

# Groundwater Sustainability Plan Implementation and Stewardship for the Future

July 9, 2024

Joint Meeting:

Napa County Groundwater Sustainability Agency  
and Technical Advisory Group





## Outline

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Napa Valley Subbasin: Historical Conditions and Transitions

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Climate Change and Need for Adaptive Management

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Enhancing Recharge, Pilot Sites, Workplans' Implementation & Outreach

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Discussion Questions

## Historical Napa River, 1885

**Historical Conditions:** *Drainage and flood control practices changed the landscape, including the river system, and impacted ecosystem habitat.*

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**Transition for the Future:** *Efforts underway since the late 1990s to restore connectivity and function. Investment in sustainable resources for the future requires cultural, social, and institutional changes.*

Napa Valley and River, 1885, by Manuel Valencia

**Incised**

**Plan**

**Implement**

**Restore**

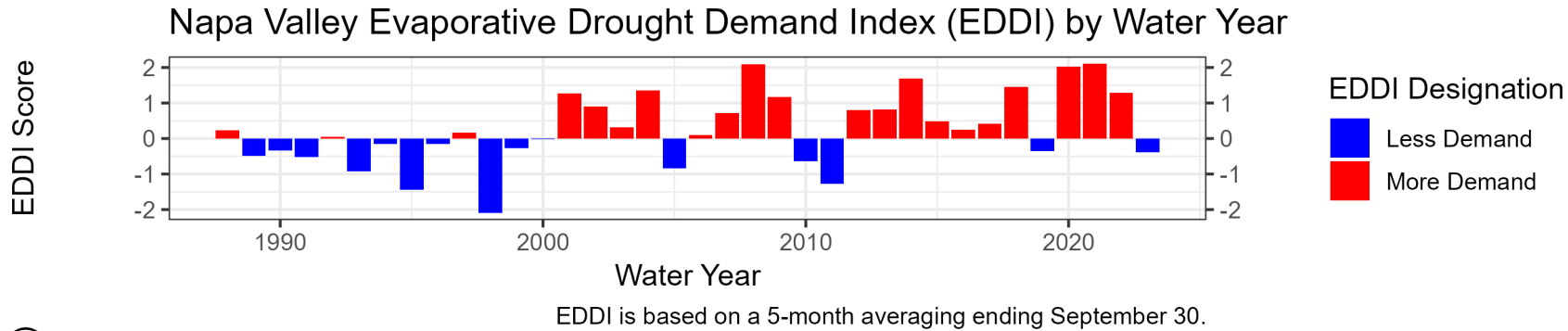


# Climate Change and Need for Adaptive Management

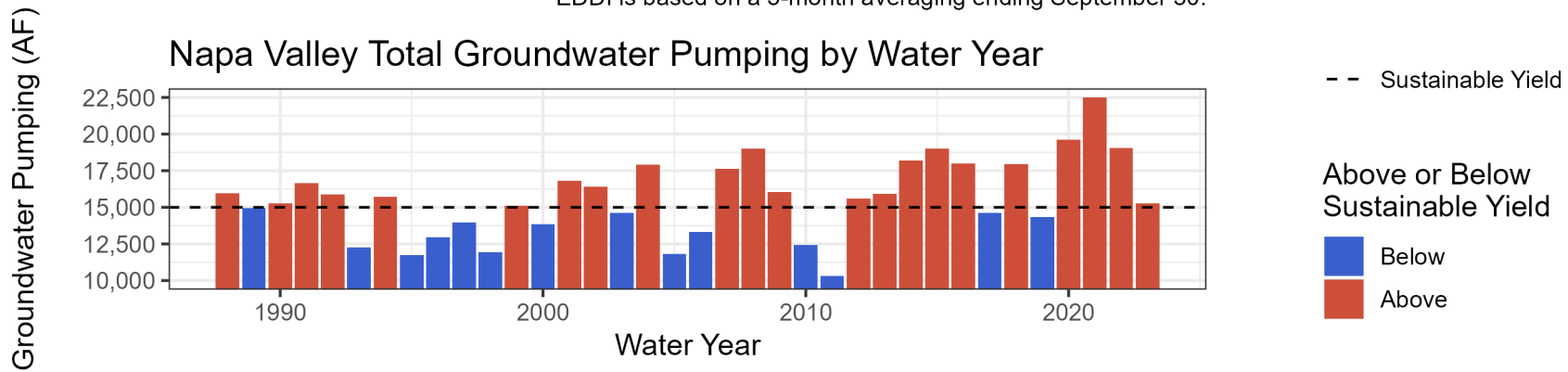
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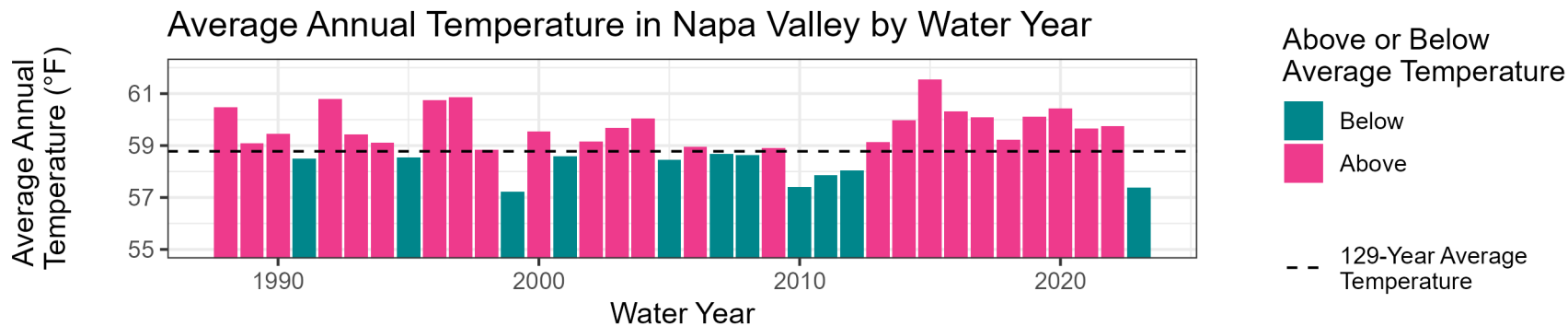
# Climate Change Observed: Napa Valley Evaporative Drought Demand Index, Pumping, and Temperature (1988-2023)



