



# WATER CONSERVATION PLAN

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# **WATER CONSERVATION PLAN FOR THE CITY OF CROWLEY**

## **Water Utility Profile**

The City of Crowley Water System (Public Water System ID 2200034) currently served more than 15,000 residents in 2018 and this population is expected to grow to 40,000 by the year 2050. The City currently purchases over 686,000,000 gallons of treated water from the City of Fort Worth each year which is provided to Crowley residents through a City maintained water distribution system. The water system customer base is approximately 89 percent residential and the remaining 11 percent are multi-family and commercial/industrial users. Crowley also has a total of 8 wells, 3 are active and have been designated for emergency use only.

The treated water the City of Crowley purchases from Fort Worth comes from the Tarrant Regional Water District (TRWD). This water is from six major reservoirs:

- Lake Bridgeport (via the West Fork of the Trinity River),
- Eagle Mountain Lake (via the West Fork of the Trinity River),
- Lake Worth (via the West Fork of the Trinity River),
- Lake Benbrook (A pipeline connects Lake Benbrook to the Rolling Hills Water Treatment Plant to supplement supply to that plant. A pump station on the Clear Fork of the Trinity River also supplies the Holly Water Treatment Plant.),
- Cedar Creek Reservoir (via pipeline), located approximately 75 miles southeast of Fort Worth, and
- Richland-Chambers Reservoir (via pipeline), located approximately 75 miles southeast of Fort Worth.

The follow is a map of the Crowley water system service area.



Legend

+

FIREHYDRANTS

•

VALVES

▪

PLUG

WATER\_LINES

The main map area displays a complex network of water infrastructure overlaid on a street map. A prominent red line outlines the primary service area. A dense grid of blue lines represents the water mains, with numerous red dots indicating fire hydrant locations. Smaller black dots represent valves, and small black squares represent plugs. The map includes various street names such as Industrial Blvd, V. Cowe Rd, and E Main St. A large light blue area in the center-right represents a body of water. The map is bordered by a thick blue bar at the bottom.

# Water Map

A standard compass rose with a central star-like design. The cardinal directions are labeled: 'N' for North at the top, 'S' for South at the bottom, 'E' for East on the right, and 'W' for West on the left.

A horizontal scale bar with three segments. The first segment is labeled '0', the second '1,000', and the third '2,000'. Below the bar, the word 'Feet' is centered.

**DISCLAIMER**  
This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.



## **Section 1: Objectives**

In order to protect these sources and extend their useful life, it is necessary to examine water use practices and educate the public about ways in which to reduce overall water use. It is also necessary to set goals and outline methodologies with which to achieve those goals.

This Water Conservation Plan identifies water conservation goals and explains conservation practices that will help protect long-term water supplies for the City of Crowley, and its customers. For the benefit of regional governmental constancy this plan is based on the City of Fort Worth's Water Conservation Plan. This Plan includes information required by the Texas Commission on Environmental Quality (TCEQ) for Water Conservation Plans as well as information specific to the City of Crowley water distribution system.

In the Texas Water Code, water conservation is defined as follows:

- a. The development of water resources; and,
- b. Those practices, techniques, and technologies that will 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.

Based upon these concepts of water conservation, the City of Crowley's objective is to implement a Water Conservation Plan, which will protect the quality of the raw water supplies and reduce per capita usage. This can be accomplished by increasing water use efficiency, thereby reducing water demands without adversely affecting population and economic growth potentials to its customers. The development of additional water supplies to meet the City's water needs will be done as joint projects with the City of Fort Worth and TRWD. The principal objective of this Plan is to set guidelines for the promotion and publicity of water conservation methods that can be used by retail customers served from the City's water supply system to reduce their daily water use. It also outlines methods within the City's government, which can reduce water losses. If effective and subscribed to by the City and the general population, these methodologies may result in the following:

- Reduce average daily water demands
- Reduces need for water rate increases
- Lower peak season water use
- More efficient water distribution

In reference to emergency demand management, procedures to reduce water use and manage water supplies in the event of severe drought or other emergencies are found in the City's Drought and Water Emergency Plan.

## **Section 2: Conservation Overview**

The Crowley Water Conservation Plan recognizes that the City is a participant in a regional water supply system, and that water conservation requires a region-wide approach. The City of Crowley is required through its wholesale water contract with the City of Fort Worth to implement “the same rationing, conservation measures or restrictions to the use of water,” and water conservation plans, as those implemented by Fort Worth.

### **Water Use Summary**

Water use is typically expressed in gallons per capita/per day (gcpd). This number is generally the average annual water use expressed in a per day total divided by the population of the service area. It is typically greater than the general person actually uses in any given day themselves. Water use statistics include all water use which can be attributed to a population and may include:

Household use (cleaning, cooking etc.)	Commercial outdoor water use
Residential landscaping	Industrial/manufacturing use
Vehicle washing	Schools, churches, institutions
Recreation	Fire protection
Workplace water use	Public area use
Commercial indoor water use	Municipal government use

Efforts at conservation in water use must affect all these areas possible in order to accomplish a measurable and significant reduction over time.

