

# **ATTACHMENT “A”**



**City of Keller, Texas  
P.O. Box 770  
Keller, Texas 76244**

## **DRAFT Water Conservation Plan**

Developed to comply with the requirements of  
The Texas Commission on Environmental Quality  
and The Texas Water Development Board

**PWS# 2200096**

**Adopted by Ordinance No. XXXX:**

**Effective  
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## TABLE OF CONTENTS

1.0	INTRODUCTION AND OBJECTIVES.....	1-1
2.0	TEXAS COMMISSION ON ENVIRONMENTAL QUALITY RULES.....	2-1
2.1	TCEQ Rules Governing Conservation Plans .....	2-1
2.2	Guidance and Methodology for Reporting on Water Conservation and Water Use.....	2-2
3.0	DESCRIPTION OF SERVICE AREA AND UTILITY PROFILE .....	3-1
4.0	SPECIFICATION OF WATER CONSERVATION GOALS.....	4-1
5.0	METERING, WATER USE RECORDS, CONTROL OF WATER LOSSES, AND LEAK DETECTION AND REPAIR .....	5-1
5.1	Accurate Metering of Treated Water Deliveries from Fort Worth.....	5-1
5.2	Metering of Customer and Public Uses and Meter Testing, Repair, and Replacement .....	5-1
5.3	Record Management System .....	5-4
5.4	Determination and Control of Water Loss.....	5-4
5.5	Leak Detection and Repair .....	5-5
5.6	Monitoring of Effectiveness and Efficiency .....	5-6
6.0	OTHER REQUIRED CONSERVATION MEASURES .....	6-1
6.1	Public Education and Information .....	6-1
6.2	Water Rate Structure.....	6-1
6.3	Reservoir System Operation.....	6-2
6.4	Implementation and Enforcement.....	6-3
6.5	Coordination with Regional Water Planning Groups.....	6-3
7.0	ADDITIONAL CONSERVATION EFFORTS.....	7-1
7.1	Reuse and Recycling of Wastewater .....	7-1
7.2	Water-Conserving Plumbing Fixtures.....	7-1
7.3	Landscape Water Management.....	7-1
7.4	Requirement for Water Conservation Plans by Wholesale Customers .....	7-2
8.0	ADOPTION OF WATER CONSERVATION PLAN, PERIODIC REVIEW AND UPDATE OF PLAN.....	8-1

## LIST OF TABLES

Table 4-1: Water Conservation Plan 5 and 10 Year Goals.....	4-2
Table 5-1: Meter Type Distribution .....	5-4
Table 5-2: Water Loss 5 and 10 Year Goals .....	5-5
Table 6-1: Residential Water Rates.....	6-2
Table 6-2: Non-Residential Water Rates .....	6-2
Table 7-1: Twice per Week Watering Schedule .....	7-2

## LIST OF FIGURES

Figure 3-1: Keller’s Water Service Area .....	3-2
Figure 3-2: Tarrant Regional Water District Supply Sources.....	3-3
Figure 4-1: Historic Total GPCD and Goals .....	4-2

## APPENDICES

<b>APPENDIX A</b>	List of References
<b>APPENDIX B</b>	Texas Commission on Environmental Quality Rules on Water Conservation Plans for Municipal and Wholesale Water Providers <ul style="list-style-type: none"> <li>• Texas Administrative Code Title 30, Part 1, Chapter 288, Subchapter A, Rule §288.1 – Definitions (Page B-1)</li> <li>• Texas Administrative Code Title 30, Part 1, Chapter 288, Subchapter A, Rule §288.2 – Water Conservation Plans for Municipal Uses by Public Water Suppliers (Page B-5)</li> </ul>
<b>APPENDIX C</b>	City of Keller Water Utility Profile Based on TCEQ Format
<b>APPENDIX D</b>	Letters to Region C Water Planning Group, TRWD and Fort Worth
<b>APPENDIX E</b>	Illegal Water Connections and Theft of Water Ordinance
<b>APPENDIX F</b>	Ordinance Adopting <i>Water Conservation Plan</i>

## **1.0 INTRODUCTION AND OBJECTIVES**

Water supply has always been a key issue in the development of Texas. In recent years, the increasing population and economic development of North Central Texas have led to growing demands for water supplies. At the same time, local and less expensive sources of water supply are largely already developed. Additional supplies to meet future demands will be expensive and difficult to secure. Drought conditions in recent years have highlighted the importance of the efficient use of our existing supplies to make them last as long as possible. Extending current supplies will delay the need for new supplies, minimize the environmental impacts associated with developing new supplies, and delay the high cost of additional water supply development.

Recognizing the need for efficient use of existing water supplies, the Texas Commission on Environmental Quality (TCEQ) has developed guidelines and requirements governing the development of Water Conservation Plans.<sup>1</sup> The TCEQ guidelines and requirements are included in Appendix B. The City of Keller (Keller) has developed this *Water Conservation Plan* in accordance with TCEQ guidelines and requirements. Since Keller is a wholesale water customer of the City of Fort Worth (Fort Worth), the *Water Conservation Plan*<sup>2</sup> for Fort Worth was consulted during the development of this Plan to ensure consistency. This *Water Conservation Plan* replaces the previous plan dated June 2014.

The objectives of this *Water Conservation Plan* are as follows:

- To reduce water consumption from the levels that would prevail without conservation efforts
- To reduce the loss and waste of water
- To improve efficiency in the use of water
- To encourage efficient outdoor water use
- To document the level of recycling and reuse in the water supply
- To extend the life of current water supplies by reducing the rate of growth in demand

<sup>1</sup> Superscripted numbers match references listed in Appendix A

## **2.0 TEXAS COMMISSION ON ENVIRONMENTAL QUALITY RULES**

### **2.1 TCEQ RULES GOVERNING CONSERVATION PLANS**

The TCEQ rules governing development of Water Conservation Plans for public water suppliers are contained in Title 30, Part 1, Chapter 288, Subchapter A, Rule 288.2 of the Texas Administrative Code, which is included in Appendix B. For the purpose of these rules, a Water Conservation Plan is defined as “A strategy or combination of strategies for reducing the volume of water withdrawn from a water supply source, for reducing the loss or waste of water, for maintaining or improving the efficiency in the use of water, for increasing the recycling and reuse of water, and for preventing the pollution of water.” The elements in the TCEQ water conservation rules covered in this Plan are listed below.

#### Minimum Conservation Plan Requirements

The minimum requirements in the Texas Administrative Code for Water Conservation Plans for Public Water Suppliers are covered in this report as follows:

- 288.2(a)(1)(A) – Utility Profile – Section 1.0 and Appendix C
- 288.2(a)(1)(B) – Record Management System – Section 5.3
- 288.2(a)(1)(C) – Specific, Quantified Goals – Section 4.0
- 288.2(a)(1)(D) – Accurate Metering – Section 5.1
- 288.2(a)(1)(E) – Universal Metering – Section 5.2
- 288.2(a)(1)(F) – Determination and Control of Water Loss – Section 5.4
- 288.2(a)(1)(G) – Public Education and Information Program – Section 6.1
- 288.2(a)(1)(H) – Non-Promotional Water Rate Structure – Section 6.2
- 288.2(a)(1)(I) – Reservoir System Operation Plan – Section 6.3
- 288.2(a)(1)(J) – Means of Implementation and Enforcement – Section 6.4
- 288.2(a)(1)(K) – Coordination with Regional Water Planning Groups – Section 6.5 and Appendix D
- 288.2(c) – Review and Update of Plan – Section 8.0

#### Additional Conservation Requirements (Population over 5,000)

The Texas Administrative Code includes additional requirements for Water Conservation Plans for drinking water supplies serving a population over 5,000:

- 288.2(a)(2)(A) – Leak Detection, Repair, and Water Loss Accounting – Section 5.5
- 288.2(a)(2)(B) – Requirement for Water Conservation Plans by Wholesale Customers – Section 7.4

#### Additional Conservation Strategies

The Texas Administrative Code lists additional conservation strategies, which may be adopted by suppliers, but are not required. Additional strategies adopted by Keller include the following:

- 288.2(a)(3)(A) – Conservation Oriented Water Rates – Section 6.2
- 288.2(a)(3)(B) – Ordinances, Plumbing Codes or Rules on Water-Conserving Fixtures – Section 7.2
- 288.2(a)(3)(D) – Reuse and Recycling of Wastewater – Section 7.1
- 288.2(a)(3)(F) – Considerations for Landscape Water Management Regulations – Section 7.3

## **2.2 GUIDANCE AND METHODOLOGY FOR REPORTING ON WATER CONSERVATION AND WATER USE**

In addition to TCEQ rules regarding water conservation, this Plan also incorporates elements of the *Guidance and Methodology for Reporting on Water Conservation and Water Use* developed by TWDB and TCEQ, in consultation with the Water Conservation Advisory Council (the “Guidance”).<sup>3</sup> The Guidance was developed in response to a charge by the 82<sup>nd</sup> Texas Legislature to develop water use and calculation methodology and guidance for preparation of water use reports and Water Conservation Plans in accordance with TCEQ rules. Keller has considered elements of the Guidance in preparation of this Plan.

