# Water Conservation Plan - CITY OF MISSION

## Contents

## Section I: INTRODUCTION

The City of Mission provides the public with its water and sewer services within its certificate of convenience and necessity area (CCN). The water and wastewater systems are owned and operated by the City and is governed by a board of elected Mayor and City Council officials.

The amount of water that the City water system can store, treat, divert, and distribute to its customers is limited. Mission wants to avoid waste or unreasonable use of water, which could lead to a possible drought and emergency conservation strategies. Therefore, it is imperative that the available water resources be put to the maximum beneficial use to which they are capable, while simultaneously implementing strong conservation measures to eliminate waste. While short-term water shortages and water supply emergencies are often unpreventable, response measures can be determined and implemented in advance, to avoid, minimize, or mitigate the risks and impacts of drought-related water shortages and other emergencies.

The purpose of this Plan is to establish a Water Conservation and Drought Contingency Plan ("WCDCP" or "Plan") for the City in accordance with Texas Admin. Code Title 30, Chapter 288. The basic goal of the Plan is to ensure an uninterrupted supply of available water in an amount sufficient to satisfy essential human needs. First, the Water Conservation Plan develops a conservation strategy for reducing the volume of water withdrawn from a water supply source, reducing the loss of waste of water, increasing the recycling and reuse of water, and the prevention of pollution of water. Secondly, the Drought Contingency Plan is a strategy for temporary supply and demand management responses to temporary and potentially recurring water supply shortages and other water supply emergencies.

## Section II: Evaluation of Water and Wastewater Systems and Customers Use Characteristics (Utility Profile)

### A. Demographics

The City provides water and wastewater services within the City's limits and extra territorial jurisdiction. The service area is approximately 36.17 square miles. The current 2023 estimated dynamic population is 96,960. This figure does not include people that visit during the winter season.

### B. Water Supply & Purchase of Raw Water

The Rio Grande River is the sole source of water for the citizens of Mission and has delivery contracts with United Irrigation District (UID), as follows:

| | | |
|---|---|---|
| Adjudicated Water Rights | 5,300.00 | acre feet/year |
| Available Purchased Water Allotment | 12,265.02 | acre feet/year |
| TOTAL | 17,565.02 | acre feet/year |
| Additional contracted with UID | unlimited | |

The City takes the raw water supply from United Irrigation District (UID) canal system through a gravity pipe into the City's reservoirs. The raw water is stored in two (2) City owned raw water reservoirs which have a maximum storage capacity of approximately 180 million gallons (MG).

**C. Capacity of Water Treatment Plants**

1. The City has two water treatment plants, a 17.5 MGD North Water Treatment Plant (NWTP) and an 8.0 MGD South Water Treatment Plant (SWTP) for a total treatment capacity of 25.5 MGD. Water treatment consists of pre-disinfection with chlorine dioxide applied at the raw water pump station. Ammonia and chlorine are injected at the plant intake line to form chloramines throughout the treatment process and as a distribution disinfectant. An aluminum sulfate coagulant and polymer are injected at the intake line to assist with the settling process. The water then runs through the treatment system which consists of aeration, rapid mix, flocculation, sedimentation, and filtration.
2. The City's water distribution system is interconnected with the City of McAllen and Agua Special Utility District water systems. Treated water can be diverted during emergencies to supplement demand between systems.

**D. Pumps and Storage Capacities**

1. The NWTP has six high service pumps with a total combined pumping capacity of 26.0 MGD with largest pump out and total of 34.1 MGD with all pumps operating. The high service pumps pump treated water from two 2.0 MG ground storage tanks into the distribution system. The Plant is also equipped with a 0.5 MG clear well. The SWTP has four high service pumps with a total combined pumping capacity of 10.8 MGD with largest pump out and 14.4 MGD with all pumps operating. These high service pumps pump from the 2.0 MG treated water ground storage tank. The total combined treated water high service pump capacity is 48.5 MGD and a combined treated water ground storage capacity of 6.0 MG. The Plant has a total of 2 Master Meters that are calibrated annually.
2. A total of six elevated treated water storage tanks with a combined water storage capacity of 4.0 MG are also in the distribution system. These tanks are located at various quadrants of the City. Therefore, total combined treated water capacity (ground and elevated) for the City is 10.5 MG.
3. The City has a total of 478.64 miles of water lines, of which approximately 30 percent are 12 inches in diameter or larger. Additionally, there are 3,209 fire hydrants in the distribution system.

**E. Water Use Characteristics**

1. Water pumpage. Current total treated water pumpage for 2023 was 5,037.8 MG, and total metered water sales of water of 4,476.1 MG. Water loss for 2023 was 10.35 percent or a total of 521.6 MG, according to the Water Loss Audit Report.
2. The water uses and per capita water use is as follows.

