



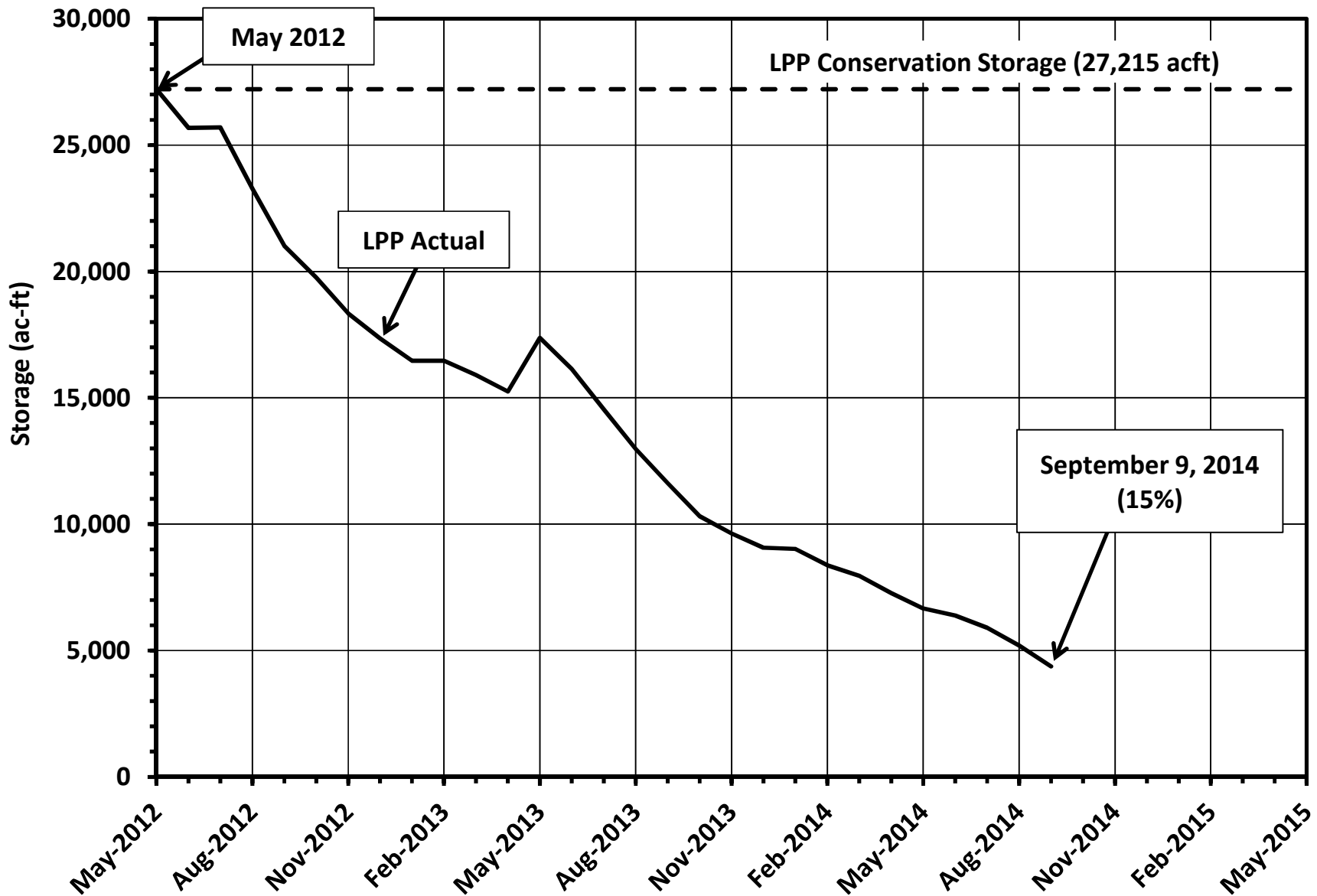
Drought Status and Response

September 9, 2014

Palo Pinto County Municipal Water District No. 1



Lake Palo Pinto Storage from Beginning of Current Drought



Severity of current drought: Records of streamflow for past 76 years (for Brazos River just above Possum Kingdom Lake) indicate that streamflows for past 27 months have averaged 25% of the lowest previous 27 month period which occurred during the 1950's drought.

