Chain of Lakes Conveyance System (COLCS) Special Board Workshop

April 1, 2026

Supporting Zone 7's Strategic Goals and Initiatives

Strategic Goals

Initiatives

# 5	Develop a diversified water supply plan and implement supported projects and programs
# 8	Continue evaluating the Chain of Lakes Conveyance System Project
# 11	Manage the Groundwater Sustainability Agency and implement the Groundwater Sustainability Plan

Topics of Discussion

1. Project Description
2. Project Objectives
3. Completed Work
4. **Break #1**
5. Project Design
6. Estimated Costs and Schedule
7. **Break #2**
8. Benefits and Costs
9. Funding Sources
10. Conclusion and Recommendation
11. Q and A

Abbreviations

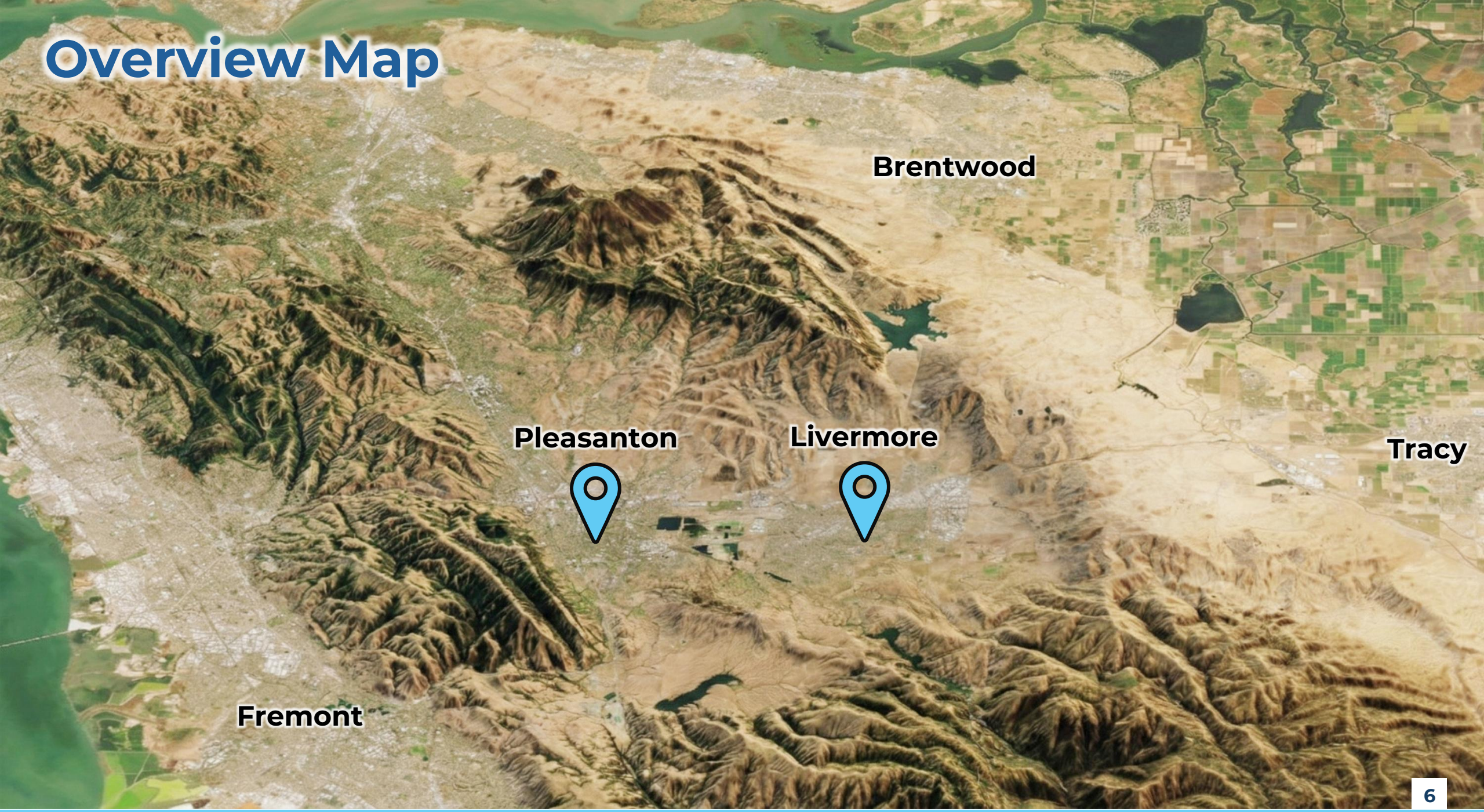
- AF Acre-Feet
- CIP Capital Improvement Plan
- COL Chain of Lakes (Zone 7 owns Lake I and Cope Lake currently)
- COLCS Chain of Lakes Conveyance System
- DCP Delta Conveyance Project
- DVWTP Del Valle Water Treatment Plant
- DWR California Department of Water Resources
- M&I Municipal and Industrial (i.e., treated water)
- PFAS Per- and polyfluoroalkyl substances
- SBA South Bay Aqueduct
- SWP State Water Project
- TAF Thousand Acre-Feet

Project Description

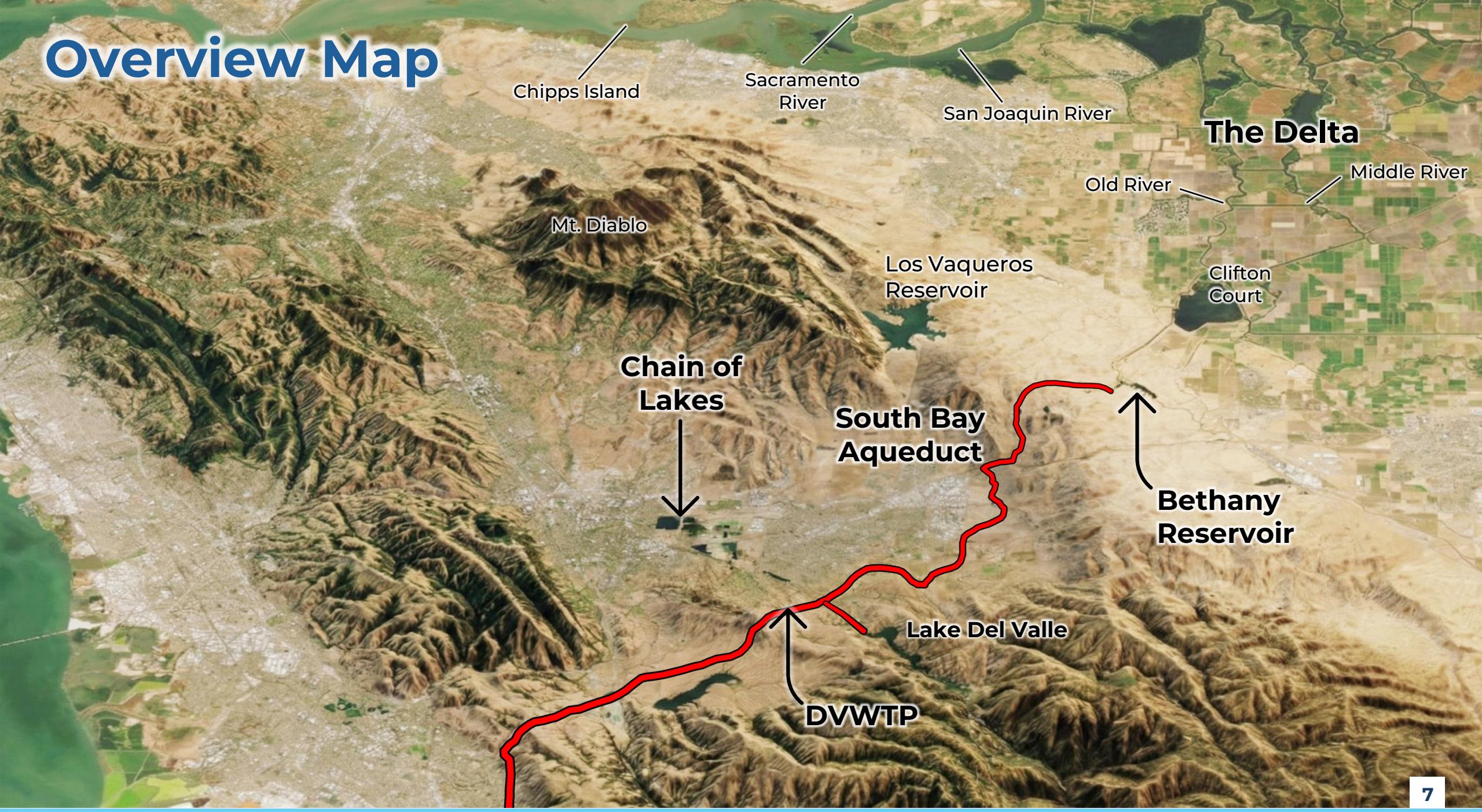
What is the project?

