DALLAS WATER UTILITIES PREPARING FOR THE FUTURE

NORTH CENTRAL TEXAS TAWWA

ANNUAL HOLIDAY DINNER

DECEMBER 8, 2016

OUTLINE

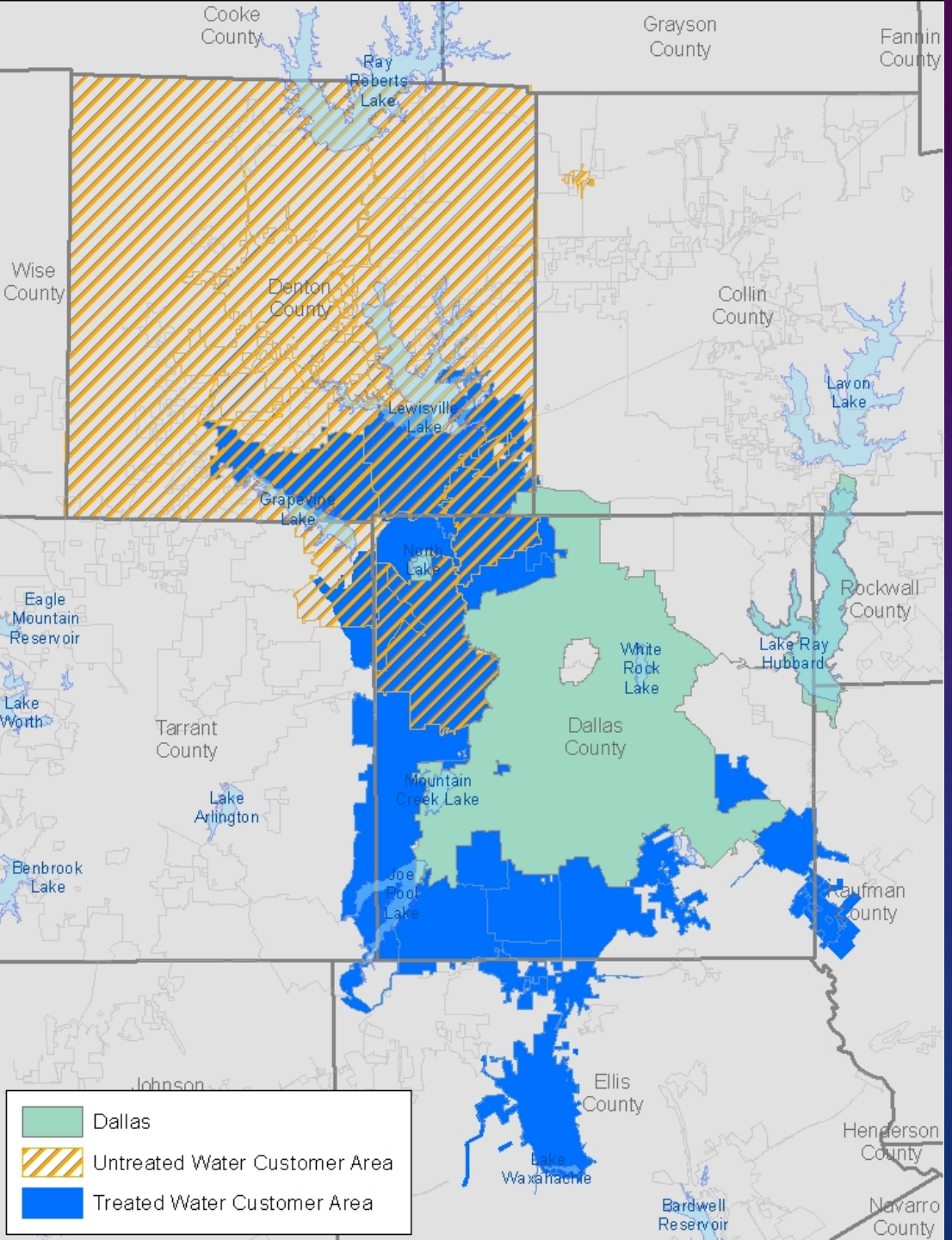
1. Background
2. State of the Utility
3. 2016 State of the Water Industry Report, AWWA
    a. Renewal and Replacement of Aging Infrastructure
    b. Financing for Capital Improvements
    c. Public Understanding of the Value of Water Systems and Their Services
    d. Long-Term Water Availability
    e. Public Understanding of the Value of Water Resources

Dallas Water Utilities Background

- Founded in 1881
- Department of the City of Dallas responsible for the administration and management of the water and wastewater system
- Funded from water and wastewater revenues, receives no tax dollars (Enterprise Fund)

