Johnson County Special Utility District
CCN# 10081
PWS ID TX1260018

WATER CONSERVATION PLAN

2017

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Johnson County Special Utility District

Water Conservation Plan

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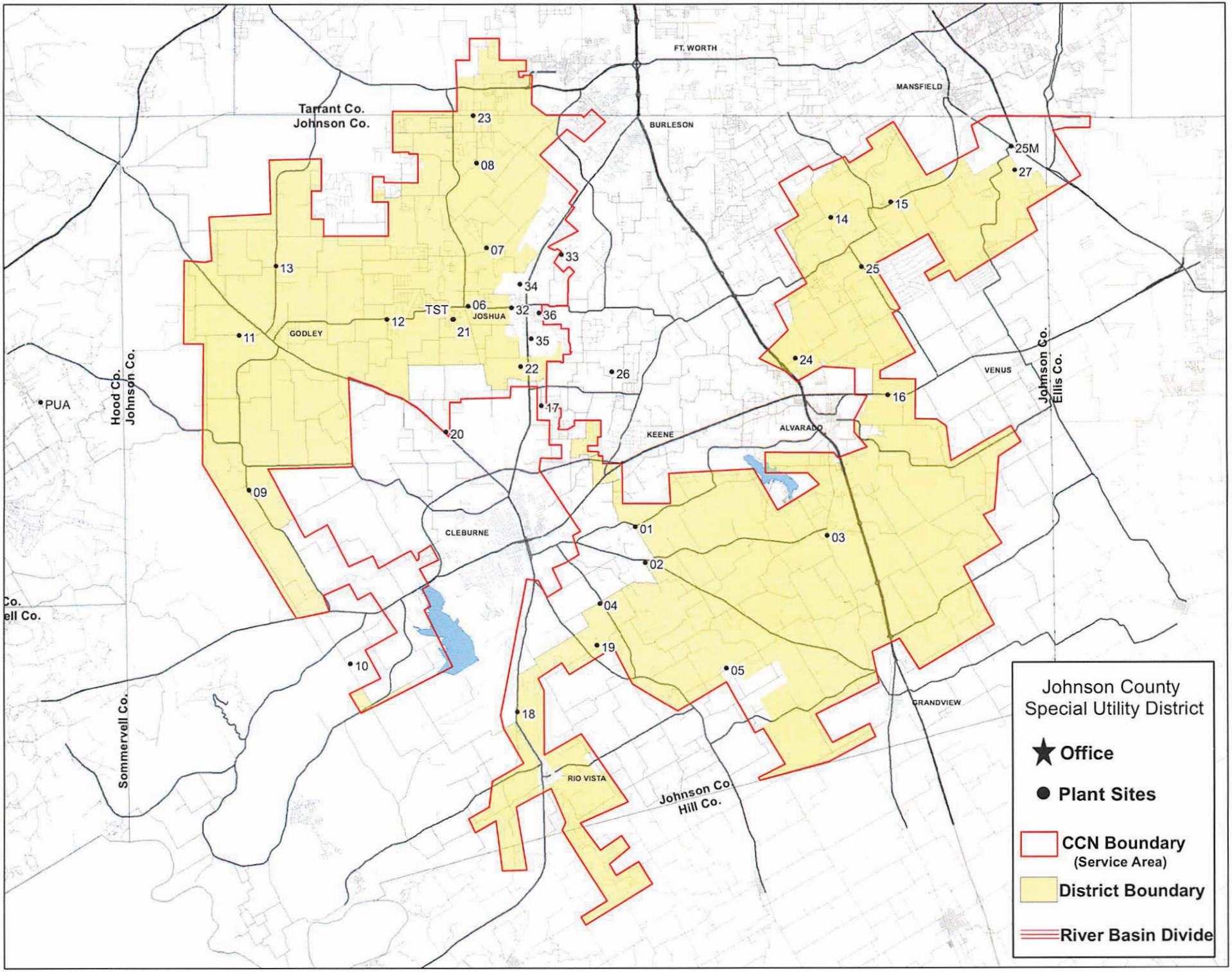
FT. WORTH
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Office
Plant Sites
CCN Boundary
(Service Area)
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1. INTRODUCTION

1.1 Introduction and Objectives

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a water conservation plan is defined as "A strategy or combination of strategies for reducing the volume of water withdrawn from a water supply source, for reducing the loss or waste of water, for maintaining or improving the efficiency in the use of water, for increasing the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."

In 1990, the Johnson County Rural Water Supply Corporation (JCRWS) originally developed a Water Conservation Plan. The plan was submitted to the Texas Water Development Board (TWDB) for approval. Texas Water Development Board approved the plan and the Board of Directors passed a resolution on July 11, 1990 putting the plan in place. Likewise, in subsequent 5-year increments, a resolution was adopted for accepting each updated plan.

Johnson County Special Utility District (JCSUD) uses its best efforts to implement and maintain an updated Water Conservation Plan in order to promote the conservation of available water supply, and/or to protect the integrity of the water supply facility, to protect and preserve public health, welfare and safety.

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.
- Encourage efficient outdoor water use.
- To extend the life of current water supplies by reducing the rate of growth in demand.
- To educate the customers of JCSUD about the need for water conservation and the benefits of conserving our most valued natural resource.