**Since 2012,  
Drier**

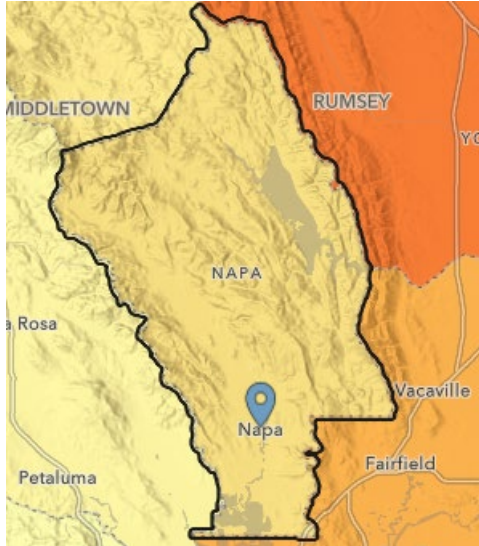


**Since 2012,  
Increase in  
Pumping**

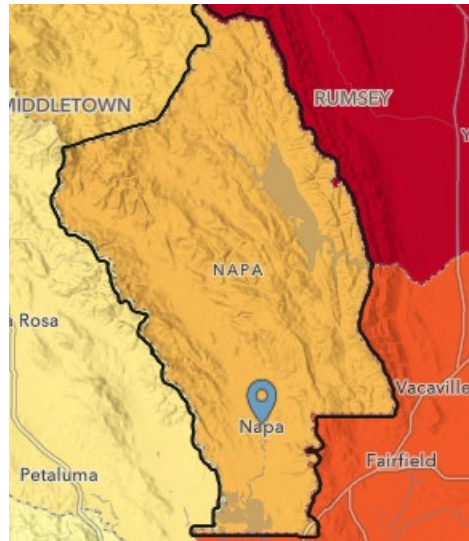


**Since 2012,  
Increase Avg.  
Annl. Temp**

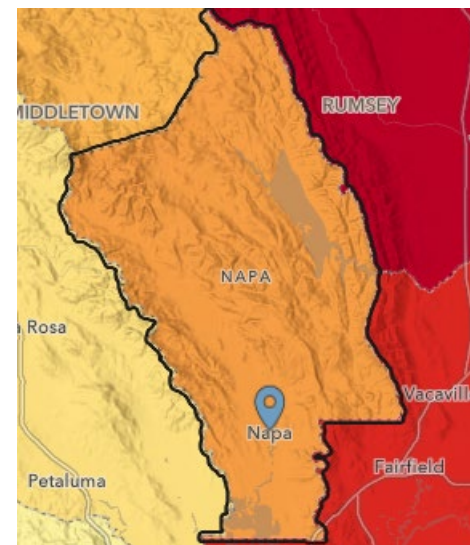
# Napa Climate Projections: Drought, Annual Days >100°F



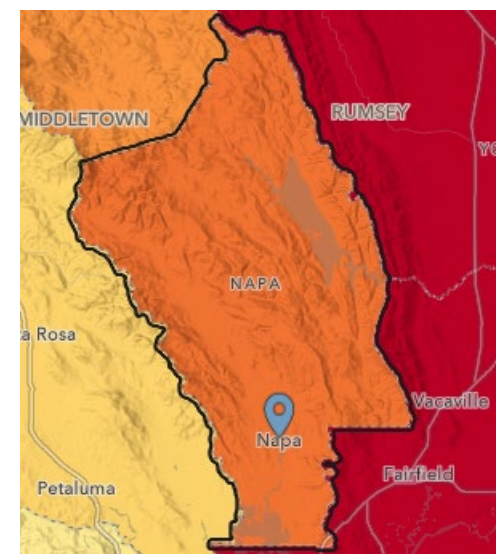
**Modeled History**  
**1976-2005**  
**4.8 days**



