

# This presentation premiered at WaterSmart Innovations

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City of Austin, Texas  
Reclaimed Water Program  
“Using Purple to Make Austin Green”

WaterSmart 2010 Innovation Conference  
Rehabilitation of Force Mains to Reclaimed  
Water Mains Produces Savings  
Cole Newton



## ■ Cole Newton

- Project Manager for Austin Water Utility in the Reclaimed Water Program
- Graduate of Auburn University with a Bachelors of Civil Engineering
- Prior experience includes working for a private A/E firm for 3 years in airport design and construction
- U.S. Army Veteran



# Overview

- What is Reclaimed Water
- Austin's Reclaimed Water System
- Rehabilitation of Existing Infrastructure
- The Future of Reclaimed Water in Austin
- Conclusion and Questions

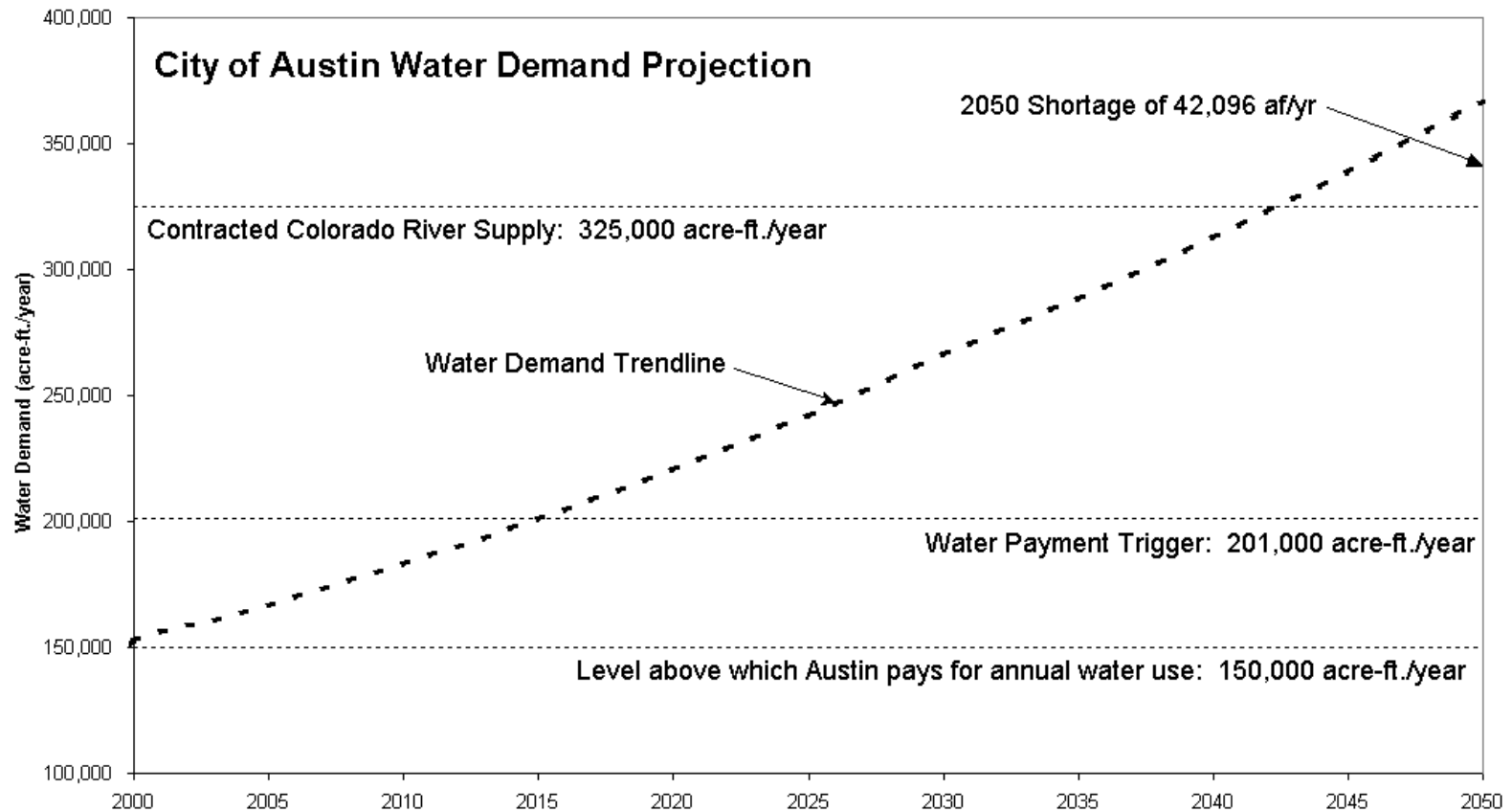


# What is Reclaimed Water

- Highly treated wastewater effluent
- Quality – akin to river water
- Demand management tool
- Major uses
  - Irrigation
  - Cooling
  - Manufacturing
  - Toilet flushing



# Austin's Water Projections



# Austin's Reclaimed History

- 1970's & 1980's – an afterthought
- 1990's – a decade of planning
  - Master plans developed in 1992, 1998, 2001 and 2005
- 2000's – construction



# Austin's Reclaimed Water System

Reclaimed Water System - 2009

Reclaimed water is made at our 2 major plants and 4 other small satellite plants.

Two major plants supply the City with reclaimed water and the satellite plants supply the plant and immediately surrounding areas.

Current system and 2005 master plan outline reclaimed water being produced at the 2 major plants at low elevations on the eastern edge of the city and being pumped back to the west to the cities core at higher elevations.

