

CITY OF HORSESHOE BAY

WATER CONSERVATION PLAN

SECTION 1. OVERVIEW OF SERVICE AREA. The City of Horseshoe Bay is a political subdivision of the State of Texas – a home rule law municipal corporation incorporated in an election held in September 2005, and is the successor to the Lake LBJ Municipal Utility District (MUD), absorbed into the City in March 2006. The City operates under the Local Government Code and Texas Administrative Code, and is governed by a Mayor and five-member City Council. A City Manager is employed by the City of Horseshoe Bay, reporting to the Mayor and city council and administers the day-to-day operations of the City.

The City of Horseshoe Bay (City or Horseshoe Bay) is located in Llano County and Burnet County, Texas, adjacent to Lake Lyndon B. Johnson (LBJ). The estimated current population (full and part-time residents) within the City's immediate boundaries and service area (11.5 square miles) is 6,692 persons. The total population served by the City's water system (outside-City customers and wholesale water customers) is estimated to be 7,413.

Horseshoe Bay currently obtains one hundred percent (100%) of its water supply from surface water residing in Lake LBJ; i.e., raw (untreated) water is purchased from the Lower Colorado River Authority (LCRA). The LCRA is currently involved in intensive planning efforts concerning these water supplies, as water should be conserved and not wasted – and this is especially relevant in times of reduced rainfall, decreased lake levels, and the shortages of water supply that will accompany drought conditions.

SECTION 2. PURPOSE OF WATER CONSERVATION PLAN. This *Water Conservation Plan* is necessary for the proper management of our water resources and to ensure Horseshoe Bay Residents of ample water supplies for now and in the future. The PLAN is a combination of strategies for reducing the consumption of water, reducing the loss and waste of water, and for improving and maintaining the efficiency of water use. This document contains long-term measures to facilitate meeting the goals identified in this *Water Conservation Plan*.

This PLAN sets forth uniform requirements, guidelines, and recommendations for Water Conservation and Emergency Water Demand Management (Drought Contingency) for the City of Horseshoe Bay.

In addition, it is the intent of this Water Conservation Plan to meet all the requirements of these Agencies:

- Texas Water Development Board (TWDB) – Texas Administrative Code (TAC) 31, Chapters 363, 371, 375, 382, and 384;

- Texas Commission on Environmental Quality (TCEQ) – 30 TAC Chapter 288; and
- Lower Colorado River Authority (LCRA) – Requirements associated with submittal of Water Supply Contracts.

SECTION 3. DEFINITIONS. The following words and terms, when used in this *Water Conservation Plan*, shall have the following meanings unless the context clearly indicates otherwise.

1. City of Horseshoe Bay: The Public Water Purveyor (Supplier) responsible for providing water service to retail customers within its City boundaries and any out-of-City or to any wholesale customers in adjacent areas, or its Mayor and City Council, City Manager, or Staff, as the context dictates.
2. Conservation: Those practices, techniques, and technologies that reduce the consumption of water, reduce the loss or waste of water, improve the efficiency in the use of water or increase the recycling and reuse of water so that a water supply is made available for future or alternative uses.
3. Drought Contingency Plan: A strategy or combination of strategies for temporary water supply management and demand management responses to temporary and potentially recurring water supply shortages and/or emergencies.
4. Industrial Use: The use of water in processes designed to convert materials of a lower order into materials of greater value or greater usability.
5. Irrigation Use: The use of water for the irrigation of crops, trees, lawns, and landscapes, and other similar uses.
6. Irrigation Water Use Efficiency: The percentage of that amount of irrigation water which is beneficially utilized by the substance under irrigation.
7. Lower Colorado River Authority (LCRA): The Regional Water Supply Agency that provides the surface water supply to the City of Horseshoe Bay.
8. Municipal Per Capita Water Use: The sum total of water diverted into a water supply system for residential, commercial, and public and institutional uses divided by the population served by the water supply system.
9. Municipal Use: The use of water for domestic purposes, for fighting fires, flushing sewers and drains, watering lawns and landscapes and gardens, for recreational purposes, watering parks and parkways, for filling swimming pools, for industrial and commercial enterprises, and for other similar uses.
10. Pollution: The alteration of the physical, thermal, chemical, or biological quality of water, or the contamination of any water in the State of Texas that renders the water harmful to humans or the environment, or that impairs the usefulness of the water.