**Early Century**  
**2015-2044**  
**10.0 days**



**Mid Century**  
**2035-2064**  
**13.8 days**

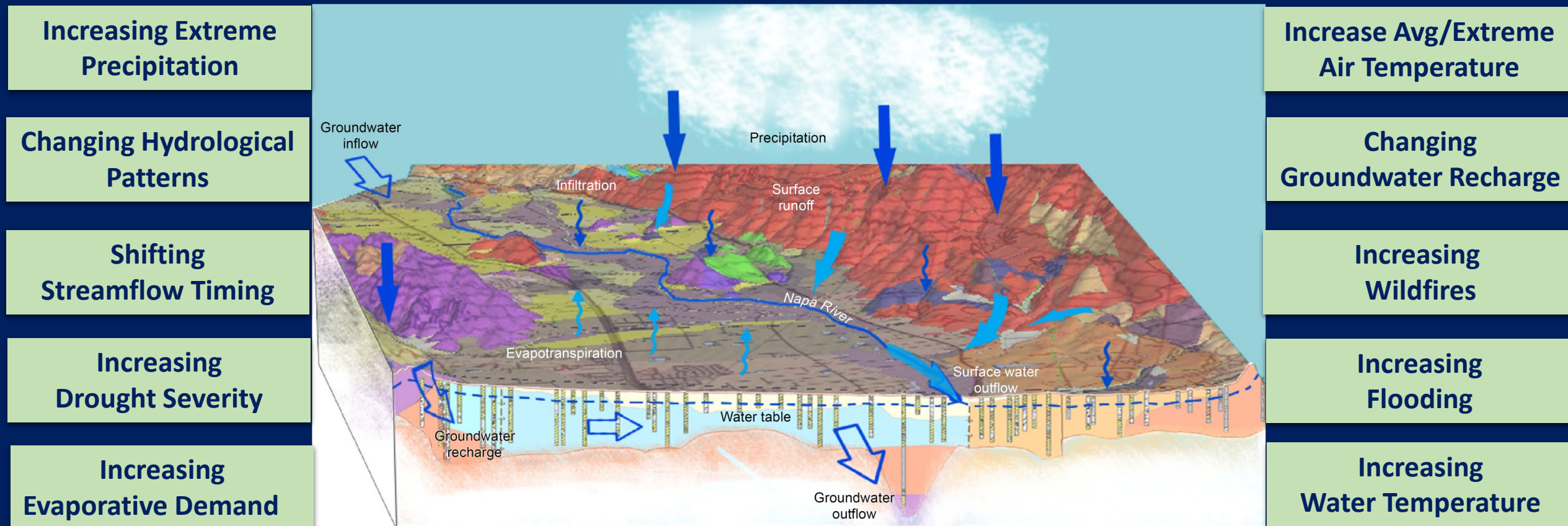


**Late Century**  
**2070-2099**  
**18.6 days**

**Future Projection: Nearly 4X More Annual Days >100°F**

# Global, State and Local Climate Urgency

*Historically, we could anticipate cycles of wetter and drier conditions.  
We can no longer rely on such cycles; there is no “new normal”.*