### **2.1 General Methods of Conservation**

There are many ways to accomplish conservation and the practices are not new. In fact, some significant conservation efforts have been made throughout the State of Texas through the plumbing fixture modifications. The State Code which affected this change is described below. Other conservation efforts are focused at appliance efficiencies, reduction in landscape use, and the modification of personal behaviors.

### **2.2 Plumbing Code Requirements**

The State of Texas has required water-conserving fixtures in new construction and renovations since 1992. The state standards call for flows of no more than 2.2 gallons per minute (gpm) for faucets, 2.75 gpm for showerheads, and 1.6 gallons per flush for toilets. Similar standards are now required nationally under federal law. These state and federal standards assure that all new construction and renovations will use water-conserving fixtures.

### Section 3: Water Conservation Goals

In 2014, the City's goals were revised to include the following in their water conservation program:

1. Continue water use reductions to achieve the "average conservation water use" levels established in the table Below (average 79 gpcd in 2050);
2. Reduce water loss by the repair or replacement of water meters;
3. Use internal programs to find and minimize water loss;
4. Encourage water conservation through water rate structure; and
5. Continue and expand the public education program.

#### 2014 GOALS

Description	Units	1990	Projections					
			2005	2010	2020	2030	2040	2050
Population		5,500	8,100	10,000	15,000			30,000
Average Conservation water use	GPCD	123	107	100	88	81	80	79

Current TCEQ rules require the adoption of specific water conservation goals for a water conservation plan. The goals for this water conservation plan include the following:

- Maintain the 5-year moving average total per capita and residential per capita water use below specified amount in Table 1.
- Reduce water loss by the repair and replacement of water meters.
- Encourage water conservation through water rate structure.
- Expand the public education program through public awareness and responsible public behavior.
- Implement metering of several unmetered City facilities
- Implement water loss audit finding – See Section 4-5
- Partner with TRWD for sprinkler system evaluation program

These aggressive goals for water conservation command that the City continue its ongoing programs and coordinate with area cities to develop broad reaching education and public involvement programs.

## **Section 4: Water Conservation Methods**

The City of Crowley Conservation Plan includes the following water conservation methods:

1. Public information and education;
2. Plumbing Code;
3. Conservation oriented rates;
4. Universal metering, meter testing, repair and replacement;
5. Leak detection and repair;
6. Valve exercising program;
7. Water conserving landscaping;
8. Landscape Water Management;
9. Plumbing retrofit program;
10. Water use auditing;
11. Water wasting; and
12. Periodic review and plan updates

Each method is presented and described in the following subsections.

### **4.1 Public Information and Education**

The most important part of any City's conservation program is public education. The City of Crowley's Public Works Department works to develop education materials for distribution to citizens. The Public Works Department works to educate the public through:

- City Website
- Information Booths at Public Events
- Social Media
- Water Bill Inserts
- Brochures made available at City Facilities

An excellent means to provide information to citizens is the City's website. The Water Department strives to keep updated information on the website including water conservation programs and status of the Water Department's Emergency Water Management Plan.

### **4.2 Plumbing Code**

Chapter 14, Article VIII of the City Code requires water efficient plumbing fixtures as required by State Law. This Code allows for the implementation on a uniform basis of a system to prevent high water use fixtures from being installed in new residences or other structures.

### 4.3 Conservation Oriented Rates

Conservation of water is considered each year when the water rates are set by City Council.

Each customer is first charged a flat base rate and usage charges are then assessed according to customer consumption as shown on the table below.

Water Rates	Amount
a. Monthly rates inside the city limits:	
Minimum base rate	\$16.99
Up to 2,000 gallons, per 1,000 gallons	\$1.75
3,000—10,000 gallons, per 1,000 gallons	\$4.92
11,000—25,000 gallons, per 1,000 gallons	\$5.46
26,000—75,000 gallons, per 1,000 gallons	\$5.99
All over 76,000 gallons, per 1,000 gallons	\$6.26
b. Monthly rates outside the city limits:	
Minimum base rate (includes \$4.00 administrative fee)	\$20.99
Up to 2,000 gallons, per 1,000 gallons	\$1.75
3,000—10,000 gallons, per 1,000 gallons	\$4.92
11,000—25,000 gallons, per 1,000 gallons	\$5.46
26,000—75,000 gallons, per 1,000 gallons	\$5.99
All over 76,000 gallons, per 1,000 gallons	\$6.26

### 4.4 Universal Metering, Meter Testing, Repair and Replacement

In 2018 the City of Crowley installed meters at several previously unmetered City facilities. Additionally, meters were installed at targeted hydrants used in the filling of city utility vehicles. The City now meters the majority of all treated water used, with the exception of some filling and flushing of new water mains and for free suppressions. This water use is estimated by reporting the length and size of main extensions monthly or, in case of free suppression, estimates of water volume by the Fire Department.

All meters will be maintained within acceptable operating accuracy range as defined by the manufacturer or AWWA Standard for meter accuracy, whichever is more stringent. Dead meters and meters that indicate reduced usage will be checked, field tested, and replaced when found to be out of manufacturer specifications or not meeting AWWA standards.