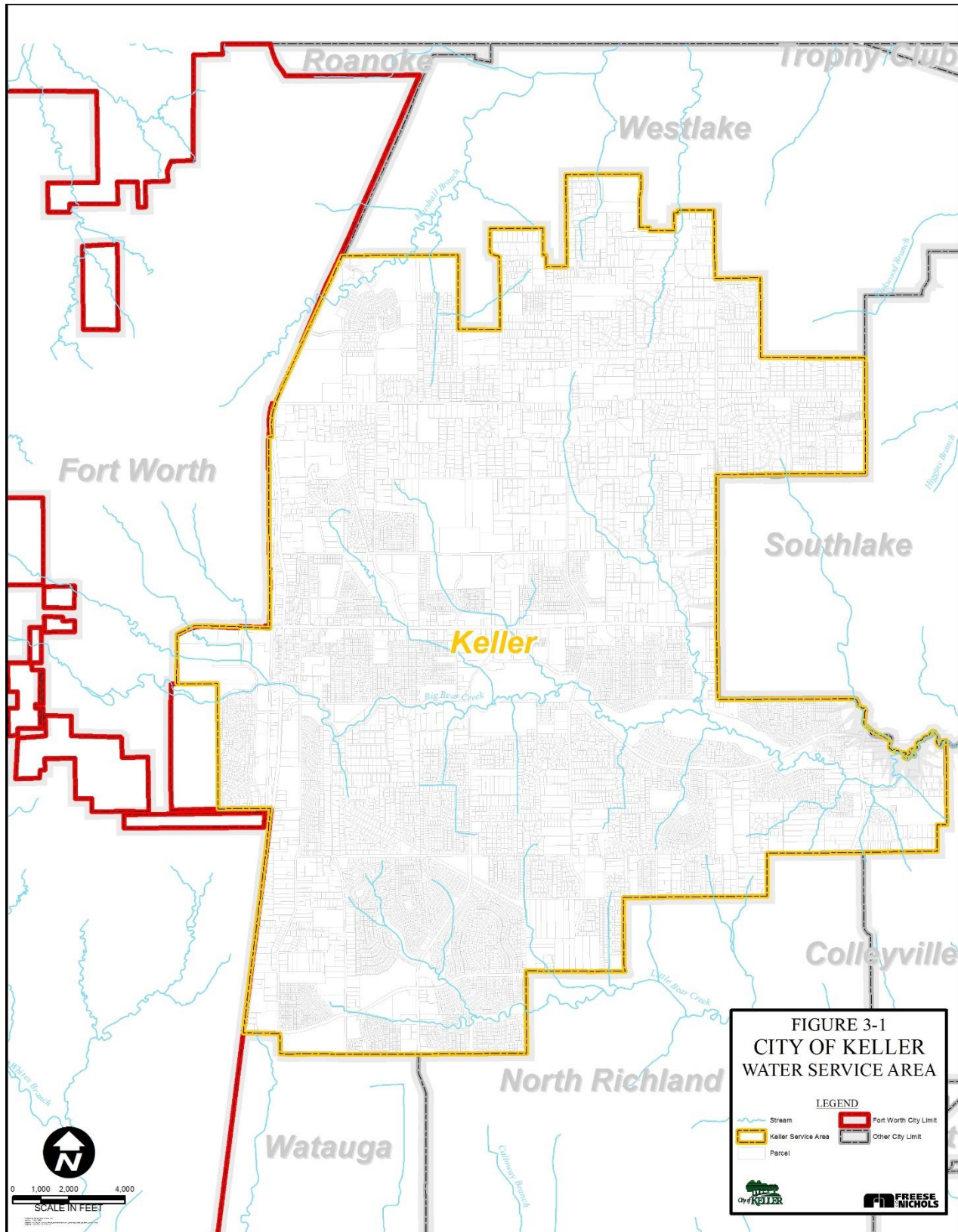
### **3.0 DESCRIPTION OF SERVICE AREA AND UTILITY PROFILE**

The City of Keller provided retail water service to approximately 45,000 people in 2017. In order to provide this water, Keller purchased an average of 246 million gallons of treated water from the City of Fort Worth per month in 2017. **Figure 3-1** shows the City of Keller service area in relation to the City of Fort Worth. The City of Fort Worth purchases raw water from TRWD which comes primarily from four major sources, as shown in **Figure 3-2**:

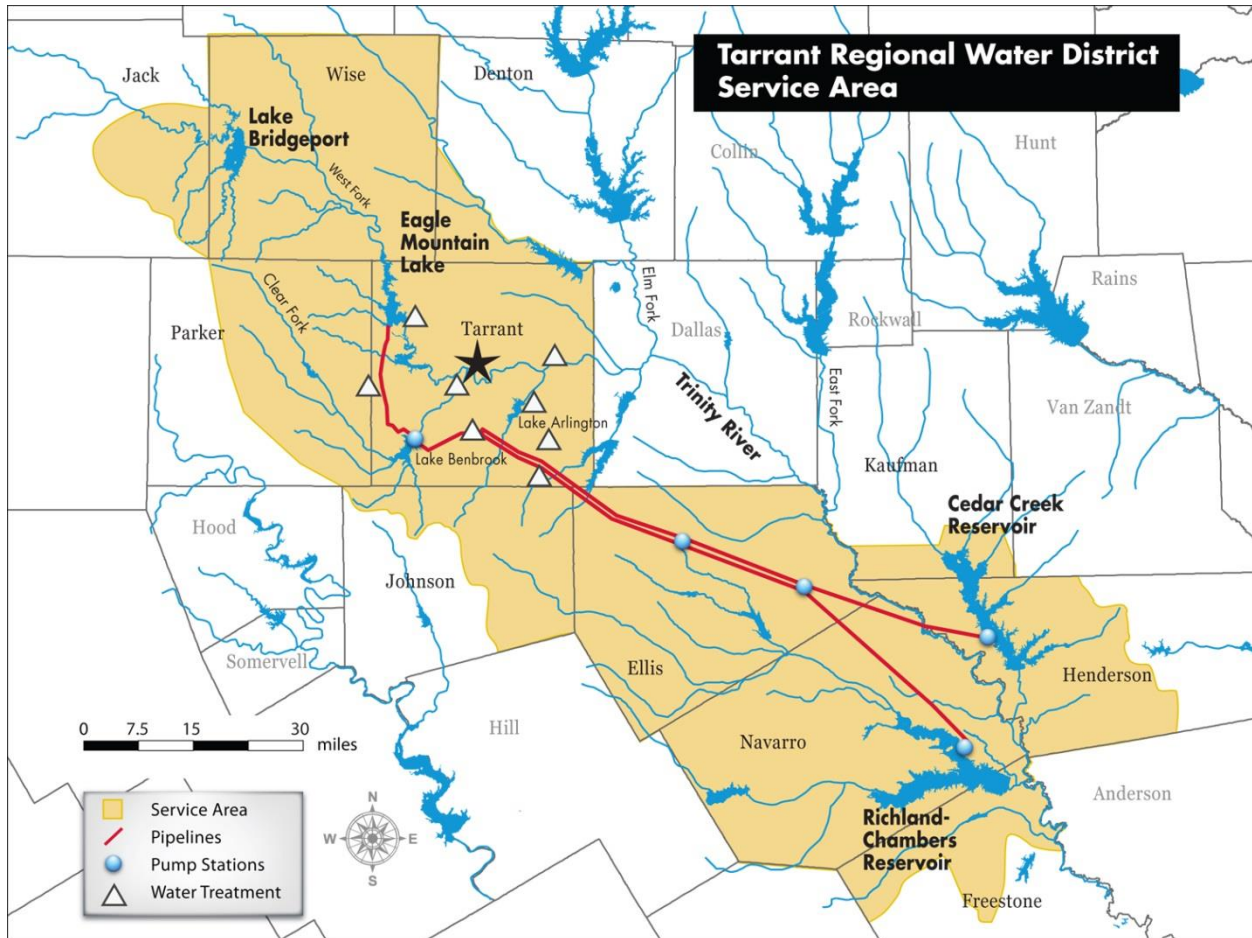
- The West Fork of Trinity River via Lake Bridgeport, Eagle Mountain Lake and Lake Worth
- The Clear Fork of the Trinity River via Lake Benbrook. (A pipeline connects Lake Benbrook to the Rolling Hills Water Treatment Plant to supplement supply to that plant. A pump station on the Clear Fork of the Trinity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

Keller has no water or wastewater treatment plants. Treated water is purchased from the City of Fort Worth, and Keller's wastewater is treated by the Trinity River Authority. Appendix C contains Keller's most recent water utility profile based on the format recommended by TCEQ for retail suppliers.

