



## WATER CONSERVATION PLAN



**City of Andrews**

**November 14, 2019**

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## **1.0 INTRODUCTION AND OBJECTIVE**

Water supply has always been a key issue in the development of Texas. In recent years, the increasing population and economic development of West Texas have led to a growing demand for water supplies. At the same time, local and less expensive sources of water supply are largely developed. Additional supplies to meet future demands will be expensive and difficult to secure. Drought conditions in recent years have highlighted the importance of efficiently using the existing water to make them last, if possible. Efficient use of 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 to efficiently use existing water supplies, the Texas Commission of Environmental Quality (TCEQ) has developed guidelines and requirements to govern the development of the Water Conservation Plan (WCP). The City of Andrews has developed this Water Conservation Plan in accordance with Texas Water Development Board (TWDB) guidelines and requirements. Since the city supplies their own retail raw water the WCP should be completely sustainable and consistent.

The objectives of the 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 of 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.



## **2.0 TEXAS WATER DEVELOPMENT BOARD RULES**

### **2.1 TWDB RULES GOVERNING CONSERVATION PLANS**

The rules that apply to all Texas Water Development Board (TWDB) Financial Assistance Programs are specified under the Texas Administrative Code 31, Chapters 355, 363, 371, 375, 382 and 384 and to public utilities that provide portable water service to 3,300 or more connections. The WCP must meet the minimum requirements as stated below and should be no older than 5 years.

The TCEQ rules governing the development of WCP for public water suppliers are contained in Title 30, Part 1, Chapter 288, Subchapter A, Rule 288.2 of the TWDB. The elements of the TCEQ water conservation rules as covered in this plan are listed below and are also in accordance with TWDB regulations.

#### Minimum Conservation Plant Requirements

The minimum requirements in the TWDB code for WCP for Public Water Suppliers are covered in this report as follows.

- 363.15(b)(1)(A) - Utility Profile-Section 3.0 and Appendix B;
- 363.15(b)(1)(B) - Specification of Goals – Section 4.0;
- 363.15(b)(1)(C) - Schedule for Implementing the Plan – Section 6.0;
- 363.15(b)(1)(D) - Record Management System – Section 5.4;
- 363.15(b)(1)(E) - Accurate Master Meter – Section 5.1;
- 363.15(b)(1)(F) - Universal Metering – Section 5.3;
- 363.15(b)(1)(G) - Determination and Control of Water Loss – Section 5.2;
- 363.15(b)(1)(H) - Leak Detection Repair, and Water Loss Accounting – Section 5.5;
- 363.15(b)(1)(I) - Public Education and Information Program – Section 5.7;
- 363.15(b)(1)(J) - Non-Promotional Water Rate Structure – Section 5.8;
- 363.15(b)(1)(K) - Means of Implementation and Enforcement – 5.9;

