



CITY OF GEORGETOWN

GEORGETOWN UTILITY SYSTEMS

WATER CONSERVATION PLAN

2019



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1. Introduction and Objectives

Water supply is a key element in the growth and development of Georgetown, and for the greater Central Texas region. Much like the greater Central Texas region as a whole, Georgetown continues to experience high levels of residential and commercial growth, which continue to impact the growing demand for existing water supplies. Given the impact of growth, and the unpredictability of drought conditions it is important for the City of Georgetown to make efficient use of its existing supply. Through this efficiency, existing water sources can be prolonged.

Benefits of efficient water use are two-fold. First and foremost, efficient use will ensure our water supplies last into the future. Efficient water use helps maximize the value of our existing infrastructure, and the City of Georgetown can prolong the availability of current water supply by ten years, if the goals set forth in this plan are achieved. The secondary benefit is the reduction or delay of capital improvement projects, which results in water rate stability.

Both the Texas Commission on Environmental Quality (TCEQ) and the Texas Water Development Board (TWDB) have provided guidelines and requirements governing the development of water conservation plans. The Texas Water Development Board maintains best management practices which have been reviewed and considered in the development of this plan. The following Water Conservation Plan was developed and implemented by the City of Georgetown in accordance with guidelines established by the TCEQ and the TWDB.

The Water Conservation Plan objectives are listed below

- Reduce overall water consumption.
- Reduce the loss or waste of water.
- Improve the efficiency in the use of water.
- Document recycling and reuse efforts.

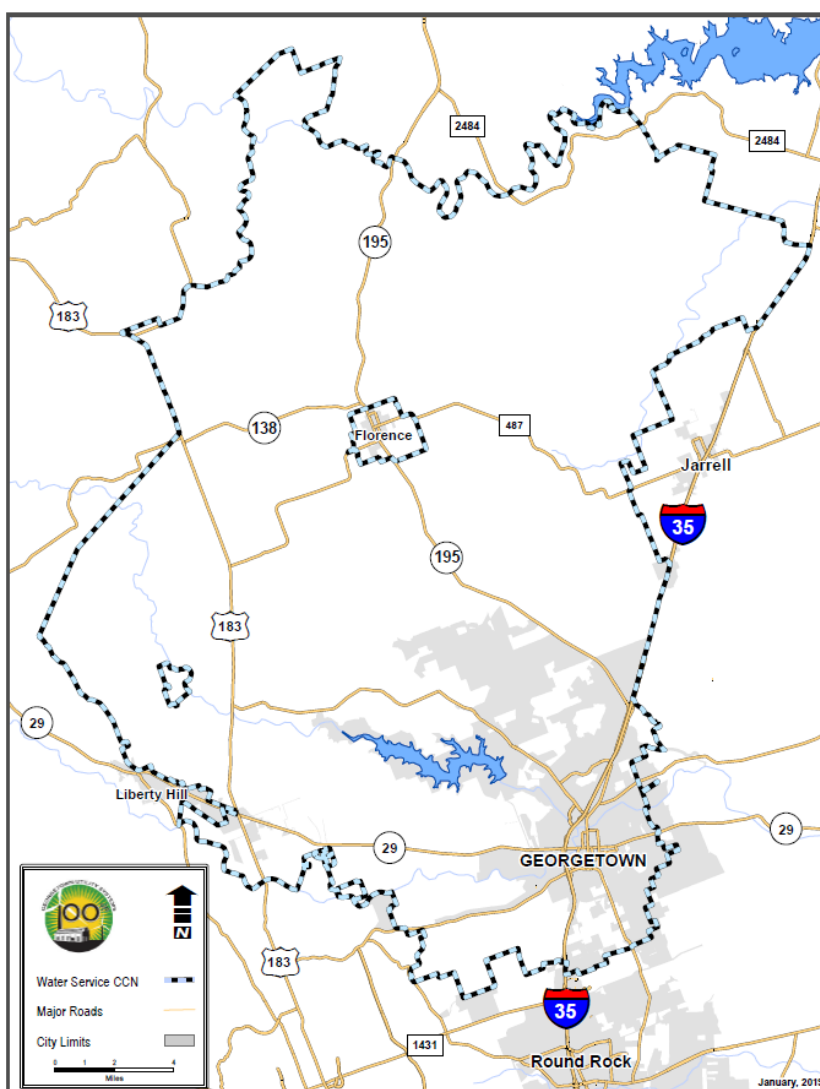
2. Utility Profile

The City of Georgetown currently serves over 400 square miles (Figure 2.1) which includes over 106,000 people, and 39,702 metered connections. The connections are made up of the following categories: 37,475 Residential, 1,895 Commercial, 28 Industrial, and 284 Institutional. In 2018, the average daily water use was 20.79 million gallons per day (MGD), and the peak usage was 41.22 million gallons.

