applied to the WMP to determine if trigger levels or other parameters need to be adjusted to ensure absolute protection of firm water supplies, as required by law.

Additionally, as the drought continues, it appears that a re-evaluation of the firm yield of Lakes Travis and Buchanan will be necessary. By TCEQ rule, the combined firm yield is a measure of

that amount of water that Lakes Travis and Buchanan can produce annually during the "worst drought of record." As demonstrated in Chapter 3 of the Proposed WMP, the LCRA is using the drought of the 1950s as its benchmark. In its definitions, the LCRA defines the "Combined Firm Yield of Lakes Buchanan and Travis" as "the calculated firm yield of lakes Buchanan and Travis **when operated as a system, incorporating LCRA's agreements and operating assumptions regarding calls on the upper basin**. The Combined Firm Yield is based on the 1940s to 1950s historic Drought of Record." *See* Proposed WMP, p. ES-10. LCRA's proposed expanded definition of the "Combined Firm Yield" introduces a number of subjective, unquantified, and undisclosed elements into its "firm yield" equation, as emphasized in the quoted language above. Because by many objective measures, the current drought is already worse than the 1940s to 1950s Drought of Record, the use of that time period as the benchmark for determination of the Combined Firm Yield introduces further uncertainties into the calculation. As noted above, when the 2014 data is included in the next round of water availability modeling, this may also impact the calculation of the firm yield. For all of these reasons, LCRA's WMP should include a well-defined, objective, transparent, and reproducible method for calculating the Combined Firm Yield of Lakes Buchanan and Travis. Because the amounts of water the LCRA sells to firm customers and the amounts it releases to interruptible customers are based upon the Combined Firm Yield of the reservoirs, these calculations and determinations are critical to the protection of LCRA's firm water commitments and the proper management of LCRA's water rights under its WMP.

As this unprecedented drought continues, we are observing new hydrologic conditions. For example, rainfall events are not translating into the amount of reservoir inflows that we have seen in the past. Scientists have noted this trend in various Texas river basins. While we know that inflows have decreased, studies regarding the cause(s) for this change in hydrology are still underway, and further analyses are warranted. According to a preliminary analysis of the hydrology of the Highland Lakes watershed by CTWC's hydrologist, soils within the basin have become drier and there has been a hydrologic change in the frequency of rainfall events, coupled with a noticeable increase in the duration of dry periods between rain events. Additionally, the number of small, permit-exempt impoundments within the watershed has increased over time. Rainwater tends to enter the dry ground or be impounded in small ponds before flowing overland into creeks and entering the lakes as inflow. As acknowledged by the LCRA on the first page of the Proposed WMP, the WMP is not a static document and it is revised periodically to address changing conditions. *See* Proposed WMP, p. ES-1. We agree that the WMP is not a static document. When studies are complete and information becomes available, the WMP should be re-evaluated and amended, as appropriate, to apply new knowledge regarding changed conditions.

In addition to the incorporation of significant new hydrologic data during this time of historic drought, the continuing, rapid population growth within the LCRA's existing firm water customers also justifies a careful, near-term re-evaluation of the WMP. As more and more people and businesses move to Central Texas, firm demands are expected to continue to increase. The 600,000 acre-foot lake storage level selected as a benchmark for the drought worse than the drought of record should be increased as population and needs increase. If it is not, then that target level becomes less and less protective as the demands on the water supply increase.

To conclude, CTWC does not wish to delay the TCEQ's consideration of the Application due to these concerns, but it is critical that they be addressed in a timely manner. The WMP or the TCEQ's Order should include a specific date by which the LCRA is required to re-evaluate the WMP in light of new information (including, at the very least, the 2014 data); to re-calculate the firm yield using the most current data; and submit its evaluation to the TCEQ with an application to amend its WMP in response to this information. Allowing for a reasonable amount of time to collect and evaluate the 2014 data, we suggest that the TCEQ Order on the Proposed WMP require the LCRA to submit an application to amend its WMP to incorporate new data by no later than December 31, 2016.

CTWC appreciates the work of the LCRA and the TCEQ to get to this point in the process. We are especially appreciative of the agencies' efforts to provide opportunities for public engagement and input, such as this informal comment period. CTWC will remain engaged in the process as we work to resolve the concerns outlined above. Thank you for your consideration.

Sincerely,

*Jo Karr Tedder*

Jo Karr Tedder
President

| | |
|---|---|
| **From:** | WRAS |
| **To:** | Kathy Alexander; Christine Peters |
| **Subject:** | FW: LCRA WMP |
| **Date:** | Tuesday, January 06, 2015 1:10:11 PM |

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FYI

**From:** Donna Klaeger [mailto:dklaeger@gmail.com]
**Sent:** Tuesday, January 06, 2015 12:19 PM
**To:** WRAS
**Cc:** Zak Covar; L'Oreal Stepney
**Subject:** LCRA WMP

January 6, 2015

TCEQ Commissioners,

Our citizens in Central Texas appreciate your leadership and collaboration with LCRA, stakeholders and citizens to update the 2010 Water Management Plan to protect firm drinking water supplies. We believe that the TCEQ Executive Director's May 2014 Report provides far more protection than previous Water Plans. It is imperative to include current supply data and higher release triggers, to establish higher minimum storage volumes in the Highland Lakes, which is the key to properly manage water through this ongoing drought.

We encourage the TCEQ to continue to evaluate on an annual basis the volume of stored water and the inflows. We must rely on current data to make important decision. We know first hand that this drought is a disaster, which has left many communities without water supply. The low lake levels not only jeopardize drinking water supplies for over one million citizens, it has had a significant economic impact on our businesses and property tax valuations.

Disasters present unique opportunities to update and address out dated policies and procedures. We thank you for your diligence to make decisions based on current data and facts. We stand ready to assist as needed in communicating updates to our citizens.

Sincerely,

*Donna S. Klaeger*
Retired, Burnet County Judge
Burnet County Citizen

Environmental Stewardship
A Sustainable Ecosphere

January 7, 2015

Submitted by website and by hand

Kathy Alexander
Texas Commission on Environmental Quality
P.O. Box 13087, MC-160
Austin, Texas, 78711-3087

**Re: LCRA Water Management Plan (WMP)**

***"Saving the water and the soil must start where the first raindrop falls."***
Lyndon B. Johnson

Dear Ms. Alexander,

Management of the Colorado River basin in a manner that will sustainably provide for the human and environmental needs of the basin will require a broader and more ecologically sound platform. We will not progress into a sustainable future by simply amending and updating the current WMP using the same *old* principles. We must find, and agree upon, a new paradigm. In 2013 a working group convened with the specific objective of developing water planning and management principles[1] (Attachment 1). Environmental Stewardship (ES) is a signatory to the resulting principles that form the foundation of our comments herein. ES will attempt to show, through this letter and input throughout the remaining portion of this review process, that:

A1. External factors have had catastrophic impacts: The current drought has demonstrated that the current water management plan (WMP) has not adequately addressed several external factors[2] that have catastrophically impacted the basin, and, if left unchecked, will sabotage any attempt to meet the WMP's objectives unless likewise managed.

A2. The extent and severity of this drought is man-made: The drought has demonstrated that, though the lack of "normal" rainfall[3] has brought us to this condition, the extent and severity of the current drought is likely significantly worse than the drought-of-record due to man's management practices and unrealistic expectations[4] (some of which have been codified in law).

A3. Conjunctive management is needed: Future management practices will, of necessity, need to include conjunctive[5] management of the land, the surface waters, and the aquifers that intersect the basin.

A4. Environmental flows are *essential*: Future management practices must guarantee a solid base of environmental flows to meet critical subsistence and threshold flow needs of the river and bay[6]. Environmental flows are *essential* water demands.

To address these issues, Environmental Stewardship (ES) urges the TCEQ and LCRA to jointly provide the leadership necessary to recognize, understand and address the critical issues facing Central Texas and the basin by taking the following steps:

B1. Investigate rainfall trends: Do the investigative research necessary to confirm or refute the indicative rainfall data, and to estimate the inflows that would have been expected from the rainfall received in the upper basin without impediments to stream flows. Incorporate rainfall into the model used to manage the basin and link the model to predictive rainfall models.

B2. Investigate land use practices and trends: Do the investigative research to identify and quantify changes in land management practices in the upper basin that have impacted on freshwater inflows to the Highland Lakes. Identify land management practices that will reduce the severity of these impacts. Include the following: 1) brush and rangeland management, especially mesquite in and around streambeds, 2) small reservoirs and other rainwater catchment practices (rooftop and cisterns) that intercept rainfall, and 3) agricultural practices including irrigated crops such as cotton.

B3. Incorporate groundwater into the water management plan: Partner with, on a co-equal regulatory basis, groundwater conservation districts (GCD) throughout the basin to understand and quantify the impacts of groundwater pumping on surface water flow in the river systems. Work with GCDs to identify regulatory and management practices that will reduce the impact of groundwater pumping. Estimate the impacts of groundwater pumping in major aquifers and regions on future stream flow throughout the basin.

B4. Incorporate conjunctive practices into the water management plan: Work cooperatively with the Texas Water Development Board (TWDB) and Texas Parks and Wildlife Department (TPWD) to develop the information needed to understand the connections between surface and groundwater and the impacts associated with current management practices of one upon the other. Develop management practices to effectively and efficiently manage these resources while providing adequate environmental flows, especially *essential* flows during drought conditions.

B5. Guarantee *essential* environmental flows in the water management plan. *Subsistence* and *threshold* environmental flow levels have been established as the *essential* levels to provide a safety net for river and bay health during periods of low flow. These environmental flow levels are designed to maintain an "ecologically sound environment" by providing for the freshwater flows necessary to maintain the viability of the state's streams, rivers, bay and estuary systems and should be guaranteed by way of the water management plan.

## A1. EXTERNAL FACTORS HAVE HAD CATASTROPHIC IMPACTS

I call your attention to a study recently released in the Texas Water Journal titled: "Observed trends in air temperature, precipitation, and water quality for Texas reservoirs: 1960-2010[7]". Here are some conclusions I have drawn from the report (Attachment 2) that apply to the Highland Lakes[8]:

1. The number of dry days in the watershed of these lakes has DECREASED. Thus there have been MORE WET DAYS.
2. There has been a DECREASE in precipitation intensity. Thus there have been fewer intense precipitation events that provide episodic high inflows.
3. There has been an INCREASE in average annual, summer and winter temperatures. Thus INCREASING evaporation and evapotranspiration.
4. There has been a DECREASE in the number of days below freezing, and an INCREASE in the coldest day temperatures.

When this information is considered along with the changing hydrology, which is resulting in decreased inflows to the Highland Lakes, a story emerges of man-made factors in the upper basin that have caused catastrophic impacts on stakeholders in the middle and lower basin, and that is about to be repeated in the lower basin.

National Weather Service data[9] for the region indicate that the 30-year average annual rainfall in the contributing watershed is up 7-20%. This is consistent with rainfall in San Angelo, in the middle of the contributing watershed (Attachment 3), where precipitation has increased about 28%[10] in the first six years of the current drought (2008-13) when compared to the first six years of the drought of record (1946-51).

Though it is getting hotter, rainfall in the contributing watershed is up significantly over the same drought-of-record period. Yet inflows to the lakes are significantly lower (-54%[11]) than for first six years of the drought-of-record (1946-57 compared to 2008-13). This drastic reduction in inflows has had *catastrophic* impacts on the Highland Lakes, the economy of the region, FIRM and interruptible customers, and the environment.

Simply stated, rainfall in the watershed is not being converted to inflows to the Highland Lakes. Rainfall, therefore, is not the entire problem, nor the ultimate solution to the challenge of managing the Highland Lakes system and the basin.

**Brush Control Practices**: Personal communications regarding changes in land use and management practices in the regions have led to the assertion that the lack of brush control in the region has lead to a dominance of mesquite in the landscape which captures and evapotransipires water before it can runoff or be adsorbed into the aquifers. The *Texas Land Trends*[12], by the Texas A&M Institute of Renewable Natural Resources (IRNR)[13] shows that there are three areas of the upper basin that have show major increase in land consolidation that extend across the basin.

**Small surface-water impoundments**: A recent study[14] titled "Effect of Small Surface Water Impoundments on Water Supply Reservoirs" looked at the effects of NRCS structures and small stock ponds in both reducing flows to the reservoirs and in reducing sediment loads to the reservoirs. The study included Lake Coleman in the Colorado River basin.

The study found that the effect of such structures was to reduce inflows to Lake Coleman by 12 to 28 percent, and firm yield by 20 to 40 percent. Looking at the effect of stock ponds alone in the Lake Coleman watershed, the reduction in inflows ranged from 13 to 17 percent, and in firm yield from 25 to 34 percent using two different assumptions about stock pond areal densities.

**Irrigated Agriculture**: It is evident by personal observations driving from Clovis, NM to San Angelo in October 2014 that irrigated cotton dominates the landscape (along with mesquite). Personal communications with persons living in another portion of the watershed indicates that other crops, such as hay, are also extensively irrigated.

**Conclusion 1:** Many things have changed in the watershed since the 1950s in addition to climate. The changes need to be identified and understood before we can find a solution to the changing hydrology. The rainfall and land use trends need to be further investigated to provide conclusive information regarding rainfall and the impact of land use on inflows to the Highland Lakes from the contributing watershed. The Texas Water Resources Institute has just published an issue dedicated to these issues[15].

## A2. EXTENT AND SEVERITY OF CURRENT DROUGHT IS MAN-MADE

**Right-sizing and Retro-fitting Water Treatment & Distribution Systems**:

During the TCEQ SOAH Hearing,[16] held in regard to the LCRA's request for an Emergency Exemption from the WMP, it was revealed that residual chlorine levels in drinking water during low flow caused by implementing conservation measures was the basis for arguing the need for an emergency exemption to protect "public health and safety." One engineer testified that the treatment and distribution systems were designed to meet the growing peak-flow demands and were not designed for low flows during drought conditions. As a result, water in the pipes stagnated and chlorine levels dropped below drinking water standards. Part of the rationale for the need for an exemption was that it would take *years* to engineer and implement remedies for these problems.

It is unfortunate, but the net result of this oversight was that irrigators and the environment were required to bear the consequences of this man-made emergency.

Another discussion was about the need to lower intake structures in Lake Austin to accommodate lake levels and demand. The irony, again, was that several cities were going together to design *larger* intake structures rather than putting in structures that met the need of each user. Unfortunately, we might anticipate that, if these structures are in

place there may well be a similar need for emergency orders to enable them to operate these structures during low flow drought periods.