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

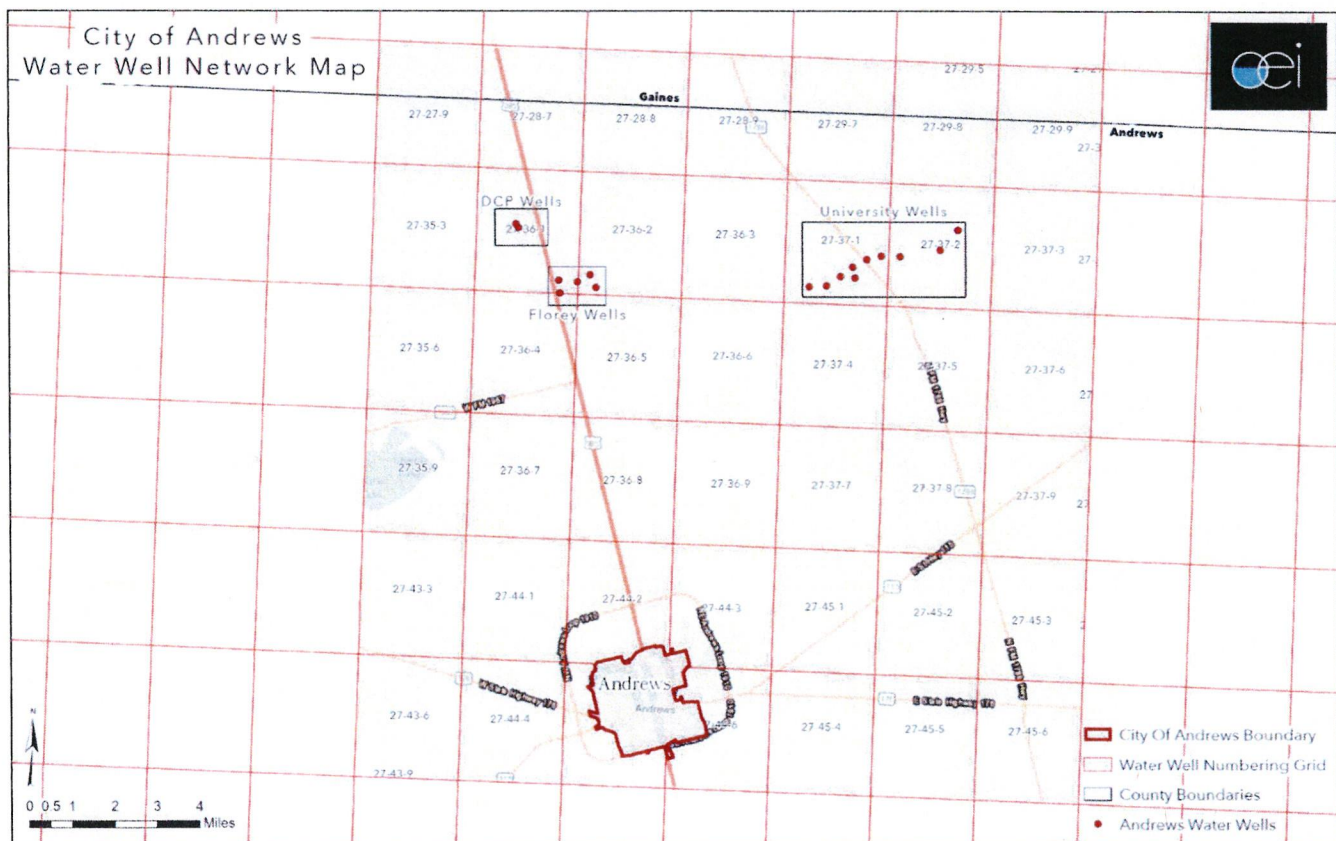
In addition to TCEQ rules regarding water conservation, this Plan also incorporates elements of the Guidance and Methodology for Reporting on Water Conservation and Water Use developed by the TWDB and the TCEQ, in consultation with the Water Conservation Advisory Council (the "Guidance"). The Guidance was developed in response to a charge by the 82nd Texas Legislature to develop water use and calculation methodology and

guidance for the preparation of water use reports and WCP in accordance with TCEQ rules. The city has considered elements of the Guidance in preparation of this Plan.

### 3.0 DESCRIPTION OF SERVICE AREA AND UTILITY PROFILE

The City of Andrews provided retail water service to approximately 13,762 people in 2019. In order to provide this water, the city pumps approximately 2 million gallons per day (MGD) of groundwater from three (3) well fields near the City limits. Figure 1 shows the City of Andrews service area in relation to where the well fields can be located.

*Figure 1: Andrews Water Service Area*





#### Three well field water sources:

- Florey Well Field: Located 10 miles north of the City on the east side of US 385
- DCP Well Field: Located about 10 miles north of the City on the west side of US 385
- University Well Field: Located about 10 miles north of the City & 7 miles east of US 385.

The City of Andrews is self-supplied by these three well fields for raw ground water. The wastewater facilities are in Andrews where all the secondary treatment occurs. Appendix B shows the Utility Profile for all the water usage in the past five years from 2015-2019. The information is presented in TWDB format for simplification purposes.

Each well field contains their own active water wells that feed the city when called upon. The City of Andrews operates the DCP Well Field with two (2) active wells, Florey Well Field with five (5) active wells and University Well Field with ten (10) active wells.

## **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 the 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 the Table 1;
- Implement and maintain a program for universal metering and meter replacement and repair as discussed in section 5.3;
- Raise public awareness of water conservation and encourage responsible public behavior by a public education and information program as discussed in Section 5.7;
- Increase efficient water usage and decrease waste in lawn irrigation by enforcement of landscape water management regulations as described in Section 5.8;
- Develop a system-specific strategy to conserve water during peak demands, thereby reducing the peak use.
- Maintain higher tiered / stepped water rates for higher volume usage.

TCEQ defines municipal use in gallons per capita per day as “the total average daily amount of water diverted or pumped for treatment for potable use by a public water supply system. The calculation is made by dividing the





water diverted or pumped for treatment for potable use by the population served.” In this definition, the “water diverted or pumped” refers to the total volume of water metered at the City’s three (3) well fields and includes the City’s water loss. These reduction goals, expressed in gallons per capita per day (gpcd), are based on the average total gpcd for the City for the last five years (2014-2018) which is approximately 122 gpcd.

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

One of the key elements in water conservation is the careful tracking of water usage and the 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 ANDREWS**

The City’s three (3) well fields supply all the water used by the City. The well meters are calibrated annually, and all deliveries should be measured to an accuracy of at least  $\pm 5$  percent, ideally. A system for repairing and replacing should be based on American Water Works Associations (AWWA) standards.

