



**SCV**  
**WATER**

9/14/2022

# **Watershed Resilience Initiative Update**

**Workplan Overview**

# Outline

- Drivers of the Watershed Resilience Initiative
- Setting
- Work Plan Summary
- Status of Work in Progress
- Moving Forward



# Drivers of the Watershed Resilience Initiative (WRI)



# Motivation for Watershed Resilience Initiative

- The State of California is facing unprecedented challenges in water supply, protection of natural ecosystems, and balancing the needs of diverse water users.
- The Resilience Initiative addresses water supply system, ecosystem, and groundwater system resilience.
- It is intended to provide a transparent and scientifically sound evaluation of the costs, benefits, and impacts of complex interrelated actions.



# Drivers for Watershed Resilience Initiative

- California Water Plan Update 2023
- Santa Clarita Valley Groundwater Sustainability Plan, 2021
- SCV Water 5-Year Strategic Plan, 2019
- SCV Water Stewardship Objectives for the Santa Clara River, 2019
- Governor's Water Resilience Portfolio Initiative, 2019
- Santa Clara River Enhancement and Management Plan, 2005 (SCREMP)



- Managing Uncertainties/Risks in Changing Environment
- Protect and Enhance Environmental Qualities
- Water Use Efficiency Mandates
- Investments in Projects/Programs



# Drivers for Watershed Resilience Initiative

- Integrates
  - Agency Mission and Values
    - ✓ Reliability and Quality
    - ✓ Sustainability and Resiliency
    - ✓ Supportive of Community Values
    - ✓ Environmentally Sensitive
    - ✓ Cost Effectiveness
  - SCV Water's Santa Clara River Stewardship Objectives
    - ✓ Cooperate with stakeholders and strengthen partnerships
    - ✓ Support public ownership of property along the river
    - ✓ Preserve and protect parcels for water conservation and recharge
    - ✓ Promote appreciation and enjoyment of the river
    - ✓ Seek options for the removal of invasive plant species from the river
    - ✓ Devise, promote, and partner in conservation projects
    - ✓ Manage the river to protect and ensure sustainability of groundwater resources



# Drivers for Watershed Resilience Initiative

- Driven by Regulatory and Legal Actions that could constrain future projects including:
  - Water rights and public trust values.
  - CEQA.
  - Endangered Species.
  - Ratepayer actions.
  - Recovering costs from polluters.

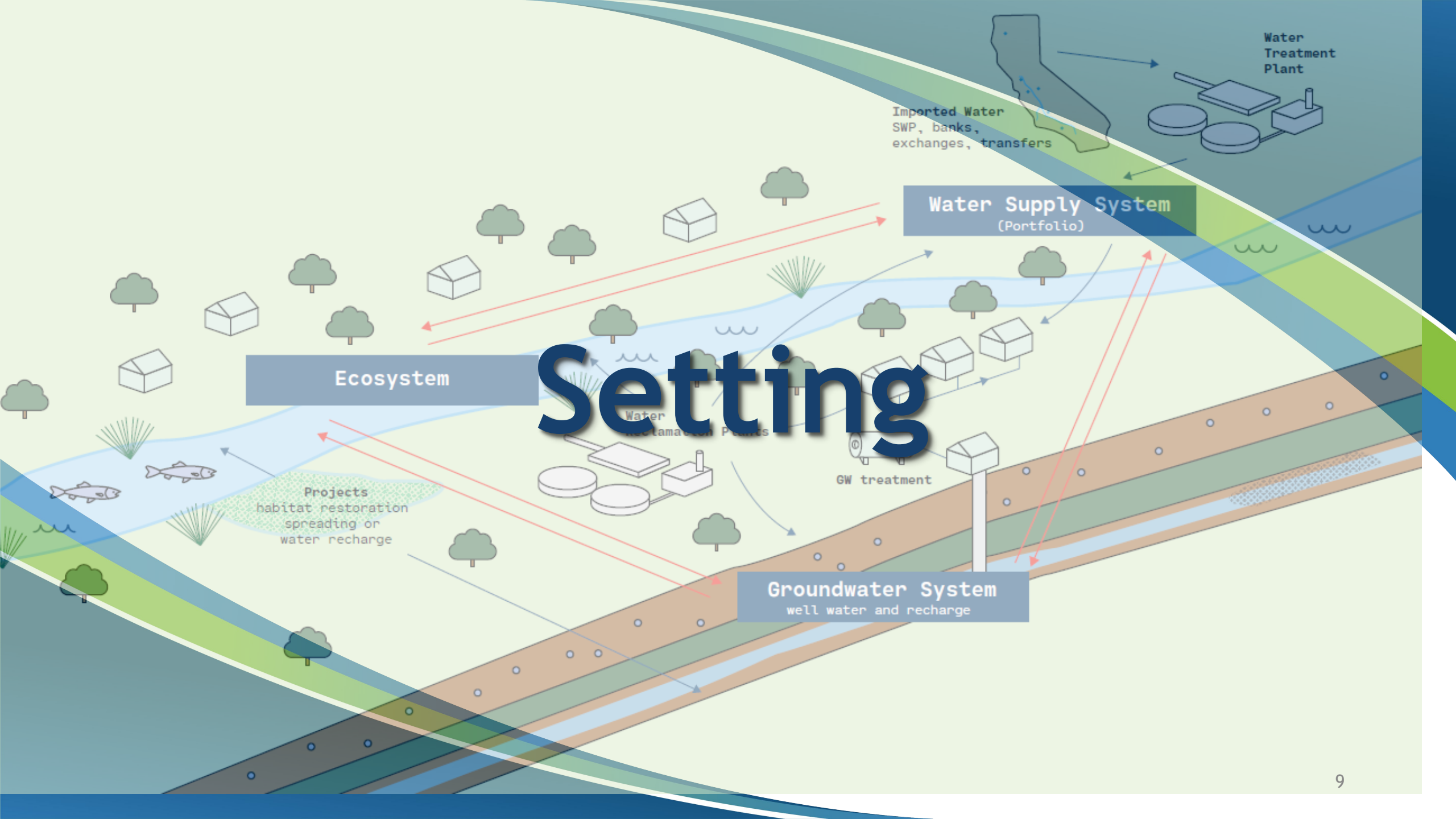


# Represents Revised Planning Methodology

- Current and Future Physical and Regulatory Constraints/Challenges
  - Climate Change
  - Ecological values
  - Water Quality and Contaminants of Emerging Concern
  - Permitting
  - Water Rights
  - Ratepayer implications
- Relationships with other Stakeholders
  - Governmental and non-governmental
  - Community
  - Downstream users
- Strives to make SCV Water an institutional leader for public policy choices along the river system related to the use and management of water resources







