APPLICATION OF THE LOWER COLORADO RIVER AUTHORITY FOR EMERGENCY AUTHORIZATION	§ § § §	**BEFORE THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY**

AFFIDAVIT OF RYAN ROWNEY

THE STATE OF TEXAS §
§
COUNTY OF TRAVIS §

Before me, the undersigned authority, personally appeared Ryan Rowney, a person known by me to be competent and qualified in all respects to make this affidavit, who being by me first duly sworn, deposed as follows:

1. I am over 21 years of age, of sound mind, and have never been convicted of a felony or crime of moral turpitude. I am fully competent and qualified in all respects to make this affidavit.

2. The facts stated in this affidavit are within my personal knowledge and are true and correct.

3. I, Ryan Rowney, am an individual residing in Burnet, Texas.

4. A true and correct copy of my resume, detailing my prior work history, is attached hereto under Tab 1.

5. I have worked for the LCRA for 30 years. For the last 30 years, I have worked in LCRA's Water Operations. My current title is Vice President, Water Operations.

6. As part of my duties at the LCRA, my department provides planning services for the water utility and I am responsible for all operations within Water Operations including operations of the dams forming the Highland Lakes and operations of LCRA's Gulf Coast, Lakeside, and Garwood Irrigation divisions.

7. My opinions stated herein are based on my familiarity with LCRA's operations, as well as my understanding of LCRA's contractual obligations to the farmers within LCRA's Garwood division and to Pierce Ranch, a wholesale interruptible irrigation customer. I also have a general familiarity with LCRA's firm customers' operations. I have also relied upon a variety of information provided to me by LCRA staff, which is of a nature typically relied upon in my profession, as described below and for which true and correct copies are either attached or referenced to other portions of LCRA's emergency request and incorporated by reference herein:

   a. Affidavit of Ron Anderson, including attachments

   b. Affidavit of Bob Rose, including attachments

c. Affidavit of David Wheelock, including attachments

d. Affidavit of Nora Mullarkey Miller, including attachments

8. IMPACTS OF DROUGHT ON IRRIGATION OPERATIONS.

a. If LCRA were following the 2010 WMP this year based on a January 1, 2015 combined storage of approximately 689,400 acre-feet, LCRA would make available up to about 175,000 acre-feet for the downstream irrigation operations at diversion points from the river. To make such water available, assuming an additional 20 percent would need to be released to account for losses in delivering water from Lake Travis to the irrigation operations, following the 2010 WMP could have resulted in the need to release up to about 210,000 acre-feet of water for interruptible customers.

b. Within LCRA's Gulf Coast irrigation operation, a very limited portion of the canal system has been operated in 2015 using run-of-river water to meet demands of firm customers. No surface water has been delivered to customers in the Lakeside irrigation operation this year.

c. If LCRA were to provide interruptible stored water to customers in the Gulf Coast and Lakeside operations, a significant amount of water would first be necessary simply to charge or fill the canals between the river and the customers' delivery points.

d. Some farmers within the Lakeside and Gulf Coast service areas who are normally served by LCRA are using groundwater to irrigate rice this year. To the best of my knowledge, the customers who have started a rice crop using groundwater will be able to complete the crop using groundwater (and do not need LCRA-supplied surface water to avoid potentially losing a crop).

9. IMPACTS OF DROUGHT ON FIRM WATER CUSTOMERS.

a. Ensuring adequate firm supply for LCRA's firm customers is critical. The maximum historical annual amount of reported water use to meet firm customer demands from the firm supplies of lakes Buchanan and Travis during 2000 through 2011 was about 247,000 acre-feet in 2011. In addition, about 33,000 acre-feet of firm water was supplied to help meet environmental flow needs in 2011. The maximum interruptible water released from lakes Buchanan and Travis during this same period occurred in 2011 and totaled about 433,000 acre-feet. The maximum total amount released or used from the Highland Lakes, about 714,000 acre-feet, occurred in 2011. In 2012, firm water use from lakes Buchanan and Travis by LCRA customers was about 148,000 acre-feet; 31,000 acre-feet was supplied to help meet environmental flow needs; and about 9,000 acre-feet of interruptible water was supplied for farmers in the Garwood irrigation division. Total use of water from lakes Buchanan and Travis in 2012 was about 188,000 acre-feet. In 2013, firm water use from lakes Buchanan and Travis by LCRA customers was about 173,500 acre-feet; about 33,500 acre-feet

was supplied to help meet environmental flow needs; and about 22,000 acre-feet of interruptible water was supplied for farmers in the Garwood irrigation division. Total use of water from lakes Buchanan and Travis in 2013 was about 229,000 acre-feet. In 2014, firm water use from lakes Buchanan and Travis by LCRA customers was about 128,000 acre-feet; about 5,000 acre-feet was supplied to help meet environmental flow needs; and about 16,000 acre-feet of interruptible water was supplied for farmers in the Garwood irrigation division. Total supply of water from lakes Buchanan and Travis in 2014 was about 149,000 acre-feet.

