

Memorandum



CITY OF DALLAS

DATE February 23, 2018

TO Honorable Members of the Mobility Solutions, Infrastructure and Sustainability Committee

SUBJECT **Long-Range Water Supply Plan Update – Integrated Pipeline Project**

On Monday, February 26, 2018, you will be briefed on updates regarding the Long-Range Water Supply Plan, with focus on the Integrated Pipeline Project. The briefing materials are attached for your review.

Please feel free to contact me if you have any questions or concerns.

A handwritten signature in blue ink, appearing to read 'Majed A. Al-Ghafry'.

Majed A. Al-Ghafry
Assistant City Manager

[Attachment]

c: Honorable Mayor and Members of the City Council
T.C. Broadnax, City Manager
Larry Casto, City Attorney
Craig D. Kinton, City Auditor
Billerae Johnson, City Secretary (Interim)
Daniel F. Solis, Administrative Judge
Kimberly Bizer Tolbert, Chief of Staff to the City Manager
Jo M. (Jody) Puckett, Assistant City Manager (Interim)

Jon Fortune, Assistant City Manager
Joey Zapata, Assistant City Manager
M. Elizabeth Reich, Chief Financial Officer
Nadia Chandler Hardy, Chief of Community Services
Raquel Favela, Chief of Economic Development & Neighborhood Services
Theresa O'Donnell, Chief of Resilience
Directors and Assistant Directors