## SCV Water Imported Water Supplies (Existing and Potential)

• Sites Reservoir

• Yuba Water Accord Transfer

• SWC Dry Year Water Transfer

• Delta Conveyance

San Luis Reservoir

• AquaTerra Water Bank

State Water Project Aqueduct

Devils Den Water District

• Newhall Land and Farm Semitropic Banking

• Semitropic Banking Program

BVRRB Firm Transfer

• RRB Banking and Exchange

• Nickel Water

Irvine Ranch Water District Exchange

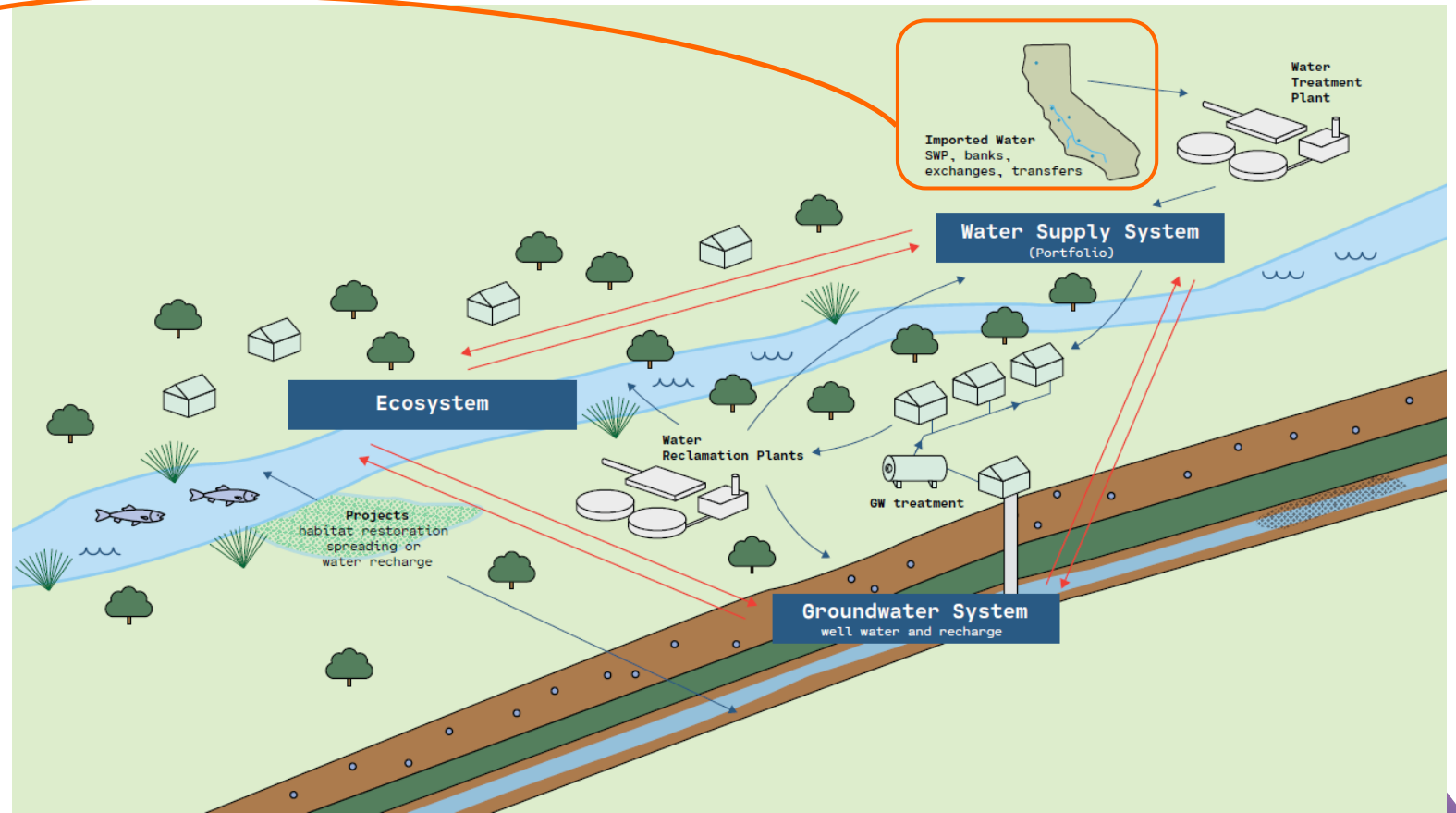
• Kern West Side Water Districts Exchange

• AVEK High Desert Water Bank and Exchange

• Castaic Lake

• United Water Conservation District Exchange

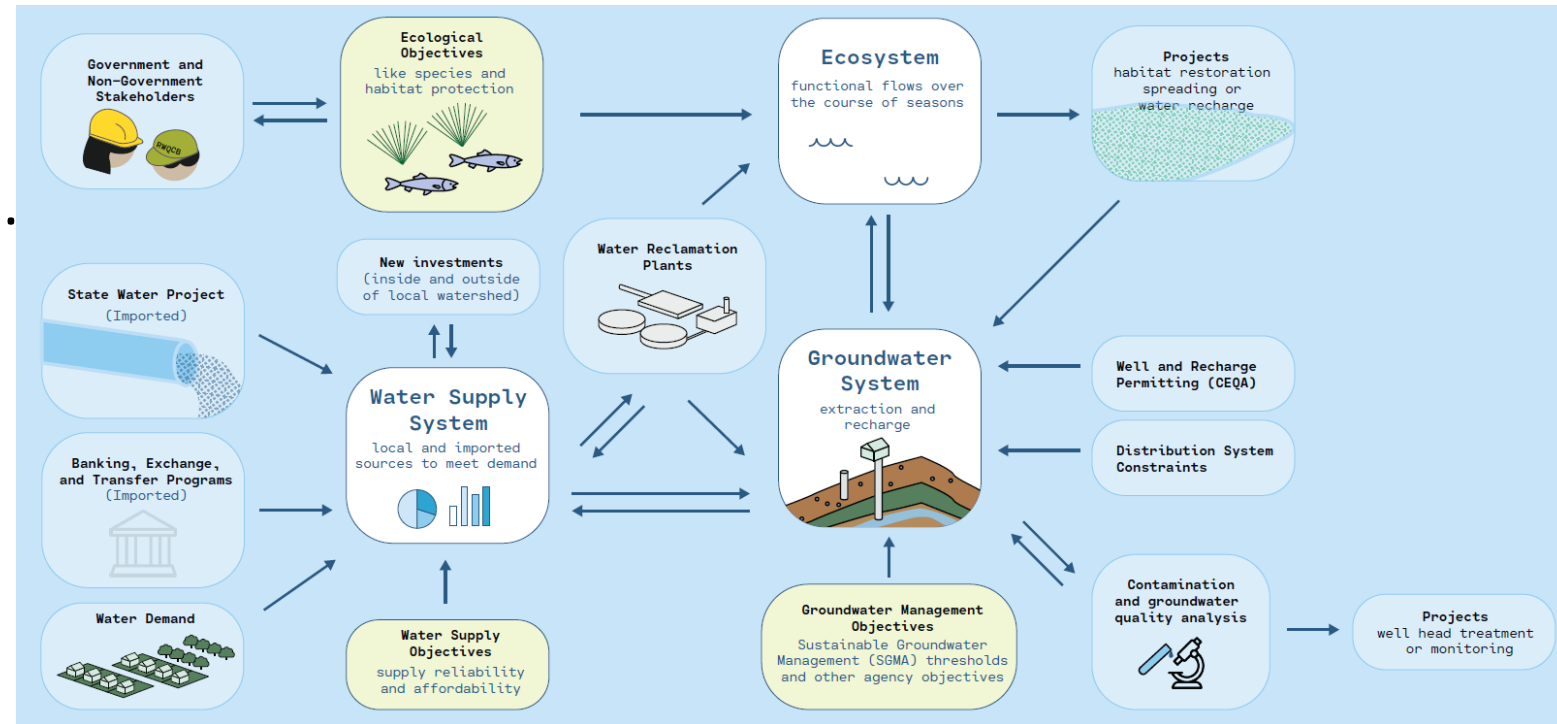
The Santa Clarita Valley Watershed is a human-natural system that must balance ecosystem, water supply, and regulatory needs in an increasingly complex hydrologic setting.