11. Public Water Supplier: An individual or entity that supplies water to the public for human consumption.
12. Regional Water Planning Group: A group established by the Texas Water Development Board to prepare a regional water plan pursuant to Texas Water Code 16.053 (the City of Horseshoe Bay is within Region K).
13. Retail Public Water Supplier: An individual or entity that, for compensation, supplies water to the public for human consumption. This term does not include any individual or entity that supplies water to itself or its employees or tenants incidental to that employee service or tenancy where the water is not resold or used by others.
14. Reuse: The authorized use for one or more beneficial purposes of use of water that remains unconsumed after the water is used for the original purpose of use and before the ultimate disposal of the used water occurs.
15. Texas Commission on Environmental Quality: The State Agency dealing with environmental issues for the State of Texas, including the regulation of Public Water Purveyors.
16. Water Conservation Plan: A strategy or combination of strategies for reducing the volume of water withdrawn from a water supply source, by reducing the loss of waste of water, for maintaining or improving the efficiency of the use of water, for increasing the recycling and reuse of water, and for preventing the pollution of water.
17. Wholesale Public Water Supplier: An individual or entity that, for compensation, supplies water to another for resale to the public for human consumption. This term does not include any individual or entity that supplies water to itself or its employees or tenants incidental to that employee service or tenancy where the water is not resold or used by others.

SECTION 4. SUMMARY OF “UTILITY PROFILE.” The current water rate profile is included in Exhibit A, and a summary of the utility profile highlights is presented in the following.

A. Service Area and Population – the size of the Horseshoe Bay (HSB) service area is 11.5 square miles. The current (2009) Horseshoe Bay population (full and part-time residents) is 6,692, with total population receiving water service estimated as 7,413, and with increases in population projected to be as follows:

YEAR	HSB POPULATION	WATER SERVICE POPULATION
2010	7,890	8,542
2020	10,652	11,532
2030	14,381	15,568
2040	19,413	21,017
2050	26,207	28,373

B. Water Use Data for Service Area – A summary of the past years is listed below, along with future projections (usage amounts are in gallons).

	Horseshoe Bay WATER USAGE		Outside / Wholesale WATER USAGE		TOTAL WATER USAGE
2005	599,804,000	+	25,156,000	=	624,960,000
2006	672,893,000	+	29,687,000	=	702,580,000
2007	550,698,000	+	26,257,000	=	576,955,000
2008	663,833,000	+	53,819,000	=	717,652,000
2009	610,426,000	+	34,224,000	=	645,101,000

**TOTAL PROJECTED
WATER USAGE (gallons)**

2010	635,634,000	(planning period)
2015	754,934,000	(planning period)
2020	896,624,000	(planning period)
2030	1,119,417,000	
2040	1,511,227,000	
2050	2,040,160,000	

C. Un-Accounted-For-Water Use - Previous five (5) years of un-accounted-for water use (loss) is outlined below:

YEAR	U-A-for-WATER (WATER LOSS)	PERCENTAGE (%)	GPCPD
2005	32,577,000	5.2	15
2006	66,628,000	9.5	29
2007	55,596,000	9.6	24
2008	22,924,000	3.2	9
2009	31,180,000	4.8	13

Planning Period reductions in “Water Loss” (Unaccounted-for-Water):

YEAR	GPCD REDUCTION
2010	5
2015	3
2020	2

D. Peak-to-Average Daily Use Ratio - in the following list, these Ratios are outlined for years 2005 through 2009.

YEAR	AVERAGE FLOW	PEAK FLOW	RATIO
2005	1,712,219	3,575,000	2.09
2006	1,924,877	3,480,000	1.81
2007	1,581,000	3,348,000	2.12
2008	1,924,877	3,929,000	2.04
2009	1,673,548	3,831,000	2.29

E. Municipal Per Capita Water Use - The past amounts for **municipal GPCD** (gallons per capita per day) are outlined in the following

YEAR	MUNICIPAL GPCD
2005	274
2006	297
2007	248
2008	297
2009	262

SECTION 5. WATER CONSERVATION GOALS.