b. Until 2014, LCRA owned four water treatment plants whose raw water supply is Lake Travis or Lake Buchanan as noted in the Table 1.

Table 1. Water Treatment Plants Previously Owned by LCRA Supplied from Lakes Buchanan or Travis

System Name	Intake Location	Estimated Population Served	Service Area
Paradise Point Water System	Lake Buchanan	350	Paradise Point
Lake Buchanan Water System	Lake Buchanan	1,410	Service area around the south and west sides of Lake Buchanan
Smithwick Mills Water System	Lake Travis	160	Smithwick Mills
Ridge Harbor Water System	Lake Travis	400	Ridge Harbor

c. LCRA also owned the Spicewood Beach water system. This groundwater-based system is influenced by the water levels in Lake Travis. As a result of the low lake levels, production of the groundwater wells had diminished significantly. The system is now supplied with surface water from Lake Travis.

d. Based on my knowledge of the treatment systems in and around lakes Buchanan and Travis, the systems previously owned by LCRA's are representative of the types of potable water systems that obtain raw water from the lakes.

e. LCRA has 18 customers that currently take raw water for municipal purposes from Lake Travis. I reviewed information maintained by LCRA that identifies what LCRA believes to be the elevations of our customers' intake structures. The depths of those intakes range from 545 feet mean sea level (msl) to 645 feet msl on Lake Travis.

f. If the levels in Lake Travis or Lake Buchanan drop below the current lowest pumping elevations, temporary measures would likely need to be taken by LCRA's raw water customers to extend their intake facilities to reach water at lower elevations. It is my understanding firm customers are actively spending or planning to spend funds to allow their intakes to operate at lower elevations.

g. Based on this information, it is my opinion that the current drought presents an imminent threat to public health and safety for several of LCRA's raw water customers if the lake levels or releases drop more quickly than arrangements for alternative intakes or supplies can be implemented.

h. It is further my opinion that not releasing the amount of interruptible water to supply the downstream LCRA irrigation operations as required by the 2010 Water Management Plan provides additional time for LCRA and its raw water customers to evaluate options and construct any required improvements to intake structures.

10. IMPACT OF DROUGHT ON HIGHLAND LAKES INFLOWS.

a. LCRA tracks inflows into the Highland Lakes at four gauges located upstream of the lakes on major contributing rivers and streams including the Colorado River, the Llano River, the Pedernales River and Sandy Creek.

b. Inflows to the Highland Lakes over the past several years are among the lowest on record. The average annual inflows over the past seven years, from 2008 through 2014, have been about 386,720 acre-feet per year, or about 32 percent of the long-term average from 1942 through 2014.

c. Table 2 presents the lowest ten years of gauged inflows into lakes Buchanan and Travis and the average annual inflows since 1942. Inflows for 2011 into the lakes were the lowest annual inflows on record, about 10% of average inflows. Calendar years 2008, 2009, 2011, 2012 and 2013 and 2014 are all among the lowest 10 years of inflows to the Highland Lakes.

Table 2. Ten Lowest Annual Inflows into the Highland Lakes (acre-feet per calendar year)

Year	Amount
2011	127,802
2014	209,023
2013	215,138
2008	284,462
2006	285,229
1963	392,589
2012	393,163
1983	433,312
1999	448,162
2009	499,732
Average (1942-2014)	1.2 million

d. Inflows to the Highland Lakes continue at low levels. Inflows for the first four months of 2015 of about 70,974 acre-feet were only 21 percent of the historical average inflows for that period. Although rainfall has been closer to normal in recent months, the inflows into lakes Buchanan and Travis have still been below normal. Monthly inflows have been below average in 59 of the past 60 months. See Table 3.

