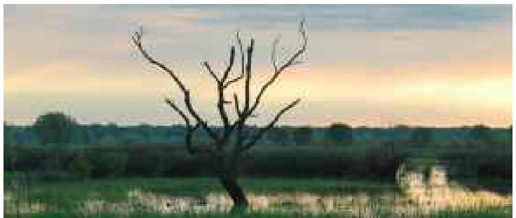
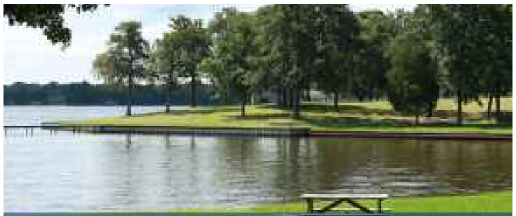
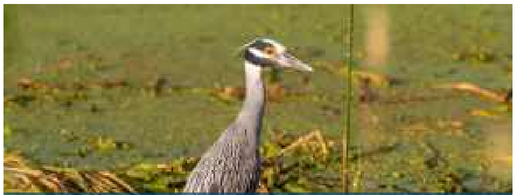
Executive Summary

August 2025

Table of CONTENTS







Conservation

Reuse

Operational Change

Groundwater

Existing Reservoir

New Reservoir

Out-of-State

Transmission

Acknowledgements

Staff

Dan Buhman, P.E., General Manager
Rachel Ickert, P.E., Chief Engineering Officer
Jason Gehrig, P.E., Director of Infrastructure Engineering
Zach Huff, P.E., Director of Water Resources Engineering
Darrel Andrews, Director of Environmental Services (retired)
Jennifer Owens, Director of Environmental Services
Nicole Rutigliano, P.E., Water Supply Manager
Dustan Compton, Conservation Manager
Amy Kaarlela, P.H., Water Supply Planner
Vinicius de Oliveira, PhD, Water Resources Engineer

Board of Directors

Leah M. King, President
Paxton Motheral, Vice President
C.B. Team, Secretary
Skylar O'Neal, Member
Johnathan Killebrew, Member

Consultant Team

David Harkins, PhD, P.E., Principal in Charge
Amber Batson, P.E., Engineer of Record
Jessica Fritsche, Project Manager
John Rehring, P.E. (*not licensed in Texas)
Inge Wiersema, P.E., ENV SP (*not licensed in Texas)
Charlie He (*not licensed in Texas)
Eva Steinle-Darling, PhD, P.E.
Tony Smith, P.E.
Powell Hinson, P.E.
Julia Schmidt, P.E., ENV SP (*not licensed in Texas)
Warren Grecco
Wen Zhao, P.E. (*not licensed in Texas)

Spencer Schnier, P.E.
Angelica Huerta, EIT

Lissa Gregg, P.E.
Kristal Copp, P.E.

Nick Mander, P.E.
John Carron
John Craven, P.E.

A LETTER FROM OUR GENERAL MANAGER…

Tarrant Regional Water District has a long history of providing outstanding service to the public. Whether it's ensuring a reliable, sustainable water supply, vital flood protection or outstanding recreational opportunities, our goal is to enrich the lives of the people in the communities where we work, live and play. Proactive planning for our future is key to the District's continued success.

Beginning in the 1950s, the District has developed long range water supply plans that have been updated periodically. The most recent version was the 2014 Integrated Water Supply Plan (IWSP). This document is an update to that IWSP, allowing us to take a fresh look at how to best meet the needs of the District for the next 50 years and beyond. The IWSP allows the District to evaluate a wide range of water supply options, combined with potential new policies and management strategies to meet our long-term water supply needs.

In the following document you will find the results of countless hours of work to identify the best solutions for the District's future water supply. We have outlined a plan that will meet the goals and objectives of our District, including:

- Reliability – Ensuring that water supply is delivered to TRWD's customers whenever they need it.
- Implementation – Selecting the long-term water supply options that can be successfully built, integrated into our system, and operated.
- Affordability – Providing cost-effective solutions for TRWD's customers, looking both at today's costs and what the future may hold.
- Community Alignment – Developing water supply solutions that will be accepted by stakeholders and end users.

We are committed to the success of the communities we serve. This 50-year water supply strategy gives us a path forward to ensuring everyone enjoys the life-altering benefits of clean, reliable water.

Sincerely,

Dan Buhman, General Manager

EXECUTIVE SUMMARY

ES.1 Introduction

Tarrant Regional Water District (TRWD) provides wholesale raw water supplies to an 11-county region in North Texas. TRWD is one of the largest raw water suppliers in Texas, providing water to over 2.5 million people, as well as providing irrigation, mining, and industrial water. Supply is delivered directly to 52 wholesale customers, including the cities of Arlington, Fort Worth, and Mansfield, and the Trinity River Authority (TRA), who then distribute treated water to approximately 70 cities. Beyond water supply, TRWD provides flood control, recreation opportunities, and environmental benefits to the region.

TRWD's mission is to deliver a reliable, resilient, and sustainable supply of water to the public at the lowest cost and highest quality possible.

TRWD's service area spans the upper portion of the Trinity River Basin. Average annual precipitation increases from west to east from about 34 to 40 inches per year. Surface water is the primary source of supply in the region and the only source utilized by TRWD. The upper Trinity River Basin hydrologic conditions vary significantly from year to year, and surface water supplies are subject to severe droughts.

Over the past 100 years, TRWD has emerged as an organization with the crucial role of supplying water to the growing communities in North Texas. In total, TRWD owns and operates four water supply reservoirs: Lake Bridgeport, Eagle Mountain Lake, Cedar Creek Reservoir, and Richland-Chambers Reservoir. Raw water is conveyed from Richland-Chambers and Cedar Creek to Tarrant County via more than 250 miles of pipelines. Additionally, TRWD utilizes Lake Arlington, Lake Benbrook, and Lake Worth for storage; has a reuse project in operation at Richland-Chambers Reservoir; and has another planned at Cedar Creek Reservoir. These projects and infrastructure have enhanced water security for the entire region and ensured water supply is available when and where it is needed to support the growing North Texas economy and population. TRWD's service area, water supply sources, and infrastructure are depicted in Figure ES.1.

In 2014, TRWD completed its first Integrated Water Supply Plan (IWSP), establishing a planning platform that has served TRWD well. The evaluation included the identification and assessment of more than a dozen new water supply options analyzed against a range of demand projections. At the conclusion, the report documented a recommended suite of near-term strategies for implementation. The following identified strategies from the 2014 IWSP are either complete or currently underway:

- In 2014, TRWD began the operation of the George W. Shannon Wetlands, also referred to as the Richland-Chambers Wetlands.
- TRWD has obtained Excess Flow (ExFlo) permits for Benbrook Lake, Eagle Mountain Lake, Richland-Chambers Reservoir, and Cedar Creek Reservoir. These ExFlo permits allow TRWD to divert additional water supply during periods when specific reservoirs are above the conservation pool, and excess flows are available.
- TRWD has made considerable progress on the construction of the Integrated Pipeline (IPL) in conjunction with Dallas Water Utilities (DWU). At full project build-out, the 150 miles of newly constructed pipeline will provide TRWD with an additional 200 million gallons per day (mgd) of conveyance capacity to move water from TRWD's East Texas reservoirs to the metroplex.
- The Marty Leonard Wetlands at Cedar Creek Reservoir (or Cedar Creek Wetlands), an additional reuse project similar to the Richland-Chambers Wetlands, has been permitted, and design is currently underway. The new wetlands project will have a capacity of 150 mgd and will be online around 2032.
- TRWD has actively led the region in water conservation for almost two decades through municipal customer support, education and public awareness campaigns, efficiency, and accurate accounting in TRWD operations, and offerings of classes, programs, and landscape efficiency initiatives.