### **5.2 DETERMINATION AND CONTROL OF UNACCOUNTED FOR WATER**

Water loss is the difference between the amount of water supplied by the wells and the amount of water delivered (sold) to customers plus authorized but unmetered uses such as firefighting or releases for flushing of lines. Water loss can include several categories:

- Inaccuracies in customer meters;
- Unmetered uses such as firefighting;
- Losses due to water main breaks and leaks in the water distribution system;
- Losses due to illegal connections and theft.

Other Actions that are being used for the City of Andrews to reduce losses include the following:

- 24/7 maintenance to repair breaks in the lines to households, Retail stores, business, etc;
- Main replacement program;
- Replacement meter program;
- City employees and the public works department work together to identify possible leaks in the distribution system. Leaks are fixed as quickly as possible.



Residential metering is done with an automatic meter reading system manufactured by Master Meter. The automatic metering reading (AMR) system provides meter accuracy of  $\pm 3.0\%$ . The city has established a meter replacement program to assure accurate accounting of all water used by its users.

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

In the year 2017, the City of Andrews began a 5-year water meter replacement program to (1) replace all meters out of warranty, and (2) replace all meters 1 inch and under.

As part of the Water Conservation Plan, the City maintains a meter replacement program that will replace meters according to the following schedule:

- One inch and smaller—Replace every 15 years.
- One inch to four inches—Tested every ten years and repaired or replaced if necessary.
- Greater than four inches—Tested every two years and repaired or replaced as necessary.

Meters registering any unusual or questionable readings will be tested and repaired to restore to full functionality.

### **5.4 RECORD MANAGEMENT SYSTEM**

As required by TAC Title 31, Part 1, Chapter 363, Subchapter A, Rule 363.15 (b)(1)(D), the City's current record management system allows for the separation of wholesale for residential and commercial accounts. The system tracks water pumped, water delivered and water metered to the customer. From this information, water losses are calculated and tracked on a monthly and annual basis. The water losses are monitored on a regular basis to determine unusual trends and assist in regulating water losses.

The City identifies high residential water users through database management and notifies the resident as can be seen on Table 1 if a leak is suspected. The customers are advised to check faucets and frequently dye is freely distributed to customers to check their toilets for a possible leak. The customer is also advised to check all outdoor plumbing and sprinkler systems.



Table 1: Total Meters in City

Meter Size	Total Number
O4 - COMMERCIAL-REGULAR	2
O5 - RESIDENTIAL-REGULAR	2
C1 - COMMERCIAL- REGULAR	292
C2 - COMMERCIAL-LARGE ACCTS	22
C3 - COMMERCIAL MULTI-UNITS	12
G1 - CITY	33
G2 - COUNTY	43
G3 - SCHOOL	21
G4 - STATE/FEDERAL	3
H1 - HOSPITAL	22
I1 - INDUSTRIAL	2
M2 - MISC-FIELD ACCTS <=1"	5
N1 - CHURCHES	40
N2 - OTHER NONPROFIT	3
R1 - RESIDENTIAL-3/4 & 1"	4067
R2 - RESIDENTIAL-LARGE	8
R3 - RESIDENTIAL-MULTI UNIT	61
R4 - RESIDENTIAL-CC, EMP, FIRE	72
R5 - RESIDENTIAL-IRRIGATION	2
<b>TOTAL</b>	<b>4712</b>

## 5.5 LEAK DETECTION, REPAIR AND WATER LOSS ACCOUNTING

The City currently maintains a leak detection program designed to reduce the loss of water due to leaks and water main breaks. Most leaks are discovered by the visual observation from both members of the public and through the AMR system. City maintenance crews regularly check and service transmission and storage facilities to ensure that any leaks or main breaks in these areas are quickly contained and repaired. Daily inspections are performed on all water supply storage and pumping facilities.

## 5.6 MONITORING OF EFFECTIVENESS AND EFFICIENCY

All storage and booster stations are monitored daily, 7 days per week, 365 day per year. The AMR system provides continuous monitoring of customer meters and is monitored daily. Meter Accuracy and minor water losses are improved with the use of the AMR system and routine maintenance review of lines that have excess calls or leaks.

## 5.7 CONTINUING PUBLIC EDUCATION AND INFORMATION CAMPAIGN

The continuing public education and information campaign for water conservation will be expanded to include the following elements:

- Encourage local media coverage of water conservation issues and the importance of water conservation;
- Make water conservation brochures and other water conservation materials available to the public at City Hall;
- Make information on water conservation available on its website and include a link to the Texas AgriLife Extension Native and Adapted Landscape Plants, An Earthwise Guide to Central Texas;
- Post water conservation information on the City's social media sites. Posts will include material developed by City staff and material obtained from the TWDB, the TCEQ, and other sources;