The entirety of the service area falls within the Brazos River Basin, and has five major watersheds; Stillhouse Hollow Lake – Lampasas River, Berry Creek, North Fork San Gabriel River, South Fork San Gabriel River, and Salado Creek. The City is supplied surface water from Lake Georgetown through the Brazos River Authority, and ground water from the Edwards Aquifer.

There are two distinct soil types in the service area, which impact water usage. Interstate Highway 35 runs along the divide of the Edwards Plateau covering the western portion of the service area, and the soil is shallow and rocky. The Blackland Prairie runs to the east, and the soil is deep and clay-like which helps retain moisture.

FIGURE 2.1 City of Georgetown Water Service Area

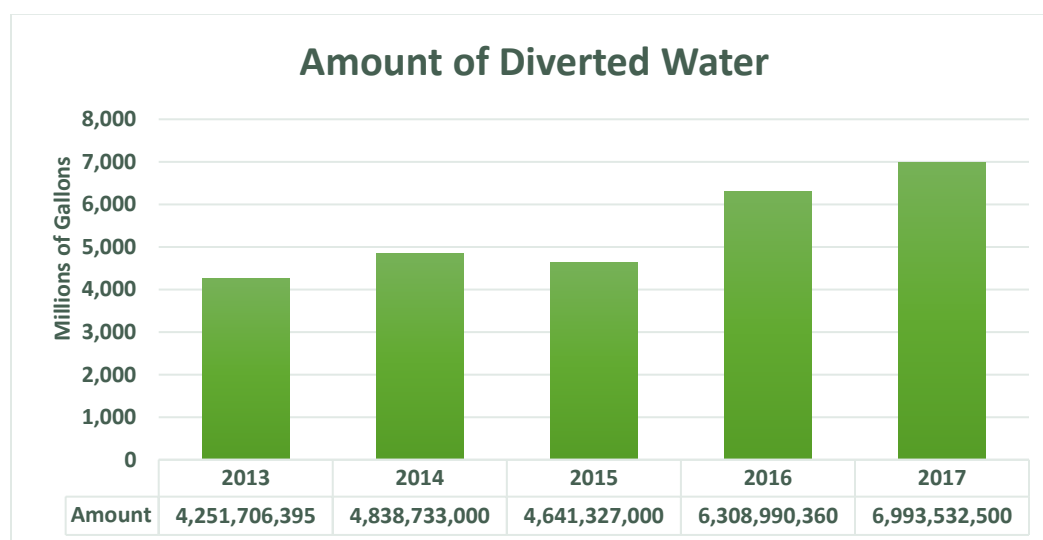


The City's service area is currently served by four treatment facilities; additional treated water can be supplied through an interconnection with Round Rock if needed. The total treatment capacity is 47.1 MGD and below is a listing of individual treatment facilities and their capacities.

| Treatment Facility | Design Capacity (MGD) |
|--------------------------------------|-----------------------|
| Lake Water Treatment Plant | 28.6 |
| Park Water Treatment Plant | 6.3 |
| Southside Water Treatment Plant | 3.2 |
| Domel Water Treatment Plant | 3.0 |
| Round Rock Treated Supply (Optional) | 6.0 |

The amount of water which has been diverted from our available sources is shown in Figure 2.2. In 2016, the City of Georgetown and Chisholm Trail Special Utilities District merged which increased the amount of diverted water and is reflected in Figure 2.2.

Figure 2.2



In order to develop a comprehensive Water Conservation Plan, a review of the water distribution system must be completed. The TWDB Utility Profile was developed with the most current information available, and a copy of the full profile is attached as Appendix A.