Table 3. Monthly Inflows to Lakes Buchanan and Travis from May 2010 to April 2015

Month	Inflows (acre-feet)	Percent of Monthly Average
May 2010	95,821	47.2%
June 2010	33,517	20.6%
July 2010	59,905	70.6%
Aug 2010	10,783	17.0%
Sept 2010	86,952	85.7%
Oct 2010	14,385	11.9%
Nov 2010	13,899	20.0%
Dec 2010	16,845	25.0%
Jan 2011	21,158	32.9%
Feb 2011	16,306	19.5%
Mar 2011	13,811	15.5%
Apr 2011	9,175	9.0%
May 2011	11,182	5.5%
June 2011	1,340	0.8%
July 2011	734	0.9%
Aug 2011	403	0.6%
Sept 2011	922	0.9%
Oct 2011	29,927	24.8%
Nov 2011	6,874	9.9%
Dec 2011	15,969	23.7%
Jan 2012	35,178	54.8%
Feb 2012	74,699	89.2%
Mar 2012	112,517	126.0%
Apr 2012	19,477	19.0%
May 2012	83,699	41.2%
June 2012	12,599	7.7%
July 2012	8,712	10.3%
Aug 2012	2,041	3.2%
Sept 2012	12,006	11.8%
Oct 2012	19,338	16.0%
Nov 2012	6,042	8.7%
Dec 2012	6,854	10.2%
Jan 2013	15,117	23.5%
Feb 2013	8,792	10.5%
Mar 2013	10,741	12.0%
Apr 2013	11,127	10.9%
May 2013	29,265	14.4%
June 2013	5,608	3.4%
July 2013	17,423	20.5%
Aug 2013	1,593	2.5%
Sept 2013	30,161	29.7%
Oct 2013	48,444	40.1%
Nov 2013	18,092	26.1%
Dec 2013	18,775	27.8%
Jan 2014	12,270	19.1%
Feb 2014	9,505	11.4%
Mar 2014	8,376	9.4%
Apr 2014	6,183	6.0%
May 2014	74,274	36.6%
June 2014	23,542	14.5%
July 2014	13,893	16.4%
Aug 2014	4,478	7.1%
Sept 2014	12,180	12.0%
Oct 2014	9,263	7.7%
Nov 2014	24,273	35.0%
Dec 2014	10,786	16.0%
Jan 2015	17,361	27.0%
Feb 2015	11,752	14.0%
Mar 2015	19,136	21.4%
Apr 2015	22,276	22.2%

e. Inflows into lakes Buchanan and Travis in the current drought include the lowest inflows over a various time periods ranging from 12 months to 84 months. These inflows are less than half of the corresponding lowest inflows for periods of similar duration during the 1950s. See Table 4.

Table 4. Comparison of inflows in current drought to 1950s Drought of Record

	Lowest inflows for time period in ongoing drought		Lowest inflows for time period in 1950s Drought of Record	
Time Period	Period ending	Inflows (acre-feet)	Period ending	Inflows (acre-feet)
12 months	Sept. 2011	120,160	Apr. 1951	408,784
24 months	May 2014	393,337	Mar. 1952	1,006,681
36 months	Mar. 2015	643,177	Aug. 1952	1,636,088
48 months	Feb. 2015	936,774	Aug. 1952	3,035,846
60 months	Apr. 2015	1,348,206	Aug. 1952	4,128,806
72 months	Apr. 2015	2,372,796	Apr. 1955	5,193,016
84 months	Apr. 2015	2,617,790	Aug. 1952	6,050,804

f. As a result of extremely low inflows into the lakes, record high temperatures, high evaporation rates, and higher than anticipated interruptible demands, the combined storage in the lakes dropped significantly in 2011, and in a very short timeframe. In 2012 and 2013, and 2014, even with interruptible stored water cut off from the Gulf Coast and Lakeside irrigation division, the lake levels have not recovered. The combined storage in lakes Buchanan and Travis was about 767,094 acre-feet, or 38 percent of capacity, on May 1, 2015. (*See* Tab 2.) The last time both lakes Buchanan and Travis were simultaneously at their maximum allowable conservation storage was February 13, 2005.

g. The total combined storage in lakes Buchanan and Travis on May 1, 2015 was the third lowest combined storage on May 1 since the reservoirs were constructed as shown in Table 5. Outside of the current drought, the only time the lakes were at a lower level on May 1 was in 1952, the year the combined storage fell to the historic all-time low.