1.2 History of Johnson County Special Utility District

In 1965, the Johnson County Water Supply Corporation organized and chartered under state statutes as a non-profit corporation, much like many others of its kind in Texas during this era. The beginnings of these rural water suppliers arose throughout the country and were funded through loans from the Farmers Home Administration. The system began with 305 users and served a genuine need in supplying drinking water to the rural community. In 1972, the West Prairie Water Supply Corporation in the northern portion of the County was merged into the existing system. The merger of two entities into one was named the Johnson County Rural Water Supply Corporation.

In 1977, the Nolan River Water Supply Corporation in the southern portion of the County also merged with the JCRWS. This public water supplier with such humble beginnings is steadily evolving into much more as time and growth goes in Johnson County.

In 1984, JCRWS had 5,116 rural families being served and the growth trend for the county continued. In 1985, JCRWS, along with a smaller neighboring water system, Johnson County Fresh Water District, recognized that the supply of well water would not continue to sustain the growth in Johnson County. Consequently, the Brazos River Authority was asked to do a feasibility study on transporting surface water from Lake Granbury to the two systems in Johnson County, some 24 miles away. The need for surface water as a more reliable source was becoming increasingly urgent, as ground water levels in the northwest part of the country were experiencing serious decline.

By 1989, JCRWS was receiving treated water from Lake Granbury. The Brazos River Authority had issued public bonds to fund the construction of the Surface Water and Treatment System (SWATS) that eventually would treat and serve 3.5 MGD Johnson County Rural Water Supply Corporation, Johnson County Fresh Water District, Acton Municipal Utility District and the City of Granbury. The SWATS plant was fitted with a desalinization unit to remove excessive chloride and sulfate by a process known as Electro-Dialysis Reversal by the IONICS Corporation. In 1999, the SWATS plant capacity was increased to 5 MGD. Soon after, the SWATS participants agreed to consider expanding the plant to 15 MGD.

In 1992, the Texas Natural Resource Conservation Commission (now Texas Commission on Environmental Quality) granted JCRWS an alternate capacity requirement (ACR) rating of .5 gpm per connection. Two years after receiving the ACR, JCRWS was supplying about 7000 connections with only 1.625 MGD of surface water capacity from the SWATS treatment plant (Surface Water and Treatment System) on Lake Granbury operated by the Brazos River Authority. The annual audit in 1994 reported the asset value for the distribution system at $13.6 million.

In 2000, JCRWS was serving 10,200 connections. The Board of Directors voted to convert Johnson County Rural Water Supply Corporation to a special utility district (SUD). Converting to a SUD allows water supply corporations to become a political subdivision. Benefits include being sales tax-exempt and eligible to participate in the state-sponsored insurance risk pool (TML) rather than paying higher private-sector liability insurance premiums. The largest cost-savings comes for governmental entities issuing tax-exempt bonds to fund capital projects. Finally in 2004, the Texas legislature approved the conversion and the organization began operating as the Johnson County Special Utility District.

Today, JCSUD is the largest Special Utility District in Texas yielding some 15,750 connections, or service provided to a population of 43,000. The management and employees at JCSUD have honed and polished their skills to maintain a level of efficiency that is exemplary among rural water systems in Texas. Likewise, the Board of Directors is committed to provide direction and support that affords the best possible

service within the financial means to continue with the spirit of "people helping people."

2. UTILITY PROFILE

2.1 Existing Water Supplies

The service area of the JCSUD consists of approximately 320 square miles in Johnson, Tarrant, Hill, and Ellis Counties, Texas. JCSUD covers about three-fourths of unincorporated Johnson County. About 95% of the customers are in Johnson County. The service area has a Certificate of Convenience and Necessity originally issued in November 1979. This document essentially is a franchise authorization, which allows only JCSUD to provide water service within this area. Currently the system provides about 35% ground water from existing wells and 65% from surface water. 70% of the surface water comes from City of Mansfield and 30% comes from Lake Granbury in Hood County. JCSUD has maintained a long-term raw water contract for 9,210 acre-feet of water from Lake Granbury with Brazos River Authority.

The water supply for JCSUD is provided from three (3) sources. The water supply assessment is based on a maximum day condition. For over 95% of the time, because of fluctuations in water usage, the capacity will not be fully utilized. In general a maximum day or a condition approximating maximum day occurs three (3) to five (5) times per year and then in only drought years. The water supply sources are a series of long term contracts with the Brazos River Authority (BRA), water wells owned by JCSUD, and water purchase agreements with the City of Mansfield and Grand Prairie. Based on the TCEQ exemption of .5gpm per connection, forecasts show this reserve to extend through 2070.

Table 1 shows the current water supply capabilities.

TABLE 1
JCSUD WATER SUPPLY

Current Water Supply Source	Capacity MGD	Capacity gpm	Connections at 0.5 gpm	0.6 gpm
BRPUA SWATS Plant	7.19	4,993	9,986	8,322
Wells	3.22	2,236	4,472	3,727
Mansfield Contract	9.00	6,250	12,500	10,417
Grand Prairie	6.00	4,167	8,334	6,945
TOTALS	25.41	17,646	35,292	29,411

2.2 Wholesale Customers

JCSUD provides wholesale water on an as-needed basis to six customers that have contracts with JCSUD: the City of Alvarado, Monarch Utilities, Blue Water Oaks, Walnut Creek MHP, Bethany SUD and the City of Keene. JCSUD also provides water to Bell Manor (no contract). For alternative capacity requirement calculations, the

water supply provided to these wholesale water customers were subtracted from JCSUD's daily production values, except for Walnut Creek MHP. The number of active JCSUD connections does not include connections within the wholesale water customer systems for the City of Alvarado, Monarch Utilities, Blue Water Oaks, and Bell Manor. JCSUD also provides water supplies for temporary and unusual water demands for fire protection, oil and gas drilling operations and road construction. The District's Long Range Water Supply Plan includes supplying the growing demand of its wholesale customers just like caring for the retail customer demand. Table 1 shows the maximum water capacity of 25.41 MGD. The excerpt below is taken from the 2016 Brazos G Regional Water Plan showing this capacity will cover the needs through the 2070 growth projection.

