Water Supply Projects and Planning Update

Water Operations Committee Meeting

Nov. 13, 2024

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Agenda

- Provide an update on active water supply projects
- Provide an update on ongoing planning efforts that support new future water supply projects

Water Supply Planning – LCRA's Role

Per LCRA Board Policy 501 – Water Resources:

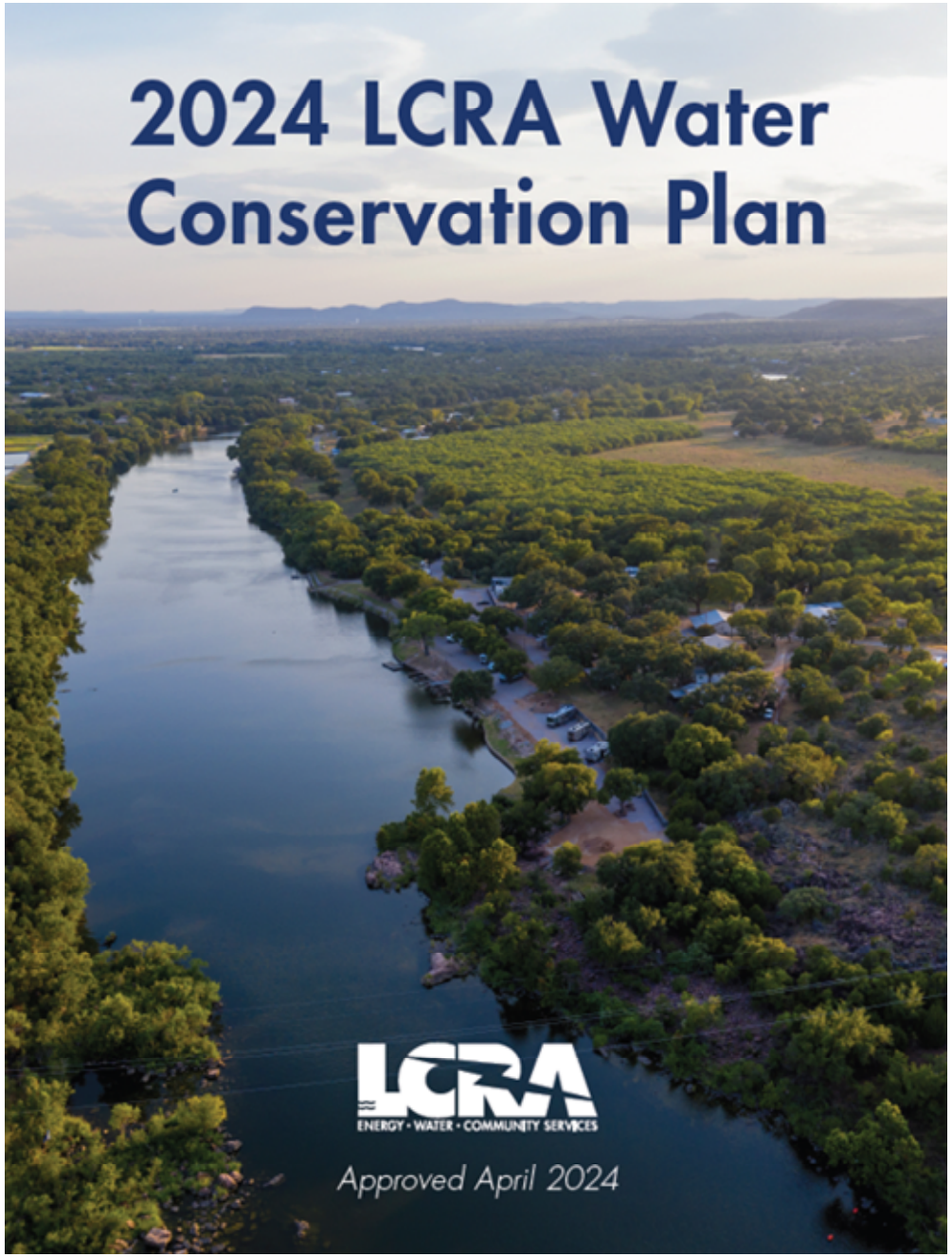
"LCRA will take initiative in appropriate management, planning, programs and projects to control, store, preserve, use, develop, conserve and manage the water supplies under its jurisdiction."

"While maximizing the potential supplies available from its Colorado River rights in a cost-effective manner, LCRA may consider development of new, cost-effective supplies to serve its customers."

Water Conservation

As of 2023, water conservation totaled about 25,000 acre-feet per year

Total Cumulative Conserved Supply (a-f per year)		
	Five-year goal (2029)	10-year goal (2031)
Municipal and industrial	12,000	15,000
Power	1,000	1,100
Agricultural divisions	18,000	20,000
Total	**31,000**	**36,100**



Arbuckle Reservoir

- Firm supply: up to 90,000 a-f per year
- Seepage barrier wall is complete
- Currently in the filling and testing phase

Griffith League Ranch Groundwater

- Groundwater permits for 8,000 a-f per year
- Executed monitoring well agreement
- Making progress on the required federal permits

Lake Bastrop Water

- Total firm supply: up to 10,200 a-f per year
- Operate Lake Bastrop between 442 feet and 450 feet above mean sea level

Lake Bastrop Water (Continued)

- **Proposed infrastructure:**
  - Upgrade existing river intake
  - New river pump station and pipeline
  - New outfall structure into Lake Bastrop
  - New outlet from dam to Spicer Creek