**FIGURE 3-1: KELLER'S WATER SERVICE AREA**



**FIGURE 3-2: TARRANT REGIONAL WATER DISTRICT SUPPLY SOURCES**



## 4.0 SPECIFICATION OF WATER CONSERVATION GOALS

TCEQ rules require the adoption of specific 5-year and 10-year 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 water use and residential per capita water use below the specified amount in gallons per capita per day, as shown in Table 4-1.
- Implement and maintain a program of universal metering and meter replacement and repair as discussed in Section 5.2.
- Maintain the level of water loss percentage in the system below 8 percent annually in 2014 and subsequent years, as discussed in Section 5.5.
- Raise public awareness of water conservation and encourage responsible public behavior by a public education and information program as discussed in Section 6.1.
- Increase efficient water usage and decrease waste in lawn irrigation by enforcement of landscape water management regulations as described in Section 7.3.
- Develop a system-specific strategy to conserve water during peak demands, thereby reducing the peak use.

In the previous (2014) Plan, total per capita use goals were 203 gpcd by 2018 and 200 gpcd by 2023 which Keller has already achieved. Due to recent wet conditions and the implementation of drought restrictions in the previous five years the five-year average may underestimate use during drier conditions. Thus a 10-year average (2008-2017) represents a range that captures wet and dry years and should be used as the baseline for goal development. As of 2017, Keller's ten-year average total per capita use was 197 gpcd. Keller has developed the 2024 and 2029 goals based on the plumbing code reductions outlined in the 2021 Region C Projections<sup>4</sup> and the expected savings from measures in this Plan. The current specific goals are outlined in **Table 4-1** and keep the same goal reduction trends as the 2014 Water Conservation Plan shown in **Figure 4-1**. These goals should be measured against a 5-year average per capita, although some (dry) years will see higher per capita usage than these 5- year average goals. A series of dry years may lead to an average exceeding the goal.

**TABLE 4-1: WATER CONSERVATION PLAN 5- AND 10-YEAR GOALS**

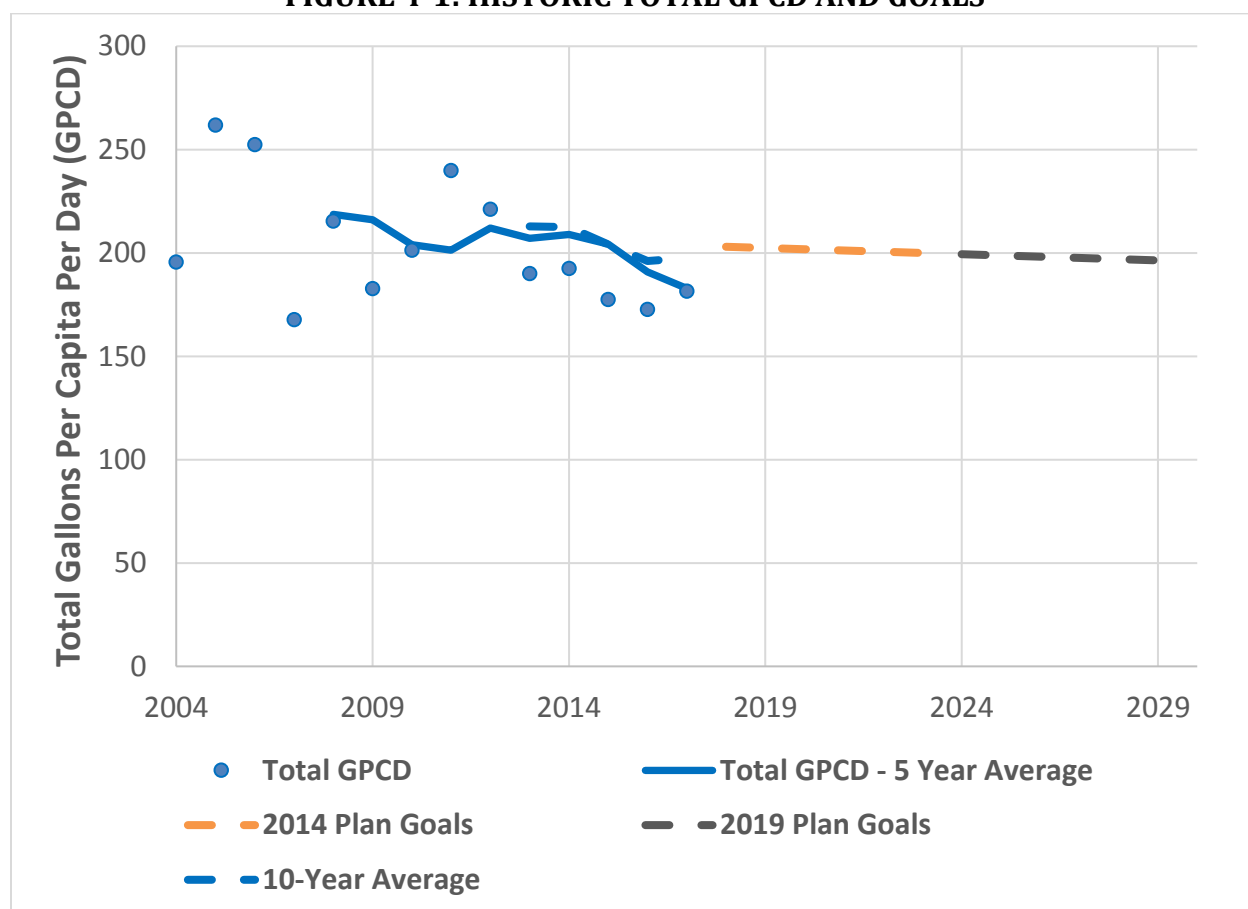
Description	Units	2008-2017 Average	2024	2029
Total GPCD <sup>a</sup>	GPCD	197	199	196
Residential GPCD <sup>b</sup>	GPCD	156	160	158
Water Loss GPCD <sup>c</sup>	GPCD	9	16	16
Water Loss Percentage	%	5%	8%	8%

a. Total GPCD = (Total Gallons in System ÷ Permanent Population) ÷ 365

b. Residential GPCD = (Gallons Used for Residential Use ÷ Residential Population) ÷ 365

c. Water Loss GPCD = (Total Water Loss ÷ Permanent Population) ÷ 365

d. Water Loss Percentage = (Total Water Loss ÷ Total Gallons in System) X 100; or (Water Loss GPCD ÷ Total GPCD) X 100

**FIGURE 4-1: HISTORIC TOTAL GPCD AND GOALS**

## **5.0 METERING, WATER USE RECORDS, CONTROL OF WATER LOSSES, AND LEAK DETECTION AND REPAIR**

One of the key elements in water conservation is careful tracking of water use and control of losses through illegal diversions and leaks. Careful metering of water deliveries and water use, detection and repair of leaks in the distribution system, and regular monitoring of water losses are important in controlling losses.

### **5.1 ACCURATE METERING OF TREATED WATER DELIVERIES FROM FORT WORTH**

Fort Worth supplies all of the water used by Keller and monitors all deliveries using meters with an accuracy of at least  $\pm 5$  percent. Fort Worth's meter testing, repair, and replacement program is based on American Water Works Association (AWWA) standards. Fort Worth has developed a meter exchange program to replace inaccurate meters.

### **5.2 METERING OF CUSTOMER AND PUBLIC USES AND METER TESTING, REPAIR, AND REPLACEMENT**

Keller meters all of its water uses, including retail sales and public and governmental users. Keller estimates the water used by the fire department for fire suppression and hydrant flushing based on the length of time the water flows and the water pressure.

Keller has initiated a program to test and calibrate all water meters that are two inches and larger in diameter on an annual basis. Smaller meters will be tested and calibrated when the water use patterns indicate a decline in water usage that cannot readily be explained.

In the year 2000, Keller began a water meter replacement program and has since replaced all of the water meters, including retail sales, public, and governmental in the system. Keller has completed this replacement program and all meters are less than ten years old. Keller has also installed a radio system to read water meters as the meter reader drives down the street (Automated Meter Reading, or AMR).

Water and wastewater utilities increasingly face challenges associated with population growth that cannot be offset by reduced per capita consumption, and aging infrastructure that will require significant investment. Advanced Metering Infrastructure (AMI) is one tool in the toolbox of a smart and effective utility which can serve to reduce per capita consumption and therefore delay the need for major capital expenses and rate adjustments, improve customer service, detect potential leaks, and streamline operational decision making and reduce operational costs.

## **Benefits of AMI**

An AMI metering system can bring numerous advantages to a water utility's capability to track water use and manage the operations of its water distribution system.

### Increase Distribution System Efficiency

The initial benefit in adopting an AMI metering system comes from the efficiency of the meters themselves and in the way, meters are read. AMI systems can transmit the meter data directly from the meter to the utility office, eliminating the need for some vehicles and freeing meter-reading staff for other duties. Smart meters register much lower flows (less than a gallon) than older meters, which tend to under-register flows as they age. The new meters operate with a long-life battery and do not need to be replaced as quickly as traditional meters.

In addition to increased accuracy, AMI also provides water use data in real time. Information from the meters can be gathered in hourly or 15-minute intervals in most cases, rather than on what is usually a monthly schedule. This gives the water utility the capability of locating leaks in the distribution system or at a customer's location and repairing them much more quickly, reducing the amount of water losses. In more advanced systems, utility staff can monitor the operation of meters, check valves and hydrants, with the result that utility staff can quickly spot reverse flows and remotely send repair or shutoff signals back to the meter. Smart metering systems also allow the water utility to monitor water pressure in various sections of the distribution system and make pressure adjustments quickly.