Table 5. Lowest Historic May 1 Combined Storage Levels

Year	Combined Storage in Lakes Buchanan and Travis on May 1 (acre-feet)
2014	731,508
1952	738,210
2015	767,094
2013	795,146
1951	937,557
1948	944,110
2012	965,010
1964	1,004,510
1963	1,217,294
2009	1,288,195

h. For the period from 2012 to present, the highest combined storage occurred was 1,032,000 on May 22, 2012, and the lowest combined storage was 637,000 acre-feet on Sept. 19, 2013. Combined storage on March 4, 2015 was 718,000 acre-feet.

i. Recent low inflows to the Highland Lakes even with widespread rain events are symptomatic of the drought's severity which has included dry soils that have absorbed most of the rainfall that has occurred.

(1) Heavy, widespread rainfall in the Llano River and San Saba River watersheds above the Highland Lakes on Sept. 19 and 20, 2013 averaged two to three inches, with some rain gages reporting totals as high as six or seven inches. (*See* Affidavit of Bob Rose.) However, this rain event only yielded approximately 24,000 acre-feet of inflow to the lakes.

(2) A widespread, light to moderate intensity rain event on November 4, 5 and 6, 2014 included rainfall totals averaging two to three inches above the Highland Lakes but only yielded about 4,000 acre-feet of inflow to the lakes. (*See* Affidavit of Bob Rose.)

(3) A rain event on November 21 and 22, 2014 included rainfall totals averaging one to three inches above the Highland Lakes but only yielded about 17,000 acre-feet of inflow to the lakes. (*See* Affidavit of Bob Rose.)

(4) A rain event on March 20 through 22, 2015 with widespread rainfall totals averaging 1 to 2.5 inches above the Highland Lakes only yielded about 16,000 acre-feet of inflow to the lakes.

(5) By comparison, an event in March 2007 with two to four inches of widespread moderate to heavy rainfall yielded almost 100,000 acre-feet of inflows to lakes Buchanan and Travis. A later event in March 2007 with another two to four inches of widespread moderate to heavy rainfall produced about 275,000 acre-feet of inflows to the lakes. (*See* Affidavit of Bob Rose.)

j. Two large rain events occurred in the lower Colorado River Basin watershed in October 2013. However the majority of rainfall and runoff occurred below the watersheds of lakes Buchanan and Travis. Gauged inflows to lakes Buchanan and Travis for October and November totaled about 69,000 acre-feet, as compared to flow that originated downstream and went past Bay City, totaling 355,000 acre-feet for those two months.

k. In the first four months of 2015, the rainfall and streamflows below the Highland Lakes were significantly greater than the rainfall and streamflows in the watershed of the Highland Lakes. The gauged inflows to the Highland Lakes for that four-month period totaled about 71,000 acre-feet or 21 percent of average. For that same four-month period, the Colorado River inflows into Matagorda Bay were about 620,000 acre-feet.

11. Annual evaporation from the six Highland Lakes (lakes Buchanan, Inks, LBJ, Marble Falls, Travis and Austin) during 2010, 2011, 2012, 2013 and 2014 are presented in Table 6.

Table 6. Evaporation from the Highland Lakes

Year	Total Evaporative Loss (acre-feet per year)
2010	183,923
2011	192,404
2012	144,759
2013	120,899
2014	114,294

12. EFFICIENCY IMPROVEMENTS. In 2012, LCRA implemented process improvements that have improved the efficiency of releases from the Highland Lakes for downstream water needs. These include: 1) a smaller increment of instantaneous releases from Tom Miller Dam, which allows for more precisely meeting instream flow requirements as well as other demands; and 2) improvements to models and procedures for determining the downstream demand and the estimated amount of flows originating downstream.

13. Emergency relief approved by TCEQ in April 2014 reduced the instream flow requirement associated with the Blue Sucker from 500 cubic feet per second (cfs) to 300 cfs for a six-week period. LCRA previously estimated that without the emergency relief, up to about 21,000 acre-feet might be released from Lakes Buchanan and Travis to meet the requirement. As a result of the emergency relief and

inflows from rain events below Lake Travis during the six-week period, LCRA released only about 4,000 acre-feet from storage for the requirement. In 2015, due to similar relief, in combination with consistent runoff below Lake Travis, LCRA did not release any water from storage for the blue sucker fish.

14. LCRA has temporary permits in place that allow LCRA to use a downstream water right (14-5475) to meet some of the needs of customers located downstream of the Highland Lakes to the extent of availability of run-of-river flows and subject to environmental flow requirements. In the first four months of 2015, LCRA has supplied approximately 3,000 acre-feet under the temporary permits. Similar authorizations allowed LCRA to supply 7,000, 1,000 and 7,000 acre-feet in 2012, 2013 and 2014.