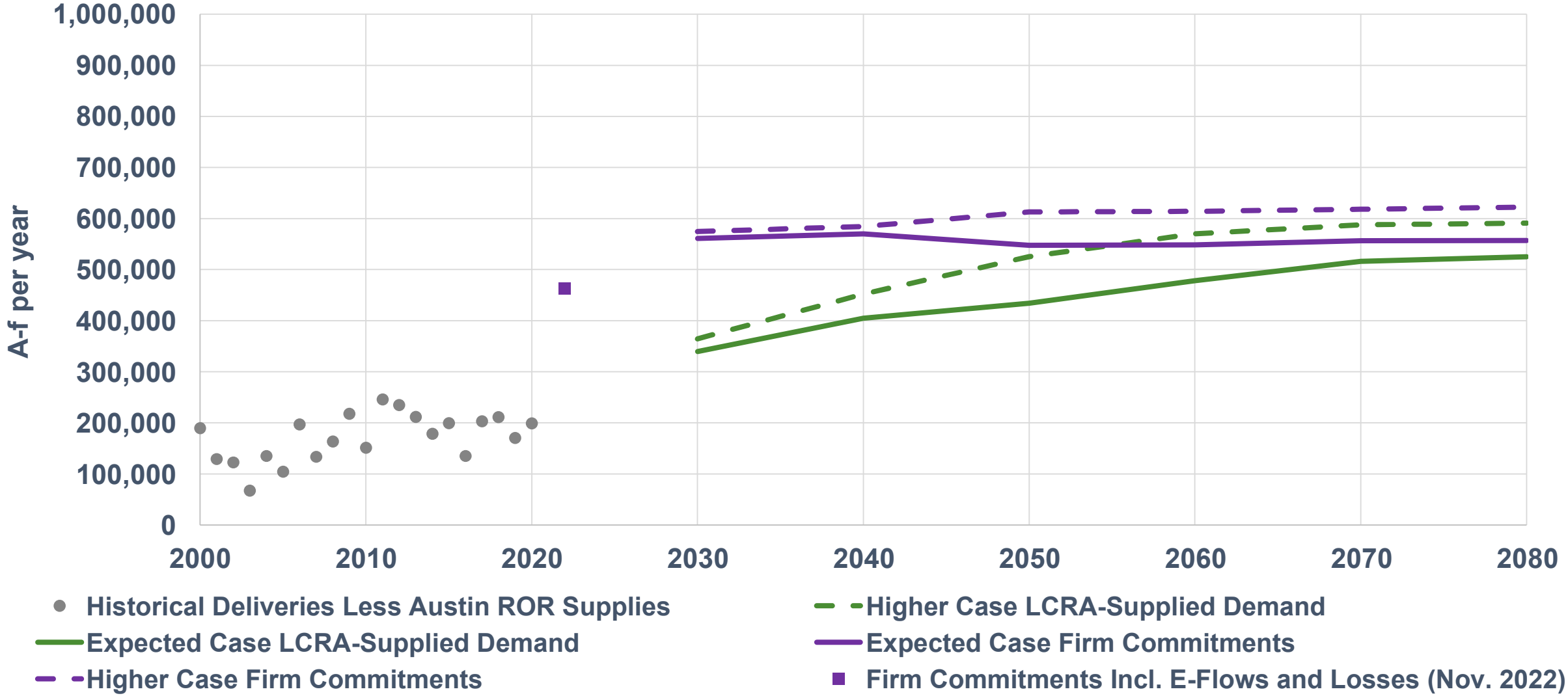
- **Contract recently executed with engineering firm for 30% design**

- **Concurrently exploring permitting and regulatory constraints**

Water Supply Resource Report – Key Considerations

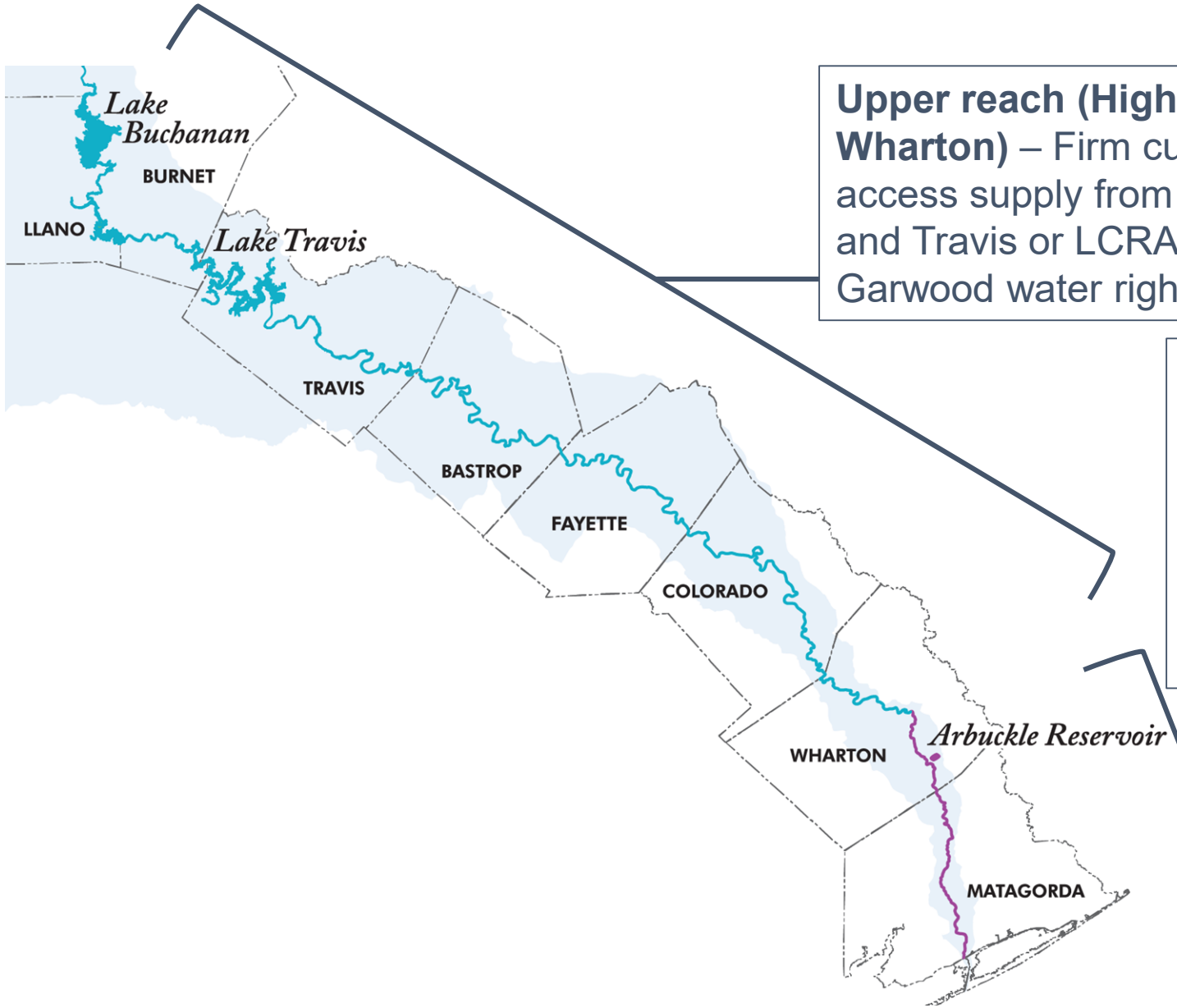
- Demands
- Uncertainties in demands and supplies
- Additional supply amount
- Strategies and timelines for additional supply