## 5.8 NON-PROMOTIONAL WATER RATE STRUCTURE

### Minimum Charge

Minimum charge – ¾" to 1" meter for 1 <sup>st</sup> 2,000 gallons	\$17.50
Minimum charge – 1-1/2" & larger meter for 1 <sup>st</sup> 2,000 gallons	\$35.00
Minimum Charge – Bulk Users	\$77.00

### Plus Charge per Thousand Gallon Used

<u>Residential, Commercial and Industrial</u>	
Meter minimum (0-2 or 0-10, based on size of meter)	\$0.00
Over minimum – 10 (for meters 1" and smaller)	\$2.77
11 - 20	\$3.05
21 - 40	\$3.45
41 and over	\$4.13
<u>Governmental (City, County, School) Buildings &amp; Grounds, Industrial or Business Parks</u>	
Meter minimum (0-2 or 0-10, based on size of meter)	\$0.00
Over minimum – 20	\$2.28
21 - 40	\$2.59
41 and over	\$3.11
<u>Churches, Firemen, Council Members, Employees</u>	
50% of Residential Rate (rounded to nearest \$.05)	\$0.00
Meter minimum (0-2 or 0-10, based on size of meter)	\$1.40
Over minimum – 10 (for meters 1" and smaller)	\$1.55
11 - 20	\$1.75
21 - 40	\$1.75
41 and over	\$2.05



Andrews County Gov't Recreation Areas

(parks, ballfields, but not including County buildings	\$0.00
Meter minimum (0-2 or 0-10, based on size of meter)	\$3.11
Over meter minimum	

## 5.9 IMPLEMENTATION AND ENFORCEMENT – (Comments on enforcement, Fines Etc. if WCP is violated)

Plumbing code – The City of Andrews has adopted the 2015 International Plumbing Code which requires installation of water conserving devices in new construction. New construction will not be certified and issued a certificate of occupancy unless it meets the City of Andrews Plumbing Code requirements.

Cut off unpaid bills – Customers who do not pay for water service have their water service terminated approximately ten days after the original due date. Service is not reactivated until payment arrangements are made.

Water theft – When water theft is determined, service is immediately disconnected and will not be reinstated until all fines and fees are paid.

## 6.0 SCOPE AND SCHEDULE

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.

A copy of Ordinance No. 1641 amending Ordinance No. 1435 adopted by the City of Andrews on November 14, 2019 is attached and made part of this plan. Ordinance No. 1641 designates responsible officials to implement and enforce the Water Conservation Plan. Enforcement of Ordinance No. 1641 becomes effective immediately as adopted by the Andrews City Council on November 14, 2019. Ordinance No. 1641 is attached as Appendix C.

Following is a schedule, to achieve the targets and goals for water conservation:

- Calibrations of meters for all treated water deliveries are conducted at least annually
- Meters will continue to be monitored for accuracy annually and replaced on a 15-year cycle, or when accuracy cannot be maintained within  $\pm 5\%$
- Water audits conducted annually





- Real water losses are identified and corrected
  - Real water losses are minimized by replacement of deteriorating water mains and appurtenances, conducted on an on-going basis
- Materials developed to encourage water conservation measures, materials obtained from the Texas Water Development Board, Texas Commission on Environmental Quality or other sources will be posted to the City's website and/or social media sites semi-annually
- Water rates shall continue to be reviewed annually to insure water revenues exceed expenses and replacement costs and to discourage excessive and wasteful use
- The City's leak detection program will continue to be utilized to reduce real water losses
- Water meters 1 inch and smaller will be continued to be changed out with "smart" meters over the next two years so that the entire inventory will be less than 5 years old.



## **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, and subchapter B , Rule 288.20



## **Appendix B**

### **Utility Profile**



## Utility Profile

Name of Utility: City of Andrews

Public Water Supply Identification Number (PWS ID): TX0020001

Certificate of Convenience of Necessity (CCN) Number: 10208

Surface Water Right ID Number: \_\_\_\_\_

Wastewater ID Number: 20078

Contact: First Name: Garcia Last Name: Adeline

Title: 4325234820 Email: [agarcia@cityofandrews.org](mailto:agarcia@cityofandrews.org)

Address: 111 Logsdon St City: Andrews State: TX

Zip Code: 79714 Zip+4: \_\_\_\_\_ Date: 5/14/2019

Is this person the designated Conservation Coordinator? ☒ Yes ☐ No

Regional Water Planning Group: F

Groundwater Conservation District: NONE

Our records indicate that you:

☐ Received financial assistance of \$500,000 or more from TWDB

☒ Have 3,300 or more retail connections

☐ Have a surface water right with TCEQ

### A. Population and Service Area Data

1. Current service area size in square miles: 5

1. Historical service area population for the previous five years, starting with the most current year.

*Table 2: Population and Service Data*

Year	Historical Population Served By Retail Water Service	Historical Population Served By Wholesale Water Service	Historical Population Served By Wastewater Water Service
2018	13,000	0	13,000
2017	12,000	0	12,000
2016	12,000	0	12,000
2015	12,000	0	12,000
2014	12,000	0	12,000