Miles of trans. main – 19

Annual use ~ 1 – 1.5 billion gallons

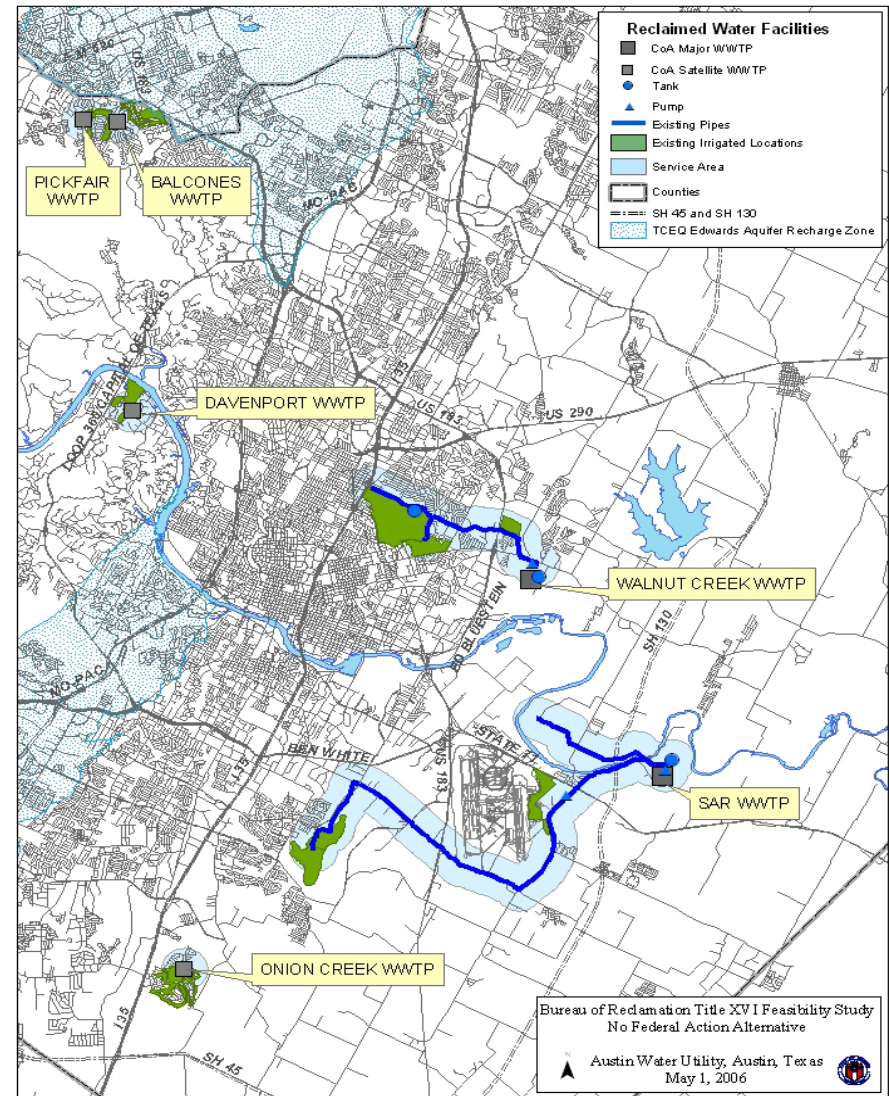
Current customers ~ 31

How much water is that?

3,123 olympic-sized swimming pools

41 million car washes

1.31 billion toilet flushes





# Rehabilitation of Existing Infrastructure

- Rehabilitation of Force Mains to Reclaimed Water Mains
  - Opportunity
  - Actual Project
    - Design Consultant: Kurkjian Engineering Corporation