**Conclusion 2:** The combination of the above discussed oversights and the previously discussed changes in land management practices (A1) have resulted in low water levels in the Highland Lakes and problems with intake structures and distribution systems that have led to emergency conditions that could have been avoided. These and other such planning and management policies and practices need to be reviewed and amended to take into account the need to keep such systems operational during low-flow drought conservation periods.

## A3. CONJUNCTIVE MANAGEMENT IS NEEDED

If the conditions described in A1 are found to have led to significant impacts on the extent and severity of drought in the basin, then there is direct evidence of the need to conjunctively manage the land, surface water and groundwater systems of the basin. Operating each system in an isolated "silo" has resulted in unanticipated, and unwanted impacts on the basin that were not considered in the previous WMP, and are not anticipated in the current WMP. Recognizing that these systems are intimately connected is the first step in managing the entire system for the benefit of the people, businesses, cities, and environment of the Colorado River basin and bay system. The "Highland Lakes" are not a "silo system" that can be managed without regard to the impact of its management on other systems "outside the silo", and likewise the impact of "other silos" on this system.

Conjunctive management will be complicated given the governance structures in our state. The first step must be to get the two regulatory entities working together: river authorities and groundwater conservation districts (GCD); in this case LCRA and multiple GCDs. Land use practices need to be included in the management strategy. Former President and Texas native Lyndon B. Johnson once said: “Saving the water and the soil must start where the first raindrop falls.” Land use is regulated closely within the territorial jurisdiction of cities, but is poorly regulated in unincorporated portions of counties. For purposes of managing land and water on a regional basis, it will likely be desirable to include regional water management groups (RWMG) in the planning and management process. With 95% of the land in the state privately owned, it is essential to develop a meaningful working relationship with the landowners and the state agencies associated with land management.

**Conclusion 3:** Conjunctive management is necessary, but will require decision-making outside the jurisdiction of the LCRA (except for systems managed wholly by LCRA). To manage at this level will require a management structure that enables multi-agency decision-making with individual implementation.

## A4. ENVIRONMENTAL FLOWS ARE ESENTIAL

The TCEQ, in response to the recommendations of the Colorado and Lavaca Basin and Bay Area Stakeholder Committee (CL BBASC), established environmental flow standards for the Colorado River and Matagorda Bay. *Subsistence* and *threshold* environmental flow levels have been established as the *essential* levels to provide a safety net for river and bay health during periods of low flow. These environmental flow levels are designed to maintain an "*ecologically sound environment"* in recognition by the legislature that it is necessary to "*provide for the freshwater flows necessary to maintain the viability of the state's streams, rivers, bay and estuary systems."* In providing for environmental flows, the Legislature established that *"maintaining the biological soundness of the state's rivers, lakes, bays, and estuaries is of great importance to the public's economic health and general well-being.*"

**Need for commitment by LCRA WMP to meet *essential* instream and freshwater inflow needs**[17]

**Most urgent concern:** The current draft and amendments to the LCRA WMP[18] do not make a straightforward, unconditional commitment to meet *essential* environmental flow needs *in all months in all years*. The plan does not include the two statements below that were in the approved 2010 WMP:

"*Instream flow needs will be met by the release of stored water from Lakes Buchanan and Travis to maintain the daily river flows at no less than the critical instream flow needs in all years*.[19]" [emphasis added]

"*Critical inflow needs of 171,120 ac-ft./yr. will be met in all years with releases of stored water from Lakes Buchanan and Travis.*[20] "[emphasis added]

Though not stated in the text of the current draft WMP, Technical Papers A-3, A-4 and A-5, provided by the LCRA to TCEQ[21], demonstrate the operational intent that *subsistent instream flows be met in all months of all years*, and that *threshold freshwater inflows to the bay be met in all months of all years, with the proviso that, only storable inflows are released to the extent that they are available from that month's inflows*. To the degree that these technical papers are not legal guidelines, the WMP should reflect these same minimum standards and should make the same straightforward, unconditional commitments to *essential* environmental flows as in previous water management plans.

**Conclusion 4:** Past WMPs made a commitment to meet the *essential* environmental flow needs of the river and bay. The current plan should be no less committed to our rivers and bays as directed by the legislature. The 2010 management plan did not contain the *proviso* that exists in the technical papers. This proviso should be eliminated. The "look-back" concept developed, and accepted by the LCRA during the 2014 stakeholder process, should be fully implemented in the final approved WMP. Further, the "look-back" should be extended to two- or three- month look-back to provide a mechanism to ensure that the bay gets the safety-net level of freshwater inflows needed to maintain ecological health through drought

conditions. Certainly, if inflows were adequate in previous months to provide freshwater inflows to the bay, but those flows were not used for that purpose but rather stored, then those inflows should be available to meet the needs of the bay in future months.

**Decoupling Environmental Flows from Ag Irrigation Interests**

As adopted during the stakeholder process[22], there are times in the annual cycle when it is reasonable that environment and agricultural use of water be decoupled. As was brought out during the discussion, there are times when linked management is not justified. Linking the trigger for coming out of drought conditions during the seasons when water is never provided for agricultural use (October - March) is not logical and limits opportunities to enhance environmental flows by taking advantage of hydrological events below the Highland Lakes. The LCRA ran a "decoupled scenario[23]" that demonstrated that there are times when decoupling benefits environmental flows. However, the LCRA placed limits on these opportunities using caps that artificially limited water that was otherwise naturally available as storable inflows to the Highland Lakes. Likewise, the LCRA only decoupled environmental flows during non-agriculture irrigation periods.

**Conclusion 5:** Decoupling of environmental and Ag interests provides increased environmental flows that benefit both the river (instream flows) and the bay (freshwater inflows). Environmental flow legislation was intended to provide adequate flows to "*provide for the freshwater flows necessary to maintain the viability of the state's streams, rivers, bay and estuary systems."* The coupling of environmental and Ag interests is an arbitrary artifact of previous WMPs and is contrary to the intent of the Legislature. Environmental flows should be fully decoupled in the current WMP.

**There is a drain hole in the river above Bastrop**

There is empirical evidence that there is a drain hole in the Colorado River just above Bastrop that is connected to the Simsboro Aquifer (yes, the river and the aquifer are connected). According to an LCRA gain-loss study[24], the Colorado River is a "*losing stream*" in the segment where the river and the Simsboro aquifer intersect between Utley bridge and Fisherman's Park, in Bastrop County. In November 2008 the river was estimated to be losing 9 cubic feet per second or a loss of 6,516 ac-ft per year (see Table 19-1 from the report). Overall, the Colorado River below Austin has an estimated net gain of 145,000 to 170,000 ac-ft per year as it flows from Longhorn Dam to Matagorda Bay (error of study estimated to be +/- eight percent).

The LCRA and others have applied for Simsboro aquifer groundwater well permits in Bastrop and Lee counties requesting a total of 111,000 ac-ft per year[25]. Previous pumping of the Simsboro aquifer by Alcoa[26] at its mining site was in the range of 23,000 ac-ft/year from 1990 through 1999. Current pumping permitted by the Lost Pines GCD in the Simsboro Aquifer is about 75,000 ac-ft/yr.

The impact of the pumping described above by way of the apparent direct connection between the Colorado River and the Simsboro Aquifer could cause future losses from the

river to the aquifer to be significantly greater than the current estimated loss of about 6,500 ac-ft/yr. The impact of groundwater pumping of the Simsboro Aquifer on the Colorado River needs to be studied, quantified if possible, and managed.

**Table 19-1. Estimates of groundwater contribution to the lower Colorado River.**

| Reach | Description | River miles | Water-bearing units | Larger aquifer | Median adjusted gain-loss (cubic feet per second) |
|---|---|---|---|---|---|
| #1 | Austin-Bastrop | 53.5 | Simsboro | Carrizo-Wilcox | -9 |
| #2 | Bastrop-Smithville | 24.8 | Calvert Bluff, Carrizo, Queen City, Sparta | Carrizo-Wilcox, Queen City, Sparta | +59 |
| #3 | Smithville-LaGrange | 36 | Yegua-Jackson | Yegua-Jackson | -22 |
| #4 | LaGrange-Columbus | 40.9 | Catahoula, Oakville, Goliad | Gulf Coast | +81 |
| #5 | Columbus-Wharton | 68.5 | Goliad, Willis, Lissie | Gulf Coast | +10 |
| #6 | Wharton-Bay City | 34.1 | Lissie, Beaumont | Gulf Coast | +98 |
| | | | | **Total Gain:** | +217 |

ac-ft/yr
-6,516
42,714
-15,927
53,641
7,240
70,949
157,100 Net
200 144,793
235 170,132

Table 19-1 from LCRA Report (Saunders, Geoffrey P. June 2009)

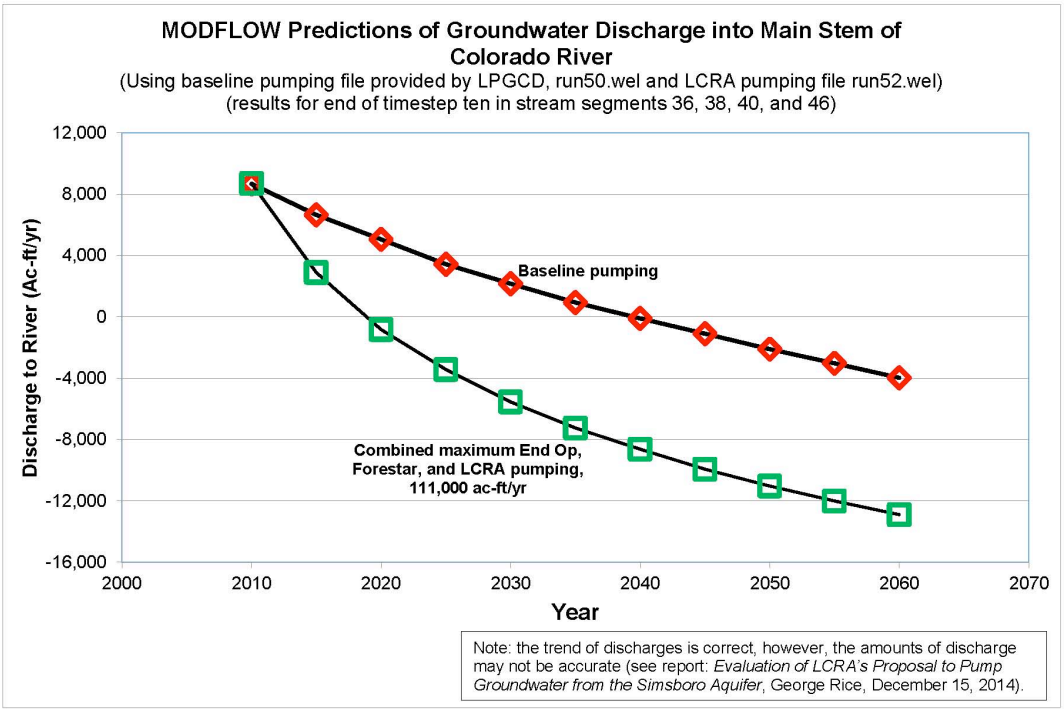
Environmental Stewardship, in connection with its efforts to inform the permitting process of the Lost Pines GCD and the desired future conditions process of Groundwater Management Area 12, contracted a groundwater hydrologist, George Rice, to evaluate the impacts of groundwater pumping. Environmental Stewardship hereby submits documentation[27] (Rice's LCRA Evaluation Report) and expert testimony[28] demonstrating that there is likely to be deleterious impacts on the aquifers associated with the Simsboro Aquifer and on the Colorado River and its tributaries resulting from groundwater pumping (Attachments 4 & 5). Study reports have also been provided to the District for the Forestar's[29], and End Op's[30] permitted and proposed pumping of the Simsboro Aquifer (Attachments 6 and 7).

Rice's LCRA Evaluation Report shows that groundwater modeling indicates that there will likely be impacts on baseflows (aquifer outflows) to the Colorado River and tributaries. Though modeling does not specifically predict quantity of impact, it does predict a trend toward decreasing the amount of groundwater discharges to surface waters. Increased pumping rates predict less discharge to the river when pumping is increased over baseline pumping rates. The greater the pumping rate on the aquifer, the less discharge to the river.

The model also predicts that distance from the river impacts rate of groundwater discharge to the river. Pumping close to the river has a greater impact on discharge of groundwater to the river than the same pumping rate has at a greater distance from the river. LCRA's wells are within 4 to 5 miles of the point where the Colorado River intersects the Simsboro Aquifer outcrop, and are a little less than 4 miles from the Colorado River at Fisherman's Park in Bastrop, TX. Rice's LCRA Evaluation study predicts that LCRA's pumping will decrease the discharge of groundwater to the Colorado River thereby reducing the amount of water flowing in the river.

Rice's LCRA Evaluation Report also estimates the combined impact of the Lost Pines GCD

baseline pumping (existing permitted pumping) and major new permits (LCRA, Forestar, and End Op) on aquifer outflows to the Colorado River. The combination of all existing and projected pumping within the district is predicted by the GAM model to have a *three-fold* impact in decreasing groundwater outflows to the river and tributaries over baseline pumping. The model predicts a trend where the Colorado River changes from a "gaining stream" to a "losing stream" within the 50 year planning cycle. The predicted trend and the shift to a losing stream have major implications for environmental flows (both instream and freshwater inflows) especially during drought conditions. Likewise the trend has major implications for Matagorda Bay as LCRA brings an off-channel reservoir on line in the lower basin. Again, though the model does not specifically predict quantitative impacts, the trend is clear and needs to be better understood as groundwater pumping is ramped up over the next decade.




## Historical and Recent Gain-Loss Studies

The Colorado River gains water from the Carrizo-Wilcox and other aquifer formations as it passes through Bastrop and Fayette counties. Historical records and recent studies indicate that the Colorado River has been, and remains, a gaining river as it passes through the river segment associated with the Carrizo-Wilcox aquifer group. Low-flow studies conducted by the USGS in1918, and a flow-duration curve generated by Dutton, in 2003[31] indicate that these groundwater formations contribute approximately 25,000 acre-feet per year to the Colorado River.

More recently, the Lower Colorado River Authority (LCRA) conducted studies to assist in its management of water releases from the Highland Lakes to meet water rights and

environmental flows obligations. These studies include information on the gains/losses of the river as it flows through Bastrop County and provide additional quantification of the amount of base flow the river gains during dry periods like the one that has occurred over the past several years. In a study related to the LCRA Operations Project (Saunders, 2006[32]) the author concluded, "the lower Colorado River is a gaining stream that receives groundwater contributions from major and minor aquifers." Analysis of USGS data contained in the report, though inconclusive, shows a gain of about 50 cubic feet per second (cfs) in the reaches passing over the Carrizo-Wilcox between Utley and Smithville (about 99 acre-feet per day). Limited fieldwork in 2005 also suggested that the Colorado River has some stream flow gain from groundwater in these reaches.