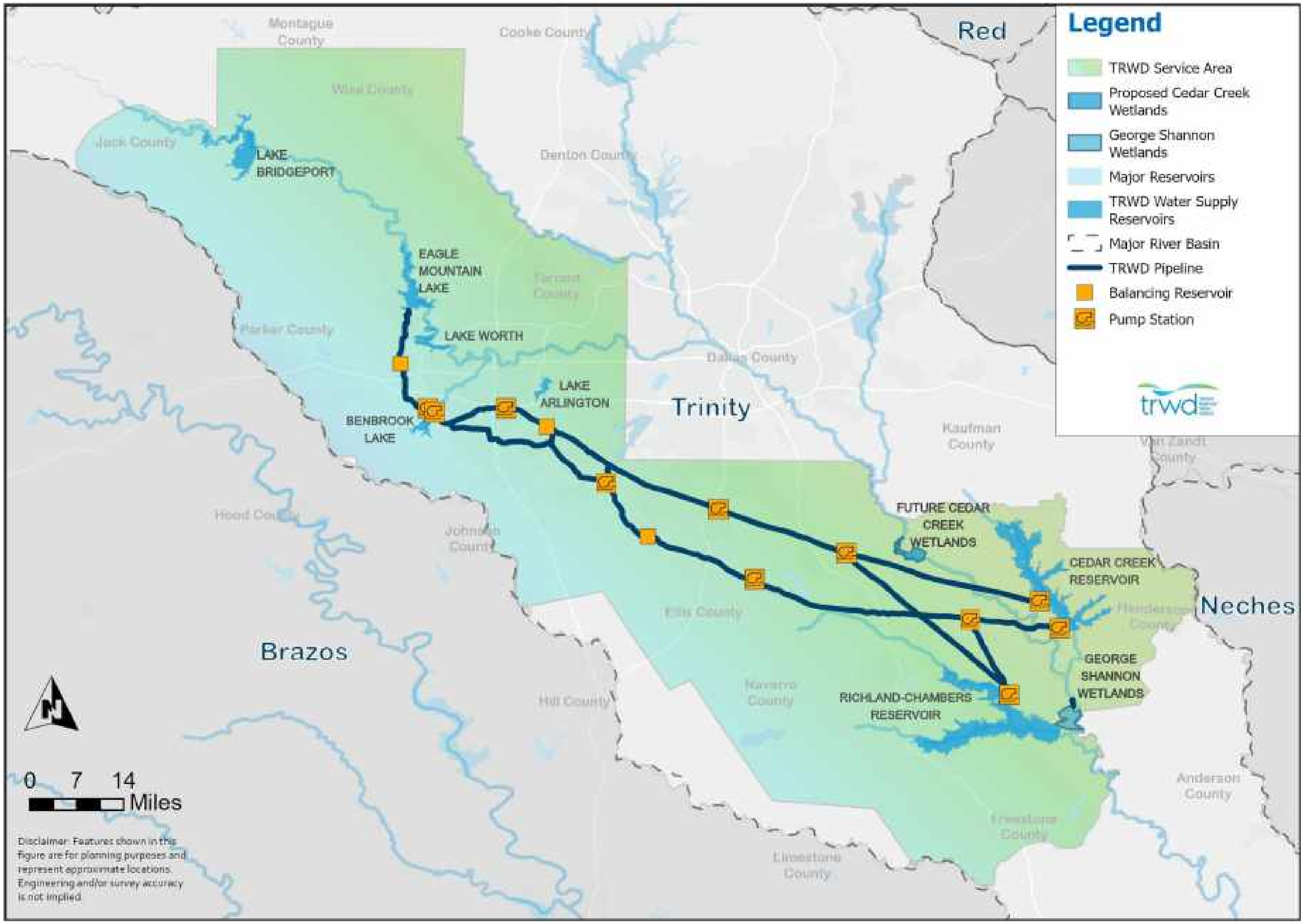
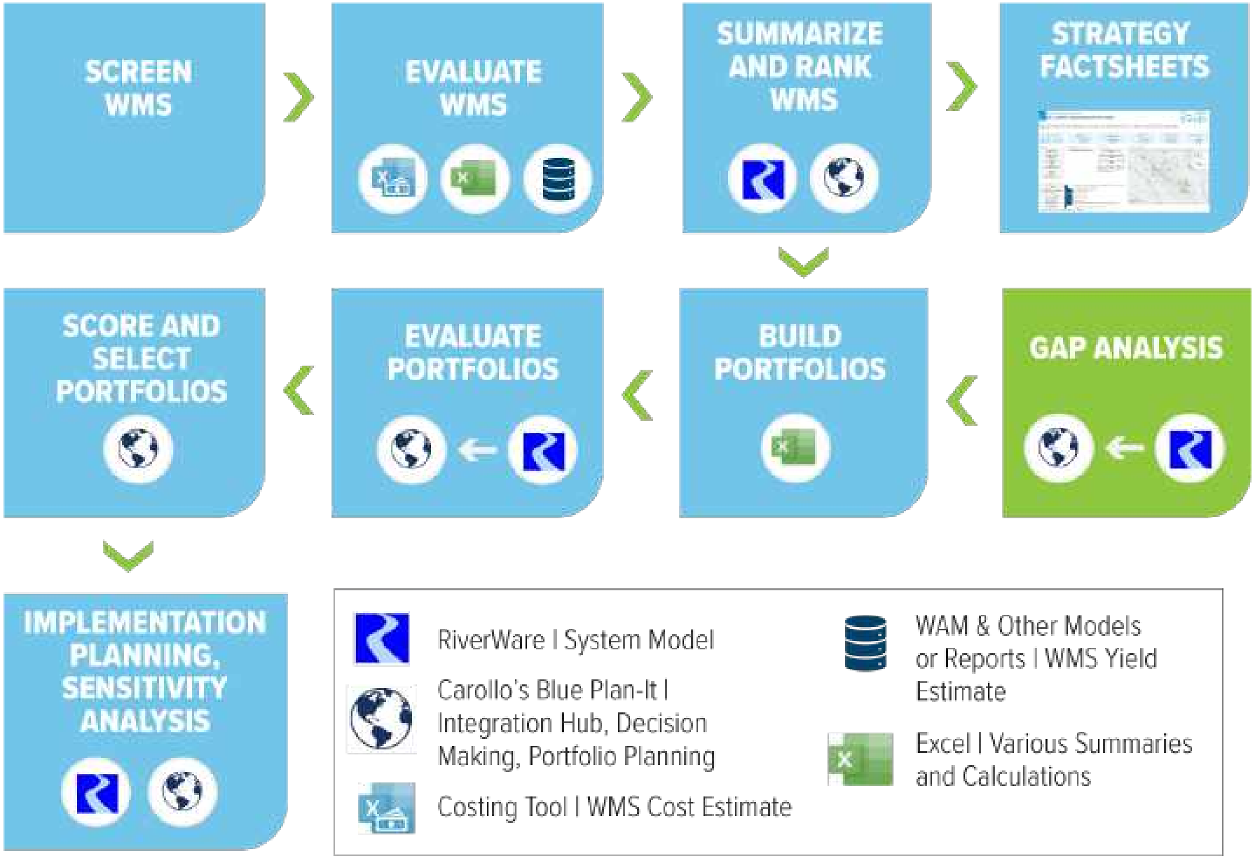


Figure ES.1 TRWD Baseline Water Supply System

ES.2 IWSP Update Approach

The work of planning for new supplies is an ongoing, continuous effort. Even with the recent expansions in supply and conveyance, as well as advancements in operations and efficiency, TRWD must continue to proactively develop additional supplies to meet future needs. Today's uncertainties are unmatched, with rapid population growth projected to continue and evolving technological, environmental, hydrological, and political conditions. TRWD has undertaken this IWSP Update to establish an updated roadmap for future supply development against this deep uncertainty while striving to meet multiple water supply objectives.

The IWSP Update looks holistically at TRWD's water supply system, comparing supply availability and conveyance capacity to projected water demands through 2080, and identifies future alternatives of combined water management strategies (WMS or strategies) to best meet objectives. The study employs a probabilistic modeling approach and explores TRWD's water supply reliability goals against affordability metrics. The primary modeling tools used to develop the IWSP include an adapted version of TRWD's existing RiverWare water supply model, a costing tool that reflects TRWD's recent bids for construction and financial assumptions, and a custom application of Carollo Engineers' (Carollo) Blue Plan-it for data integration and decision-making, as shown in Figure ES.2.



Notes: WMS = Water Management Strategy; WAM = Water Availability Model.

Figure ES.2 IWSP Update Key Components and Modeling Tools

For each simulated future year, the modeling framework was designed to generate 82 years of potential outcomes for each month based on hydrologic records from 1941 through 2022. The simulation includes historical hydrologic inflows, evaporation rate, and seasonal patterns superimposed against conditions for future demands at TRWD delivery nodes, supplies, permits, operational rules, reservoir conditions (e.g., reservoir evaporation and storage), and infrastructure limitations. This process is repeated in 10-year increments for a forecast horizon from 2030 to 2080.

The key components of the IWSP Update include:

- Identify and screen strategies available to TRWD, with detailed focus and analysis on selected strategies with the greatest potential to meet the projected gap in supply while balancing other objectives.
- Quantify the yield potential and cost-related information for each selected strategy and qualitatively score these strategies based on other key evaluation criteria.
- Using RiverWare, evaluate the existing and planned water supply system against projected growing demands, referred to as a gap analysis. Key outputs include system reliability statistics, quantification of the additional supply needed to meet growing demands, determination of when and where the supply is needed within the system, and identification of additional infrastructure needed for conveyance.
- Identify and present selected portfolios that best meet objectives, including implementation plans, sensitivity analysis, and adaptive planning triggers.

Reliability Goals and Supply Objectives

With Carollo's guidance, TRWD established this minimum threshold for reliability for the IWSP Update: a gap exists if more than 5 percent of system demands cannot be met during a repeat of the critical year of the historical drought of record (1956). The target, thus, is meeting 95 percent of demands or more during the critical drought year. This threshold guided the development of portfolios and was used to calculate the timing of when additional strategies must be implemented and how much water supply strategies must deliver. Per TRWD's Drought Contingency Plan, Stage 3 reservoir storage conditions correspond to restrictions that, when implemented by all customers, would result in approximately a 20 percent demand curtailment.[1] Thus, the 95 percent minimum reliability threshold represents a balance between water use reduction actions by consumers under extreme conditions and the high cost of meeting 100 percent demand during these extreme conditions.

Portfolios are evaluated against water supply objectives to ensure supply reliability, select implementable projects, maintain affordability, and align solutions with the community. Each objective has quantitative metrics associated with it to determine the relative performance of the portfolio for each objective (Table ES.1).

Table ES.1 Water Supply Objectives

Objective	Description
Reliability	Ensuring that the water supply is delivered to TRWD's customers when and where they need it.
Implementation	Selecting the long-term water supply options that can be successfully built and operated.
Affordability	Providing cost-effective solutions for TRWD's customers, examining today's costs and what the future may hold.
Community Alignment	Developing water supply solutions that will be accepted by stakeholders and end users.

[1] TRWD Water Conservation and Drought Plan 2024

ES.3 Incorporated Studies

As follows, the IWSP Update builds upon analysis conducted by TRWD over the past several years to update, set direction for, and/or refine estimates around specific components of water supply planning.

TRWD Service Area Demand Update. Historically, TRWD's demands rapidly increased year-over-year alongside population growth. In the mid-2000s, TRWD launched its conservation program, marking a critical step towards demand management, which was followed by State led efforts to improve the efficiency of plumbing fixtures, and regional irrigation restrictions allowing lawn watering no more than two days per week. Weather aside, water demands held steady throughout much of the period between 2008 and 2018, underscoring the combined impact of conservation efforts, efficiency standards, and drought-induced behavioral changes. To better plan, TRWD completed a detailed study of water demand in 2020, developing projections for five scenarios covering variations in growth, climate, and conservation. The highest scenario, referred to as the Suburban Sprawl with Stressors (S3), is the basis of the IWSP Update.

Since the conclusion of the demand study, the COVID-19 pandemic occurred and growth accelerated in the region. In 2022, after a very hot summer, TRWD recorded its highest demand to date, with annual deliveries reaching 428,600 acre-feet (AF). The demand record was surpassed the next year when TRWD's demands were 438,700 AF. In 2024, with weather closer to average, demands totaled 418,000 af. These recent trends indicate that TRWD's water demands are tracking along the highest scenario from the demand study but have significant range in variability due to weather.