Drought Response to Date:

2012 – Lake is Full – No Restrictions

Water use averages **4.5 Million Gallons Per Day (MGD) – Baseline**

December 2012 – Stage 1 Implemented

2013 – Mostly in Stage 1

Water use averages **4.0 MGD (11% reduction from 2012 Baseline)**

November 2013 – Stage 2 Implemented

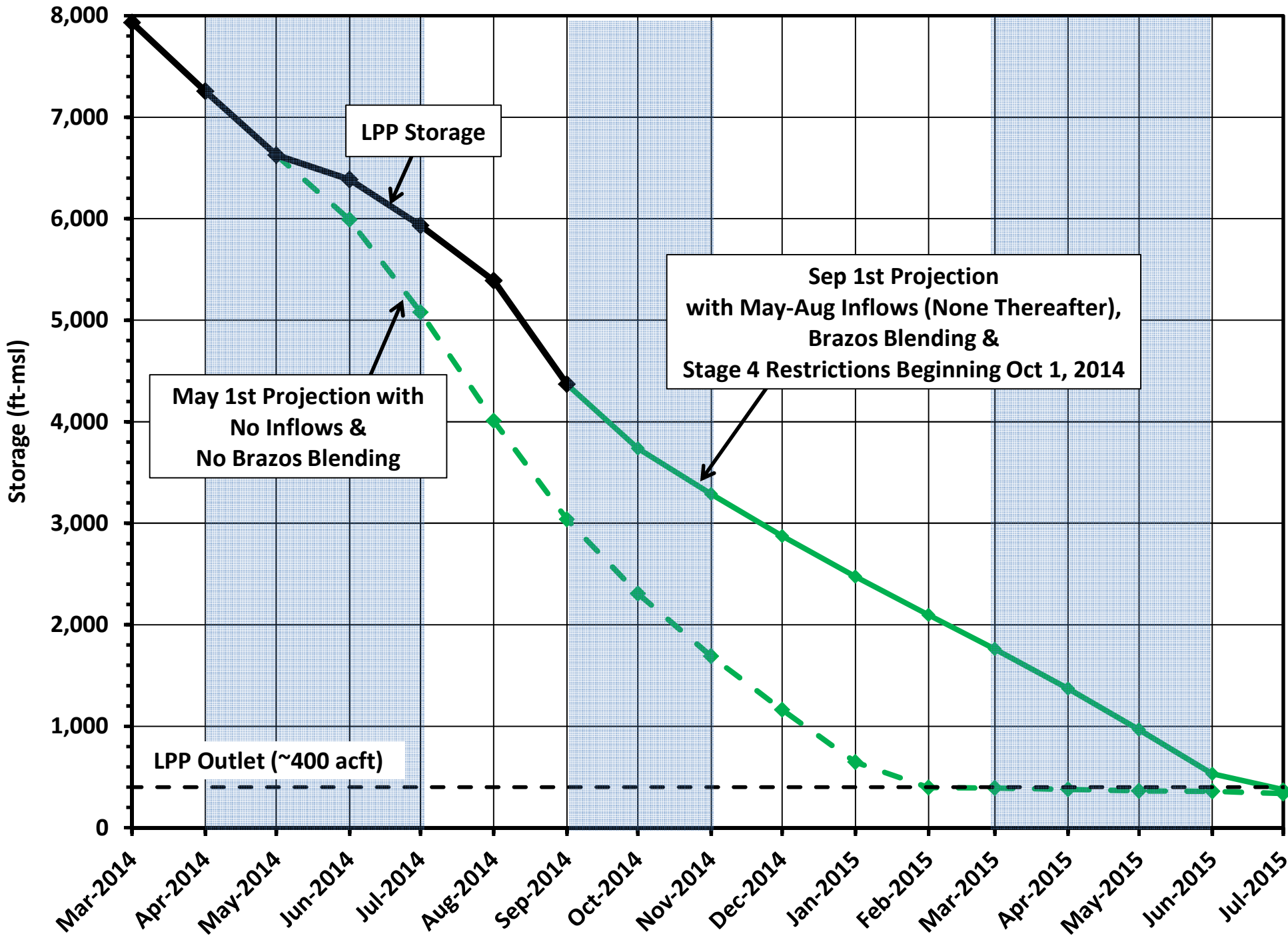
2014 – Combination of Stages 2 and 3

Water use averages **3.8 MGD (to August = 15.5% reduction from Baseline)**

April 2014 – Stage 3 Implemented

May 2014 – Began blending Brazos River Water (about 3:1)