(a) The City supplies potable water for residential, commercial, industrial, and public uses. The total per capita use for Mission in 2023 was 142 gallons per day;

(b) Municipal per capita water use is total water pumped into the distribution system for residential, commercial, and public uses, divided by the population served. Industrial water use is not included in this calculation. Mission's municipal per capita use for 2023 was 110 gallons per day; (Source: TWDB Utility Profile)

(c) Mission's industrial users account for less than 1 percent of the total active meter accounts. The largest water volume user for 2023 was Texas Citrus Exchange which purchased an approximate total of 22.8 MG of water for 2023; and

(d) Mission has 30,577 active water meter accounts as of December 31, 2023.

**F. Water Loss**

Mission's water loss is due to water breaks, leaks, meter under registration, main line flushing, plant backwash and unmetered fire hydrants. The amount of water loss is determined by the difference between production and metered water sales. The average amount of water loss for the past five (5) years was 9.78 percent. The water loss for 2023 was 10.35 percent or 521.6 MG.

**G. Wastewater Services**

1. The City operates a Wastewater Treatment Plant. The treatment plant is based upon an extended aeration activated sludge system, with secondary effluent limitations. Treated effluent is diverted through a UV disinfection system and then discharges into a drain ditch connected to a floodway system thence into the Arroyo Colorado and Laguna Madre Estuary. The annual treated wastewater volume for 2023 was 2,705.7 MG. The average monthly amount of treated wastewater for that same period was 225.48 MG per month or 7.41 MG per day.
2. The City Wastewater Treatment Plant has a 13.5 MGD design flow. It is currently 56 percent hydraulically loaded with effluent limitations of seven mg/L of carbonaceous biochemical oxygen demand, 15 mg/L of total suspended solids, and two mg/L of ammonia nitrogen.
3. The wastewater collection system consists of 374.58 miles of lines, with line sizes ranging from 6 inches to 24 inches. There are 40 active lift stations and approximately 27,437 active sewer accounts.

**Water Conservation Utility Profile (Appendix A)**

## Section III: WATER CONSERVATION GOALS

1. The City of Mission supplies potable water to a population of approximately 96,960 in 2023.
2. Based on the data found in the utility profile and on careful evaluation of Mission's water consumption and practices, the City has set the following goals to be achieved through the adoption of this Water Conservation Plan.

   (a) Verify location and accuracy of raw water meter and water treatment plant high service pumps meter as compared to the Distribution System customer meters.

(b) Determine water loss in the system.

(c) To reduce total daily per capita water use to 140 gpd by the year 2029 and reduce the water loss to 10.25 percent by the same year.

(d) To implement long-term cost-effective recovery measures for major causes of water loss due to metering.

(e) To increase both public and employee awareness regarding water conservation and water related issues. This will especially be encouraged during the summer months when water consumption increases significantly.

(f) To promote the re-use of treated wastewater effluent for agriculture, industry, and public use.

(g) Water loss reduction goals:

Current water loss 5-year average 2019-2023 was 476,501,252 gallons or 9.78 percent of total treated water. The water loss for 2023 was 521.6 million gallons or 10.35 percent of total treated water. Therefore, proposed goals are:

5 Year Reduce water loss in the system by 1% to 10.25%

10 Year Reduce water loss in the system by an additional 0.5% to 10.2%

All accounts: Gallons per capita per day (gpcd) proposed goals:

5 Year 1% reduction, reduce consumption from 142 gpcd to 140 gpcd

10 Year 2% reduction, reduce consumption from 142 gpcd to 139 gpcd

Residential: Gallons per capita per day (gpcd) forecast: Increase in population:

5 Year 1% reduction, reduce consumption from 110 gpcd to 109 gpcd

10 Year 2% reduction, reduce consumption from 110 gpcd to 108 gpcd

The Table below displays the 5-year and 10-year goals summary for water savings.

| City of Mission | *Historic 5-year Average* | *Baseline* | *5-year goal for year 2029* | *10-year goal for year 2034* |
|---|---|---|---|---|
| Total GPCD | 141 | 142 | 140 | 139 |
| Residential GPCD | 113 | 110 | 109 | 108 |
| Water Loss GPCD | 14 | 15 | 14 | 14 |
| Water Loss Percentage | 9.78% | 10.35% | 10.25% | 10.20% |

**Reference: TWDB 1964 form & TCEQ-10218**

## Section IV: SCHEDULE FOR IMPLEMENTING THE PLAN TO ACHIEVE TARGETS AND GOALS

The City of Mission will adhere to the following schedule, to achieve the targets and goals for water conservation:

1. All customers and water users shall be metered.
2. Periodic meter testing, calibration, and repair.
   (a) Calibrations of the raw water meter and the treated water leaving the water treatment plant meter shall be conducted annually;
   (b) Customer meters larger than 1 ½" shall be tested annually, and
   (c) Customer meters smaller than 1 ½" shall be tested every ten years on a staggered basis.
3. Real water losses are identified and corrected daily by replacing defective meters and responding to repair of water breaks within a 30-minute time frame by our City staff.
4. Real water losses are minimized by replacement of deteriorating water mains and appurtenances, as is conducted by the City staff on an ongoing basis.
5. The City will mail out material developed by the staff, materials obtained from the Texas Water Development Board, Texas Commission on Environmental Quality or other sources semi-annually (once in the spring and once in the summer) to all customers.
6. Utilize the TWDB Municipal Water Conservation Planning Tool software resource to help the City implement and enforce our City's Water Conservation Goals https://www.twdb.texas.gov/conservation/municipal/plans/index.asp.