    - Contractor: Haegelin Construction Company
  - Cost Savings
  - Future Projects and Possibilities

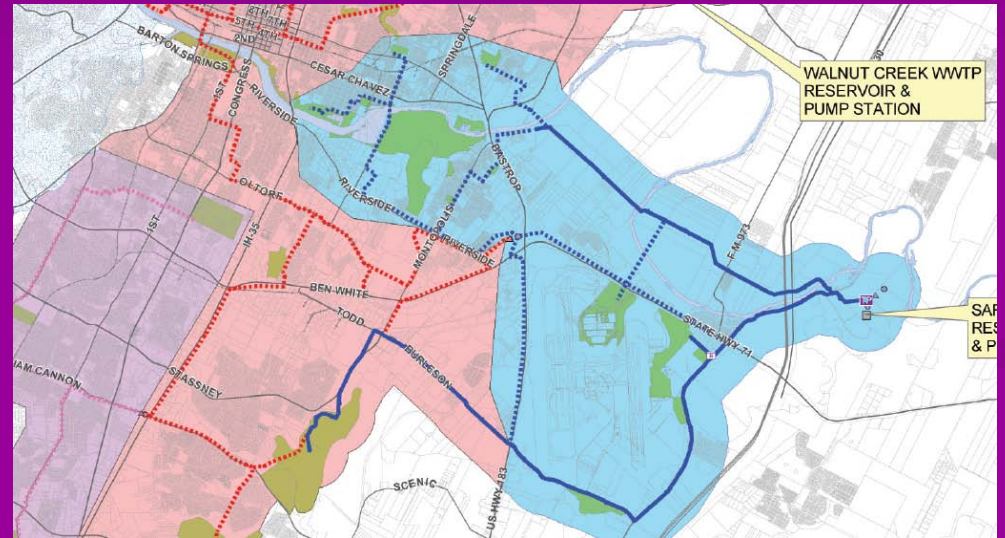


# Rehabilitation of Existing Infrastructure

## ■ Opportunity

- Existing WWTP shutdown 2006
- Reviewed the 2005 City of Austin Reclaimed Water Master Plan to evaluate future build out.
- Compared Master Plan with abandoned infrastructure for possibilities.
- 1994 rehabilitated 19,000 LFT of 24" force main into reclaimed water main.