DRAFT

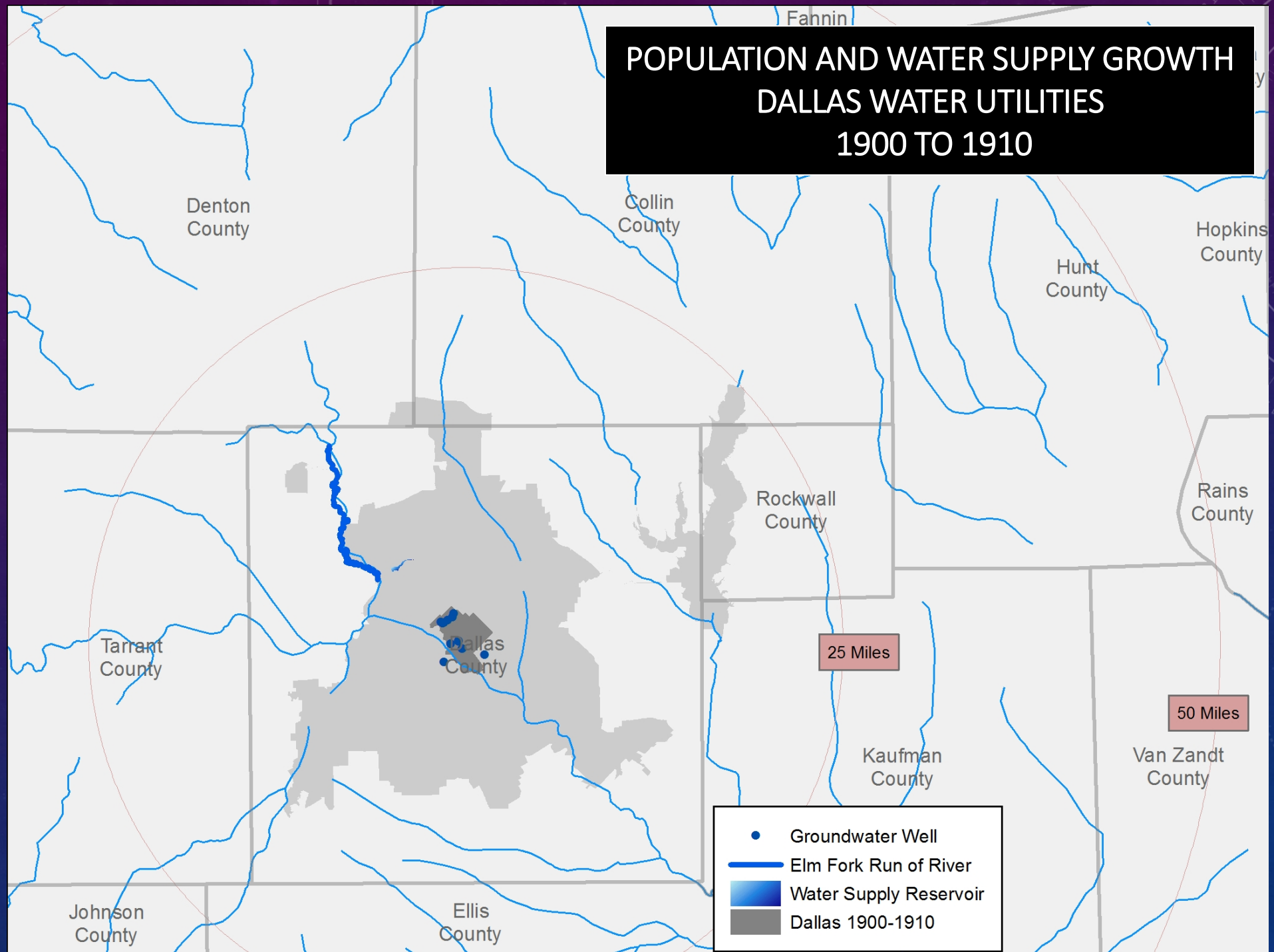
Lake Tawakoni Spillway



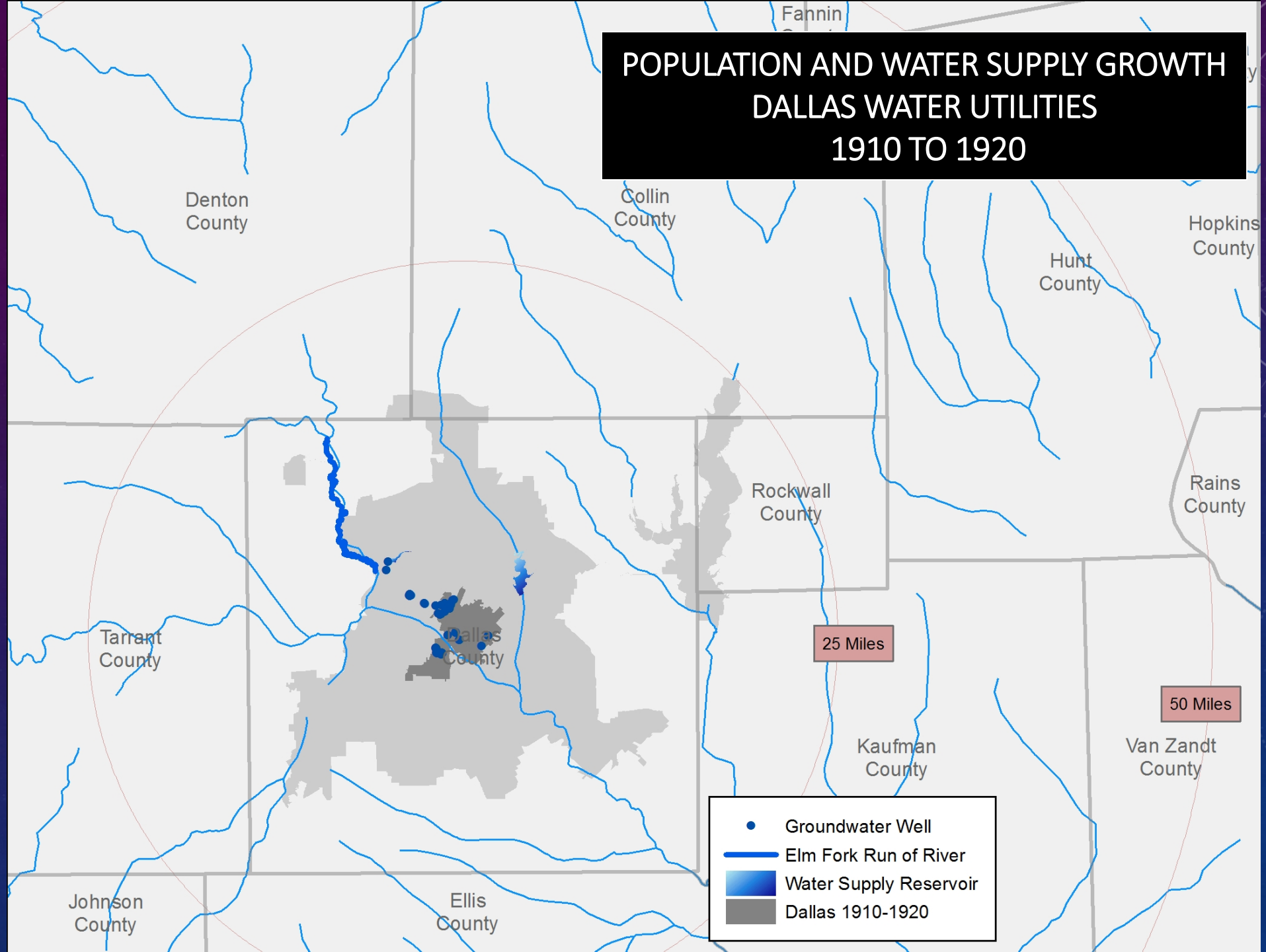
Dallas Water Utilities Service Area

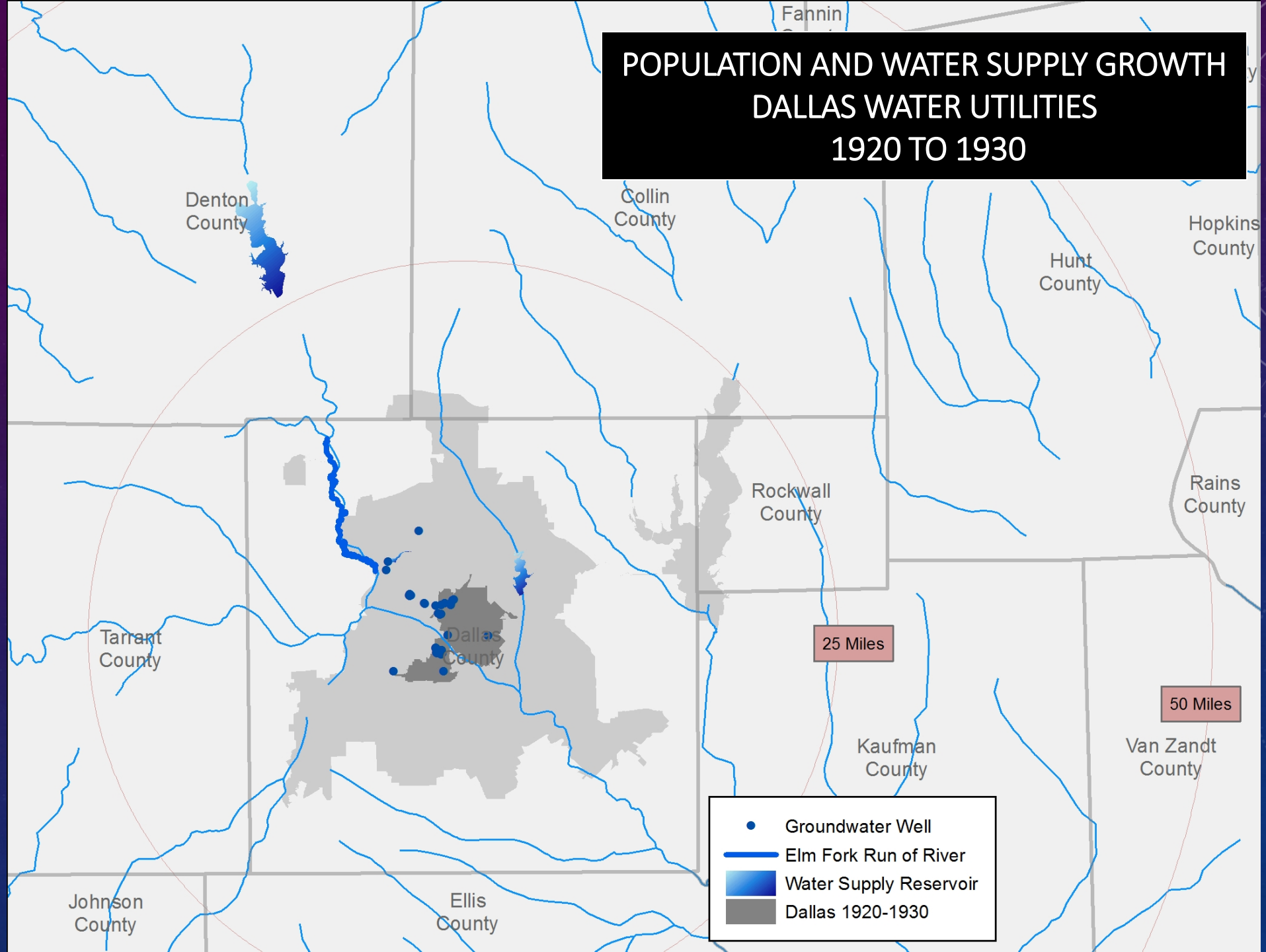
Population served: 2.4 million

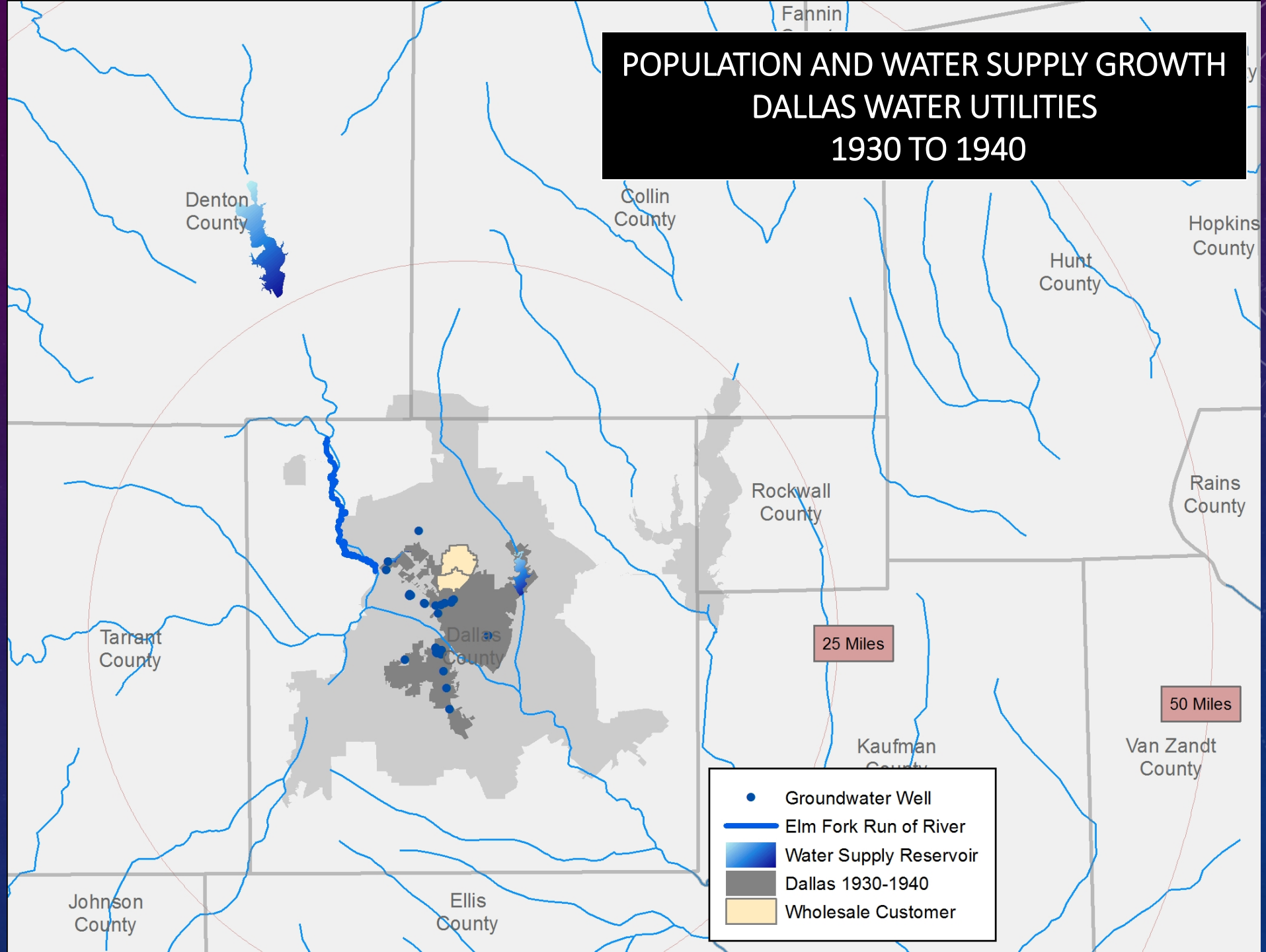
- 1.2 million in Dallas
- 1.2 million in 27 wholesale customer cities

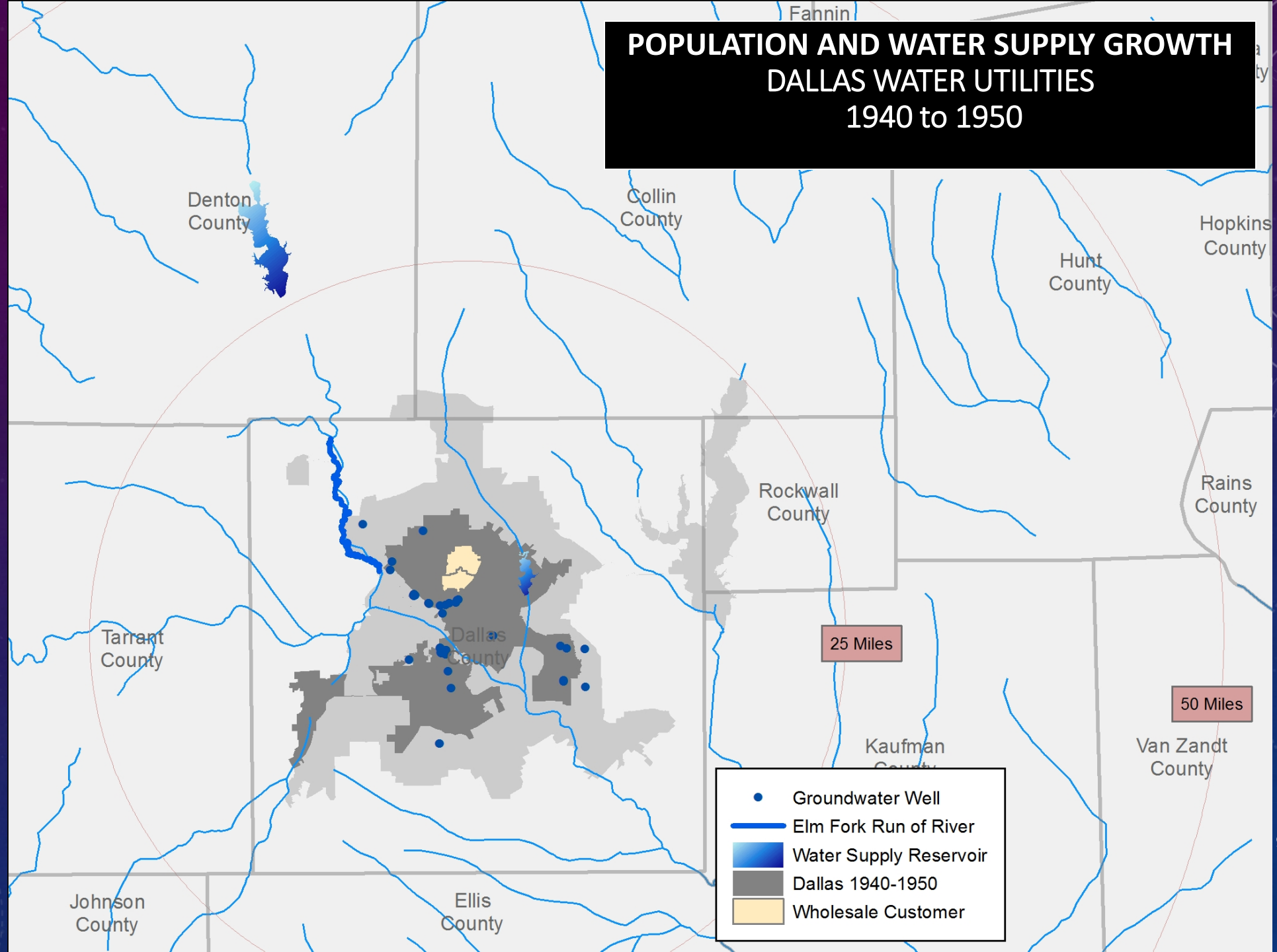

POPULATION AND WATER SUPPLY GROWTH
DALLAS WATER UTILITIES
1900 TO 1910
Fannin
Denton County
Collin County
Hopkins County
Hunt County
Rockwall County
Rains County
Tarrant County
Dallas County
25 Miles
50 Miles
Kaufman County
Van Zandt County
Johnson County
Ellis County
Groundwater Well
Elm Fork Run of River
Water Supply Reservoir
Dallas 1900-1910