5.38 Wholesale Water Provider Supply Plans

Table 5.38-1 lists each wholesale water provider in the Brazos G Area and its corresponding surplus or shortage in years 2040 and 2070. A brief summary of the wholesale water provider (WWP) and the plan for the selected WWPs are presented in the following sub chapters. For each wholesale water provider with a projected shortage, a water supply plan has been developed and is presented in the following sub chapters. **Note that shortages shown reflect full contractual commitments compared to existing supplies.**

Table 5.38-1.Wholesale Water Provider Surplus/(Shortage)

Wholesale Water Provider	Surplus/(Shortage)[1,2]		Comment
	2040 (acft/yr)	2070 (acft/yr)	
Brazos River Authority (Lake Aquilla System)	1,426	696	Projected shortage – see plan below
Brazos River Authority (Little River System)	(67,791)	(95,859)	Projected shortage – see plan below
Brazos River Authority (Main Stem System)[3]	(109,174)	(139,428)	Projected shortage – see plan below
Aquilla Water Supply District	1	1	Projected surplus
Bell County WCID No. 1	(988)	(6,951)	Projected shortage – see plan below
Bistone MWSD	(2,792)	(3,112)	Projected shortage – see plan below
Bluebonnet WSC	(103)	(536)	Projected shortage – see plan below
Central Texas WSC	787	13	Projected surplus
Eastland County WSD	346	232	Projected surplus
Heart of Texas	(5,593)	(5,593)	Projected shortage – see plan below
North Central Texas MWA	(937)	(1,597)	Projected shortage – see plan below
Palo Pinto County MWD No. 1	(4,562)	(5,174)	Projected shortage – see plan below
Upper Leon MWD	(75)	(458)	Projected shortage – see plan below
West Central Texas MWD	(1,167)	(1,583)	Projected shortage – see plan below
City of Abilene	(27,176)	(27,206)	Projected shortage – see plan below
City of Anson	633	606	Projected surplus
City of Bryan	(5,533)	(26,578)	Projected shortage – see plan below
City of Cedar Park	(4,082)	(4,348)	Projected shortage – see plan below
City of Cleburne	(1,314)	(4,625)	Projected shortage – see plan below
City of Gatesville	(1,405)	(4,510)	Projected shortage – see plan below
Johnson County SUD	7,019	1,966	Projected surplus
Kempner WSC	(1,076)	(1,868)	Projected shortage – see plan below
City of Mineral Wells	0	0	Projected surplus
City of Round Rock	(14,028)	(46,089)	Projected shortage – see plan below
City of Stamford	2,099	1,845	Projected surplus

2.3 Water Distribution System

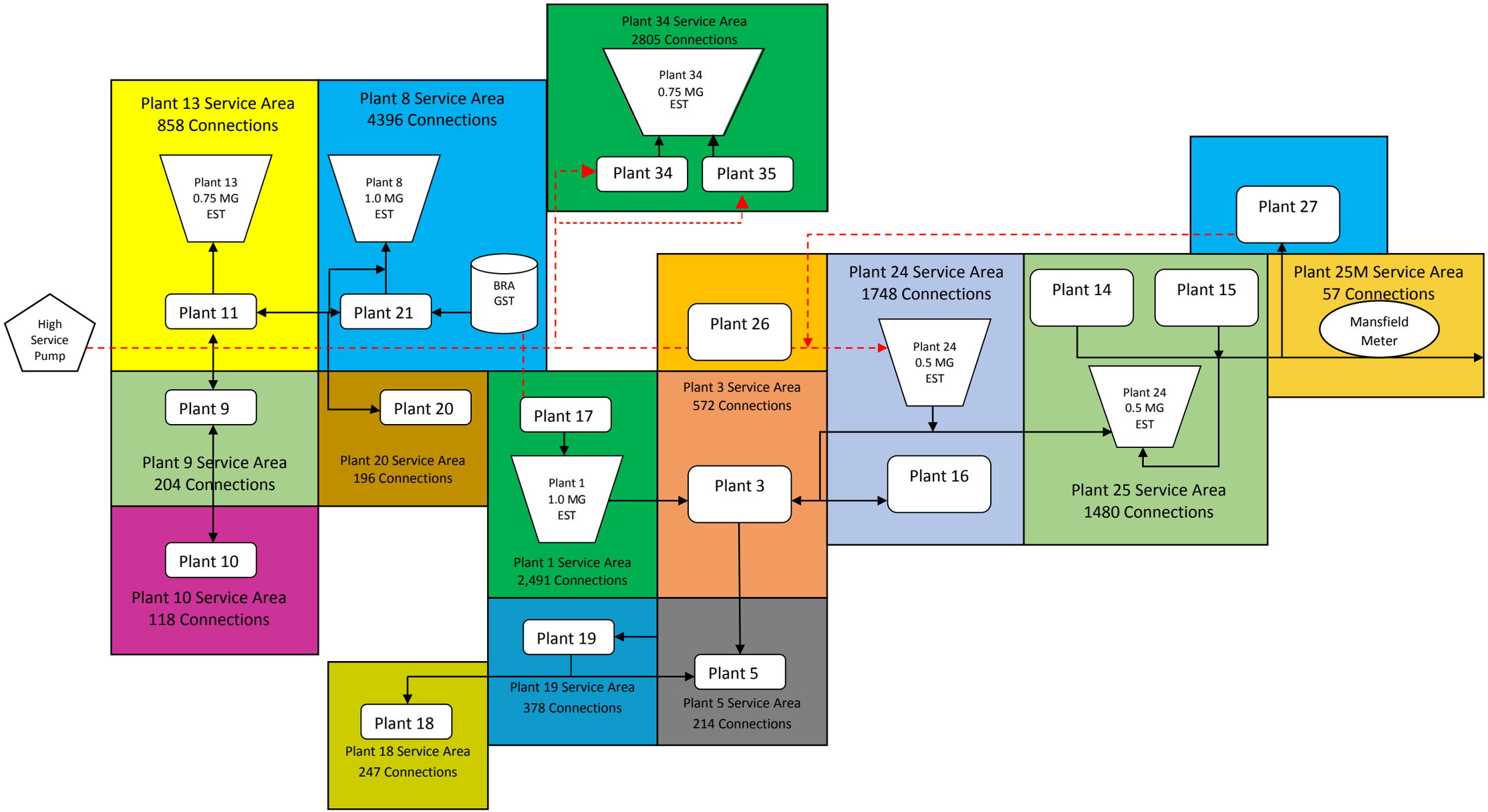
The JCSUD water distribution system is very complex as detailed in the System Diagram (page 5a). The system started initially as a rural water supply system. However, as the water supply demands increased, the nature of the water distribution system has started to change to a suburban system with some commercial requirements. The system consists of approximately 967 miles of water pipe ranging in sizes from twenty-four (24) inch diameter pipe down to one (1) inch diameter pipe.