Project Area

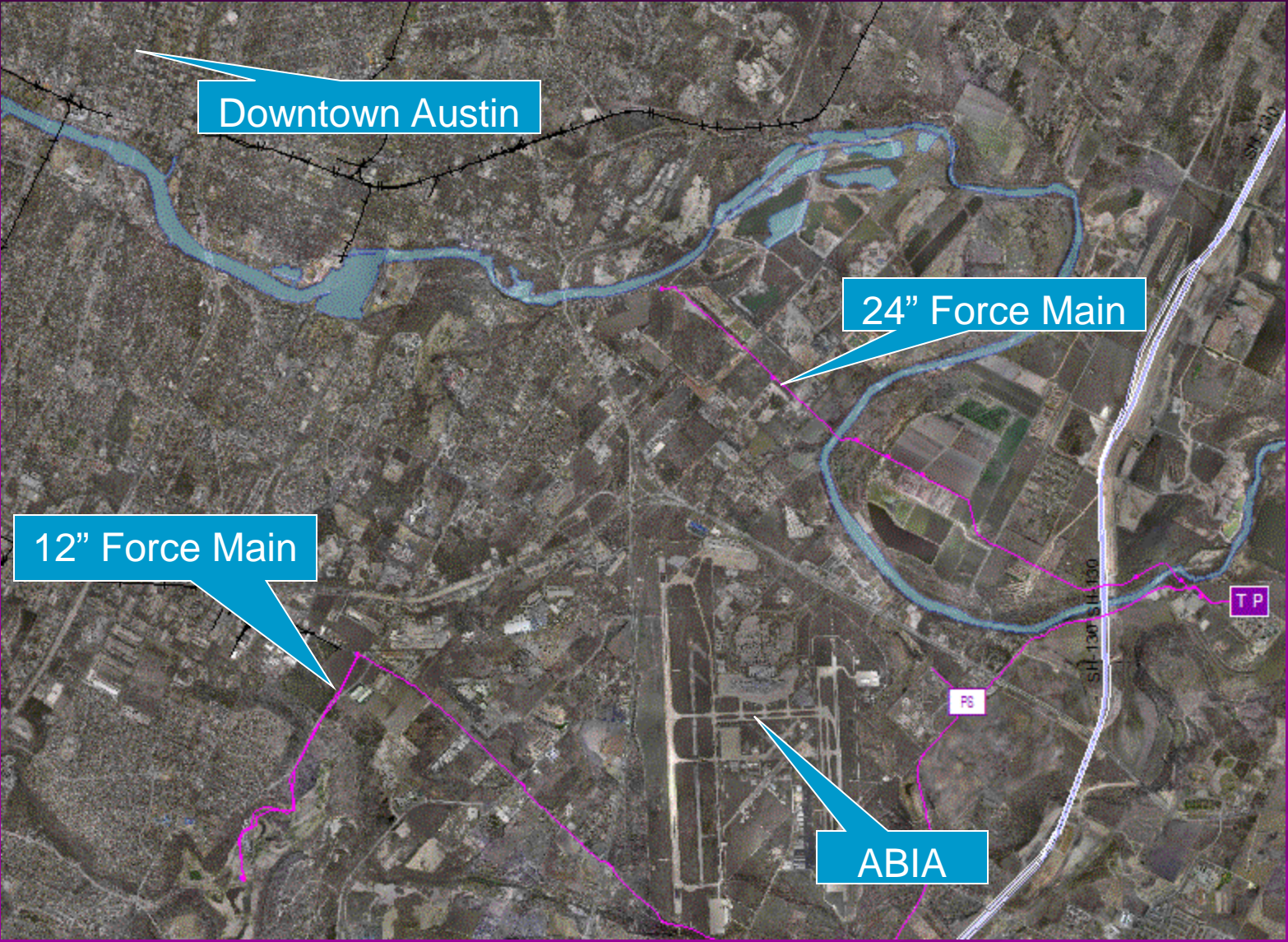


# Rehabilitation of Existing Infrastructure

- Actual Project to Expand the System
  - Overall the project consisted of rehabilitating 8,000 LFT of 24” DI pipe and 8,950 LFT of 12” DI pipe, doing maintenance on 19,000 LFT of 24” DI pipe and adding 84 LFT of 24” DI pipe and 20 LFT of 16” DI pipe.
    - 24” DI force main was originally constructed in 1986
    - 12” DI force main was originally constructed in 1976
  - To do that the scope was outlined as a project that consisted of “flushing one 24” and one 12” abandoned force main, replacing 17 manhole lids and frames, replacing at least one manhole completely and repairing two others, replacing 13 air release valves, replacing 10 valve box lids making two 12” force main interconnections with associated 12” valves and adding a 24” valve and 84’ of 24” pipe to the end of the abandoned force main”.