The LCRA conducted a field investigation in November 2008 as a follow-up to above mentioned gain-loss studies (Saunders, 2009[33]; see Table 19-1 above). The study concluded "the total net gain to the Colorado River from the Carrizo-Wilcox aquifer in Bastrop County was estimated to be 30 cfs during the November 2008 low flow event. This compares to the USGS 1918 estimate of 36 cfs, and the LCRA estimate of 50 cfs in November 2005". Saunders further concluded

> "such contributions to the base flow from these sources can be important during critical low-flow conditions." *"A study of ground water-surface water interaction prepared as part of development of the Central Carrizo-Wilcox groundwater availability model (GAM) indicated that base-flow rates of rivers crossing the aquifer outcrop have not decreased over time, and seasonal variability in base flow for perennial streams may not fluctuate significantly (Dutton, et al., 2003). In addition, flow from bedrock aquifers through the alluvium to the river is a complicated system and deserves more understanding. As demands on ground water resources increase with future growth in the Central Texas region, ground water-surface water interactions may need to be periodically monitored to assess water availability in the decades to come."*

**Conclusion 6:** If one considers the apparent connection between the drain hole in the river above Bastrop in the lower basin, and the story of what has apparently happened to the river and inflows to the Highland Lakes in the upper basin, it becomes evident that the river is not being managed in a sustainable manner that will avoid dramatic problems in the future. We are in danger of impacting the river system below Austin in a similar manner as in the upper basin, resulting in a dramatic decrease in the contribution of groundwater outflows to the lower basin and inflows to Matagorda Bay. This situation will become even more critical as environmental flows to Matagorda Bay are held back by the LCRA approved Lane City Off-channel Reservoir Project. Ecologically speaking, a river is an ecological system and has to be managed on an ecological basis. The ecological service functions (the groundwater-surface water connection) of the river that provide FLOW have been severely reduced in the upper basin. **Environmental flows in both the upper basin, but critically now in the lower basin, must be guaranteed in the LCRA WMP**.

## REVIEW OF COMMENTS PROVIDED TO THE LCRA

Management of the water resources of the Colorado River Basin and Matagorda Bay are critical to the future welfare of both the residents of Central Texas and the environment of the region. Both the TCEQ and LCRA have a challenging task to balance the many competing interests. In our August 18th letter[34] I provided comments and attached papers to draw the LCRA's attention to one aspect of the plan that we believe needs more consideration; the groundwater-surface water interaction between the Colorado River and the aquifers it intersects as it flows to the Gulf.

Attachment 1 to the August 18 letter, *Review of Groundwater-Surface Water Interactions between the Carrizo-Wilcox Aquifer Group and the Colorado River*, demonstrated the risks to the river from over-pumping the aquifers. The risks have hydrological, ecological, and political implications. Hydrologically the river is predicted to become a “losing stream” within the planning period (this in addition to the current "losing stream" status of the Simsboro segment). This will have ecological consequences related to both “instream flows” in the river, and “freshwater inflows” to Matagorda Bay.

Politically there is a concern that groundwater pumping takes water from the river that has been appropriated in surface water permits and may be stored in the Highland Lakes. The paper reviews work by Environmental Stewardship that demonstrates the potential for this concern. Using estimated outflows to the river, the TCEQ WAM RUN 3 model was used to estimate impacts on the river, and more specifically on surface water rights. This analysis did not, however, look at the impact of reduced outflows on the river over the 50-year planning period.

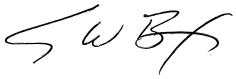
Environmental Stewardship recommended that a more thorough groundwater-surface water impact analysis be conducted as a part of the water management plan evaluation

Environmental Stewardship again urges the TCEQ to encourage the Texas Water Development Board (TWDB) or the Lower Colorado River Authority (LCRA) to collect base-flow gain/loss data to calibrate GAMs and WAMs. We have a *very rare* opportunity to conduct a gain-loss hydrologic study on the lower Colorado River during a period of *severe drought and historic low flow conditions* resulting from the curtailment of irrigation water for rice farming. The information collected as part of the study could be used to assist in the calibration of groundwater availability models.

In summary comments to the LCRA regarding the stakeholder process, ES[35] commented that: "[t]hough the stakeholder process has led to very minor improvements in attainment frequency for environmental flows; especially for the bays during drought conditions, the bay and estuaries are still at significant risk. Statistically, the model predicts that attainment of Threshold flows, the *essential* safety net for the bay, is only at 86% with a goal of 100%, and bay salinity is above the target of 27.5 ppt for 17 consecutive months during a repeat of the DOR. **An objective of the WMP is to "Provide threshold [flows to the bay] every month.[36]" This plan does not meet that objective. We must do better."**

Thank you for the opportunity to provide these comments and documents to support our concerns. We stand ready to assist the TCEQ in your evaluation and look forward to seeing a balanced result. Please contact me at 512-300-6609 or Steve.Box@att.net if you have questions.

Respectfully submitted,



Steve Box
Executive Director
Environmental Stewardship

cc: Paul Pape, Bastrop County Judge
Phil Wilson, LCRA General Manager
John Hofmann, LCRA EVP of Water
Kirk Watson, Senator District 14

Attachments:

Attachment 1. Water Planning and Management Principles: The Lakes, Rivers and Bays Group.
Attachment 2. "Observed trends in air temperature, precipitation, and water quality for Texas reservoirs: 1960-2010. With ES drawn overlays.
Attachment 3. Comparison of rainfall over the Highland Lakes (HL) watershed to inflows to the HL during current and drought-of-record (DOR).
Attachment 4. Rice, George. December 2014. Evaluation of LCRA's Proposal to Pump Groundwater from the Simsboro Aquifer (LCRA Evaluation Report).
Attachment 5. Rice, George. December 2014. Affidavit and express offer to make Mr. Rice available for cross examination before the Lost Pines GCD Board regarding LCRA Evaluation Report.
Attachment 6. Rice, George. December 14, 2013. Forestar's Proposal to Pump Groundwater from the Simsboro Aquifer
Attachment 7. Rice, George. July 20, 2014. Evaluation of End Op's Proposal to Pump Groundwater from the Simsboro Aquifer

Environmental Stewardship is a charitable nonprofit organization whose purposes are to meet current and future needs of the environment and its inhabitants by protecting and enhancing the earth's natural resources; to restore and sustain ecological services using scientific information; and to encourage public stewardship through environmental education and outreach. We are a Texas nonprofit 501(c) (3) charitable organization headquartered in Bastrop, Texas. For more information visit our website at http://www.environstewardship.org/.

**REFERENCES:**

[1] Water Planning and Management Principles. February 2014. The Lakes, Rivers, and Bays Group. **Endorsers of the Water Principles**: Brigid Shea, Travis County Commissioner, Bill Bunch, Save Our Springs Alliance, Jo Karr Tedder, Central Texas Water Coalition, Jennifer Walker, Sierra Club, David Foster, Clean Water Org., Paul Robbins, Austin Green Activist, Cindy Smiley, CTWC, Charles Flatten, Hill Country Alliance, Phil Cook, Bastrop, Dorothy Taylor, CTWC, Steve Box, Environmental Stewardship, Bastrop, Izzy Hauss, Hicks & Co. Environmental Services, Haythem Dawlett, Legend Communities, Inc., * Affiliations listed for informational purposes only and do not reflect any official position by that entity. 02.2014

[2] In the upper contributing zone: the impacts of the following on Highland Lake inflows: Lack of brush control, small surface water impoundments, agricultural use of groundwater for irrigation (especially cotton). In the cities: the impacts of

over-sizing water treatment and distribution systems such that they cannot be safely operated at reduced/drought flow levels without dropping below residual chlorine standards.

[3] Rainfall records and trends tend to indicate that rainfall over the contributing zone of the upper basin has been as much as 30% greater during the first six years of the current drought when compared to the same period in the DOR.

[4] We need to ask the question: Is it reasonable to expect that water supply will be adequate in drought and severe drought conditions to enable the supply and use of the same amount of water to FIRM customers as these customers receive during wet conditions. There needs to be a means of recognizing and supplying "essential needs" while reducing and/or eliminating non-essential uses. Unfortunately this expectation has been written into the adjudication orders that created the LCRA water management plan and the terms and conditions the LCRA must meet in managing FIRM vs interruptible water.

[5] Dictionary.com: conjunctive / adjective 1. joining; connective 2. joined 3. of or relating to conjunctions or their use 4. (logic) relating to, characterized by, or containing a conjunction noun 5. a less common word for conjunction (sense 3) Derived Forms conjunctively, adverb. Word Origin C15: from Late Latin conjunctīvus, from Latin conjungere to conjoin.

[6] Lacking such line-in-the-sand safety-net practices, the Colorado river will, like the Rio Grande and the western Colorado River, cease to flow to its bay and cease to be a sound ecological environment. The lack of freshwater inflows will bring dramatic ecological and economic impacts to the bay system and those who depend on the bay for a livelihood ... and on Texas heritage.

[7] Rodica Gelca, Katharine Hayhoe, and Ian Scott-Fleming. Observed trends in air temperature, precipitation, and water quality for Texas reservoirs: 1960-2010. Texas Water Resources Institute. Texas Water Journal, Volume 5, Number 1, pages 36-54. https://journals.tdl.org/twj/index.php/twj/issue/view/364/showToc Attachment 1 to this letter includes an overlay of reservoirs in the Highland Lake system to orient the maps to the Highland Lakes contributing zone.

[8] Lakes Buchanan, O.H. Ivie, E.V. Spence, and J.B. Thomas. The location of the lakes on the Colorado River in Figure 1 correlate with the latitude and longitude locations of these four lakes. (see Texas Reservoir Trends Supplement - LCR.pdf)

[9] Bruce Melton, PE. Historic Highland Lakes Drought Comparison. 2014. Climate Change Now Initiative, Austin, Texas. http://www.climatediscovery.com.

[10] Calculated by Environmental Stewardship from Melton data (see attachment HL_Rainfall_Inflow_Analysis14Sept14).

[11] Calculated by Environmental Stewardship from Melton data (see attachment HL_Rainfall_Inflow_Analysis14Sept14).

[12] Texas Land Trends published a new report in October, 2014 per its website: xlandtrends.org . The *Texas Land Trends* report is in its third publication. Previous reports have been single and comprehensive works. A change with the 2014 *Texas Land Trends* release is the development of a series of reports, rather than a single report released every five years, to better understand the status of Texas lands from the perspective of key issues (e.g., water, energy, etc.). This inaugural issue is focused on the five-year trends update of Texas rural working lands. Furthermore, part of the new 2014 *Texas Land Trends* report will include a completely redesigned interactive website to be launched later this year. Stay tuned for future updates from *Texas Land Trends*. Figure 8 shows a net increase in working lands or minor decrease in working lands across the upper basin. Figure 18 shows three areas across the basin with major increase in land consolidation. Figure 17 shows land fragmentation between the consolidation areas.

[13] Amy Buice and Kathy Wythe. 2014. "Tracking the Trends", txH2O Winter 2014 edition. Texas Water Resources Institute.

[14] R.J. Brandes Company. 2011. Effects of Small Surface Water Impoundments on Water Supply Reservoirs. TWDB Contract No. 0704830751. Final Report

[15] Preserving Private Lands Conserves Water. Stewardship starts where the first raindrop falls. http://twri.tamu.edu/publications/txh2o/winter-2014/conserving-private-lands-conserves-water/

[16] TCEQ SOAH Hearing. February 17, 2013. SWB notes from the meeting: The PRIMARY Public Health and Safety issue (other than fire protection) is the inability of the large water treatment and distribution systems to handle low flows from conservation, drought, and drought management practices because they are unable to maintain disinfecting CHLORINE LEVELs. As the witnesses for Firm Water Cooperative, Earl Foster with Lakeway MUD and Aron Archer with HDR, testified (and/or Greg Meszaros), they have engineered these larger water systems (Austin, Cedar Park, Leander, etc.) to meet peak demands and under low flow conditions they have problems with low chlorine residuals. These low chlorine residuals cause them to have to flush and waste the water in the lines and tanks. They are unable to keep "stagnant" water from developing in the systems since they were not designed to operate at such low flow rates. If I understand correctly, the term "stagnant" in this context means "water with residual chlorine levels below required drinking water standards." I suspect that "designed for peak demands" includes plans for growing populations during good times when water is plentiful. Though somewhat and artificial and human engineered problem, the problem none-the-less exists. So a point to be vigilant about in conservation advocacy and planning is to ensure that systems designs are right-sized to also operate under low flow conditions ... and/or are retrofitted.

[17] Quoted from ES letter to LCRA Board of Directors, August 18, 2014.

[18] And final draft and amendments submitted to TCEQ

[19] LCRA 2010 WMP as amended January 27, 2010, item (15) page P-4.

[20] LCRA 2010 WMP as amended January 27, 2010, item (16) page P-5.