Long-Range Water Supply Plan Update – Integrated Pipeline Project

Mobility Solutions,
Infrastructure &
Sustainability Committee

February 26, 2018

Terry S. Lowery,
Director (Interim)
Dallas Water Utilities



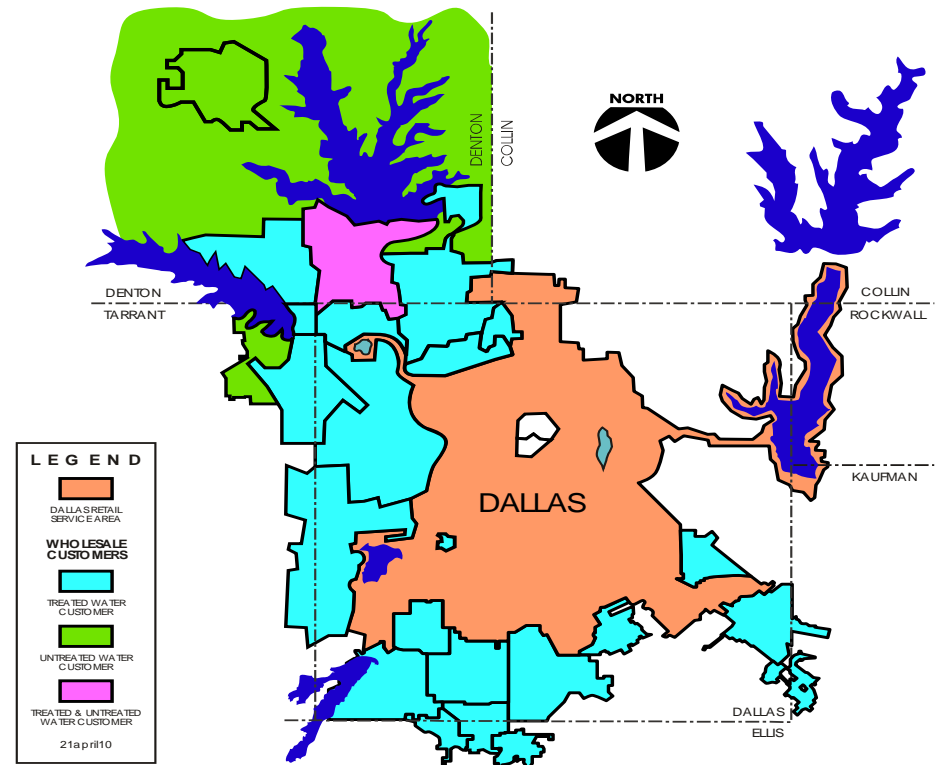
City of Dallas

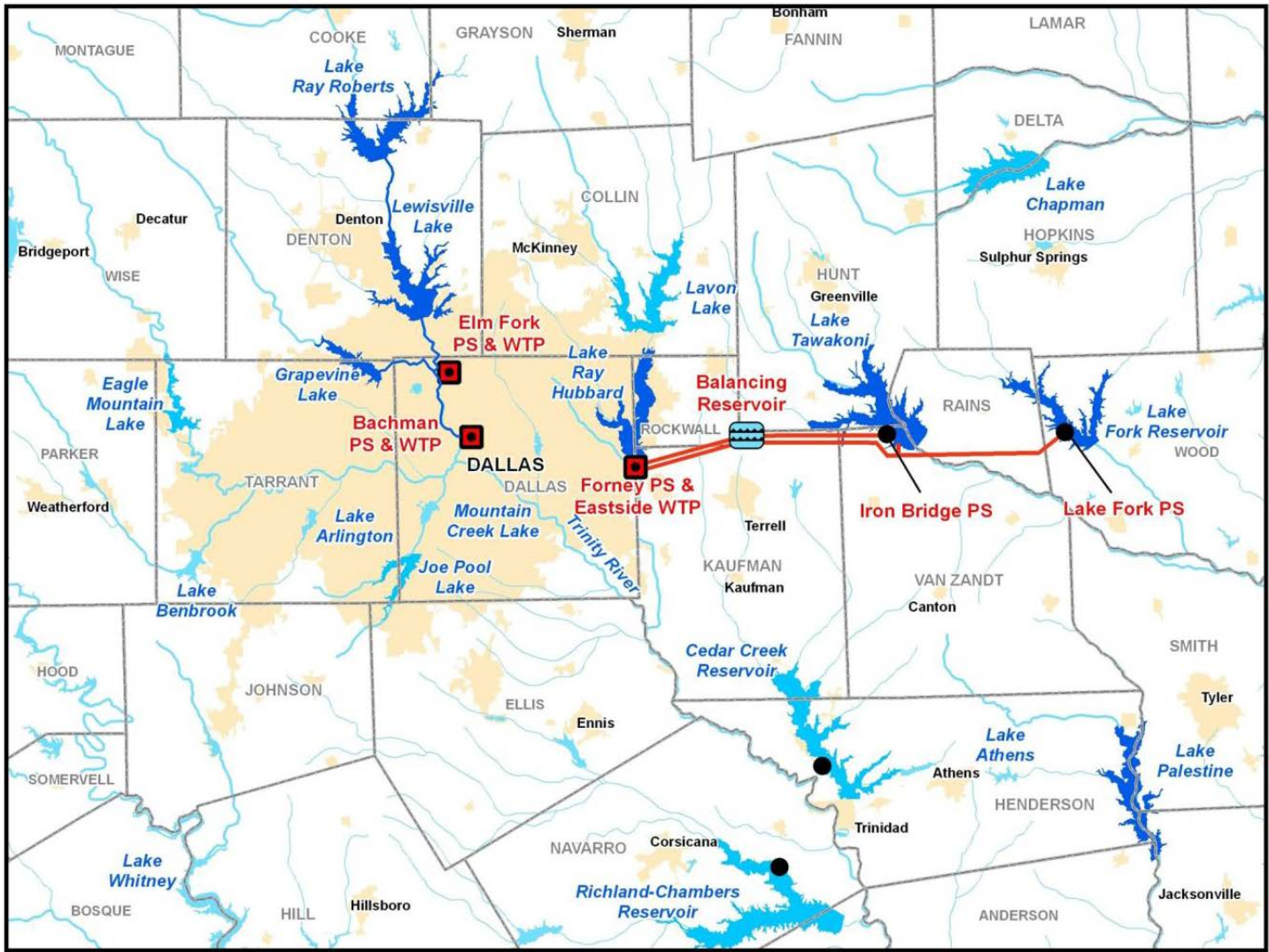
Purpose

- Provide an update on implementation of Dallas' 2014 Long-Range Water Supply Plan (LRWSP)
- Provide an update on the Integrated Pipeline (IPL) Project, a joint project between the City of Dallas and the Tarrant Regional Water District (TRWD)

Dallas: Regional Water Supplier for More Than 75 Years

- Under the Texas Constitution and state law, all surface water is owned by the State of Texas
- The state has granted Dallas extensive water rights in return for its promise to serve a defined area approved by City Council and included in the state water plan, which includes customer cities





Long-Range Water Supply Planning

- Dallas' 1959 LRWSP was updated in 1975, 1989, 2000 and 2005
- The 1959 plan recommended that Dallas supply water to surrounding cities



Forney Dam at Lake Ray Hubbard
Installation of Tainter Gates

Long-Range Planning (cont.)