Lake Palo Pinto Storage Projections



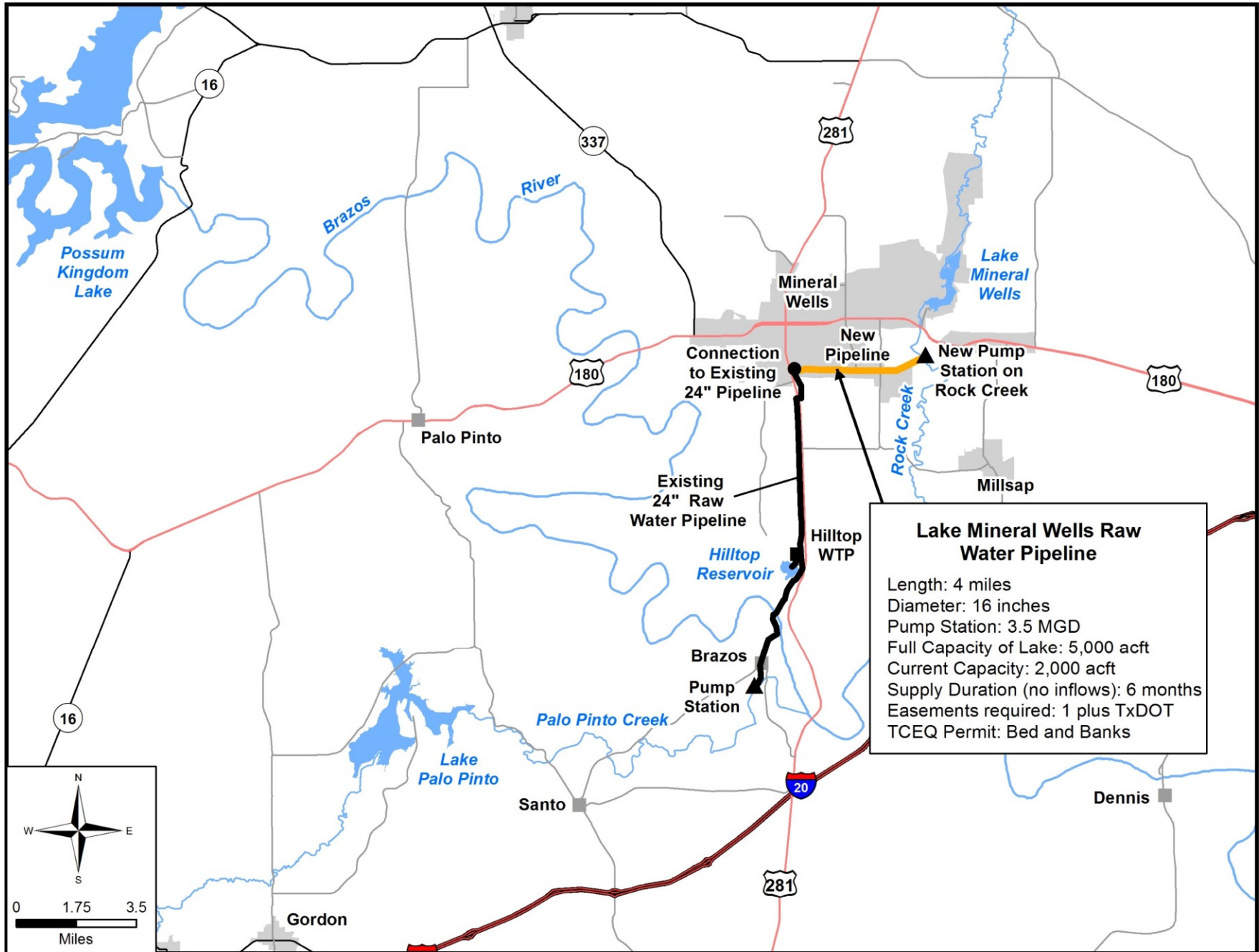
Next Actions:

- October 1 – Implement Stage 4 Restrictions:
 - No outside watering
 - Request all Customers to Significantly Reduce Water Use
- Goal: Reduce water use to **2.8 MGD**
 - (38% reduction from 2012 Baseline)**
 - (26% reduction from 2014 – Current Use)**
- November – Select and Begin Construction on Supplemental Water Supply Option(s)
- Recommend publishing City’s actual weekly water use on-line and in local newspaper

Supplemental Water Supply Options Under Consideration:

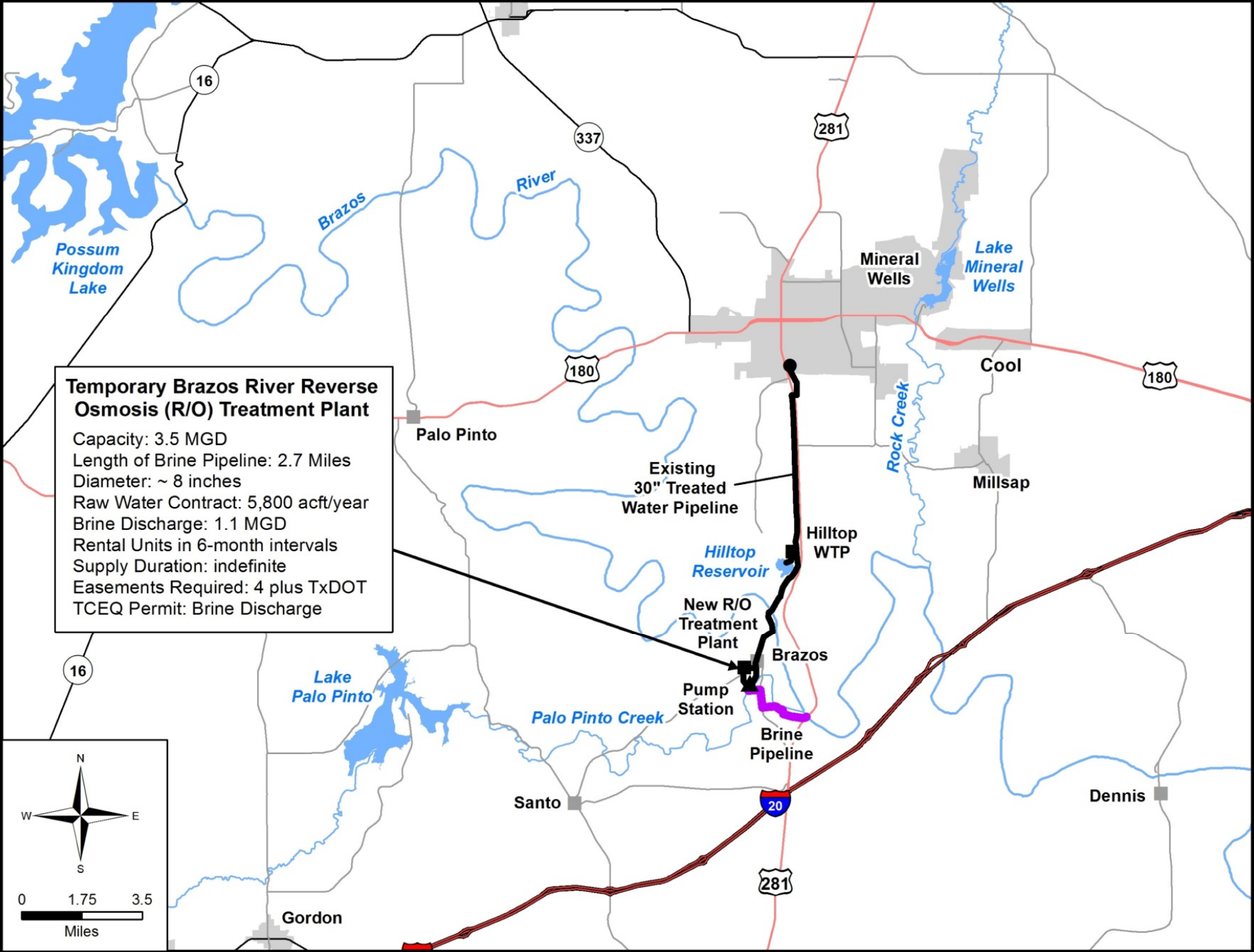
- Pipeline to Lake Mineral Wells
- Temporary Reverse Osmosis Water Plant (WTP) to Treat Brazos River Water
- Treated Water Pipeline to Weatherford
(Preliminary Discussions)