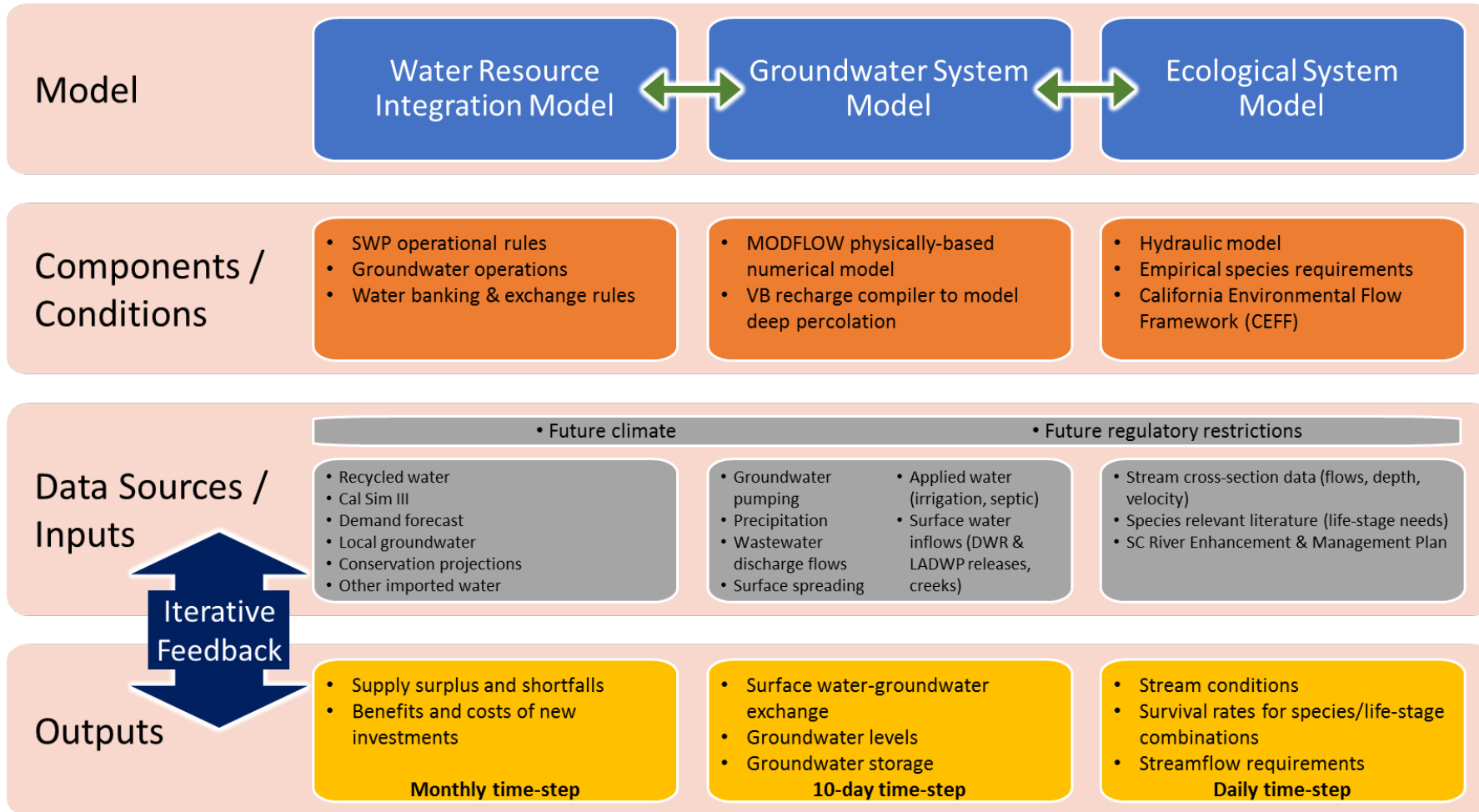
# Analysis will be conducted Using State-of-the-Art Analytical Tools

- SCV Water has several analytical tools developed and in development, which will form the core of its integrated analysis:

- Water Resource Integration Model.
- Ecological System Model.
- Groundwater System Model.