The passage of Senate Bill 1 in 1997 changed water supply planning throughout the state:

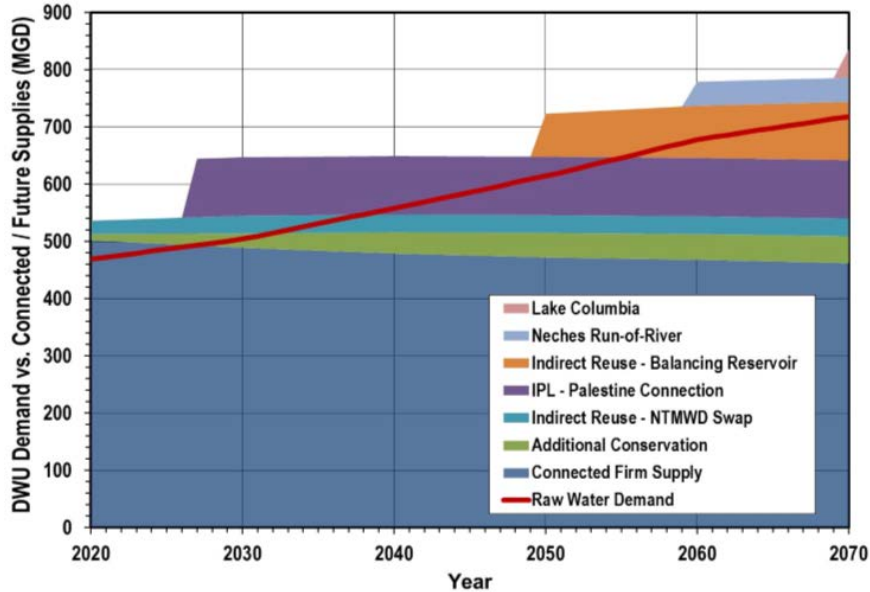
- Regional water planning groups established
- Regional and state plans required every five years
- Local plans to be provided to the Regional Planning Group for consideration in the Regional Water Plan

2014 Long-Range Water Supply Plan

- [Adopted by City Council on October 8, 2014](#)
- System average day water demands reduced by 23% or approximately 151 million gallons per day (MGD)
- Connected firm yield reduced over time due to sedimentation and increased evaporation from higher temperatures
- Projected supply and demand deficit beginning in 2027
 - 15 MGD deficit in 2030
 - 258 MGD deficit by 2070
- Recommends strategies to address deficit