2. Projected service area population for the following decades.

*Table 3: Projected Service Population*

Year	Projected Population Served By Retail Water Service	Projected Population Served By Wholesale Water Service	Projected Population Served By Wastewater Water Service
2020	15,000	0	15,000
2030	20,000	0	20,000
2040	25,000	0	25,000
2050	30,000	0	30,000
2060	35,000	0	35,000

3. Described source(s)/method(s) for estimating current and projected populations.

Based upon Census Projections assuming the city does not grow as fast as the county



## B. System Input

System input data for the previous five years.

Total System Input = Self-supplied + Imported – Exported

*Table 4: Produced Water*

Year	Water Produced in Gallons	Purchased/Imported Water in Gallons	Exported Water in Gallons	Total System Input	Total GPCD
2018	839,964,948	0	0	839,964,948	177
2017	784,400,000	0	0	784,400,000	179
2016	821,193,939	0	0	821,193,939	187
2015	871,858,586	0	0	871,858,586	199
2014	1,021,053,608	0	0	1,021,053,608	233
Historic Average	867,694,216	0	0	867,694,216	195

## C. Water Supply System

1. Designed daily capacity of system in gallons 12,744,000

2. Storage Capacity

2a. Elevated storage in gallons: 1,000,000

2b. Ground storage in gallons: 3,200,000



#### D. Projected Demands

1. The estimated water supply requirements for the next ten years using population trends, historical water use, economic growth, etc.

*Table 5: Projected Demands*

Year	Population	Water Demand (gallons)
2020	15,000	839,965,125
2021	15,200	839,965,302
2022	15,400	839,965,479
2023	15,600	839,966,656
2024	15,800	839,967,656
2025	16,000	839,968,656
2026	16,200	840,969,656
2027	16,400	841,969,656
2028	17,400	842,969,656
2029	18,400	843,969,656

2. Description of source data and how projected water demands were determined.

Census Projections for the County

#### E. High Volume Customers

1. The annual water use for the five highest volume **RETAIL** customers.

*Table 6: Highest Volume Users*

Customer	Water Use Category	Annual Water Use	Treated or Raw
Andrews Independent School District	Institutional	31,051,000	Treated
City of Andrews	Institutional	26,701,000	Treated
Andrews County	Institutional	17,882,000	Treated
Hospital	Institutional	10,672,000	Treated
Palmer of Texas	Commercial	2,961,000	Treated

2. The annual water use for the five highest volume **WHOLESALE** customers.

Customer	Water Use Category	Annual Water Use	Treated or Raw
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NONE

**F. Utility Data Comment Section**

Additional comments about utility data.

Water Reports

**Section II: System Data**

**A. Retail Water Supplier Connections**

1. List of active retail connections by major water use category.

*Table 7: Total Connections in City*

Water Use Category Type	Total Retail Connections (Active + Inactive)	Percent of Total Connections
Residential - Single Family	4,358	87.25 %
Residential - Multi-Family	63	1.26 %
Industrial	3	0.06 %
Commercial	420	8.41 %
Institutional	151	3.02 %
Agricultural	0	0.00 %
<b>Total</b>	4,995	100.00 %



2. Net number of new retail connections by water use category for the previous five years.

*Table 8: New Retail Connections*

Net Number of New Retail Connections							
Year	Residential - Single Family	Residential - Multi-Family	Industrial	Commercial	Institutional	Agricultural	Total
2018	6			3			9
2017	Data not collected before 2018						
2016							
2015							
2014							

**B. Accounting Data**

The previous five years' gallons of RETAIL water provided in each major water use category.

*Table 9: Water Used (Accounts)*

Year	Residential - Single Family	Residential - Multi-Family	Industrial	Commercial	Institutional	Agricultural	Total
2018	557,592,000	22,968,000	1,387,000	81,002,000	110,757,000	0	773,706,000
2017	544,429,000	19,559,000	1,423,000	71,527,000	106,200,000	0	743,138,000
2016	507,403,000	21,161,000	2,636,000	58,167,000	116,189,000	0	705,556,000
2015	501,426,000	20,297,000	2,584,000	68,482,000	130,643,000	0	723,432,000
2014	564,447,000	20,507,000	5,326,000	69,062,000	157,207,000	0	816,549,000

**C. Residential Water Use**

The previous five years residential GPCD for single family and multi-family units.