California Water Plan Update 2023 Theme: Adapted to Napa River Watershed

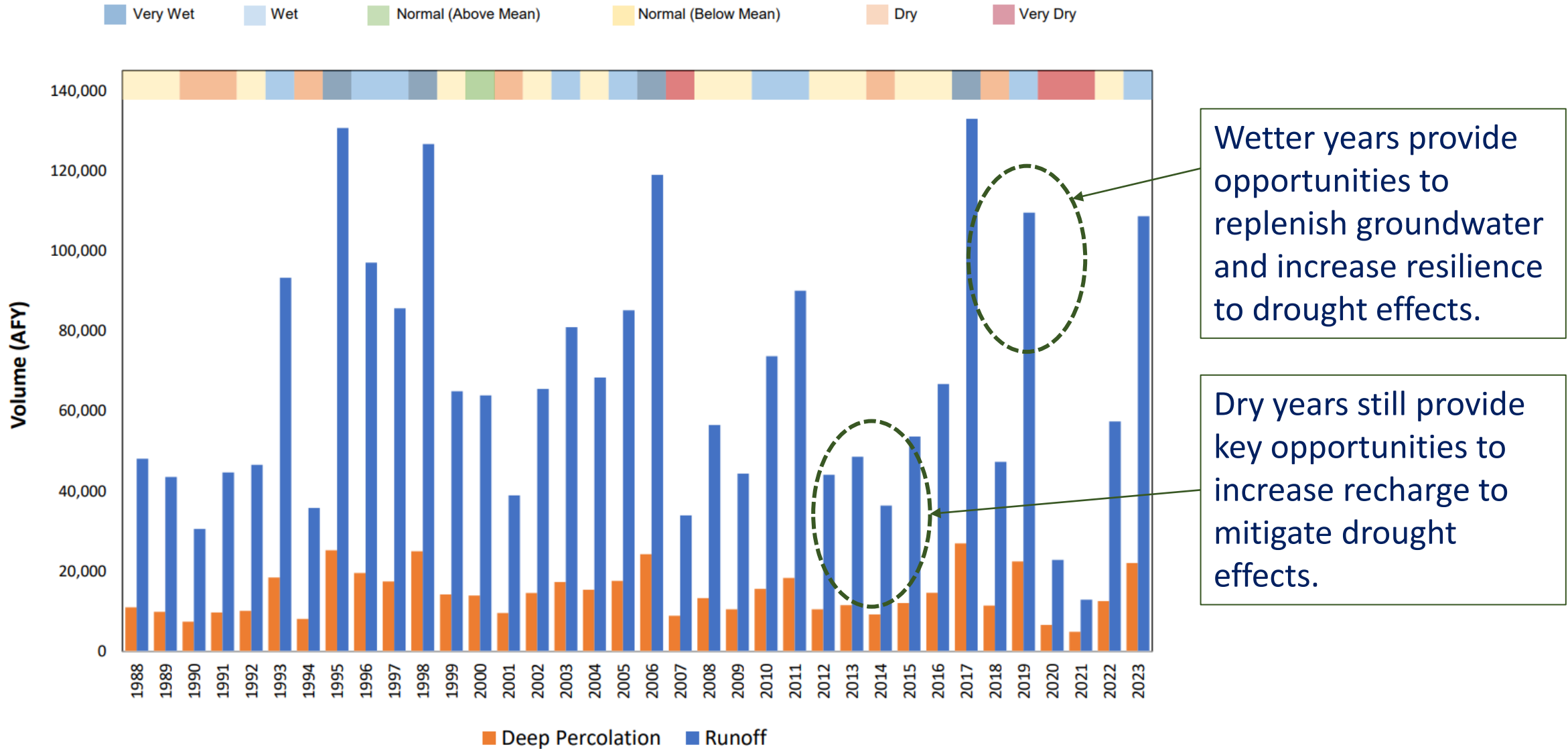
# Enhancing Recharge, Pilot Sites, Workplans' Implementation, and Outreach

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# Opportunities for Recharge: Retaining Runoff



# Recharge Opportunities: On-Farm Approaches Scaled Up for Basin Benefits



Cover Crops and Building  
Soil Health and Biodiversity



Vineyard-Specific BMPs:  
Conservation/Recharge;  
Dry Farming



SW Right: Winter Recharge



Tile Drainage: Capture and  
Store for In-Lieu Use



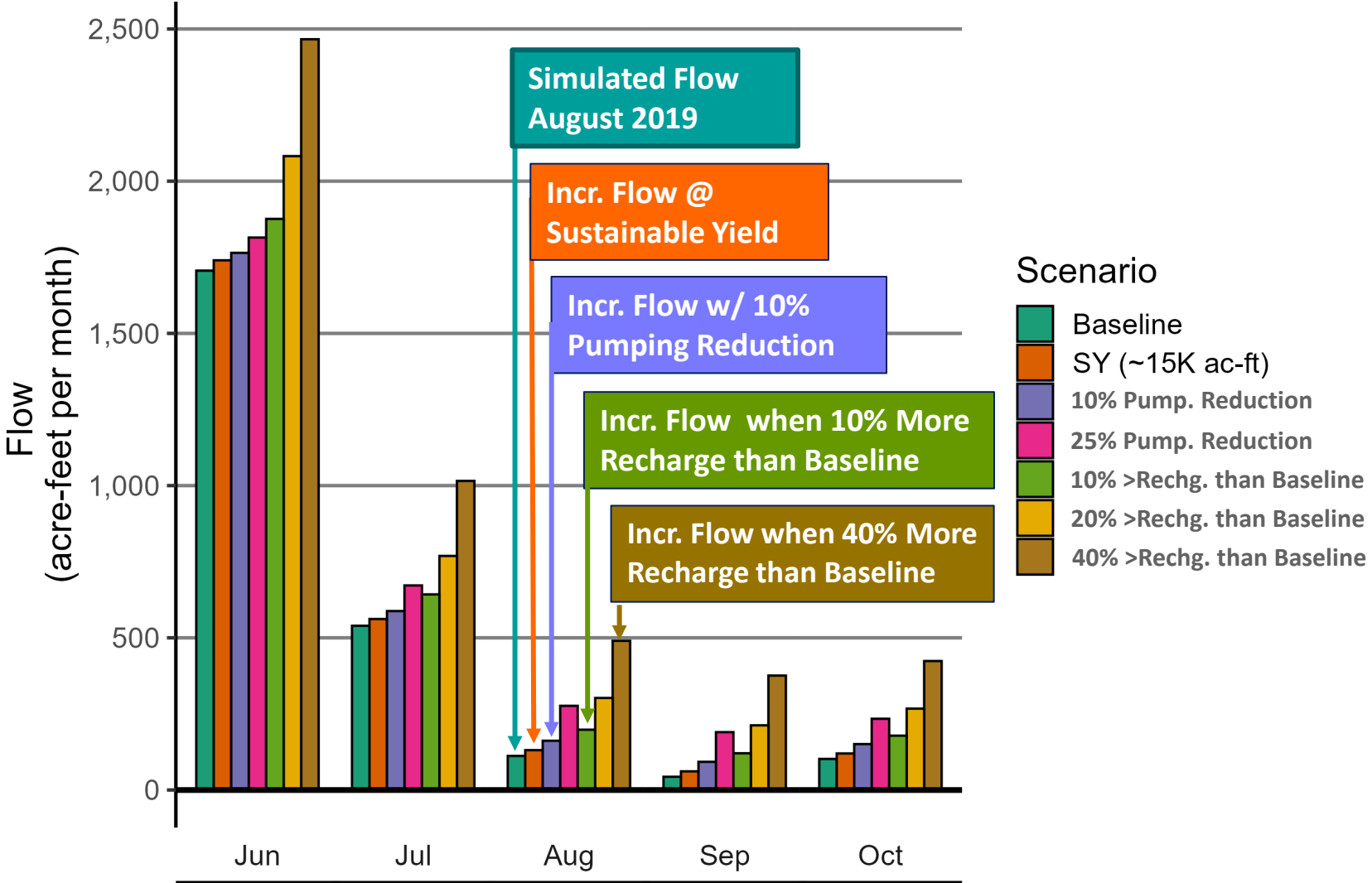
On-Site Ponds: Stormwater  
Storage, In-Lieu Use,  
Recharge