A. Summary for Potential of Reducing Per Capita Water Use - A summary of the results of the technical potential for reducing per capita water use is presented below.

ITEM	GPCD 2010	GPCD 2015	GPCD 2020
> Potential for Reduction in unaccounted-for water use:	5	3	2
> Potential for Reduction in indoor water use due to Water-conserving plumbing fixtures:	2	1	0
> Potential for Reduction in Seasonal use:	40	20	10
> Potential for Reduction in water use due to Public Education Programs:	6	3	1
> <i>Total Technical Potential for Reducing Per Capita Water Use:</i>	<u>53</u>	<u>27</u>	<u>13</u>

B. Water Conservation Planning Goal – The Planning Goal equals the five year rolling average of water use minus the calculated Total Technical Potential, and is illustrated as follows, and includes the Planning Period of 2010 – 2015 – 2020:

ITEM	2010	2015	2020
> Five-Year Rolling Avg of Water Use (GPCD):	270	217	190
> Needed reduction in GPCD to meet Planning Goal:	53	27	13
> Water Conservation (Planning) Goal to be achieved:	<u>217</u>	<u>190</u>	<u>177</u>

SECTION 6. LONG TERM CONSERVATION COMPONENTS.

A. Reduction in Water Loss and Un-Accounted-For Water:

1. Leak Detection and Leak Repair Program. The City of Horseshoe Bay is in the process of hiring an outside firm to conduct a system-wide Leak Detection Program, with subsequent repair of a multitude of leaks. The City encourages residents to immediately report all suspected water leaks (# 830-598-8741); the City will be happy to investigate a leak, whether it is on the City's side of the water meter or the resident's side of the meter.
1. Leak Repairs. Horseshoe Bay Public Works Department (Field Operations) shall continue to monitor for leaks on water distribution lines, transmission lines, and service lines and meters. Leak repairs shall be scheduled and completed in a timely manner. For the most part, the City of Horseshoe Bay is dependent upon citizen reporting of leaks. Leaks are scheduled for repair after proper notice to other companies with underground facilities, and after these companies have had the opportunity to mark their facilities and lines (within the legal framework of the "Damage Prevention Law for Texas," as related to excavation activities).
2. Metering. All Customer Service Lines are metered. Bulk Water taken from fire hydrants is also metered.
3. Customer Meter Testing and Meter Change-Out Program. 5/8" x 3/4" and 1" water meters are tested as necessary and/or as requested by the Customer, with larger meters being tested on a regular basis to determine accuracy. Meters are being changed out on an as-needed basis, depending upon their accuracy and registered usage, and in conjunction with AWWA Recommendations.
4. Production Meters. The production meters are tested on an annual basis and are within the AWWA Accuracy Standards.
5. Water Loss Accounting. The City of Horseshoe Bay is currently engaged in contacting a Software Provider to update all billing records and reports in order to have the best data available as related to customer billing, water loss, and un-accounted-for-water. The Billing System will also provide enhanced customer water-use data.
6. Field Operations. The Public Works Department (Field Operations) employees have been instructed to calculate water losses due to water system leaks that have been repaired, and to enter this data on each leak repair Work Order.
7. Water System Audit. It is the intent of the City of Horseshoe Bay to conduct an intensive "Water System Audit," which will consist of the following:
 - > Structured method of accounting for ALL water use in service area
 - > Real / Apparent / Unavoidable losses
 - > Top down audit – Identify areas of concern

- > Bottom up audit – Focus on best approaches
- > Key Areas: “All Uses” Accounting, Meters, Leaks, Pressure, Water Theft, Inaccurate Readings, Customer Side Leaks, and other associated items

In addition, staff will conduct a comprehensive water loss audit in 2010. This audit, a requirement of the state, will help the City refine its areas of real and apparent water loss and develop appropriate water loss goals.

8. Records Management System. The Horseshoe Bay employees will ensure that the current record-keeping system for water pumped, water deliveries, water sales, and water losses is maintained in an orderly and accurate manner. Additional record-keeping measures shall be implemented as necessary to upgrade and improve this records management system.