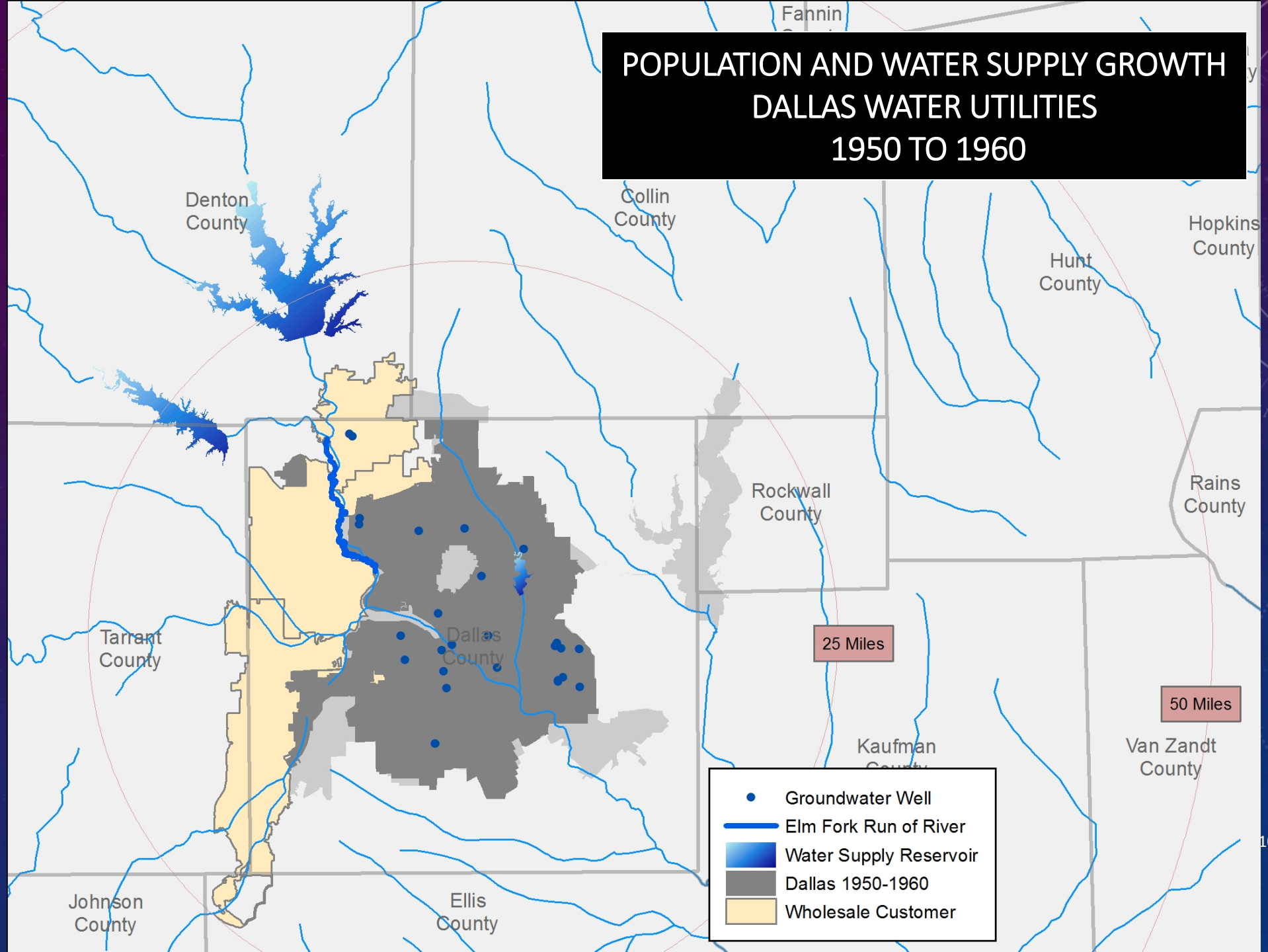
POPULATION AND WATER SUPPLY GROWTH
DALLAS WATER UTILITIES
1910 TO 1920

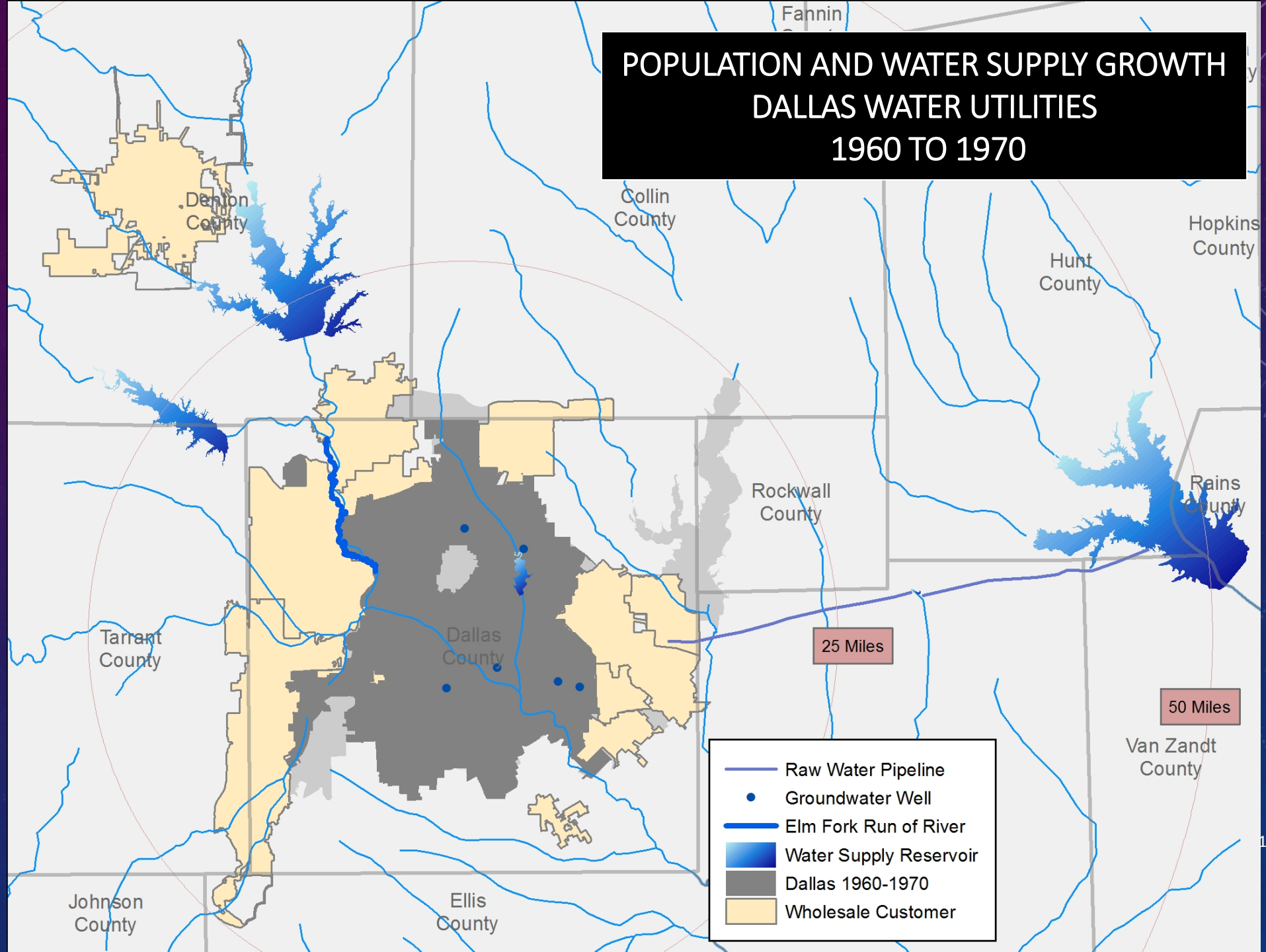


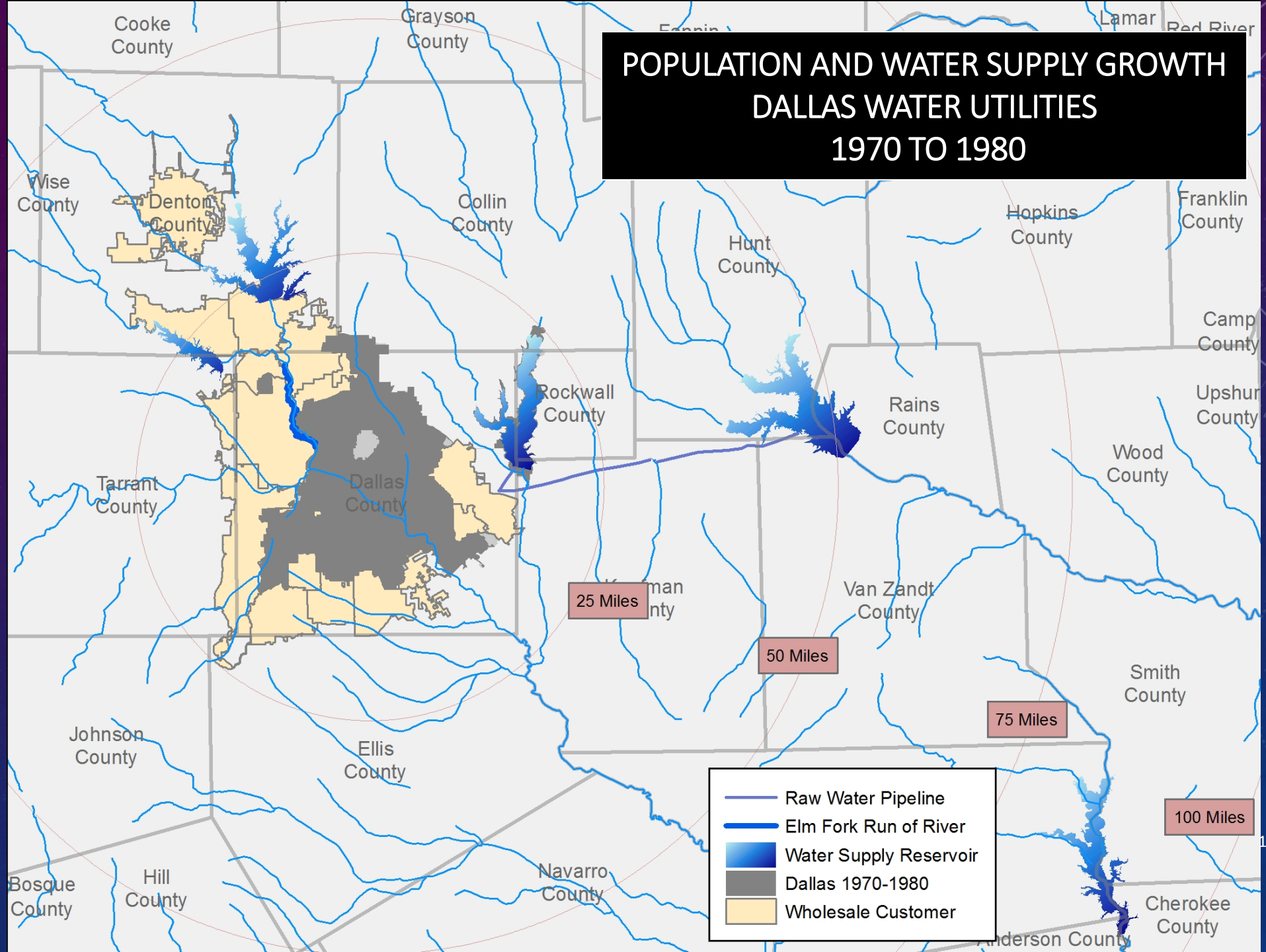

POPULATION AND WATER SUPPLY GROWTH
DALLAS WATER UTILITIES
1920 TO 1930
Fannin
Denton County
Collin County
Hopkins County
Hunt County
Rockwall County
Rains County
Tarrant County
Dallas County
25 Miles
50 Miles
Kaufman County
Van Zandt County
Johnson County
Ellis County
Groundwater Well
Elm Fork Run of River
Water Supply Reservoir
Dallas 1920-1930

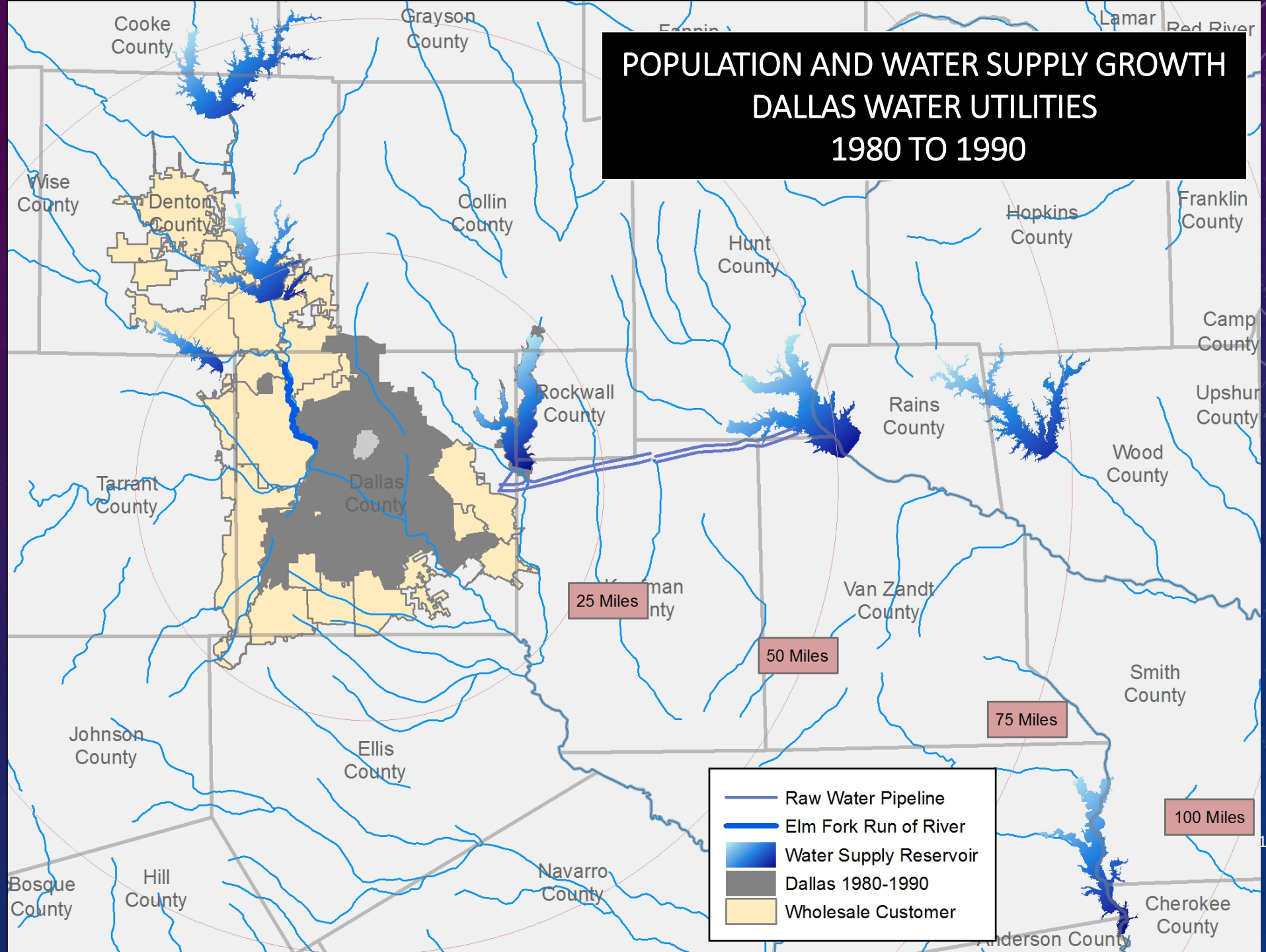

POPULATION AND WATER SUPPLY GROWTH
DALLAS WATER UTILITIES
1930 TO 1940
Fannin
Denton County
Collin County
Hopkins County
Hunt County
Rockwall County
Rains County
Tarrant County
Dallas County
25 Miles
50 Miles
Kaufman
Van Zandt County
Johnson County
Ellis County
Groundwater Well
Elm Fork Run of River
Water Supply Reservoir
Dallas 1930-1940
Wholesale Customer