*Table 10: Residential Water Use (Past 5 Years)*

Year	Total Residential GPCD
2018	122
2017	129
2016	121
2015	129
2014	108
Historic Average	122



#### D. Annual and Seasonal Water Use

1. The previous five years' gallons of treated water provided to RETAIL customers.

*Table 11: Treated Retail Water Use*

Month	Total Gallons of Treated Water				
	2018	2017	2016	2015	2014
January	43,757,000	39,849,000	41,987,000	48,196,000	50,117,000
February	39,946,000	41,070,000	43,989,000	72,737,000	47,589,000
March	59,378,000	60,506,000	61,256,000	56,072,000	6,234,000
April	78,200,000	62,821,000	69,277,000	81,178,000	87,866,000
May	98,518,000	84,373,000	85,881,000	74,887,000	110,178,000
June	97,257,000	91,327,000	89,994,000	87,394,000	117,291,000
July	100,102,000	99,332,000	112,007,000	110,569,000	124,874,000
August	84,849,000	73,947,000	95,768,000	104,025,000	116,356,000
September	63,899,000	73,749,000	58,822,000	89,475,000	75,392,000
October	54,416,000	58,190,000	63,996,000	6,630,000	82,516,000
November	41,753,000	50,272,000	46,068,000	55,055,000	52,597,000
December	39,300,000	40,897,000	40,276,000	46,461,000	4,653,000
<b>Total</b>	801,375,000	776,333,000	809,321,000	832,679,000	875,663,000



2. The previous five years' gallons of raw water provided to RETAIL customers.

*Table 12: Raw Retail Water Use*

Month	Total Gallons of Raw Water				
	2018	2017	2016	2015	2014
January	43,757,000	39,849,000	41,987,000	48,196,000	50,117,000
February	39,946,000	41,070,000	43,989,000	72,737,000	47,589,000
March	59,378,000	60,506,000	61,256,000	56,072,000	62,340,000
April	78,200,000	62,821,000	69,277,000	81,178,000	87,866,000
May	98,518,000	84,373,000	85,881,000	74,887,000	110,178,000
June	97,257,000	91,327,000	89,994,000	87,394,000	117,291,000
July	100,102,000	99,332,000	112,007,000	110,569,000	124,874,000
August	84,849,000	73,947,000	95,769,000	104,025,000	116,356,000
September	63,899,000	73,749,000	58,822,000	89,475,000	75,392,000
October	54,416,000	58,190,000	63,996,000	6,630,000	82,516,000
November	41,753,000	50,272,000	46,068,000	55,055,000	52,597,000
December	39,300,000	40,897,000	40,276,000	46,461,000	4,653,000
<b>Total</b>	801,375,000	776,333,000	809,322,000	832,679,000	931,769,000

3. Summary of seasonal and annual water use.

*Table 13: Seasonal and Annual Total Water Use*

	Summer RETAIL (Treated + Raw)	Total RETAIL (Treated + Raw)
<b>2018</b>	564,416,000	1,602,750,000
<b>2017</b>	529,212,000	1,552,666,000
<b>2016</b>	595,539,000	1,618,643,000
<b>2015</b>	603,976,000	1,665,358,000
<b>2014</b>	717,042,000	1,807,432,000
<b>Average in Gallons</b>	602,037,000.00	1,649,369,800.00



## E. Water Loss

Water Loss data for the previous five years.

*Table 14: Total Water Loss*

Year	Total Water Loss in Gallons	Water Loss in GPCD	Water Loss as a Percentage
<b>2018</b>	55,403,387	12	6.60 %
<b>2017</b>	30,910,000	7	3.94 %
<b>2016</b>	104,315,115	24	12.70 %
<b>2015</b>	136,958,573	31	15.71 %
<b>2014</b>	191,741,438	44	18.78 %
<b>Average</b>	103,865,703	24	11.55 %

## F. Peak Day Use

Average Daily Water Use and Peak Day Water Use for the previous five years.

*Table 15: Peak Day Use*

Year	Average Daily Use (gal)	Peak Day Use (gal)	Ratio (peak/avg)
<b>2018</b>	4,391,095	6134956	1.3971
<b>2017</b>	4,253,879	5752304	1.3522
<b>2016</b>	4,434,638	6473250	1.4597
<b>2015</b>	4,562,624	6564956	1.4389
<b>2014</b>	4,951,868	7793934	1.5739

## G. Summary of Historic Water Use

*Table 16: Historical Data*

Water Use Category	Historic Average	Percent of Connections	Percent of Water Use
<b>Residential - Single Family</b>	535,059,400	87.25 %	71.11 %
<b>Residential - Multi-Family</b>	20,898,400	1.26 %	2.78 %
<b>Industrial</b>	2,671,200	0.06 %	0.35 %
<b>Commercial</b>	69,648,000	8.41 %	9.26 %
<b>Institutional</b>	124,199,200	3.02 %	16.51 %
<b>Agricultural</b>	0	0.00 %	0.00 %