IWSP Update Strategy Report. In 2020, TRWD commissioned an evaluation of changed conditions since the 2014 IWSP and identified activities needed to update the IWSP. The recommended tasks were comprehensive and covered hydrologic updates, exploring regional collaboration opportunities, refining strategies, prioritizing transmission system planning, and modeling considerations.

Hydrologic Risk Review. TRWD conducted a study (2022) to explore the prospect that more water may be permitted than would be available for withdrawal if future droughts are more severe than the 1950s recorded historical drought. The analysis focused on paleoclimate insights into past North Texas climate and droughts, future climate risk and uncertainty, modeling and planning guidelines, and best practices. Study methods included a literature review and expert panel discussions. The study highlighted the uncertainty around future climate, and the importance of maintaining safety factors to buffers against future drought and development of solutions that add resilience to the system.

Strategy Studies. In recent years, TRWD has sponsored or partnered on several feasibility-level studies analyzing cost and/or supply for certain strategies, such as Lake Ringgold, groundwater, and Marvin Nichols Reservoir and Lake Wright Patman. TRWD has several ongoing studies, including analysis to optimize system operations and investigate permitting additional return flows (referred to as "SyOps"), and a Regional Optimization Study with other North Texas water suppliers. TRWD is also in the process of implementing an Aquifer Storage and Recovery project and an additional reuse wetlands project.

Region C Plan. The Region C Water Planning Group is responsible for developing a comprehensive water supply plan to ensure sustainable and reliable water resources for the region's growing population. This planning effort, mandated by the Texas Water Development Board (TWDB), evaluates current and future water demands, identifies potential shortages, and proposes strategies such as conservation, infrastructure development, and alternative water sources. TRWD continues to play a crucial role in Region C Planning, and since this IWSP Update is more detailed and comprehensive, it will serve as valuable input for Region C. For some strategies and where noted, Region C planning information was utilized to develop the IWSP strategy evaluation.

ES.4 Water System, Supplies, and Demands

Key characteristics and elements of TRWD's baseline water supply system include the service area extent, water right holdings, water supply reservoirs, and infrastructure to move water from the reservoirs to the customer delivery points, as well as the yield of the reservoirs. Each of these characteristics and elements are foundational to determining the future water supply gaps and needs. The baseline system definition includes current and near-term planned water supply and conveyance elements.

TRWD service area includes all or part of Tarrant, Ellis, Navarro, Wise, Denton, Freestone, Henderson, Jack, Johnson, Kaufman, and Parker Counties. Water supply is captured in TRWD's water supply reservoirs and delivered to 95 customer take points along reservoirs and TRWD's pipelines.

ES.4.1 Supplies

TRWD's existing water rights are all within the Trinity River Basin, and annual water rights total just over 810,000 AF. About 71 percent of the water rights are in the East Texas reservoirs. In addition, TRWD administers some water rights held by others, including Lakes Arlington and Worth. Specific components of the TRWD water supply system include:

- TRWD East Texas water supply reservoirs.
  - Cedar Creek Reservoir.
  - Richland-Chambers Reservoir.
- TRWD West Fork water supply reservoirs.
  - Lake Bridgeport.
  - Eagle Mountain Lake.
- Terminal storage reservoirs utilized but not owned by TRWD.
  - Lake Arlington (provides some additional yield).
  - Benbrook Lake (provides some additional yield).
  - Lake Worth.
- Permitted return flow reuse projects.
  - George W. Shannon Wetlands, also referred to as the Richland-Chambers Wetlands.
  - Marty Leonard Wetlands, also referred to as the Cedar Creek Wetlands (to be constructed in the future but assumed to be part of the baseline TRWD supply system).
- ExFlo permits.
  - Benbrook Lake.
  - Eagle Mountain Lake.
  - Richland-Chambers Reservoir.
  - Cedar Creek Reservoir.
- Other sources.
  - Bed and banks authorizations.
  - Minor permits.

While TRWD's annual water rights exceed 800,000 AF, a water right is not a guarantee of available supply. Hydrologic conditions vary significantly from year to year in North Texas. Wet years bring excess water and flooding, while drought years put pressure on water supplies. Reservoir yield typically refers to the quantity of water from a reservoir projected to be available reliably during a critically dry period. Firm yield, specifically, is the maximum amount of water that can reliably be supplied during a repeat of the drought of record, regardless of how much water is permitted. Safe yield is the maximum amount of water that can be reliably supplied during a repeat of the drought of record, while retaining a minimum supply in reserve. For TRWD, the minimum reserved supply is enough to meet demand for 1 year. Region C provides firm and safe yield supply estimates for TRWD's major water supply reservoirs, as summarized in Table ES.2. Generally, the firm yield estimates reflect modeled sedimentation impacts that have likely occurred since reservoir construction and the continuation of that trend. TRWD's total firm yield is currently estimated at approximately 665,000 acre-feet per year (AFY). With the addition and anticipated buildout of Cedar Creek Wetlands, and including sedimentation impacts, the firm yield is projected to increase to just under 739,000 AF by 2080. Safe yield is estimated at just under 555,000 AFY, increasing to almost 625,000 AF by 2080.

Table ES.2 Firm and Safe Yield of Reservoirs in AFY

	2030	2040	2050	2060	2070	2080
Firm Yield						
Richland Chambers Reservoir	224,650	223,205	221,760	220,357	218,953	217,550
Richland Chambers Wetlands	100,465	100,465	100,465	100,465	100,465	100,465
Cedar Creek Reservoir	207,350	206,105	204,860	203,640	202,420	201,200
Cedar Creek Wetlands(1)	0	40,856	58,273	74,191	90,974	90,974
West Fork System	118,961	118,361	117,761	117,078	116,394	115,711
Benbrook Lake	4,271	4,271	4,271	4,271	4,271	4,271
Lake Arlington	9,500	9,350	9,200	9,067	8,933	8,800
Total Firm Yield	**665,197**	**702,613**	**716,590**	**729,069**	**742,410**	**738,971**
Safe Yield						
Richland Chambers Reservoir	190,000	188,266	186,531	184,781	183,030	181,280
Richland Chambers Wetlands	100,465	100,465	100,465	100,465	100,465	100,465
Cedar Creek Reservoir	157,150	155,340	153,530	151,797	150,063	148,330
Cedar Creek Wetlands(1)	0	40,856	58,273	74,191	90,974	90,974
West Fork System	96,161	95,561	94,961	94,428	93,894	93,361
Benbrook Lake	3,371	3,371	3,371	3,371	3,371	3,371
Lake Arlington	7,500	7,385	7,270	7,157	7,043	6,930
Total Safe Yield	**554,647**	**591,244**	**604,401**	**616,190**	**628,840**	**624,711**
90% Safe Yield	**499,182**	**532,120**	**543,961**	**554,571**	**565,956**	**562,240**

Notes:
Source: 2026 Region C Initially Prepared Plan, Volume II. Available at https://regioncwater.org/wp-content/uploads/2025/03/2026_Region_C_Initially_Prepared_Plan_Volume_II.pdf.
(1) The yield at Cedar Creek Wetlands ramps up over time to the full permitted value based on projected available return flows.

ES.4.2 Transmission System

The baseline TRWD water supply system also includes pumping and transmission facilities, including the "legacy pipelines" from Cedar Creek and Richland-Chambers Reservoirs and the IPL. The IPL is an intrasystem conveyance project constructed in partnership with DWU that increases capacity from the existing East Texas reservoirs. All portions of the IPL are anticipated to be complete around 2037. Additional pipelines include the Eagle Mountain Connection between Benbrook Lake, Eagle Mountain Lake, and Fort Worth's Westside WTP; and a pipeline from Benbrook Lake to Rolling Hills WTP.

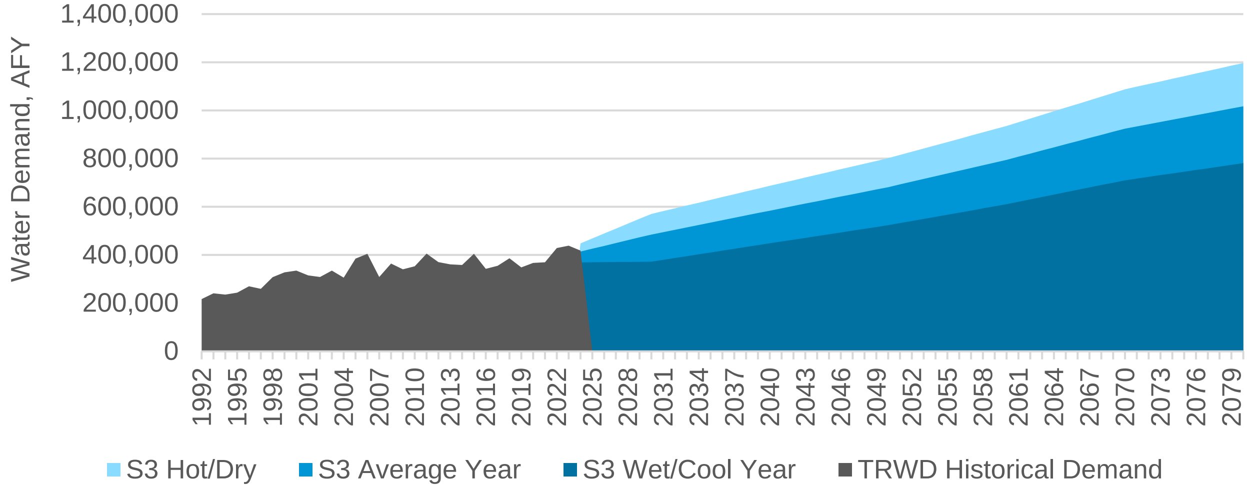
TRWD's system also includes three balancing reservoirs: Eagle Mountain Balancing Reservoir, Kennedale Balancing Reservoir, and Midlothian Balancing Reservoir. The balancing reservoirs do not provide a source of supply but rather facilitate transmission operations. Additionally, the baseline system includes 14 pump stations ranging in capacity from 120 to 350 mgd.