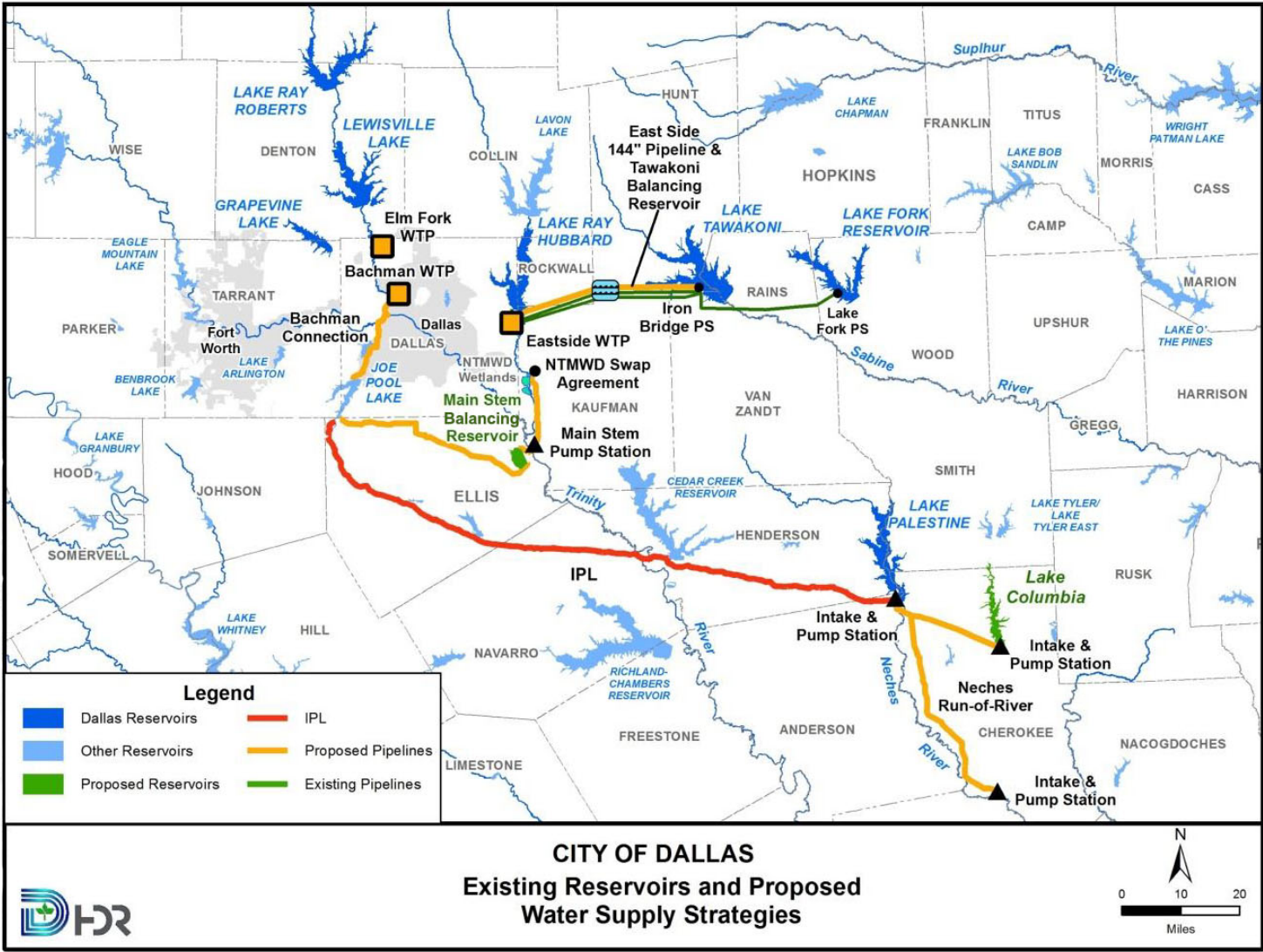
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Recommended Implementation Timeline



Demand / Supply / Strategy	2020	2030	2040	2050	2060	2070
Current System						
Projected Raw Water Demand	468.8	503.5	557.7	614.5	678.8	717.8
Available Connected Supply	502.1	488.8	478.7	472.0	467.6	461.3
Buffer / (Deficit)	33.3	(14.7)	(79.0)	(142.5)	(211.2)	(256.5)
Recommended Water Management Strategies						
Additional Conservation	10.9	24.6	36.3	42.2	44.9	46.4
Indirect Reuse Implementation						
Main Stem Pump Station - NTMWD Swap Agreement	23.1	27.5	31.1	31.1	31.1	31.1
Main Stem Balancing Reservoir	-	-	-	75.0	90.0	102.0
Connect Lake Palestine						
IPL Part 1 - Connection to Lake Palestine	-	102.0	102.0	102.0	102.0	102.0
IPL Part 2 - Connection to Bachman WTP	-	-	-	-	-	-
Neches Run-of-River	-	-	-	-	42.2	42.2
Lake Columbia	-	-	-	-	-	50.0
Total Future System						
Supply from Recommended Strategies	34.0	154.1	169.4	250.3	310.2	373.7
Total Supplies	536.1	642.9	648.1	722.3	777.8	835.0
Buffer / (Deficit)	67.3	139.4	90.4	107.8	99.0	117.2
Percent Buffer of Total Supplies	12.6%	21.7%	13.9%	14.9%	12.7%	14.0%

(in millions of gallons per day)



Current Projects – Status and Timing

- Main Stem Pump Station (2020)
 - Develop amendment to NTMWD Swap Agreement for cost sharing
- IPL – Lake Palestine Connection (2027)
 - TRWD – Land Acquisition
 - TRWD – Permit application development
- IPL to Bachman Connection (2027)
 - Scope of work for feasibility and routing study