ZONE 7 WATER AGENCY

Overview Map



Overview Map



Overview Map

Chain of Lakes Conveyance System

- Utilize existing assets (Lake I, Cope Lake)
- 7-mile-long two-way pipeline connecting the SBA and Lake I and Cope Lake
- Gravity flow to fill the lakes
- Pump station to pump the water back to DVWTP for treatment and distribution
- PFAS removal and conventional treatment at DVWTP

Project Objectives

Why do we need this project?

ZONE 7 WATER AGENCY

Achieving Water Supply Reliability Policy Goals

Goal 1

Normal Operations under Drought Conditions

- Chance of shortage should not be more than 1-in-10 in any year
- Severity of shortage should not exceed 15% of demand during droughts

Goal 2

Extended Unplanned Outages of a Week or More

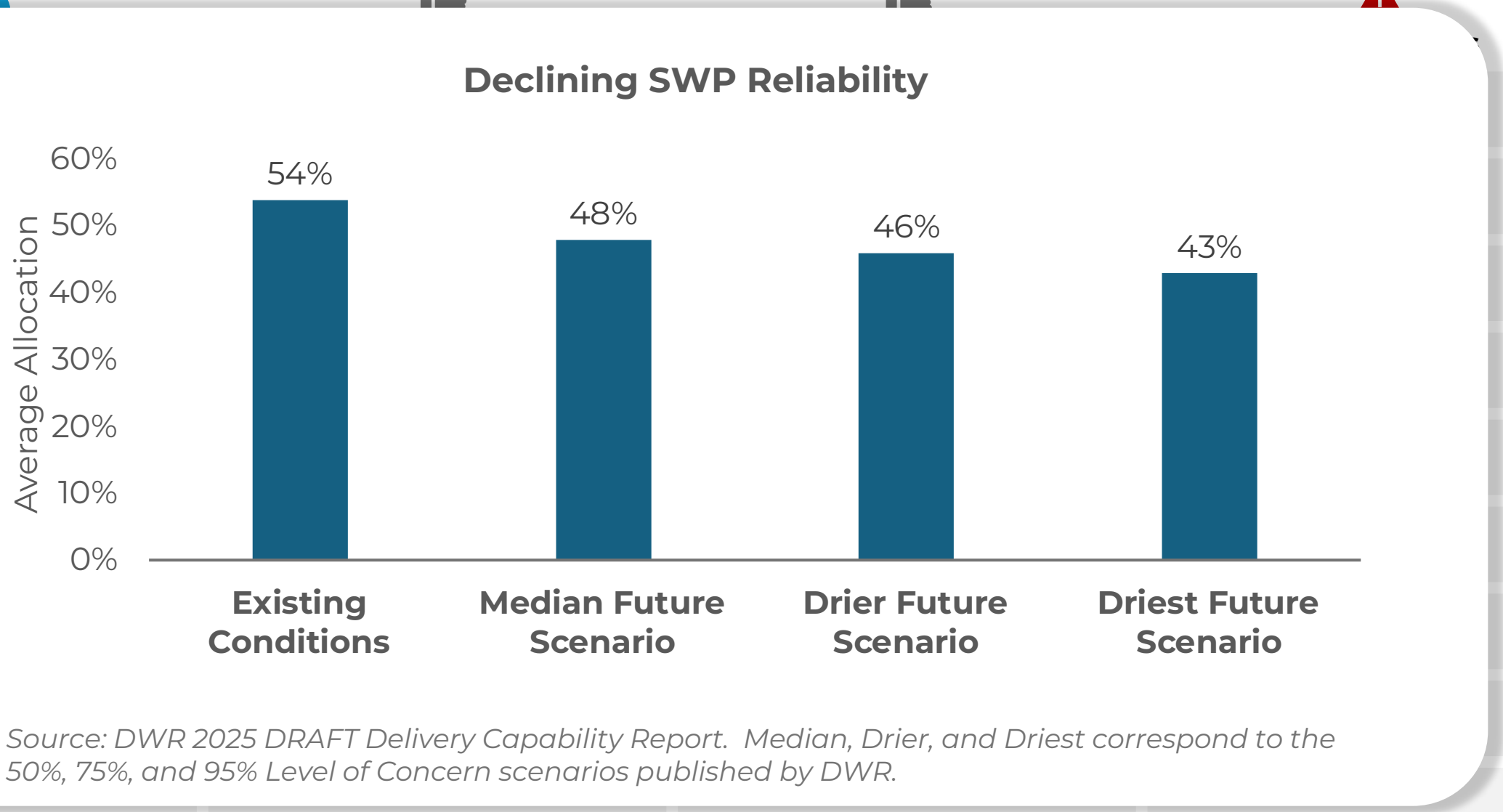
- Maintain capacity to meet at least 80% of maximum month treated demand

GAP ANALYSIS OF ZONE 7'S WATER SUPPLY PORTFOLIO

Water Supply Sources	Upsides	Downsides	Vulnerabilities
State Water Project	High Table A Allotment	Declining Delivery Capability	Emergencies, SWP outages

** Potential projects ** Limited future availability*

GAP ANALYSIS OF ZONE 7'S WATER SUPPLY PORTFOLIO



Source: DWR 2025 DRAFT Delivery Capability Report. Median, Drier, and Driest correspond to the 50%, 75%, and 95% Level of Concern scenarios published by DWR.

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Water Supply Sources	Upsides	Downsides	Vulnerabilities
State Water Project	High Table A Allotment	Declining Delivery Capability	Emergencies, SWP outages
Kern Groundwater Banks	Significant Storage Capacity	Limitations on Recovery Capacity	Emergencies, SWP outages, Conveyance Limitations
Sites*	New Non-SWP Water Supply	Depends on Delta for Conveyance	Emergencies, SWP outages, Conveyance Limitations
Delta Conveyance Project*	Restore SWP Delivery Capability	Project Completion Date	Hydrology

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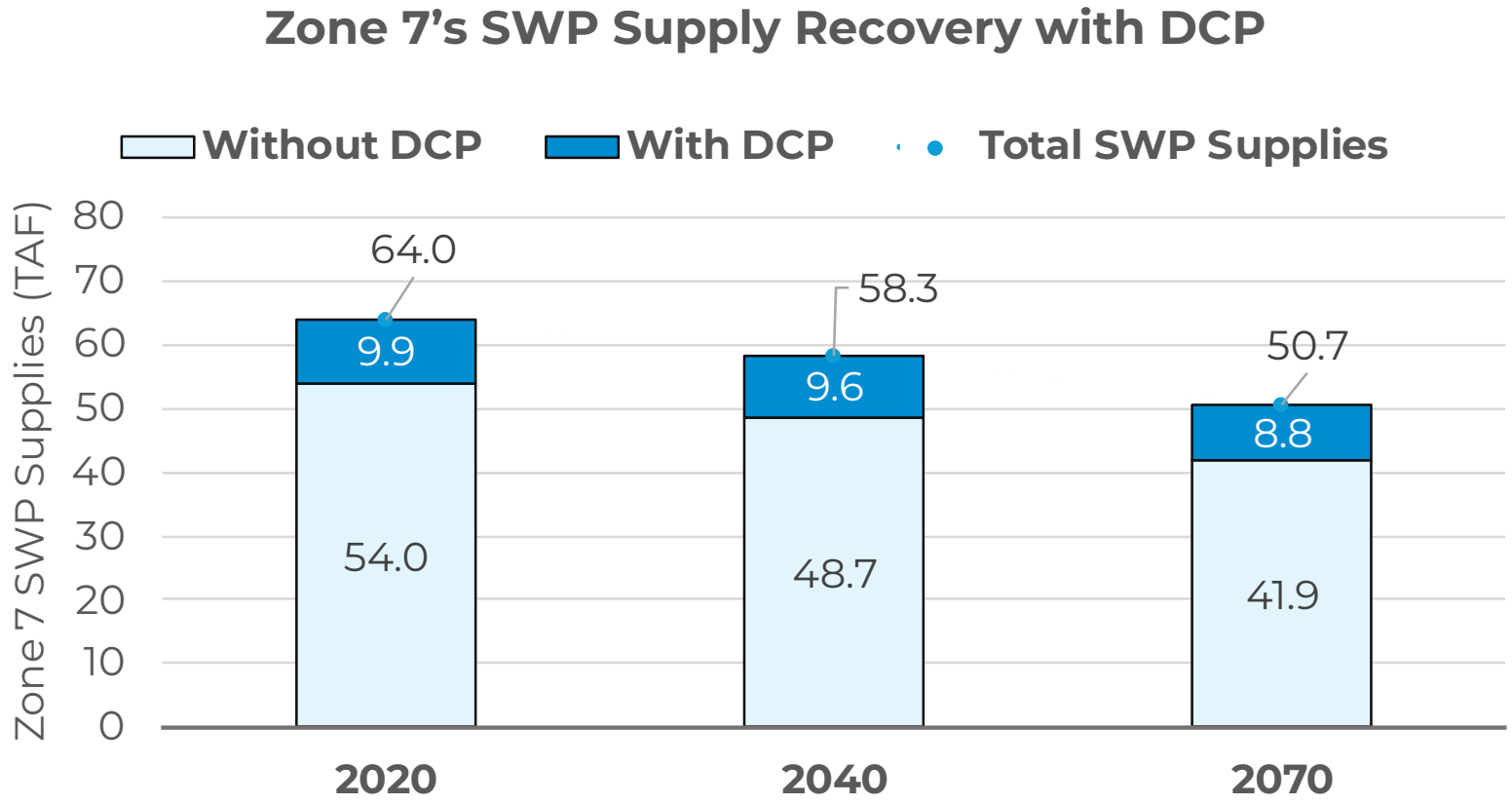

Source: DWR's modeling of DCP supply recovery, October 2024. Includes Table A and A21 recovery.