# Potential Benefits of Sustainability Actions: Pumping Reduction & Enhanced Recharge

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*Actions to Achieve 10% More Recharge Compared to Baseline Result in More Streamflow than 10% Pumping Reduction*

Sustainability Scenarios - WY 2019  
Evaluated at Napa River at Napa (Oak Knoll)

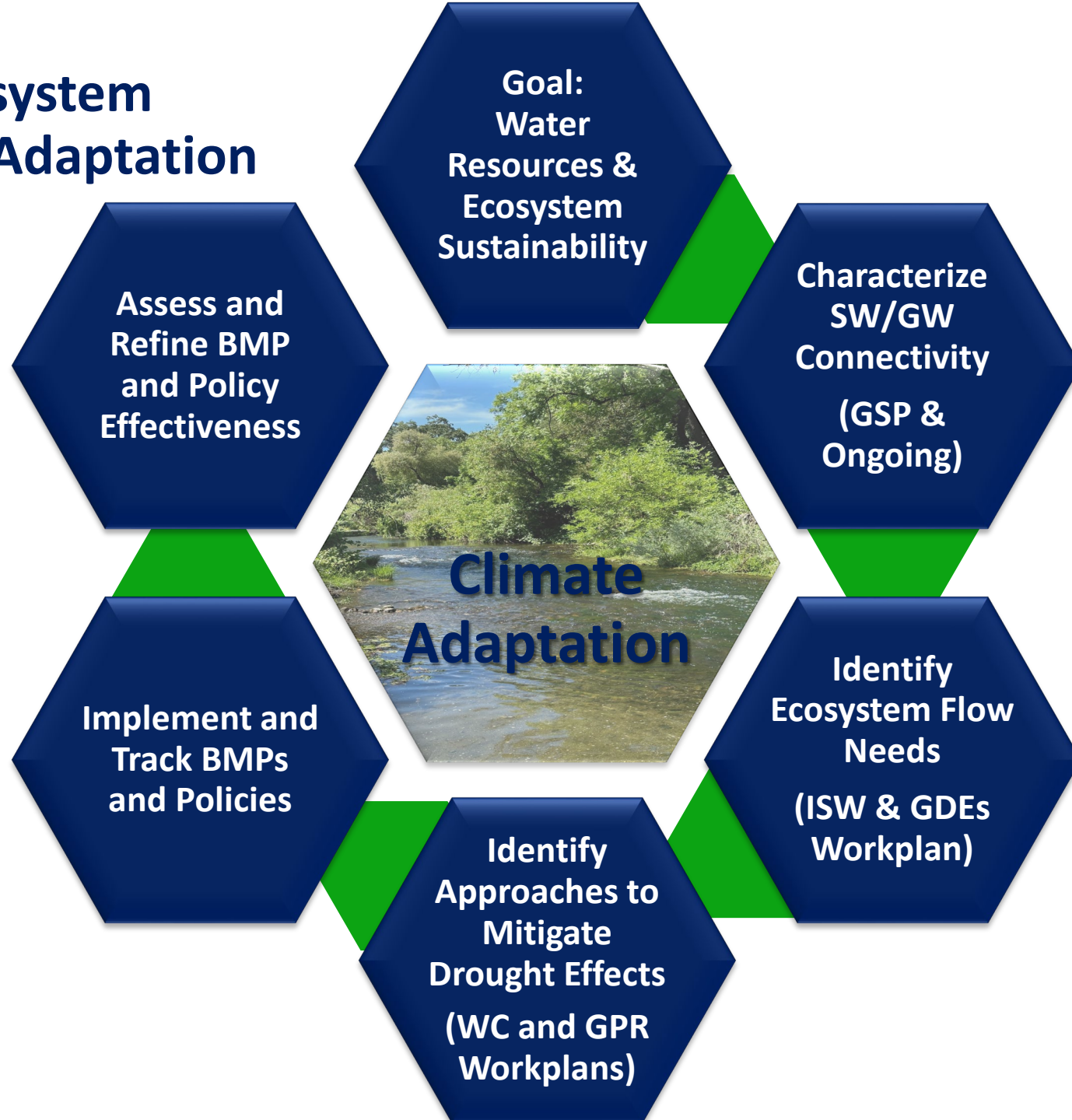


# Napa River Watershed Stewardship: Promoting Sustainability



# Baseflow and Ecosystem Drought: Climate Adaptation

- Climate change and drought complicate efforts to improve habitat and flows