**H. System Data Comment Section**

Water Reports

**Section III: Wastewater System Data****I. Wastewater System Data**

1. Design capacity of wastewater treatment plant(s) in gallons per day: 2,600,000

2. List of active wastewater connections by major water use category.

*Table 17: Waste Water Connections*

Water Use Category	Metered	Unmetered	Total Connections	Percent of Total Connections
<b>Business &amp; Residential</b>	0	4,636	4,636	96.58 %
<b>Industrial</b>	0	2	2	0.04 %
<b>Commercial</b>	0	143	143	2.98 %
<b>Institutional</b>	0	19	19	0.40 %
<b>Agricultural</b>	0	0	0	0.00 %
<b>Total</b>	0	4,800	4,800	100.00 %

3. Percentage of water serviced by the wastewater system: 0.00 %



4. Number of gallons of wastewater that was treated by the utility for the previous five years.*Table 18: Total Treated Wastewater*

Month	Total Gallons of Treated Water				
	2018	2017	2016	2015	2014
January	32,183,684	27,749,824	34,410,794	34,798,284	34,049,046
February	32,053,931	24,387,265	31,934,115	30,136,243	30,264,160
March	36,055,914	27,389,389	33,003,047	32,179,149	32,364,560
April	31,189,225	27,365,298	29,934,791	31,822,565	32,441,923
May	31,575,225	30,699,775	26,271,725	33,929,972	33,254,825
June	30,737,351	31,751,242	29,071,500	33,494,664	31,423,814
July	28,469,686	33,982,999	29,284,264	30,186,936	33,241,744
August	30,044,323	32,856,948	29,420,637	32,853,497	33,806,750
September	28,331,750	28,907,713	28,258,016	30,033,349	35,049,267
October	30,467,795	33,002,927	27,740,599	23,376,274	33,390,615
November	27,646,213	28,268,304	26,438,200	28,514,872	31,975,532
December	27,072,462	30,579,476	25,586,389	34,980,717	32,642,678
<b>Total</b>	365,827,559	356,941,160	351,354,077	376,306,522	393,904,914

5. Could treated wastewater be substituted for potable water? ☐ Yes ☒ No**J. Reuse Data**

6. Data by type of recycling and reuse activities implemented during the current reporting period.

*Table 19: Re-use Data*

Type of Reuse	Total Annual Volume (in gallons)
On-site Irrigation	
Plant wash down	
Chlorination/de-chlorination	
Industrial	
Landscape irrigation (park,golf courses)	111,985,000
Agricultural	90,111,000
Discharge to surface water	0
Evaporation Pond	0
Other	
<b>Total</b>	202,096,000





### K. Wastewater System Data Comment

Additional comments and files to support or explain wastewater system data listed below.

### L. Total Produced Ground Water

*Table 20: Total Treated Wastewater*

Month	Total Gallons of Treated Wastewater				
	2019	2018	2017	2016	2015
January	29,977,000	32,183,000	87,749,000	34,410,000	34,798,000
February	31,744,000	32,053,000	24,387,000	31,934,000	30,136,000
March	35,785,000	36,055,000	27,389,000	33,003,000	32,179,000
April	37,926,000	31,189,000	27,653,000	29,934,000	31,822,000
May	38,847,000	31,757,000	30,699,000	26,271,000	33,929,000
June	37,235,000	30,737,000	31,751,000	29,071,000	33,494,000
July	40,537,000	28,469,000	33,982,000	29,284,000	30,186,000
August	43,138,000	30,044,000	32,856,000	29,420,000	32,853,000
September		28,331,000	28,907,000	28,258,000	30,038,000
October		30,467,000	33,002,000	27,740,000	23,376,000
November		27,646,000	28,268,000	26,433,000	28,514,000
December		27,072,000	30,579,000	25,586,000	34,980,000
<b>Total</b>	295,189,000	366,003,000	417,222,000	351,344,000	376,305,000

*Table 21: Total Produced Raw Retail Water*

Month	Total Gallons of Raw Retail Water				
	2019	2018	2017	2016	2015
January	39,535,000	42,224,000	40,521,000	43,187,000	47,236,000
February	41,547,000	42,495,000	41,304,000	43,754,000	46,280,000
March	40,930,000	44,698,000	44,539,000	49,749,000	42,869,000
April	41,014,000	72,972,000	66,125,000	67,155,000	73,915,000
May	59,365,000	95,825,000	71,598,000	83,599,000	84,083,000
June	86,831,000	109,580,000	90,122,000	82,173,000	77,558,000
July	99,865,000	89,828,000	98,056,000	105,032,000	94,331,000
August	102,885,000	97,583,000	87,605,000	112,392,000	115,242,000
September		74,234,000	77,783,000	68,943,000	100,651,000
October		59,493,000	58,621,000	61,341,000	72,469,000
November		46,223,000	57,663,000	54,943,000	60,387,000
December		39,611,000	42,619,000	40,714,000	48,119,000
<b>Total</b>	511,972,000	814,766,000	776,556,000	812,982,000	863,140,000