Communities can also use AMI for other water utility improvements. Tracking water use more efficiently can provide utility finance departments with water use data that allows better financial forecasting based upon changing water use patterns.

### Provide Cost Savings

First to be noticed is the reduced need for a large number of meter readers. Rather than lay off these workers, most utilities have moved them to other jobs, either in system maintenance or customer service. Most utilities can always improve system maintenance response, such as addressing water leaks in distribution lines; and customer service departments welcome additional help in responding to the incoming water use data on customer leaks and high usage.

The use of more efficient meters results in more accurate water use tracking. Most water utilities will see an increase in water rate revenues due to more accurate meter reads, ability to read previously

unregistered low flows, and a reduction in estimated meter readings. In addition, utilities will be able to more quickly pinpoint and respond to water leaks, identify illegal connections, and change out malfunctioning meters and valves. The resulting reduction in water losses will result in reduced pumping, distribution and treatment costs. Some indirect costs may also be reduced, such as those incurred when repairing streets and roads damaged by large water leaks.

#### Enhance Water Conservation Programs and Improve Customer Service

In addition to increasing the efficiency of a community's water distribution system, AMI systems can also help reduce water use by residential and commercial water users. There are numerous ways in which water utilities can use the new metering systems to increase communication with water users and assist them in making water efficiency improvements.

Water utilities with smart metering systems use them for demand management in two ways: for tracking customer water use in real time to identify high usage and water leaks; and to establish a more direct communication link between the utility staff and the customer in order to achieve water savings. Communities with AMI systems can use the gathered data to send customers high usage or leak alerts through email or by text message. Customer service departments can also use the data to respond to customer calls regarding high water bills. They can help the customer find the reason for the high usage, be it a leak or unusually high irrigation, by accessing the real-time water use data.

Those with AMI systems can use the smart meters' two-way communication capability to send leak or high usage alerts via email, establish an online portal allowing customers to view their water use as often as they wish on their computers, or send customers water usage reports that compare their water use to a neighborhood average. Most utilities that have implemented these services have reported improvements in customer relations, as well as reductions in water use. Over time, water users recognize the value of AMI in helping them manage their water use more effectively. These services can be especially beneficial in reducing water use in the commercial, industrial and institutional sector, as these customers are usually the largest water users; and facility managers are always looking for ways to manage their properties more efficiently.

#### **Challenges to AMI Implementation**

While the benefits of a smart metering system bring many advantages to the ability of a water utility to manage its operations more efficiently, there are some challenges to successful implementation. Utility managers who have implemented these systems are pleased with the improvements they bring but advise

those beginning to consider AMI to take the time needed to plan this transition thoughtfully. AMI can be costly to implement; the data can be difficult to manage, and the customer engagement and rollout can be problematic if not handled correctly. Before implementing AMI, a utility should weigh the benefits and costs to determine if such a system is appropriate.

### 5.3 RECORD MANAGEMENT SYSTEM

As required by Texas Administrative Code Title 30, Part 1, Chapter 288, Subchapter A, Rule 288.2 (a)(1)(B), Keller's record management system allows for the separation of water sales and uses into residential and non-residential classes. The non-residential water use can be tracked by the use of codes into the required categories of commercial, public/institutional, and industrial use categories. Keller's record management system allows water sales and uses to be tracked as separate categories, and includes water sales to multi-family housing in the residential sales category. This information is included in the TCEQ required Water Conservation Implementation Report, as described in Section 6.4. **Table 5-1** shows the number of meters by customer type for 2017.

**TABLE 5-1: METER TYPE DISTRIBUTION**

<b>Meter Size</b>	<b>Total Number</b>
Residential Single Family	14,473
Residential Multi Family	42*
Commercial	990
Institutional	105
<b>Total</b>	<b>15,610</b>

\*The 42 meters serve 1,276 multi-family units

### 5.4 DETERMINATION AND CONTROL OF WATER LOSS

Total water loss is the difference between water delivered from Fort Worth and authorized consumption by Keller's customers. Authorized consumption includes billed metered uses, unbilled metered uses, and unbilled unmetered uses such as firefighting and releases for flushing of lines. Water losses include two categories:

- Apparent losses such as inaccuracies in customer meters. (Customer meters tend to run more slowly as they age and under-report actual use). Unauthorized consumption due to illegal connections and theft. (Ordinance to protect against losses is included in Appendix E).
- Real Losses due to water main breaks and leaks in the water distribution system and unreported losses.

Measures to control water losses are part of the routine operations of the City of Keller. Maintenance crews and personnel are asked to look for and report evidence of leaks in the water distribution system. The leak detection and repair program is described in Section 5.5 below. Meter readers are asked to watch for and report signs of illegal connections, so they can be addressed quickly. Water losses are included in the Utility Profile in Appendix C. In the previous Plan, water losses averaged 4 percent of the total water used in Keller. As of 2017, the ten-year average water loss has remained at approximately 5 percent of the total water used in Keller. The goals for water loss are shown in **Table 5-2**.

**TABLE 5-2: WATER LOSS 5- AND 10-YEAR GOALS**

Description	Units	2013-2017 Average	2024	2029
Water Loss GPCD <sup>a</sup>	GPCD	9	16	16
Water Loss Percentage <sup>b</sup>	%	5%	8%	9%

a. Water Loss GPCD = (Total Water Loss ÷ Permanent Population) ÷ 365

b. Water Loss Percentage = (Total Water Loss ÷ Total Gallons in System) x 100; or (Water Loss GPCD ÷ Total GPCD) x 100

## 5.5 LEAK DETECTION AND REPAIR

The City of Keller will begin an active leak detection and repair program as part of the implementation of this Plan. Components of the active leak detection and repair program will include:

- City crews and personnel are asked to continue looking for and reporting evidence of leaks in the water distribution system during their normal duties.
- Keller has a 24 hour hotline where main breaks and leaks can be reported.
- Keller will also invest in permanent leak noise detectors and loggers for critical areas in their system such as large supply mains and valves.
- The City has implemented a work order system to track all of the identified leaks, repairs and estimated real losses.
- Based on the work order system, the City will build a database tied to GIS of areas within the water distribution system in which numerous leaks and line breaks are reported or detected for replacement as funds become available.
- Keller has set aside an annual budget amount dedicated for line replacement for areas identified in the database.

The City in the past has made an adjustment for water leaks within their billing system if the use is three times greater than the average monthly use and the customer provided documentation that the leak has been repaired in a timely manner.

## **5.6 MONITORING OF EFFECTIVENESS AND EFFICIENCY**

The City of Keller will maintain a database of information regarding water sales and use, water losses, and leak detection and repair activities to determine the effectiveness of the programs.

## 6.0 OTHER REQUIRED CONSERVATION MEASURES

### 6.1 PUBLIC EDUCATION AND INFORMATION

The continuing public education and information campaign on water conservation includes the following elements:

- Insert water conservation information with utility bills. Inserts will include material developed by the City of Keller and material obtained from the TWDB, the TCEQ, and other sources.
- Encourage local media coverage of water conservation issues and the importance of water conservation, including local cable television, radio, and newspaper.
- Notify local organizations, schools, and civic groups that City staff are available to make presentations on the importance of water conservation and ways to save water.
- Promote the *Texas Smartscape* website ([www.txsmartscape.com](http://www.txsmartscape.com)) and provide water conservation brochures and other water conservation materials available to the public at City Hall and other public places.
- Make information on water conservation available on the City's website ([www.cityofkeller.com](http://www.cityofkeller.com)), and include links to the *Texas Smartscape* website, and links to information on water conservation on the TWDB and TCEQ websites.
- Participate in the education programs being used by Fort Worth and the Tarrant Regional Water District for students and the public ([www.savetarrantwater.com](http://www.savetarrantwater.com)).
- Provide a public feedback comment window on the City's water conservation website ([cityofkeller.com](http://cityofkeller.com)).
- Participate in the TRWD interactive weather station program through information and a link on the City's website ([www.cityofkeller.com](http://www.cityofkeller.com)).

### 6.2 WATER RATE STRUCTURE

The City of Keller applies an increasing block water rate structure that is intended to encourage water conservation and discourage excessive use and waste of water. The water rate structure is broken down into residential rates and non-residential rates, and is provided in **Table 6-1** and **Table 6-2**. Both residential and non-residential customers are charged a minimum water rate of \$21.17 per month for a standard sized meter. The rates shown in the tables below were effective as of December 1, 2018 and are subject

to change as the City continues to refine its rate structures to improve the impact on water conservation and manage the cost of service most effectively.