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GAP ANALYSIS OF ZONE 7'S WATER SUPPLY PORTFOLIO

Water Supply Sources	Upsides	Downsides	Vulnerabilities
State Water Project	High Table A Allotment	Declining Delivery Capability	Emergencies, SWP outages
Kern Groundwater Banks	Significant Storage Capacity	Unreliable Recovery Capacity	Emergencies, SWP outages, Conveyance Limitations
Sites*	New Non-SWP Water Supply	Depends on Delta for Conveyance	Emergencies, SWP outages, Conveyance Limitations
Delta Conveyance Project*	Restore SWP Delivery Capability	Project Completion Date	Hydrology
Potable Reuse*	Not dependent on hydrology	Infrastructure/capital intensive	Public sentiment
Water Transfers**	No Capital Costs	Uncertain Availability	Emergencies, SWP outages
Groundwater basin	Local Control, Storage	Facility Production Limitations	Groundwater Sustainability
Arroyo Del Valle Water Right via Lake Del Valle	Local Control, Non-SWP Water Right	Limited Supply and Storage	Hydrology
Water Conservation (demand reduction)	Local Control	Limited Results	Depends on Enforcement

** Potential projects ** Limited future availability*

Water Supply Reliability Blueprint
Strategy to minimize supply vulnerabilities

- To maximize local water storage for emergencies and supply interruptions
- To develop local storage reservoirs to capture, store, and conserve the available water to withstand climate change, including extreme swings between historic droughts and record storms
- To enhance operational flexibility, including sources
- To increase total storage capacity gradually
- To create synergy with other water supply sources to maximize benefits

COLCS Project Objectives

Objective #1 – Local Water Storage

Objective #2 – Emergency Water Supply

Objective #3 – Increased Yield as COL Expands

Objective #4 – Transfer and Exchange Opportunities

Objective #1 – Local Water Storage

Increases Storage Under Direct Zone 7 Management

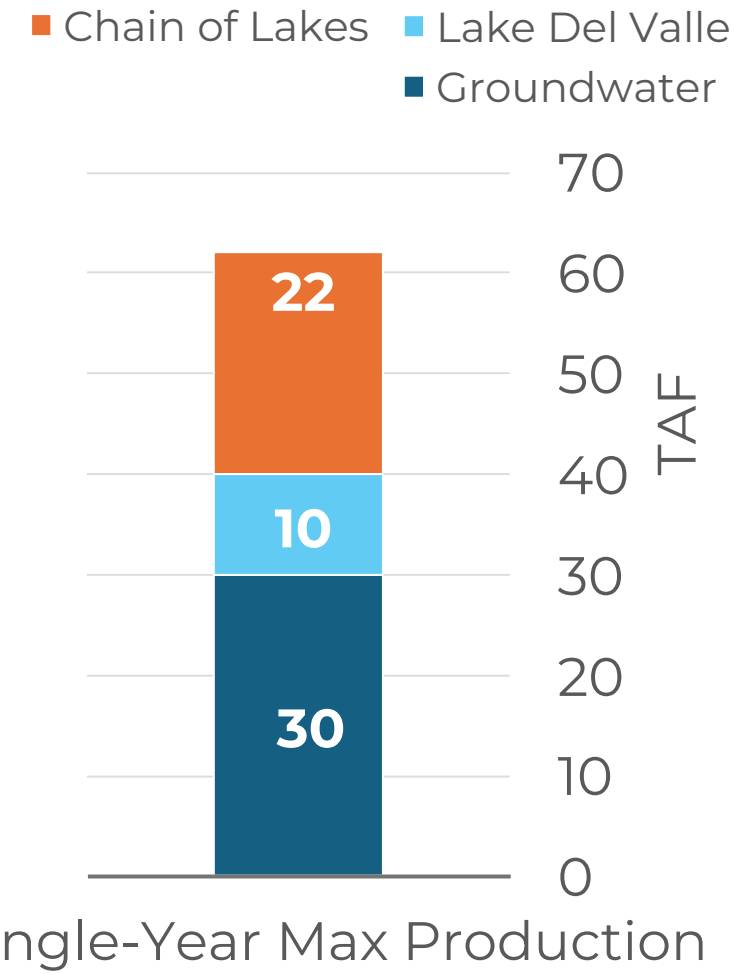
- Maximize a local stand-by and surplus water supply
- Enable independence from delta conditions or conveyance or recall capacity in SWP and banking programs
- Provide production system redundancy and enhanced ability to meet the reliability Goal 2 in case of the SWP outage
- Reduce San Luis Reservoir spill risk
- Minimize banking program leave-behind and deposit/recovery costs

Zone 7 Distribution System

Objective #2 – Emergency Water Supply

Safety Net of up to a Full Year of Emergency Supply

- Essential emergency supply for unforeseen supply interruptions due to catastrophic scenarios
- Total storage of 36,000 AF with I/Cope
- Single-year pump-back capacity of up to 22,000 AF
- Stores up to one year's supply of water to meet the demand, along with locally available supplies*
- Significantly increases the ability to withstand prolonged droughts using local supplies



** Assumes 30 TAF max well system production with regional wells*

Objective #3 – Increased Yield as COL Expands

Maximizes Yield of Existing Rights and Future Investments

- Perfect Arroyo del Valle Water right (additional 5-9 TAF in wet years) by maximizing beneficial use
- DCP: Maximize yield from diversion during high flow conditions
  - Additional 2,500 AFY with existing lakes
  - Additional 5–6,000 AFY with additional lakes
- Coordinated operation of Sites and COLCS could increase the Sites Project's yield substantially
- Other
  - Future potential for stormwater management
  - Sustainable management of groundwater basin and well fields during droughts (reducing pumping rate to allow more recovery time)

Objective #4 – Transfer and Exchange Opportunities

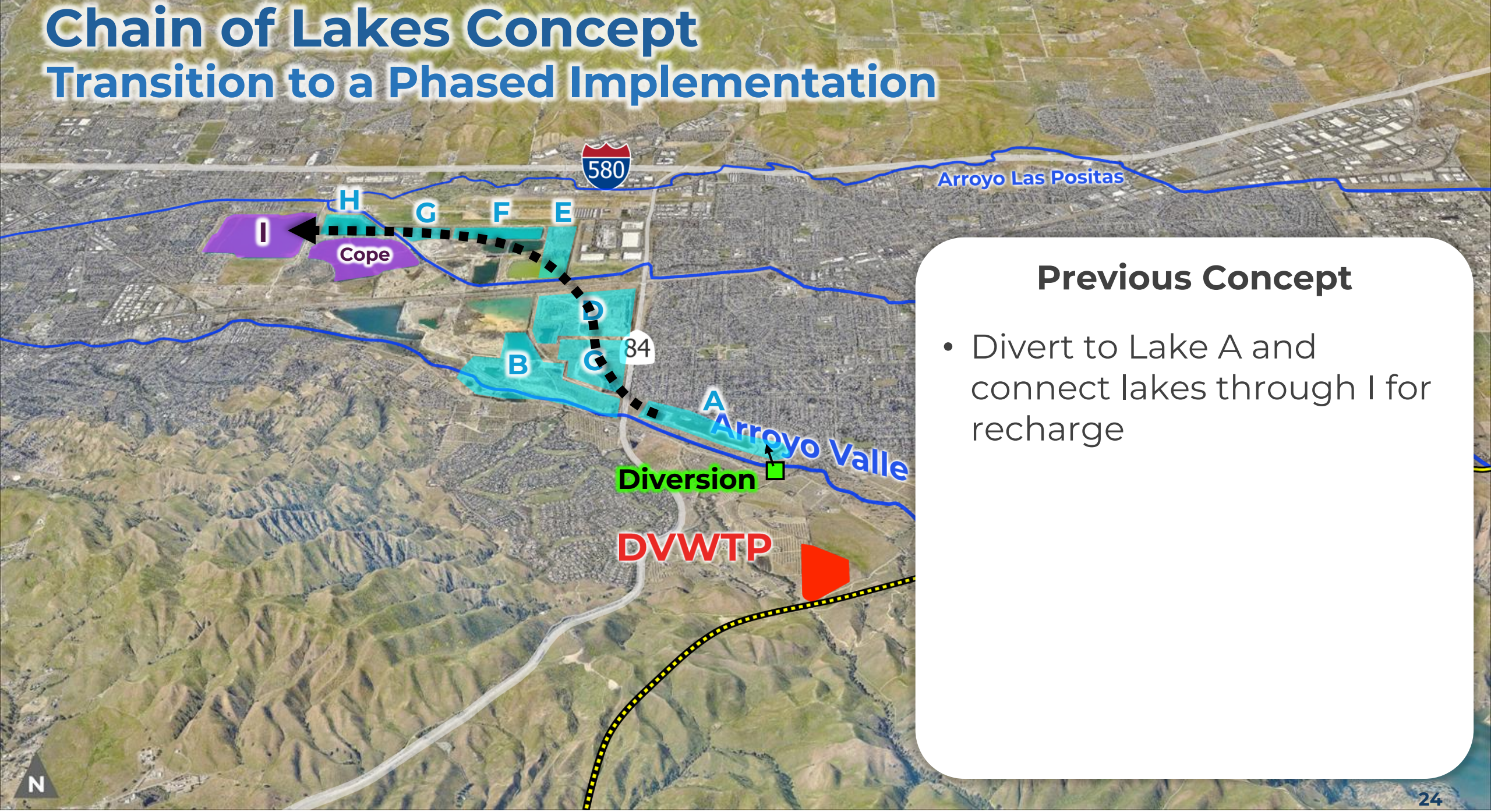
- Surplus capacity could be offered for banking by other agencies
- Opportunity to maximize the use of storage space in a way that could increase transfer opportunities