WSRR – Planning for Demands and Commitments



WSRR: Water Supply Resource Report ROR: run of river E-Flows: environmental flows

Firm Supplies and Demands Vary by Location



Upper reach (Highland Lakes to Wharton) – Firm customers can access supply from lakes Buchanan and Travis or LCRA's amended Garwood water right

Lower reach (Bay City/ Arbuckle and Matagorda) – Firm customers can access supply from downstream rights and Arbuckle Reservoir (also can access supply from upstream reach if needed)

WSRR – Planning for Uncertainty

- **Projected demands and commitments**
  - Population growth rates of existing customers could be higher than expected
  - Could have more new customers than what we expected

- **Projected firm supply**
  - Could have future droughts worse than what we have experienced

Prudent to have a cushion to help deal with the unexpected

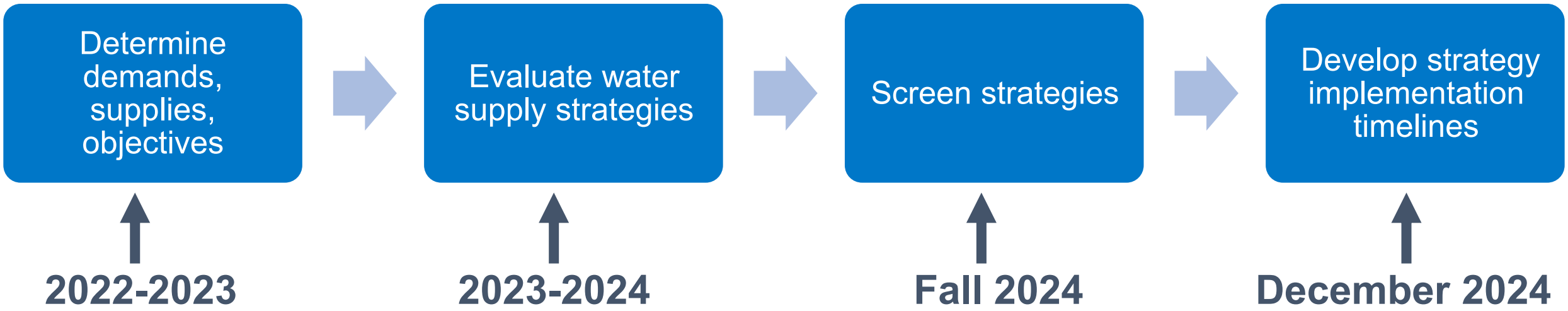
WSRR – Planning for Additional Supply (Upper Reach)

	Acre-feet per year					
	2030	**2040**	**2050**	**2060**	**2070**	**2080**
Projected firm commitments	468,000	477,000	455,000	456,000	464,000	464,000
Uncertainty cushion	30,000	30,000	50,000	50,000	50,000	50,000
Total supply needed	498,000	507,000	505,000	506,000	514,000	514,000
Existing firm supply[1]	450,000	450,000	450,000	450,000	450,000	450,000
New supply objective	**48,000**	**57,000**	**55,000**	**56,000**	**64,000**	**64,000**

[1]Combined firm yield of lakes Travis and Buchanan plus 33,000 a-f per year of Garwood right. Does not include potential sedimentation.

Targeted new firm water supply for the upper reach of about 60,000 a-f per year by 2040

WSRR Scope and Schedule



Water Supply Strategies Considered

Conservation

- Firm customers

Extend existing supplies

- Direct potable reuse (Highland Lakes)

System optimization and new Colorado River supplies

- Aquifer storage and recovery
- Off-channel reservoirs with pipelines to Travis County

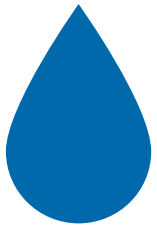
Other new supplies

- Groundwater purchase
- Transfer water from East Texas
- Seawater desalination

Evaluation of Water Supply Strategies

Supply quantity

Preliminary capital cost

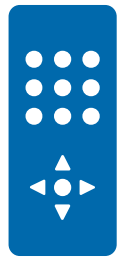


Preliminary unit cost

Federal legal and regulatory requirements

State and local legal and regulatory requirements

Time to implement



Control

End user water treatment

Scored each water supply option on 1 to 5 scale

Evaluation Uses Planning-Level Assumptions

- All designs and cost estimates are considered preliminary and are based on existing data and studies
- Costs are in September 2023 dollars and have been developed using Texas Water Development Board's Uniform Costing Model

LCRA Water Conservation Strategies

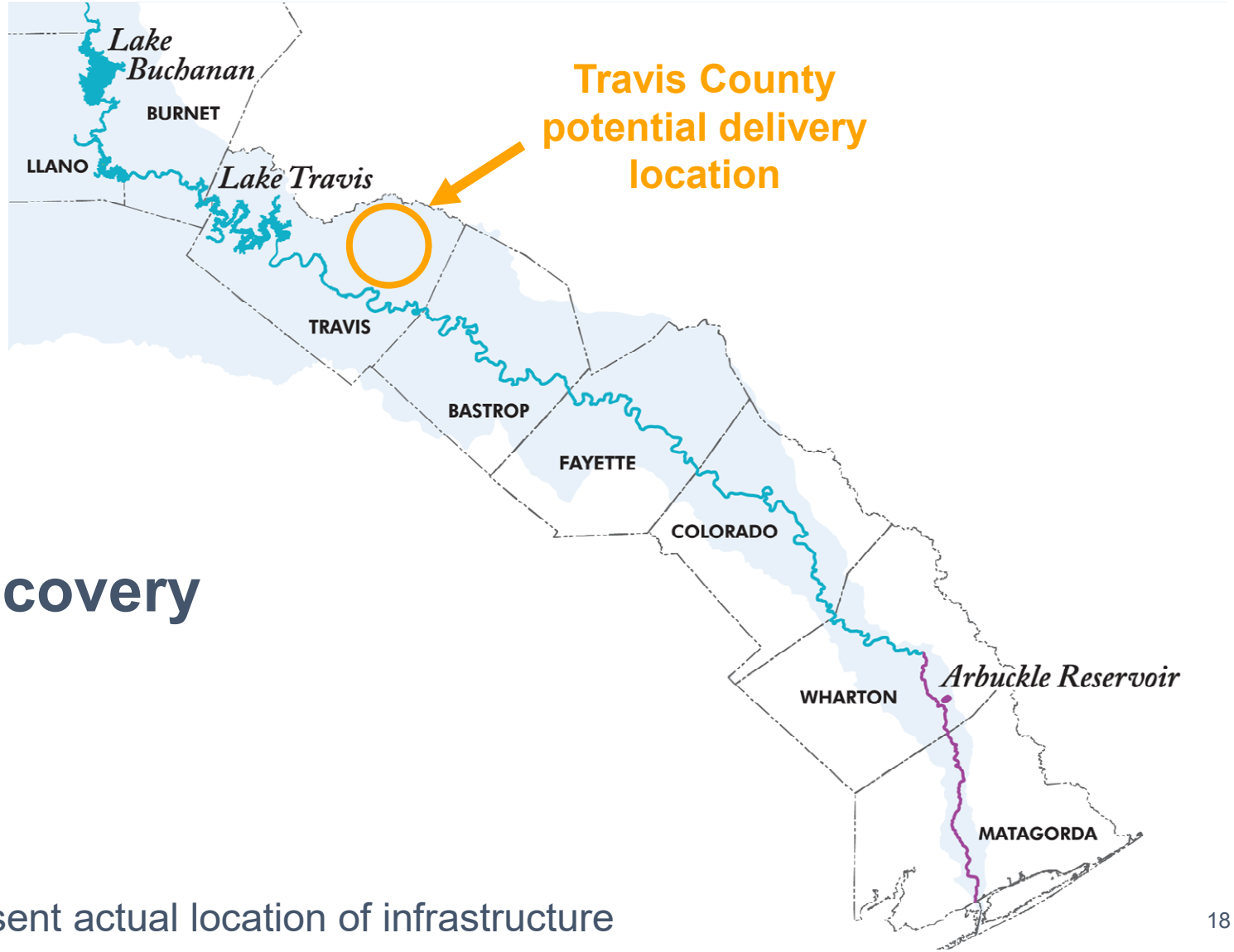
- Permanent maximum once-per-week watering schedule
- Gallons per capita per day cap on contract renewals
- Enhanced conservation incentives