- Sequential dry years intensify baseflow drought (reduction of groundwater discharge)
- The river system and watershed require ongoing “hydration” to mitigate ecosystem drought effects



Interconnected Surface Water and Groundwater Dependent Ecosystems Workplan: Napa Valley Subbasin



MARCH 2024



Napa County Water Conservation Workplan  
*A Guide for Vineyards, Wineries, and Other Water Users*



MARCH 2024



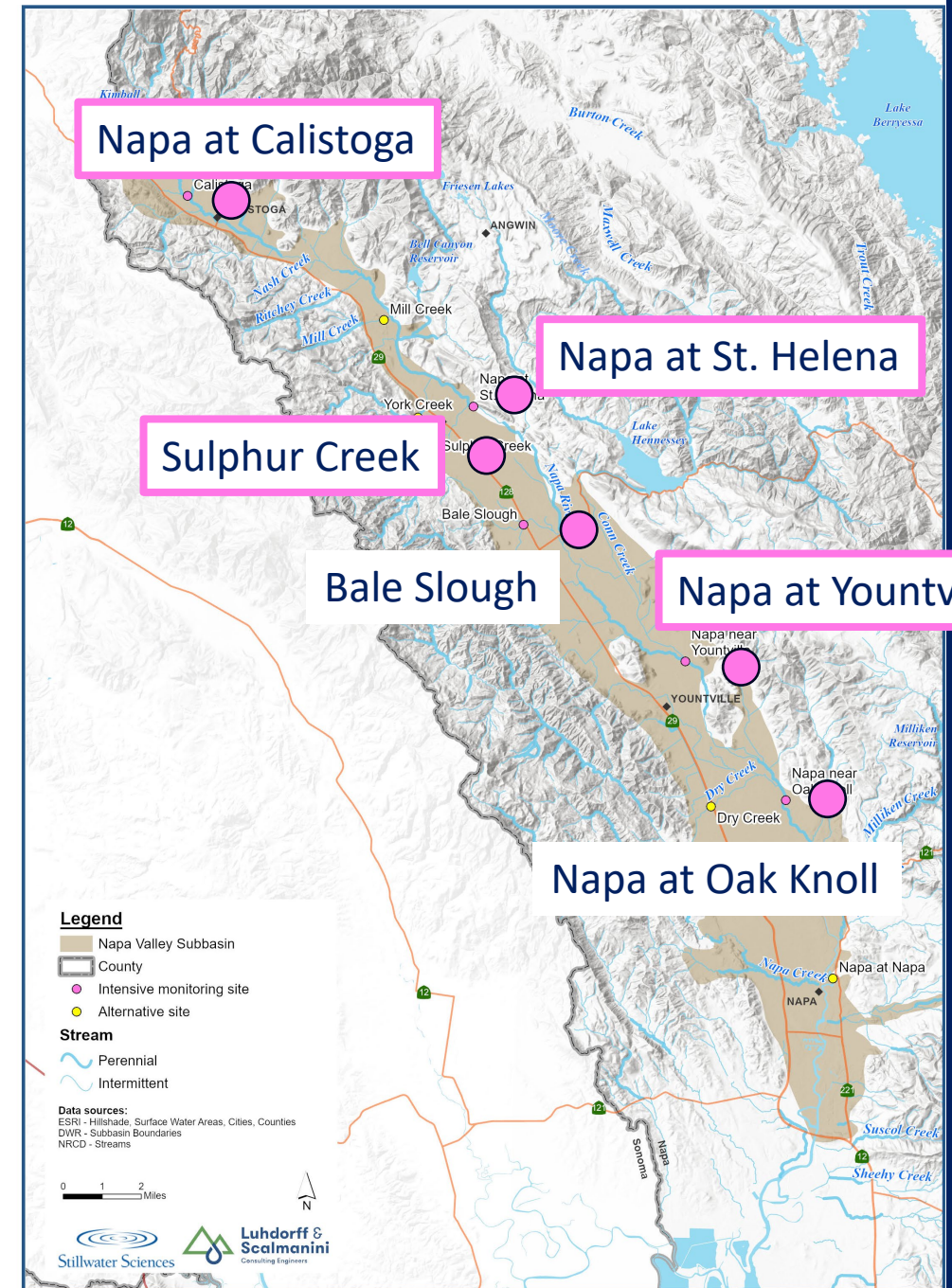
Groundwater Pumping Reduction Workplan: Napa Valley Subbasin