Completed Work

What has been done to date?

ZONE 7 WATER AGENCY

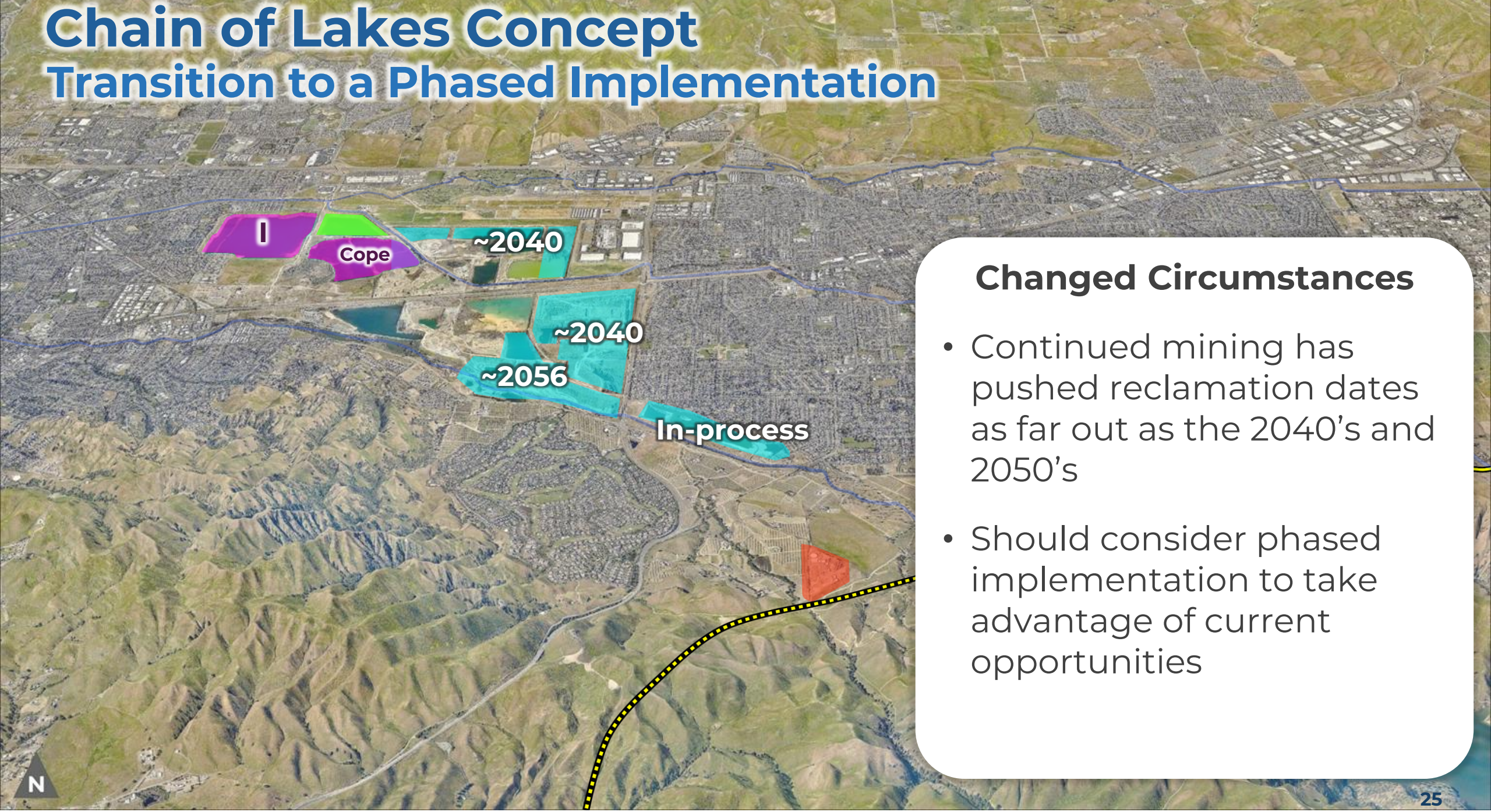
Chain of Lakes Concept
Transition to a Phased Implementation



Previous Concept

- Divert to Lake A and connect lakes through I for recharge

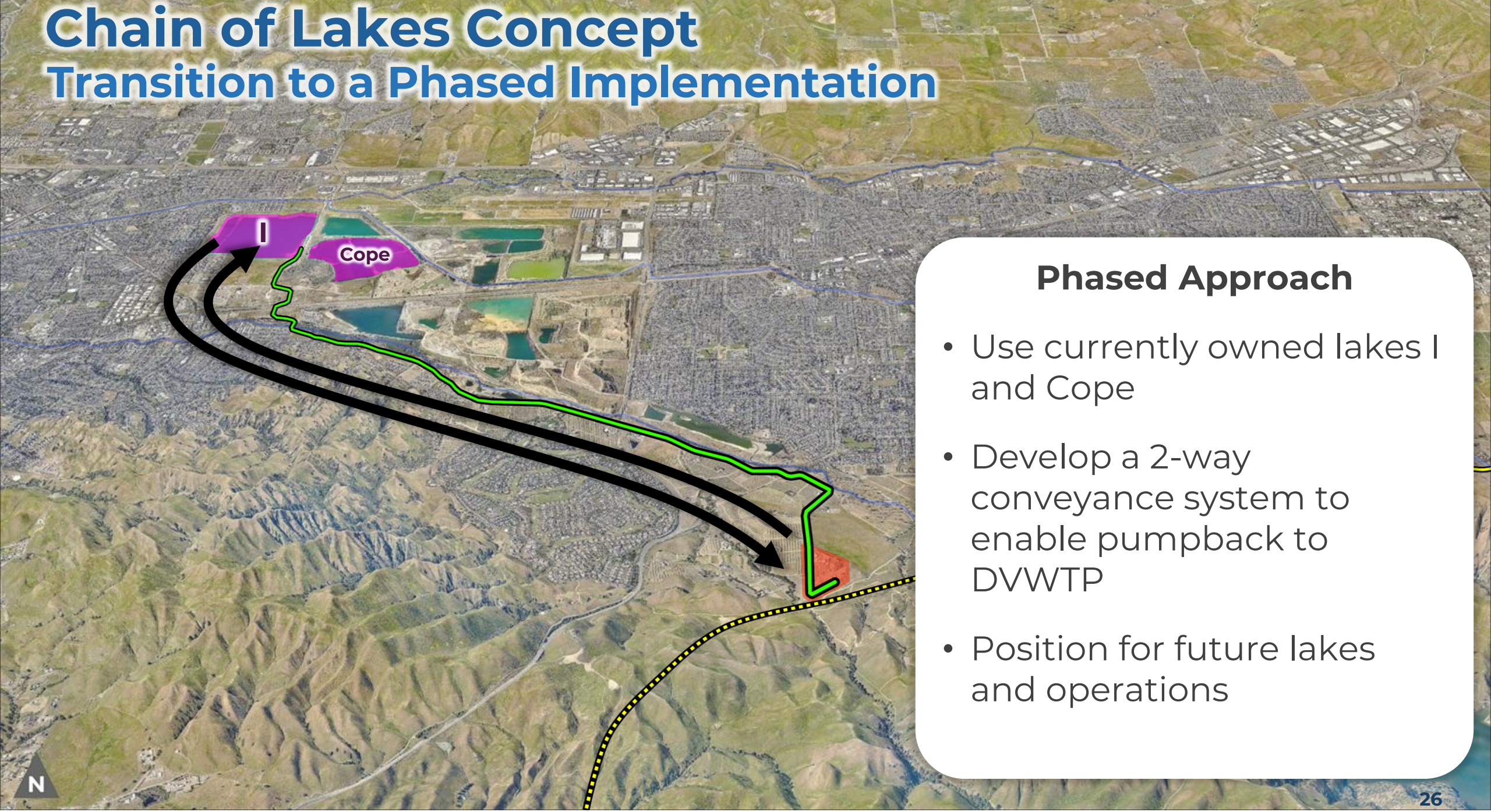
Chain of Lakes Concept
Transition to a Phased Implementation