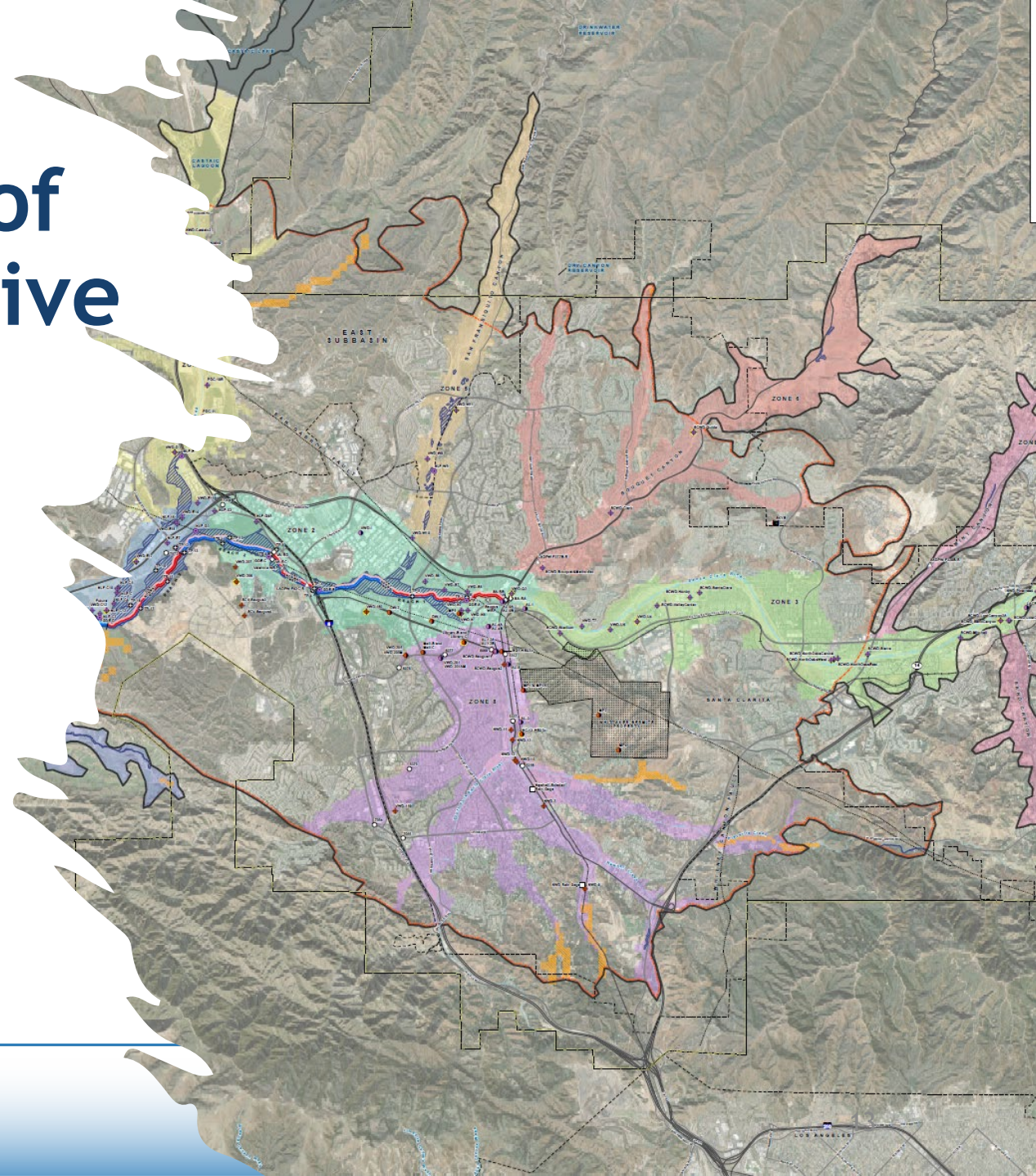


# SCV Water Multi-Model Toolset

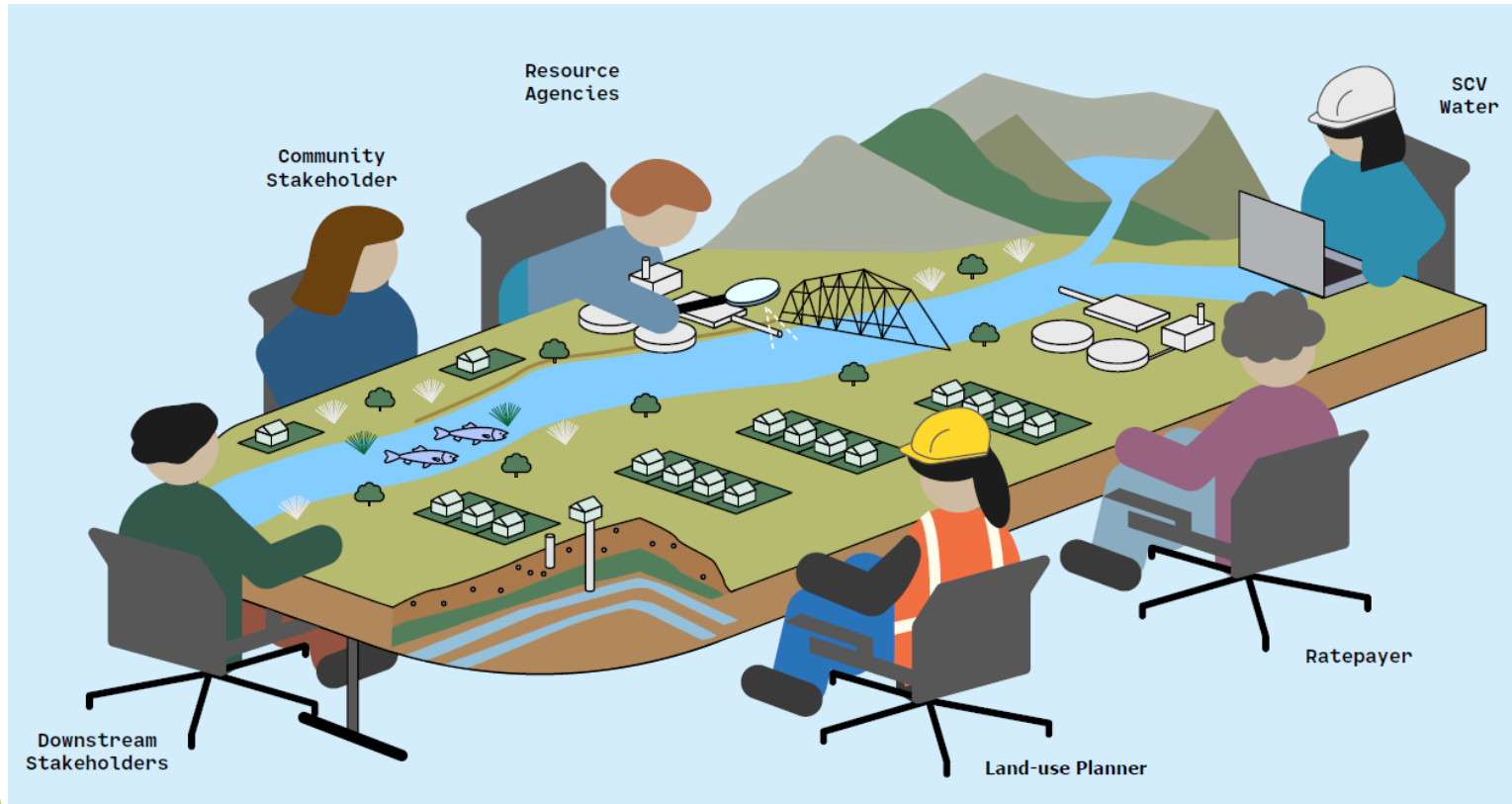


# Water Quality is an Integral Component of the Resilience Initiative

- Salt and Nutrient Plan
- Groundwater Contaminant Modeling
- Review of existing water quality data and modeling efforts to understand how water quality conditions, particularly relating to groundwater, can be incorporated into planning and development.