**TABLE 6-1: RESIDENTIAL WATER RATES**

<b>Volume (gal/month)</b>	<b>Rate (\$/1,000 gal)</b>
0-2,000	3.42
2,001 – 10,000	4.57
10,001 – 20,000	4.96
20,001 – 25,000	5.50
25,001 – 40,000	6.88
> 40,000	7.42

**TABLE 6-2: NON-RESIDENTIAL WATER RATES**

<b>Volume (gal)</b>	<b>Rate (\$/1,000 gal)</b>
0-2,000	3.42
2,001 – 10,000	4.57
10,001 – 20,000	5.67
20,001 – 25,000	6.45
25,001 – 40,000	6.88
> 40,000	7.42

### 6.3 RESERVOIR SYSTEM OPERATION

Keller purchases treated water from the City of Fort Worth who in turn purchases raw water from TRWD. Thus, Keller does not have surface water supplies for which to implement a reservoir system operation plan. TRWD's permits allow for coordinated operation of its reservoirs.

The TRWD operates its system based on District operating policies, contractual agreements and permit requirements. TRWD is responsible for operation of their reservoir system which consists of seven major reservoirs – Lake Bridgeport, Eagle Mountain Lake, Lake Worth, Cedar Creek Reservoir, Richland-Chambers Reservoir, Lake Arlington and Lake Benbrook. TRWD's reservoir system operation plan seeks to maximize efficiency of water withdrawals within the constraints of existing water rights. Other priorities include maintaining water quality and minimizing potential impacts on recreational users, fish, and wildlife. Each reservoir is operated on a policy of flood release above the conservation elevation. For more information regarding TRWD's Reservoir System Operation refer to TRWD's Water Conservation Plan<sup>5</sup>.

## **6.4 IMPLEMENTATION AND ENFORCEMENT**

The City of Keller completes the TCEQ required *Water Conservation Implementation Report* by May 1 of each year. The report includes various water conservation strategies that have been implemented, including the date of implementation. Additionally, the report includes progress made on the five and ten year per capita water use goals from this Plan. If the goals are not being met, Keller must document the reasons why. The amount of water saved is also documented in this report.

Appendix E includes a copy of the ordinance related to illegal connections and water theft. Appendix F contains a copy of the ordinance adopted by the City Council regarding this *Water Conservation Plan*. The ordinance designates responsible officials to implement and enforce the *Water Conservation Plan*.

## **6.5 COORDINATION WITH REGIONAL WATER PLANNING GROUPS**

The service area of the City of Keller is located within the Region C Water Planning Group and the Tarrant Regional Water District, and Keller will provide a copy of this *Water Conservation Plan* to both groups. Appendix D includes copies of the letters sent to the Chair of the Region C Water Planning Group, the General Manager of TRWD, and the Water Director of Fort Worth with copies of the Plan.

## **7.0 ADDITIONAL CONSERVATION EFFORTS**

### **7.1 REUSE AND RECYCLING OF WASTEWATER**

The City of Keller does not own and operate its own wastewater treatment plant. Keller's wastewater is treated by the Trinity River Authority.

TRWD has a Texas water right allowing the diversion of return flows of treated wastewater from the Trinity River. The water right allows for water to be pumped from the river into constructed wetlands for treatment, and subsequently pumped into Richland-Chambers Reservoir and Cedar Creek Reservoir. The wetlands project will ultimately provide 115,500 acre-feet per year for TRWD, of which 10,000 acre-feet per year can be supplied from existing facilities. A portion of this indirect reuse will be provided to the City of Keller as treated water supply.

### **7.2 WATER-CONSERVING PLUMBING FIXTURES**

The City of Keller adopted the International Plumbing Code, 2015 Edition with modifications in Chapter 14 of the City of Keller Code of Ordinances. The Texas Health and Safety Code, Title 5, Subtitle B, Chapter 372 effective January 1, 2014, encourages water conservation through the requirement that all toilets sold, offered for sale or distributed must be a dual flush toilet that may not exceed 1.28 gallons per flush on average or for one full flush. The projected demands for Keller that have been adopted for the *2021 Region C Water Plan*<sup>4</sup> accounts for the new plumbing code requirement.

### **7.3 LANDSCAPE WATER MANAGEMENT**

Keller has an existing landscape and irrigation ordinance which prohibits wasting water. This ordinance prohibits watering between 10 a.m. and 6 p.m. year round. In addition, the irrigation ordinance requires that only licensed irrigators alter existing or install new irrigation systems within Keller. Keller has adopted ordinances to require rain and freeze sensors on new irrigation systems and that those sensors be properly functioning.

Keller has utilized Tarrant Regional Water District's Residential Sprinkler System Evaluation Program. This program makes recognized industry professionals available to Keller residents at no cost, consists of a comprehensive look at their irrigation system and controller, and provides a valuable, detailed report with recommended changes to help increase efficiency and reduce water waste. Between October 2017 and September 2018, 68 Keller residents took advantage of the program.

Keller, as a wholesale customer of the City of Fort Worth, adopted a year-round no more than twice per week watering schedule on June 17, 2014. Keller amended the landscape and irrigation ordinance to include a mandatory twice per week watering schedule similar to Stage 1 of its drought plan. The schedule is included as **Table 7-1**. Preliminary analysis of alternative watering schedules was evaluated as part of this update, but no changes to the schedule were made for this Plan.

**TABLE 7-1: 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)

#### **7.4 REQUIREMENT FOR WATER CONSERVATION PLANS BY WHOLESALE CUSTOMERS**

The City of Keller does not provide wholesale water to any customer. The requirement associated with wholesale water contracts as stated in Title 30, Part 1, Chapter 288, Subchapter A, Rule 288.2 of the Texas Administrative Code does not apply to any of Keller's Contracts.

## **8.0 ADOPTION OF WATER CONSERVATION PLAN, PERIODIC REVIEW AND UPDATE OF PLAN**

Opportunity for public comment on the Plan was provided at a City of Keller City Council meeting on April XX, 2019. Appendices E and F contain copies of the ordinances related to illegal connections and water theft, as well as the ordinance adopting this Plan. Appendix C contains the adopted water utility profile for Keller.

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.

***Appendix A***  
***List of References***

## **APPENDIX A**

### **LIST OF REFERENCES**

1. Title 30 of the Texas Administrative Code, Part 1, Chapter 288, Subchapter A, Rules 288.1 and 288.2, downloaded from  
[http://texreg.sos.state.tx.us/public/readtac\\$ext.ViewTAC?tac\\_view=4&ti=30&pt=1&ch=288](http://texreg.sos.state.tx.us/public/readtac$ext.ViewTAC?tac_view=4&ti=30&pt=1&ch=288), December 2018.
2. City of Fort Worth, “Water Conservation Plan”, prepared by Freese and Nichols, Inc., April 2019.
3. Texas Water Development Board, Texas Commission on Environmental Quality, Water Conservation Advisory Council. “Guidance and Methodology for Reporting on Water Conservation and Water Use”, December 2012
4. Freese and Nichols, 2021 Region C Water Plan Demand Projections, adopted by the Texas Water Development Board.
5. Tarrant Regional Water District, “Water Conservation and Drought Contingency Plan”, prepared by the Tarrant Regional Water District, April 2019

## ***Appendix B***

### ***Texas Commission of Environmental Quality Rules***

## APPENDIX B

### TEXAS COMMISSION OF ENVIRONMENTAL QUALITY RULES ON MUNICIPAL WATER CONSERVATION AND DROUGHT CONTINGENCY PLANS

#### TITLE 30 ENVIRONMENTAL QUALITY

#### PART 1 TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

#### CHAPTER 288 WATER CONSERVATION PLANS, DROUGHT CONTINGENCY PLANS, GUIDELINES AND REQUIREMENTS

#### SUBCHAPTER A WATER CONSERVATION PLANS

#### **RULE §288.1 Definitions**

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The following words and terms, when used in this chapter, shall have the following meanings, unless the context clearly indicates otherwise.

(1) Agricultural or Agriculture--Any of the following activities:

(A) cultivating the soil to produce crops for human food, animal feed, or planting seed or for the production of fibers;

(B) the practice of floriculture, viticulture, silviculture, and horticulture, including the cultivation of plants in containers or non-soil media by a nursery grower;

(C) raising, feeding, or keeping animals for breeding purposes or for the production of food or fiber, leather, pelts, or other tangible products having a commercial value;

(D) raising or keeping equine animals;

(E) wildlife management; and

(F) planting cover crops, including cover crops cultivated for transplantation, or leaving land idle for the purpose of participating in any governmental program or normal crop or livestock rotation procedure.

(2) Agricultural use--Any use or activity involving agriculture, including irrigation.

(3) Best management practices--Voluntary efficiency measures that save a quantifiable amount of water, either directly or indirectly, and that can be implemented within a specific time frame.

(4) 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.

(5) Commercial use--The use of water by a place of business, such as a hotel, restaurant, or office building. This does not include multi-family residences or agricultural, industrial, or institutional users.

(6) Drought contingency plan--A strategy or combination of strategies for temporary supply and demand management responses to temporary and potentially recurring water supply

shortages and other water supply emergencies. A drought contingency plan may be a separate document identified as such or may be contained within another water management document(s).

(7) Industrial use--The use of water in processes designed to convert materials of a lower order of value into forms having greater usability and commercial value, and the development of power by means other than hydroelectric, but does not include agricultural use.