15. If the emergency relief related to interruptible water the Gulf Coast, Lakeside and Pierce Ranch irrigation operations expires, rice crops that were started with groundwater could be switched to surface water. LCRA could also receive requests for water for supplemental uses such as row crops and, later in the year, wildlife management. Those uses are secondary to rice and, during a curtailment year, requests for such uses are only considered if water is available in the canal system.

16. It is my opinion that the current drought continues to present an imminent threat to public health and safety if the lake levels drop more quickly than arrangements can be made to extend intakes or obtain alternate water supplies. In light of the ongoing drought conditions and lack of recovery in the Highland Lakes, I believe that it is prudent to extend the suspension of interruptible stored water supply to customers in the Gulf Coast, Lakeside, and Pierce Ranch irrigation operations for an additional 120 days to cover the remainder of the 2015 irrigation season consistent with the emergency relief granted to date.

Further affiant sayeth not.

RYAN ROWNEY, AFFIANT

SWORN TO AND SUBSCRIBED before me on the 14th day of May, 2015.

TABETHA JASKE
Notary Public, State of Texas
My Commission Expires
January 11, 2018

Notary Public in and for the State of Texas

My Commission Expires: 1-11-2018

Tab 1

Ryan B. Rowney
P.O. Box 220
Austin, TX 78767
(512)730-6874

EXPERIENCE

LOWER COLORADO RIVER AUTHORITY, Austin, TX **October 1983 to Present**

Vice President, Water Operations (Sept. 2011 to Present)

Responsible for all areas of Water Operations including Hydro Operations, Irrigation Operations, River Operations, Water and Wastewater Operations, Water Surface Management and Water Customer Support. Provides safety oversight for Water Operations and reports directly to the Executive Vice President of Water.

Responsible for the operations and maintenance of LCRA's six dam and 13 hydroelectric (hydro) generation units, 1,100 miles of irrigation canals, nine irrigation pump stations, LCRA's system of rain and stream gauges, and LCRA water and wastewater systems.

Responsible for the development and reporting of drought and lake conditions to the General Manager and the LCRA Board of Directors on a monthly basis.

Manager of Dam & Hydroelectric Operations (Mar. 2004 to Sept. 2011)

Operate and maintain LCRA's network of dam and hydro generating assets while providing leadership and direction to staff. Manage flood operations. Develop strategic and operating goals and objectives in line with LCRA's overall goals and objectives. Ensure adherence to safety procedures and policies. Provide leadership and direction to dam and hydro related utility maintenance activities.

Superintendent of Dam & Hydroelectric Operations (May 2001 to Mar. 2004)