# Stakeholder-Driven Initiative



1. Board Check-ins
2. Technical Advisory Committee (TAC)
3. Community Stakeholders



# Draft Work Plan Summary

## Phase A: System Conditions

### Step 1: Review integrated multi-model toolset

- Review modeling systems to understand: data formats, limitations, and potential improvement
- *Kick-off Meeting*

### Step 2: Visualize and communicate baseline conditions

- Develop the visualization platform that integrates output from the multi-model toolset
- *Baseline Conditions Workshop*

### Step 3: Define uncertainties and future scenarios

- Parameterization of uncertainties in the multi-model system
- *Problem Formulation (PLRM) Workshop*
- *Board Check-in*

## Phase B: Vulnerability Assessment

### Step 4: Assess trade-offs

- Identify key water uses
- Define relationships between water uses
- Understand water use priorities

### Step 5: Identify performance indicators

- Identify model output needed and write scripts to calculate indicators
- *Performance Indicator Workshop*
- *Board Check-in*

### Step 6: Visualize and communicate future conditions

- Run current management decisions under future uncertainty scenarios and visualize
- *Future Conditions Workshop*

## Phase C: Adaptation and Planning

### Step 7: Identify and evaluate adaptation strategies

- *Adaptation Strategies Identification Workshop*
- Parameterize and run adaptation strategies in the multi-model toolset

### Step 8: Communicate adaptation strategies

- Extract and visualize results from adaptation strategies across future uncertainties
- *Adaptation Strategies*

### Step 9: Document and continuously develop the Resilience Initiative

- Document the Adaptive Resilience Plan
- Plan for adaptable monitoring
- *Resilience Initiative*

# The Watershed Resilience Initiative is Organized into Three Main Phases

## Phase A: System Conditions

### Step 1: Review integrated multi-model toolset

- Review modeling systems to understand: data formats, limitations, and potential improvement
- **Kick-off Meeting**

### Step 2: Visualize and communicate baseline conditions

- Develop the visualization platform that integrates output from the multi-model toolset
- **Baseline Conditions Workshop**

### Step 3: Define uncertainties and future scenarios

- Parameterization of uncertainties in the multi-model system
- **Problem Formulation (XLRM) Workshop**
- **Board Check-in**

## Phase B: Vulnerability Assessment

### Step 4: Assess trade-offs

- Identify key water uses
- Define relationships between water uses
- Understand water use priorities

### Step 5: Identify performance indicators

- Identify model output needed and write scripts to calculate indicators
- **Performance Indicator Workshop**
- **Board Check-in**

### Step 6: Visualize and communicate future conditions

- Run current management decisions under future uncertainty scenarios and visualize
- **Future Conditions Workshop**

## Phase C: Adaptation and Planning

### Step 7: Identify and evaluate adaptation strategies

- **Adaptation Strategies Identification Workshop**
- Parameterize and run adaptation strategies in the multi-model toolset

### Step 8: Communicate adaptation strategies

- Extract and visualize results from adaptation strategies across future uncertainties
- **Adaptation Strategies Evaluation Workshop**

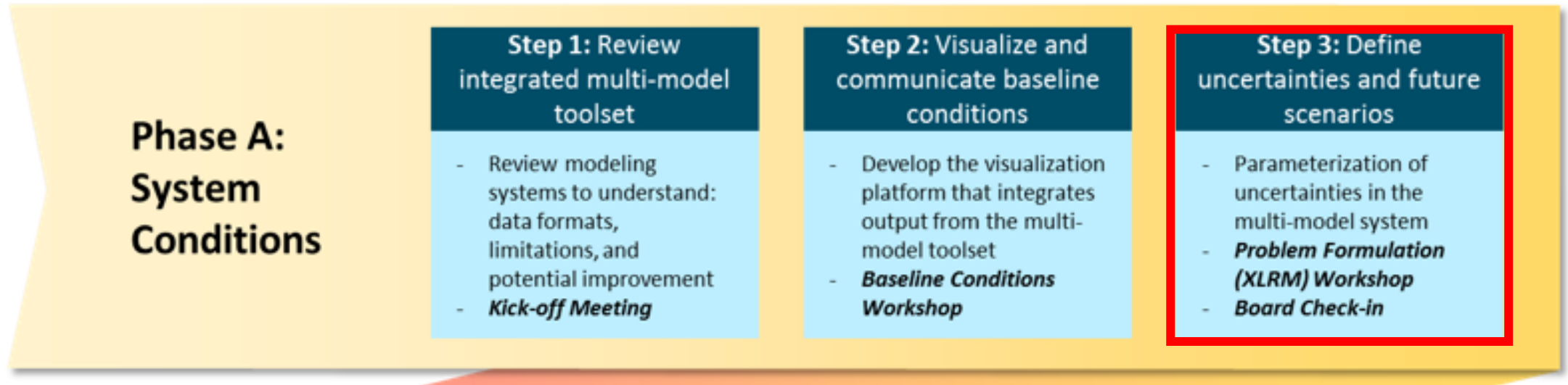
### Step 9: Document and continuously develop the Resilience Initiative

- Document the Adaptive Resilience Plan
- Plan for adaptable monitoring
- **Resilience Initiative Workshop**





# Phase A: System Conditions



- Better understand the elements that make up our current system and identify knowledge and data gaps that might guide future development objectives.
- All stakeholders develop a common knowledge of the current situation.
- This phase will provide us with tools and information to allow us to perform stress tests in the Vulnerability Assessment phase (Phase B) to understand how the behavior of our system deviates from the baseline under a range of different future conditions.



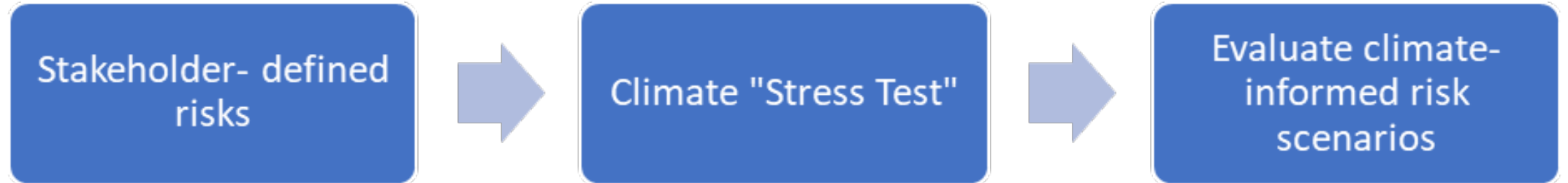
# Phase A: System Conditions

- The Resilience Initiative embraces future uncertainties such as:
  - Climate change projections
  - Contaminants of emerging concern
  - Evolving regulations
  - Population projections
- Three approaches generally employed in the water industry for long-term planning under uncertainty are:
  1. Traditional Decision Analysis
  2. Top-Down (Climate Science) Approach
  3. Bottom-Up (Decision Scaling) Approach