3. Specification of Conservation Goals

The City of Georgetown must establish 5-year and 10-year goals for water loss and municipal water use as part of the plan. The previous 2014 plan goals are shown below in Table 3.1.

Table 3.1

2014 Water Conservation Plan Five-Year and Ten-Year Municipal Per Capita Water Use Goals (gpcd)

| Description | Historic 5-Year Avg | Baseline 2013 | 5 Year Goal for 2018 | 10 Year Goal for 2023 |
|------------------------------------|---------------------|---------------|----------------------|-----------------------|
| Total GPCD | 231 | 218 | 180 | 160 |
| Residential - Single Family (gpcd) | 141 | 131 | 120 | 120 |
| Residential - Multi-Family (gpcd) | -- | -- | -- | -- |
| Water Loss (gpcd) | 39 | 45 | 27 | 19 |
| Water Loss (%) | 17 | 21 | 15 | 12 |

Using the guidelines set forth by the TCEQ and the TWDB, the new goals for the 2019 plan are noted in Table 3.2.

Table 3.2

2019 Water Conservation Plan Five-Year and Ten-Year Municipal Per Capita Water Use Goals (gpcd)

| Description | Historic 5-Year Avg | Baseline 2018 | 5 Year Goal for 2024 | 10 Year Goal for 2029 |
|------------------------------------|---------------------|---------------|----------------------|-----------------------|
| Total GPCD | 190 | 187 | 170 | 160 |
| Residential - Single Family (gpcd) | 135 | 136 | 125 | 112 |
| Residential - Multi-Family (gpcd) | 74 | 61 | 50 | 47 |
| Water Loss (gpcd) | 30 | 23 | 16 | 13 |
| Water Loss (%) | 15.58 | 12.35 | 10 | 8 |

3.1. Best Management Practices

The Texas Water Development Board published the “Water Conservation Best Management Practices Guide” in 2004 as a tool for utilities to improve water efficiency of their own operations as well as the efficiency of their customers. The City of Georgetown used these best management practices (BMP) during the development of this plan.

The best management practices are outlined in eight areas which consisting of 26 individual BMP's. The City of Georgetown has implemented eleven (11) of those, and over the next five years will implement programs for eight (8) new ones. Figure 3.1, provides an overview of the current City's BMP's and identifies the new ones to be implemented.

Figure 3.1 Best Management Practices

| BMP Area | Individual BMP | | | | |
|---|--------------------------------|---|--|--|--|
| 1) Conservation Analysis and Planning | Conservation Coordinator | Cost Effective Analysis | Water Survey for SF and MF Customers | | |
| 2) Financial | Water Conservation Pricing | Wholesale Agency Assistance Programs | | | |
| 3) System Operations | Metering of all Connections | System Water Audit and Loss Control | | | |
| 4) Landscaping | Athletic Field Conservation | Golf Course Conservation | Landscape Irrigation Conservation and Incentives | Park Conservation | Residential Landscape Irrigation Evaluation |
| 5) Education and Public Awareness | Public Education | School Education | Small Utility Outreach and Education | Partnerships with Nonprofit Organizations | |
| 6) Rebate, Retrofit, and Incentive Programs | Conservation for ICI Customers | Residential Clothes Washer Incentives | Residential Toilet Replacement | Showerhead, Aerator, Toilet Flapper Retrofit | WaterWise Landscape Design and Conversion Programs |
| 7) Conservation Technology | New Construction Graywater | Rainwater Harvesting and Condensate Reuse | Water Reuse | | |
| 8) Regulatory and Enforcement | Prohibiting Wasting Water | Conservation Ordinance Planning and Development | | | |