Lake Mineral Wells Pipeline

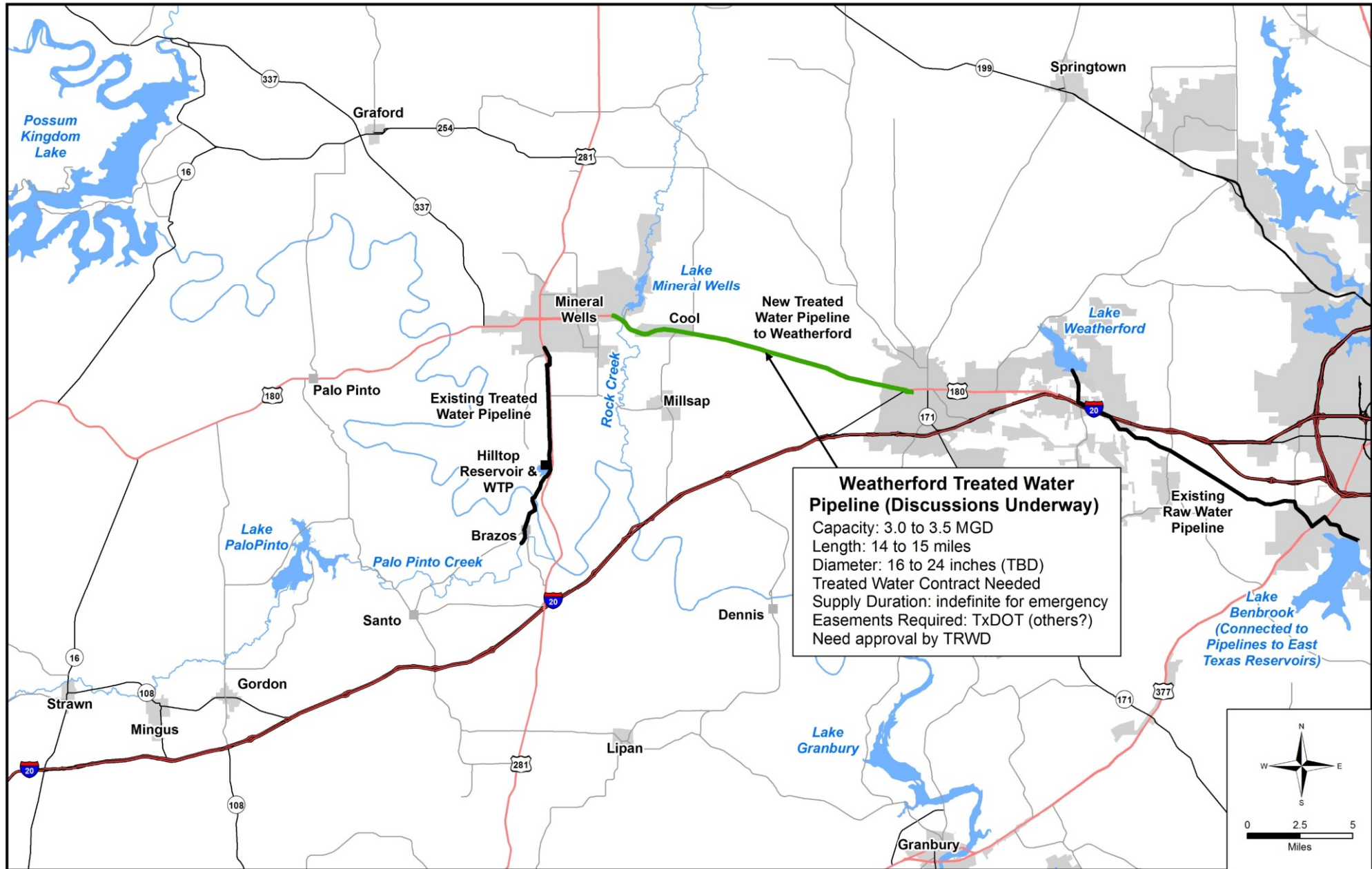


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Temporary Brazos R/O WTP

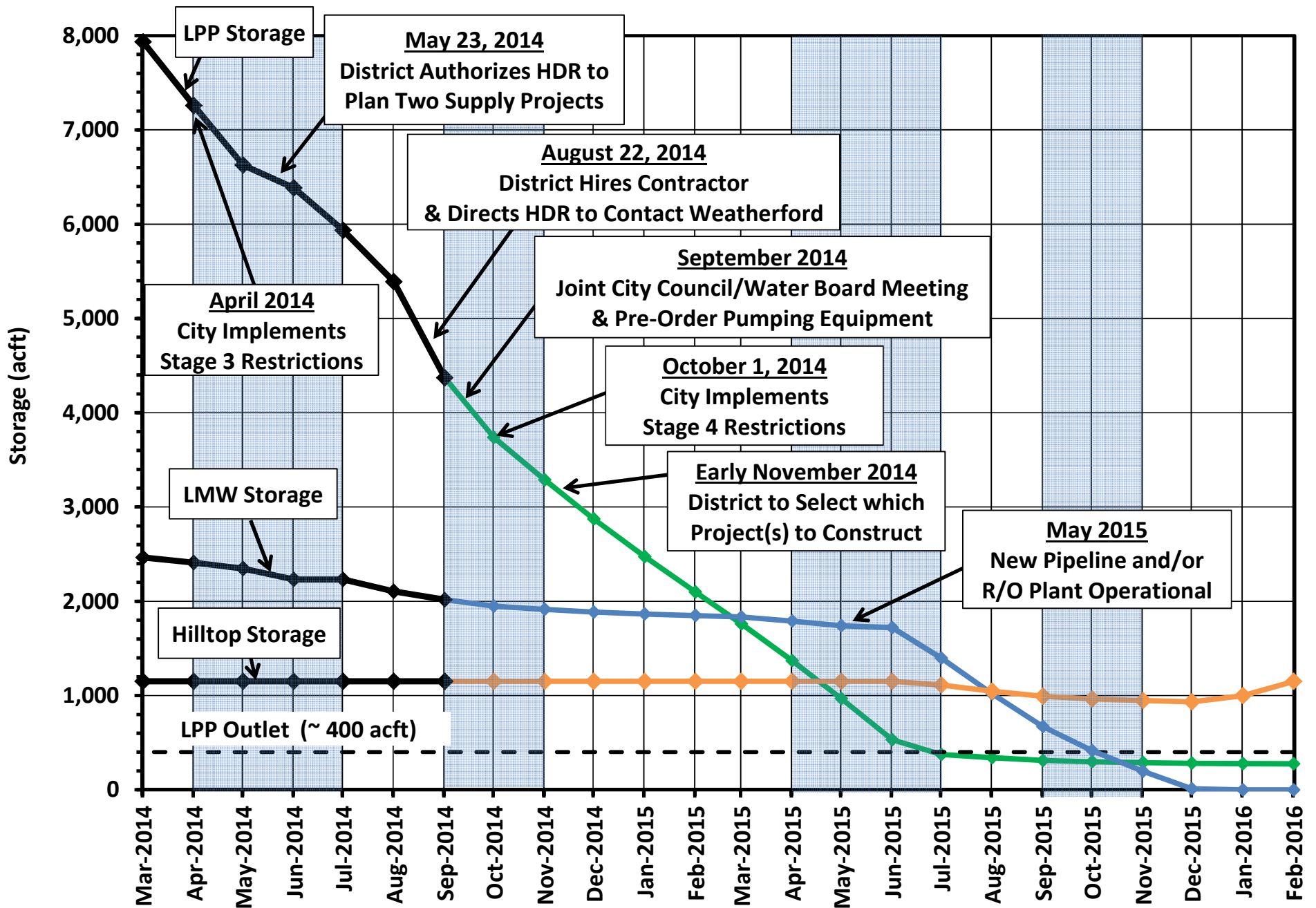


Weatherford Treated Water Pipeline



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Lake Palo Pinto, Lake Mineral Wells and Hilltop Storage Projections



Estimated Construction and Annual O&M Costs of Options

Option	Construction (Millions)	Annual O&M (Million\$/year)
LMW Pipeline	\$4.7	\$0.0 (5 Month Supply if no Inflows)
Brazos R/O WTP	\$2.6	\$4.6 (equipment rentals & power & water)
Weatherford Pipeline	\$8.3	\$5.0 (estimated treated water costs)

Comparison of City's Current Water Revenues and Estimated Total Annual Costs of Options

Option	Annual Costs*	% Increase
Current City Water Revenues	\$4,800,000	Baseline
LMW Pipeline	+ \$376,000	+ 8%
Brazos R/O WTP	+ \$4,808,000	+ 100%
Weatherford Pipeline	+ \$5,664,000	+ 118%

* Assumes projects are financed for 20 years at 5% interest rate

Advantages of Lake Mineral Wells Pipeline

- Most Economical Option - has no additional net operation costs
- Option is quickest to implement
- Provides additional time for other options to be fully implemented
- Would be advantages to be a permanent part of City's water supply system for future droughts
- Increases opportunity to capture runoff from another watershed

Disadvantages

- Existing water in lake will last about 5 months – unless additional inflows occur before next May

Advantages of Temporary Brazos River Water Reverse Osmosis Treatment Plant

- Cheapest construction costs of all Options at \$2.6 M
- Could be left in place until Turkey Peak Project is constructed and then removed
- Can Operate for an Indefinite Period of Time

Disadvantages

- High Equipment Rental, Operating Costs and Water Purchase at about \$3.60/1,000 gallons
- Will require the City to more than double their water revenues if operated for a full year
- Time Required for Brine Discharge Permit

Advantages of Weatherford Treated Water Pipeline (under discussion)