[21] Technical Papers A-1 thru A-6 provided to TCEQ by LCRA on May 31, 2012
[22] LCRA moderated stakeholder meetings held August/September 2014.
[23] LCRA Model Run (D) 09-03-2014 Decoupled Scenario (1940-2013).
[24] Saunders, Geoffrey P. June 2009. Los Flow Gain-Loss Study of the Colorado River in Texas. Table 19-1 with calculations to convert cubic feet per second (cfs) to acre-feet per year.
[25] The LCRA is now completing 4 wells in the Simsboro to pump 10,000 ac-ft/yr. Forestar is completing wells to pump 12,000 ac-ft/yr (they have sued the District demanding a full 45,000 ac-ft/yr). End Op is still trying to get permits for 46,000 ac-ft/yr (originally requested 56,000 ac-ft/yr). The District has existing permits for about 55,000 ac-ft/yr (not including the above applications and permits). Combined permitted pumping in the Lost Pines District is about 75,000 ac-ft/yr. Blue Water in Post Oak Savannah is permitted for 71,000 in Burleson Co.
[26] Joe Cooper, General Manager, Lost Pines GCD. Personal communications and Excel spreadsheet below:
ALCOA Simsboro pumping reported to RRC (per RRC):

| YR. | AFY |
|---|---|
| 1990 | 23,340 |
| 1991 | 23,423 |
| 1992 | 23,330 |
| 1993 | 23,388 |
| 1994 | 23,378 |
| 1995 | 23,487 |
| 1996 | 23,905 |
| 1997 | 23,006 |
| 1998 | 23,245 |
| 1999 | 37,787 |
| TOTAL | 248,289 |

[27] Rice, George. December 2014. Evaluation of LCRA's Proposal to Pump Groundwater from the Simsboro Aquifer (LCRA Evaluation Report).
[28] Rice, George. December 2014. Affidavit and express offer to make Mr. Rice available for cross examination before the Lost Pines GCD Board regarding LCRA Evaluation Report.
[29] Rice, George. December 14, 2013. Forestar's Proposal to Pump Groundwater from the Simsboro Aquifer
[30] Rice, George. July 20, 2014. Evaluation of End Op's Proposal to Pump Groundwater from the Simsboro Aquifer
[31] Dutton, Alan R., Bob Harden, Jean-Philippe Nicot, and David O'Rourke. February 2003. Groundwater Availability Model for the Central Part of the Carrizo-Wilcox Aquifer in Texas, Appendix B – Surface Water- Groundwater Interaction in the Central Carrizo-Wilcox Aquifer.
[32] Saunders, Geoffrey P. 2006. Aquifers of the Gulf Coast of Texas. TWDB publication 365.
[33] Saunders, Geoffrey P. June 2009. Low-Flow Gain-Loss Study of the Colorado River in Bastrop County, Texas.
[34] ES letter to the LCRA Board of Directors dated August 18, 2014
[35] ES August 14, 2014 letter to the LCRA Water Operations Committee of the Board following the August/September stakeholder process.
[36] August 25, 2014 staff overview on the Water Availability Model (WAM), page 13, Environmental Flows 2012 Application, Bay and Estuary Inflows, - Provide threshold every month. http://www.lcra.org/water/water-supply/Documents/WAM-overview.pdf

# HIGHLAND LAKES FIRM WATER CUSTOMER COOPERATIVE

January 30, 2015

***Via email to:*** *wras@tceq.texas.gov*
***And via first class U.S. Mail to:***
Dr. Kathy Alexander
Texas Commission on Environmental Quality
P.O. Box 13087, MC 160
Austin, TX 78711-3087

Re: LCRA WMP (Application No. 58938A; Lower Colorado River Authority's October 31, 2014 "Amended and Restated" permit amendment application for Certificates of Adjudication Nos. 14-5478, as amended, and 14-5482, as amended, requesting revisions to the Water Management Plan)

Dear Dr. Alexander:

The Highland Lakes Firm Water Customer Cooperative ("HLFWCC") offers the following preliminary comments for consideration during the TCEQ's technical review of the above-referenced permit application. In general, these comments fall into the following categories: (1) comments on items omitted from the proposed water management plan ("WMP") that need to be included; (2) comments on wording in the proposed WMP that needs to be clarified; and (3) questions that need to be addressed.

Regarding omitted items, as we explained in our verbal comments on January 7, 2015 and as set forth more fully below, the most significant omission from the WMP is the removal of LCRA's drought contingency plan ("DCP") provisions pertaining to curtailment of firm water customers. We have worked very hard for the last several years to make LCRA's water management practices more transparent, coherent, and predictable. The progress made during the time between LCRA's 2012 WMP application and its 2014 WMP application has been substantial. However, LCRA's proposal to remove the firm customer DCP provisions from the WMP is a step backwards. It creates unnecessary uncertainty and is antithetical to the purpose of the

WMP. Another omission from the WMP is any basis for the disparate treatment of Garwood. Both of these topics need to be addressed in the WMP for the reasons more fully explained below.

Regarding wording clarifications, our goal is to ensure that the WMP is unambiguous and the actions taken thereunder are predictable. The WMP is a tool used by LCRA and all of its customers. Our members manage public water supply systems. We need the WMP to be drafted clearly and precisely so that compliance is objectively verifiable and water resource management is more predictable for everyone. Ambiguous language is likely to cause serious conflicts among the stakeholders in the future. It is much better to clarify the language now so that everyone has the same understanding and expectations about what the WMP requires.

Lastly, we do have a few questions that we think are worth addressing in your comments back to LCRA. Depending on LCRA's responses we may have more questions, but there are just a few points on which we need some additional information. It is our hope that you will incorporate all of our comments into your technical comments and/or include the comments in the ordering provisions of the order approving the proposed WMP.

## I. OMITTED ITEMS THAT MUST BE INCLUDED IN THE WMP

### A. LCRA's Drought Contingency Plan (DCP) for Firm Water Customers

LCRA proposes to remove from the WMP all curtailment provisions pertaining to firm water customers and to address that topic in an entirely separate document subject only to the provisions of the TCEQ rules at 30 Tex. Admin. Code ch. 288. Specifically, we are referring to the removal from the pending application of the provisions currently included in the 2010 WMP at § 4(E)(4), pp. 4-31 through 4-34, and in the 2012 WMP application at § 4.7, pp. 4-23 through 4-25. Nothing in the TCEQ's June 3, 2013 letter to LCRA or the TCEQ's May 16, 2014 report made any reference to removing these provisions from the WMP. No stakeholder asked for removal of this section either. We are strongly opposed to removing these DCP provisions applicable to firm water customers from the WMP. We believe that the DCP provisions for firm water customers should not be removed from the WMP for the reasons set forth below.

1. **The firm customer DCP provisions are an integral part of the WMP**. It is inappropriate to remove the DCP for firm water customers from the WMP and treat the firm customer DCP as if it were an entirely separate exercise unrelated to the WMP. It is not. The firm customer DCP derives directly from the 1988 Adjudication Order[1] and is interdependent upon the WMP. **Under the 1988 Adjudication Order, there can be no curtailment of firm water customers unless *both* of the following conditions exist: (i) a drought worse than the drought of record ("DWDR") has been declared; and (ii) no water is being released from storage for any interruptible water customers.** These two conditions of firm customer curtailment are the very foundation of the 1988 Adjudication Order and are the underpinnings of the water management strategies described in the WMP. A major goal of the WMP is to provide a roadmap for LCRA to follow so that its water management strategies *do not* trigger declaration of a DWDR. If, however, a DWDR is declared and if LCRA has already cut off water to all of its interruptible customers, we are aware that curtailment of firm water customers could occur. But the firm customer curtailment provisions do not exist independently from the WMP; rather, they spring from the WMP. Our concern is that if the firm customer curtailment provisions are removed from the WMP, they will be stripped of their proper context. Without context, there is no link between when or the type of curtailment actions that can be imposed. Without the proper context, the rights of firm water customers will be adversely affected. We feel strongly about this issue because we have already seen this happen and it illustrates our point. On November 19, 2013, the LCRA Board passed a resolution (the "Resolution") mandating firm water customer curtailment in the form of a one day per week outdoor watering schedule. The relevant section of the Resolution provides:

> 2. The *LCRA Drought Contingency Plan is temporarily amended* to provide for additional *regulation of water use by firm water customers* as follows:
>
> If combined storage of lakes Buchanan and Travis is below 1.1 million acre-feet on March 1, 2014 and TCEQ has issued an order that results in the cutoff of interruptible stored water supply to the Gulf Coast, Lakeside and Pierce Ranch irrigation operations, the following measures shall take effect until such time as either combined storage increases to 1.1 million acre-feet or above or interruptible stored water is supplied to any customers in the Gulf Coast, Lakeside or Pierce Ranch irrigation operations:

[1] I*n Re: The Exceptions of the Lower Colorado River Authority and the City of Austin to the Adjudication of Water Rights in the Lower Colorado River Segment of the Colorado River Basin*, Cause No. 115,414-A-1, In the District Court of Bell County, Texas 264th Judicial District, April 20, 1988 (the "1988 Adjudication Order").

> a. *Firm customers shall adopt and implement watering restrictions that limit the irrigation of ornamental landscaped areas (such as lawns) with hose-end sprinklers or automatic irrigation systems other than drip irrigation to no more than once per week.*
>
> b. Municipal wholesale water customers *shall* provide LCRA with an order, ordinance, or resolution to demonstrate adequate enforcement provisions related to the restrictions.
>
> c. Failure to comply with the watering restrictions will subject the customer to the following *penalties* to be determined by the LCRA Board of Directors:
>
> i. First documented violation: Written notice of violation;
> ii. Second documented violation: Penalty of up to $2,000;
> iii. Third and subsequent violation: Penalty of up to $10,000;
> iv. Each day in which the violation is observed is considered a separate violation.

Section 2(a) of the Resolution requires firm customers to impose one-day per week watering restrictions. A requirement to restrict outdoor watering constitutes mandatory curtailment of firm water customers. However, when the Resolution was first passed in 2013, and when it was re-adopted in 2014, two things were true: (1) no DWDR had been declared, and (2) the firm customer curtailment provisions in LCRA's DCP were a part of the WMP, but LCRA did not follow the proper procedures to amend the WMP. Both of those circumstances cause the Resolution to violate the 1988 Adjudication Order.

With regard to timing, since a DWDR had not been declared, imposition of mandatory curtailment requirements on firm water customers violated the 1988 Adjudication Order. The 1988 Adjudication Order requires that firm customers rights must be fully protected even under drought of record conditions; in other words, up to the point that a DWDR is declared. Prior to declaration of a DWDR, no mandatory curtailment is allowed. And fully protecting firm customers' demands means fully protecting our demands at levels existing before-mandatory restrictions or curtailment.

With regard to procedural due process, none of the proper procedures for amending the firm customer DCP were followed. No unilateral action of the LCRA Board can amend, even temporarily, LCRA's DCP provisions for firm customers. LCRA's DCP is fully incorporated into the current 2010 WMP and is included in that document as Chapter 4. Then, as now, there was no stand-alone DCP separate and apart from the WMP. The WMP can only be amended by taking all of the following steps: (1) LCRA Board votes to submit an application to the TCEQ requesting an amendment to the WMP; (2) LCRA staff prepares and files a water rights permit application to amend the WMP with the TCEQ; and (3) the TCEQ issues an order

approving a revised WMP. Because these procedures were not followed, Section 2 of the Resolution has no effect.

LCRA's reliance on language in the January 2010 Order Approving the WMP to justify unilateral actions of the LCRA Board mandating curtailment by its firm water customers is misplaced. The 2010 Agreed Order conditionally approving LCRA's 2010 WMP includes the following ordering provision relating to the DCP portion of the WMP:

> 1(g) Consistent with 30 Tex. Admin. Code Ch. 288, LCRA shall review and update, as appropriate, in accordance with the schedule required by such rules, those portions of Chapter 4 that relate to its Drought Contingency Plan (DCP) that do not change the triggers or amount of curtailment of interruptible supply or the triggers related to instream flows and bay and estuary inflows. Changes to other portions of the DCP, including any changes to LCRA's specific, quantified *targets* for water use reductions of firm customers required by chapter 288, do not constitute an amendment to the Water Management Plan requiring notice and an opportunity for contested case hearing, but must otherwise comply with the public notice requirements of Chapter 288 of the Commission's rules. *Prior to implementing any mandatory firm water customer curtailment allowed under Texas Water Code section 11.039, LCRA shall work with its firm customers to develop a specific water curtailment plan, which must be approved by the LCRA Board and the Commission pursuant to other applicable procedures*.[2]

Section 1(g) of the 2010 Agreed Order allows LCRA to change "*targets* for water use reductions of firm customers" by following the procedures in Chapter 288, rather than the more stringent procedures applicable to other WMP amendments. Since such "targets" are legally unenforceable per 30 Tex. Admin. Code § 288.22(a)(6), it is not entirely inappropriate that the 2010 Agreed Order also exempts such non-mandatory goals from the contested case hearing process and makes them subject to the less stringent DCP public notice provisions in Chapter 288 of the TCEQ's rules. However, *mandatory* curtailment provisions such as those in the Resolution are addressed in the last sentence of Section 1(g) of the 2010 Agreed Order. Mandatory curtailment provisions must be approved by the TCEQ and are subject to the process for amending the WMP, including the provisions pertaining to the right to a contested case hearing, discussed below.

Even if the 2010 Agreed Order allowed some provisions of the DCP to be amended by following the Chapter 288 procedures, the 2010 Agreed Order appears to have been superseded by Section 11.1273 of the Texas Water Code. Although on some

[2] 2010 Agreed Order, at Ordering Provision #1(g), page 9.

aspects of the WMP amendment process, Section 11.1273 tracks and codifies the 2010 Agreed Order, on this point it departs from the 2010 Agreed Order. For example, Sections 11.1273(b) and (c) identically track Section 1(f) of the 2010 Agreed Order regarding the time for the TCEQ to complete the technical review of an WMP amendment application (1 year), and the time for LCRA to respond to TCEQ comments (30 days, unless otherwise mutually agreed). However, Section 11.1273(d) does not track the next section of the 2010 Agreed Order, Section 1(g). The legislature certainly could have codified the language in the Section 1(g) of the 2010 Order into Section 11.1273(d) of the Water Code, but it chose not to do so. Because the legislature intentionally did not include the language in Section 1(g) of the 2010 Order in the statute, the firm customer curtailment provisions must remain in the WMP and be processed in accordance with all other WMP provisions.

Finally, even assuming for the sake of argument that the Resolution properly amended LCRA's DCP, the Resolution is unenforceably vague. For example, Section 2(c) of the Resolution states that "failure to comply with the watering restrictions will subject the customer to" certain monetary penalties that escalate each time a violation occurs. It is unclear from this language whether LCRA intends to assess penalties against its firm water customers for failure to amend their DCPs, or whether LCRA intends to assess penalties directly against end users who may water more than once per week. The penalty scheme is a familiar one that is usually directed at end-users who water their landscapes more often than allowed. But LCRA has acknowledged that it has no authority to enforce its DCP against the retail customers of its wholesale firm water customers. The awkward wording of the Resolution raises many more questions than it answers. This is just one of the examples of wording in the Resolution that is awkward and vague, but it highlights the fact that firm customers need to be protected from this type of mandated curtailment, vague standards, and enforcement threats all occurring even before firm customers are legally allowed to be curtailed under the 1988 Adjudication Order.

**2. <u>Removal of the firm customer DCP from the WMP diminishes firm water customers' due process rights</u>.** Making adoption or revision of firm customer DCP provisions subject only to the procedures outlined in 30 Tex. Admin. Code ch. 288, and not to the contested case hearing provisions applicable to all other major WMP amendments, severely handicaps the firm customers because the procedural differences between the two processes are substantial and significant. Under LCRA's proposal, due process rights for firm customers would be limited to notice and comment rulemaking, rather than contested case hearing, in violation of the 1988 Adjudication Order. The

1988 Adjudication Order states that major amendments to the WMP are subject to a contested case hearing. The right to a contested case hearing is a significant procedural and substantive due process right and is a much more robust due process right than is provided under 30 Tex. Admin. Code ch. 288. Entities subject to Chapter 288 adopt DCPs through a legislative process such as the passage of a resolution, ordinance, or order, depending on the type of entity. The public's opportunity to be involved in the Chapter 288 DCP adoption process is limited to providing comments at a public meeting. There is no right to a contested case hearing. Removing the firm customer DCP provisions from the WMP deprives the firm customers of the right to have a contested case hearing on those provisions. In addition, unless it contains unconstitutional provisions, a DCP adopted under Chapter 288 will probably withstand any legal challenge. Finally, removing firm customer DCP provisions from the WMP, but leaving interruptible customer DCP provisions in the WMP, means that firm water customers have fewer due process rights than interruptible customers. Not only does this put firm customers on an unequal due process footing, it makes no sense given the overall purpose of the WMP to protect firm customers.