MARCH 2024

# ISW and GDEs Workplan Implementation

- Six intensive survey sites
- Stillwater conducted reconnaissance visit to four of the sites with LSCE, Napa RCD, and Napa County on May 1 to define site limits
- Field visit to 4 of the sites on May 14 with Stillwater Sciences, Napa County, Napa RCD, LSCE, and TAG member Matt Kondolf
- Implementation of California Environmental Flows Framework (CEFF)



# 2024 Monitoring

## LSCE

Add stage recorders at new well sites and Calistoga

## RCD planned summer 2024

Dissolved oxygen and temperature monitoring

Flow connectivity monitoring

Assess fish habitat

Fish surveys

## Stillwater

Conducted amphibian surveys at 4 of 6 sites

GDE health surveys in late summer

California freshwater shrimp surveys (Calistoga reach)



# ISW and GDEs Workplan Implementation

- Observed foothill yellow-legged frog tadpoles and subadults in Sulphur Creek and tadpoles and eggs at Napa at St. Helena
- Observed a steelhead redd at Calistoga site
- Northwestern pond turtle basking at Yountville and St. Helena



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# 2025 Surveys

## **RCD**

Dissolved oxygen and temperature monitoring

Flow connectivity monitoring

Assess fish habitat

Fish surveys

## **Stillwater**

Special status plants (spring)

Vegetation surveys (summer 2025)

Birds (spring)

Amphibian surveys (spring)





# Pause for Questions

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# Water Conservation and Groundwater Pumping Reduction Workplans: Guiding Framework

- Focus on voluntary actions that achieve groundwater benefits for the Subbasin
- Assess the costs and benefits of alternative actions and focus on those that are most cost-effective
- Leverage existing programs and opportunities to generate value from a suite of voluntary actions
- Include adaptive management to adjust the program as data and sustainability indicators evolve

# Water Conservation and Groundwater Pumping Reduction Workplans: Overview



## Water Conservation Workplan

- “What water conservation options are available for Napa Subbasin water users?”



## Groundwater Pumping Reduction Workplan

- “How do we measure and achieve groundwater conservation in the Subbasin?”

# Water Conservation and Groundwater Pumping Reduction Workplans: Implementation

## Component 1: Education and Outreach

- Develop educational materials
- Build partnerships with local organizations
- Develop notification/messaging system

## Component 2: Voluntary Adoption

- Develop incentive program for technology/practice adoption
- Pilot a benchmarking program
- Develop a voluntary meter data and reporting program

## Component 3: Voluntary Certification

- Define minimum criteria (practices) for a certification program's members to receive a financial incentive
- Develop incentives for certification: initial and recurring

Adaptive management with annual and 5-year performance and outcomes reviews

# Water Conservation and Groundwater Pumping Reduction Workplans: Implementation Timeline

Expected Timeline of Implementation Plan Components						
Component / Activity	Q1 24	Q2 24	Q3 24	Q4 24	Q1 25	Q2 25
<b>Component 1: Education and Outreach</b>						
Educational Materials	X	X	X	X	X	X
Partnership-Building	X	X	X	X	X	X
Automated Messaging System		X	X	X	X	X
<b>Component 2: Voluntary Adoption</b>						
Incentive Program for Adoption		X	X	X	X	X
Benchmarking Program		X	X	X	X	X
Meter Data and Reporting Program		X	X	X	X	X
<b>Component 3: Voluntary Certification</b>						
Incentivize Certification		X	X	X	X	X
<b>Adaptive Management and Coordination with Other Programs</b>						
Review (X) and Coordination (*)	*	*	*	*	X	*

# Certification Programs

- Verified compliance with defined standards
  - Awareness through a label
- Example private benefits
  - Efficiency improvements
  - Regulatory compliance (LandSmart, Fish Friendly Farming)
  - Environmental, Social, and Governance (ESG) standards
  - Buyer specifications
  - Intrinsic value
  - Marketing and value-add
- Example public benefits
  - Water quality improvements
  - Water conservation
  - Air quality improvements
  - Soil health
  - Ecosystem and habitat improvements



# Certification Programs: Overview



	Napa Green	SIP Certified	Certified Sustainable Winery & Vineyard	Fish Friendly Farming
Vineyard/Winery Certification?	Yes/Yes	Yes/Yes	Yes/Yes	Yes/No
Napa Acres Certified	6,000	-	15,500	40,000
Total Acres Certified	6,000	46,000	204,000	224,000
Napa Wineries Certified	90	-	44	-
Total Wineries Certified	90	5	171	-