(8) Institutional use--The use of water by an establishment dedicated to public service, such as a school, university, church, hospital, nursing home, prison, or government facility. All facilities dedicated to public service are considered institutional regardless of ownership.

(9) Irrigation--The agricultural use of water for the irrigation of crops, trees, and pastureland, including, but not limited to, golf courses and parks which do not receive water from a public water supplier.

(10) Irrigation water use efficiency--The percentage of that amount of irrigation water which is beneficially used by agriculture crops or other vegetation relative to the amount of water diverted from the source(s) of supply. Beneficial uses of water for irrigation purposes include, but are not limited to, evapotranspiration needs for vegetative maintenance and growth, salinity management, and leaching requirements associated with irrigation.

(11) Mining use--The use of water for mining processes including hydraulic use, drilling, washing sand and gravel, and oil field re-pressuring.

(12) Municipal use--The use of potable water provided by a public water supplier as well as the use of sewage effluent for residential, commercial, industrial, agricultural, institutional, and wholesale uses.

(13) Nursery grower--A person engaged in the practice of floriculture, viticulture, silviculture, and horticulture, including the cultivation of plants in containers or nonsoil media, who grows more than 50% of the products that the person either sells or leases, regardless of the variety sold, leased, or grown. For the purpose of this definition, grow means the actual cultivation or propagation of the product beyond the mere holding or maintaining of the item prior to sale or lease, and typically includes activities associated with the production or multiplying of stock such as the development of new plants from cuttings, grafts, plugs, or seedlings.

(14) Pollution--The alteration of the physical, thermal, chemical, or biological quality of, or the contamination of, any water in the state that renders the water harmful, detrimental, or injurious to humans, animal life, vegetation, or property, or to the public health, safety, or welfare, or impairs the usefulness or the public enjoyment of the water for any lawful or reasonable purpose.

(15) Public water supplier--An individual or entity that supplies water to the public for human consumption.

(16) Regional water planning group--A group established by the Texas Water Development Board to prepare a regional water plan under Texas Water Code, §16.053.

(17) Residential gallons per capita per day--The total gallons sold for residential use by a public water supplier divided by the residential population served and then divided by the number of days in the year.

(18) Residential use--The use of water that is billed to single and multi-family residences, which applies to indoor and outdoor uses.

(19) Retail public water supplier--An individual or entity that for compensation supplies water to the public for human consumption. The term does not include an individual or entity that supplies water to itself or its employees or tenants when that water is not resold to or used by others.

(20) 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 that water is either disposed of or discharged or otherwise allowed to flow into a watercourse, lake, or other body of state-owned water.

(21) Total use--The volume of raw or potable water provided by a public water supplier to billed customer sectors or nonrevenue uses and the volume lost during conveyance, treatment, or transmission of that water.

(22) Total gallons per capita per day (GPCD)--The total amount of water diverted and/or pumped for potable use divided by the total permanent population divided by the days of the year. Diversion volumes of reuse as defined in this chapter shall be credited against total diversion volumes for the purposes of calculating GPCD for targets and goals.

(23) Water conservation coordinator--The person designated by a retail public water supplier that is responsible for implementing a water conservation plan.

(24) Water conservation plan--A strategy or combination of strategies for reducing the volume of water withdrawn from a water supply source, for reducing the loss or waste of water, for maintaining or improving the efficiency in the use of water, for increasing the recycling and reuse of water, and for preventing the pollution of water. A water conservation plan may be a separate document identified as such or may be contained within another water management document(s).

(25) Wholesale public water supplier--An individual or entity that for compensation supplies water to another for resale to the public for human consumption. The term does not include an individual or entity that supplies water to itself or its employees or tenants as an incident of that employee service or tenancy when that water is not resold to or used by others, or an individual or entity that conveys water to another individual or entity, but does not own the right to the water which is conveyed, whether or not for a delivery fee.

(26) Wholesale use--Water sold from one entity or public water supplier to other retail water purveyors for resale to individual customers.

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Source Note: The provisions of this §288.1 adopted to be effective May 3, 1993, 18 TexReg 2558; amended to be effective February 21, 1999, 24 TexReg 949; amended to be effective April 27, 2000, 25 TexReg 3544; amended to be effective August 15, 2002, 27 TexReg 7146; amended to be effective October 7, 2004, 29 TexReg 9384; amended to be effective January 10, 2008, 33 TexReg 193; amended to be effective December 6, 2012, 37 TexReg 9515; amended to be effective August 16, 2018, 43 TexReg 5218

**TITLE 30** ENVIRONMENTAL QUALITY

**PART 1** TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

**CHAPTER 288** WATER CONSERVATION PLANS, DROUGHT CONTINGENCY PLANS,  
GUIDELINES AND REQUIREMENTS

**SUBCHAPTER A** WATER CONSERVATION PLANS

**RULE §288.2 Water Conservation Plans for Municipal Uses by Public Water Suppliers**

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(a) A water conservation plan for municipal water use by public water suppliers must provide information in response to the following. If the plan does not provide information for each requirement, the public water supplier shall include in the plan an explanation of why the requirement is not applicable.

(1) Minimum requirements. All water conservation plans for municipal uses by public water suppliers must include the following elements:

(A) a utility profile in accordance with the Texas Water Use Methodology, including, but not limited to, information regarding population and customer data, water use data (including total gallons per capita per day (GPCD) and residential GPCD), water supply system data, and wastewater system data;

(B) a record management system which allows for the classification of water sales and uses into the most detailed level of water use data currently available to it, including, if possible, the sectors listed in clauses (i) - (vi) of this subparagraph. Any new billing system purchased by a public water supplier must be capable of reporting detailed water use data as described in clauses (i) - (vi) of this subparagraph:

- (i) residential;
  - (I) single family;
  - (II) multi-family;
- (ii) commercial;
- (iii) institutional;
- (iv) industrial;
- (v) agricultural; and,
- (vi) wholesale.

(C) specific, quantified five-year and ten-year targets for water savings to include goals for water loss programs and goals for municipal use in total GPCD and residential GPCD. The goals established by a public water supplier under this subparagraph are not enforceable;

(D) metering device(s), within an accuracy of plus or minus 5.0% in order to measure and account for the amount of water diverted from the source of supply;

(E) a program for universal metering of both customer and public uses of water, for meter testing and repair, and for periodic meter replacement;

(F) measures to determine and control water loss (for example, periodic visual inspections along distribution lines; annual or monthly audit of the water system to determine illegal connections; abandoned services; etc.);

(G) a program of continuing public education and information regarding water conservation;

(H) a water rate structure which is not "promotional," i.e., a rate structure which is cost-based and which does not encourage the excessive use of water;

(I) a reservoir systems operations plan, if applicable, providing for the coordinated operation of reservoirs owned by the applicant within a common watershed or river basin in order to optimize available water supplies; and

(J) a means of implementation and enforcement which shall be evidenced by:

(i) a copy of the ordinance, resolution, or tariff indicating official adoption of the water conservation plan by the water supplier; and

(ii) a description of the authority by which the water supplier will implement and enforce the conservation plan; and

(K) documentation of coordination with the regional water planning groups for the service area of the public water supplier in order to ensure consistency with the appropriate approved regional water plans.

(2) Additional content requirements. Water conservation plans for municipal uses by public drinking water suppliers serving a current population of 5,000 or more and/or a projected population of 5,000 or more within the next ten years subsequent to the effective date of the plan must include the following elements:

(A) a program of leak detection, repair, and water loss accounting for the water transmission, delivery, and distribution system;

(B) a requirement in every wholesale water supply contract entered into or renewed after official adoption of the plan (by either ordinance, resolution, or tariff), and including any contract extension, that each successive wholesale customer develop and implement a water conservation plan or water conservation measures using the applicable elements in this chapter. If the customer intends to resell the water, the contract between the initial supplier and customer must provide that the contract for the resale of the water must have water conservation requirements so that each successive customer in the resale of the water will be required to implement water conservation measures in accordance with the provisions of this chapter.