Would require Board action

Could be implemented relatively quickly

Benefits would accrue over time

New Supplies From Colorado River

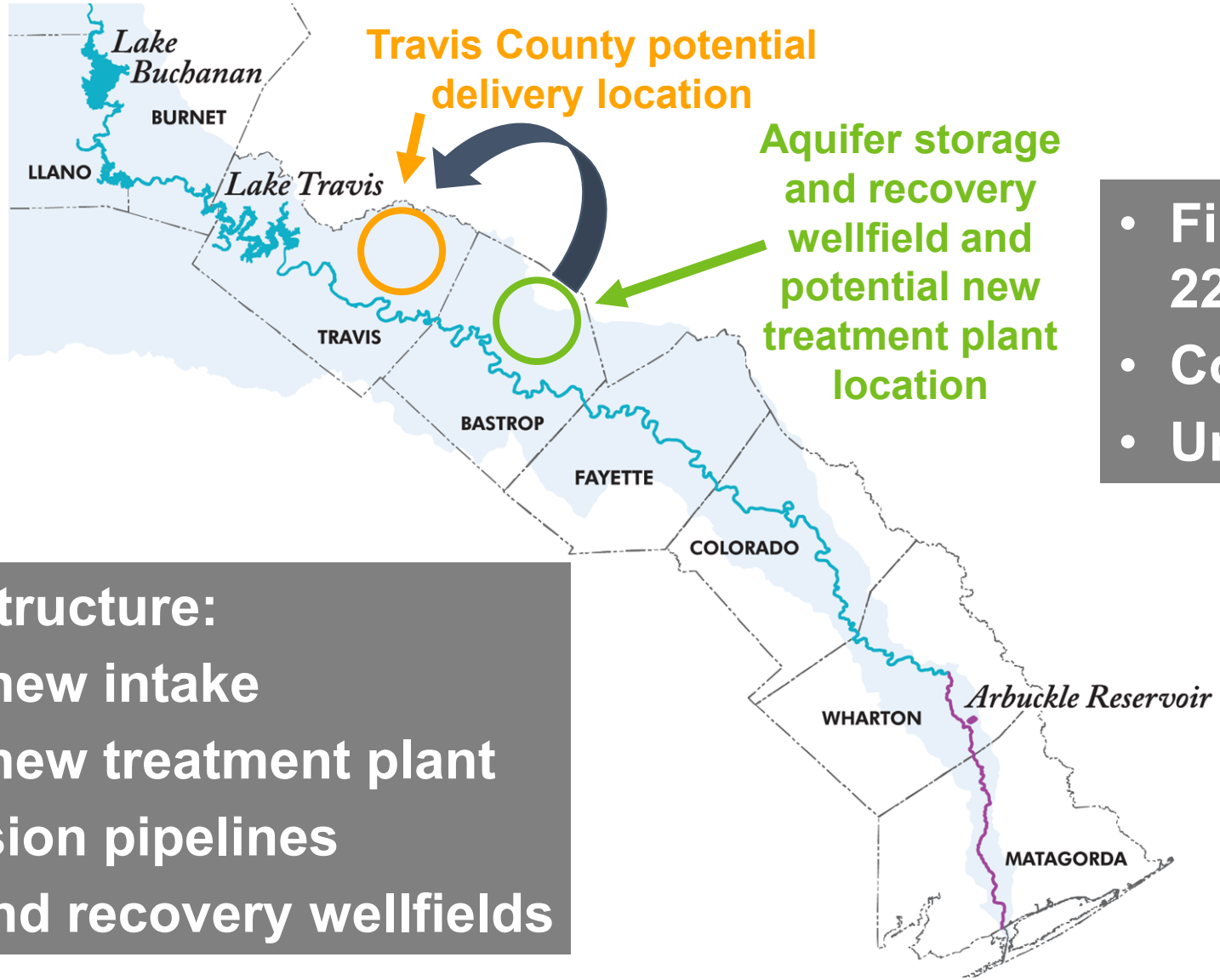


- **Aquifer storage and recovery**
- **Off-channel reservoirs**

Illustrations are conceptual and do not represent actual location of infrastructure

New Supplies From Colorado River

Aquifer Storage and Recovery



- Firm supply: up to 22,000 a-f per year
- Cost: $1 billion
- Unit: $3,600 per a-f

Major infrastructure:

- Potential new intake
- Potential new treatment plant
- Transmission pipelines
- Storage and recovery wellfields

Estimates are preliminary and based on existing data; costs are in September 2023 dollars and were developed using Texas Water Development Board methodology