Future Projects

- Main Stem Balancing Reservoir (2050)
 - Develop scope of work for preliminary engineering, geotechnical evaluation and land acquisition
 - Evaluate financing alternatives
- Neches Run-of-River (2060)
 - Develop agreement with Upper Neches River Municipal Water Authority (UNRMWA)
 - Assist UNRMWA with water rights permitting
- Lake Columbia (2070)
 - Develop agreement with Angelina Neches River Authority

Recommended Water Strategies

Recommended Strategy	Projected Supply (MGD)	Total Project Cost (millions)	Unit Cost (\$/1,000 gal)
Additional Conservation	46.4	\$51.7 ^a	\$0.38
Indirect Reuse Implementation – Main Stem Pump Station – NTMWD Swap Agreement	31.1	\$25.9 ^b	\$0.25
Indirect Reuse Implementation – Main Stem Balancing Reservoir	102	\$675	\$1.74
Connect Lake Palestine	102	-	-
IPL Part 1 – Connection to Lake Palestine ^c	-	\$939	\$2.31
IPL Part 2 – Connection to Bachman WTP ^c	-	\$244	\$0.49
Neches Run-of-River	42.2	\$227	\$1.88
Lake Columbia	50.0	\$289	\$1.78
Totals	373.7	\$2,451.6	\$1.24

^a Equivalent total project cost based on net present value analysis for the 50-year planning horizon

^b Represents Dallas' portion of the total project cost

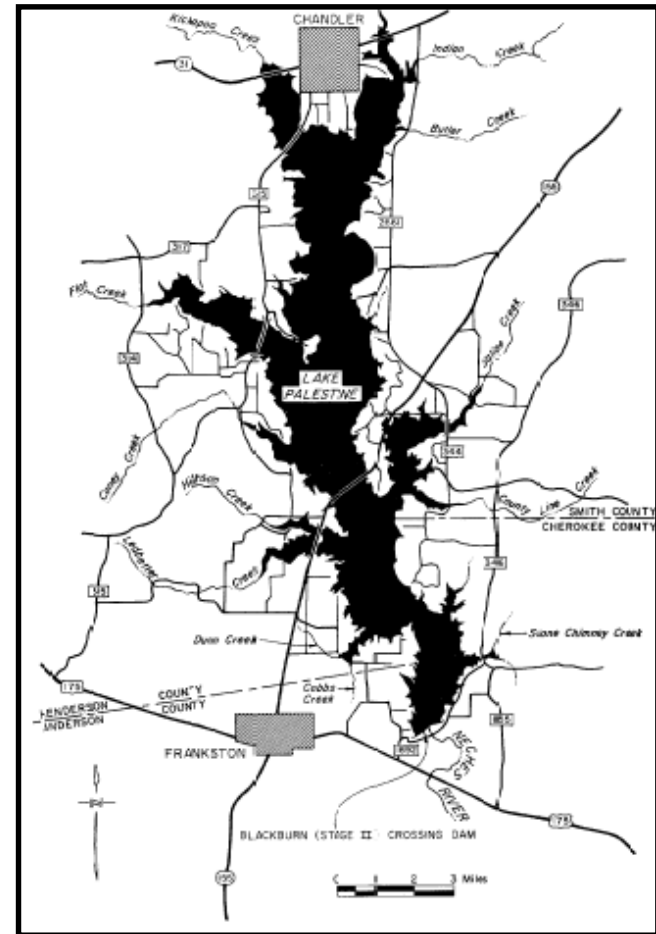
^c The IPL project requires both projects to supply 102 MGD to the Dallas system

Integrated Pipeline Project

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Lake Palestine

- Lake Palestine was constructed by the UNRMWA and completed in 1971
- In 1972, Dallas acquired rights to use 53.73% of the firm yield of Lake Palestine
- In the 1975 LRWSP, Dallas began planning for the connection of Lake Palestine
- In 2007, Dallas entered into an Interlocal Cooperation Contract (ICC) with TRWD to study joint transmission facilities



Integrated Pipeline (IPL) Project

- Dallas has contractual water rights in Lake Palestine
- TRWD has water rights in Cedar Creek and Richland Creek reservoirs
- IPL will interconnect Dallas and TRWD supplies
- Dallas needs additional water supply in the 2030 time period
- Connecting Lake Palestine extends supplies over 20 years