(3) Additional conservation strategies. Any combination of the following strategies shall be selected by the water supplier, in addition to the minimum requirements in paragraphs (1) and (2) of this subsection, if they are necessary to achieve the stated water conservation goals of the plan. The commission may require that any of the following strategies be implemented by the water supplier if the commission determines that the strategy is necessary to achieve the goals of the water conservation plan:

(A) conservation-oriented water rates and water rate structures such as uniform or increasing block rate schedules, and/or seasonal rates, but not flat rate or decreasing block rates;

(B) adoption of ordinances, plumbing codes, and/or rules requiring water-conserving plumbing fixtures to be installed in new structures and existing structures undergoing substantial modification or addition;

(C) a program for the replacement or retrofit of water-conserving plumbing fixtures in existing structures;

(D) reuse and/or recycling of wastewater and/or graywater;

(E) a program for pressure control and/or reduction in the distribution system and/or for customer connections;

- (F) a program and/or ordinance(s) for landscape water management;
  - (G) a method for monitoring the effectiveness and efficiency of the water conservation plan;
  - and
  - (H) any other water conservation practice, method, or technique which the water supplier shows to be appropriate for achieving the stated goal or goals of the water conservation plan.
- (b) A water conservation plan prepared in accordance with 31 TAC §363.15 (relating to Required Water Conservation Plan) of the Texas Water Development Board and substantially meeting the requirements of this section and other applicable commission rules may be submitted to meet application requirements in accordance with a memorandum of understanding between the commission and the Texas Water Development Board.
- (c) A public water supplier for municipal use shall review and update its water conservation plan, as appropriate, based on an assessment of previous five-year and ten-year targets and any other new or updated information. The public water supplier for municipal use shall review and update the next revision of its water conservation plan every five years to coincide with the regional water planning group.
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**Source Note:** The provisions of this §288.2 adopted to be effective May 3, 1993, 18 TexReg 2558; amended to be effective February 21, 1999, 24 TexReg 949; amended to be effective April 27, 2000, 25 TexReg 3544; amended to be effective October 7, 2004, 29 TexReg 9384; amended to be effective December 6, 2012, 37 TexReg 9515

## **Appendix C**

### ***City of Keller Water Utility Profile Based on TCEQ Format***



**Texas Commission on Environmental Quality**

**UTILITY PROFILE AND WATER CONSERVATION PLAN  
REQUIREMENTS FOR MUNICIPAL WATER USE  
BY RETAIL PUBLIC WATER SUPPLIERS**

This form is provided to assist retail public water suppliers in water conservation plan development. If you need assistance in completing this form or in developing your plan, please contact the conservation staff of the Resources Protection Team in the Water Availability Division at (512)239-4691.

**City of Keller - Utility Profile Based on TCEQ Format**

Name:	City of Keller	
Address:	1100 Bear Creek Pkwy	
	Keller, Texas 76244	
Telephone Number:	(817) 743-4000	Fax: (817) 743-4091
Water Right No.(s):		
Regional Water Planning Group:	Region C	
Form Completed by:	Alonzo Linan	
Title:	Public Works Director	
Person responsible for implementing conservation program:	Alonzo Linan	Phone: 817-743-4000
Signature:		Date: XX/XX/XXXX

NOTE: If the plan does not provide information for each requirement, include an explanation of why the requirement is not applicable.

<b>UTILITY PROFILE</b>
------------------------

**I. POPULATION AND CUSTOMER DATA****A. Population and Service Area Data**

1. Attach a copy of your service-area map, and if applicable, a copy of your Certificate of Convenience and Necessity (CCN).

See Figure 3-1

2. Service area size (square miles): 18.5

3. Current population of service area: 44,620

4. Current population served for:

a. water: 44,620

b. wastewater: 44,620

5. Population served by utility for the previous five years:

6. Projected Population for service area in the following decades:

<u>Year</u>	<u>Population</u>	<u>Year</u>	<u>Population</u>
<u>2013</u>	<u>41,090</u>	<u>2020</u>	<u>46,319</u>
<u>2014</u>	<u>42,040</u>	<u>2030</u>	<u>51,580</u>
<u>2015</u>	<u>42,890</u>	<u>2040</u>	<u>51,580</u>
<u>2016</u>	<u>44,050</u>	<u>2050</u>	<u>51,580</u>
<u>2017</u>	<u>44,620</u>	<u>2060</u>	<u>51,580</u>

7. List source or method for the calculation of current and projected population size.

*Current Population based on Water Use Surveys (NCTCOG estimates); Projected Population is from City of Keller's Water Master Plan Update (currently underway), which identifies 51,580 as full buildout anticipated by 2028.*

**B. Customers Data**

Senate Bill 181 requires that uniform consistent methodologies for calculating water use and conservation be developed and available to retail water providers and certain other water use sectors as a guide for preparation of water use reports, water conservation plans, and reports on water conservation efforts. A water system must provide the most detailed level of customer and water use data available to it, however, any new billing system purchased must be capable of reporting data for each of the sectors listed below.

[http://www.tceq.texas.gov/assets/public/permitting/watersupply/water\\_rights/sb181\\_guidance.pdf](http://www.tceq.texas.gov/assets/public/permitting/watersupply/water_rights/sb181_guidance.pdf)

1. Current number of active connections. Check whether multi-family service is counted as Residential ☒ or Commercial? ☐

<i>Treated Water Users</i>	<i>Metered</i>	<i>Non-Metered</i>	<i>Totals</i>
Residential	14,515		14,515
<i>Single-Family</i>	14,473		14,473
<i>Multi-Family</i>	42		42
Commercial	990		990
Industrial/Mining			0
Institutional	105		105
Agriculture			0
Other/Wholesale		2*	2
<b>TOTAL</b>	<b>15,610</b>	<b>0</b>	<b>15,612</b>

\* Used to track fire flows and flushing, not physical connections

2. List the number of new connections per year for most recent three years.

<i>Year</i>	<i>2015-2017 Average</i>		
<i>Treated Water Users</i>			
Residential	36		
<i>Single-Family</i>	36		
<i>Multi-Family</i>	0		
Commercial	12		
Industrial/Mining			
Institutional	0		
Agriculture			
Other/Wholesale			
<b>TOTAL</b>	<b>48</b>		

3. List of annual water use for the five highest volume customers.

<i>Customer</i>	<i>Use (1,000 gal/year)</i>	<i>Treated or Raw Water</i>
1. City of Keller	61,684	Treated
2. Keller ISD	42,015	Treated
3. Hidden Lakes Master HOA	16,922	Treated
4. Hidden Lakes Master HOA	9,117	Treated
5. Grand Estates at Keller, LP	9,029	Treated

**II. WATER USE DATA FOR SERVICE AREA****A. Water Accounting Data**

1. List the amount of water use for the previous five years (in 1,000 gallons.)

Indicate whether this is ☐ diverted or ☒ treated water.

*NOTE: This is the total treated water purchased from Fort Worth, not water sold to customers*

<u>Year</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>
<i>Month</i>					
January	117,666	121,131	132,070	132,468	142,218
February	115,731	130,092	114,906	158,473	137,960
March	168,871	191,840	126,447	143,240	182,031
April	198,320	208,281	143,016	192,769	222,290
May	257,159	296,393	131,392	171,767	330,011
June	336,158	278,276	243,970	277,514	274,463
July	400,462	346,391	366,699	415,952	375,112
August	432,898	432,647	542,480	380,561	295,252
September	325,093	339,875	398,251	304,589	359,864
October	223,116	286,718	311,856	298,690	265,418
November	155,316	188,314	139,047	181,435	200,762
December	120,128	133,422	128,788	127,218	170,517
<b>Totals</b>	<b>2,850,920</b>	<b>2,953,379</b>	<b>2,778,922</b>	<b>2,784,675</b>	<b>2,955,898</b>

Describe how the above figures were determined (e.g, from a master meter located at the point of a diversion from the source, or located at a point where raw water enters the treatment plant, or from water sales).

*Use this space to include description of methods*

2. Amount of water (in 1,000 gallons) delivered/sold as recorded by the following account types for the past five years.

<u>Year</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>
<i>Account Types</i>					
Residential	2,335,234	2,376,426	2,236,639	2,176,580	2,304,977
<i>Single-Family</i>	2,286,798	2,330,418	2,196,359	2,130,781	2,256,905
<i>Multi-Family</i>	48,437	46,008	40,280	45,800	48,072
Commercial	375,381	376,459	392,554	387,938	392,803
Industrial/Mining					
Institutional	70,177	70,065	54,932	51,584	56,892
Agriculture					
Other/Wholesale	0	0	0	0	0
<b>TOTAL</b>	<b>2,780,792</b>	<b>2,822,951</b>	<b>2,684,124</b>	<b>2,616,102</b>	<b>2,754,672</b>

3. List the previous records for water loss for the past five years (the difference between water diverted or treated and water delivered or sold).

<i>Year</i>	<i>Amount (gallons)</i>	<i>Percent %</i>
2013	67,772,829	2.4%
2014	128,527,742	4.4%
2015	81,560,182	2.9%
2016	163,410,092	5.9%
2017	192,423,564	6.5%

#### **B. Projected Water Demands**

If applicable, attach or cite projected water supply demands from the applicable Regional Water Planning Group for the next ten years using information such as population trends, historical water use, and economic growth in the service area over the next ten years and any additional water supply requirements from such growth.

<b>Year</b>	<b>Projected Demand (AF/Y)</b>	<b>Source of data</b>
2017	9,071	Historical Demand
2018	10,161	<i>Interpolated</i>
2019	11,250	<i>Interpolated</i>
2020	12,339	2021 Region C Water Plan
2021	12,420	<i>Interpolated</i>
2022	12,501	<i>Interpolated</i>
2023	12,582	<i>Interpolated</i>
2024	12,663	<i>Interpolated</i>
2025	12,744	<i>Interpolated</i>
2026	12,824	<i>Interpolated</i>
2027	12,905	<i>Interpolated</i>

Note: Projections are for retail and wholesale customers (both current and potential customers). Projections include TWDB estimated reductions for plumbing fixtures. Projections are from Region C Water Planning Group information for the 2021 Plan, as approved by TWDB.