**3. <u>Removal of the firm customer DCP from the WMP handicaps firm customer's ability to engage in effective water management</u>**. If our members do not know what curtailment provisions they might be subject to, we are unable to engage in effective water planning. As discussed above, if we are subject to various Board resolutions adopted out of context from the WMP and under conditions not allowed in the 1988 Adjudication Order, our water management practices will suffer. Just as the interruptible customers need predictability so they will know whether and when to plant crops, we too need predictability. A major goal of the WMP is to create a plan that all water users can follow so they can effectively manage water demands during times of scarcity. The proposed WMP describes several foreseeable drought conditions, describes what interruptible and environmental releases could occur during each stage, and describes the conditions under which a DWDR could be declared, but then it stops short of saying what happens to firm customers after a DWDR is declared. In effect, the proposed WMP describes all of the steps leading firm customers to the edge of the cliff, describes when they might be pushed over, but is silent on what happens during and after the descent. Firm customers are left to wonder what curtailment rules might apply after a DWDR is declared. This approach to curtailment procedures stands in stark contrast to the provisions in the WMP pertaining to curtailment of interruptible water customers. The proposed WMP exhaustively describes every instance under which the interruptible supply customers will or will not receive water and how much. These details provide interruptible water users plenty of time before planting season to

change their practices to match the available water supply. The firm customers need similar information and it should be included in the WMP.

**4. 1988 Adjudication Order requires meaningful TCEQ oversight of the terms of the firm customer DCP.** The 1988 Adjudication Order envisioned that TCEQ would oversee adoption of and major amendments to the WMP. However, if the firm customer DCP is adopted and amended under only the provisions of Chapter 288, rather than under the 1988 Adjudication Order, the TCEQ would be effectively sidelining itself with regard to firm customer curtailment provisions. Under Chapter 288, the TCEQ's role will be limited to reviewing the DCP table of contents against a checklist of basic required plan elements, which is how the TCEQ is currently handling all other DCPs. But the 1988 Adjudication Order requires more, and TCEQ needs to stay involved with the issue through the WMP process.

**5. We support the firm customer curtailment provisions that were included in the 2012 WMP application at § 4.7, pp. 4-23 through 4-25 – we simply want that section to be included in the WMP and not be part of a separate process.** Just to be clear, we agree that water conservation is prudent and we are fully aware that mandatory pro rata curtailment is contemplated under of Section 11.039 of the Texas Water Code. Our members manage retail public water supplies large and small on a daily basis. Because we are retail public water suppliers, all of our members have adopted and are implementing their own individual DCPs as well as separate water conservation plans. These plans are subject to approval by both the TCEQ and by LCRA as our wholesale water provider. So we fully understand the importance of both water conservation and drought contingency planning. But our rights are also governed by the 1988 Adjudication Order. That Order governs the timing of any imposition of mandatory firm water curtailment measures, and the process for adopting those curtailment measures. We believe that those aspects of the 1988 Adjudication Order are respected only if the firm customer DCP provisions are included in the WMP. In addition, for the mandatory curtailment period, the percent reduction in pumping by firm customers needs to be clearly stated in the WMP, but because there are several ways to meet a target, the exact methods of reducing water use are outlined in each firm water customer's DCP.

**In conclusion, we urge the TCEQ to require LCRA to supplement its WMP Application and to include the mandatory curtailment provisions applicable to firm water customers in the event of a DWDR in the WMP so that those provisions can be evaluated during the this application review process the same way as the mandatory**

**curtailment provisions applicable to interruptible water customers are being evaluated. We also urge the TCEQ to include the following language in any order adopting the WMP: "LCRA shall not impose mandatory curtailment firm water customers unless *both* of the following conditions exist: (i) a DWDR has been declared; and (ii) no water is being released from storage for any interruptible water customers."**

## B. Garwood Contracts

In many places, the proposed WMP states that some action (or inaction) by LCRA is justified because the Garwood contracts so state. This is problematic for two reasons.

First, the implication is that the WMP is subject to the Garwood contract, but releases from storage for Garwood are not subject to the WMP. This is exactly the opposite of what is required by the 1988 Adjudication Order and antithetical to the WMP concept. No contract can contravene the 1988 Adjudication Order or the WMP required by that Order.

Second, all of LCRA statements about the Garwood contract are unsubstantiated. In a WMP application that is hundreds of pages long, includes 9 multi-part appendices, and 13 multi-part exhibits, the Garwood contracts are nowhere to be found. As a result, the WMP application contains no basis for supporting LCRA's interpretations of the Garwood contracts, and neither the TCEQ nor the public have any bases for evaluating LCRA's representations regarding the contracts.

**Therefore, we submit that Garwood is not entitled to special treatment under the WMP. However, if Garwood is entitled to special treatment under the WMP, the TCEQ should require that the Garwood contracts be included in the WMP application, and require LCRA to add a new section to the WMP explaining its position regarding releases from storage for Garwood, how the Garwood contracts are in compliance with the 1988 Adjudication Order, and how the Garwood contracts relate to the proposed WMP.**

## C. Reporting and Update Schedule

We urge the TCEQ to spell out in the order adopting the new WMP some of the events that require LCRA to file a new WMP Application, and to provide a deadline for LCRA for doing so. We are very concerned that the WMP will again become stale and obsolete. For example, your May 2014 Report mentions several non-weather-related "update" events that would trigger revisions to the WMP: a change in operations due to new permits or amendments, construction of the off-channel reservoir, the City of Corpus Christi's diversions, and any change in use of LCRA's run of the river rights. Any order adopting a new WMP should expressly require LCRA to submit a WMP amendment within a specified time after the occurrence of one of these events.

Also, any order approving a new WMP should require LCRA to submit to the TCEQ reports providing a historical combined storage and inflow data and forecasts, much like the information included in the affidavits from LCRA staff accompanying all of its WMP and emergency order applications. Further, if certain hydrogeological conditions are met, LCRA should be required to submit a new WMP application to the TCEQ making whatever adjustments are required to the WMP based on weather-related conditions within a specified time period.

Finally, we may be on the brink of having a new period to use as the so-called "Drought of Record." TCEQ should impose on LCRA a continuing duty to monitor the situation and if conditions occur that require re-definition of the DOR period, TCEQ should require LCRA to submit an amendment to the WMP within a specified period of time.

# II. CLARIFICATIONS NEEDED IN THE WMP

## A. Glossary[3]

### 1. "*Combined Firm Yield of Lakes Buchanan and Travis*" and "*Firm Water*"

The new definitions of these terms proposed in the 2014 WMP Application are not consistent with the 1988 Adjudication Order. The definitions of these terms from

[3] For convenient comparison, the definitions discussed in this section that are common to the 1988 Adjudication Order, 2014 WMP Application, and 2010 WMP are included as Attachment 1.

the 2010 WMP are more consistent with the 1988 Adjudication Order and should be used in the new WMP.

The 1988 Adjudication Order uses the term "*Combined Firm Yield*" to describe the maximum amount of firm, uninterruptible commitments of water that LCRA is authorized to take out of Lakes Travis and Buchanan.[4] As used in the 1988 Adjudication Order, the purpose of the definition is to identify the greatest amount of water the LCRA can sell to firm water customers out of the reservoirs, and to establish a cap on the amount of firm water that the LCRA can sell. However, the proposed WMP includes an entirely new definition of "*Combined Firm Yield*." It is defined as the "calculated" "firm yield [a term separately defined]" and "incorporating LCRA's agreements and operating assumptions regarding calls on the upper basin." In this new definition, the term "LCRA's agreements" is not defined. Further, inclusion of a reference to "LCRA agreements" in a definition meant to set a cap on water sold under those agreements makes the definition circular and nonsensical. **The proposed definition of Combined Firm Yield needs to be revised to be the same as the definition of this term set forth in the 2010 WMP.**

2. "*Firm Water*"

The proposed new definition of "*Firm Water*" in the 2014 WMP is not correct. The definition of "*Firm Water*" in the 2014 WMP is the same as the definition of the term "*Combined Firm Yield*" in the 2010 WMP. These terms are not synonymous. Firm Water is the amount of water that the LCRA has contracted away under all of its firm water contracts. If "*Firm Water*" is redefined to mean "*Combined Firm Yield*," the term "*Firm Water Customer*" has no meaning. **The proposed definition of "*Firm Water*" needs to be revised to be the same as the definition of this term set forth in the 2010 WMP.**

3. "*Drought of Record*"

This definition needs to be expanded so as to allow for a new critical drought period to be used if storage levels drop below the levels in the 1940s -1950s. This possibility is allowed for in the definition of this term used in the 2010 WMP. **The proposed definition of "*Drought of Record*" needs to be the same definition of that term in the 2010 WMP, and a definition for the term "*Critical Period*" as set forth in the 2010 WMP needs to be added.**

[4] 1988 Adjudication Order, Lake Buchanan: FOF 19.d COL 4.F; Lake Travis: FOF 26.d.; COL 6.F.

## B. Drought Conditions

This important section must convey very complex concepts in the clearest possible way. As currently drafted, it falls short of that goal. Specifically, the conditions for entering and exiting the drought conditions are very convoluted and some important concepts only implied but never stated. For example, the period over which combined storage levels and inflows are evaluated are not stated, and the conditions for entering and exiting the Less Severe Drought Condition are very convoluted and difficult to follow. **Our suggested revisions to clarify this section are attached as Attachment 2.**

## C. The Look-Ahead Test

With regard to the Curtailment Procedures for a Crop Season, the WMP Application states that, "The curtailment procedure for that Water Supply Condition will be followed for the upcoming Crop Season *unless the LCRA Board determines* that Combined Storage would drop below 600,000 acre-feet in the next 12 months or below 900,000 acre-feet in the upcoming Crop Season." (WMP App. at 4-7 § 4.3.2). Several things need to be clarified with regard to this provision. First, since this is the new "Look-Ahead Test" described on page 4-11 at § 4.3.2.4, § 4.3.2 should cross-reference § 4.3.2.4. Also, the bases and process for the LCRA Board uses to determine whether Combined Storage would drop below the stated levels needs to be fully spelled out in the WMP so that all stakeholders have the ability to run the "Look-Ahead Test." Stakeholders need to be able to use the "Look-Ahead Test" as a tool to manage their own water systems, and to confirm the results of any testing done by LCRA. The results from the "Look-Ahead Test" should not vary based on whether LCRA runs the model, the TCEQ runs it, or a stakeholder runs it. To remove ambiguity regarding the "LCRA Board's determination" that Combined Storage might drop below the stated levels, WMP § 4.3.2 needs to be modified to state that the LCRA Board will make such determination using the "Look-Ahead Test" and the modeling parameters for the "Look-Ahead Test" need to be expressly stated.[5] At the very least, a description of the inputs for the "Look-Ahead Test" (both variable and constant), and the benchmark (cumulative inflow to the lakes being less than the 99$^{th}$ percentile) need to be included in the body of the WMP. **Our suggested revisions to clarify these provisions is attached as Attachment 3.**

[5] Except that the basis for excluding Garwood needs to be explained or deleted.

Also, as you know, reaching a combined storage level of 600,000 acre-feet is one of the conditions allowing the LCRA Board to declare a Drought Worse than the Drought of Record. Another of our main efforts for the past couple of years has been to try and drive home the point that actions or inactions by LCRA that trigger a DWDR should not be built into or allowed under the WMP. In other words, releases from storage by LCRA to its interruptible water customers that would cause declaration of a DWDR is an anathema to the entire WMP concept and cannot be condoned under any circumstances. **Therefore, we urge the TCEQ to provide in any Order adopting a new WMP an express provision stating that any action or inaction by LCRA causing combined storage to fall below 600,000 acre feet is a violation of the WMP.**

### C. Combined Managed Conservation Storage

Section 4.7 of the WMP includes provisions for measuring drought duration by referencing the terms "combined managed conservation storage," and the "individual managed conservation storage" for each of Lakes Buchanan and Travis. These terms are not defined in the WMP. These are terms of art and should be defined in the Glossary or in Section 4.7.

## III. QUESTIONS

1. What is the effect of modifying the Less Severe Drought Condition table to add two additional tiers for first crop and one additional tier for second crop? Would this make an additional 25,000 AF of interruptible water supply available for first crop and an additional 9,000 AF available for second crop? (WMP App. at 4-10, Table 4.2, adding First Crop tiers for 1.4 to 1.499 MAF - 145,000 AF, and 1.5 to 1.599 MAF - 155,000 AF; and Second Tier for 1.4 to 1.599 MAF - 55,000 AF).

2. Why is the first criteria for exiting the Extraordinary Drought Condition reaching a Combined Storage of 1.3 MAF, rather than 1.7 MAF per the TCEQ draft Report? (WMP App. at 4-6, § 4.2.4.2)

3. Why are the "Evaluation Dates" on March 1 and July 1, rather than March 1 and August 1 per the TCEQ Report? (WMP App. at 4-4, § 4.2.1)

Thank you again for the opportunity to submit these preliminary comments and questions for consideration during your ongoing technical review of LCRA's WMP application. We hope that the issues we have raised can be sorted out during the technical review process. However, as specifically allowed by the TCEQ's December 11, 2014 notice to stakeholders, we expressly reserve the right to make additional comments and request a contested case hearing after the technical review is complete. In the meantime, if you have any questions or need additional information, please do not hesitate to contact me at (512) 261-6222 x140.

Sincerely,
HIGHLAND LAKES FIRM WATER CUSTOMER COOPERATIVE

By: 

Earl Foster, Steering Committee Chair

Attachments

cc: Steering Committee Members
Trish Carls, via email to tcarls@cmcdlaw.com

**ATTACHMENT 1**

**DEFINITIONS -- COMPARISON of 1988 Adjudication Order, 2010 WMP and Pending WMP Application**

**1. The 1988 Adjudication Order defines "Combined Firm Yield" as follows:**

". . . that portion of the Combined Theoretical Yield remaining after it is assumed that inflows will be reduced by honoring upstream senior water rights and/or passed through Mansfield Dam to honor downstream senior water rights, in accordance with the relative priorities of such rights except to the extent that the holder of any such right may agree otherwise." ).