Changed Circumstances

- Continued mining has pushed reclamation dates as far out as the 2040's and 2050's
- Should consider phased implementation to take advantage of current opportunities

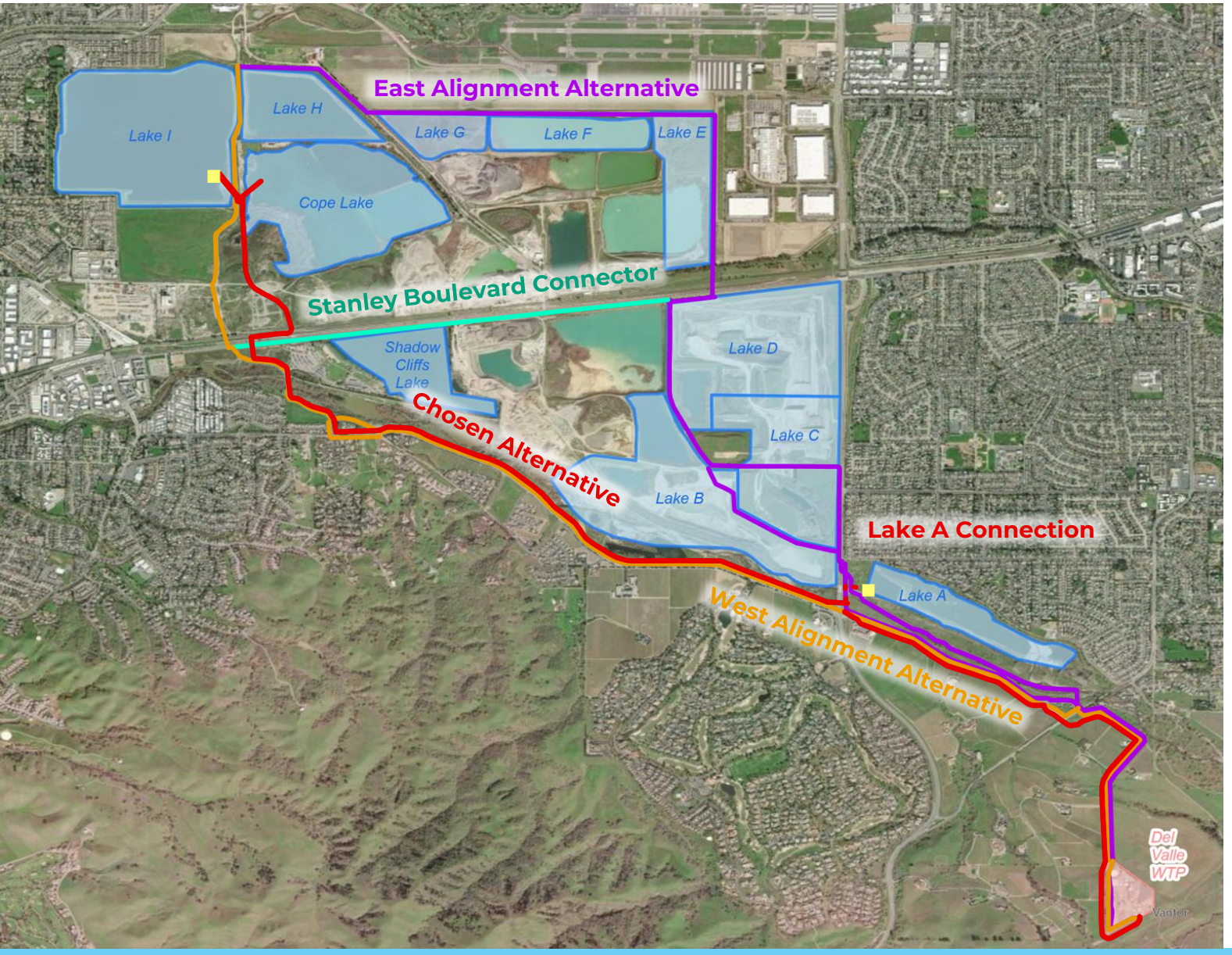
Chain of Lakes Concept
Transition to a Phased Implementation



Phased Approach

- Use currently owned lakes I and Cope
- Develop a 2-way conveyance system to enable pumpback to DVWTP
- Position for future lakes and operations

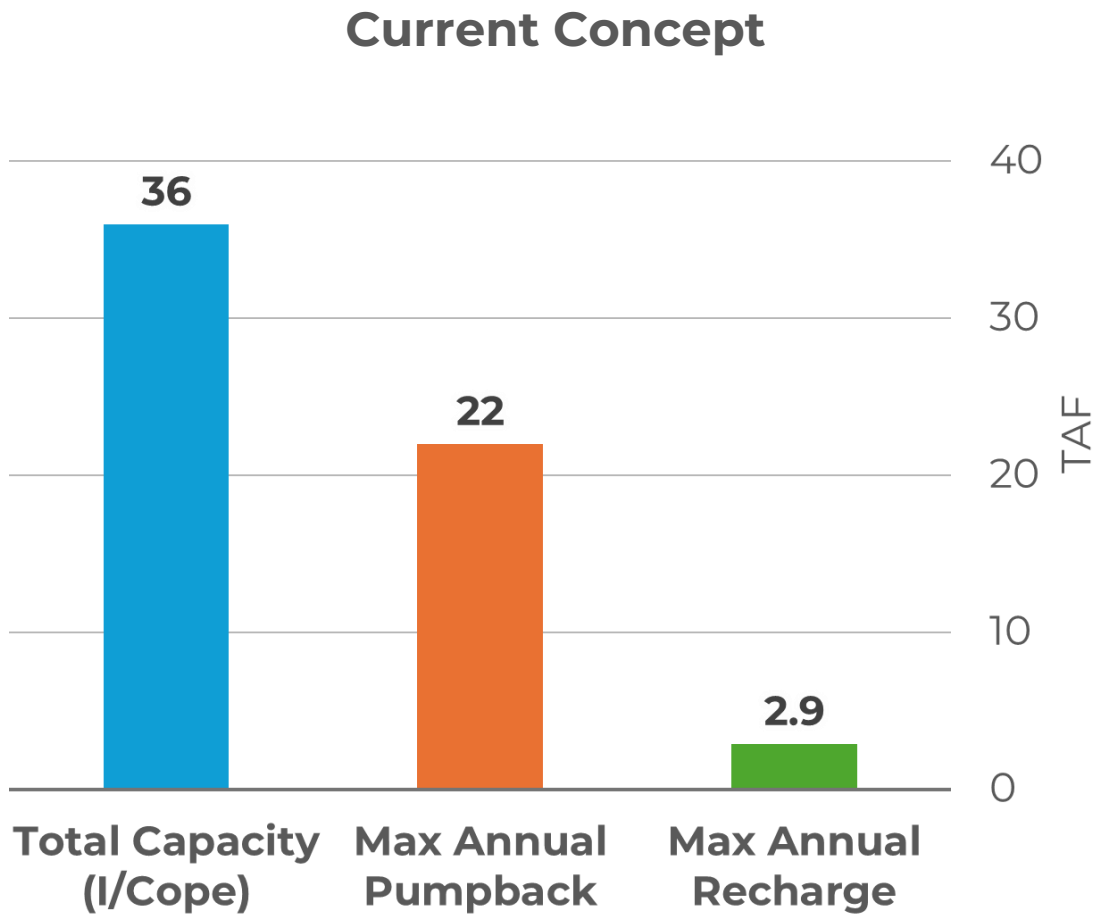
Alignment Study (2020 - 2023)



- Alternatives narrowed down to two: West Alignment and East Alignment
- Version of West Alignment chosen
- Deciding factors: difficulty constructing East Alignment through quarries, shorter pipe length required, and use of existing access road
- Pump station can be added at Lake A in the future

Feasibility Study (Nov 2023 – Mar 2025)

- Water Availability Analysis
- Evaluated 1-way vs 2-way conveyance system
- Evaluated surface storage and recharge potential
- Water Quality Blend Analysis
- Pipe Sizing and Capacity Analysis
- Prepared Initial Engineering Cost Estimates



COLCS Workshops

Session 1
April 2025

Identified analysis needs:

- Recharge rates
- PFAS treatment capabilities
- Project yield

Drafted project goals:

- Locally stored emergency supply
- Water supply reliability
- Dry year supply

Session 2
May 2025

- Analyzed recharge rates and determined that pumpback yield drives project benefits
- Identified need to refine alternative for pump station and PFAS treatment
- **Selected the two-way pipeline concept as preferred**

Session 3
January 2026

- Assessed technical feasibility and yield
- Analyzed economic and financial feasibility
- Discussed development of purpose and need statements
- **Recommended to proceed with project planning and development**

Break #1

Project Design

What would it take to develop this project?