ES.4.3 Water Demand Projections

TRWD service area annual deliveries grew from 217,000 AF in 1992 to 418,000 AF in 2024, as shown in Figure ES.3. While demand fluctuates annually, on average demand grew by about 2 percent per year across the 32-year period. In 2022, after a very hot summer, TRWD recorded its highest demand to date, with annual deliveries reaching 428,600 AF. The demand record was surpassed the next year when TRWD's demands were 438,700 AF. In 2024, with weather closer to average, demands totaled 418,000 AF. Rapid growth in water demand occurred between 1992 and 2008, coinciding with an average year-over-year population increase of 43,000 people per year over the 16-year period.[2] Annual population growth slowed to an average increase of 25,000 people per year from 2008 to 2018. However, since 2018 population has increased to an average growth of 58,000 people per year, and since 2020 has increased by 65,000 per year. TRWD's conservation program combined with the U.S. Energy Policy Act of 1992 and the 2010 Texas Plumbing Fixtures Act contributed to lower per capita water use due to a combination of behavioral changes and plumbing fixture efficiency changes.

Demand assumptions were adopted from TRWD's 2020 Demand Study, with a few minor modifications to account for areas that have grown quicker than projected, adding a new user group in Wise County, and linearly extending to 2080. That study projected several scenarios of potential future water demands. The selection of a demand scenario for comparison of supplies affects the timing of strategy implementation for the IWSP Update. The "S3" scenario, the most aggressive growth scenario, was selected as TRWD's demands have tracked close to this projection line and it offers a conservative but realistic perspective on future needs. The S3 forecast assumes that future climate, demographic growth, and low-density development impact demand, with moderate adaptation assumed from water conservation.

Given the S3 growth conditions and other assumptions on climate and conservation, the 2080 range of water demand is between 781,000 and 1,200,000 AFY, representing demand growth of up to 750,000 AFY beyond the historical high demand of 438,700 AF (Figure ES.3). The projected growth is an increase of 175 percent during dry conditions over the next 50 years and represents continued population and economic growth across TRWD's 11-county service area.



Notes: S3 = Suburban Sprawl with Stressors demand scenario.

Figure ES.3 TRWD Historical Water Demand and Future Projections

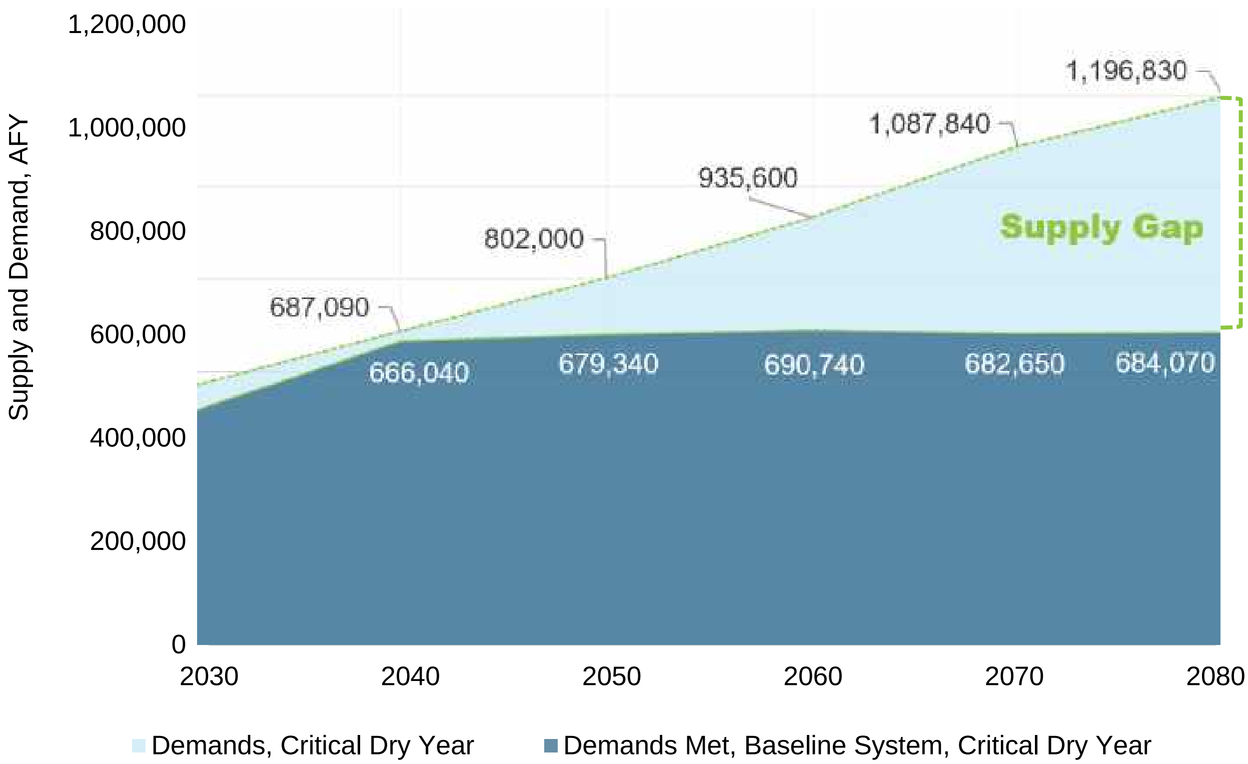
[2] TRWD. 2020. TRWD Service Area Demand Update: Water Demand Forecast Report. Prepared by CDM Smith.

ES.5 Needs Assessment

The TRWD RiverWare model was used to analyze future water supply system reliability with the projected demands and to quantify supply gaps, or shortages, without new water supply strategies and infrastructure beyond the near-term planned projects. Gaps are presented as the maximum volume of supply shortage that occurs during a repeat of the drought of record when demands are high due to hot and dry conditions, and supplies are lowest due to reduced surface water flows. The drought of record for TRWD water supply reservoirs occurred between 1949 and 1956. The critical drought year with the highest total system gap occurs at the end of that drought period in 1956.

The quantity of demand that can be met by the baseline water supply system varies over time. The demand that can be met is a function of assumptions around permit constraints, reservoir inflows, reservoir sedimentation, conveyance and pumping capacity, and operational rules and policies. The demand that can be met is further a function of where the demands are located within the system and the monthly peaking of demands. Given the future conditions assumed in the modeling, the critical dry year supply gap begins to increase starting in 2040 and continues along that trend through 2080, as shown in Figure ES.4. The gap magnitude is the difference between the system demand and met demand. The supply gap is just over 120,000 AF in 2050 and reaches 513,000 AF by 2080.

The modeling shows that a water supply shortage of 7 percent could occur in 2030 under critically dry conditions. This shortage could be mitigated by enacting TRWD's drought contingency plan, through operational changes, or acceleration of planned projects.



Notes: Calculated based on the critical year of the drought of record (1956) from the S3 demand scenario. The increase in demands met from 2030 to 2040 reflects the planned completion of the Cedar Creek Wetlands and the IPL. Results generated from RiverWare.

Figure ES.4 TRWD Critical Dry Year Supply Gap from RiverWare Analysis

ES.6 Water Management Strategy Options

Strategies are discreet, independent water supply options. Through workshops with TRWD staff and their customer stakeholders, more than 70 potential strategies were identified as an option for TRWD development. Some of these strategies have been previously identified, studied, and/or conceptualized. Others were entirely new and surfaced via brainstorming and through a review of innovative ideas across the world. Initial screening was conducted qualitatively through discussions with TRWD staff, management, and regional stakeholders to identify those most viable. Eighteen strategies plus two intrasystem, infrastructure-only projects were selected and carried forward for evaluation, as shown in Figure ES.5.

The strategies become the building blocks of meeting water supply objectives. No one strategy can meet the supply gap, so combinations of strategies must be considered. The strategies are described in terms of location, yield, cost, partnership opportunities, phasing potential, and implementation timing. Three strategies were identified as "No Regrets," indicating they are low risk, high value options that offer system flexibility and adaptability over time.

While these 18 strategies are evaluated as discreet options, many variations in the configuration of the strategies are possible. As an example, Toledo Bend was assumed at half the available yield with one partner. In reality, if infrastructure to convey Toledo Bend water to TRWD's service area was constructed, the amount of supply secured may go up or down and there may be one partner or several. Additionally, there are other strategies that did not move forward but may be worth future evaluation and monitoring, including (but not limited to) brackish groundwater, regional agreements for water sharing, negotiations or purchasing for more reuse supply, or other out of state options.