B. Reduction in Indoor Water Use due to Water-Conserving Plumbing Fixtures.

1. Water Conserving Plumbing Fixtures. New construction, which is a significant portion of the total construction that has occurred in Horseshoe Bay, has included these type plumbing fixtures. The City will require EPA WaterSense fixtures, including high efficiency toilets and low-flow faucets, to be installed in all new construction (Standards for New Construction).
2. Reduction in Indoor Water Use. In addition to the Water Conserving Fixtures, Horseshoe Bay shall promote the reduction in indoor water use via its public education program.

C. Reduction in Seasonal Water Use.

1. Seasonal Water Use. (Outdoor water use for irrigation purposes).

YEAR	BASE	SUMMER	SEASONAL USE
2005	159	367	208
2006	223	415	192
2007	180	288	108
2008	238	373	135
2009	223	396	173

2. Reduction of Seasonal Water Use. Use to be reduced during higher water demand period, including additional emphasis on outdoor water conservation, and implementation, if necessary, of Conservation Measures from the City’s *Drought Contingency Plan*.

In addition, staff will pursue irrigation audit certification to conduct irrigation audits in order to help reduce seasonal water use.

D. Reduction in Water Use due to Public Education Program.

1. Water Conservation Brochures. The City of Horseshoe Bay will maintain a supply of Water Conservation Brochures (listing Water Conservation Measures) in the lobby of its office for the convenience of its Customers. Furthermore, these Brochures will also be distributed to each new Water Customer of Horseshoe Bay.
2. Newspaper Notice – Water Conservation. At opportune times in Horseshoe Bay’s program to conserve water, Notices will be provided in the local Newspaper(s) to educate the public about water conservation.
3. Additional Measures. (1) Water infrequently in the winter (December, January, and February), as regular watering is not necessary; automatic sprinklers should be shut off in winter. (2) Only use automatic and other mechanical sprinklers during the hours of 7:00 p.m. to 10:00 a.m., as this significantly diminishes evaporation. (3) In the Spring, Summer, and Fall, only water two (2) days per week. If it rains during the week – skip your next watering day. (4) Lawns require about one inch of water per week (1/2” of water per watering event if irrigate two times per week). Both water and money will be wasted if over-watering allows water to flow down the sidewalk or the street. (5) Additionally, in order that irrigation might be automatically halted during rainy weather, automatic sprinkler shut-offs should be installed by Horseshoe Bay Residents.

E. Promotion of Water Conservation through Rate Structure.

1. Inclining Block Water Rates. The City of Horseshoe Bay Mayor and City Council have enacted a Water Rate Structure that promotes water conservation, and attempts to reduce water consumption within the home, commercial facility, and to decrease landscape irrigation.
2. A complete list of Rates, Charges, and Fees is included with the “Water Conservation Utility Profile.”

F. Water Reclamation and Water Reuse. The Wastewater Treatment Plant of the City of Horseshoe Bay utilizes Land Application for its disposal of treated wastewater effluent. For example, in 2008 all of the effluent treated at the wastewater treatment plant (172,728,000 gallons) was applied via irrigation to farmland grass and golf course landscape, thus saving on water that would otherwise have been purchased from the LCRA and pumped from Lake LBJ.

G. Reservoir Systems Operations Plan. The City of Horseshoe Bay does not own any reservoir facilities, and obtains its full water supply from the Lower Colorado River Authority; subsequently, a “Reservoir Systems Operations Plan” is not applicable to the City.

SECTION 7. OPTIONAL CONSERVATION COMPONENTS.

A. “Best Management Practices” (BMPs) for Water Conservation – A “Water Conservation Task Force” has been established by SB 1094, to review, evaluate, and recommend optimum levels of water use efficiency and conservation for the State of Texas. The Task Force has also been directed to identify, evaluate, and select Best Management Practices (BMPs) for municipal, agricultural, and industrial water users.

BMPs are a combination of management, educational, and structural practices that are the most effective and economical ways of conserving water. Some of the Best Management Practices listed below have already been implemented by Horseshoe Bay; however, the remaining BMPs will be finalized and adopted at a later date by the City Council.