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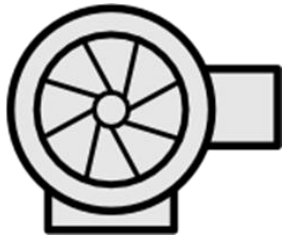
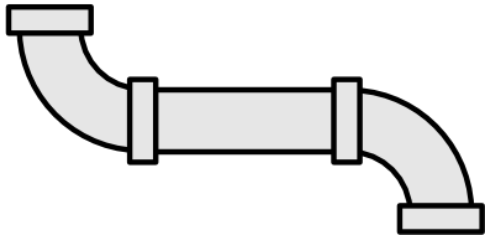
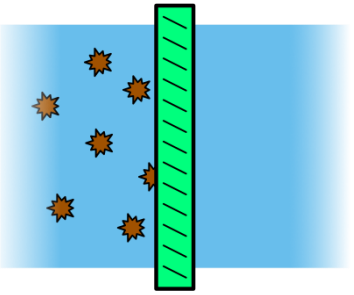
New Facilities



Inlet/Outlet and Pump Station at Lake I/Cope



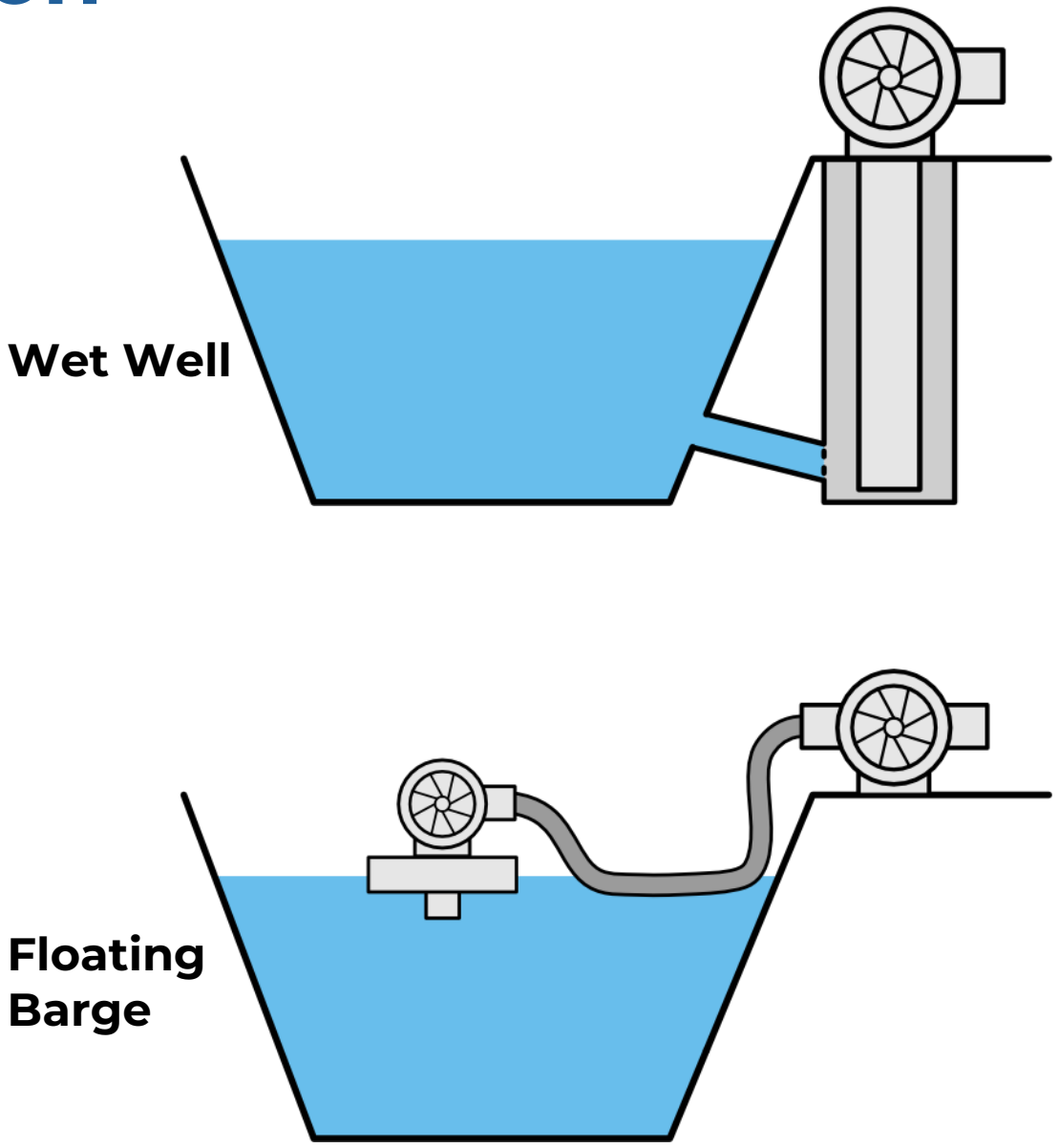
42” 2-way Pipeline from Lake I/Cope to DVWTP



PFAS Treatment at DVWTP

Inlet/Outlet and Pump Station

- Flow control station and inlet to Lake I
- Size pump station at 20 MGD
- Pump Station Configurations
  - Deep wet well with vertical turbine pumps.
  - Floating barge pump station with high-lift booster pump station.



Pipeline from Lake I/Cope Lake to DVWTP

- 42” diameter; 7 miles
- 2-way: gravity flow to COL, pumped back to DVWTP
- Corridor evaluated at conceptual level, follows Vineyard/Arroyo Valle
- Potential refinements to pipeline alignment
  - Agency Coordination
  - Permitting
  - Property and Right-of-Way

PFAS Treatment at DVWTP

- DVWTP is preferred for ease of operation and maintenance
- Preferred Treatment: Granular Activated Carbon Gravity Contactor

Estimated Costs and Schedule

How much would it cost and how long would it take?

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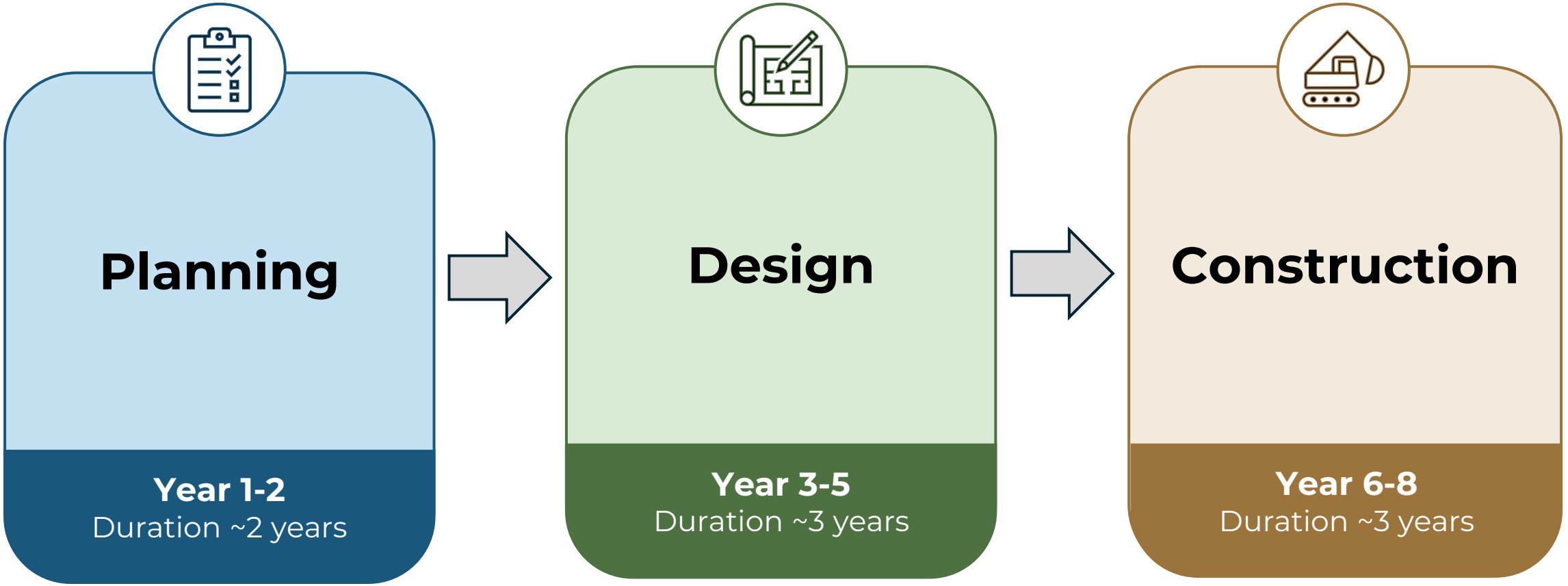
Project Cost Estimate (2026 Price Level, $M)