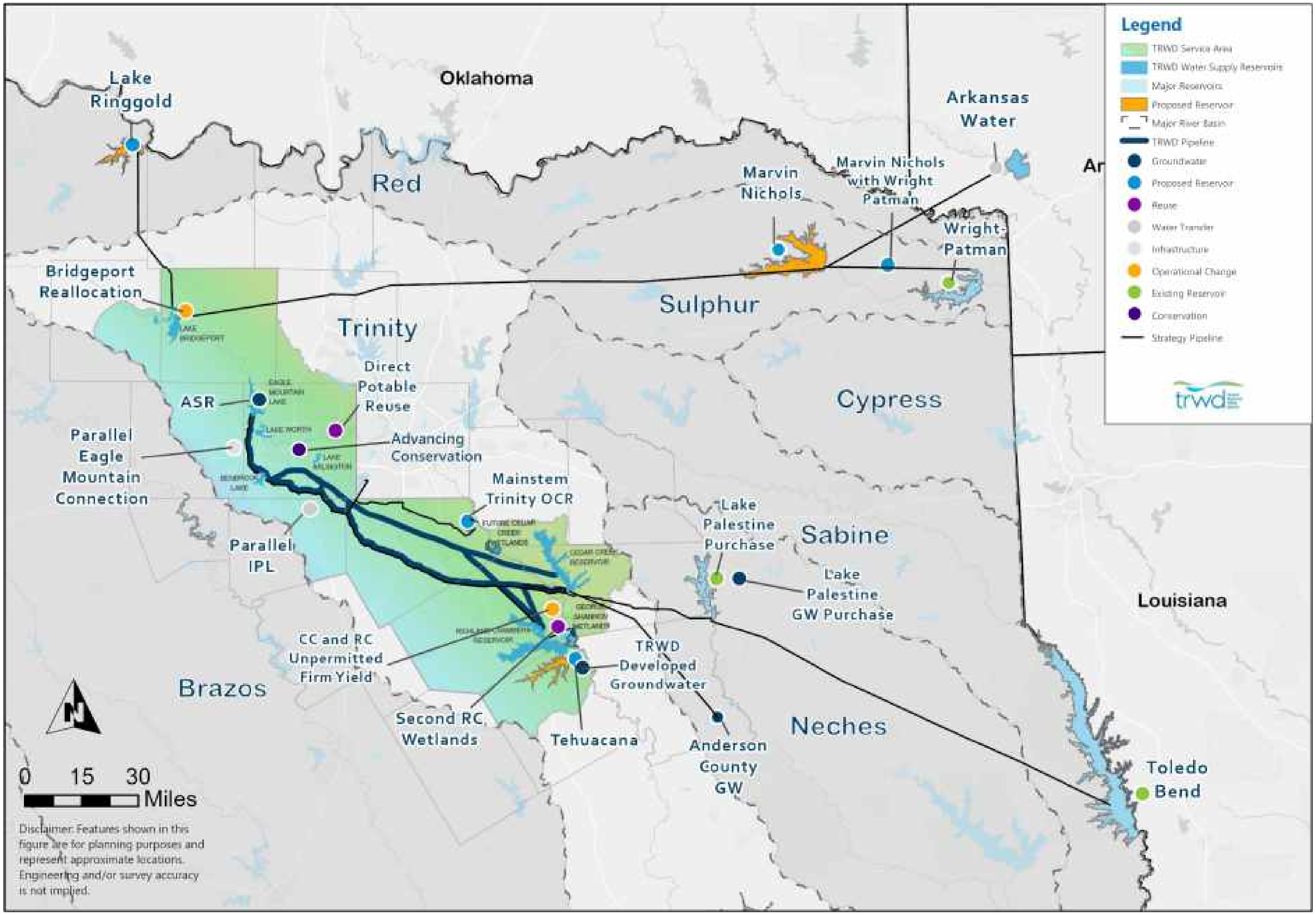


Figure ES.5 TRWD Water Management Strategy Locations

Advancing Conservation: The Advancing Conservation strategy involves developing and implementing a robust, cost-effective regional water conservation program in coordination with customer cities to offer direct-to-customer rebates, utility cost-share measures, expanded education, and assistance in passing key ordinances, all aimed at reducing demand, and improving efficiency. This strategy does not create a new water supply but rather stretches existing water supplies and infrastructure capacity further into the future. It scores high in the water supply objective criteria. The strategy is flexible and can be phased.

- Firm Yield: 90,500 AFY savings in an average year by 2080 (in addition to savings from current conservation efforts).
- Unit Cost after Debt Service: $750/acre-foot (AF) (assumed to be funded through annual budgets).
- Implementation Timeline: Ongoing through 2080.
- Identified as a No Regrets strategy.

Direct Potable Reuse (DPR): This strategy involves constructing an advanced water purification facility (AWPF) to treat a portion of the tertiary-treated flow from the Village Creek Water Reclamation Facility. The purified recycled water would augment the raw water supply sources of TRA's Tarrant County Water Supply Project (WSP). The treatment at the AWPF can be based on either reverse osmosis (RO) or a carbon-based treatment train. The cost estimate is based on the carbon treatment train because it does not create an RO brine that requires handling and disposal. Partnerships between TRWD, TRA, and the City of Fort Worth would be required. This strategy enhances water efficiency, optimizes local supplies, and reduces pumping needs from TRWD's East Texas reservoirs to the Fort Worth metroplex.

- Firm Yield: 20,500 AFY.
- Capital Cost: $394.6 million.
- Unit Cost with Debt Service: $1,917 per AF.
- Implementation Timeline: 18 years.

Second Richland-Chambers Wetlands: This strategy involves creating a second wetlands similar to the existing Richland-Chambers Wetlands to treat return flow in excess of TRWD's currently permitted reuse. The wetlands could be sourced through purchase of supply from a regional partner, new reuse opportunities from interbasin transfers, negotiation on the Lake Livingston agreement, or a System Operations permit. The strategy assumes a second IPL would be needed to transmit the supply from Richland-Chambers Reservoir to Benbrook Lake. Richland-Chambers Reservoir is estimated to be able to assimilate 90 mgd of additional reuse supply, so the wetlands would be sized at approximately 2,000 acres.

- Firm Yield: 100,890 AFY.
- Capital Cost: $1,545 million.
- Unit Cost with Debt Service: $1,143 per AF.
- Implementation Timeline: 20 years.

Cedar Creek and Richland-Chambers Unpermitted Firm Yield: This strategy focuses on obtaining a permit for the additional yield associated with the firm yield of the Cedar Creek and Richland-Chambers Reservoirs. This additional permitted supply would be available to TRWD during periods of drought. It assumes that a second IPL will be needed to transmit the additional supply to Benbrook Lake. The strategy yield would not be used during normal operations but rather only during extreme drought.

- Firm Yield: 21,920 AFY.
- Capital Cost: $252.3 million.
- Unit Cost with Debt Service: $864 per AF.
- Implementation Timeline: 3 years for permitting, additional time required for second IPL.
- Identified as a No Regrets strategy.

Bridgeport Reallocation: This strategy reallocates additional Lake Bridgeport supplies currently only permitted as releases to Eagle Mountain Lake to meet the demands of users at Lake Bridgeport. This strategy does not create new supplies and represents an operational change only. When implemented, it would be paired with other strategies that bring new supply to Eagle Mountain Lake.

- Firm Yield: 0 AFY.
- Capital Cost: $0.25 million.
- Unit Cost with Debt Service: $0 per AF.
- Implementation Timeline: 3 years.
- Identified as a *No Regrets* strategy.

Aquifer Storage and Recovery (ASR): ASR involves storing water in an underground aquifer and later recovering it for beneficial use. This conceptual strategy is evaluated to better understand the potential for ASR to improve system reliability. The strategy includes a 10 mgd conceptual ASR project around Eagle Mountain Lake using ExFlo water supply as the source of water to be injected and stored underground. ASR wells could be implemented over time for phased capacity.

- Firm Yield: 11,209 AFY.
- Capital Cost: $285.4 million.
- Unit Cost with Debt Service: $1,313 per AF.
- Implementation Timeline: 11 years.

TRWD Developed Groundwater: This strategy involves developing groundwater wells on land owned by TRWD in Freestone County. Water would be pumped to Richland-Chambers Reservoir. The strategy assumes that a second IPL will be needed to transmit the supply from Richland-Chambers to Benbrook Lake. Partnerships are not required for this strategy. TRWD Developed Groundwater project implementation could be phased.

- Firm Yield: 7,000 AFY.
- Capital Cost: $151.7 million.
- Unit Cost with Debt Service: $1,585 per AF.
- Implementation Timeline: 10 years, additional time required for second IPL.

Lake Palestine Groundwater Purchase: This strategy includes purchasing groundwater in Henderson County from a water marketer with a point of transfer in Lake Palestine. To convey the supply, this strategy assumes that DWU would be willing to allow TRWD to utilize a portion of DWU's IPL between Lake Palestine and the existing IPL for a fee. The strategy also assumes that a second IPL will be needed to transmit the supply from Cedar Creek to Benbrook Lake. Partnership would be needed with DWU for use of the IPL from Lake Palestine to Cedar Creek Reservoir. Lake Palestine Groundwater Purchase project implementation could be phased.

- Firm Yield: 15,000 AFY.
- Capital Cost: $286 million.
- Unit Cost with Debt Service: $1,917 per AF.
- Implementation Timeline: 10 years, additional time required for second IPL.

Anderson County Groundwater: The Anderson County Groundwater Strategy involves purchasing groundwater from a holding in Anderson County and conveying the supply to the IPL at Cedar Creek via a pipeline. This supply falls within the Neches and Trinity Valley Groundwater Conservation District. The strategy assumes that a second IPL will be needed to transmit the supply from Cedar Creek to Benbrook Lake. Anderson County Groundwater does not require, but could involve, a partnership. This project is unlikely to be phased.

- Firm Yield: 42,000 AFY.
- Capital Cost: $1,324 million.
- Unit Cost with Debt Service: $2,359 per AF.
- Implementation Timeline: 10 years, additional time required for second IPL.

Lake Palestine Purchase: TRWD would purchase unused surface water from one or more entities with contracts for Lake Palestine supply. To convey the supply, this strategy assumes that DWU would be willing to allow TRWD to utilize a portion of DWU's IPL between Lake Palestine and Cedar Creek for a fee. The strategy assumes that a second IPL will be needed to transmit the supply from Cedar Creek to Benbrook Lake. Partnership would be required with a willing contract holder such as DWU or City of Tyler for negotiation of the purchase or lease of 30,000 AFY from Lake Palestine. The amount of water purchased from a partner at Lake Palestine could be phased.

- Firm Yield: 30,000 AFY.
- Capital Cost: $572.1 million.
- Unit Cost with Debt Service: $1,507 per AF.
- Implementation Timeline: 9 years, additional time required for second IPL.

Toledo Bend: The Toledo Bend Strategy involves conveying available supplies from Toledo Bend, an existing reservoir in the Sabine River Basin, to TRWD's service area. This strategy assumes that TRWD and one regional partner would purchase and convey half of SRA's available supply, 480,000 AF. The infrastructure was assumed to be phased with dual pipelines. The strategy assumes that a second IPL will be needed to transmit the supply to Benbrook Lake. A partnership is assumed with one regional partner which could include NTMWD, DWU, or others. The construction of one pipeline and then the other would support phasing for the Toledo Bend strategy.

- Firm Yield: 240,000 AFY.
- Capital Cost: $7,278.6 million.
- Unit Cost with Debt Service: $2,268 per AF.
- Implementation Timeline: 18 years.