For past ten years the City of Crowley has purchased smart meters for all new meter installations for the purpose of water conservation and accuracy. In 2018 the City moved to the cellular Advanced Metering Infrastructure (AMI). The cellular AMI utilize an AMR reading system. The AMR reading system can capture real time meter readings and can identify leaks or other anomalies in water usage. The cellular AMI provides advanced metering analytics with proactive intelligence for optimal utility management. It also offers enhanced customer service features to encourage customer engagement.

All meters 3 inches and above are tested annually. Smaller meters are repaired or replaced at least every ten years as needed. These programs, along with leak detection, repairs and the water audits, ensure that water used is metered within an accuracy of 5 percent.

#### **4.5 Leak Detection and Repair**

All meters installed in the past 10 years have electronic leak detection devices; and all water leaks reported to the Water Department are promptly repaired. Additionally, city crews and personnel are directed to look for and report evidence of leaks in the water distribution system.

In December 2018 the City contracted Matchpoint Water Asset Management to perform leak detection services for the City's approximate 76-miles water distribution system. The summary report has been submitted to the City and the Water Maintenance staff is in the process of making the needed repairs and improvements. Once repairs are completed, the city will save approximately 27,151,160 gallons per year.

#### **4.6 Valve Exercising Program**

Because large water valves may leak and large amounts of water may be lost through these connections, the Water Department has an active valve exercising program. A record of each valve will be kept in the Water Department with documentation of proper operation and record of valve defects. The goal is to exercise all valves on a cycle of once a year.

#### **4.7 Water-Conserving Landscaping**

The Water Department encourages the planting of water efficient landscaping. Information regarding the benefits of native gardens, which require less water is available on the City's website. The Crowley Public Library provides brochures year round on topics such as native gardening, rainwater harvesting, and Texas watering guides. Additionally, the Library periodically host free informational seminars open to the public.

## **4.8 Landscape Water Management**

The City of Crowley enforces a mandatory twice per week water schedule similar to Stage 1 of its drought plan. The schedule is included as Table 4.8-1. The City also prohibits the use of watering with any hose-end sprinkler or irrigation system between the hours of 10:00 a.m. and 6:00 p.m. seven days per week.

**TABLE 4.8-1: TWICE PER WEEK WATERING SCHEDULE**

<b>Monday</b>	<b>Tuesday</b>	<b>Wednesday</b>	<b>Thursday</b>	<b>Friday</b>	<b>Saturday</b>	<b>Sunday</b>
No outdoor watering	Non-residential	Residential addresses ending in (0, 2, 4, 6, 8)	Residential addresses ending in (1, 3, 5, 7, 9)	Non-residential	Residential addresses ending in (0, 2, 4, 6, 8)	Residential addresses ending in (1, 3, 5, 7, 9)

The City has recently partnered with the Tarrant Regional Water District (TRWD) to offer the citizens of Crowley free sprinkler system evaluations. Information will be made available on the City's website.

## **4.9 Plumbing Retrofit**

Although the Water Department does not have an official plumbing retrofit program, an educational effort is made to teach consumers about the possibilities and benefits of retrofitting older homes with new, more water efficient plumbing fixtures. Included in this education effort is an emphasis on water saving appliances which can save large amounts of water over the course of the year, allowing the purchaser to recoup the cost of new appliances.

## **4.10 Water Use Auditing**

The Water Department regularly compares purchases water totals to metered and known use totals. This program aids in the identification of potential water waste situations and acts as a backup to the other programs.

## **4.11 Water Wasting**

The City of Crowley has an existing Ordinance which prohibits wasting of water. The Ordinance prohibits permitting or causing water to flow, spray, or otherwise move or be discharged from the premises to or upon any street, alley or other public right-of-way, ditch or drain, and failing to repair a leak in a private plumbing system or in an irrigation system within five working days of the discovery or notification of the same.



#### **4.12 Records Management System**

The City of Crowley has an effective records management system in place, as required by TAC Title 30, Part 1, Chapter 288, Subchapter A, Rule 288.2 (a)(2)(B). The City maintains comprehensive records of water purchased, sold, lost and used for internal operations. The records management system allows for the separation of water sales and uses into residential, multi-family, commercial, institutional and industrial categories. This information will be included in an annual water conservation report.

#### **4.13 Periodic Review and Plan Updates**

TCEQ requires that water conservation plans be reviewed and, if necessary, updated every five years to coincide with the regional water planning process. This Water Conservation Plan will be updated as required by TCEQ and, in addition, will be continually reassessed for opportunities to improve water efficiency and conservation based on new or updated information.

**2019 – TABLE 1  
WATER CONSERVATION PLAN  
5- AND 10-YR GOALS FOR WATER SAVINGS**

	Historic 5yr Average	5yr Goal for year 2024	10yr Goal for year 2029
Total GPCD <sup>1</sup>	112	90	72
Residential GPCD <sup>1</sup>	74	59	47
Water Loss (GPCD) <sup>1</sup>	17	14	11
Water Loss (Percentage)	15.00%	15.56%	15.28%

<sup>1</sup>GPCD – Gallons per capita per day