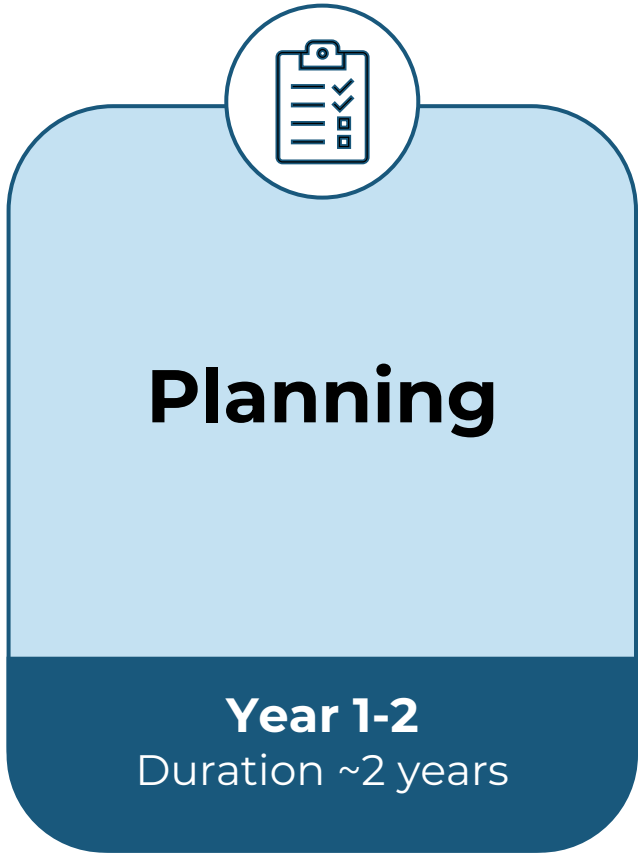
Planning and Design	
Design and Project Management	$10
Right-of-Way Acquisition	$3
Environmental, Permitting, and Mitigation	$5
Planning and Design Subtotal	**$18**
Construction	
Construction	$163
Construction Management	$14
Engineering Support During Construction	$7
Construction Subtotal	**$184**
Estimated Project Subtotal	**$200**
Risk Reserve	$40
Estimated Project Total	**$240**

Values may not add due to rounding

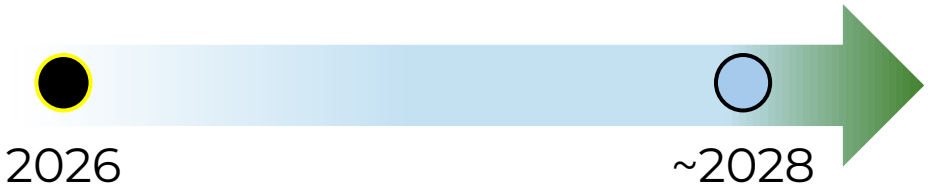
Project Schedule



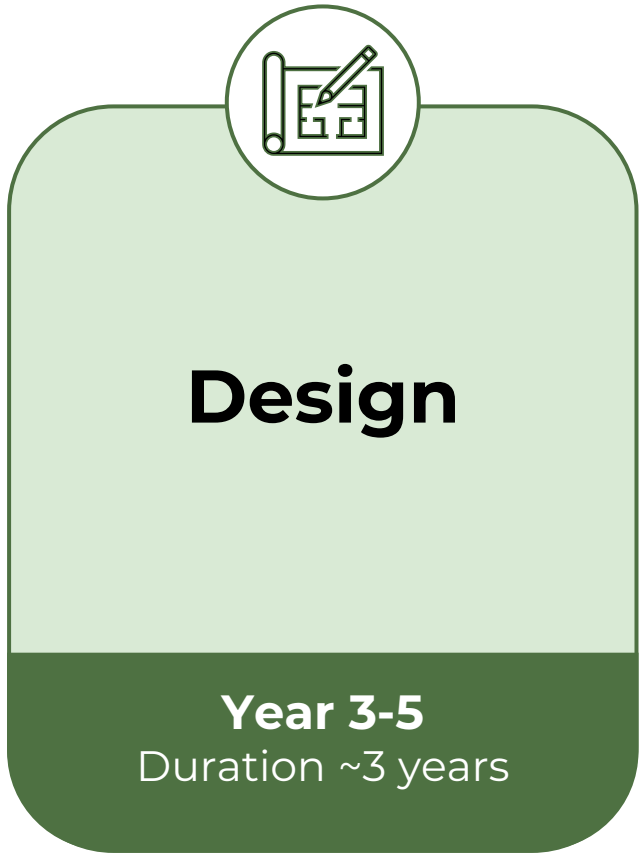
Project Schedule



- Preliminary Design
- Site Investigations
- Surveying
- Utility Locating
- Agency Coordination
- Property and Right-of-Way (Early Stage)
- Permitting (Early Stage)



Project Schedule



- Final Design
- Construction/Bid Document Preparation
- CEQA/Environmental Compliance
- Permitting and Agency Approvals
- Property and Right-of-Way
- Utility Coordination

Project Schedule

Design

Year 3-5
Duration ~5 years

Construction

Year 6-8
Duration ~3 years

Break #2

Benefit Cost Analysis

Do the benefits outweigh the costs?

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Benefit Cost Analysis

Quantitative Evaluation

Is this investment economically justified?

Benefits	Costs
• Increased local supply amount • Increased local water right yield • Increased yield from Sites and DCP • Reduce need for water purchase	• Capital Cost • O&M Cost

Qualitative Evaluation

Are the benefits worth the costs?

Benefits	Costs
• Emergency Water Supply • Additional local source of supply • Local control and management • Increased Transfer and Exchange Opportunities	• Mitigations for construction-related impacts • Community impacts during construction • Financial commitment

Quantitative Benefit Cost Analysis
Unit Cost Analysis

- Shows unit cost for range of yield from 7,000–12,000 AFY
  - 7,000 = Reoperation of existing portfolio to prioritize COLCS and increase local water capture
  - 9,000 = Including estimated synergistic yield with Sites and DCP
  - 12,000 = High-end estimate of synergistic yield and local water capture as lakes expand

** Economic analysis uses 3.25% discount rate (USACE 2026 rate), and 100-year period of analysis*

Quantitative Benefit Cost Analysis

Unit Cost Comparison

Note: Economic analysis uses 3.25% discount rate (USACE 2026 rate), and 100-year period of analysis. Estimates may not match other published data.
Sources: Desalination (Mesa Water, SDCWA, Main Water, Santa Barbara); Potable Reuse (PureWater SoCal, Valley Water, PureWater San Diego, PureWater Soquel); Other Contracts (SFPUC, ACWD, Montecito Water)

Quantitative Benefit Cost Analysis
Summary

Average Yield (AFY)	Unit Cost ($/AF)	Economically Justified? *
7,000	**$2,100**	**Yes** *Benefits equal costs*
9,000	**$1,600**	**Yes** *Benefits exceed costs*
12,000	**$1,200**	**Yes** *Benefits exceed costs*

* Conceptual level monetization of benefits to compare net present value of benefits to net present value of costs at a 3.25% discount rate over a 100-year period of analysis.