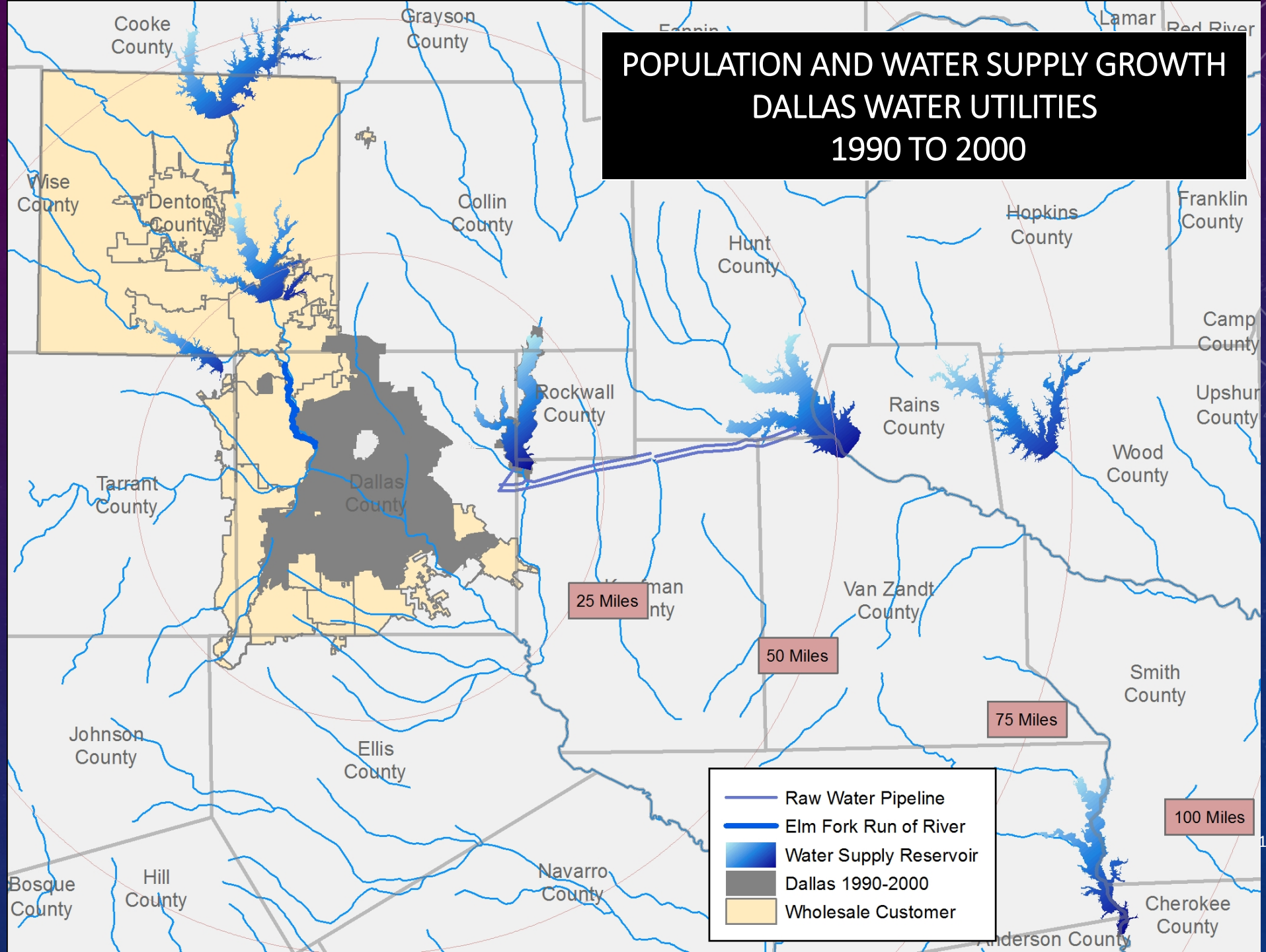

POPULATION AND WATER SUPPLY GROWTH
DALLAS WATER UTILITIES
1940 to 1950
Fannin
Denton County
Collin County
Hopkins County
Hunt County
Rockwall County
Rains County
Tarrant County
Dallas County
25 Miles
50 Miles
Kaufman
Van Zandt County
Johnson County
Ellis County
Groundwater Well
Elm Fork Run of River
Water Supply Reservoir
Dallas 1940-1950
Wholesale Customer


POPULATION AND WATER SUPPLY GROWTH
DALLAS WATER UTILITIES
1950 TO 1960
Fannin
Denton County
Collin County
Hopkins County
Hunt County
Rockwall County
Rains County
Tarrant County
Dallas County
25 Miles
50 Miles
Kaufman
Van Zandt County
Johnson County
Ellis County
Groundwater Well
Elm Fork Run of River
Water Supply Reservoir
Dallas 1950-1960
Wholesale Customer


POPULATION AND WATER SUPPLY GROWTH
DALLAS WATER UTILITIES
1960 TO 1970
Fannin
Denton County
Collin County
Hopkins County
Hunt County
Rockwall County
Rains County
Tarrant County
Dallas County
25 Miles
50 Miles
Van Zandt County
Johnson County
Ellis County
Raw Water Pipeline
Groundwater Well
Elm Fork Run of River
Water Supply Reservoir
Dallas 1960-1970
Wholesale Customer


POPULATION AND WATER SUPPLY GROWTH
DALLAS WATER UTILITIES
1970 TO 1980
Cooke County
Grayson County
Lamar
Red River
Wise County
Denton County
Collin County
Hunt County
Hopkins County
Franklin County
Camp County
Upshur County
Rockwall County
Rains County
Wood County
Tarrant County
Dallas County
Van Zandt County
Smith County
Johnson County
Ellis County
Navarro County
Hill County
Bosque County
Cherokee County
25 Miles
50 Miles
75 Miles
100 Miles
Raw Water Pipeline
Elm Fork Run of River
Water Supply Reservoir
Dallas 1970-1980
Wholesale Customer


POPULATION AND WATER SUPPLY GROWTH
DALLAS WATER UTILITIES
1980 TO 1990
Cooke County
Grayson County
Lamar
Red River
Wise County
Denton County
Collin County
Hopkins County
Franklin County
Hunt County
Camp County
Rockwall County
Rains County
Upshur County
Wood County
Tarrant County
Dallas County
25 Miles
Van Zandt County
50 Miles
Smith County
75 Miles
Johnson County
Ellis County
100 Miles
Raw Water Pipeline
Elm Fork Run of River
Water Supply Reservoir
Dallas 1980-1990
Wholesale Customer
Bosque County
Hill County
Navarro County
Cherokee County


POPULATION AND WATER SUPPLY GROWTH
DALLAS WATER UTILITIES
1990 TO 2000
Cooke County
Grayson County
Lamar
Red River
Wise County
Denton County
Collin County
Hopkins County
Franklin County
Hunt County
Camp County
Rockwall County
Rains County
Upshur County
Wood County
Tarrant County
Dallas County
25 Miles
Van Zandt County
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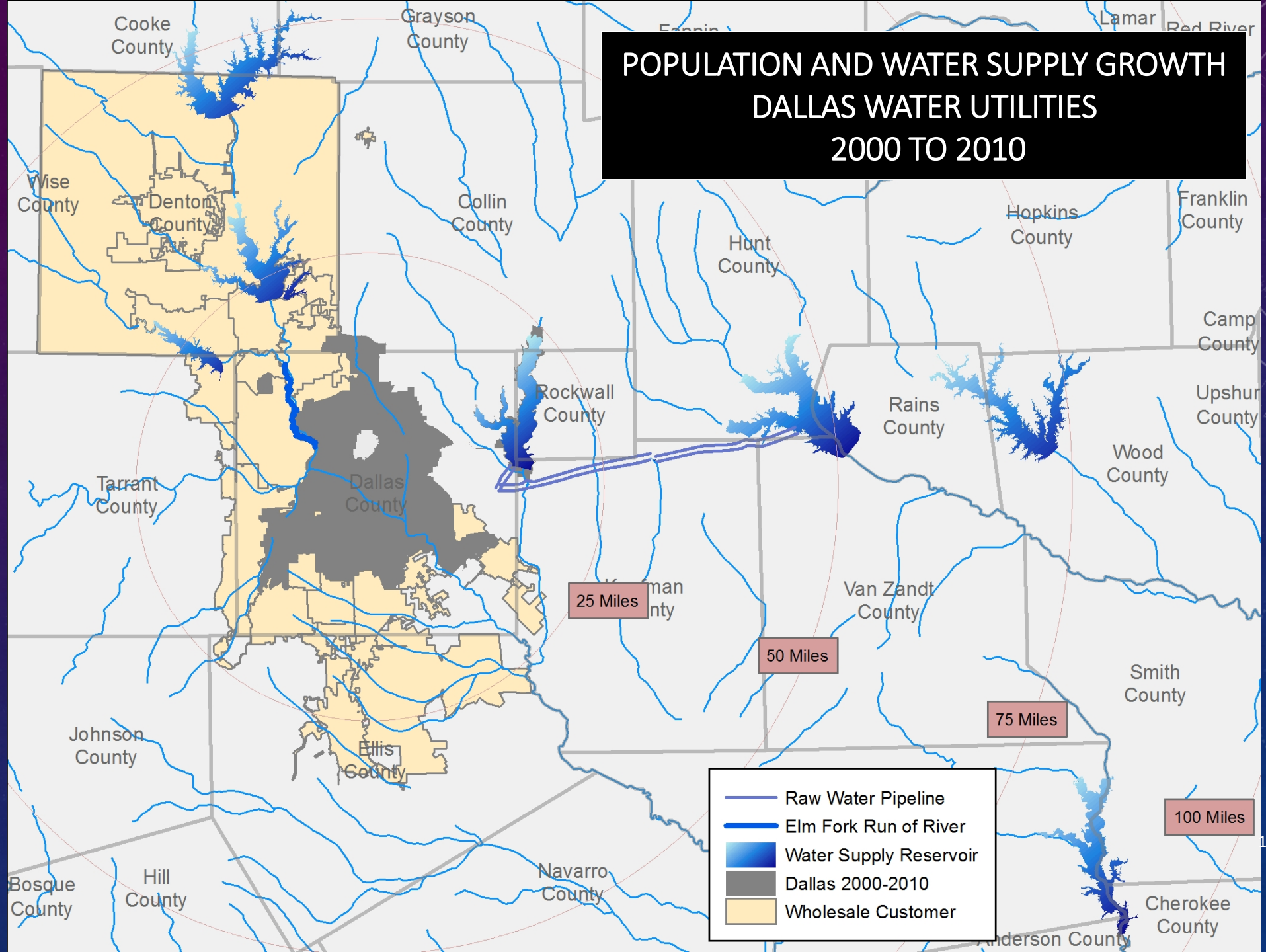
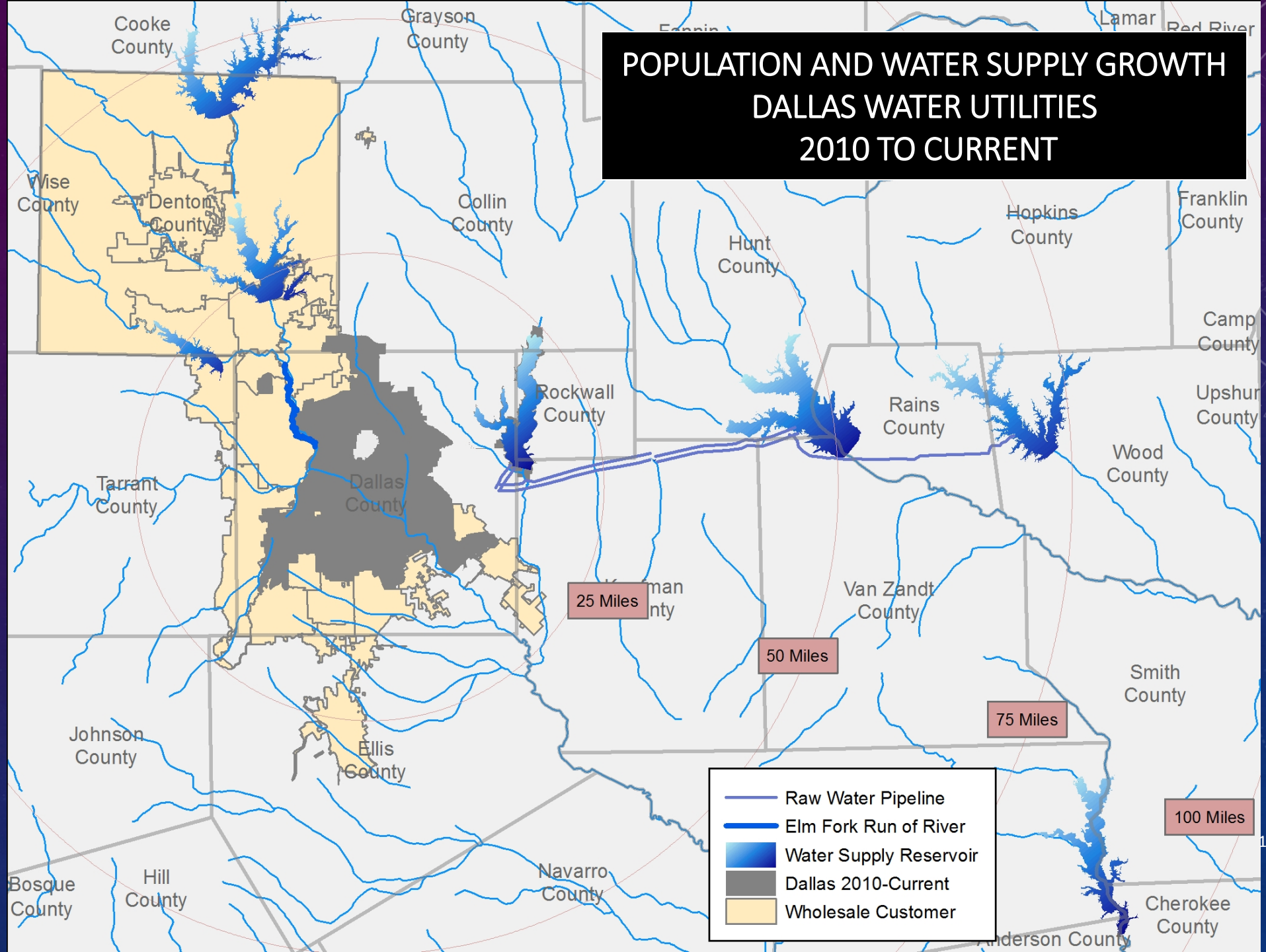
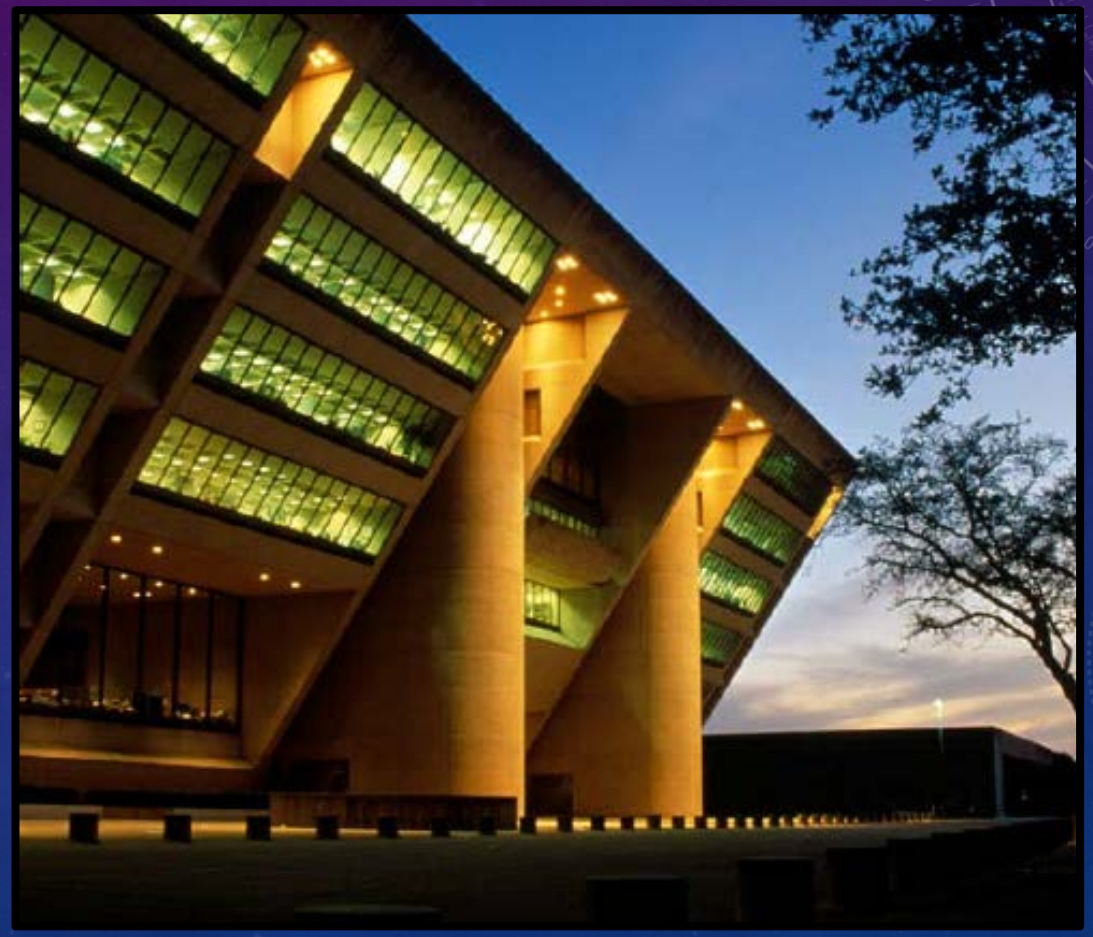
75 Miles
Johnson County
Ellis County
100 Miles
Raw Water Pipeline
Elm Fork Run of River
Water Supply Reservoir
Dallas 1990-2000
Wholesale Customer
Bosque County
Hill County
Navarro County
Cherokee County