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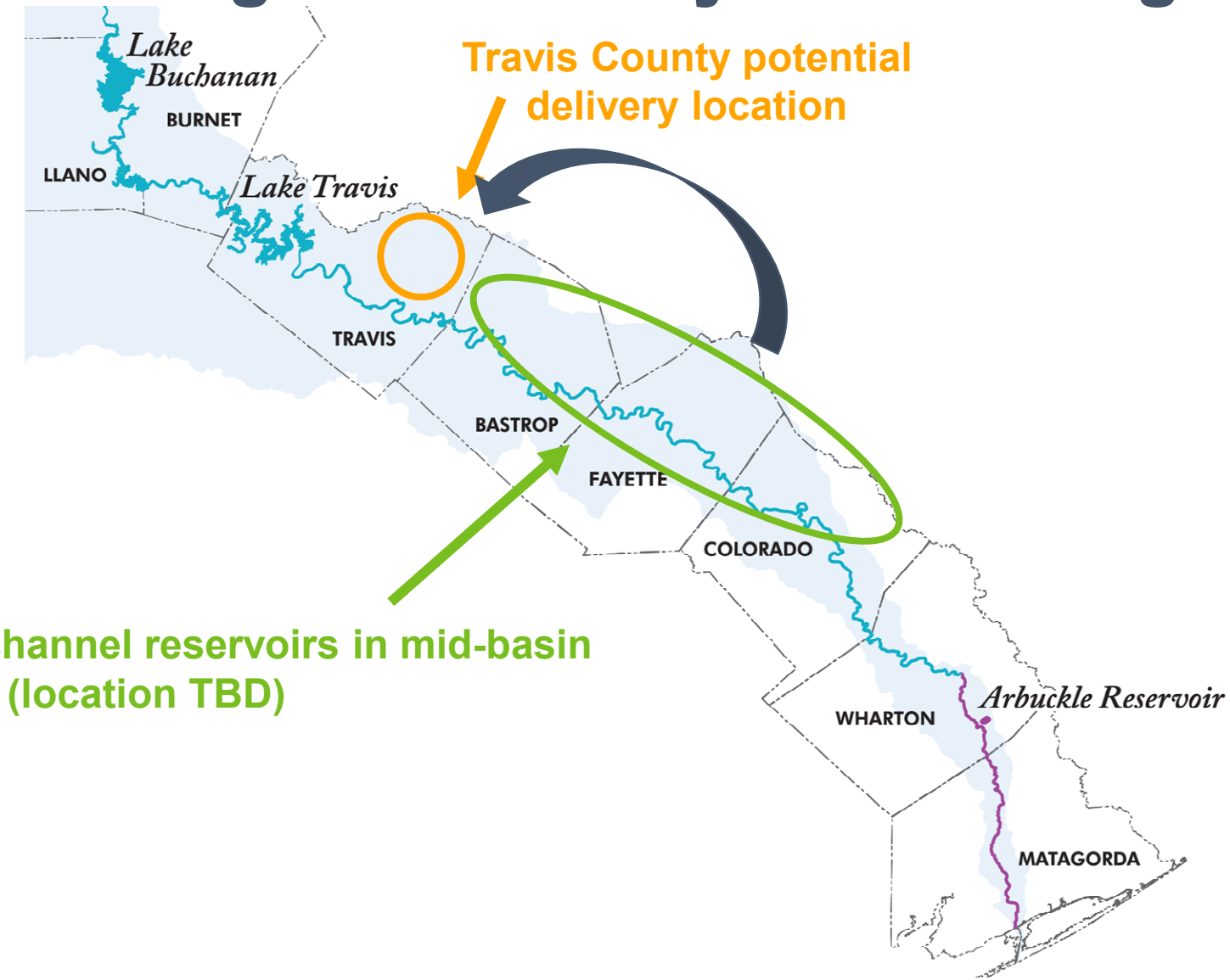
New Supplies From Colorado River

Off-Channel Storage and Conveyance Strategies



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New Supplies From Colorado River

Off-Channel Storage and Conveyance Strategies (Continued)

Location	Major infrastructure	Estimated supply and cost
MB OCR 1 (site TBD)	• Intake on Colorado River • Off-channel reservoir (60,000 a-f storage) • Transmission pipeline	• Firm supply: up to 35,000 a-f per year • Cost: $1.9 billion • Unit: $4,000 per a-f
MB OCR 2 (site TBD)	• Intake on Colorado River • Off-channel reservoir (48,000 a-f storage) • Transmission pipeline	• Firm supply: up to 29,000 a-f per year • Cost: $2.4 billion • Unit: $6,300 per a-f
MB OCR 3 (site TBD)	• Off-channel reservoir (48,000 or 80,000 a-f storage) • Transmission pipeline	• Firm supply: up to 49,000 to 73,000 a-f per year • Cost: $3.4 billion to $4.1 billion • Unit: $4,300 to $5,300 per a-f