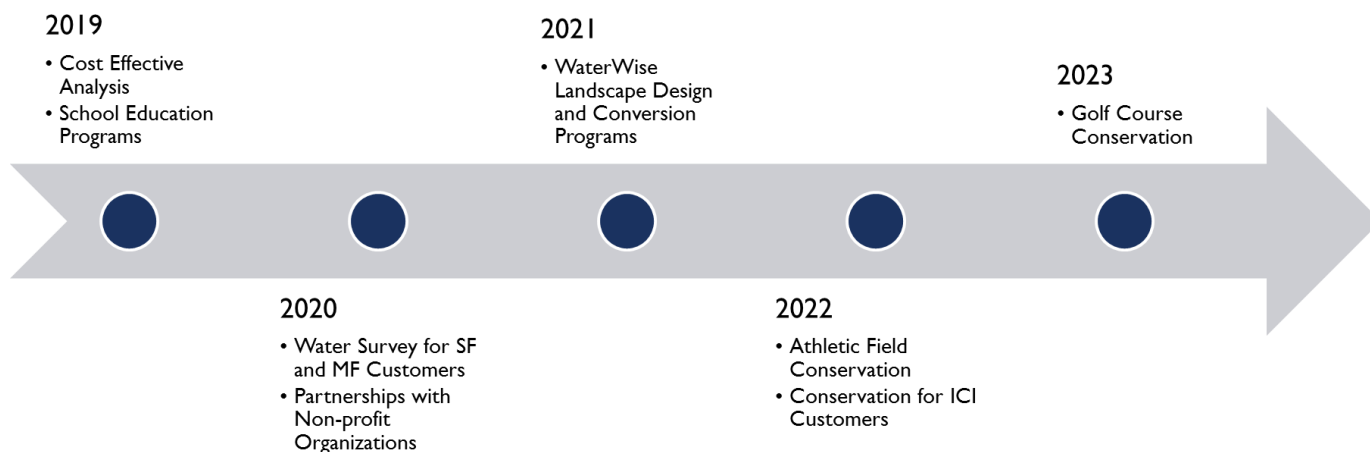
- Current BMP's Implemented



- Proposed BMP's

The BMP's highlighted in blue will be implemented over the next five years, and Figure 3.3 provides a timeline of the implementation schedule. The progress will be tracked and reviewed annually in conjunction with the annual TWDB review of the water conservation plan update.

Figure 3.2 Timeline of BMP Implementation



4. Water Conservation Plan Requirements

The following items are a requirement of Title 30, Texas Administrative Code §288.2, for entities completing a Water Conservation Plan.

4.1. Record Management System

In 2018, the City of Georgetown implemented a new Customer Information System (CIS) which allowed for the classification of customers by type of water use. Customers are segmented into the following classes: Residential, Commercial, Industrial, Government/School (Institutional). Campaign management features which were unavailable in the previous legacy system can now be used to reach these customers.

The City of Georgetown has deployed an Advanced Meter Infrastructure (AMI) to 70% of the service area, the other 30% utilizes an Automated Meter Reading (AMR) system. The AMI system allows for the collection and storage of hourly usage intervals and the data can be accessed through an online customer portal.

4.2. Measuring and Accounting for Diversions

The City of Georgetown currently utilizes nine master meters to track the amount of water into the treatment facilities. Additionally there is a metered connection with the City of Round Rock, to supply water if needed, by the City. These meters are checked daily and the master meters are tested and calibrated annually, or as needed.

4.3. Universal Metering

The City of Georgetown has meters in all connections of the distribution system. All meters meet accuracy standards when installed, and readings are subject to system validations and reviews on a monthly basis in the AMI and CIS systems during the billing process. In 2018 the City implemented a process to record all meters in the City's Enterprise Asset

Management system which allows for tracking of the meter and the various components through its entire lifecycle.

4.4. Leak Detection and Repair

The City does proactive leak detection on the entire distribution system annually. Leak detection is done on each main line segment and as leaks are found, the repairs are managed through a work order management system. In the associated leak work order, the amount of water loss is estimated and tracked for use in annual reporting. Customers can be alerted when they have a leak by utilizing leak alerts which are set up through a program called “Aqua Alerts”.

4.5. Continuing Public Education and Information

The City promotes water conservation by providing the public with information in a variety of ways and is bulleted below.

- Providing information on the City’s conservation website.
- Monthly articles/tips in the City newsletter which is mailed to all utility customers.
- Seasonal direct mailings to all water customers promoting efficient water use.
- Informational presentations to school and community groups.
- Informational booths at local festivals and events.

4.6. Non- Promotional Rate Structure

The City of Georgetown’s water and wastewater rate structure is included below. Under this rate structure, the City applies both a base rate to each account and a volumetric rate determined by meter size, water use, and customer type in the case of wastewater.