Wright Patman Reallocation: This strategy includes reallocating from flood storage to water supply in Wright Patman Lake. Six sponsors, including TRWD, are involved in this joint regional strategy. Reallocation at Wright Patman Lake is a change in the use of storage in an existing reservoir project from its present use as flood control to municipal and industrial use and includes a pool raise. Water from Wright Patman Lake would be conveyed to Lake Bridgeport and then released for downstream TRWD customers. Phasing is not considered viable for this strategy.

- Firm Yield: 65,067 AFY.
- Capital Cost: $2,456 million.
- Unit Cost with Debt Service: $2,545 per AF.
- Implementation Timeline: 22 years.

Marvin Nichols: Marvin Nichols Reservoir is a proposed water supply reservoir in the Sulphur River Basin. Total firm yield available to TRWD is estimated at 110,237 AFY, which assumes TRWD's portion of the total firm yield at 25.76 percent. This strategy includes regional partnerships with NTMWD, DWU, UTRWD, Irving, and a local partnership with SRBA. Phasing is assumed to be infeasible for a new reservoir project.

- Firm Yield: 110,237 AFY.
- Capital Cost: $3,062 million.
- Unit Cost with Debt Service: $1,907 per AF.
- Implementation Timeline: 30 years.

Marvin Nichols with Wright Patman: This strategy pairs construction of Marvin Nichols with reallocation of and supply from Wright Patman Lake. This joint, regional strategy, includes six sponsors, including TRWD. Water from Marvin Nichols and Wright Patman would be conveyed to Lake Bridgeport and then released for downstream TRWD customers. Although a new reservoir cannot be phased, the construction of a second pipeline to Wright Patman could allow for phasing.

- Firm Yield: 141,800 AFY.
- Capital Cost: $4,796 million.
- Unit Cost with Debt Service: $2,262 per AF.
- Implementation Timeline: 30 years.

Lake Ringgold: Lake Ringgold, a new reservoir on the Little Wichita River, would be constructed and supply conveyed to TRWD's system. TRWD would likely need to procure the full supply for the strategy to have a meaningful and worthwhile impact on TRWD's system yield. This strategy does not assume partnerships, although a partnership with the City of Wichita Falls could be considered. Phasing is assumed to be infeasible for any new reservoir project.

- Firm Yield: 28,000 AFY.
- Capital Cost: $1,037.8 million.
- Unit Cost with Debt Service: $2,497 per AF.
- Implementation Timeline: 25 years.

Tehuacana: Tehuacana involves the construction of a new reservoir on Tehuacana Creek, a tributary to the Trinity River in Freestone County. Tehuacana would be hydraulically connected to Richland-Chambers Reservoir with a small channel. Water from Tehuacana would be transported from Richland-Chambers and then into TRWD's transmission system. The strategy assumes that a second IPL will be needed to transmit the supply to Benbrook Lake. No partnerships are assumed for implementation. Phasing is assumed to be infeasible for any new reservoir project.

- Firm Yield: 27,514 AFY.
- Capital Cost: $1,175.4 million.
- Unit Cost with Debt Service: $2,875 per AF.
- Implementation Timeline: 25 years.

Mainstem Trinity Off-Channel Reservoir (OCR): The Mainstem Trinity OCR strategy involves construction of an OCR located near the mainstem of the Trinity River. The OCR would store approximately 300,000 AF of supply from DWU return flows or reuse water from other partners. Water would be diverted to the OCR and then conveyed via pipeline to Joe Pool Lake. This strategy assumes a 50/50 cost share with DWU for the construction of the OCR and pipeline to Joe Pool. Phasing is assumed to be infeasible.

- Firm Yield: 57,169 AFY.
- Capital Cost: $867.5 million.
- Unit Cost with Debt Service: $1,260 per AF.
- Implementation Timeline: 20 years.

Arkansas Water: The Arkansas Water strategy would involve submitting a legislative request for an out-of-state transfer of 260,000 AF of supply annually from Arkansas. The diversion would be just above Millwood Lake on the Little River in Arkansas, although a more optimal diversion point may be identified with additional study, and the supply would be conveyed to Lake Bridgeport. TRWD could implement this alone or with partnerships, although the strategy is assumed without partners. Arkansas Water could be phased, although there are some efficiencies in building out the full-size pipeline initially.

- Firm Yield: 260,000 AFY.
- Capital Cost: $10,239.8 million.
- Unit Cost with Debt Service: $2,761 per AF.
- Implementation Timeline: 25 years.

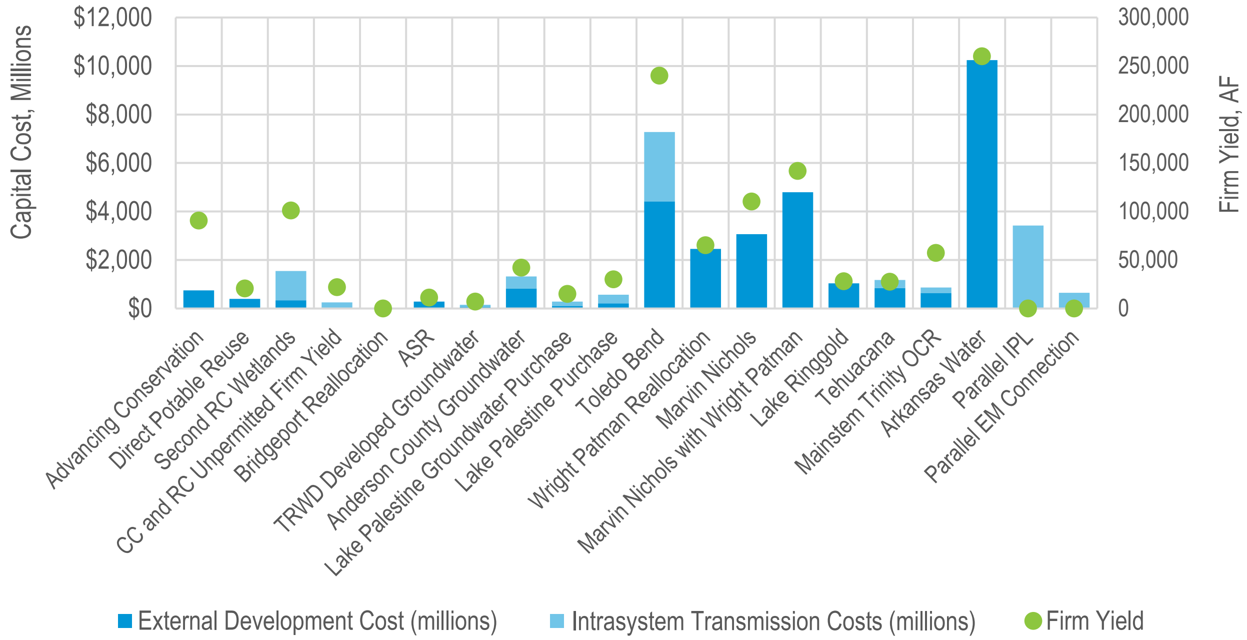
Parallel IPL: A second IPL (IPL2) would run parallel to the existing IPL. The IPL2 is assumed to be fully owned and developed by TRWD with a pumping capacity of 350 mgd. TRWD purchased a large enough right-of-way for two pipelines, which reduces the time and cost for land acquisition. The need for the IPL2 varies, depending on the strategy. For example, supplies coming from the north do not require the IPL2 for conveyance.

- Capacity: Pipeline capacity is 350 mgd.
- Capital Cost: $3,424.3 million.
- Implementation Timeline: 18 years.

Parallel Eagle Mountain Connection: A second Eagle Mountain Connection (EM2) may be needed in the future, depending on the location of the strategy, to transport supplies from Benbrook Lake to Eagle Mountain Lake. It would add capital cost but also flexibility and reliability within a portfolio. TRWD purchased a large enough right-of-way for two pipelines, which reduces the time and cost for land acquisition.

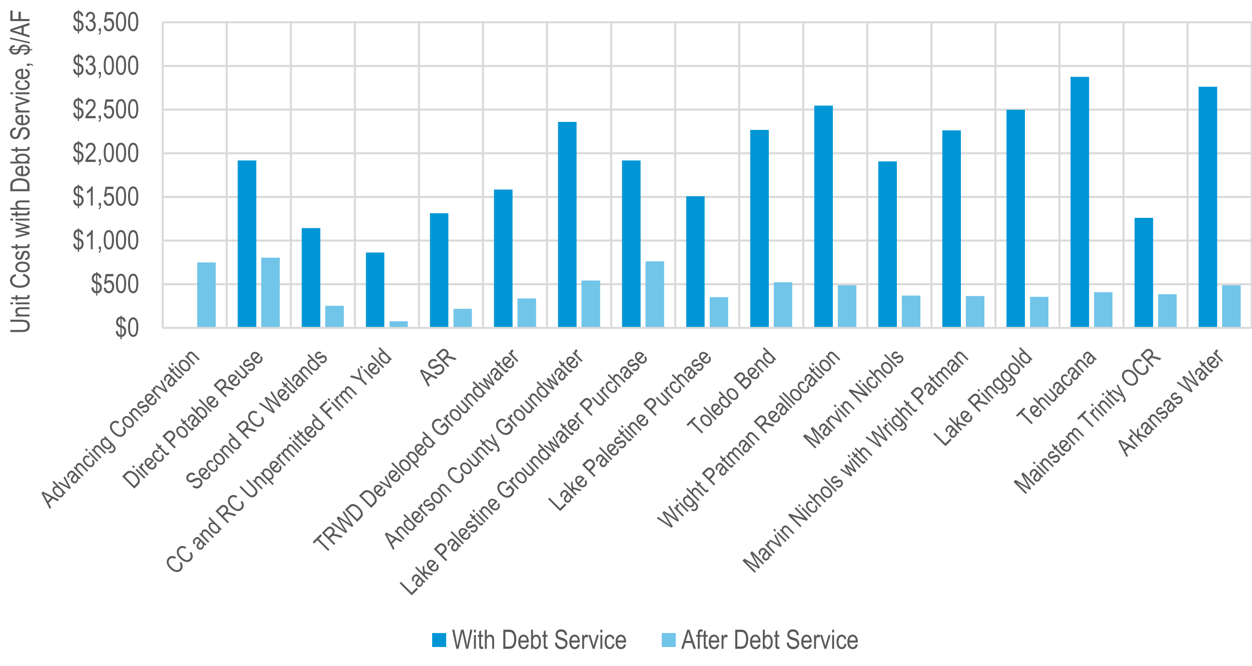
- Capacity: Pipeline capacity is 350 mgd.
- Capital Cost: $645.2 million.
- Implementation Timeline: 18 years.