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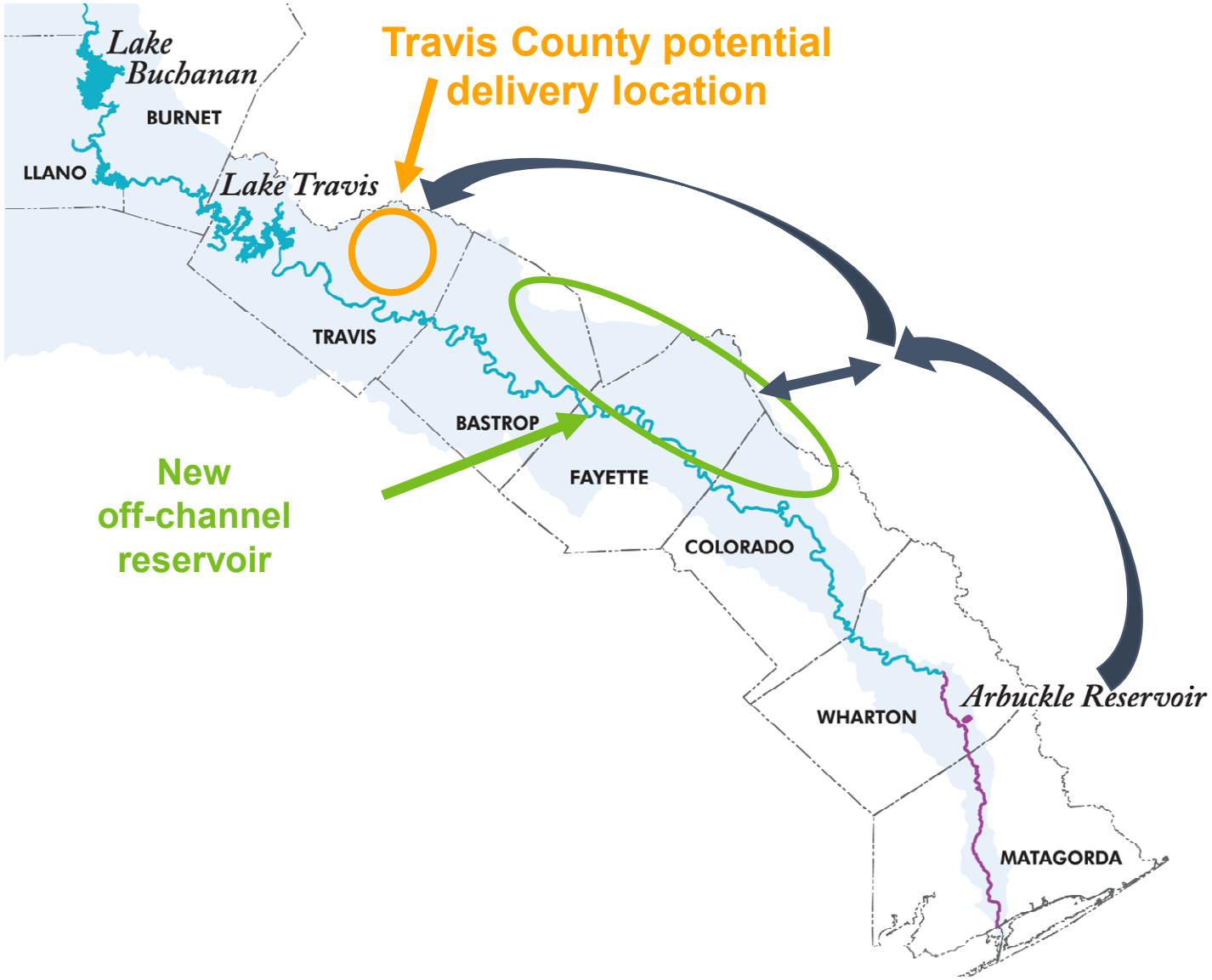
MB OCR: mid-basin off-channel reservoir

System Optimization Arbuckle Pipeline and Off-Channel Reservoirs to Travis County



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New Supplies From System Optimization

Location	Major infrastructure	Estimated supply and cost
Arbuckle Pipeline and Off-Channel Reservoir to Travis County	• Intake in Colorado River • Off-channel reservoir (48,000 a-f storage) • Transmission pipeline	• Firm supply: up to 58,000 to 72,000 a-f per year • Cost: $4.1 billion to $4.5 billion • Unit: $4,700 to $5,300 per a-f

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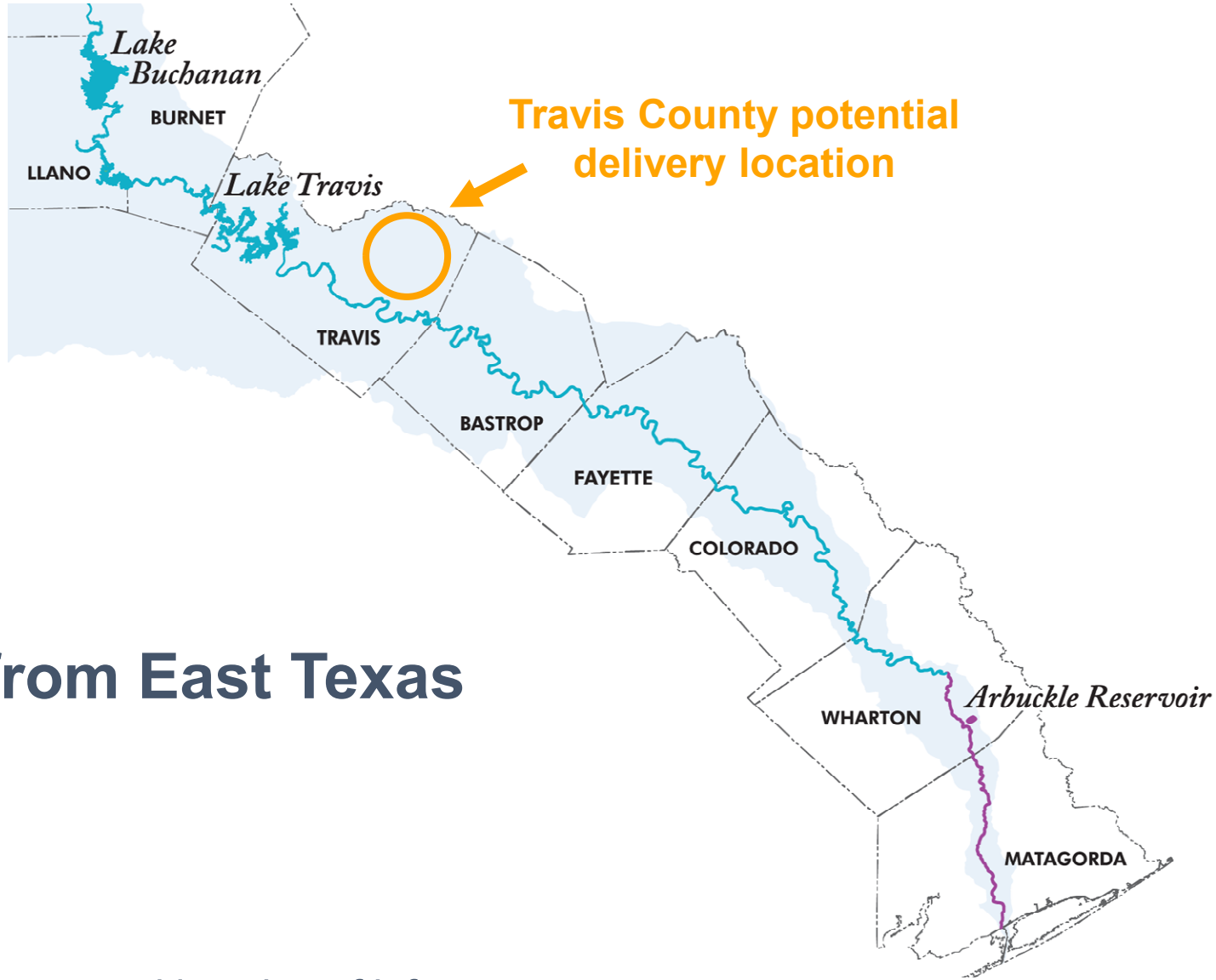
Other New Supplies



- Purchase groundwater
- Transfer surface water from East Texas
- Seawater desalination