# Phase A: System Conditions

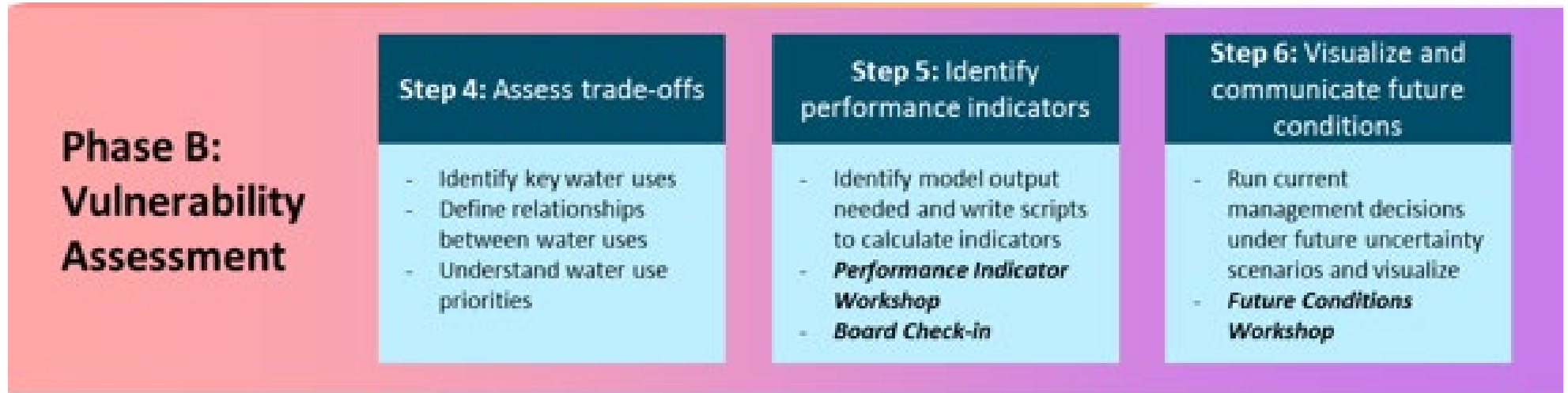
## Bottom-Up/Decision-Scaling Approach



- Essentially a stress-test approach - how far can a system be pushed under a range of future stressors.
- Allows the decision maker to understand system vulnerabilities and when they may occur.
- Original climate projections as well as projections of other uncertainties are then incorporated to assess the risk of unacceptable outcomes.
- Adaptation strategies are developed and evaluated based on the risk tolerance of the decision-makers.



# Phase B: Vulnerability Assessment



- In Phase B, stress tests will be conducted to determine the sensitivity of different water sectors to future stressors.



# Phase B: Vulnerability Assessment

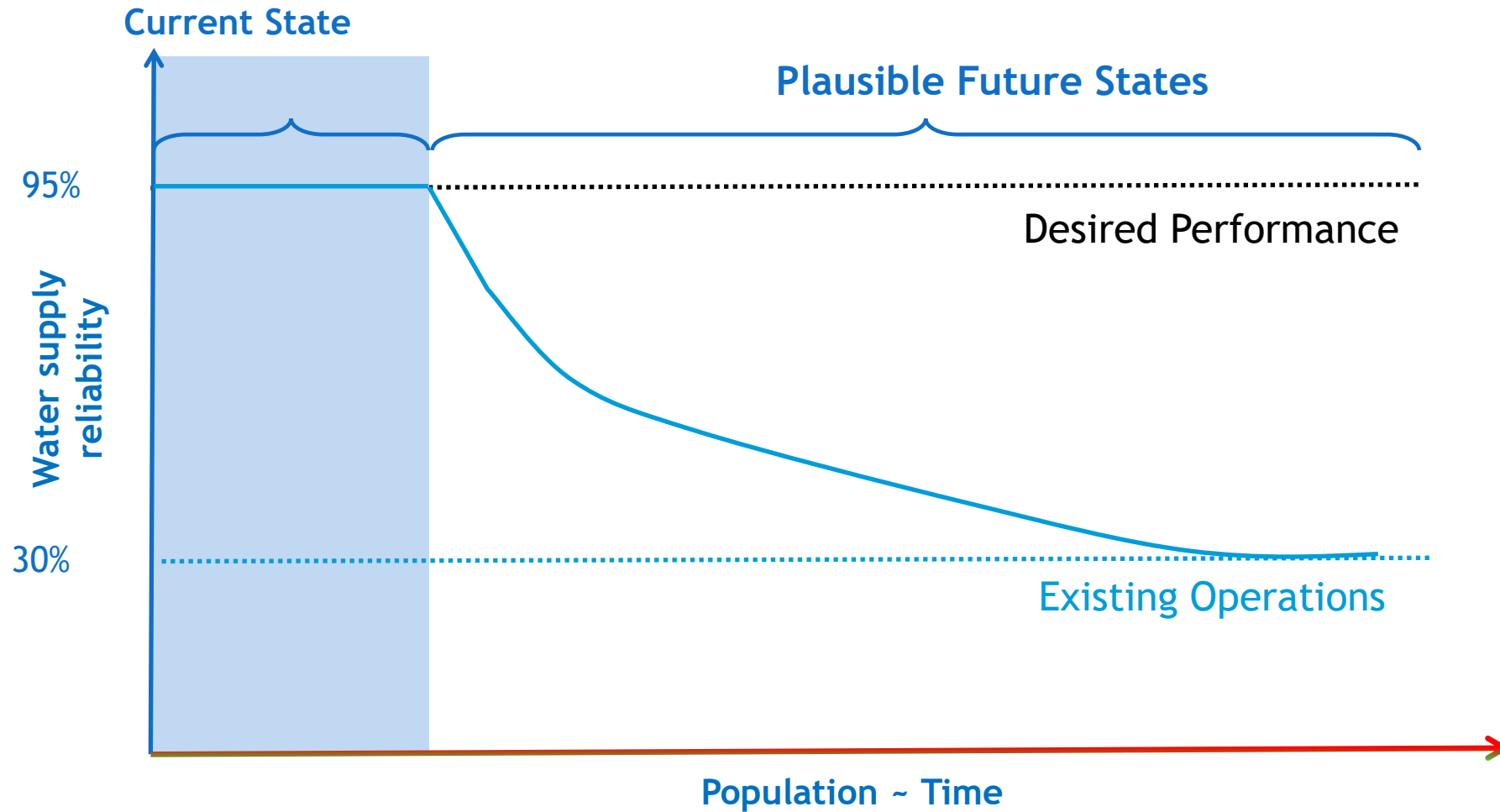
- Preliminary water sector trade-offs and performance indicators will be presented to the Board and TAC for input and revisions.