Qualitative Benefits

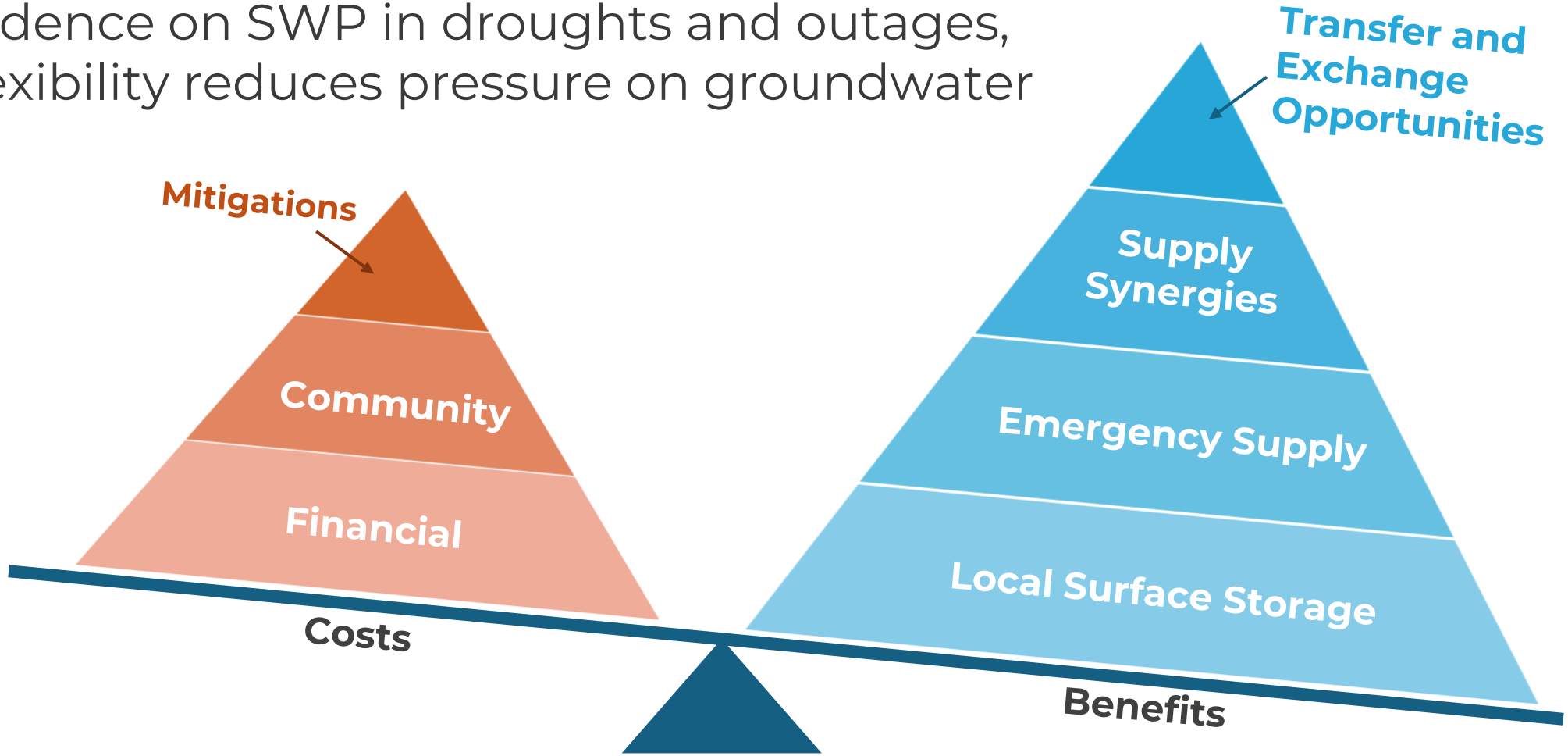
Objective	Goal 1 Normal Operations under Drought Conditions	Goal 2 Extended Unplanned Outages of a Week or More
#1 Local (Surface) Water Storage	Reduces dependence on SWP	Opportunity for non-SWP surface water storage
#2 Emergency Water Supply	-	Adds redundancy; less reliance on groundwater
#3 Increased Yield as COL Expands	Maximizes yield of other supply investments	-
#4 Transfer and Exchange Opportunities	Cost recovery, effective management, additional supply	-

Qualitative Cost

Category	Cost/Impact	Solution
Environment	Construction-related Impacts	Can be Mitigated
Social and Community	Community Impacts During Construction	Offset by Long-term Community Benefit
Financial	Financial Commitment	Offset by Water Supply Reliability Benefit

Qualitative Benefit Cost Analysis
Summary of the Balance of Benefits and Costs

- Locally controlled surface water storage reduces dependence on SWP in droughts and outages, and flexibility reduces pressure on groundwater



Funding Sources

How are we going to fund this?

ZONE 7 WATER AGENCY

Potential Funding Sources

- Fund 120 and Fund 130 can support the project
- Included in the current 10-year Capital Improvement Program
- Debt Financing is feasible
- Eligible for State and Federal Grant Programs
- Pursuing Water Resources Development Act funding

Summary and Conclusion

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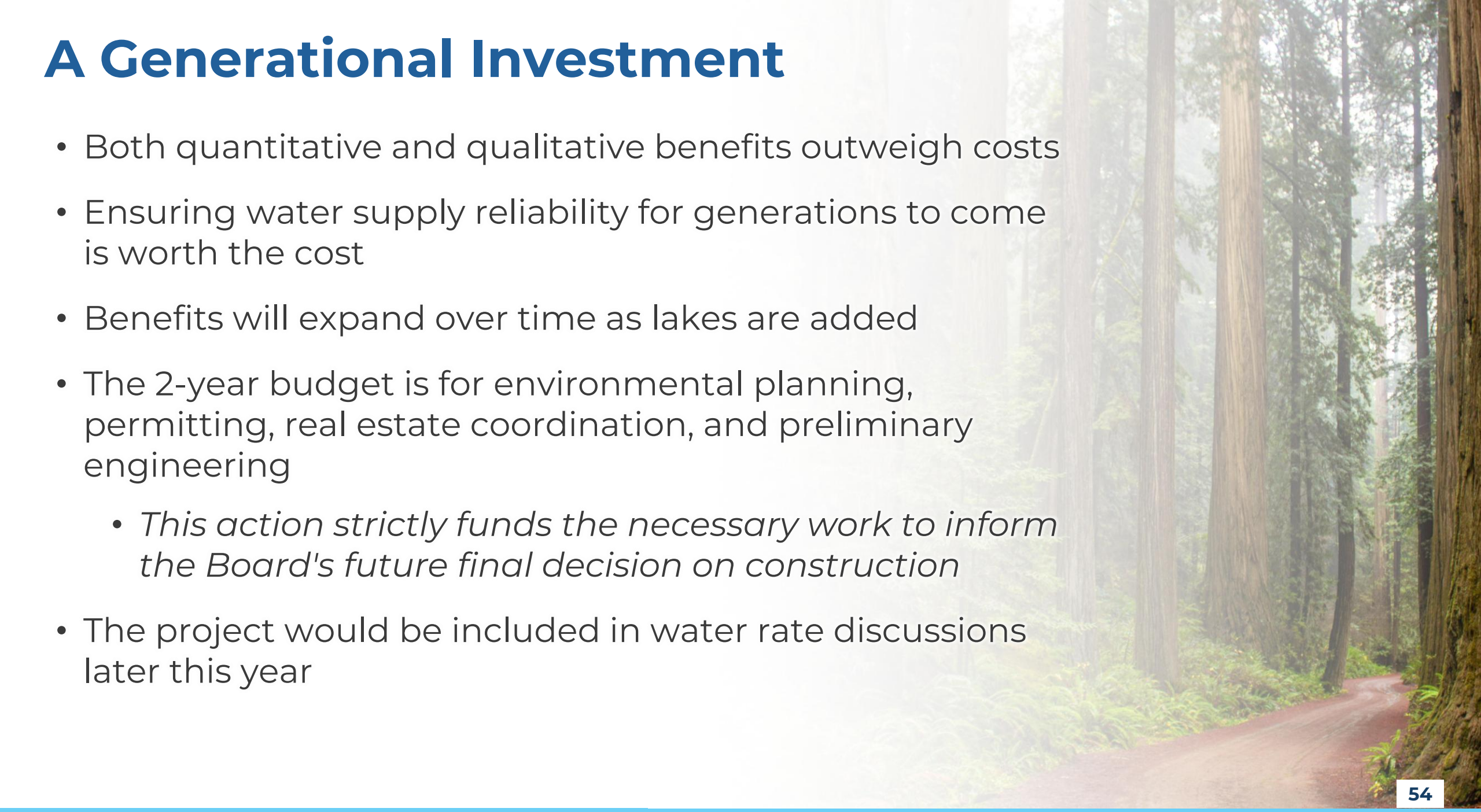
A Generational Investment

- Both quantitative and qualitative benefits outweigh costs
- Ensuring water supply reliability for generations to come is worth the cost
- Benefits will expand over time as lakes are added
- The 2-year budget is for environmental planning, permitting, real estate coordination, and preliminary engineering
    - *This action strictly funds the necessary work to inform the Board's future final decision on construction*
- The project would be included in water rate discussions later this year



Q and A

Excellence is never an accident. It is always the result of high intention, sincere effort, and intelligent execution; it represents the wise choice of many alternatives – choice, not chance, determines your destiny.
– Aristotle