### **III. WATER SUPPLY SYSTEM DATA**

#### **A. Water Supply Sources**

List all current water supply sources and the amounts authorized (in acre feet) with each.

<i>Water Type</i>	<i>Source</i>	<i>Amount Authorized</i>
Surface Water		
Groundwater		
Contracts	City of Fort Worth	No set Contract amount; Fort
Other		Worth will supply amount
<b>Total</b>		equal to demand, capped at

**B. Treatment and Distribution System**

## 1. Design daily capacity of system:

Treatment Plant	Design Capacity (MGD)	Reliable Pumping Capacity (MGD)
N/A Purchase Treated Water		
<hr/>		
Total	0	0

## 2. Storage capacity:

- a. Elevated      4      MG  
b. Ground        6      MG

## 3. If surface water, do you recycle filter backwash to the head of the plant?

☐ Yes      ☐ No      If yes, approximate amount (MGD):

**IV. WASTEWATER SYSTEM DATA****A. Wastewater System Data (if applicable)**

1. Design capacity of wastewater treatment plant(s) (MGD): 173.5

## 2. Treated effluent is used for:

- ☐ on-site irrigation,  
☐ off-site irrigation,  
☐ plant wash-down, and or  
☐ chlorination/dechlorination.

If yes, approximate amount (in gallons per month):

3. Briefly describe the wastewater system(s) of the area serviced by the water utility. Describe how treated wastewater is disposed. Where applicable, identify treatment plant(s) with the TCEQ name and number, the operator, owner, and the receiving stream if wastewater is discharged.

Treatment Plant Name	TCEQ Number	Permitted Discharge (MGD)	Operator	Owner	Receiving Stream
Denton Creek Regional Wastewater System	13457-001 13457-002	11.5	TRA	TRA	Cade Branch, Denton Creek, Grapevine Lake, Whites Branch tributary
Central Region Wastewater System	10303-001	162.0	TRA	TRA	West Fork Trinity River

**B. Wastewater Data for Service Area (if applicable)**

1. Percent of water service area served by wastewater system: 92% *remaining 8% is septic systems*
2. Monthly volume treated for previous five years (in 1,000 gallons):

<i>Year</i>	<i>2013</i>	<i>2014</i>	<i>2015</i>	<i>2016</i>	<i>2017</i>
<i>Month</i>					
January	89,247	95,357	97,439	98,993	78,371
February	80,681	83,581	91,440	90,466	70,581
March	85,436	89,311	112,075	101,401	87,358
April	84,671	91,718	104,790	106,748	91,643
May	79,829	92,916	149,680	105,792	86,938
June	75,931	89,768	113,409	99,858	90,930
July	75,068	86,772	90,501	91,918	91,394
August	76,243	86,636	87,072	92,629	87,131
September	71,846	81,778	87,988	85,269	77,177
October	75,827	84,845	109,917	88,340	81,252
November	83,208	88,575	119,980	87,249	77,127
December	106,574	91,696	115,664	73,843	86,320
<b>Totals</b>	<b>984,562</b>	<b>1,062,951</b>	<b>1,279,954</b>	<b>1,122,507</b>	<b>1,006,224</b>

## **Appendix D**

***Letters to Region C Water Planning Group, TRWD and  
Fort Worth***

## **APPENDIX D**

### **LETTERS TO REGION C WATER PLANNING GROUP, TRWD AND FORT WORTH**

Date

Mr. Kevin Ward, Chair  
Region C Water Planning Group  
c/o Trinity River Authority  
P.O. Box 60  
Arlington, TX 76004

Dear Mr. Ward:

Enclosed please find a copy of the **April 2019** *Water Conservation Plan* (which is an update to the May 2009 *Water Conservation Plan*) for the City of Keller. I am submitting a copy of this plan to the Region C Water Planning Group in accordance with the Texas Water Development Board and Texas Commission on Environmental Quality rules. The City Council of Keller adopted the updated Plan on **April XX, 2019**.

Sincerely,

Alonzo Liñán, P.E.  
Director of Public Works  
City of Keller

Date

Mr. Jim Oliver, General Manager  
Tarrant Regional Water District  
800 East Northside Drive  
Fort Worth, TX 76102

Dear Mr. Oliver:

Enclosed please find a copy of the **April 2019** *Water Conservation Plan* (which is an update to the May 2009 *Water Conservation Plan*) for the City of Keller. I am submitting a copy of this plan to the Tarrant Regional Water District in accordance with the Texas Water Development Board and Texas Commission on Environmental Quality rules. The City Council of Keller adopted the updated Plan on **April XX, 2019**.

Sincerely,

Alonzo Liñán, P.E.  
Director of Public Works  
City of Keller

City of Keller



Date

Mr. Chris Harder, P.E., Water Director  
Fort Worth Water Department  
P.O. Box 870  
Fort Worth, TX 76101

Dear Mr. Harder:

Enclosed please find a copy of the **April 2019** *Water Conservation Plan* (which is an update to the May 2009 *Water Conservation Plan*) for the City of Keller. I am submitting a copy of this plan to the City of Fort Worth in accordance with the Texas Water Development Board and Texas Commission on Environmental Quality rules. The City Council of Keller adopted the updated Plan on **April XX, 2019**.

Sincerely,

Alonzo Liñán, P.E.  
Director of Public Works  
City of Keller

## **Appendix E**

### **Illegal Water Connections and Theft of Water Ordinance**

ORDINANCE NO. 1281

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF KELLER, TEXAS, PERTAINING TO ILLEGAL WATER CONNECTIONS AND/OR THE THEFT OF WATER FROM THE WATER SUPPLY OF THE CITY OF KELLER; PROVIDING A SEVERABILITY CLAUSE; PROVIDING A PENALTY; AUTHORIZING PUBLICATION; AND ESTABLISHING AN EFFECTIVE DATE.

WHEREAS, The City of Keller recognizes that the amount of water available to its water customers is limited; and

WHEREAS, pursuant to Chapter 54 of the Local Government Code, the City of Keller is authorized to adopt such policies necessary to preserve and conserve available water supplies; and

WHEREAS, the City of Keller seeks to minimize water losses to its supply of water from illegal connections and theft through the adoption of an ordinance pertaining to illegal water connections and theft of water.

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF KELLER, TEXAS:

Section 1: THAT, the above findings are hereby found to be true and correct and are incorporated herein in their entirety.

Section 2: A person commits an offense of theft of water by any of the following actions:

- (a) A person may not knowingly tamper, connect to, or alter any component of the City's water system including valves, meters, meter boxes, meter box lids, hydrants, lines, pump stations, ground storage tanks, and elevated storage tanks. This shall include direct or indirect efforts to initiate or restore water service without the approval of the City.

1 (b) If, without the written consent of  
2 the City Manager or the City  
3 Manager's designee, the person  
4 knowingly causes, suffers or allows  
5 the initiation or restoration of  
6 water service to the property after  
7 termination of services(s). For  
8 purposes of this section, it shall be  
9 assumed that the owner, occupant, or  
10 person in control of the property  
11 caused, suffered, or allowed the  
12 unlawful initiation or restoration of  
13 services(s).

14 (c) A person may not knowingly make or  
15 cause a false report to be made to  
16 the City of a reading of a water  
17 meter installed for metered billing.

18 (d) A person commits a separate offense  
19 each day that the person performs an  
20 act prohibited by this section or  
21 fails to perform an act required by  
22 this section.

23 Section 3: THAT, any person, firm or corporation  
24 violating any provision of this article shall  
25 be deemed guilty of a Class C misdemeanor  
26 and shall, upon final conviction thereof, be  
27 fined in an amount not to exceed \$2,000.00  
28 (Two Thousand Dollars) and/or discontinuance  
of water service by the City.

Section 4: THAT, if any section, paragraph, clause or  
provision of this Ordinance shall for any  
reason be held to be invalid or  
unenforceable, the invalidity or  
unenforceability of such section, paragraph,  
clause or provision shall not effect any of  
the remaining provisions of this Ordinance.

Section 5: THAT, the City Secretary is hereby authorized  
and directed to cause publication of the  
descriptive caption and penalty clause of  
this Ordinance as an alternative method of  
publication provided by law.

Section 7: THAT, this Ordinance shall become effective  
upon its adoption and publication provided by  
law.

1 AND IT IS SO ORDAINED.

2 Passed and approved on the first reading by a vote of 5  
3 to 0 on this the 6th day of September, 2005.

4 Passed and approved on the second reading by a vote of 4  
5 to 0 on this the 20th day of September, 2005.

6 CITY OF KELLER, TEXAS

7  
8 BY: Julie A. Tandy  
9 Julie A. Tandy, Mayor

10 ATTEST:

11 Sheila Stephens  
12 Sheila Stephens, City Secretary

13 Approved as to Form and Legality:

14 L. Stanton Lowry  
15 L. Stanton Lowry, City Attorney  
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## **Appendix F**

### ***Ordinance Adopting Water Conservation Plan***