The water distribution system consists of four (4) principal components; water supply, water storage tanks, pump stations, and distribution piping. The system started initially as a rural water supply system. It has been built by the mergers of at least five (5) separate entities into the current system. In addition, at least three (3) investor owned or neighborhood water associations have also been absorbed into the JCSUD system.

The system is divided into pressure planes for best management of the system. The pressure planes are geographic sub-areas of the entire water system. The purpose of a pressure plane is to control the minimum and maximum water pressure within an area. The system is split into fifteen (15) pressure planes. Pressure Planes 1, 8, 13, 24, 25 and 34 have elevated storage tanks to meet peak hourly conditions. Pressure Planes 3, 5, 9, 10, 18, 19, and 20 have ground storage and pressure tanks to meet peak hourly conditions. Pressure Plane 25M is served from Mansfield and its peak hour conditions are met through the Mansfield system.

Johnson County Special Utility District

2017 Public Water System Diagram



2.4 Water Storage Tanks and Pump Stations:

Water Storage Tanks - JCSUD has a number of water storage facilities, both elevated tanks and ground tanks. The required capacity for water storage is regulated by TCEQ. The capacity requirement is 200 gallons per connection. If a pressure plane has more than 2,500 connections, at least 100 gallons per connection must be elevated storage. JCSUD owns a 3MG elevated, ground storage standpipe, better known as the TST (Transmission Storage Tank) located on Brushy Nob, just west of Joshua. JCSUD has over 9MG of ground storage including the TST, and 4.5MG of elevated storage.

Table 3 below shows the current JCSUD water storage availability.

Table 3
JCSUD Water Storage

Pressure Plane	Plants	Capacity All Ground Tank(s) Gal.	Capacity Elevated Tank Gal.	Total Capacity Storage Tank(s) Gal.
1	1		1MG	1MG
	17	500K		500K
13	13		750K	750K
	11	270K		270K
8	8		1MG	1MG
	21	3.5MG		3.5MG
24	24		500K	500K
	16	200K		200K
25	25		500K	500K
	14	100K		100K
	15	100K		100K
3	3	500K		500K
5	5	200K		200K
9	9	100K		100K
10	10	100K		100K
18	18	100K		100K
19	19	500K		500K
20	20	500K		500K
25M	25M			
26	26	1MG		1MG
26	26	1MG		1MG
34	34	200K	750K	950K
	35	150K		150K
Totals		9.02 MG	4.5 MG	13.52 MG

Pump Stations - Each pressure plane except for 25M has at least one (1) pump station associated with it. Two (2) of the pump stations (Plants 11 and 21) have vertical turbine pumps. All of the others have split case centrifugal pumps.

Table 4 shows the existing pumping capacity at each plant.

Table 4
JCSUD Pump Stations

Pressure Plane	Plants	Capacity Booster Pumps gpm
1	1	
	17	3,600
13	13	
	11	2,150
8	8	
	21	4,400
24	24	
	16	1,250
25	25	
	14	980
	15	980
3	3	1,600
5	5	860
9	9	800
10	10	440
18	18	600
19	19	2,100
20	20	1,200
25M	25M	
34	34	1,500
	35	1,500
Total		**23,960**

The principal criteria used to establish the water system requirements are derived from the Texas Commission on Environmental Quality (TCEQ) which established water system regulations in Chapter 290. These criteria define water supply requirements and water distribution system requirements including facility sizes. These were used in developing the Master Plan. Currently JCSUD has an exemption for the water supply requirements of 0.6 gpm per connection to 0.5 gpm per connection. This is a 20 percent savings. TCEQ has asked JCSUD to provide more data to maintain the exemption. The maximum day criteria generally govern the size of the water supply requirements.