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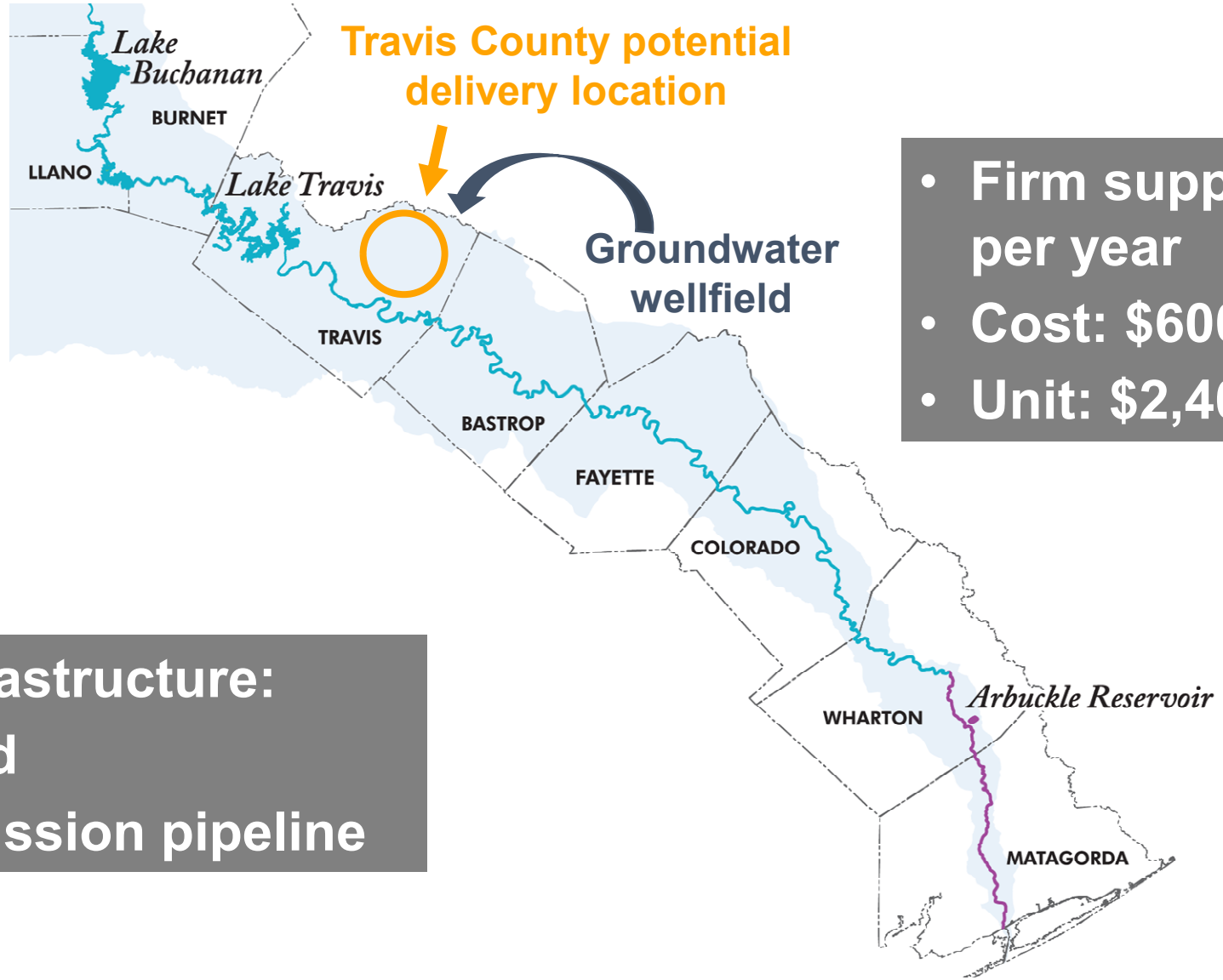
Purchase Groundwater



- Firm supply: up to 25,000 a-f per year
- Cost: $600 million
- Unit: $2,400 per a-f

Major infrastructure:

- Wellfield
- Transmission pipeline

Cost estimates exclude cost of groundwater; estimates are preliminary and based on existing data; costs are in September 2023 dollars and were developed using Texas Water Development Board methodology

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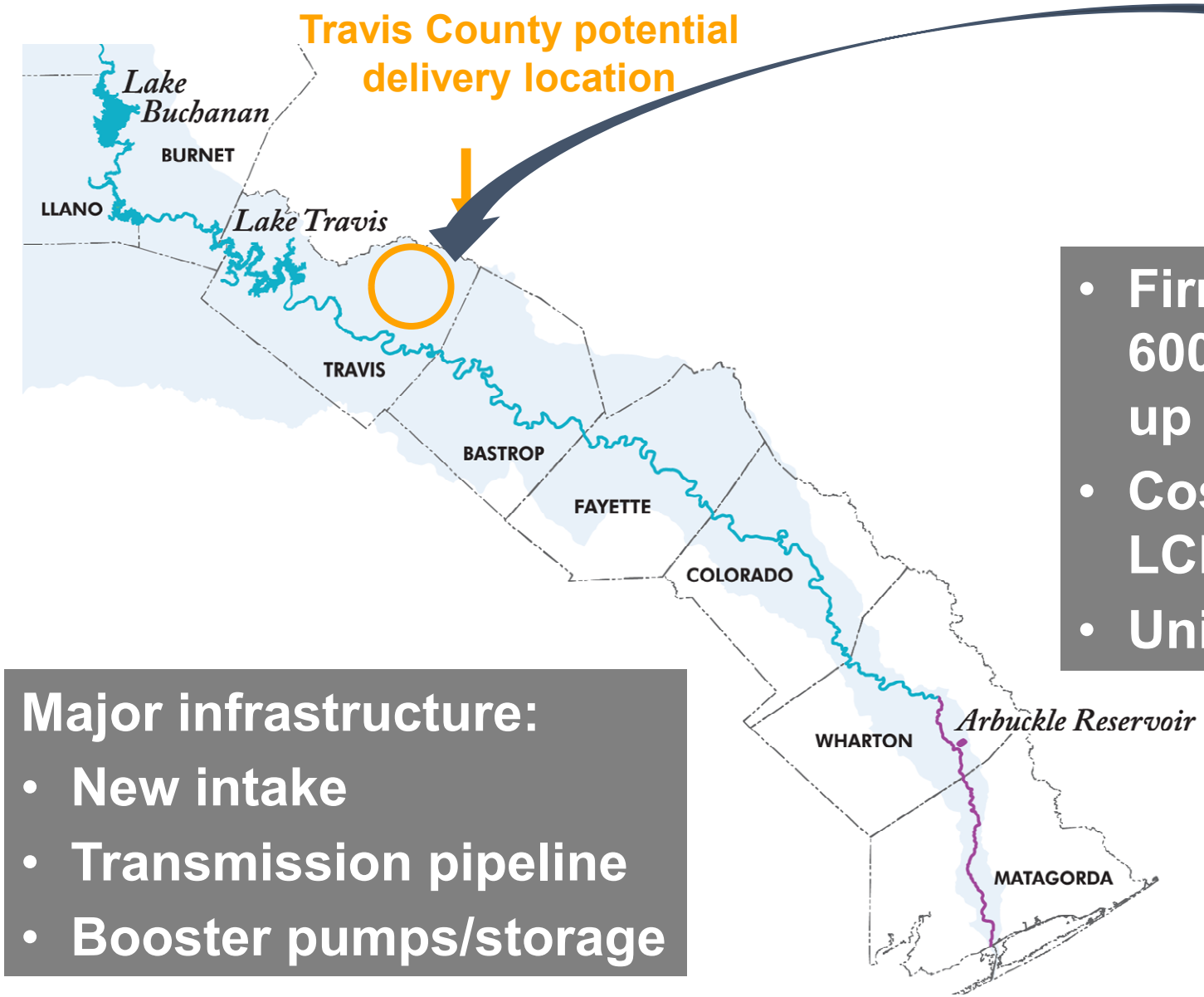
Transfer From East Texas