Table 22: Total Produced Treated Retail Water

Month	Total Gallons of Treated Retail Water				
	2019	2018	2017	2016	2015
January	35,527,000	39,706,000	35,479,000	34,228,000	38,146,000
February	44,541,000	40,102,000	36,801,000	34,531,000	38,343,000
March	30,098,000	43,398,000	39,002,000	43,630,000	34,963,000
April	57,437,000	68,473,000	60,101,000	55,508,000	59,459,000
May	56,796,000	93,435,000	71,643,000	70,237,000	70,943,000
June	73,512,000	90,928,000	85,384,000	74,183,000	66,590,000
July	89,874,000	88,591,000	97,770,000	88,362,000	77,996,000
August	99,807,000	99,861,000	86,964,000	105,033,000	98,274,000
September		74,264,000	77,475,000	63,573,000	88,859,000
October		49,450,000	57,722,000	53,311,000	58,647,000
November		42,113,000	56,505,000	53,076,000	53,896,000
December		44,431,000	40,490,000	33,982,000	41,771,000
Total	488,246,000	774,752,000	745,336,000	709,654,000	727,887,000

## M. Water Losses from Field Wells to Storage Tanks

Table 23: Water Loss from Well to Storage Tanks

	TOTAL WATER FROM WELL	TOTAL WATER TO STORAGE TANK	LOSS (%)
2015	863,140.00	832,679.00	3.529
2016	812,982.00	809,322.00	.450
2017	776,556.00	776,333.00	.029
2018	814,766.00	801,375.00	1.644



**Appendix C**  
**Ordinance No. 1641**  
**Water Conservation Plan**



ORDINANCE NO. 1641

**AN ORDINANCE OF THE CITY OF ANDREWS, TEXAS, ADOPTING A WATER CONSERVATION PLAN TO PROMOTE RESPONSIBLE USE OF WATER; PROVIDING THE REPEAL OF ALL ORDINANCES OR SECTIONS IN CONFLICT THEREWITH; PROVIDING A SEVERABILITY CLAUSE, PROVIDING FOR A PENALTY OF FINE FOR EACH OFFENCE; AND PROVIDING FOR AN EFFECTIVE DATE**

**WHEREAS**, the City of Andrews, Texas (City), recognizes that the amount of water available to the City and its water utility customers is limited and subject to depletion during periods of extended drought; and

**WHEREAS**, the City recognizes that natural limitations due to drought conditions and other acts of God cannot guarantee an uninterrupted water supply for all purposes; and

**WHEREAS**, the City recognizes that to ensure the continued availability of a safe and adequate water supply to the City and its water utility customers, it is necessary to control the demand for water; and

**WHEREAS**, as authorized under law, and in the best interest of the citizens and the customers of Andrews, Texas, the City Council deems it expedient and necessary to establish certain rules and policies for the orderly and efficient management of limited water supplies prolonged or extended periods of high temperatures and below average rainfall.

**NOW THEREFORE, BE IT RESOLVED AND ORDAINED BY THE CITY COUNCIL OF THE CITY OF ANDREWS, TEXAS THAT:**

**Section 1.** The City of Andrews Water Conservation Plan attached hereto and made a part hereof for all purposes be, and the same is hereby adopted as the official policy of the City.

**Section 2.** Should any paragraph, sentence, clause, phrase or word or section of this ordinance be declared unconstitutional, illegal or invalid for any reason, the same shall not affect the validity of this ordinance as a whole or any part or provision thereof, other than the part so declared to be invalid, illegal, or unconstitutional.

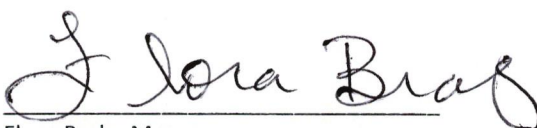
**Section 3.** That all ordinances or parts thereof that are in conflict or inconsistent with the provisions of this ordinance, be, and the same are hereby, repealed and all other ordinances of the City not in conflict with the provisions of this ordinance shall remain in full force and effect.

**Section 4.** The City Manager or chief administrative officer or his designee is hereby directed to file a copy of the Plan and this Ordinance with the Texas Water Development Board in accordance with Title 31, Chapter 363 of the Texas Administrative Code.

**Section 5.** It is hereby officially found and determined that the meeting at which this ordinance was passed was open to the public as required and that public notice of the time, place, and purpose of said meeting was given as required by the Open Meetings Act, Chapter 551 of the Texas Government Code.

PASSED AND APPROVED this 24th day of October 2019.

PASSED AND ADOPTED this 14<sup>th</sup> day of November 2019

  
Flora Braly, Mayor

ATTEST:

  
Sara Copeland, City Secretary