POPULATION AND WATER SUPPLY GROWTH
DALLAS WATER UTILITIES
2000 TO 2010
Cooke County
Grayson County
Lamar
Red River
Wise County
Denton County
Collin County
Hunt County
Hopkins County
Franklin County
Camp County
Upshur County
Rockwall County
Rains County
Wood County
Tarrant County
Dallas County
Van Zandt County
Smith County
Johnson County
Ellis County
Navarro County
Hill County
Bosque County
Cherokee County
Anderson County
25 Miles
50 Miles
75 Miles
100 Miles
Raw Water Pipeline
Elm Fork Run of River
Water Supply Reservoir
Dallas 2000-2010
Wholesale Customer


POPULATION AND WATER SUPPLY GROWTH
DALLAS WATER UTILITIES
2010 TO CURRENT
Cooke County
Grayson County
Lamar
Red River
Wise County
Denton County
Collin County
Hopkins County
Franklin County
Hunt County
Camp County
Rockwall County
Rains County
Upshur County
Wood County
Tarrant County
Dallas County
25 Miles
Van Zandt County
50 Miles
Smith County
75 Miles
Johnson County
Ellis County
100 Miles
Raw Water Pipeline
Elm Fork Run of River
Water Supply Reservoir
Dallas 2010-Current
Wholesale Customer
Bosque County
Hill County
Navarro County
Cherokee County

CURRENT STATE OF THE DALLAS WATER UTILITIES

- Approximately 1,450 employees
- 699 square mile service area
- 300,000+ retail customer accounts
- FY17 Operating Budget of $657.5 M
- FY17 Capital Budget of $311.5 M
- Assets of $5.2 B
- Outstanding P & I of $3.2 B
  - Principal $2.1 B
  - Interest $1.1 B



DALLAS WATER UTILITIES ASSET SUMMARY

Water Supply, Treatment and Distribution System

- 7 reservoirs, (6 connected)
- 3 water treatment plants with a combined capacity of 900 MGD
- 23 pump stations
- 4,930 miles of water mains
- 9 elevated and 12 ground storage tanks
- Value of water assets $3.2 B
- Treated 135 BG of water in FY16

Wastewater Collection and Treatment System

- 2 wastewater treatment plants with a combined capacity of 260 MGD
- 15 wastewater pump stations
- 4,020 miles of wastewater main
- Value of wastewater assets $2.0 B
- Treated 76 BG of wastewater in FY16

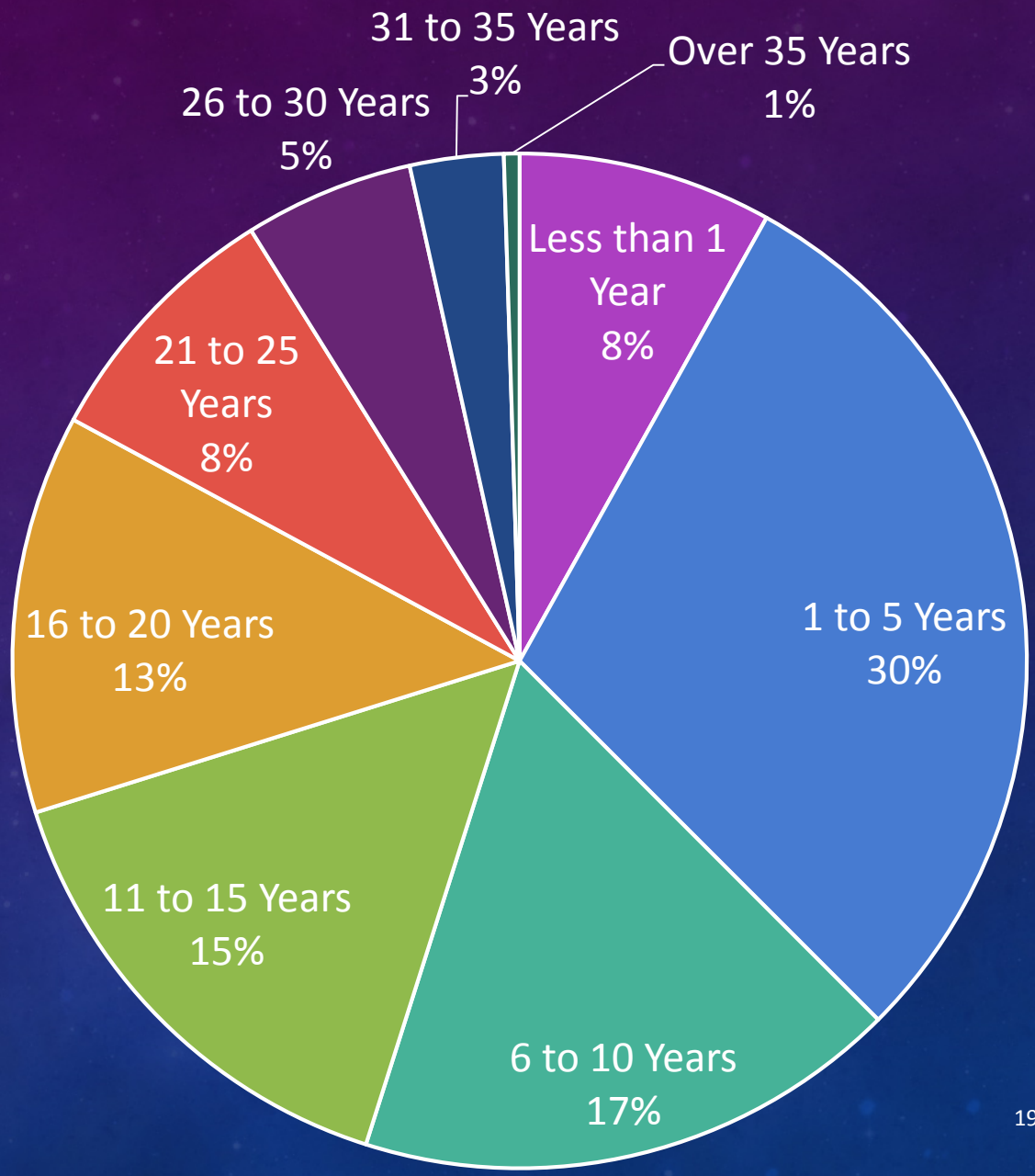
AGING WORK FORCE

35

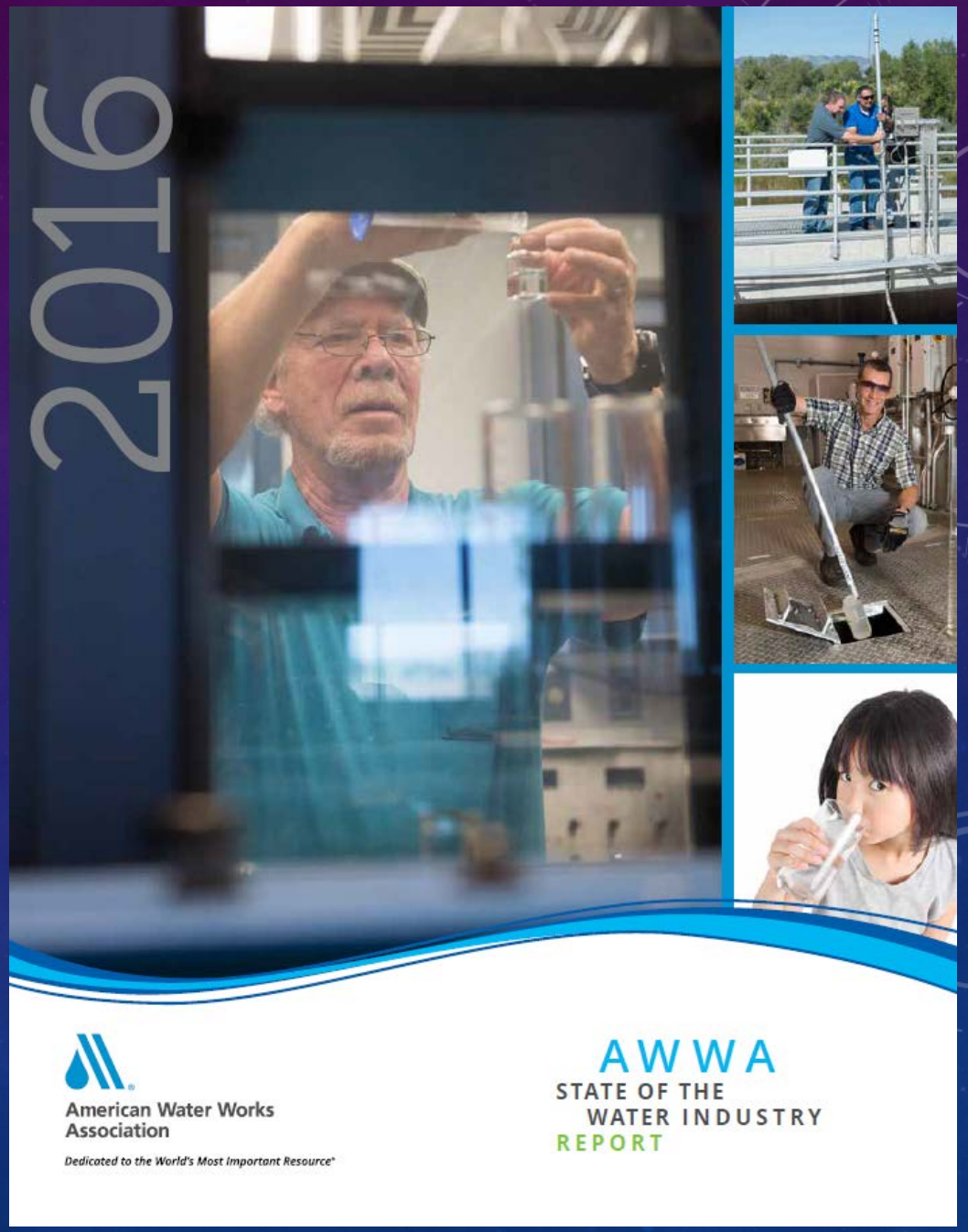
Percent of DWU employees eligible to retire within the next 5 years