Strategy Comparison: Capital costs range greatly across strategies, with the larger yield strategies having much higher investment costs, as shown in Figure ES.6. Unit costs of the strategies with debt service range from $850 per AF up to $2,900 per AF, as shown in Figure ES.7. After debt service is retired, the strategies have unit costs closer in range, at around $800 per AF or less.



Note: Values in September 2023$ to align with Region C Planning.

Figure ES.6 Strategy Capital Cost Comparison



Note: Excludes BP Reallocation, IPL2, and EM2 because those strategies have no associated yield. Values in constant September 2023 dollars to align with Region C Planning.

Figure ES.7 Strategy Unit Costs Comparison

ES.7 Supply Portfolios

A portfolio represents combinations of strategies designed to meet TRWD's water supply objectives. Evaluation and compilation of portfolios is a core component of the IWSP Update. Given the significant future water supply needs and the geographic span of TRWD's system, and with the inherent uncertainty in several of the larger supply volume strategies, there are numerous portfolios that could be possible, each with unique risk, cost, and yield profiles.

Given the robust modeling framework to develop this IWSP Update, many metrics were produced, including several on cost, reliability for the system, reliability for individual delivery points, and energy use, for examples. A subset of metrics was selected for this summary.

ES.7.1 Portfolios Evaluated

To address the supply gap, some combination of strategies is needed to have new supply sources online and operational ahead of the projected gap. Multiple iterations of portfolios were generated to explore reliability, system performance, and to balance these against affordability objectives. In all, more than 50 portfolios were simulated. With each iteration, supply timing, infrastructure timing, and variations in certain supplies were tested and adjusted to achieve improved portfolio performance.

There are many combinations of supply strategies possible, but five supply portfolios were selected based on performance. All portfolios include the No Regrets strategies. One portfolio includes only smaller strategies, and four of the five portfolios include one large supply project that comes online in 2060 and multiple smaller capacity strategies. Portfolios were defined as follows.

Mix of Smaller Portfolio: This portfolio combines multiple smaller strategies to demonstrate system performance without a large supply strategy. It includes Advancing Conservation, CC and RC Unpermitted Firm Yield, Bridgeport Reallocation, ASR, Lake Palestine Purchase, TRWD Developed Groundwater, Parallel EM Connection, Second RC Wetlands, Mainstem Trinity OCR, Direct Potable Reuse, Anderson County Groundwater, and Tehuacana. The portfolio requires both the Parallel IPL and Parallel EM Connection to convey new supplies to meet demands.

Toledo Bend Portfolio: The main supply source for this portfolio is Toledo Bend, coming online in 2060. The portfolio relies heavily on eastern supplies, requiring conveyance of water nearly 175 miles to Cedar Creek Reservoir and then another 80 miles to the metroplex. Other strategies include Advancing Conservation, CC and RC Unpermitted Firm Yield, Bridgeport Reallocation, Direct Potable Reuse, TRWD Developed Groundwater, Lake Palestine Purchase, Parallel IPL, and Parallel EM Connection.

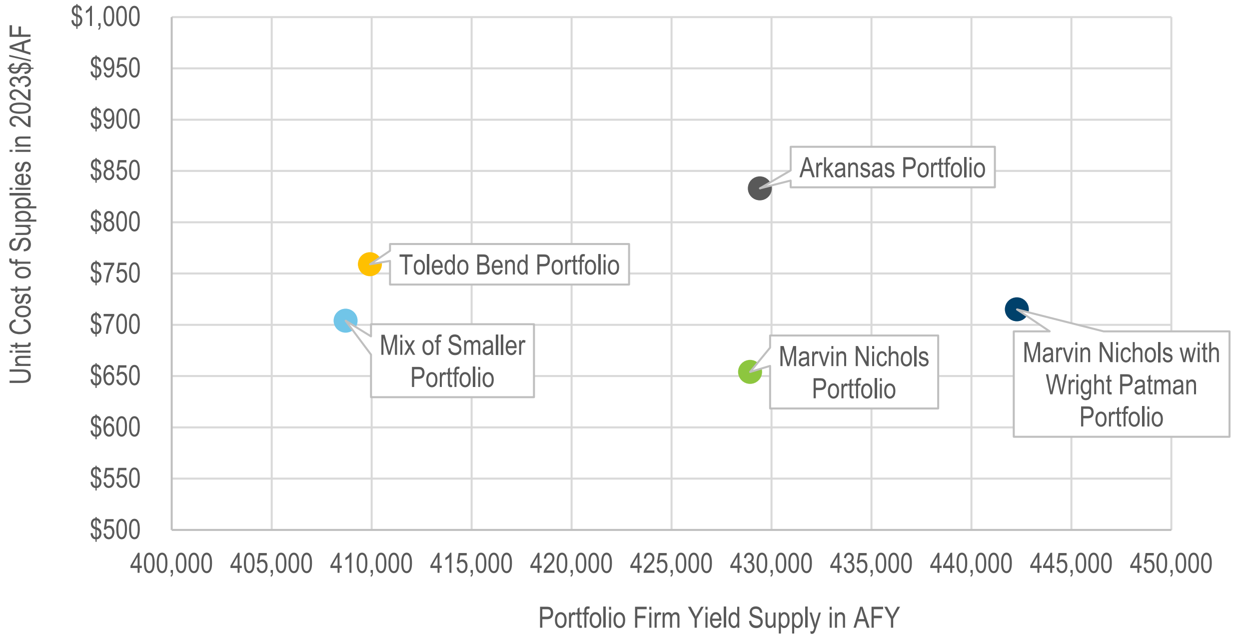
Marvin Nichols Portfolio: This portfolio includes the construction and conveyance of water from the proposed Marvin Nichols Reservoir to Lake Bridgeport via 192 miles of pipeline. It also incorporates several other strategies to meet reliability metrics, including Advancing Conservation, CC and RC Unpermitted Firm Yield, Bridgeport Reallocation, Lake Palestine Purchase, ASR, Mainstem Trinity OCR, TRWD Developed Groundwater, Second RC Wetlands and Parallel IPL. It is geographically balanced, with a new supply coming into Lake Bridgeport from the North, supplies from East Texas (Lake Palestine Purchase), and other smaller supplies spread out across TRWD's service area and just beyond.

Marvin Nichols with Wright Patman Portfolio: This portfolio expands upon the Marvin Nichols plan by adding Wright Patman reallocation, with water conveyed to Lake Bridgeport through 240 miles of pipeline. Other strategies include Advancing Conservation, CC and RC Unpermitted Firm Yield, Bridgeport Reallocation, Lake Palestine Purchase, Mainstem Trinity OCR, Second RC Wetlands and Parallel IPL.

Arkansas Portfolio: This portfolio centers around conveying water from Arkansas, just north of Millwood Lake, to Lake Bridgeport via 250 miles of pipeline. Other strategies include Advancing Conservation, CC and RC Unpermitted Firm Yield, Bridgeport Reallocation, Lake Palestine Groundwater Purchase, Anderson County Groundwater and Arkansas Water. This portfolio does not require the Parallel IPL nor the Parallel EM Connection.

ES.7.2 Portfolio Comparison

Portfolio supply potential, expressed in firm yield, compared to the unit cost of supplies is provided in Figure ES.8. Portfolio firm yield ranges from about 410,000 AF up to 442,000 AF. The weighted unit cost ranges from $654 to $833 per AF, expressed in constant 2023 dollars. Capital costs, if built today, range from $8,430 million up to $11,920 million. Four of the portfolios require the Parallel IPL, with the Arkansas portfolio uniquely not requiring a second IPL. Two of the five portfolios require the Parallel EM Connection, with those that have northern supplies not needing that additional conveyance.



Notes: The unit cost of supplies is expressed in constant September 2023 dollars per AF of firm yield (or equivalent) in the portfolio. For the portfolio, the value is weighted to account for the volume of supplies relative to the total portfolio supply. A second weighting is applied assuming 30 years of unit cost with debt service and 20 years of unit cost after debt service, respectively.

Figure ES.8 Comparison of Portfolio Unit Cost and Supply

ES.7.3 Adaptive Implementation

Adaptive implementation refers to a flexible, responsive approach to executing long-term infrastructure investments where underlying planning assumptions, infrastructure sizing and timing decisions are continuously updated based on changing conditions and emerging priorities. For example, if the projected population growth and water demands accelerate at a faster pace than assumed in this IWSP Update, the proposed timing of new water supply strategies would also need to be moved forward. Similarly, the estimated yield or implementation timeline assumed for individual supply strategies could increase or decrease in the future when more information becomes available, resulting in adjustments of the proposed timelines presented in this chapter. Or if a strategy that is planned for implementation encounters a fatal flaw during planning or permitting, another strategy may be needed instead.

For a comprehensive analysis of results, strategies were grouped by planning horizon and magnitude of the supply. Three general phases were identified, as shown in Figure ES.9, and described as follows.