The term "Combined Theoretical Yield" is defined in the 1988 Adjudication Order as "the amount of water that could be supplied from conservation storage in Lakes Travis and Buchanan during each year of a simulated repeat of the drought of record," as calculated in studies that make certain assumptions about inflow measurement and operation of the lakes as a system. (Lake Buchanan FOF 22; Lake Travis FOF 29)

**2. 2014 WMP Application proposed new definitions:**

**Combined Firm Yield of Lakes Buchanan and Travis** -- the calculated firm yield of lakes Buchanan and Travis when operated as a system, *incorporating LCRA's agreements and operating assumptions regarding calls on the upper basin*. The Combined Firm Yield is based on the 1940s to 1950s historic Drought of Record. See "firm yield" definition below." [This is an entirely new definition.]

**Drought of Record (DOR)** – the worst hydrologic drought for which streamflow records are available and is considered to be the period of time during recorded history when natural hydrological conditions provided the least amount of water supply. For the WMP, the Drought of Record is the drought of the 1940s and 50s.

**Firm Water** – water that can be supplied on a consistent (or "firm") basis from lakes Buchanan and Travis through a repeat of the worst drought in recorded history for the lower Colorado River basin, which is the drought of the 1940s and 50s, while honoring all downstream water rights. This drought is known as the Drought of Record. [This is the same as the 2010 WMP definition of Combined Firm Yield.]

**Firm Yield** – that amount of water, that the reservoir could have produced annually if it had been in place during the worst drought of record. In performing this simulation,

naturalized streamflows will be modified as appropriate to account for the full exercise of upstream senior water rights is assumed [?] as well as the passage of sufficient water to satisfy all downstream senior water rights valued at their full authorized amounts and conditions as well as the passage of flows needed to meet all applicable permit conditions relating to instream and freshwater inflow requirements. (*See* 30 Tex. Admin Code § 297.1(20).) [This is pasted in from the TCEQ regulations. Awkward phrasing is in the rule.]

**Interruptible Stored Water** – water from lakes Buchanan and Travis that must be cut back or cut off during drought or times of shortage to ensure that LCRA can meet Firm Water customer demands.

**3. 2010 WMP definitions:**

**Combined Firm Yield** - a specific amount or quantity of water stated in acre-feet that represents the maximum average annual demand that can be met from a reservoir system during a simulation of a repetition of the system's Drought of Record, while honoring the full extent of upstream and downstream senior water rights.

C**ritical Drought Period** - the period of time during which the reservoir system was last full and refilled, and the storage content was at its minimum value.

**Drought of Record -** the drought that occurred during the critical drought period.

**Firm Water -** a supply of stored water that is drawn from the combined firm yield of the reservoir system. Such supplies are diverted or otherwise committed under a contract or resolution issued by the LCRA Board.

**Firm Yield** - the maximum average annual supply of water that can be supplied from a water source without shortages during a repetition of the critical drought period.

**Interruptible Stored Water** - stored water supplied pursuant to contract or resolution, where the contract, resolution or special conditions defining the commitment specifically provides that such commitment is "subject to interruption or curtailment."

**ATTACHMENT 2**
**REVISIONS TO SECTION 4.2**

**4.2.1. Introduction**

This Section 4.2 presents the Water Supply Conditions that are used to determine the amounts of Interruptible Stored Water available for the downstream agricultural operations in Lakeside, Gulf Coast, and Pierce Ranch and the criteria in effect to help meet environmental flow needs. The Water Supply Condition will be evaluated on each March 1 and July 1 (the "Evaluation Date"), taking into account inflows into Lakes Buchanan and Travis during the relevant annual Inflow Evaluation Period (defined below), and the Combined Storage of Lakes Buchanan and Travis during the relevant annual Combined Storage Evaluation Period (defined below) as presented ~~below~~ in the following sections. That Water Supply Condition will be considered in the determination of Interruptible Stored Water and environmental flow criteria on that Evaluation Date. The Water Supply Condition remains in effect until criteria for entering a new Water Supply Condition or for exiting the Water Supply Condition are met on a subsequent Evaluation Date. The March 1 Inflow Evaluation Period consists of the December, January and February months immediately preceding the relevant March 1. The July 1 Inflow Evaluation Period consists of the April, May and June months immediately preceding the relevant July 1. The March 1 Combined Storage Evaluation Period consists of the July, August, September, October, November, December, January and February months immediately preceding the relevant March 1. The July 1 Combined Storage Evaluation Period consist of the March, April, May, and June months immediately preceding the relevant July 1.

**4.2.2. Normal Condition**

The Normal condition is in effect under either of the following two conditions:

1. Condition 1:
   (a) for the ~~period prior~~ Inflow Evaluation Period and Combined Storage Evaluation Period corresponding to the Evaluation Date, neither the Less Severe Drought nor the Extraordinary Drought condition was in effect, and

   (b) on the Evaluation Date, neither the criteria for entering Less Severe Drought nor the criteria for entering Extraordinary Drought are met.

2. Condition 2:

(a) for the ~~period prior~~ inflow Evaluation Period and Combined Storage Evaluation Period corresponding to the Evaluation Date, the Less Severe Drought or Extraordinary Drought condition was in effect, and

(b) on the Evaluation Date, the criteria for ~~lifting~~ exiting Less Severe Drought are met.

**4.2.3. Less Severe Drought Condition**

The Less Severe Drought condition can be entered or exited from either a Normal condition or an Extraordinary Drought condition, as discussed below. The Less Severe Drought condition remains in effect until either the criteria for entering the Extraordinary Drought condition (*see* Section 4.2.4.1) are met or the criteria for exiting the Less Severe Drought condition and returning to the Normal condition are met, as determined ~~on the Evaluation Date~~ as follows (*see* Section 4.2.3.2).

***4.2.3.1. Entering Less Severe Drought Condition***

To enter the Less Severe Drought condition from a Normal condition, one of the following two criteria must be met ~~on the Evaluation Date~~:

1. Combined Storage is below 1.6 million acre-feet on the Evaluation Date, and cumulative Inflows into Lakes Buchanan and Travis for the ~~preceding three months (i.e. for the March 1 Evaluation Date, the inflows for December, January and February)~~ Inflow Evaluation Period corresponding to the Evaluation Date are less than 50,000 acre-feet; or

2. Combined Storage is below 1.4 million acre-feet on the Evaluation Date, and cumulative Inflows into Lakes Buchanan and Travis for the ~~preceding three months~~ Inflow Evaluation Period corresponding to the Evaluation Date are less than the 33rd percentile of Inflows into Lakes Buchanan and Travis for ~~that three-month period~~ the same Inflow Evaluation Period. The 33rd percentile will be based upon stream flow data that the United States Geological Survey (USGS) has approved for publication as of the Evaluation Date.

The Less Severe Drought condition is also entered upon exiting the Extraordinary Drought condition unless, on the Evaluation Date, the criteria for exiting Less Severe Drought (described below) are also met.

*4.2.3.2. Exiting Less Severe Drought Condition*

To exit the Less Severe Drought condition and return to the Normal condition, the following criteria must be met on the Evaluation Date:

1. Combined Storage has been above 1.6 million acre-feet for one or more days during the Combined Storage Evaluation Period corresponding to the Evaluation Date ~~period preceding the Evaluation Date (i.e. for a July 1 evaluation, the period preceding the Evaluation Date is March 1 to June 30) and neither of the criteria for entering the Less Severe Drought condition are met on the Evaluation Date~~; and the conditions under either Section 4.2.3.2(1)(a) or 4.2.3.2(1) (b) are also met:

   (a) Both of the following conditions are true:
   (i) Combined Storage is above 1.6 million acre-feet on the Evaluation Date, and
   (ii) Cumulative Inflows into Lakes Buchanan and Travis are more than 50,000 acre-feet for the Inflow Evaluation Period corresponding to the Evaluation Date; or

   (b) Both of the following conditions are true:
   (i) Combined Storage is above 1.4 million acre-feet on the Evaluation Date, and
   (ii) Cumulative Inflows into Lakes Buchanan and Travis for the Inflow Evaluation Period corresponding to the Evaluation Date are more than the 33rd percentile of Inflows into Lakes Buchanan and Travis occurring during the same Inflow Evaluation Period. (The 33rd percentile will be based upon stream flow data that the United States Geological Survey (USGS) has approved for publication as of the Evaluation Date.);

or

2. Combined Storage has been above 1.4 million acre-feet for one or more days during the ~~period preceding the Evaluation Date~~ Combined Storage Evaluation Period corresponding to the Evaluation Date, and cumulative inflows for ~~the preceding three months~~ the Inflow Evaluation Period corresponding to the Evaluation Date are equal to or above the 50th percentile of inflows for that ~~three-month p~~period (The 50th percentile of inflows will be based upon stream flow data that USGS has approved for

publication as of the Evaluation Date), and the conditions under either Section 4.2.3.2(2)(a) or 4.2.3.2(2)(b) are also met: ~~neither of the criteria for entering the Less Severe Drought condition are met on the Evaluation Date. The 50th percentile of inflows will be based stream flow data that USGS has approved for publication as of the Evaluation Date.~~

(a) Both of the following conditions are true:

(i) Combined Storage is above 1.6 million acre-feet on the Evaluation Date, and

(ii) Cumulative Inflows into Lakes Buchanan and Travis are more than 50,000 acre-feet for the Inflow Evaluation Period corresponding to the Evaluation Date;

or

(b) Both of the following conditions are true:

(i) Combined Storage is above 1.4 million acre-feet on the Evaluation Date, and

(ii) Cumulative Inflows into Lakes Buchanan and Travis for the Inflow Evaluation Period corresponding to the Evaluation Date are more than the 33rd percentile of Inflows into Lakes Buchanan and Travis occurring during the same Inflow Evaluation Period. (The 33rd percentile will be based upon stream flow data that the United States Geological Survey (USGS) has approved for publication as of the Evaluation Date.)

**ATTACHMENT 3**
**REVISIONS TO SECTION 4.3.2**

4.3.2. Determination of Interruptible Stored Water Available for Agricultural Operations at Gulf Coast, Lakeside, and Pierce Ranch

. . . .

The Interruptible Stored Water available for the Gulf Coast, Lakeside and Pierce Ranch agricultural operations will be determined separately for the First Crop Season and the Second Crop Season. On each Evaluation Date, LCRA will determine which Water Supply Condition is in effect for purposes of this WMP (Normal, Less Severe Drought, or Extraordinary Drought) in accordance with Section 4.2, above. The curtailment procedures for that Water Supply Condition will be followed for the upcoming Crop Season unless the LCRA Board determines, using the Look-Ahead Test described in Section 4.3.2.4, that Combined Storage would drop below 600,000 acre-feet in the next 12 months or below 900,000 acre-feet in the upcoming Crop Season. If releases of Interruptible Stored Water for the First Crop Season are cut off for the entire First Crop Season, then releases of Interruptible Stored Water are also cut off for the Second Crop Season.

. . .

*4.3.2.4. Curtailment Procedures under the Look-Ahead Test*

If the LCRA Board determines, ~~considering antecedent conditions, current storage, and forecasted conditions~~ using the Look-Ahead Test described below, that the release of Interruptible Stored Water under either the Normal condition or the Less Severe Drought condition (whichever is in effect) in the upcoming Crop Season would result in Combined Storage dropping below 600,000 acre-feet in the next twelve months or below 900,000 acre-feet in the upcoming Crop Season, then no Interruptible Stored Water or Pass-Through run-of-river water under LCRA's water rights historically associated with the Gulf Coast, Lakeside and Pierce Ranch operations will be released for diversion in the Gulf Coast, Lakeside or Pierce Ranch operations for the upcoming Crop Season. However, LCRA will provide Interruptible Stored Water for the Garwood operation, consistent with the Garwood Purchase Agreement.

The Look-Ahead Test shall consist of the stochastic methods under the WAM submitted with this application, which model shall be publicly available at all times, and based on cumulative inflows to lakes Buchanan and Travis being less than the 99th percentile flows (the flows that are expected to be exceeded 99% of the time) and interruptible

stored water being provided to meet demands for all of the irrigation operations. The combined storage level for the beginning of the crop season at which storage would not drop below 900,000 acre-feet during the upcoming crop season is first determined. The levels for staying above 900,000 in the upcoming crop season are always higher than the triggers for not dropping below 600,000 acre-feet in the next twelve months, so the level for staying above 900,000 acre-feet may be used in the modeling as the look-ahead proxy. Representing the look-ahead provision, if the combined storage is less than 1,220,000 acre-feet on March 1, no stored water is made available for the irrigation operations for First Crop. If the combined storage is less than 1,190,000 acre feet on July 1, no stored water is made available for the irrigation operations for Second Crop.

**Burnet County Judge**

James Oakley

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

2015 JAN 15 AM 9:19

CHIEF CLERKS OFFICE

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countyjudge@burnetcountytexas.org

WR 8235

REVIEWED
JAN 15 2015
By

January 7, 2015

TCEQ Commissioners,

Our citizens in Central Texas appreciate your leadership and collaboration with LCRA, stakeholders and citizens to update the 2010 Water Management Plan to protect firm drinking water supplies. We believe the TCEQ Executive Director's May 2014 report provides far more protection than previous Water Plans. It is imperative to include current supply data and higher release triggers, to establish higher minimum storage volumes in the Highland Lakes, which is the key to properly manage water through this ongoing drought.

We encourage the TCEQ to continue to evaluate on an annual basis the volume of stored water and the inflows. We must rely on current data to make important decisions. We know firsthand this drought is a disaster, which has left many communities without water supply. The low lake levels not only jeopardize drinking water supplies for over one million citizens, it has had a significant economic impact on our businesses and property tax valuations.

Disasters present unique opportunities to update and address out dated policies and procedures. We thank you for your diligence to make decisions based on current date and facts. We stand ready to assist as needed in communicating updates to our citizens.

Sincerely,

James Oakley
Burnet County Judge

# Public Comments



Lower Colorado River Authority Water Management Plan Revisions to the Texas Commission on Environmental Quality
January 7, 2015



Bruce Melton PE
Melton Engineering Services Austin
Climate Change Now Initiative

*Bio: Melton is a professional civil engineer with 30 years of experience in land development, hydrology, critical environmental issues and stormwater treatment research. He is the president of Melton Engineering Services Austin and the CEO of the Climate Change Now Initiative 501c3. Since 1984 he has practiced in Austin and since 2005 the Initiative has produced about 400 reports interpreting climate science literature, about 50 published articles in the popular press, a book, two documentaries and numerous short films. He is active in leadership at the Lonestar Chapter of Sierra Club and worked 1990 - 1996 in the Environmental Program at the LCRA.*

## The Highland Lakes, Drought and Climate in the Colorado River Watershed Above Austin, Texas

(These comments were based on evaluation of historic daily Highland Lakes inflows and releases from the LCRA for the life of the lakes, and National Weather Service annual and 30-year temperature records for four to seven gauge locations across the watershed draining to the lakes for 75 to 100 years.)