Water Rates

| Customer Charge (per month) | Inside City | Outside City |
|---|------------------------|--------------|
| 5/8 inch meter | \$15.50 | \$18.50 |
| 3/4 inch meter | \$23.00 | \$27.50 |
| 1 inch meter | \$38.50 | \$46.00 |
| 1 1/2 inch meter | \$76.50 | \$91.50 |
| 2 inch meter | \$153.50 | \$183.50 |
| 3 inch meter | \$368.00 | \$440.00 |
| 4 inch meter | \$644.00 | \$770.00 |
| 6 inch meter | \$1,410.00 | \$1,686.00 |
| 8 inch meter | \$2,450.00 | \$2,929.50 |
| Residential Water Rates (effective 01/01/19)*Cost is per 1,000 gallons | | |
| (1,000 gallons) | Volumetric Rate | |
| 0-10 | \$1.75 | |
| 11-20 | \$2.40 | |
| 21-40 | \$4.00 | |
| 41-60 | \$6.50 | |
| 61 and above | \$8.50 | |

Non-Residential Volumetric Water Rates (effective 01/01/19)*Cost is per 1,000 gallons

| | Meter Size | Tier 1 Rate | Tier 2 Rate | Tier 2 Threshold |
|-------------------------|------------|-------------|-------------|-------------------|
| Small Commercial | <2" | \$2.40 | \$6.50 | 300,001 gallons |
| Large Commercial | 2" | \$2.40 | \$6.50 | 600,001 gallons |
| Large Commercial | 3" | \$2.40 | \$6.50 | 900,001 gallons |
| Large Commercial | 4" | \$2.40 | \$6.50 | 4,000,001 gallons |
| Large Commercial | 6" | \$2.40 | \$6.50 | 6,000,001 gallons |
| Large Commercial | 8" | \$2.40 | \$6.50 | 8,000,001 gallons |
| Manufacturing | <8" | \$2.40 | | |
| Municipal Interruptible | | \$2.40 | | |
| Restaurant | | \$2.40 | | |
| Evaporative Cooling | | \$2.40 | | |
| Fire Flow | | \$2.40 | | |
| Irrigation Only | | \$4.00 | \$8.50 | 500,001 gallons |

Wastewater Rates**Wastewater Rate Schedule (effective October 1st, 2019)**

| | Customer Charge Inside (per month) | Volumetric Chg (per 1000 gals) | Customer Charge Out (per month) | Volumetric Chg (per 1000 gals) |
|--|--|---|---------------------------------------|---|
| Residential Service | \$32.00* | N/A | \$36.75* | N/A |
| Single family / Domestic use only | | | | |
| Small Commercial Service | \$32.00 | N/A | \$36.75 | N/A |
| 4" sewer line / 3/4" wtr mtr / 10 fixtures or less / must be requested in writing | | | | |
| Commercial Service | \$48.40 | \$2.75 | \$55.65 | \$3.15 |
| 6" or smaller sewer line | | | | |
| Large Commercial Service | \$85.95 | \$2.75 | \$98.85 | \$3.15 |
| 8" or larger sewer line | | | | |
| High Strength Commercial | \$48.40 | \$4.50 | \$55.65 | \$5.20 |
| BOD over 250 / food processing or high level of oil or chemicals in the discharge | | | | |
| Multi-Family Service | \$114.95 | \$2.75 | \$132.20 | \$3.15 |
| Residential housing with three or more individual dwelling units per water meter | | | | |

4.7. Reservoir Systems Operations Plan

The City of Georgetown is a wholesale customer of the Brazos River Authority (BRA). As such, the BRA is responsible for the operation of the eleven (11) reservoirs within its system.

4.8. Measures to Determine and Control Water Loss

The City of Georgetown has undertaken significant efforts to address challenges with non-revenue water throughout the system. There are many variables which can impact the amount of water which is billed and these variables can have an effect on revenue. These include: meter inaccuracy, data discrepancies, unauthorized consumption, line breaks, and unreported losses.

The City of Georgetown traditionally used water loss percentage (%) as their preferred indicator, however the City has recently incorporated the use of an Infrastructure Leakage Index (ILI) as an additional indicator. The City completes an annual water loss audit, using the guidelines set forth by the TWDB, as well as a monthly water loss audit using the same methodology. A concerted effort has been achieved to increase the data validity, and significant improvement has been made in the reliability of the data which is used internally and reported externally. Figures 4.1 and 4.2 show the improvement between 2013 and 2018.