## Example of Multi Water Sector Performance

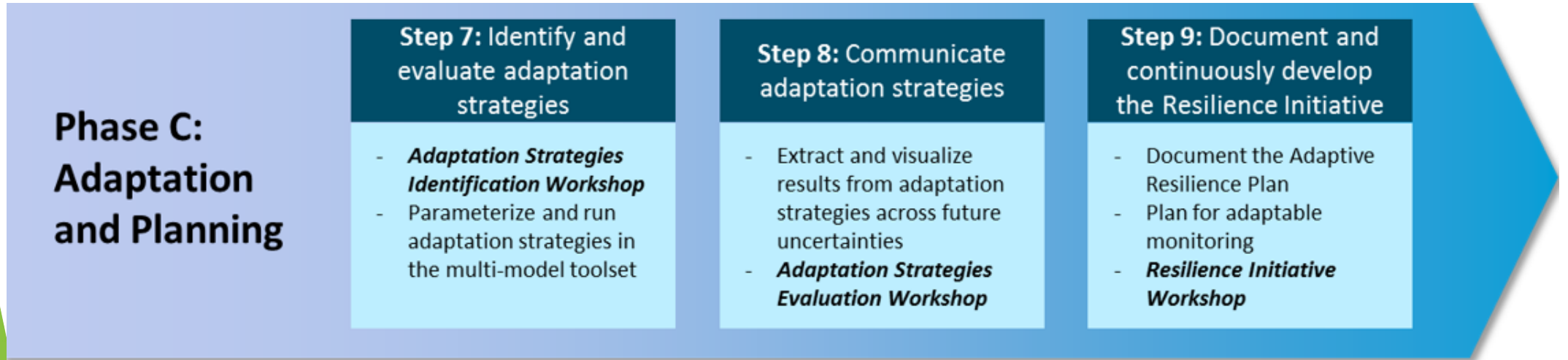
Groundwater	<ul style="list-style-type: none"><li>• <math>\Delta</math>GW Levels</li><li>• <math>\Delta</math>GW Storage</li></ul>
Ecosystem	<ul style="list-style-type: none"><li>• GDE Habitat/Sensitive Species (list) Habitat</li><li>• Riparian Habitat</li></ul>
Municipal Water Supply	<ul style="list-style-type: none"><li>• Supply Reliability</li><li>• Affordability</li></ul>
Stakeholders	<ul style="list-style-type: none"><li>• Downstream Users Water Availability</li><li>• Recreational Users Utility</li></ul>



# Phase B: Vulnerability Assessment



# Phase C: Adaptation and Planning



- A suite of adaptation strategies will be evaluated based on projects proposed in local planning documents, SCV Water strategic planning resources, and by regional stakeholders.
- A diversity of adaptation strategies will be selected that cover both policy, management, and infrastructure options.



# Phase C: Adaptation and Planning

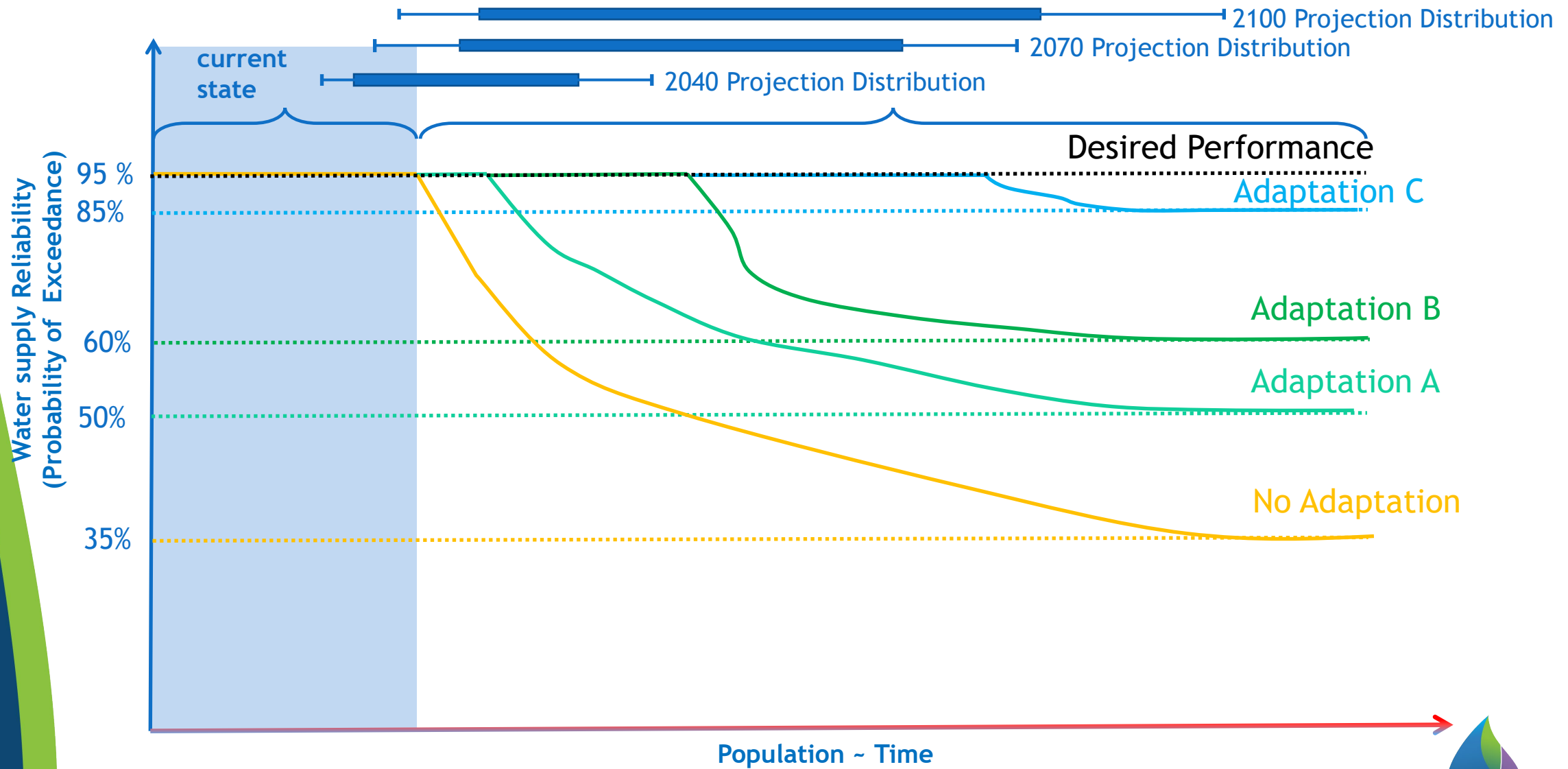
## Example of Adaptation Strategies

	Management Emphasis	Reoperation	New/Improved Infrastructure
Local Groundwater		✓	✓
Imported Water: - DCP - Sites Reservoir - Banking & Exchange Programs	✓	✓	✓
Demand	✓		
WRPs		✓	
GDEs	✓		
Regional Partnerships	✓	✓	✓