46

Median Age of DWU employee



2016 STATE OF THE WATER INDUSTRY REPORT, AWWA



TOP 5 ISSUES FACING THE WATER INDUSTRY

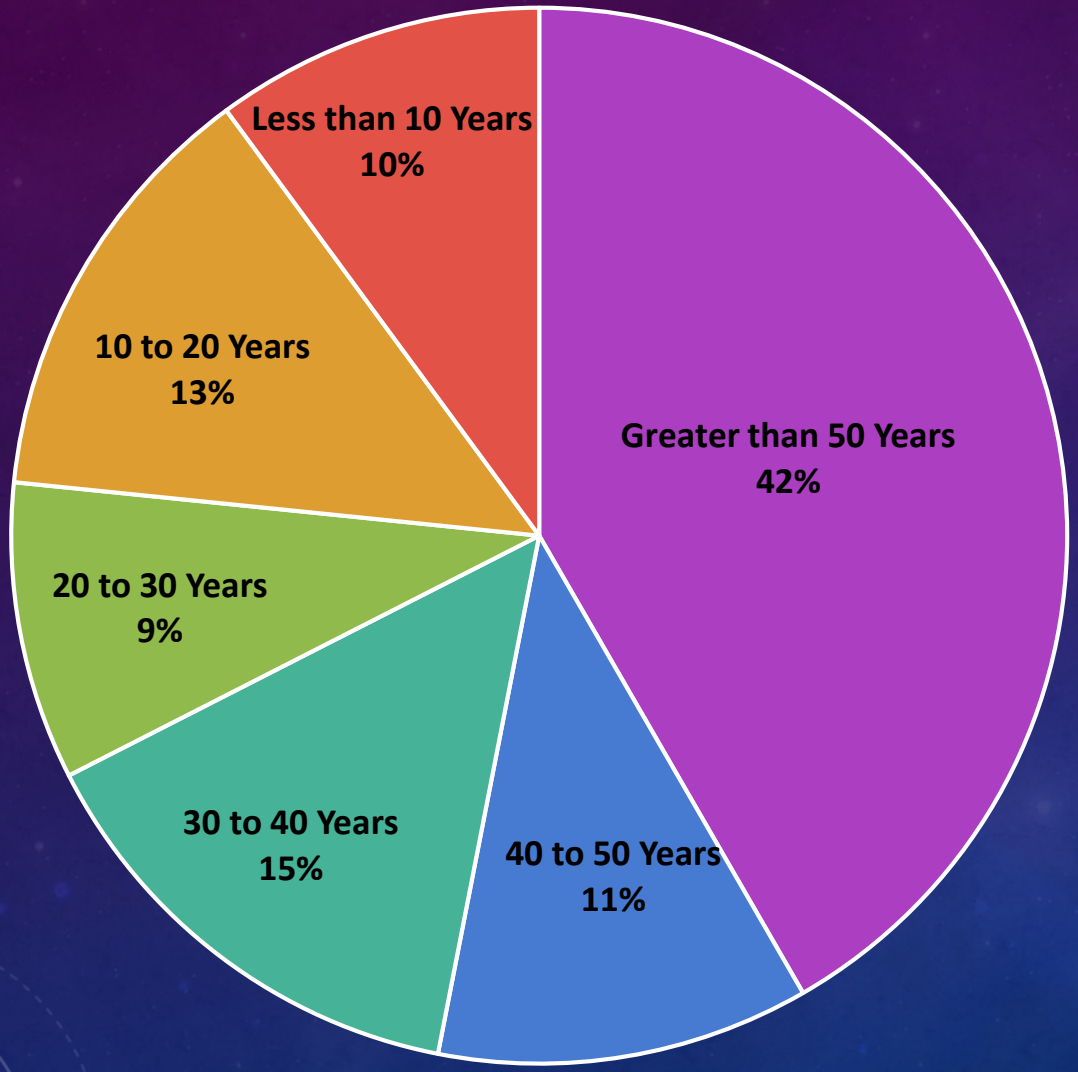
Source: 2016 State of the Water Industry Report, AWWA

1. Renewal & replacement (R&R) of aging water and wastewater infrastructure
2. Financing for capital improvements
3. Public understanding of the value of water systems and services
4. Long-term water supply availability
5. Public understanding of the value of water resources

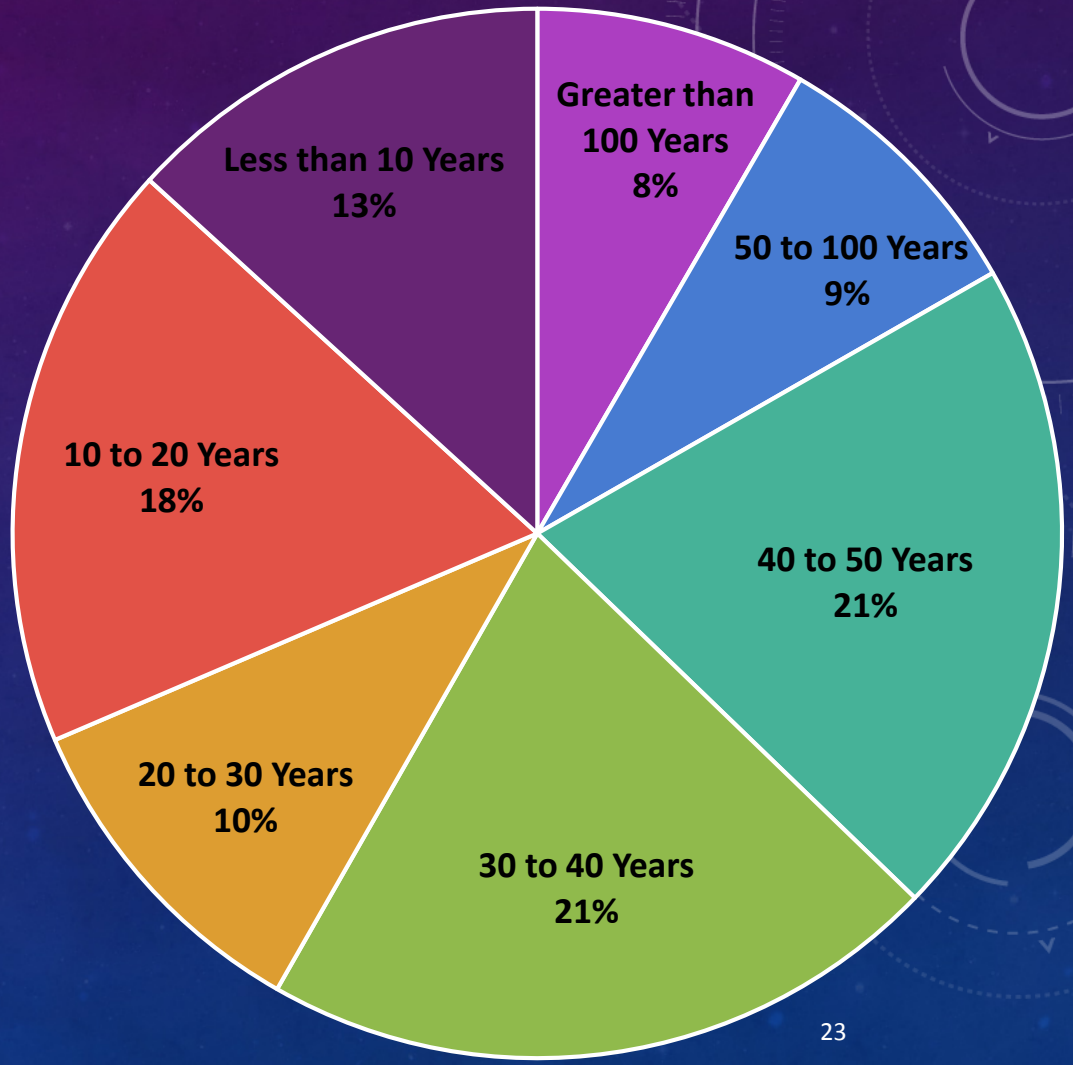
> Water systems are the cornerstone of modern society, and their continuous renewal and replacement should be made a higher priority and not dealt with in reaction to emergencies resulting from years of neglect and poor decisions by the uninformed.
>
> *Kenneth Mercer, Journal AWWA, July 2016*

RENEWAL & REPLACEMENT (R&R) OF AGING WATER AND WASTEWATER INFRASTRUCTURE

AGING INFRASTRUCTURE



Water Lines



Sanitary Sewer Lines

REPLACEMENT PROGRAM

Main Replacement Program

- Needs inventory of approximately 320 miles of water pipelines that have been identified and prioritized based on maintenance history
- Pipe size, type of pipe material, soil condition, break frequency, regulatory requirements, system overflows, and system demands are used in the replacement process
- Annual costs for water main replacements average approximately $60M

Leak Detection Program

- System surveyed every 2.5 years by 8 leak detection crews
- Since FY05 inception
  - Surveyed 31,419 miles of pipeline
  - Located 2,985 unknown leaks
  - Saved an estimated 4.0 BG

Wastewater Mains

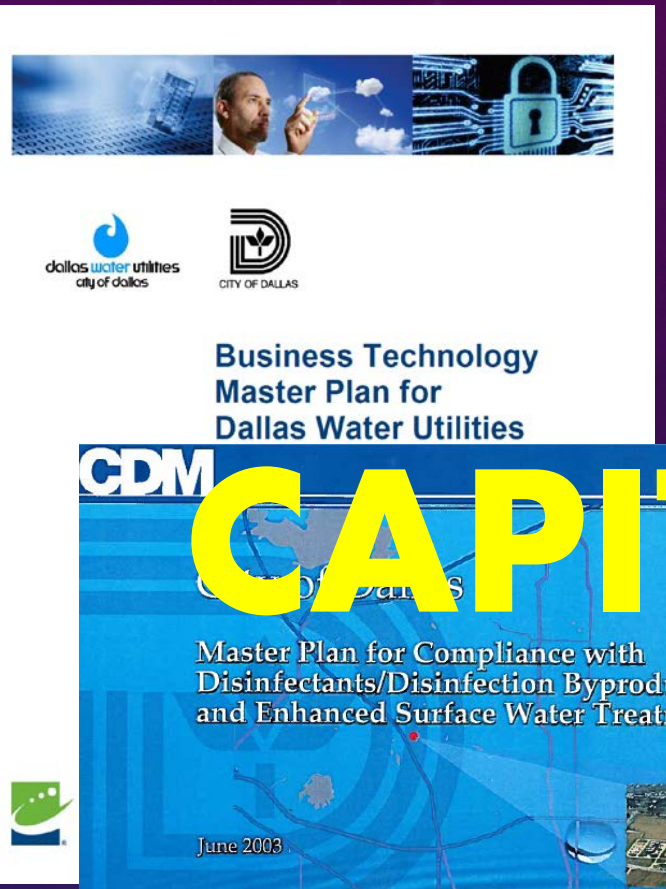
- Clean 38.5% of system annually
- Internal television inspection of 5.2% of system annually
- “Cease the Grease” public outreach initiative aimed at reducing fats, oil and grease in the sanitary sewer system; currently in the process of expanding the program message to include the proper method of handling the disposal of wet wipes and pharmaceuticals