Figure 4.2 Water Loss Trend

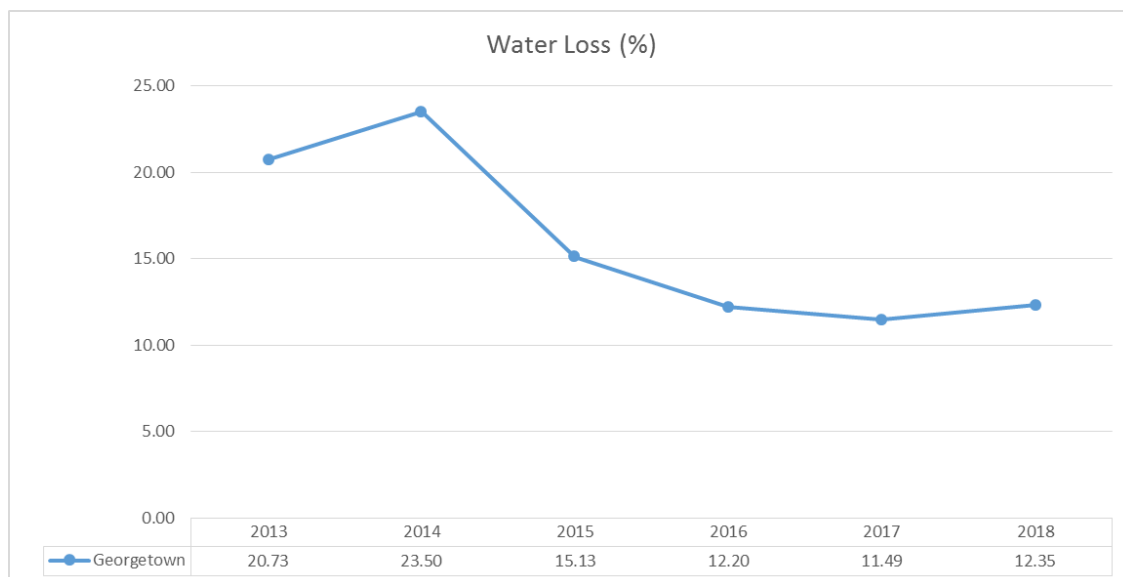