Where is the water going? Inflows to the Highland Lakes over the five year period 2008 through 2012 were half of what they were in the worst five years of the drought of the 1950s. Inflows for the eleven years before 2012 were 20 percent less than they were 1946 to 1956. (1) Since 2012, inflows have remained near their lowest, while rainfall has been about average, releases were cut in half, and lake levels continue to fall.

This is a tricky conundrum. Our climate has changed naturally in the American West (including Texas) during the prehistoric past, 10 to 100 times more extremely than the Dust Bowl or the Drought of Record in Texas. (2) Projections for the future for man-caused climate change are even larger than this.

But does the cause matter? Where is all the water going? If it were being captured in the upstream reservoirs, it seems like they would have more water in them but in May of 2014 they were only 9 percent full.

It could be going to a decrease in base flows because of lowering aquifer levels due to groundwater pumping, but the Highland Lakes are predominantly filled by storm flows, not base flows.

Range management practices could be the culprit with brush soaking up the extra water, but range conditions have changed little since they recovered after the 1950s.

It could be going to our increasing population, but upstream from the Highland Lakes, the 250,000 people who have moved in since the 1950s are only responsible for 25,000 to 30,000 acre feet of additional water use every year.

It could be going to the exploding population of the Austin region, but total releases and total water use from the Highland Lakes are almost exactly the same as during the 1950s. The reason here is because, by the 1970s, LCRA stopped releasing on average 417,000 acre feet of water every year for hydroelectric generation. Uses are different today, the totals are the same and the lakes are on average 12 feet higher every year. (3)

It's not downstream agriculture, as we have seen with the sequestration of irrigation water the last two years and near normal or above normal rainfall in the watershed and no gain in water volume in the Highland Lakes. It may be all of these things, or part of them, or the answer may be something else.

Our hydrologic cycle seems to have changed. It appears that we are seeing longer dry periods even as our total rainfall is increasing. These longer dry periods are possibly contributing to what may be an unprecedented long-term decrease in deep soil moisture. With less deep soil moisture, when it does rain, more soaks in and less runs off. Changes in the hydrologic cycle in the watershed need to be evaluated.

Because the Highland Lakes are predominantly filled by storm runoff, we may be seeing a short-circuiting of the hydrologic cycle where water is trapped between soil and sky and never makes it to the lakes.

Some of these answers undoubtedly exist and others are relatively easily determined but we will not know the answer to the big picture until all are properly evaluated.

The LCRA and San Antonio Water Project produced: Climate Change Study: Report on Evaluation Methods and Climate Scenarios in 2008. This report evaluated "middle of the road scenarios" from the 2007 and prior IPCC SRES family. Our CO2 emissions are changing along the worst-case scenario. (4) The worst-case scenario should be taken into consideration in these water Management Plan Revisions as well as using current scenarios from the 2013 IPCC process (RCP2.5 to RCP8.5).

The drought may be caused by man's carbon emissions, upstream reservoirs, reduced base flows, or it may be natural --- and this next part is very important --- If it is natural, there is no guarantee that it will go back to what we think of as normal in time frames that matter. Natural, prehistoric mega droughts in Texas in the recent prehistoric past continued for 70 to 250 years with baseline water availability similar to the Dust Bowl and droughts superimposed upon this megadrought dryness baseline. (5)

References:


1) Melton, Highland Lakes Drought Comparison Facts Sheet LCRA Water Management Plan Comments, January 7, 2015, page 2 and 3. (attached)
2) Worst Drought in 1,000 Years... 10 to 100 times more extreme than the Dust Bowl.
   Seager et al., Projections of declining surface water availability for the southwestern United States, Nature Climate Change, December 2012, page 5, last paragraph.
   http://www.ldeo.columbia.edu/res/div/ocp/pub/seager/Seager_etal_NCC2012.pdf
3) The first sentence of the introduction to the 2010 LCRA Lake Recreation Impact Study states: "LCRA's reduced hydropower generation has caused the average monthly level of Lakes Buchanan and Travis to rise by nearly 12 feet." (LCRA Open Records Act Request)
4) Worst-case scenario... CO2 emissions are tracking the high-end SRES scenario (A1FI) developed in 1999 and applied in the fourth IPCC report in 2007.
   Synthesis Report, Climate Change, Global Risks, Challenges and Decisions, Climate Change Congress,

International Alliance of Research Universities, University of Copenhagen, March 2009, page 9. http://climatecongress.ku.dk/pdf/synthesisreport

5) Normal drought cycles superimposed on top of permanent megadrought condition... Personal communication to Professor Seager. See reference 2).

# Historic Highland Lakes Drought Comparison:

## Current Drought is Likely Substantially Worse than the Drought of Record

Bruce Melton PE
Melton Engineering Services Austin, Climate Change Now Initiative, Austin, Texas
512 799-7998, bmelton@earthlink.net

Summary:

Between 1990 and 1996 I worked for the environmental program at the Lower Colorado River Authority (LCRA). This is where I learned that hydroelectric generation prior to the 1970s required more water than all other uses and that releases solely for hydroelectric generation stopped when LCRA's gas and coal fired generating facilities came on line.

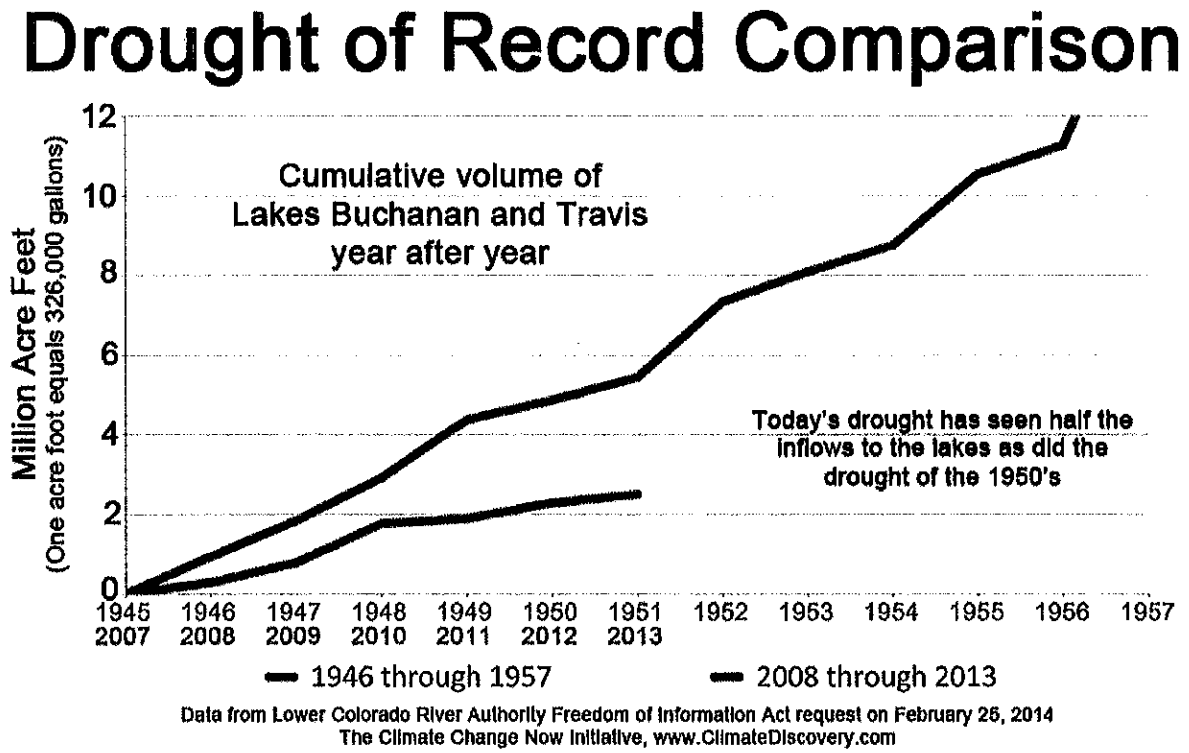
When the second new low inflow record for the Highland Lakes in two years was set in 2008 I began working on this drought of record (DOR) normalization project in earnest. Because key hydroelectric release data were not available from LCRA, it has taken years to ferret out evidence. Along the way my research has revealed evidence about how water availability has significantly decreased and how climate change is implicated.

We are receiving significantly more rainfall today than in the drought of record and inflows are significantly less. In combination with the lakes having far more water in them today relative to the 1950s because of the lack of sole purpose hydroelectric generation, this has created a water availability situation that is distinctly diminished or at the least, radically different from the 1950s.

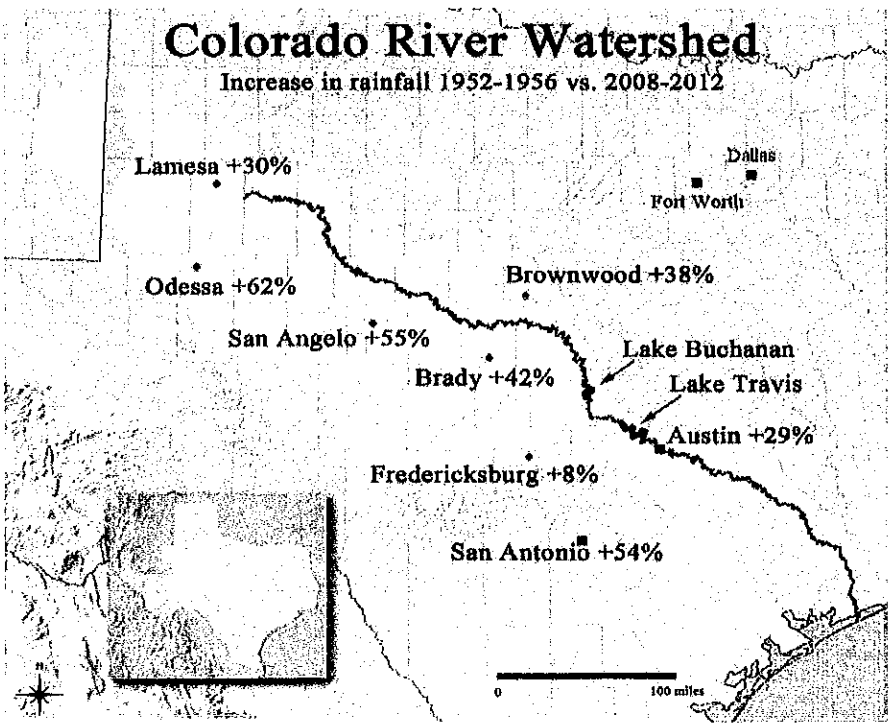
Highlights of evaluation of NWS data, two LCRA data requests, and Texas Water Development Board data:

1. The cumulative year over year volume of the Highland Lakes over the last six years, when compared to the DOR in the 1950s using LCRA criteria, is half of that during the DOR. Normalized it is less than the DOR for the last 11 years.
2. Total rainfall in the Highland Lakes contributing watershed in the last five years is up 30 to 60 percent over the worst five years of the DOR.
3. NWS 30-year average annual rainfall is up 7 to 20 percent in the contributing watershed.
4. Total inflows to the lakes in the last five years are half of what they were in the worst five years of the drought of the 1950s.
5. Lake surface evaporation on Lake Travis, based on pan evaporation data from the Texas Water Development board, is about the same today as it was in the 1950s.
6. LCRA's records of annual water use by lakeside residents of 5,000 acre feet per year.
7. The overall capacity of the eight reservoirs in the upper watershed is nine percent.
8. Unexpectedly, as the metro region's population has increased ten times over the 1950s, total lake releases are almost exactly the same as in the 1950s. This is because LCRA no longer releases 417,000 acre feet per year solely for hydroelectric generation and the lakes are on average 12 feet higher.
9. Further research needs to be done on: land use, irrigation wells and municipal and industrial consumption and base and storm inflows.
10. Most importantly, evaluation of changes in heavy rainfall frequency and duration of dry periods need to be performed so that soil water deficits can be evaluated.

**Drought of Record Comparison Using LCRA Criteria for Year over Year Cumulative Volume**




**Total five-year NWS Rainfall in the Watershed is up 30 to 60 Percent 2008 through 2012 vs. the Worst Five Years of the DOR**



**National Weather Service 30-year Rainfall averages:**

Austin 1951 – 1980: 31.50 inches
Austin 1980 – 2010: 34.42 inches ... 9 percent more (not in the Highland Lakes Watershed)
San Angelo 1951 – 1980: 18.16 inches
San Angelo 1980 – 2010: 21.23 inches ... 17 percent more
Big Spring 1951 – 1980: 17.4 inches
Big Spring 1980 – 2010: 19.67 inches ... 13 percent more
Midland 1951 – 1980: 13.80 inches
Midland 1980 – 2010: 14.80 inches ... 7 percent more
Lamesa 1951 – 1980: 16.0 inches
Lamesa 1980 – 2010: 19.14 inches ... 20 percent more

**Total Five-year Inflows 2008 through 2012 are Half of Inflows in the Worst Five Years of the DOR, 21% Less for 11 Years**

| Total Highland Lakes Inflows | | | |
|---|---|---|---|
| Today's Drought | | Drought of the 50s | |
| 2003 | 708,079 | 935,784 | 1946 |
| 2004 | 1,859,274 | 908,244 | 1947 |
| 2005 | 999,543 | 1,072,716 | 1948 |
| 2006 | 285,231 | 1,455,463 | 1949 |
| 2007 | 2,996,573 | 501,928 | 1950 |
| 2008 | 284,464 | 570,256 | 1951 |
| 2009 | 499,734 | 1,897,716 | 1952 |
| 2010 | 977,723 | 746,947 | 1953 |
| 2011 | 127,805 | 661,558 | 1954 |
| 2012 | 393,171 | 1,789,598 | 1955 |
| 2013 | 215,142 | 729,081 | 1956 |
| 2003-2013 | 9,346,739 | 11,269,291 | 1946-1956 |
| 2009-2013 | 2,213,575 | 4,378,405 | 1950-1954 |
| Data from LCRA Freedom of Information Act Request, February 25, 2014 | | | |

**Inflows: Worst 5 years (acre feet)**

2009 - 2013 2,213,575
1947 - 1951 4,378,405 97.8% more

**Inflows: 11 years**

2003 - 2013 9,346,739
1947 - 1956 11,269,291 21% more

Average Worst 5-year annual deficit: 43,000 acre feet per year.

