Napa County

1195 THIRD STREET
SUITE 310
NAPA, CA 94559

Agenda

Thursday, May 9, 2024
1:30 PM

Board of Supervisors Chambers
1195 Third Street, Third Floor

Groundwater Technical Advisory Group

Albert Filipelli (Chair)
Monica Cooper (Vice-Chair)
Julie Chambon
Miguel Garcia
Mathias Kondolf

Brian D. Bordona, Secretary- Director
Chris Apallas, County Counsel
Jamison Crosby, Natural Resources, Planning Manager
Brendan McGovern, Natural Resources, Planner III
Alexandria Quackenbush, Meeting Clerk
Angie Ramirez-Vega, Meeting Clerk

How to Watch or Listen to the Napa County Groundwater Technical Advisory Group Meetings

The Napa County Groundwater Technical Advisory Group will continue to meet the 2nd Thursday of each month. There will be no regular meeting in July or October. July 9, 2024 will be a special-joint meeting of the GTAG & GSA.

The Groundwater Technical Advisory Group realizes that not all County residents have the same ways to stay engaged, so several alternatives are offered. Remote Zoom participation for members of the public is provided for convenience only. In the event that the Zoom connection malfunctions for any reason, the Groundwater Technical Advisory Group reserves the right to conduct the meeting without remote access.

Please watch or listen to the Groundwater Technical Advisory Group meeting in one of the following ways:

1. Attend in-person at the Board of Supervisors Chambers, 1195 Third Street, Napa, Third Floor.
2. Watch on Zoom using the attendee link: https://countyofnapa.zoom.us/j/89426085834. Make sure the browser is up-to-date.
3. Listen on Zoom by calling 1-669-900-6833 (Meeting ID: 894-2608-5834).

If you are unable to attend the meeting in person and wish to submit a general public comment or a comment on a specific agenda item, please do the following:

1. Email your comment to meetingclerk@countyofnapa.org. Emails will not be read aloud but will still become part of the public record and shared with the Groundwater Technical Advisory Group.
2. Use the Zoom attendee link: https://Countyofnapa.zoom.us/j/89426085834. Make sure the browser is up-to-date. When the Chair calls for the item on which you wish to speak, click "raise hand". Please limit your remarks to three minutes.
3. Call the Zoom phone number: 1-669-900-6833. (Meeting ID: 894-2608-5834). When the Chair calls for the item on which you wish to speak, press *9 to raise hand. Please limit your remarks to three minutes.

   Please note that phone numbers in their entirety will be visible online while speakers are speaking

For more information, please contact us via telephone at (707) 253-4417 or send an email to meetingclerk@countyofnapa.org.

ANY MEMBER OF THE AUDIENCE DESIRING TO ADDRESS THE COMMITTEE:

ON A MATTER ON THE AGENDA
Please proceed to the podium when the matter is called and, after receiving recognition from the Chair, give your name and your comments or questions. In order that all interested parties have an opportunity to speak, please be brief and limit your comments to the specific subject under discussion. Time limitations shall be at the discretion of the Chair or Committee, but is generally limited to three minutes.

ON A MATTER NOT ON THE AGENDA
Public comment is an opportunity for members of the public to speak on items that are not on the agenda but are within the subject matter jurisdiction of the Committee. Public comment is limited to three minutes per speaker, subject to the discretion of the Chair. Comments should be brief and focused, and speakers should be respectful of one another who may have different opinions. Please remember this meeting is being recorded and broadcasted live via ZOOM. The County will not tolerate profanity, hate speech, abusive language, or threats. Also, while public input is appreciated, the Brown Act prohibits the Committee from taking any action on matters raised during public comment that are not on the agenda.

1. CALL TO ORDER; ROLL CALL

2. PUBLIC COMMENTS AND RECOMMENDATIONS
(The Committee invites comments and recommendations from the public concerning issues relevant to the charge of the Technical Advisory Group. Anyone who wishes to speak to the Technical Advisory Group on such a matter, if it is not on the agenda, may do so at this time. At the discretion of the Chair, individuals will be limited to a three-minute presentation. No action will be taken by the Technical Advisory Group as a result of any item presented at this time.)