2.5 Wastewater System

A. Wastewater System Data

1. Design capacity of wastewater treatment plant(s): 0.792 MGD

2. Is treated effluent used for irrigation on-site? *Yes;* off-site? *Yes*; plant wash-down? *Yes*; or chlorination/dichlorination? *Yes*
If yes, approximately *2.82 M* gallons per month.

3. Brief Description of the Wastewater System:

Johnson County Special Utility District (JCSUD) owns and operates its collection system and wastewater treatment plant under TCEQ permit number WQ0014350001. The collection system serves the city limits of Joshua and part of Burleson. The system has eight lift stations and approximately 45 miles of sewer main. The JCSUD wastewater treatment facility operates in extended aeration mode and is designed to treat 0.70 MGD, but 0.79MGD is planned in 2017. The treatment facility has influent screens, two aeration basins, four circular clarifiers, a head lift station, two RAS lift stations and a chlorine contact chamber. Effluent from the treatment facility is discharged into Village Creek and finally ends up in Lake Arlington.

B. Wastewater Data for Service Area

1. Percent of water service area served by wastewater system: *7%*

2. Monthly volume treated for previous three years (in gallons):

	Year 2014	**Year 2015**	**Year 2016**
January	10,300,000	11,100,000	16,800,000
February	9,400,000	10,100,000	12,400,000
March	10,000,000	14,300,000	17,300,000
April	10,000,000	14,300,000	16,700,000
May	11,800,000	21,400,000	7,100,000
June	10,200,000	18,700,000	9,800,000
July	10,600,000	10,300,000	11,800,000
August	10,200,000	8,100,000	11,000,000
September	12,700,000	6,900,000	10,700,000
October	11,100,000	11,700,000	10,600,000
November	9,400,000	15,100,000	10,800,000
December	9,500,000	20,600,000	10,800,000
Total	125,200,000	162,600,000	145,800,000

2.6 Lake Granbury Surface Water and Treatment System

The Brazos Regional Public Utility Agency (BRPUA) owns and operates the Lake Granbury Surface Water and Treatment System (SWATS) which provides water to retail customers in Johnson and Hood Counties. The SWATS project is classified as a wholesale public water supplier and serves two retail water customers that are JCSUD and Acton Municipal Utility District (AMUD). These customers of the SWATS project entered into a 50-year contract with the BRA to obtain treated water for the contract amount. Each retail water supplier already has in place its own water conservation plan. The BRA has implemented a Water Conservation Plan/Drought Contingency Plan in order to promote the conservation of available water supply, and/or to protect the integrity of the water supply facility, and to protect and preserve public health.

2.7 Brazos G Plan – Johnson County

The Brazos G Regional Water Plan shows that the reliable groundwater supply in Johnson County is insufficient to provide for all of the water suppliers currently using groundwater. As a result, the plan has many of the smaller suppliers in the county purchasing treated surface water from other suppliers. The Brazos G Regional Water Plan included development of additional supplies through reuse as a recommended water management strategy for Cleburne. Johnson County Special Utility District is best positioned with surplus capacity than any other wholesale water supplier listed in the 2016 Brazos G Regional Plan. Conservation was considered; however, the current per capita use rate in the county, others are below the selected target rate of 140 gallons per person per day in 2060.

2.8 Region C Plan – Johnson County

Johnson County exists in the Brazos G Water Planning area; however, the Brazos-Trinity basin divide-line bisects the county diagonally as it down-dips from the northwest corner to the southeast corner. TRWD identifies the Trinity River Basin portion of Johnson County to be within its service area. Johnson County Special Utility District (SUD) accounts for about 30% of the municipal water demand in Johnson County.

TRWD requires a system capacity buy-in for new or increased contract amounts. The cost of the buy-in is based on the value of the existing system components. TRWD's primary customers (Fort Worth, Arlington, Mansfield and TRA Tarrant County Water Supply Project) have "all needs" contracts and do not pay system buy-in costs for increased use. This is due to their obligation to meet all system revenue requirements. Other customers pay a buy-in cost for new contract water volumes or increases in contract water volumes. In 2009 and 2010, JCSUD executed water purchase agreements of 9MGD and 6MGD with the City of Mansfield and Grand Prairie respectively. Region C recognizes JCSUD as a wholesale customer to these entities in the current water plan. JCSUD is connected to the Mansfield source via its Trinity Basin Transfer Facilities project (12 mile 30" pipeline and two pump stations) which was complete and online in 2014.

3. HISTORICAL & GROWTH PROJECTED WATER USE

Population and Service Data

Current population served, **Water**:	43,239
Current population served, **Wastewater**:	6,053

Historical and projected population served by water utility:

Year	*Population
2012	40,680
2013	41,197
2014	41,640
2015	41,793
2016	43,239
2017	43,628
2018	44,021
2019	44,417
2020	44,817
2021	45,220
2022	45,627
2030	49,018
2040	53,612
2050	58,637
2060	64,134

* Current population taken from existing connections x 2.84 persons per connection
* Projected population uses historical growth data for "best fit" trend.