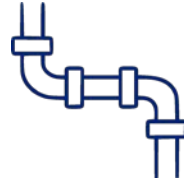


Richland Chambers to IPL Interconnect

IPL Overview



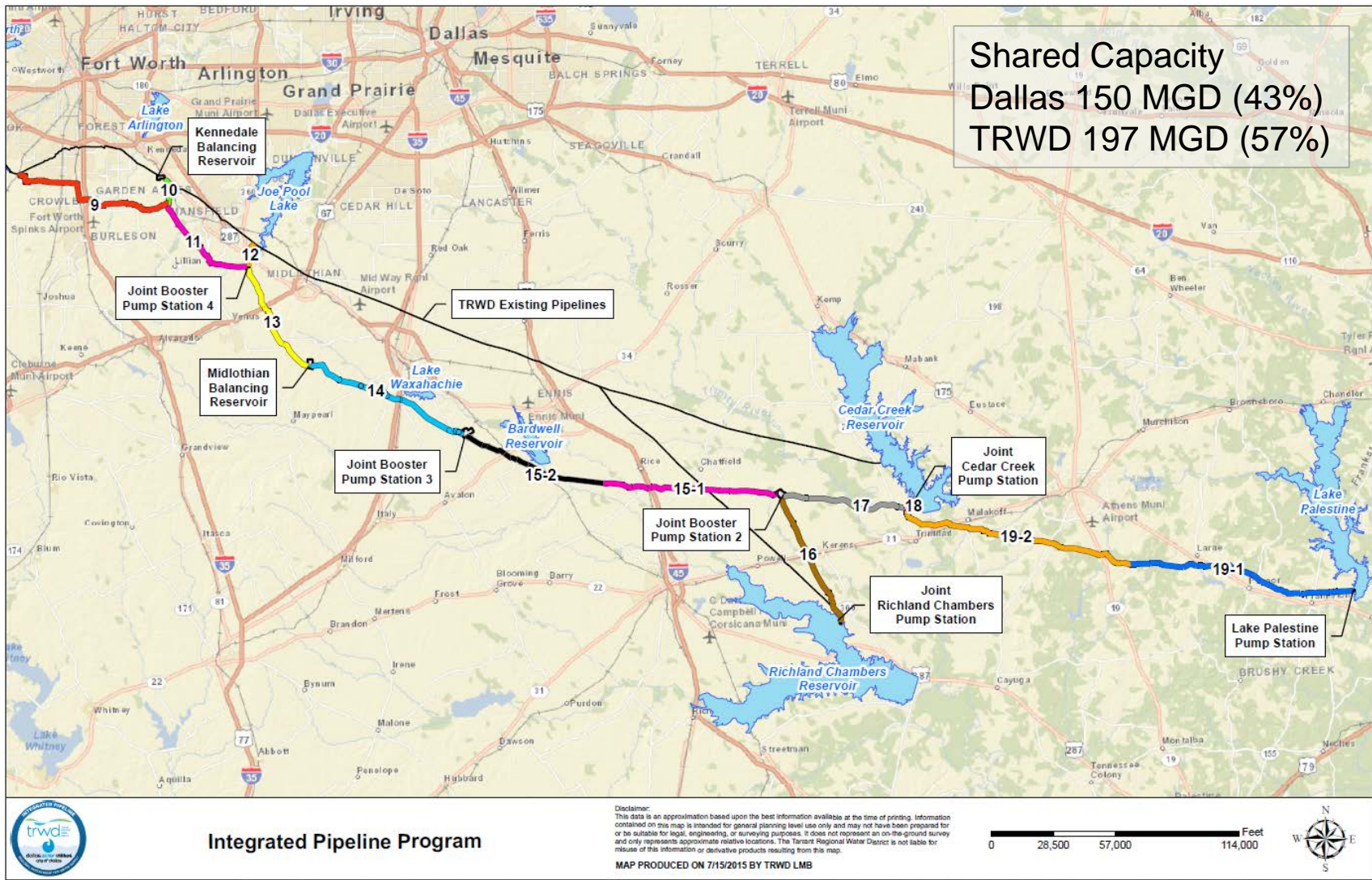
TRWD and the Dallas Water Utilities have partnered to finance, plan, design, construct and operate the IPL Project