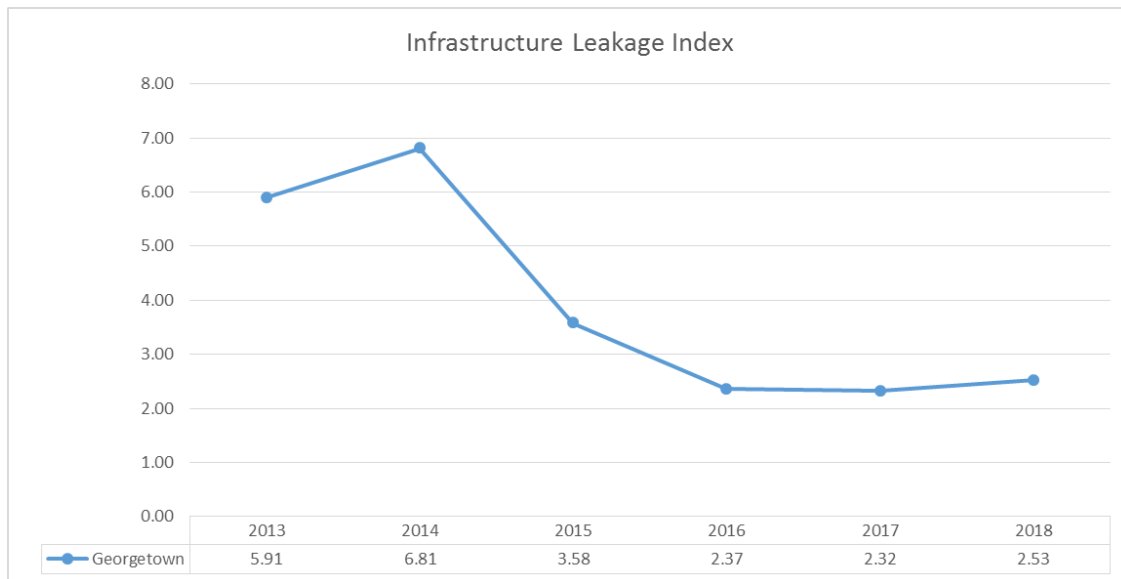
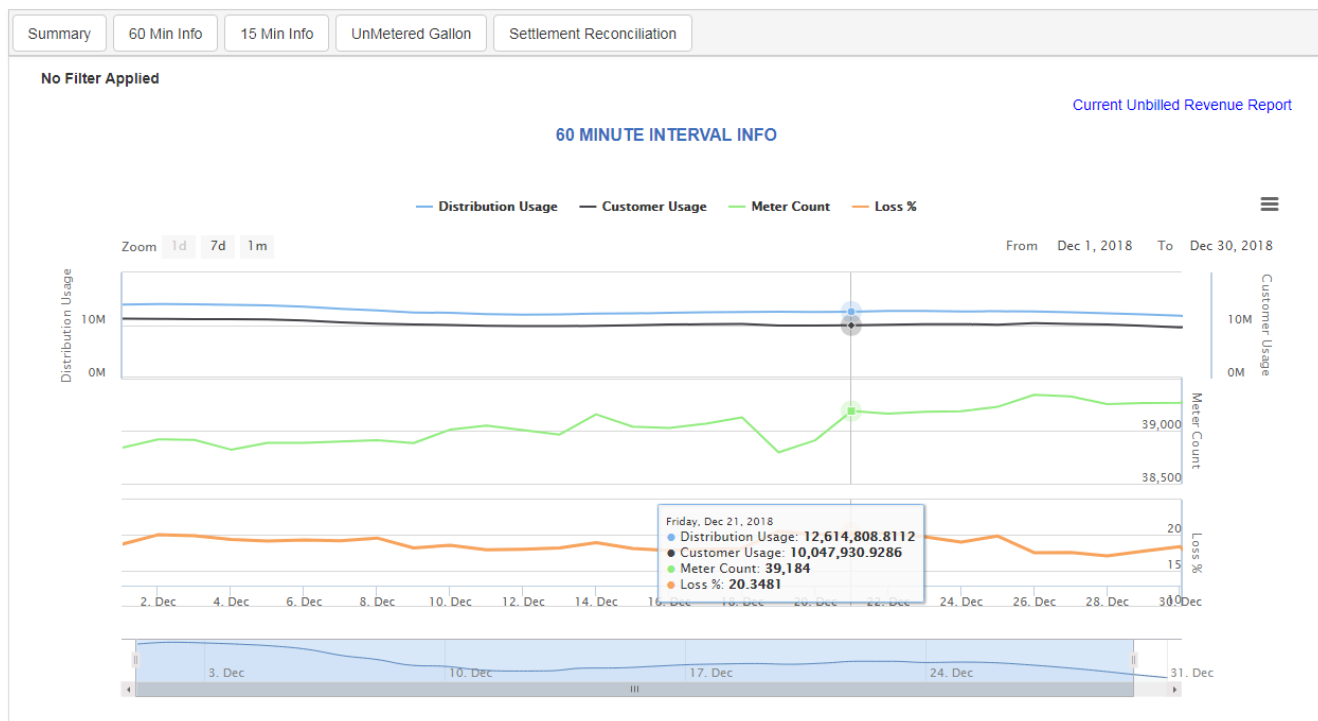