## Section V: TRACKING TARGETS AND GOALS

The staff shall track targets and goals by utilizing the following procedures:

1. Logs shall be maintained for meter calibration, meter testing, and meter replacement programs.
2. Annual water audits shall be documented and kept in the utility department file.
3. Staff shall keep a record of the number of mail-outs distributed semi-annually.
4. Rates are tracked by means of ordinances adopted.
5. Logs shall be maintained for the utility's leak detection program, including but not limited to the following:

**A. Metering Devices**

Flow meters are used to measure and account for all water diverted from water wells and all water sales continue to be metered in order to accurately record the amount of water used. The City has metering in place for all usages including contractor uses. The City is working with the local Fire Department to account for all emergency fire uses.

**B. Universal Metering**

The City has a regularly scheduled maintenance program of meter testing, repair and replacement. All production meters located at the water plant are tested and calibrated annually. Meters are maintained within the accuracy of plus or minus five percent, in order to measure and account for the amount of water diverted from the source of supply. Meter replacement recommendations are followed using the manufacturer's

guidelines.

After each monthly water meter reading, an evaluation of each customer's usage is made. Zero consumption accounts are checked to see if water is actually being used or not. At this time, it is also determined what action, if any, must be taken to reduce water consumption. An additional evaluation is made to determine what the City must do to change its conservation plan or policies.

### C. Water Loss Audits

The City of Mission shall conduct water loss audits in accordance with the Texas Water Development Board rules (Texas Admin. Code, Title 31, Chapter 358). Periodic visual inspections along the distribution lines will be completed. An audit of the water system to determine illegal connections, use of forms and accounting for loss due to flushing and firefighting will be completed annually.

### D. Leak Detection and Repair

The City will purchase water leak detector equipment to start a leak detection program. Currently, customers and City personnel call in water breaks to the systems department. Breaks are usually handled within 30 minutes.

1. Plumbing Codes and Retrofit Program.
   (a) The City has adopted the International Code Council. Additionally, the 72nd Texas Legislature passed legislation which requires plumbing, fixtures sold in Texas after January 1, 1992, to meet strict standards that incorporate efficient water use and conservation in new structures. This law subsequently affects plumbing fixtures sold and will help eliminate inefficient plumbing fixtures.
   (b) Mission does encourage businesses and homeowners to replace older water fixtures like low-flow showerhead, faucet aerators, and toilet dams purchased before January 1, 1992, with the newer, efficient replacements. Mission will also advocate the use of low demand water appliances instead of older, high use ones in homes and businesses.
2. Water Conservation Landscaping. Mission does not plan to require water conservation landscaping; however, it will encourage this type of landscaping.
   (a) Local landscaping architects and nurseries will be asked and encouraged to utilize efficient irrigation systems and native low water-using plants and grasses. Xeriscape gardening and landscaping techniques will also be asked to be promoted.
   (b) Licensed irrigation contractors will be asked to utilize drip irrigation systems, where possible, and to use water conserving irrigation systems like sprinklers that produce large drips instead of a fine mist and a sprinkler layout which accommodates prevailing wind patterns.

## Section VI: WATER CONSERVATION STRATEGIES

### A. Public Education

The City will provide the water conservation and drought contingency plans to new

customers at the time they apply for water services. Water conservation brochures will be available at City Hall on a continuing basis. Water conservation posters will be displayed at City Hall and other City Facility buildings. Public announcements will be published in the local newspaper, City newsletter, broadcast on local radio, television stations, City website, City Facebook social media.

**B. Recycling and Reuse**

The City currently will encourage reuse of treated wastewater effluent. Treated wastewater effluent could be used to irrigate City's municipal parks, public and private golf courses, and roadside landscaping. Mission is also exploring the possible use of the treated wastewater effluent for agriculture, industry, and private use.

## Section VII: CONSERVATION WATER RATE STRUCTURE

**1.** The City has established a schedule of rates to be charged for the consumption of water supplied through the City water system, as follows:

(a) Standard water rate schedule within the City limits for Mission's customers under the City's certificate of convenience and necessity.

(b) Standard water rate schedule outside of the City limits.

(c) A variable rate that increases for increased water consumption.

**2.** The standard rate to be charged for water furnished and consumed by single-family residence, multi-family residence, commercial, and industrial customers using the City's water is shown on the water and sewer rates structure ordinance, which is incorporated herein by reference as if fully set out at length, and a copy of which is on file and available for inspection in the offices of the City.

**3.** Water and sewer rates are periodically evaluated and updated as needed, so information in the water and sewer rates structure ordinance are subject to future change.

**Water Rate Ordinance (Appendix B)**

**Water Conservation & Drought Contingency Ordinance (Appendix C)**