# Certification Programs: Cost



	Napa Green	SIP Certified	Certified Sustainable Winery & Vineyard	Fish Friendly Farming
Vineyard Certification Annual Cost	\$450 - \$3,100	\$500 - \$1,000	\$250 - \$2,500	\$2 per acre
Winery Certification Annual Cost	\$550 - \$3,850		\$300 - \$5,000	N/A
Third Party Audit Costs	\$750 - \$1,500 / \$1,350 - \$2,250	\$100 - \$2,000+	\$500 - \$2,000+	\$500
Notes	Abbreviated audit / integrated audit	Annual	Annual	5-year Audit

# Incentives: GPR Workplan Implementation

- Incentives are part of multiple GPR implementation components



**Benchmarking**



**Pilot Sites**



**Certification**



**Incentives**



**Education**



**Expanded  
Measurement**

# Incentives: Overview of Considerations



## Funding Sources

- Targeted grant programs (e.g., DWR LandFlex, DOC MLRP)
- Other grants (e.g., WaterSmart, NRCS, other state agencies)
- Ratepayers



## Financial Incentives for Participation

- What are the costs to implement the practice?
- What are up-front, and ongoing costs?
- What are private and public benefits of the practice/program?



## Other Considerations and Incentives

- Can we leverage other “stackable” funding sources?
- Other GSP costs
- Non-financial incentives?

# Incentives: Potential Types of Options

## Other

- Education
- Planning assistance
- Regulatory/compliance relief or assistance
- Funding assistance

## Financial

- Certification costs
- Irrigation improvement costs
- Management costs
- Fees

## Behavioral

- Benchmarking
- Notifications
- Other nudges

## Brand Awareness

- Industry leaders
- Recognition for “water stewardship”
- Similar marketing initiatives

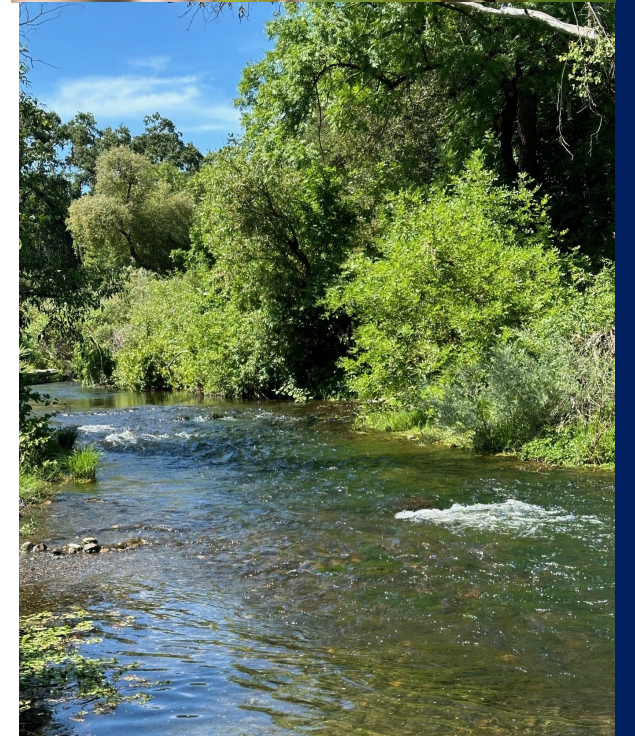
# Next Steps

Continue to implement the GPR Workplan!

- Certification
- Incentives
- Education and outreach
- Benchmarking
- Pilot Sites
- Measurement

# Outreach and Path to Sustainable Future: Conservation as a Napa Way of Life

- ***Napa stewardship vision***
  - Everyone shares responsibility for watershed sustainability
- ***Public awareness: uncertain times and changing climate require adaptation, innovation, and new approaches***
  - There is no “new normal”
- ***Vineyards and wineries: shift towards holistic watershed conservation and investments for the future***
  - Rebuilding natural resource connections, including soil health, biodiversity, ecosystem habitat, and resilient vineyards
- ***Promoting nature-based solutions for a more sustainable future***
  - Rehydrating the watershed, restoring natural function, adapting to climate change, reducing drought vulnerability



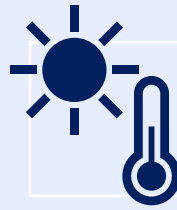
# Discussion Questions

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# Discussion Questions

- Since the late 1990s, the County and stakeholders have been engaged in stewardship activities that seek to restore the river system and protect future natural resources
- Drier/hotter conditions and extreme weather events are creating concerns about fire and flood risk, industry viability, and ecosystem health
- Climate change considerations are being addressed in many County programs
- Stewardship practices to date are insufficient to deal with projected climate change effects



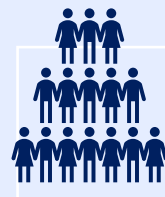
What kinds of coordination between County climate-related programs would be beneficial?



Would recognition of stewardship influencers help accelerate broader implementation of practices? How might these influencers be acknowledged?



What types of incentives would be helpful to accelerate implementation of additional BMPs?



What types of outreach would help raise public awareness of the importance of everyone sharing responsibility for watershed sustainability?





# Thank You

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