- Firm supply: total up to 200,000 to 600,000 a-f per year; LCRA share up to 66,700 to 200,000 a-f per year
- Cost: total $9 billion to $22 billion; LCRA share $3 billion to $7 billion
- Unit: $2,900 to $3,400 per a-f

Major infrastructure:

- New intake
- Transmission pipeline
- Booster pumps/storage

Cost estimates exclude cost of raw water; estimates are preliminary and based on existing data; costs are in September 2023 dollars and were developed using Texas Water Development Board methodology

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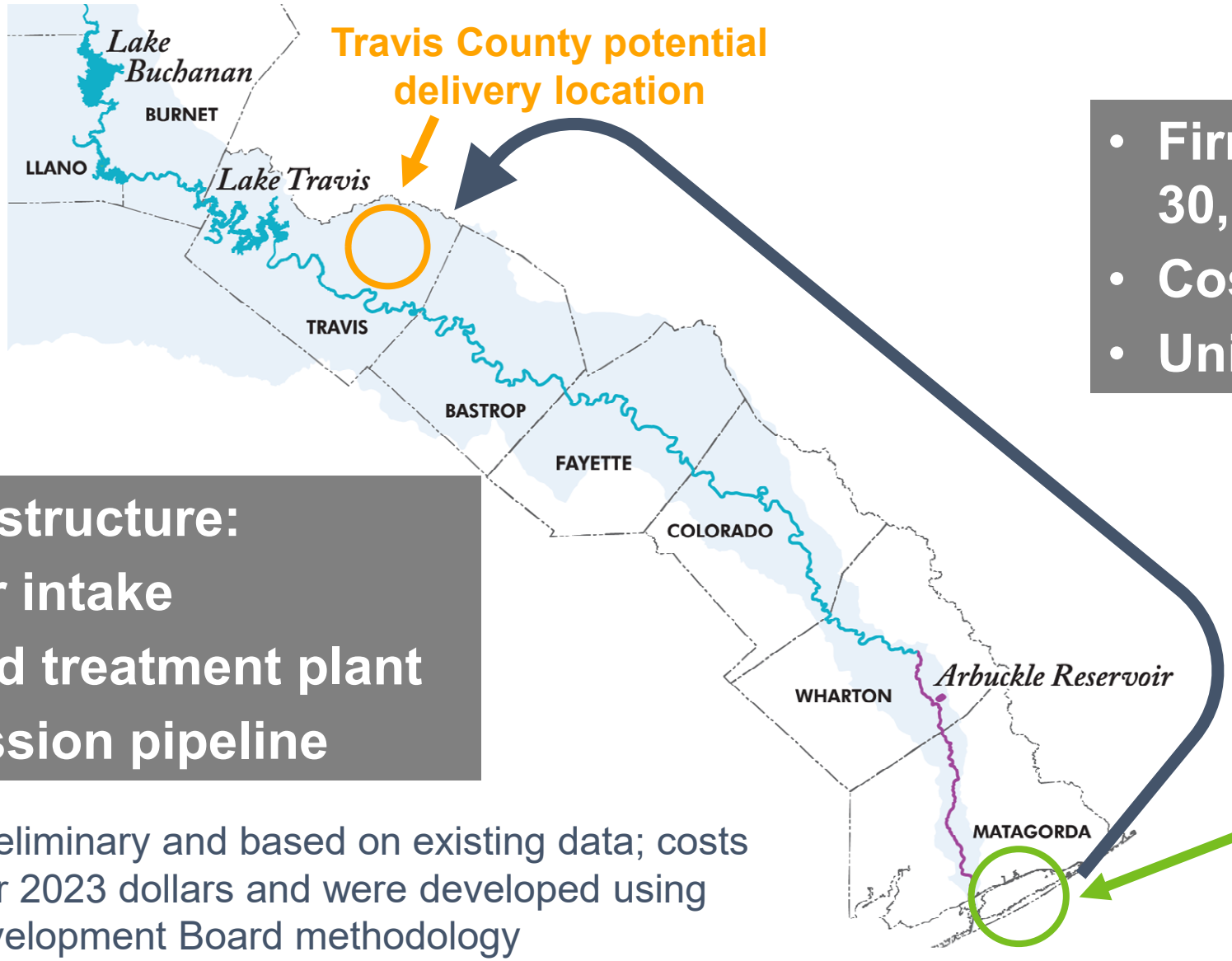
Seawater Desalination



- Firm supply: up to 30,000 a-f per year
- Cost: $3.6 billion
- Unit: $9,300 per a-f

Major infrastructure:

- Seawater intake
- Advanced treatment plant
- Transmission pipeline

Seawater intake and advanced water treatment plant location

Estimates are preliminary and based on existing data; costs are in September 2023 dollars and were developed using Texas Water Development Board methodology

Illustrations are conceptual and do not represent actual location of infrastructure

Next Steps for WSRR

- Complete evaluation of individual water supply strategies
- Compare different water supply strategies
- Create water supply scenarios with combinations of strategies and implementation timelines
- Solicit public input
- Complete the report
- Seek Board adoption of report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