Historical Connections

	2012	2013	2014	2015	2016
Residential, Single Famil	13,358	13,539	13,719	13,843	14,119
Residential, Multi Family	972	973	949	879	1,112
Commercial/Industrial	443	453	469	468	500
Other	28	28	28	27	25
Total Connections:	14,801	14,993	15,165	15,217	15,756

Usage Data

Five Year Monthly History of Water Sold

	2012	2013	2014	2015	2016
Jan	84.1 MG	98.5 MG	86.3 MG	79.7 MG	79.3 MG
Feb	72.6 MG	73.4 MG	88.3 MG	77.9 MG	72.7 MG
Mar	75.0 MG	84.4 MG	80.3 MG	76.2 MG	73.3 MG
Apr	79.8 MG	77.6 MG	84.7 MG	73.2 MG	78.1 MG
May	91.7 MG	89.2 MG	91.8 MG	77.5 MG	81.7 MG
Jun	119.5 MG	99.2 MG	101.9 MG	82.3 MG	85.5 MG
Jul	139.3 MG	142.4 MG	110.8 MG	107.1 MG	113.3 MG
Aug	174.3 MG	146.3 MG	140.4 MG	165.8 MG	155.1 MG
Sep	153.7 MG	178.6 MG	141.5 MG	164.5 MG	136.5 MG
Oct	126.3 MG	128.5 MG	128.8 MG	140.5 MG	119.2 MG
Nov	95.7 MG	86.4 MG	108.7 MG	122.7 MG	99.3 MG
Dec	101.3 MG	79.7 MG	78.2 MG	82.1 MG	90.6 MG
Total:	1,313.3 MG	1,284.2 MG	1,241.8 MG	1,249.5 MG	1,184.6 MG

Five Year Account Type Usage History

Gallons in (000) Thousands

Year	Residential	Commercial/ Industrial	Institutional	Total
2012	1,202,152	94,329	16,832	1,313,313
2013	1,172,468	92,582	19,131	1,284,181
2014	1,129,219	99,381	13,227	1,241,827
2015	1,146,382	91,374	11,717	1,249,473
2016	1,085,721	86,616	12,298	1,184,635

Five Year Water Loss History

Year	Loss, %
2012	14.0%
2013	11.0%
2014	13.0%
2015	16.0%
2016	18.0%

Five Year and Ten Year Water Loss Goals

Description	Units	2016	2022	2027
Water Loss GPCD	GPCD	17	16	14
Water Loss / Mile	Gallons/mile/day	684	650	619
Water Loss / Connection	Gallons/connection per day	42	41	39
Real Losses	I.L.I	1.1	<2	<2

Projected Demands

Year	Population	Demand
2017	43,628	1,608 MG
2018	44,021	1,623 MG
2019	44,417	1,637 MG
2020	44,817	1,652 MG
2021	45,220	1,667 MG
2022	45,627	1,682 MG
2023	46,038	1,697 MG
2024	46,452	1,713 MG
2025	46,870	1,728 MG
2026	47,292	1,743 MG

* Projected water demands calculated by taking population x five year historical GPCD x 365

Five-Year and Ten-Year Goals for Water Savings

Discription	**Historic 5 yr. Average**	**5-Year Target 2022**	**10-Year Target 2027**
Total GPCD[1]	101	100	95
Residential GPCD[2]	75	72	70
Water Loss (GPCD)[3]	17	17	15
Water Loss (Percentage)[4]	15%	15%	14%

Notes: gallons per capita day (GPCD)

1. Total GPCD = (system input / permanent population) / 365
2. Residential GPCD = (gallons used for residential use / residential population) / 365
3. Water Loss GPCD = (total water loss / permanent population) / 365
4. Water Loss Percentage = (water loss / total GPCD) x 100

4. CONSERVATION GOALS

4.1 Specification of Water Conservation Goals

Current TCEQ rules require the adoption of specific water conservation goals for a water conservation plan. As part of plan adoption, each water supplier is asked to develop 5-year and 10-year goals for per capita municipal use.

The goals for the Johnson County Special Utility District water conservation plan include the following:

- Keep the per capita municipal water use below 100 gallons per capita per day by 2022 (5-year goal).
- Keep the per capita municipal water use below 95 gallons per capita per day by 2027 (10-year goal).
- Reduce gallons lost per mile per day by 24 gallons annually by 2022.
- Maintain our existing program of universal metering and meter replacement and repair.
- Increase efficient water usage and decrease waste in lawn irrigation by implementation and enforcement of landscape water management regulations.
- Raise public awareness of water conservation and encourage responsible public behavior by a public education and information program.

4.2 Metering, Records, Nonrevenue Water, Leaks, & Monitoring

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

Accurate Metering of Treated Water Deliveries

The metering devices that measure treated water delivered to Johnson County Special Utility District will be maintained within an accuracy range of ± 2% accuracy. These meters are tested annually.

Customer Meter Testing, Repair, and Replacement

All connections to the water system are metered connections. All meters will be maintained within an acceptable operating accuracy range in accordance with AWWA standards for meter accuracy. Dead meters and meters that indicate reduced usage will be flagged during the computerized billing process. These meters will be checked and tested, as needed, and replaced when found to be out of compliance with AWWA Standards.

Records Management

As required by TAC Title 30, Part 1, Chapter 288, Subchapter A, Rule 288.2(a)(2)(B), the record management system allows for the separation of water -- sales and uses -- into residential, commercial, public/institutional, and industrial categories. This information will be included in an annual water conservation report.

The Johnson County Special Utility District will continue to maintain a record management system which accounts for the treated water received, drinking water pumped, water delivered, water sold, and water system loss. This record management system will continue to account for monthly usage in customer categories: residential domestic, commercial, and industrial usage.