# Rehabilitation of Existing Infrastructure



Map of Project Area



# Construction Photos Showing Before and After



# Construction Photos Showing Before and After

## Dilapidated Manhole



## Manhole Replaced



# Construction Photos Showing Before and After

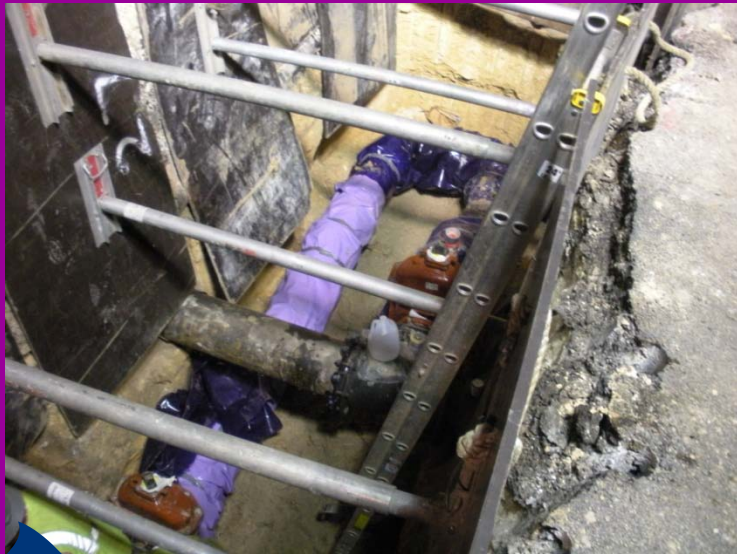


# Construction Photos Showing Before and After





# Construction Photos Showing Before and After



# Rehabilitation of Existing Infrastructure

## ■ Cost Savings

- This project final construction cost came in just under \$240,000 and took about 4 months
  - This equates to about \$2/LFT of piping.
  - Design Engineer Estimate
- The estimate for the construction of this project had it all been new construction would have been about \$3.5 million
  - Currently in Austin we are seeing bid prices for 12" DI pipe around \$65/LFT and for 24" DI pipe around \$200.
- Using existing infrastructure also produced savings in design costs.
  - Design team
  - Design time



# Rehabilitation of Existing Infrastructure

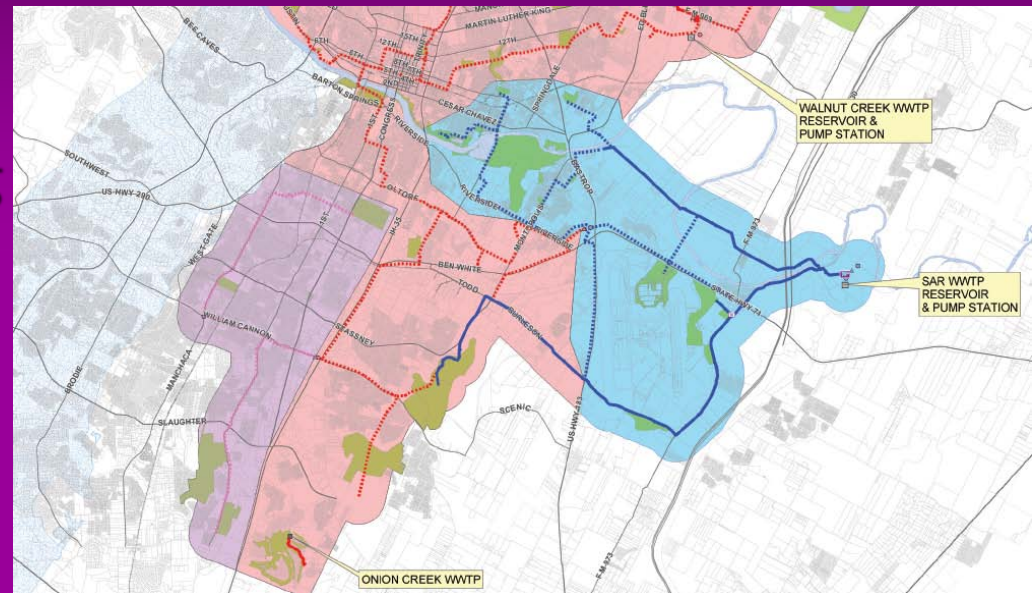
- Project Outcome
  - Expanded the reclaimed water system
  - Pushed forward a part of the 2005 Master Plan
  - Southeast system
    - Increased reliability, increased flow rates, opened two major connections for future expansion.
      - Large City Park
      - Large Community College (cooling towers and irrigation)
      - Apartments (irrigation)
      - City Library (irrigation)
      - Golf Course (irrigation)
      - Future Development (cooling towers and irrigation)
      - City Sports Complex (city park and ball fields)