- **Phase 1. Planned Supplies and Infrastructure:** TRWD's existing and planned supplies results in a firm yield projected to increase from 665,200 AFY in 2030 to 738,970 AFY in 2080. A firm yield gap of 36,000 AFY is expected in 2050, increasing to 384,000 AFY by 2080 without additional strategies. TRWD should implement the Cedar Creek Wetlands and completion of the IPL to avoid unexpected gaps in supply.
- **Phase 2. No Regrets Strategies:** Three strategies were identified with supply reliability benefits, low cost, and ease of implementation: Advancing Conservation, CC and RC Unpermitted Firm Yield, and Bridgeport Reallocation. These could address 29 percent of the supply gap by 2080. All three are assumed to be online by 2030 and should be implemented as planned. Conservation should be tracked closely to determine if planned reductions are achieved.
- **Phase 3. Supply Development Phase:** Additional water supply is needed by 2060 to avoid a potential 80,000 AFY supply gap. Of the five supply portfolios, one includes smaller strategies and four include a large supply project. The likelihood of all 12 small strategies being fully developed and brought online is very low and would not be ideal for future operations. Some of the smaller sources may be met with local resistance, permitting may not be successful, or TRWD may not be able to reach partnership agreements. Each new water source would require a separate permit and environmental review, increasing time and costs. Further, adding multiple small sources to the supply system would increase TRWD's operational complexity, as each small source would need its own monitoring, maintenance, permitting, accounting, and staffing. Thus, a larger supply is likely needed to be online by 2060.

Several of the larger strategies require initiation of planning as early as 2030. Toledo Bend planning can start as late as 2042, although TRWD would have to complete feasibility studies before then to ensure no roadblocks will be experienced. Therefore, TRWD and its potential regional partners have no more than five years (from 2025 until 2030) to explore the large supply strategies in more detail, resolve uncertainties, explore political and partnership support, and gather sufficient information to select which large strategy to move forward. However, some of the potential regional partners have a more accelerated time frame in which to make decisions on the next large water supply to be pursued. Many of these large supply options have been studied for decades, while others are relatively new ideas. This near-term timeframe should focus on filling any critical information gaps, detailed system integration studies, and working towards decisive action.

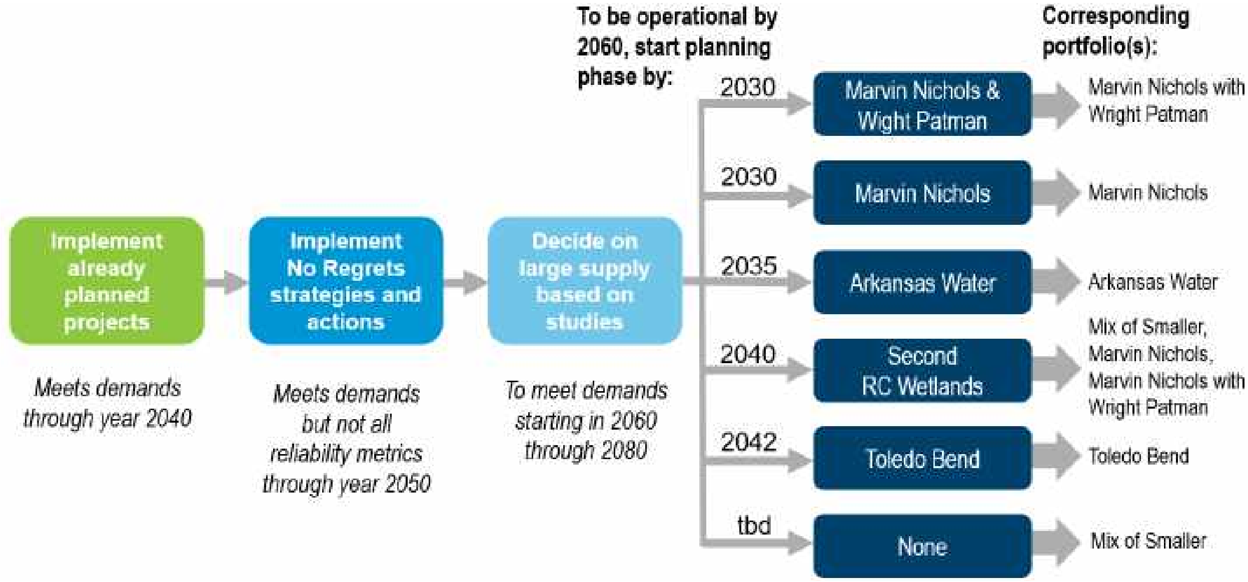


Figure ES.9 Timing and Phasing to Implement Supply Strategies

A general trigger-based implementation process is depicted in Figure ES.10. This schematic is an intentional oversimplification of all the decisions that will need to be made to focus on the key triggers, which are selection of a large supply, selection of small supply, and demand/supply balance. The No Regrets strategies are independent of any triggers and can be implemented in parallel with the additional feasibility studies around the large supply options until 2030 for some options. The decision on when and which other small strategies are implemented also has impacts on the timeline of selecting the next large supply. The actual demand growth and success of the water conservation program will determine the timing of additional supply needs. Once sufficient additional supplies are in place to meet the future projected demand, the decision tree comes to an end, or at least a temporary pause until the next planning cycle as represented by the grey box.

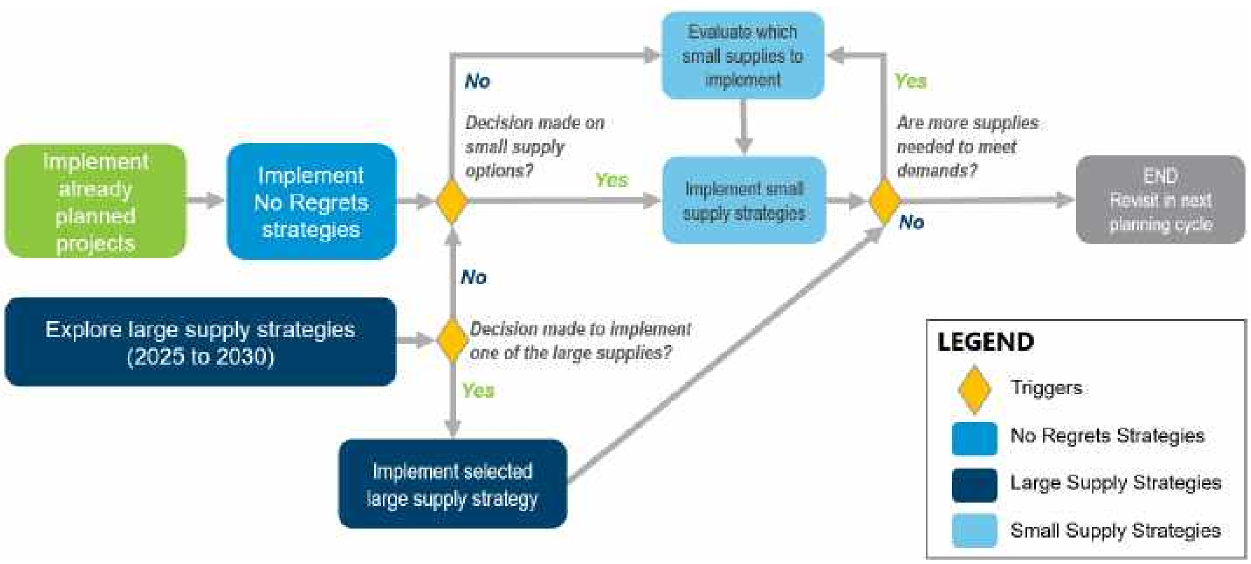


Figure ES.10 Trigger-based Implementation for All Strategy Planning

ES.8 Conclusions and Recommendations

The IWSP Update **does not recommend a single portfolio but recommends the adaptive implementation approach** to make a reasonable supply plan as more information becomes available. TRWD needs to **utilize the next 5 years to conduct detailed feasibility studies** to get a similar level of information about each of the large supply options, such that a decision can be made in conjunction with regional partners within a 5-year time frame. It will be important to study early triggers quickly to make an informed decision on which strategy to pursue. The phasing and timelines are based on meeting 95 percent of the critical dry year S3 demand forecast. It is likely that demand would either increase at a faster or slower pace than projected in this plan, which would shift timeline triggers forward or backward, respectively. In addition to growth driven by economic, demographic, and regulatory trends, the amount and pace of water conservation is another key variable that would impact implementation timelines.

The IWSP Update provides actionable recommendations for ensuring a reliable and sustainable water supply for TRWD customers. These recommendations are based on technical analysis, modeling, and water supply objectives. Key areas of focus include optimizing the baseline water system, demand and supply planning, and strategy-specific actions. The plan stresses the importance of adhering to project timelines, evaluating conveyance infrastructure, and securing additional return flows. It also highlights the **need for continuous monitoring of water demands, updating demand projections, and collaborating with regional partners.** Overall, **the IWSP Update serves as a roadmap** for prioritizing near-term actions and making adaptable, cost-effective decisions regarding water supply strategies.

For the baseline water supply system, the IWSP Update **recommends ensuring that projects assumed in the baseline are online as scheduled.** It also suggests **further evaluating the conveyance infrastructure system requirements and operational rule changes needed as planned water supplies become operational.** TRWD should study the 2030 condition more closely to determine if operational changes or acceleration of certain projects could alleviate a potential small water supply shortage. To further improve reliability from 2040 through 2070, TRWD should work towards securing additional return flows for the Cedar Creek Wetlands.

In terms of demand and supply planning, the IWSP Update **suggests prioritizing planning efforts on larger projects,** as smaller strategies are less likely to be fully developed. TRWD should start early planning steps for larger supplies now, as these take decades to develop and implement. Water demand and population growth should be closely monitored. Furthermore, reliability goals should be explored in partnership with customers to define an acceptable level of service and risk tolerance. Outcomes from ongoing studies should be analyzed within the IWSP context to inform near-term water supply decisions.

Strategy-specific recommendations include **preparing an Advanced Conservation Plan** and reevaluating modeling and gap analysis results as the Advancing Conservation strategy is implemented. TRWD should closely track Texas legislative actions that provide boosts in funding and support for specific types of water supply strategies. **Feasibility-level studies for the Toledo Bend and Arkansas Water should be conducted,** along with rate impact studies of the four large supplies. TRWD should develop smaller supplies to meet interim gaps before a large supply strategy is brought online, and study operations and conveyance to determine if certain supplies can be conveyed to users without the addition of the Parallel IPL. **Agreements with DWU on usage of the portion of the IPL that connects Lake Palestine to the existing IPL should be negotiated as well as the negotiation for a water purchase from a water right holder at Lake Palestine.** Finally, TRWD should **continue to pursue and track ASR studies.**