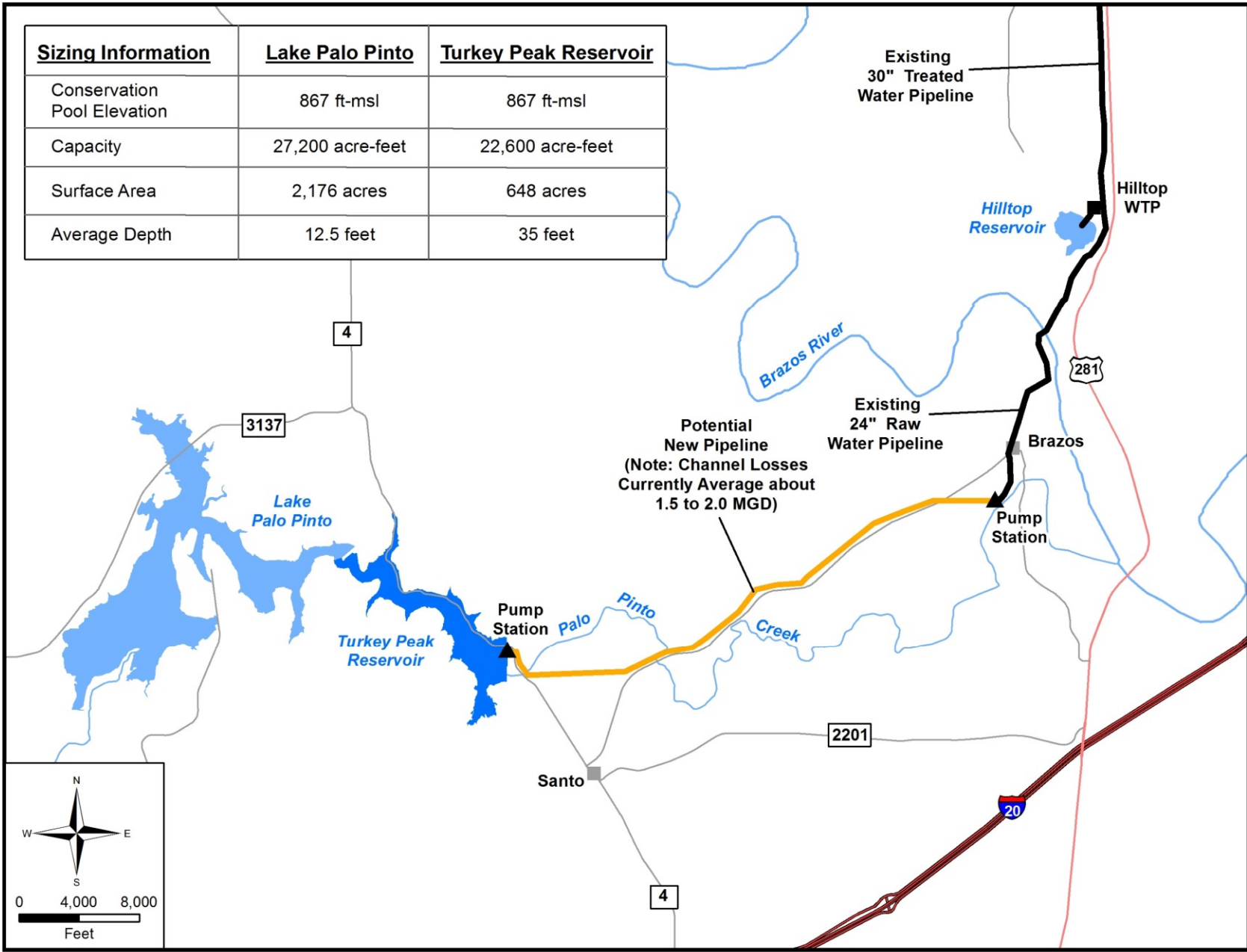
- Potential benefit of linking Mineral Wells into East Texas Water Supplies (if permanent)
- If Weatherford is interested in potential partnership – then costs could potentially be reduced
- Next meeting with Weatherford near end of September