The IPL Project is an integrated water delivery transmission system connecting Lake Palestine to Lake Benbrook with connections to Cedar Creek and Richland Chambers Reservoirs



Consists of 150 miles of pipeline and multiple pump stations capable of delivering 347 million gallons per day (MGD) of raw water to North Central Texas



IPL Project Benefits

Allows Dallas to share the cost of water transmission from distant sources

- Dallas' estimated share – \$1B
- Estimated cost savings for Dallas
 - Capital cost – \$196M
 - Bond coverage for Dallas' debt service versus O&M payment – approximately \$20M per year



108" Gate Valve at Midlothian Balancing Reservoir

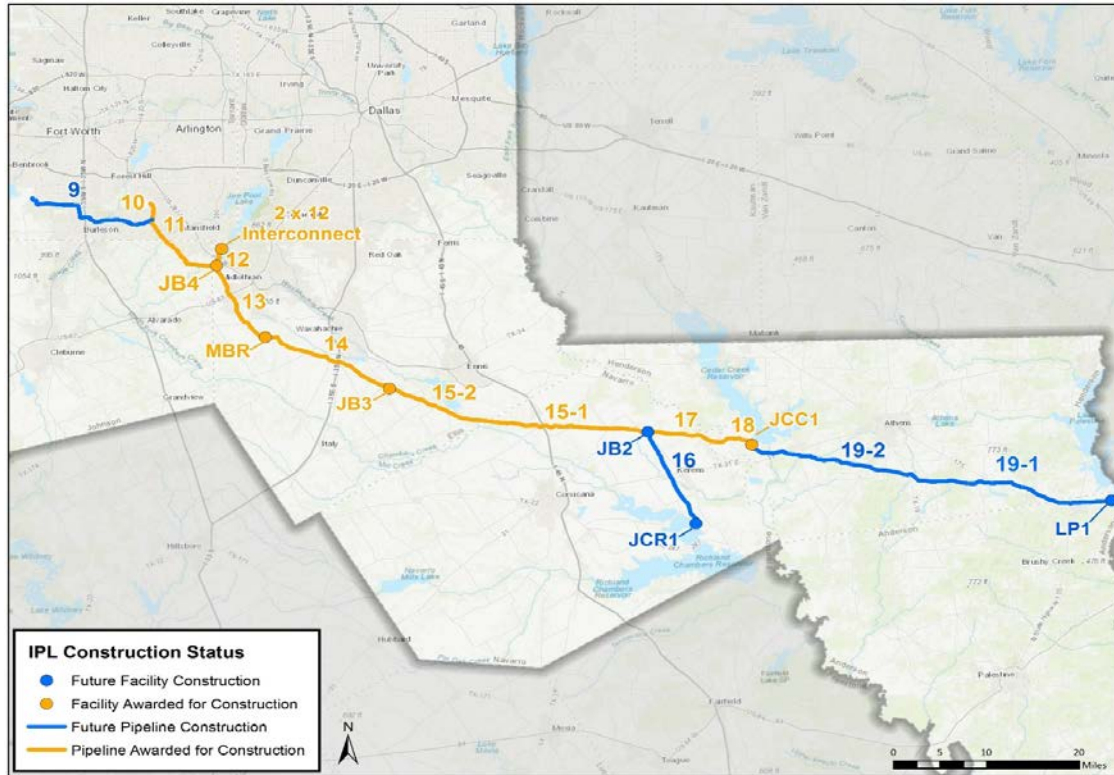
IPL Project Benefits (cont.)

- Sets the stage and tone for future regional partnerships
- Good Faith Effort – M/WBE participation goal of 25% overall



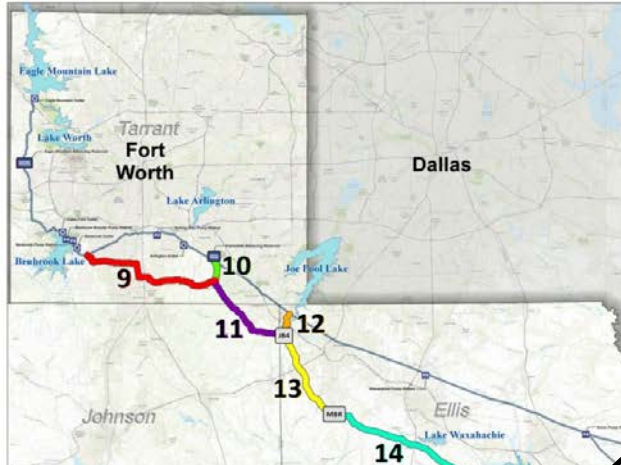
Midlothian Balancing Reservoir (MBR)