The District has implemented a meter change out program that provides for the annual replacement of meters in the system that do not register the correct amount of water flowing through them. This program has successfully replaced about 8,000 meters in the past 5 years.

Determination and Control of Water Loss

Water Loss is the difference between the water pumped and the measured water used. Water Loss can consist of two main categories: Apparent and Real Loss, which are then broken down into subcategories:

Apparent Losses

- Meter Inaccuracy (Meters tend to under-report actual use with age).
- Systematic Data Handling Errors – this would include a margin of error set which could take place through the process to read, transmit, archive, and report customer consumption totals as derived from the meter population.
- Unauthorized Consumption (Illegal Connections and Theft).

Real Losses

- Main Breaks and Leaks
- Nonrevenue Water – this is the water loss throughout the distribution system that cannot be measured or identified. Firefighting, flushing, street cleaning, irrigation

in public areas, and construction sites are all unbilled unmetered and fall in this category.

Johnson County Special Utility District will continue to monitor and minimize water loss by investigating reports of theft, inspecting water facilities in the field, using fire hydrant meters to quantify volumes sold through hydrants, visually monitoring property occupancy, and monthly comparisons of historical metered usage.

Leak Detection and Repair

The Johnson County Special Utility District will continue to vigilantly monitor the water distribution system and customer service connections for water leaks while addressing the repair thereof in a manner that expeditiously stops water loss. All leaks are isolated and repaired as soon as possible.

Persons reading meters watch for and report signs of illegal connections so they can be addressed quickly. Crews and personnel look for and report evidence of leaks in the water distribution system. Maintenance crews respond quickly. Areas of the water distribution system in which numerous leaks and line breaks occur are targeted for replacement as funds are available.

The District plans on implementing a District Metered Area (DMA) program which is part of current Best Management Practice leak control zones. A DMA is a small zone of the distribution system, typically encompassing between 1,000 and 3,000 customer service connections, with measured supply input flow of sufficiently small volume that individual leakage events can be quantified, thereby guiding leak detection deployment decisions.

Monitoring - Annual Water Conservation Report

A modified water utility profile form that will be used in the development of an annual water conservation report for the Johnson County Special Utility District. This form will be completed by May 1 of each year to monitor the effectiveness and efficiency of the water conservation program. The form records the water use by category, per capita

municipal use, and nonrevenue water for the current year and compares them to historical values. The modified water utility profile and annual water conservation report will also be sent to TRWD, which will monitor regional water conservation trends.

4.3 Continuing Education and Information Campaign

The Johnson County Special Utility District will continue to promote conservation through public education by:

- Participating in useful conservation programs.
- Promoting a consistent, regional message of conservation awareness.
- Making conservation information available on the Johnson County Special Utility District website and via monitor at the administrative office in the lobby.
- Including a conservation message in The Johnson County Special Utility District's Newsletter.
- Ensuring that the annual Consumer Confidence Report will continue to contain a conservation message for the entire service area.
- Encouraging local media coverage of water conservation issues and the importance of water conservation.
- Making water conservation brochures and other water conservation materials available to the public at Johnson County Special Utility District's administrative office.

4.4 Non-Promotional Water Rate Structure

With the intent of encouraging water conservation, the Johnson County Special Utility District has adopted an increasing block rate structure. The unit price for water increases with increasing water usage. Current water rates are shown in Table 7.1 and Table 7.2

Table 7.1: Monthly Minimum Meter Charges

Size	5/8"	3/4"	1"	1-1/2"	2"	3"	4"
Monthly	$ 33.00	$ 42.90	$ 72.60	$ 132.00	$ 330.00	$ 660.00	$ 1,320.00

Table 7.2: Charges by Volumetric Usage

Monthly Gallons Used				Charge per thousand gallons
0	to	5,000	gallons	$4.25
5,001	to	10,000	gallons	$5.25
10,001	and	greater	gallons	$6.25

4.5 Other Water Conservation Measures

Reservoir System Operation Plan

The TRWD and Brazos River Authority are responsible for all reservoir operation.

Ordinances, Plumbing Codes, or Rules on Water-Conserving Fixtures

The State of Texas has required water-conserving fixtures in new construction and renovations since 1992. The state standards call for flows of no more than 2.5 gallons per minute (gpm) for faucets, 3.0 gpm for showerheads, and 1.6 gallons per flush for toilets. Similar standards are now required nationally under federal law. These state and federal standards assure that all new construction and renovations will use water-conserving fixtures.

Prohibit Water Waste

The Johnson County Special Utility District is contemplating the adoption of conservation measures in regard to outdoor watering and landscape irrigation. Yet at this time, no resolution has been determined suitable for the District's vast area which covers both Rural and Urban customers. Being considered in this contemplation are:

- No outdoor watering with sprinklers from 10:00 a.m. to 6:00 p.m. every day, year-round. Watering with hand-held hoses (provided that they are equipped with positive shut-off devices), soaker hoses, or hand-held dispensers are allowed.
- All irrigation systems should be in compliance with current state design and installation regulations (Texas Administrative Code Title 30, Part 1, Chapter 344).
- Sprinkler Systems of designs and installations should not spray directly onto impervious surfaces such as sidewalks and roads or onto other non-irrigated areas.
- Sprinkler systems should be properly maintained to avoid waste water.
- No outdoor watering during any form of precipitation.
- No outdoor watering during a freeze or when the temperature has the potential of reaching 32° F.