Disadvantages

- Currently Highest construction and operating costs of all Options

**City and Water District will Continue to Evaluate these 3
Options and Decide in November**

Long Term Solution: Turkey Peak Project

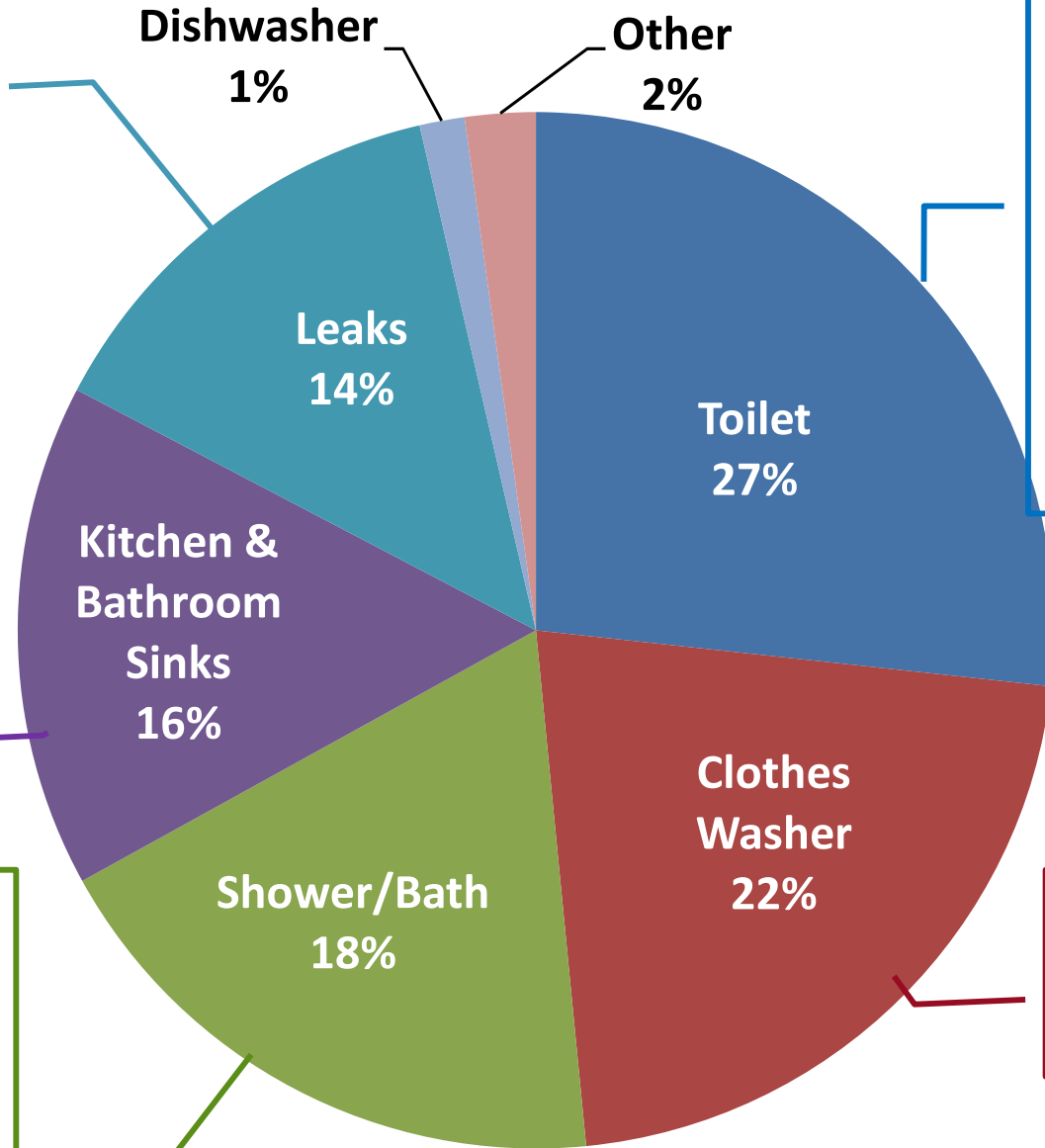


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Comparison of Turkey Peak Project Costs with other Options

Option	Annual Revenue or Costs	% Increase
Current City Water Revenues	\$4,800,000	Baseline
LMW Pipeline	+ \$376,000	+ 8%
Brazos R/O WTP	+ \$4,808,000	+ 100%
Weatherford	+ \$5,664,000	+ 118%
Turkey Peak (with 40% partner)	+ \$3,460,000	+ 72%
Turkey Peak (with 20% partner)	+ \$4,610,000	+ 96%

Typical In-Home Water Uses and ways to reduce Use



- Inspect all fixtures (especially toilets) for leaks & repair or replace

- Do not continuously run water when shaving, brushing teeth or washing dishes

- If possible, do not shower every day
- Take shorter showers
- Install low-flow shower heads

- If possible, lower water level in tank
- Inspect for leaks
- Flush less often
- If possible, add displacement (brick)
- Consider installing dual flush toilets

- Wash Full Loads
- Wash less frequently

For Plants: use buckets to recover rain water, shower/bath water, and kitchen wash water

November 2014- Decision Process

- If no Reservoir Inflows: Proceed with LMW Pipeline and either Brazos R/O WTP or Weatherford Pipeline
- If Moderate or Significant Inflows: Proceed with LMW Pipeline and consider constructing pipeline along Palo Pinto Creek to eliminate Channel Losses
- Reduce Water Use!
- Pray for Rain!

Questions/Discussion



Abbreviated History of Lake Palo Pinto and Turkey Peak Project

- **1962** – Lake Palo Pinto Permitted to store 34,250 acre-feet
- **1964** – Lake Palo Pinto Permitted to store 44,100 acre-feet (Pool raised 4 feet)
- **1985** – Volumetric Survey of Lake Palo Pinto: 27, 650 acre-feet (63% of permit)
- **1993** – Hilltop Reservoir Constructed for Water Quality Improvement; added 1,100 acre-feet of storage adjacent to Hilltop WTP
- **2004** – Alternative Storage Sites Evaluated to increase storage of Lake Palo Pinto
- **2005** – District is notified of BRA's Sys-Ops Permit Application at TCEQ
- **2006** – District decides to move forward with Turkey Peak Project
- **2007** – District and BRA agree not to protest each other's Permit Applications
- **2007** – Sediment survey of Lake Palo Pinto determines original capacity was about 29,000 acre-feet

Abbreviated History of Lake Palo Pinto and Turkey Peak Project

- **2008** – Environmental Studies for Turkey Peak initiated
- **2009** – District obtains TWDB funding for Permitting and Preliminary Design of TP Project (\$8M)
- **2009** – District submits TCEQ Water Rights Permit and COE Section 404 Permit Applications
- **2010 to 2013** – TCEQ delays processing applications in Brazos basin due to BRA Sys-Ops permit
- **2014** – TCEQ resumes processing of Turkey Peak permit application – draft expected October 2014
- **2014** – District purchases 450 acres of land in Stephens County near new Palo Pinto Mountains State Park for potential TP mitigation site
- **2015** - Phase 3 Geotechnical Investigation Planned
- **2018 to 2020** - Construction Planned