Construction Underway



Section/Facility	9	10, 11	S1X10	S2X12	1213 MBR	14	15.1	15.2	16	17, 18	19.1	19.2	JB2	JB3	JB3R	JB4	LP1	JCC1 P1	JCC1 P2	JCR1	ComTower
Design %	45%	100%	100%	100%	100%	100%	100%	100%	65%	100%	80%	85%	60%	100%	100%	30%	60%	100%	50%	60%	100%
Construction %	0	86%	19%	94%	97%	92%	99%	93%	0	58%	0	0	0	83%	100%	10%	0	53%	0	0	100%

IPL Progress



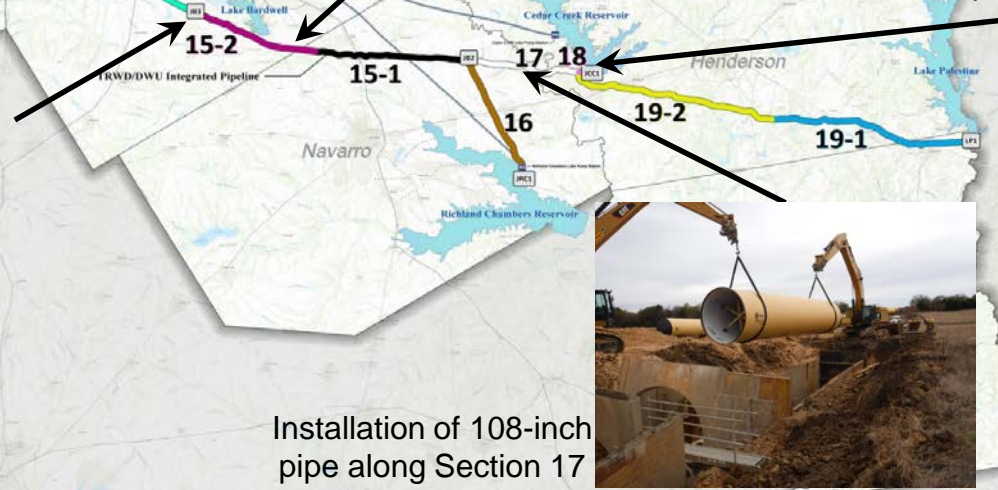
108-inch Gate Valve Installation



JB3 Pump Station Suction Reservoir



Joint Booster Pump Station 3 (JB3)



Installation of 108-inch pipe along Section 17



Financial Overview

- Current project budget – \$2.4B
 - TRWD's share of project costs is \$1.4B
 - Dallas' share of project costs is \$1.0B
- TRWD issues all bonds for the project including Dallas' portion
- Dallas approves the amount and structure of the sale for its share of project costs
 - City Manager authorized to approve bond resolution
 - Bonds secured by Dallas' revenues
- Dallas is responsible for Palestine Segment and Intake construction schedule

Financial Overview (cont.)

- TRWD revenue bond issues through 2016 – \$1.3B
 - TRWD share – \$817.9M
 - Dallas share – \$507.9M
 - Amount invoiced to date – \$857M
 - Current M/WBE percentage – 26.26
- Future TRWD debt issuances for Dallas' share of project costs are scheduled for 2020 and 2022 to complete DWU section from Lake Palestine to Cedar Creek

Summary

- From the 2005 to the 2014 LRWSP, DWU system population is approximately 9.7% higher while water demand is approximately 20% lower
- Strategies to meet 2070 DWU system:
 - 12% additional conservation
 - 36% indirect reuse
 - 27% connection to existing water supplies
 - 25% new surface water
- The IPL Project is scheduled to be moving water in 2018 with the Dallas segment and connection scheduled for 2027



Cedar Creek and Richland Chamber to IPL Interconnect (2x12 Interconnect)

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