1. Water Waste Prohibition BMP
2. Showerhead, Aerator, and Toilet Flapper Retrofit BMP
3. Residential ULFT (Ultra Low Flush Toilet) BMP
4. Residential Clothes Washer BMP
5. School Education BMP (*NOTE: At this time, there are no schools within the HSB boundaries*)
6. Water Survey for Single Family and Multi-Family Customers BMP
7. Landscape Irrigation Systems BMP – evaluate adopting and enforcing the state standards for the efficient design, installation and maintenance of landscape irrigation systems in the City’s utility service area. These standards are consistent with standards that TCEQ adopted in 2008 and are a requirement for cities with over 20,000 in population.
8. Water Wise Landscape Design and Conversion BMP – make use of drought tolerant local plants and grasses. The City staff will be more than happy to provide the latest information available from a multitude of sources on this subject. Property Owners and Home Owners Associations are encouraged to set up demonstration planting at their entrances and club houses that best fit their subdivisions. Master Gardeners are encouraged to provide demonstrations at City and Association events. The City of Horseshoe Bay will maintain a library of information on this subject at City Hall.
9. Single Family Outdoor BMP – new homes would be required to have a soil depth that meets the minimum requirements for our region and health of the plants; this usually means at least six inches (6”) of finely graded top soil – the more the better.
10. Additional BMPs are under development

B. Consideration of Implementation of BMPs – The Water Conservation Task Force will be refining these BMPs and developing other BMPs as time goes by. In the meantime, as the Water Conservation Planning Goal Period (2010 – 2015 – 2020) unfolds, and the City of Horseshoe Bay has an opportunity to evaluate its progress toward its Water Conservation Goal, then it may be necessary and prudent to implement additional Best Management Practices from those submitted by the Task Force, and consideration of additional BMP implementation will be given by the Horseshoe Bay City Council at that time.

SECTION 8. EMERGENCY WATER DEMAND MANAGEMENT PLAN (DROUGHT CONTINGENCY PLAN). The City of Horseshoe Bay Water Demand Management Plan (“Drought Contingency Plan”) has been adopted by the Mayor and City Council, after a Public Hearing. This Water Conservation Plan is an update of a Plan approved by the Lake LBJ MUD Board of Directors. The “Drought Contingency Plan” is included with this Water Conservation Plan.

SECTION 9. APPLICABILITY TO WHOLESALE CUSTOMERS. The City of Horseshoe Bay provides water supply via Contracts with Pecan Utilities and Sandy Harbor (LCRA).

The *Water Conservation Plan* and *Drought Contingency Plan* are applicable to Wholesale Water Customers of the City of Horseshoe Bay. Therefore, any future Wholesale Contracts (Water Supply Agreements) will include provisions that require the Wholesale Customers to develop and implement a Water Conservation Plan using the applicable elements of TAC 30, Chapter 288.

If the Wholesale Customer intends to resell the water, then the contract between the initial supplier and customer shall provide that the contract for the resale of water must have water conservation requirements so that each successive customer in the resale of the water shall be required to implement water conservation measures in accordance with the provisions of Title 30 TAC, Chapter 288.

SECTION 10. COORDINATION WITH REGIONAL WATER PLANNING GROUP. The service area of the City of Horseshoe Bay is located within “Region K” Water Planning Group. Copies of the Water Conservation Plan (along with any updated Drought Contingency Plan), have been furnished to the “Region K” Water Planning Group in order to ensure consistency with the Regional Water Plan.

Per their Contract requirements, the *Water Conservation Plan* and the *Drought Contingency Plan* will also be submitted to the Lower Colorado River Authority.

SECTION 11. PLAN REVIEW AND UPDATE. The “Drought Contingency Plan” has been updated, and this “Water Conservation Plan” is an update of a Water Conservation Plan that was previously approved by the Board of Directors of the Lake LBJ MUD. Subsequently, it is the intent of the City of Horseshoe Bay to upgrade these Plans as necessary, in accordance with State of Texas Statutes, Regulations of State Agencies, and the requirements of the Lower Colorado River Authority.

SECTION 12. ENFORCEMENT PROCEDURE AND OFFICIAL ADOPTION. After a Public Hearing, the Water Conservation Plan was approved via the adoption of Ordinance ORD 10-05-18A by the City Council of the City of Horseshoe Bay. Implementation and enforcement of the *Water Conservation Plan* and *Drought Contingency Plan* shall be by means of this Ordinance, by the Regulations and Policies contained within these documents, and by reference to the applicable State Laws and Regulations of the State of Texas.