Requests for Variance

The General Manager of the Johnson County Special Utility District, or his or her designee, may grant temporary variance for water use prohibited by this plan if it is determined that

an emergency condition resulting in an adverse effect to health, sanitation, or fire protection of a customer, person, or entity would result if a variance is not granted. Temporary variance may also be granted if it is determined that a customer, person, or entity is caused undue hardship or financial burden if a variance is not granted.

Outdoor watering at a service address with large multi-station irrigation systems may take place in accordance with a variance granted by the General Manager (or his or her designee) if it is determined that the property cannot be adequately irrigated in a single day.

Variances shall be granted or denied at the discretion of the General Manager or official designee. All petitions for variances should be in writing and should include the following information:

- Name and address of the petitioner(s)
- Purpose of water use
- Specific provisions from which relief is requested
- Detailed statement of the adverse effect of the provision from which relief is requested
- Description of the relief requested
- Period of time for which the variance is sought
- Alternative measures that will be taken to reduce water use
- Other pertinent information.

4.6 Implementation and Enforcement of the Water Conservation Plan

Mandatory water conservation measures will be enforced by warnings and penalties as follows:

- On the first violation, customers will be given a verbal warning that they have violated the mandatory water conservation measures. Johnson County Special

Utility District staff will provide the customer with the information and educational materials needed to comply with the plan.

- On the second violation, a violation notice and warning will be issued to the customer explaining the risk of disconnect associated with non-compliance.
- On the third and subsequent violations, the customer meter is subject to being disconnected.
- Restoring water service, the customer must sign a statement of intent to comply with all applicable water conservation measures and pay the standard "Trip" fee to re-connect service.

The General Manager (or his or her designee) may assess an administrative fee associated with a violation of this plan. Administrative fees will not be assessed for verbal or written warnings. The administrative fee shall be assessed on the third and subsequent violations, or theft of water, in order to recover costs associated with enforcement. Each day that a violation occurs shall constitute a separate violation.

5. ANALYSIS OF BEST MANAGEMENT PRACTICES

Best Management Practices have been developed for utilities to both improve water use efficiency of their own operations and for programs to improve the efficiency of their customers. The District has evaluated the best management practices outlined in the Water Conservation Best Management Practices Guide and have chosen some of these practices to aid in the effectiveness of water efficiency and water conservations among the District and its customers. Below is a list of Best Management Practices the District feels would be the most beneficial to implement for this planning cycle or that has already been implemented:

- Conservation Coordinator – In this plan update cycle, the District expands the job responsibilities of a conservation coordinator among a few members of the work force to oversee the implementing and maintaining of the conservation program.

- Water Conservation Pricing – The District uses a rate structure that discourages the inefficient use or waste of water by increasing unit prices with increased consumption.

- Metering of All New Connections and Retrofit of Existing Connections – All connections in the district are metered.

- System Water Audit and Water Loss – The District conducts a water audit yearly and uses the information to improve meter testing and repair practices, reduce unauthorized water use, improve accounting for unbilled water, and implement effective water loss management strategies.

- Public Information – The District will promote a consistent, regional message of conservation awareness and keep conservation information on the Johnson County Special Utility District Website. Also, the District will include a conservation message in the District's Consumer Confidence Report and make water conservation brochures available to the public at the District's administrative office.

- Prohibit Wasting Water – The District will discourage from outdoor water with sprinklers from 10:00 a.m. to 6:00 p.m. every day, year-round and will not allow water waste through watering imperious surfaces and during any form of precipitation.

- Wholesale Agency Assistance Programs – The District would be willing to provide technical assistance to wholesale customers for conservation.

- School Education - The District would be willing to offer presentations, plant tours, etc. to school groups within the service area.

- Partnership with Nonprofit Organizations – The District would be willing to partner with local non-profit organizations to help provide additional conservation outreach to customers.

JOHNSON COUNTY SPECIAL UTILITY DISTRICT

RESOLUTION NO. 1704-117

A RESOLUTION AUTHORIZING ADOPTION OF AN UPDATED WATER CONSERVATION DROUGHT CONTINGENCY PLAN; PROVIDING AN EFFECTIVE DATE

WHEREAS, Texas Commission on Environmental Quality (TCEQ) rules in Title 30 Texas Administrative Code (TAC) Chapter 288.30(5)(A) state that retail public water systems providing water service to 3,300 or more connections shall submit an updated water conservation/drought contingency plan that meets the requirements of Subchapter B of this chapter; and

WHEREAS, Title 30 TAC Chapter 288.30(6) states that wholesale public water suppliers shall submit an updated water conservation/drought contingency plan meeting the requirements of Subchapter B of this chapter; and

WHEREAS, Staff recommends approval of this revised 2017 Water Conservation/Drought Contingency Plan.

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF DIRECTORS OF JOHNSON COUNTY SPECIAL UTILITY DISTRICT, THAT:

Section One In accordance with Title 30 TAC Chapter 288, revisions of water conservation/drought contingency plans and implementation reports shall be updated, adopted and submitted to TCEQ every five years, the next due date being by May 01, 2022; and

Section Two The Board of Directors of JCSUD hereby approves the updated Water Conservation/Drought Contingency Plan and that this Resolution shall become effective immediately upon its passage.

PASSED AND ADOPTED on the 18th day of April, 2017, at a Regular Meeting of the Board of Directors of Johnson County Special Utility District.

JOHNSON COUNTY SPECIAL UTILITY DISTRICT

BY: _____
Tommy Webb, President

ATTEST:

_____
Michael Bowles, Secretary-Treasurer