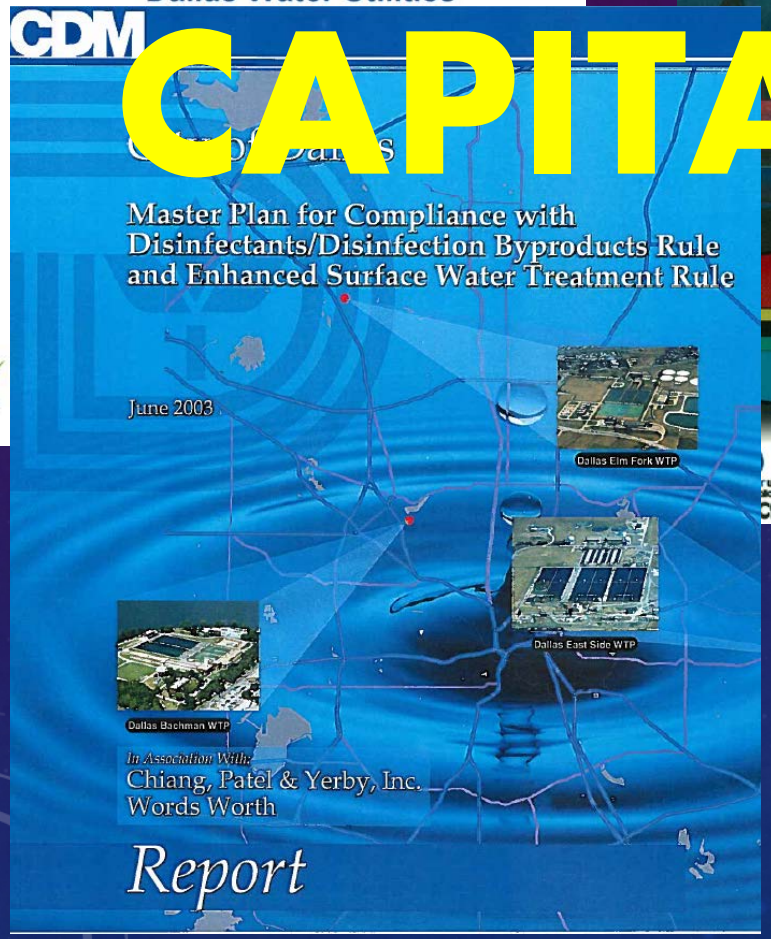
REHABILITATION FOCUS SHOW RESULTS

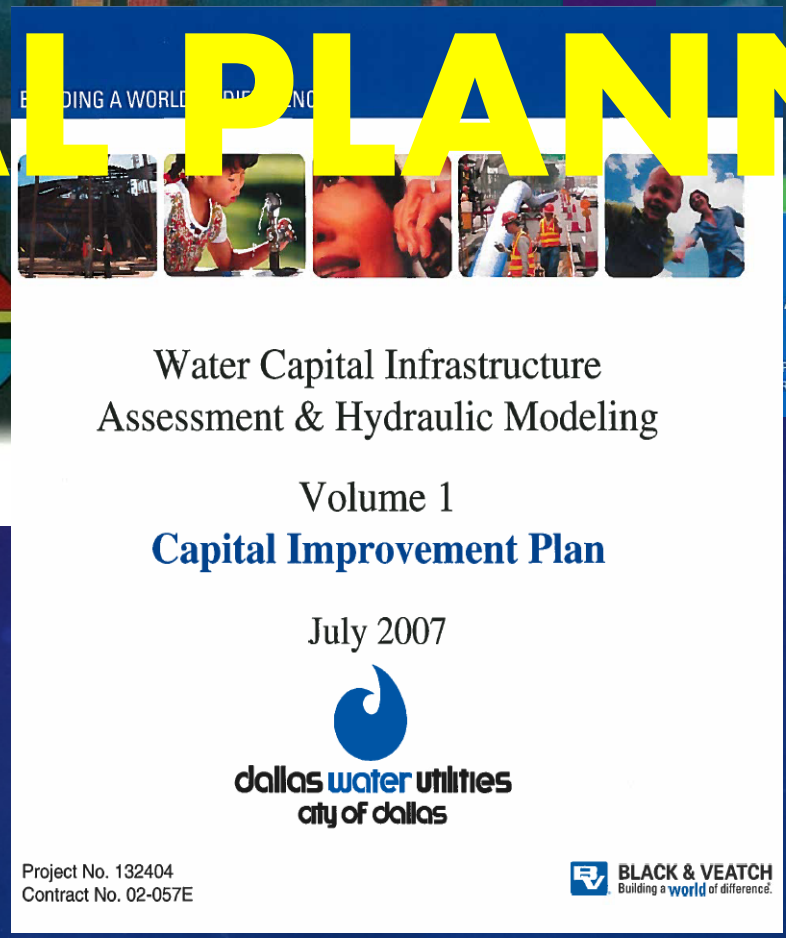
- Goals and Benefits
  - Efficient use of water supply
  - Recovers production capacity and costs
  - Reduced liability and damage to property
  - Improved environmental quality
- Unaccounted For Water was 9.35% for FY15 and 8.5% year to date for FY16 with an industry goal of 10%
- Sanitary sewer spills per 100 miles of main are 2.85% compared to the industry standard of 6.2%
- Water main breaks/leaks per 100 miles of main were 34 compared to 43 in FY11

FINANCING FOR CAPITAL IMPROVEMENTS

CAPITAL PLANNING



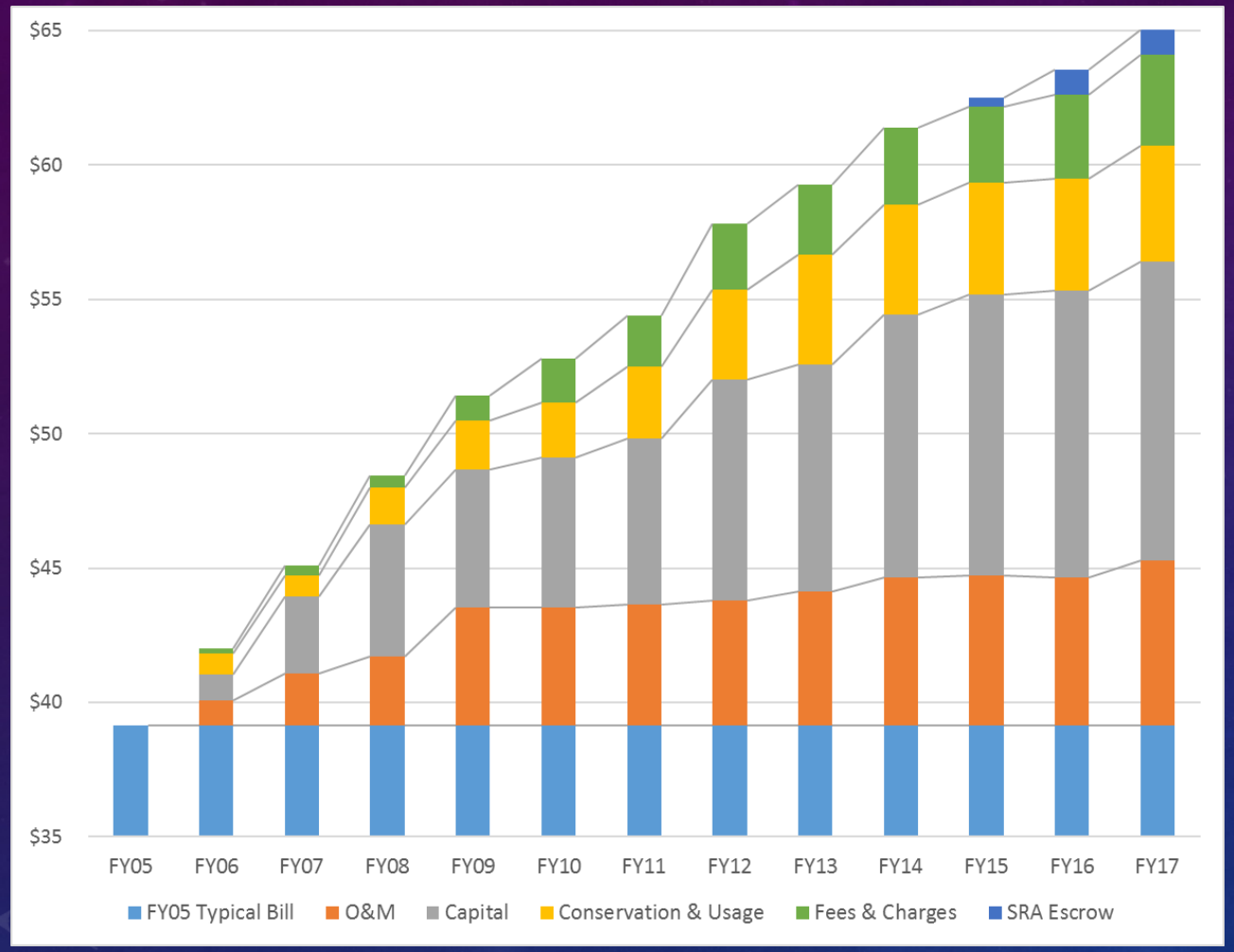




ESTIMATED CAPITAL COST

Long Range Water Supply Plan	$ 3,914 Million	2013 Dollars
Water Distribution Master Plan	$ 345 Million	2006 Dollars
Zebra Mussel Control Plan	$ 36 Million	2014 Dollars
Wastewater Capital Improvement Plan	$ 358 Million	2007 Dollars
Business Technology	$ 25 Million	2013 Dollars
Capital Estimate	**$ 4,678 Million**	

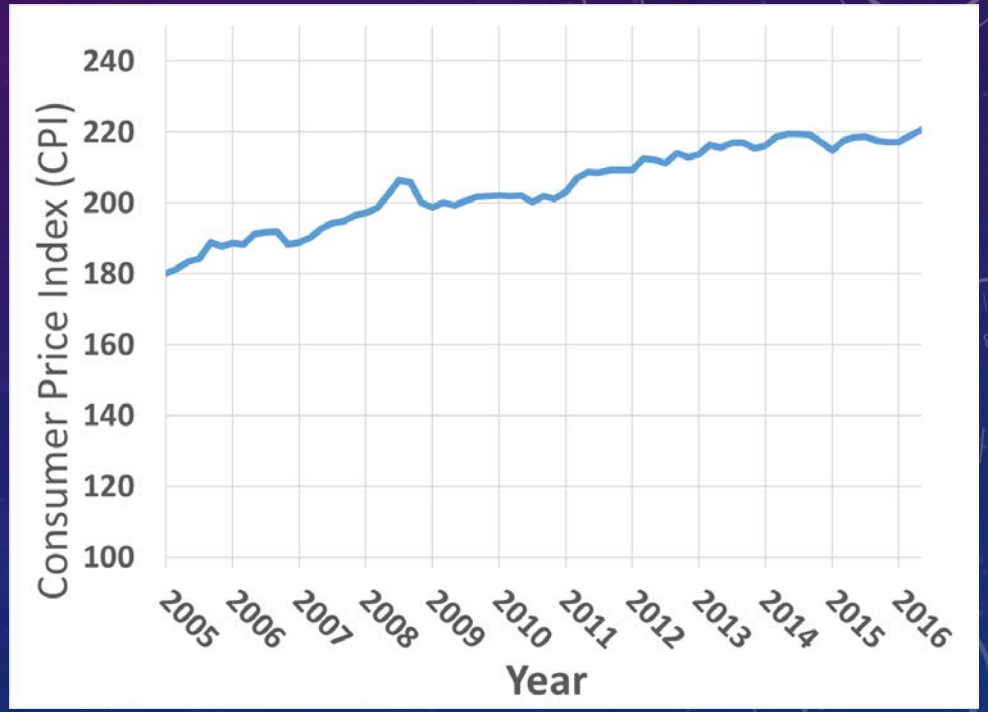
Dallas Typical Combined Water and Wastewater Bill



Assumptions:
5/8" Meter
Water - 8,300 Gallons
Wastewater – Winter Months Average

Average Annual Increase 5.3%

DFW
Consumer Price Index
(All Sectors)



Average Annual Increase 1.74%

PUBLIC UNDERSTANDING OF THE VALUE OF WATER SYSTEMS AND SERVICES

WHAT DOES WATER COST?

WHAT ARE CUSTOMERS PAYING FOR?