Figure 4.2 Infrastructure Leakage Index Trend



In 2017, an effort was initiated to incorporate non-revenue water into an operational indicator that could be captured and reviewed on a periodic basis. Using Supervisory Control and Data Acquisition (SCADA) and AMI systems, the City was able to develop a dashboard which provides a rolling seven day water loss indicator, which is used to gain advance notice of problems which needs to be addressed either in the distribution system or with the data collection systems. Figure 4.3 shows a screenshot of the dashboard used by water operators.

Figure 4.3 Water Loss Dashboard



5. Additional Conservation Strategies

5.1.1. Reuse Program

The City of Georgetown currently has a reuse program in place which aims to reduce the amount of potable water used for irrigation purposes. Currently City parks facilities rely on treated effluent water for a portion of their irrigation requirements. Additionally, two large developments augment their outdoor water use for two golf courses and roadway landscapes with reuse.

5.1.2. Landscape Water Management

The City has taken multiple approaches which are focused on reducing the amount of water that has to be used to maintain a landscape in Central Texas. Understanding that outdoor irrigation is one of the key opportunities for water savings, and that the primary driver for irrigation is the type of landscape installed, the City has adopted ordinances which address both irrigation systems and landscape installation.

All new irrigation system installations must include either a rain or moisture sensor and are restricted on the amount of irrigated area, relative to the foundation footprint. Additionally, there are specific landscaping requirements for all new residential construction include:

- A minimum of six inches of soil depth, prior to the installation of the landscape.
- All new plant materials must come from the City of Georgetown Preferred Plant List.
- The amount of turf grass is limited, relative to the size of the building footprint.
- Installation of Saint Augustine turf grass is limited to those areas with ten inches or more of soil depth or less than six hours of full sun.

5.1.3. Rebate and Incentive Programs

The City of Georgetown currently offers several rebate programs to assist customers with improving the efficiency of their irrigation systems. These programs will be evaluated each year to ensure they achieve a reduction in peak demand and overall water use, as well as being cost effective. The current rebate programs include:

- Irrigation Evaluation Rebate – Aims to offset the cost of having a licensed irrigator perform a system evaluation
- Smart Controller Rebate – Incentivizes the replacement of irrigation controllers with one which is EPA WaterSense approved.
- Spray-to-Drip Conversion – Replace an entire zone of spray irrigation to drip irrigation.
- Multi-Stream Rotor Conversion – Replace an entire zone to multi-stream rotor heads.
- Rain Barrel Purchase – Rebate is applied on the purchase of a rain barrel.

In addition to the above, the City is developing programs which would incentivize the reduction in the amount of turf grass and/or irrigated area.

5.1.4. Marketing Campaigns

Fundamentally, conservation is about changing customer behavior. The City is committed to providing relevant information to customers directly, rather than relying on passive conservation campaigns and incentives. Two initial targeted campaigns will provide feedback to customers who are not following the established watering schedule, and to customers who are overwatering. Additional opportunities exist for communicating proactively with customers regarding potential leaks. Providing this level of information will be crucial in accomplishing both the long and short term goals of this plan.

The City will continue its overarching water conservation marketing effort. In 2016 the City developed its first campaign around the slogan “Don’t Water Down Georgetown”.

5.1.5. Community Partnerships

The City will build upon partnerships with community organizations to promote water efficiency. Key community groups such as the Sun City Water Ambassadors, Texas A&M Agrilife Extension, Southwestern University, and Georgetown Independent School District are vital to the success of a comprehensive water conservation strategy in Georgetown.

5.1.6. Two Day per Week Watering

In 2019, The City will adopt a two day per week watering schedule for all customers. Doing this will promote long term water savings as well as a reduction in the peak demand experienced during the heavy outdoor irrigation months.

5.2. Enforcement Procedure and Plan Adoption

The Water Conservation plan was adopted by Resolution of the Georgetown City Council on March 26th, 2019. The adoption of the Water Conservation Plan provides City staff the ability to implement, enforce, and administer the program.

5.3. Coordination with the Regional Water Planning Group(s)

The service area for the City of Georgetown is located within the Regional Water Planning Area G. A copy of the adopted Water Conservation Plan and Drought Contingency Plan has been provided to Region G. A copy of the transmittal is included in Appendix B.

5.4. Wholesale Contract Requirements

The City of Georgetown has wholesale water contracts with several surrounding cities including the cities of Leander, Florence, and Liberty Hill. Those contracts require that those cities certify adoption of a Water Conservation Plan and Drought Contingency Plan in accordance with TCEQ guidelines.

5.5. Plan Review and Update

TCEQ requires that water conservation plans be reviewed and updated, every five years to coincide with the regional water planning group. The revised plan must also include an implementation report.

6. Appendix

Hold for Appendix A - Utility Profile

Hold for Appendix B – Coordination with Regional Water Planning Group

Hold for Appendix C – Adopted Resolution of the Water Conservation Plan

Hold for Appendix D – Utility Rate Ordinance

Hold for Appendix E – Utility Water Use Ordinance

Hold for Appendix F – Drought Contingency Plan