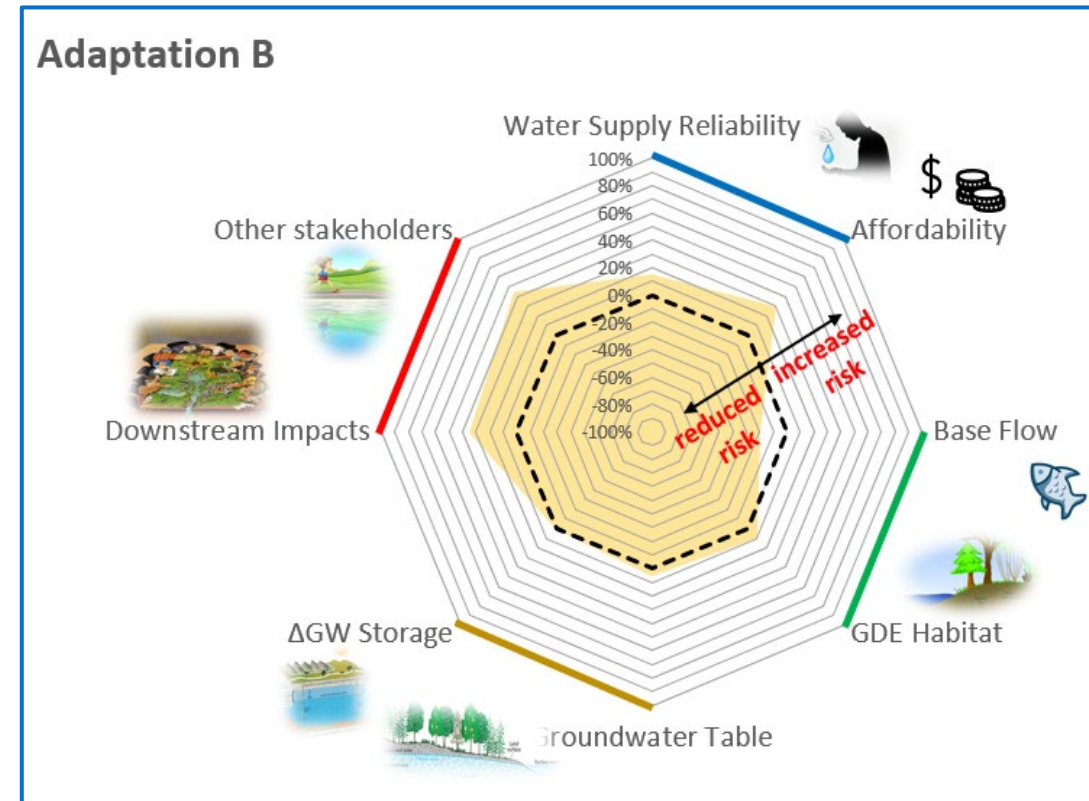
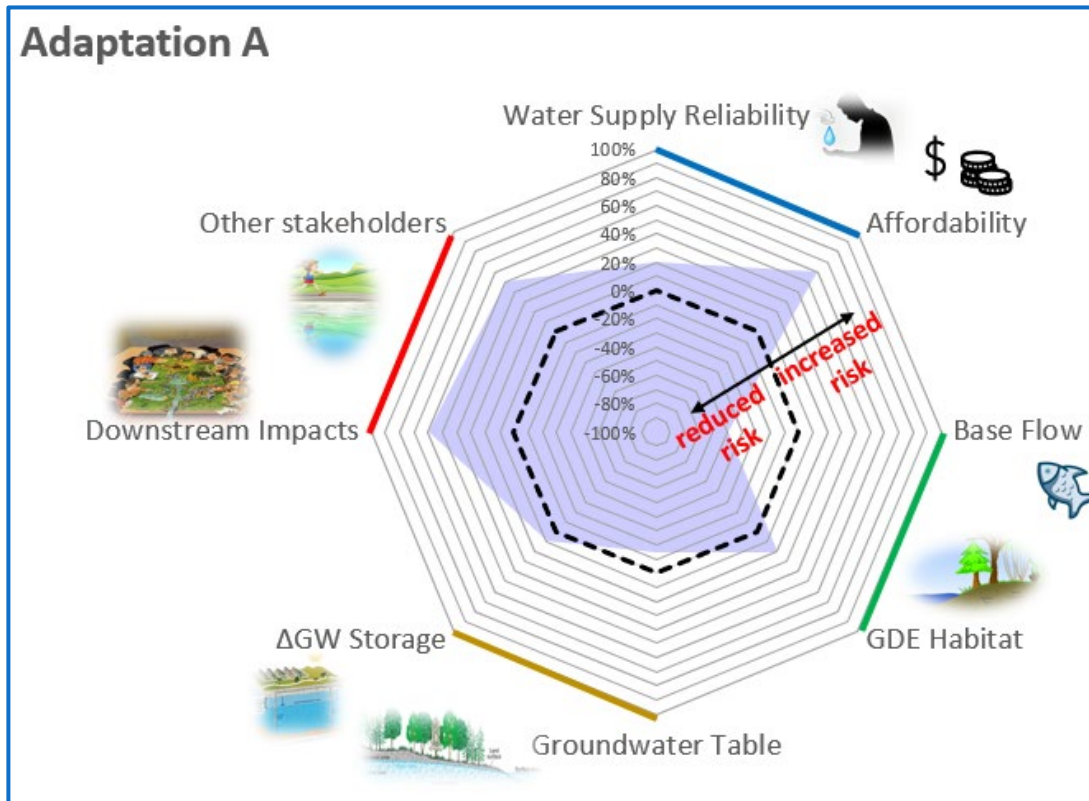


# Plausible Future States



# Phase C: Adaptation and Planning

## Sample Visualization of Tradeoffs between Adaptation Strategies



# Status of Work in Progress

		2022				2023				2024				2025			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Phase A: System Conditions	1. Review integrated multi-model toolset			B1													
	2. Visualize and communicate baseline conditions			B1			C1										
	3. Define uncertainties and future scenarios			B1			T1, B2		C2								
Phase B: Vulnerability Assessment	4. Assess trade-offs			B1													
	5. Identify performance indicators			B1					T2, B3								
	6. Visualize and communicate future conditions			B1						C3							
Phase C: Adaptation and Planning	7. Identify and evaluate adaptation strategies			B1						T3							
	8. Communicate adaptation strategies			B1								T4, B4	C4				
	9. Document and continuously develop the Resilience Initiative			B1											B5, C5		C6

# Status of Work in Progress

- Progress has been made on the California Environmental Flows Framework (CEFF) Process:
  - LIDAR has been flown and images are currently being processed.
  - Habitat Suitability Model is being developed.
- Draft Workplan that outlines the process that will be followed for the Water Resilience Initiative has been developed and shared with the pre-qualified consultants.



# Status of Work in Progress

## DRAFT Schedule

		2022				2023				2024				2025			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Phase A: System Conditions	1. Review integrated multi-model toolset			B1													
	2. Visualize and communicate baseline conditions			B1			C1										
	3. Define uncertainties and future scenarios			B1			T1, B2		C2								
Phase B: Vulnerability Assessment	4. Assess trade-offs			B1													
	5. Identify performance indicators			B1					T2, B3								
	6. Visualize and communicate future conditions			B1						C3							
Phase C: Adaptation and Planning	7. Identify and evaluate adaptation strategies			B1						T3							
	8. Communicate adaptation strategies			B1								T4, B4	C4				
	9. Document and continuously develop the Resilience Initiative			B1											B5, C5		C6

**B: Board Check-in**

**TAC: Technical Advisory Committee Workshop**

**C: Community Stakeholders Meeting**

# Moving Forward



# Moving Forward

- We will be issuing Request for Proposals (RFPs) in the next couple of months to advance several tasks that may include:
  - Evaluation of alternative groundwater operating profiles.
  - Groundwater monitoring and testing plans.
  - Data management.
  - Stakeholder engagement support.
- The agency is beginning to hire key staff to develop and manage the WRI and development of associated models.
  - Additional staff will be added to have internal expertise to run and further develop these models.
  - In the near term, the agency is relying on consultants to assist in the development of some of these models.