As part of a comprehensive cost of service study, DWU will be evaluating:

- Allocation of fixed and variable costs
- Allocation of costs between retail classes to reflect impacts of Water Conservation Programs
- Current customer classes and the option of adding additional customer classes
- Rate structure including additional water rate tiers and wastewater unit rate for all classes
- Perform an impact analysis of any alternative rate structures on customers and revenue recovery to ensure equitable recovery of costs from different customer classes

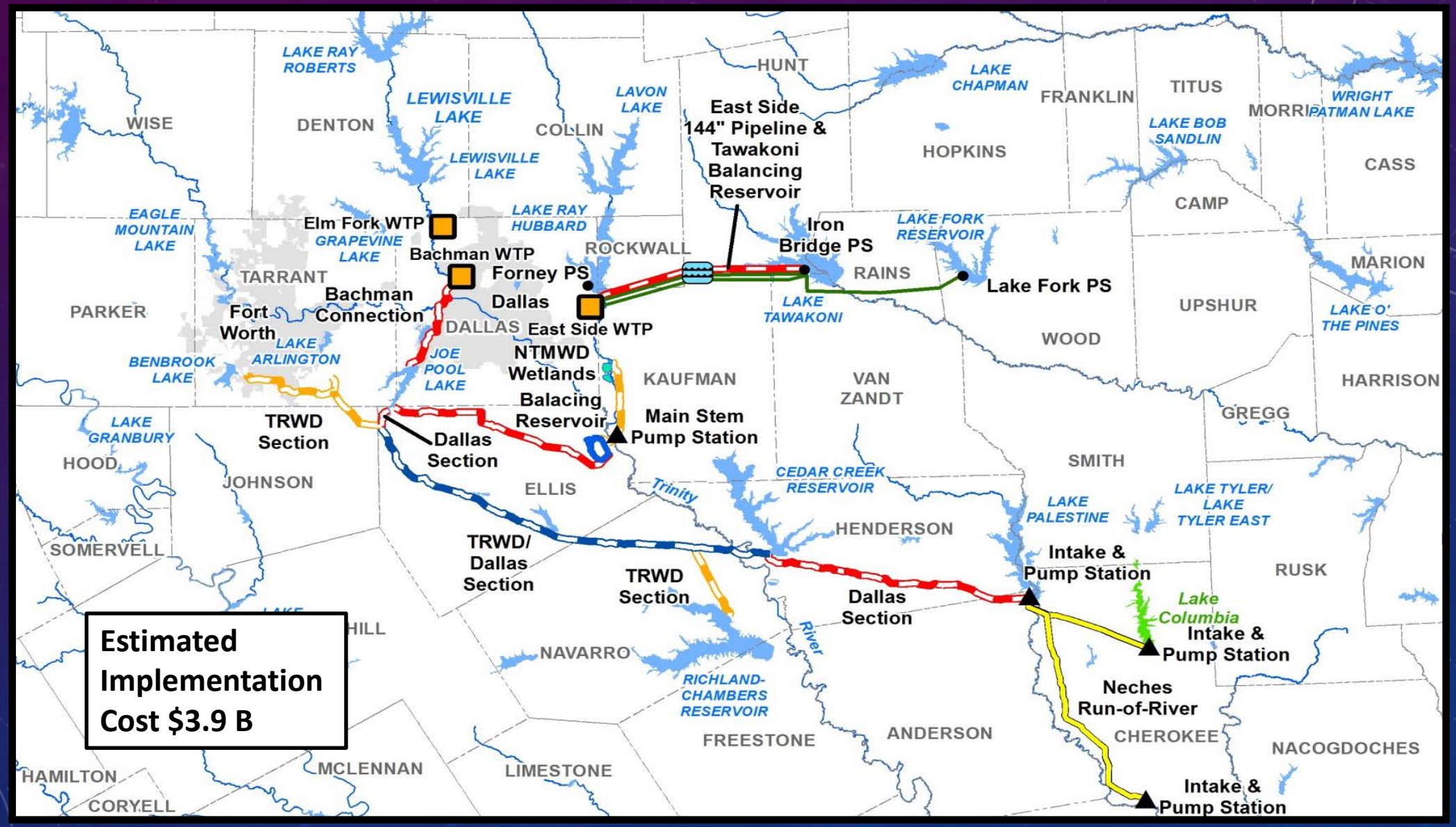
LONG-TERM WATER SUPPLY AVAILABILITY

Environmental Stewardship

Social Equality

Economic Prosperity

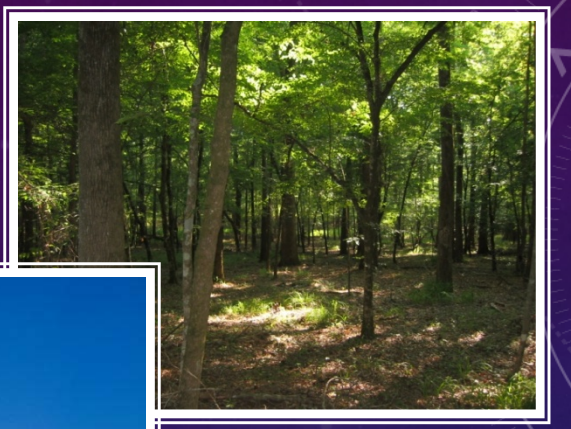
DALLAS WATER UTILITIES RECOMMENDED WATER MANAGEMENT STRATEGIES 2020 - 2070

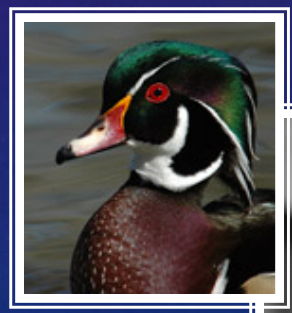


PUBLIC UNDERSTANDING OF THE VALUE OF WATER RESOURCES

Challenges to Implementing Water Supply Strategies

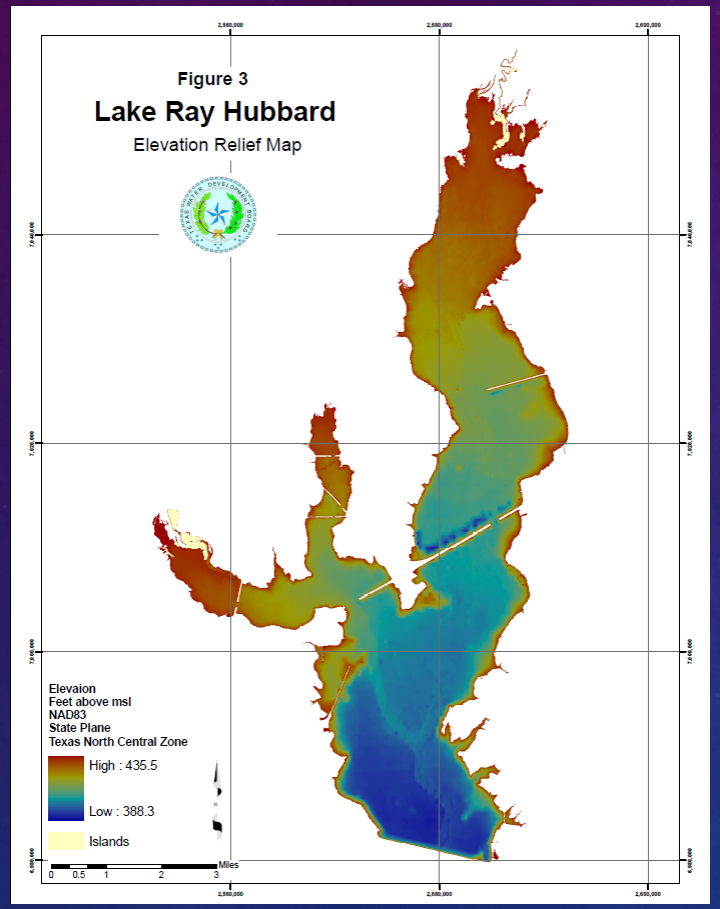
- Competing land uses
- Competition for water supply
- State and Federal legislation
- Environmental flows
- State and Federal agencies and approval process
- Permitting
- Distance to available supplies
- Costs





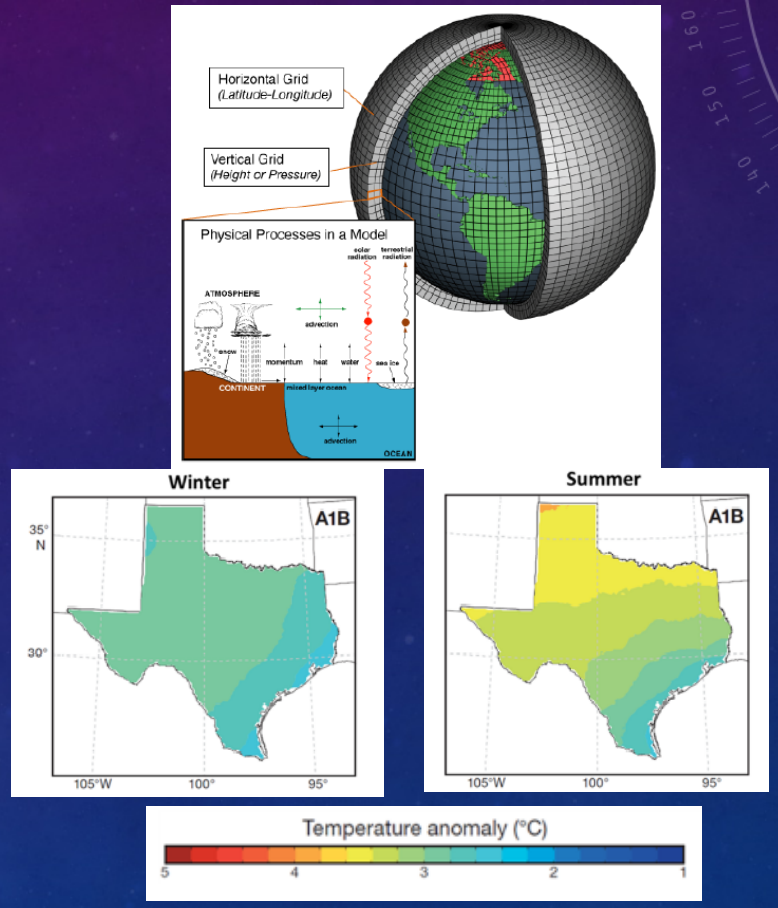
Effects on Existing Supplies

Sedimentation



Decreased Storage Volume

Climate Change

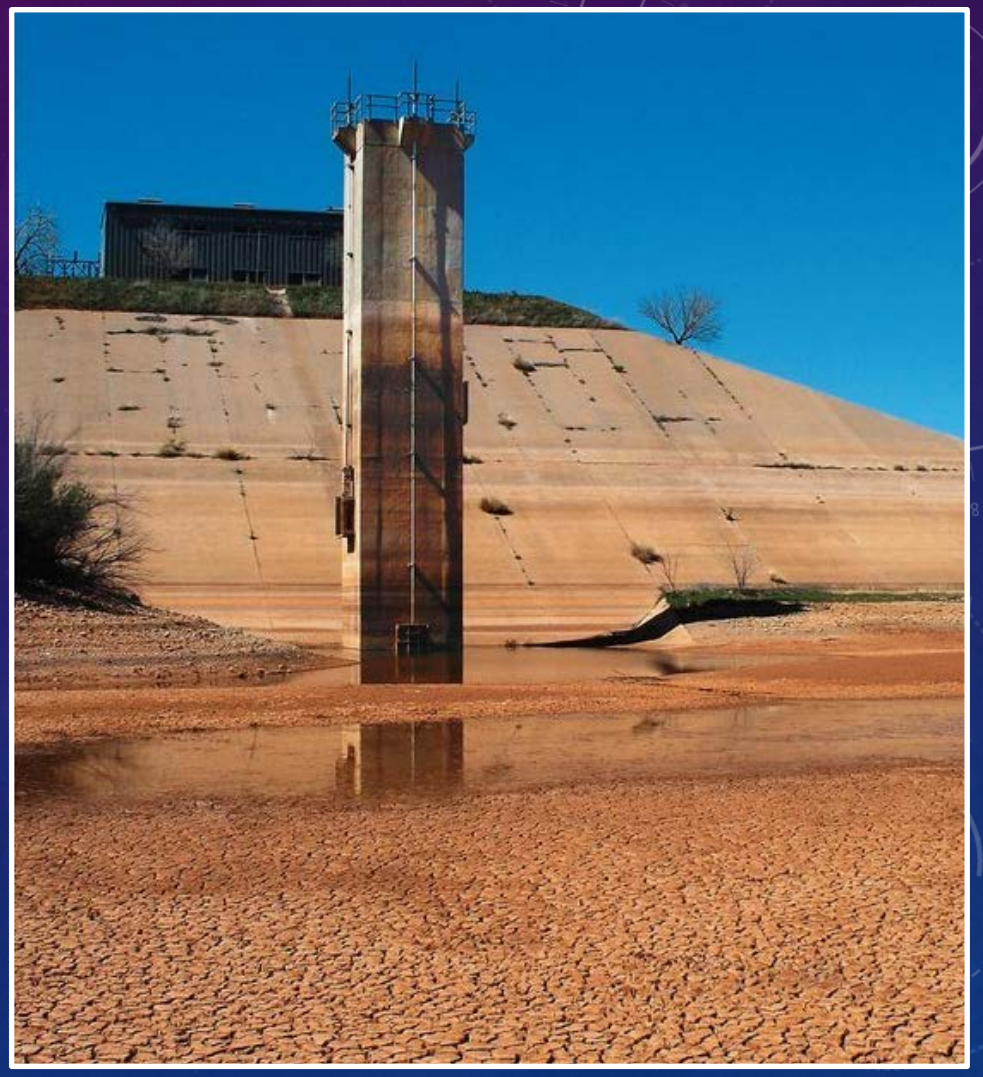


Increased Evaporation

Grapevine Lake

"The future depends on what you do today."

Mahatma Gandhi



E.V. Spenc Reservoir, 2010

Civil Engineering, January 2014, Vol 84, Issue 1

CONCLUSIONS

Challenges	As We Address the Challenges
Cost of system Stewardship	Water providers should strive to implement fair rates and fees that reflect the total cost of water services including infrastructure renewal and replacement
Water Resources development and protection	Water providers continue to minimize its footprint through the effective use of supplies and resources
Effective stakeholder communication	Water industry professionals should promote their successes and transfer newly created knowledge to their peers to reinforce an atmosphere of continuous improvement

"…as communities we must address our water infrastructure and resource management challenges or else the reliability and resiliency of our water systems, the health of our environment, the prosperity of our economy, and the safety of our water will be increasingly at risk" *2016 AWWA State of the Water Industry Report*