11-year average annual deficit: 175,000 acre feet per year

**Releases are Identical for the Worst 4 Years, 14 to 44% More in the 1950s for Longer Time Frames**

| Total Highland Lakes Releases | | | |
|---|---|---|---|
| Today's Drought | | Drought of the 50s | |
| 2003 | 911,839 | 1,306,356 | 1946 |
| 2004 | 1,617,810 | 1,112,674 | 1947 |
| 2005 | 1,306,503 | 813,445 | 1948 |
| 2006 | 616,724 | 871,897 | 1949 |
| 2007 | 2,046,411 | 684,189 | 1950 |
| 2008 | 598,200 | 578,516 | 1951 |
| 2009 | 551,700 | 467,571 | 1952 |
| 2010 | 320,996 | 531,725 | 1953 |
| 2011 | 714,434 | 607,645 | 1954 |
| 2012 | 188,012 | 1,074,293 | 1955 |
| 2013 | 228,959 | 642,550 | 1956 |
| 2008-2013 | 2,602,301 | 3,741,543 | 1949-1954 |
| 2008-2011 | 2,185,330 | 2,185,457 | 1951-1954 |
| 2003-2013 | 9,101,588 | 8,690,861 | 1946-1956 |
| Data from LCRA Freedom of Information Act Request, February 25, 2014 and LCRA Water Use Sumarries | | | |

**Releases: Worst 4 years (acre feet) ***

2008 - 2011 2,185,330
1947 - 1951 2,185,457 0.00% more

*Does not include 2012 and 2013 with no irrigation releases

**Releases: Worst 6 years (acre feet)**

2008 - 2013 2,602,301
1949 - 1954 3,741,543 44% more

**Releases: 11 years****

2003 - 2013 9,101,588 5% more
1946 - 1956 8,690,861

**Flood Gate Releases (acre feet)

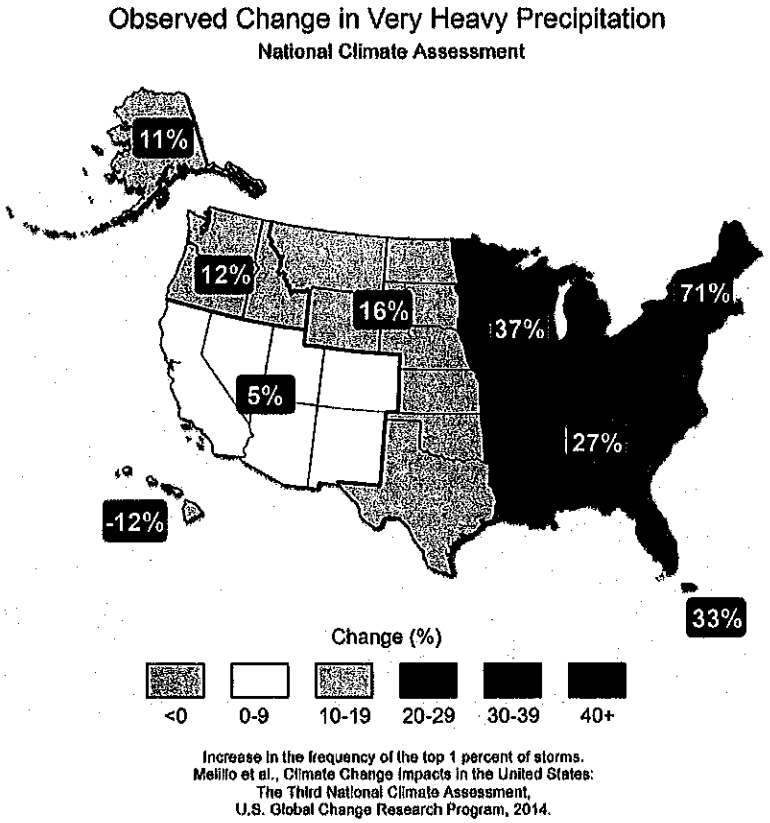
2003-2013 1,463,994
1946-1956 0

**Releases: 11 years adjusted for Flood Gate**

2003 - 2013 7,637,594

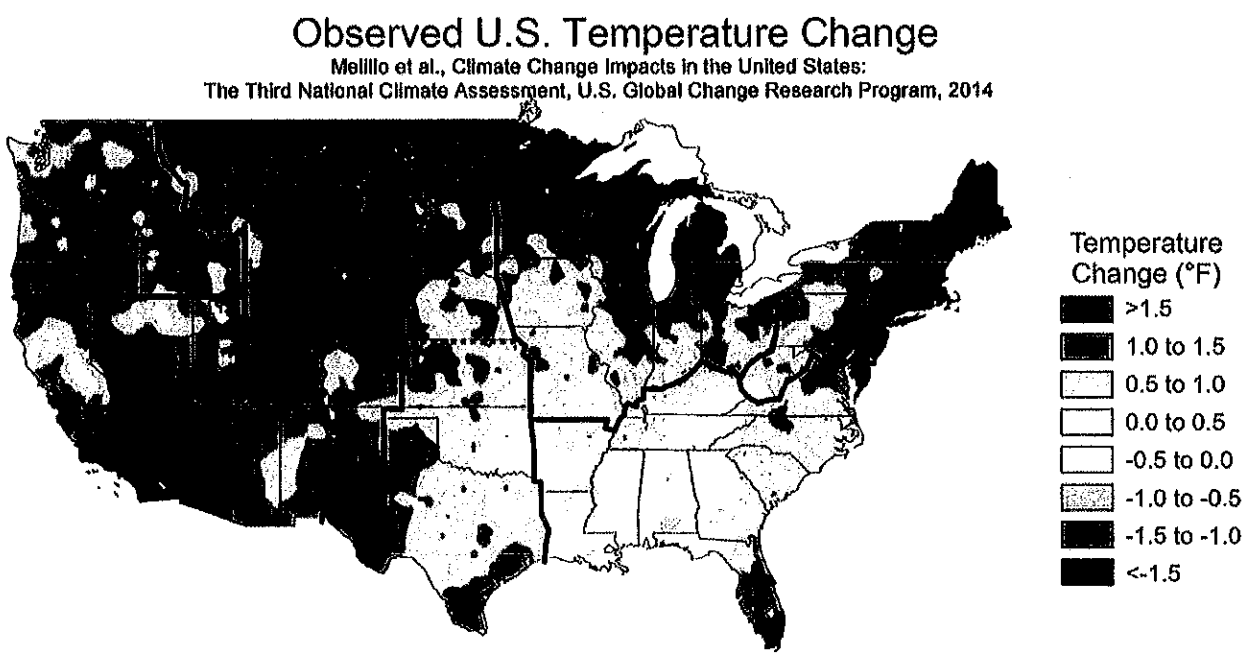
1946 - 1956 8,690,861 14% more

**Top 1 Percent of Storms have Increased 16 Percent Across the Central U.S. Region as per the National Climate Assessment**




Increase in the frequency of the top 1 percent of storms.
Melillo et al., Climate Change Impacts in the United States:
The Third National Climate Assessment,
U.S. Global Change Research Program, 2014.

**The Temperature has Warmed About a Degree the Highland Lakes Watershed Across the Watershed as per the National Climate Assessment...**



## Hydroelectric Generation Releases

The first sentence of the introduction to the 2010 LCRA Lake Recreation Impact Study states: "LCRA's reduced hydropower generation has caused the average monthly level of Lakes Buchanan and Travis to rise by nearly 12 feet." LCRA once generated electricity for the entire Central Texas region. When their coal and natural gas power pants came on line beginning in the 1970s, they stopped releasing water solely for hydroelectric generation. Today, all hydroelectric generation releases (+/- 99 percent) are done only when other releases for municipal, industrial or agriculture releases are being made. This action has increased the effective volume of the Highland Lakes by 417,000 acre feet per year.

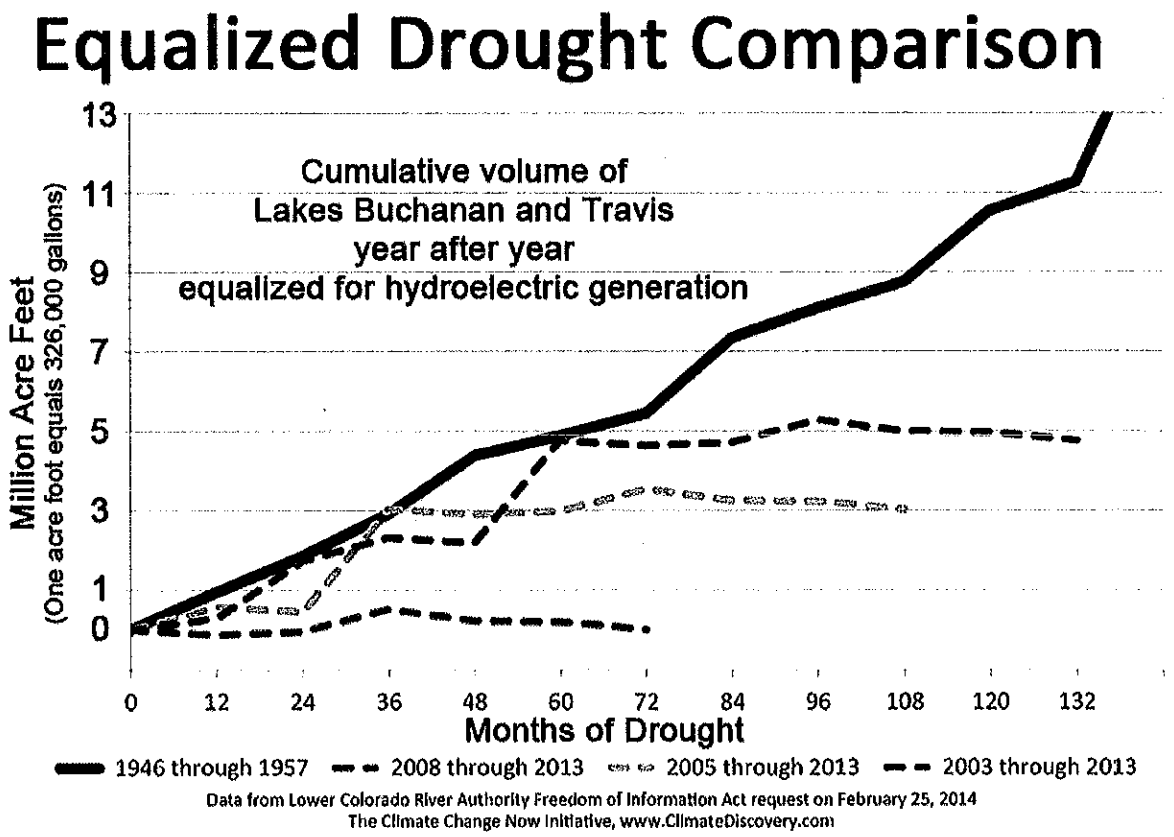
2010 Lake Recreation Impact Study, Main Report/ Chapter II/Table 1.

**Table 1. Historical Average Lake Levels for Lakes Buchanan and Travis**

| | Buchanan | | | Travis | | |
|---|---|---|---|---|---|---|
| | 1943-1959 | 1960-1979 | 1980-Present | 1943-1959 | 1960-1979 | 1980-Present |
| Average Lake Level (Feet) | 1004.92 | 1011.49 | 1016.67 | 661.85 | 671.23 | 673.60 |
| Average Historical Inflow (AF/Yr) | 854,400 | 512,480 | 548,975 | 389,960 | 474,275 | 531,795 |

Using Hydromet Lake Volume Calculator: http://hydromet.lcra.org/lakevolume/
Average volume 1943 to 1959: 1.385 million acre feet
Average Volume 1980 to present: 1.802 million acre feet
Difference = 0.417 million acre feet per year = 417,000 acre feet per year for hydroelectric generation.

**LCRA Drought of Record Evaluation Normalized (Equalized) to Compare Today's Drought More Fairly to the DOR When LCRA Released 417,000 acre Feet Annually for Hydroelectric Generation**



## Miscellaneous:

**San Angelo Rainfall in the Middle of the Contributing Watershed has had Above Normal Rainfall for Nine of the Last 12 Years**

San Angelo Annual Rainfall Comparison
Today's Drought vs. Drought of the 1950s
(1950 to 1980 30-year average = 18.15 inches)

| | | | |
|---|---|---|---|
| 2002 | 14.42 | 1946 | 12.74 |
| 2003 | 19.76 | 1947 | 13.36 |
| 2004 | 30.49 | 1948 | 12.51 |
| 2005 | 20.38 | 1949 | 24.51 |
| 2006 | 17.65 | 1950 | 15.27 |
| 2007 | 32.04 | 1951 | 12 |
| 2008 | 19 | 1952 | 9.01 |
| 2009 | 25.53 | 1953 | 21.06 |
| 2010 | 20.13 | 1954 | 9.88 |
| 2011 | 9.21 | 1955 | 12.87 |
| 2012 | 21.96 | 1956 | 7.41 |
| 2013 | 19.8 | 1957 | 15.25 |
| Total | 250.37 | | 165.87 |
| 2008-2013 | 115.63 | 1951-1956 | 72.23 |

*1957 is through August

**San Angelo 6-year Total Rainfall**

| | | |
|---|---|---|
| 2008 – 2013 | 115.63 | |
| 1951 – 1956 | 72.23 | 60% more |

**San Angelo 12-year Total Rainfall**

| | | |
|---|---|---|
| 2002 – 2013 | 250.37 | |
| 1946 – 1956 | 165.87 | 51% more |

**The Current Volume for the Eight Lakes in the Middle and Upper Colorado Basin is 9 Percent**

Colorado River, Middle and Upper Watershed Lake Volumes: 05/20/14

| 5/20/2014 | Volumes in Acre Feet<br>Percent Full | Total Capacity | Current Volume |
|---|---|---|---|
| O.H. Ivie | 11% | 554,340 | 60,977 |
| O.C. Fisher | 0.60% | 119,445 | 716 |
| Twin Buttes | 0% | 182,454 | 0 |
| E.V.Spence | 2.10% | 517,272 | 10,862 |
| J.B. Thomas | 0.80% | 199,931 | 1,599 |
| Coleman | 36.40% | 38,075 | 13,859 |
| Brownwood | 50.90% | 128,839 | 65,579 |
| Brady Creek | 28.50% | 28,808 | 8,210 |
| Total | | 1,769,164 | 161,802 |
| | | Percent Full | 9.15% |

**Population** in the Watershed has increased about 285,000 since the drought of record. Water use for this population is between 25,000 and 30,000 acre feet annually, but some of this is returned to the system via wastewater flows.