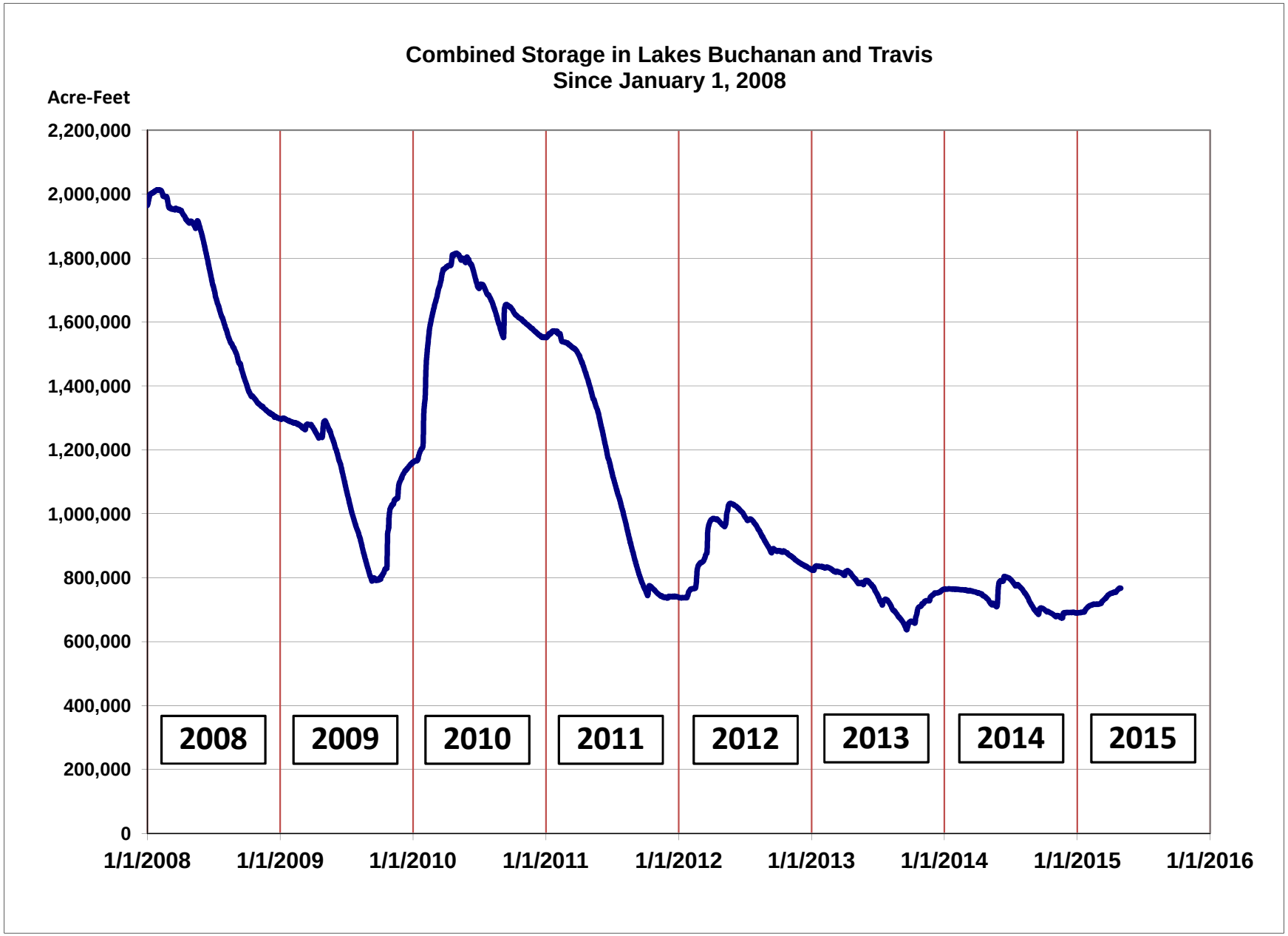
Supervise, coordinate and direct activities of dam and hydro staff. Act as liaison with the LCRA River Operations Center (ROC), LCRA Generation Desk (GenDesk) and LCRA System Operations Control Center (SOCC) to ensure the most efficient use of Hydro unit operations and flood management. Supervise the overall maintenance of the six Highland Lakes dams, the Lometa reservoir and pump station, thirteen hydroelectric turbine generators and all WWW treatment plants and associated water lines. Supervise the overall maintenance of all LCRA floodgates and related equipment.

Area Supervisor, Wirtz and Starcke Dams (Feb. 1997 to May 2001)
Supervise, coordinate and direct overall activities of staff responsible for monitoring and operating all LCRA dams and hydro generators. Lead and ensure communication and coordination of work activities with LCRA's Generation Desk (GenDesk) and the River Operations Center (ROC) to meet generation demand load requirements. Lead and ensure communication and coordination with the ROC to manage the lake levels of the six Highland Lakes, during normal, emergency and flood conditions.

Planner / Scheduler, Dam & Hydroelectric Operations (Aug. 1994 to Feb. 1997)
Develop and maintain departmental work plan and project schedules, time and cost estimates, work orders, work authorizations, requisitions, bid evaluations, pertinent records and logs, including ProCard documentation.

Electrician, Dam & Hydroelectric Operations (Oct. 1983 to Aug. 1994)
Responsible for repair, installation, replacement and testing electrical circuits, equipment and appliances in a facilities or other non-energy services environment. Isolate defects in wiring, switches, motors and other electrical equipment using testing instrument. Replace faulty switches, sockets and other elements of electrical systems. Dismantle electrical machinery and replaces defective electrical or mechanical parts such as gears, brushes and armatures. Mount motors, transformers and lighting fixtures into position and completes circuits according to diagram specifications.

Tab 2


Combined Storage in Lakes Buchanan and Travis
Since January 1, 2008
Acre-Feet
2,200,000
2,000,000
1,800,000
1,600,000
1,400,000
1,200,000
1,000,000
800,000
600,000
400,000
200,000
0
2008
2009
2010
2011
2012
2013
2014
2015
1/1/2008
1/1/2009
1/1/2010
1/1/2011
1/1/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016