# Rehabilitation of Existing Infrastructure

- Future Projects using existing infrastructure
  - Colorado River Crossing
  - Continue to look for possibilities.
    - 2005 and 2010 master plan and long term goals
    - Decommissioned wastewater treatment plant
    - Decommissioned water treatment plant

Area of Focus



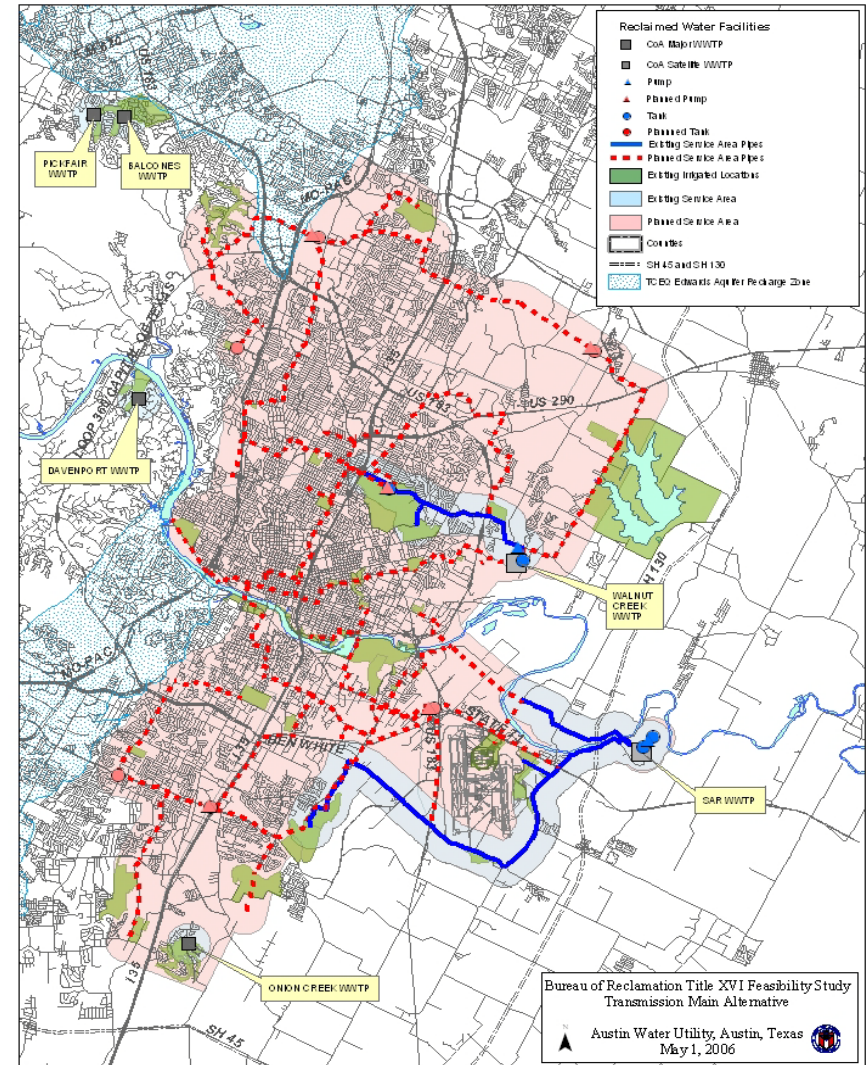
# Austin's Future Reclaimed Water System

Reclaimed Water System Master Plan - 2005

Miles of trans. main – 130+  
Water tanks - 7  
Annual use – 6 billion gallons

How much water is that?

8,150 olympic-sized swimming  
pools  
109 million car washes  
3.42 billion toilet flushes



# Conclusion

- What is Reclaimed Water
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- The Future of Reclaimed Water in Austin
- Conclusion and Questions



# Thank You

## Questions?

Cole Newton

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