3. APPROVAL OF MINUTES

A The Secretary of the committee requests approval of the minutes from the April 11, 2024 TAG meeting. **24-774**

Attachments: Draft April 11, 2024 Meeting Minutes

4. AGENDA REVIEW

5. ADMINISTRATIVE ITEMS

A Technical Advisory Group (TAG) members will receive a presentation from Dr. Sarah Yarnell, Center for Watershed Sciences at UC Davis and a member of the technical team that developed the California Environmental Flows Framework (CEFF). CEFF, an environmental flows assessment, is being applied to the Napa River under the Interconnected Surface Water and Groundwater Dependent Ecosystems Workplan to understand existing aquatic and terrestrial species health and determine what flows may be necessary to sustain these species. **24-796**

Attachments: CEFF Case Studies Napa TAG, May 2024

B Technical Advisory Group (TAG) members will receive a presentation from Lauren Pesch, Project Manager, on the Dry Farming Advisory Group, a California Sustainable Winegrowing Alliance grant received from the California Department of Water Resources, to explore opportunities to produce educational resources for dry farming practices. **24-792**

Attachments: Dry Farming Project Overview PowerPoint, May 9 2024

C Provide an update on the start of the Water Year 2024 with a focus on change in storage and future climate impacts. **24-811**

Attachments: TAG Spring Groundwater Current Conditions, May 9 2024

6. FUTURE AGENDA ITEMS

7. ADJOURNMENT

I HEREBY CERTIFY THAT THE AGENDA FOR THE ABOVE STATED MEETING WAS POSTED AT A LOCATION FREELY ACCESSIBLE TO MEMBERS OF THE PUBLIC AT THE NAPA COUNTY ADMINISTRATIVE BUILDING, 1195 THIRD STREET, NAPA, CALIFORNIA ON 5/3/2024 BY 10:30 AM. A HARDCOPY SIGNED VERSION OF THE CERTIFICATE IS ON FILE WITH THE COMMITTEE CLERK AND AVAILABLE FOR PUBLIC INSPECTION.

ALEXANDRIA QUACKENBUSH(By e-signature)
Alexandria Quackenbush, Committee Clerk

Napa County

Board Agenda Letter

1195 THIRD STREET
SUITE 310
NAPA, CA 94559
www.countyofnapa.org

Main: (707) 253-4580

Groundwater Technical Advisory Group **Agenda Date:** 5/9/2024 **File ID #:** 24-774

TO: Technical Advisory Group for the Napa County Groundwater Sustainability Agency

FROM: Brian Bordona - Director of Planning, Building and Environmental Services

REPORT BY: Jamison Crosby, Natural Resources Conservation Manager

SUBJECT: TAG Minutes from April 11, 2024

RECOMMENDATION

The Secretary of the committee requests approval of the minutes from the April 11, 2024 TAG meeting.

EXECUTIVE SUMMARY

The TAG held its eighteenth meeting on April 11, 2024. Minutes were prepared and are ready for the committee's approval.

ENVIRONMENTAL IMPACT

ENVIRONMENTAL DETERMINATION: The proposed action is not a project as defined by 14 California Code of Regulations 15378 (State CEQA Guidelines) and therefore CEQA is not applicable.

BACKGROUND AND DISCUSSION

The TAG held its eighteenth meeting on April 11, 2024. Minutes were prepared and are ready for the committee's approval.

DRAFT Meeting Minutes

Technical Advisory Group

Julie Chambon
Monica Cooper *(Vice-Chair)*
Albert Filipelli *(Chair)*
Miguel Garcia
Mathias Kondolf

Brian D. Bordona, Director
Chris Apallas, County Counsel
Jamison Crosby, Natural Resources Manager
Brendan McGovern, Planner III
Alexandria Quackenbush, Meeting Clerk

Thursday, April 11, 2024	**1:30 PM**	**Board of Supervisors Chambers 1195 Third Street, Third Floor**

1. CALL TO ORDER / ROLL CALL

Group Members Present: Chair Albert Filipelli, Julie Chambon, Matt Kondolf, Monica Cooper, Miguel Garcia.
Group Members Excused: None.
Staff Present: Brendan McGovern, Jamison Crosby, Alexandria Quackenbush.

2. PUBLIC COMMENTS AND RECOMMENDATIONS

(1) Public comments was heard.

3. APPROVAL OF MINUTES

March 14, 2024, minutes were approved as presented.
MK-AF-MC-JC-MG

4. AGENDA REVIEW

Jamison Crosby provided the agenda review.

5. ADMINISTRATIVE ITEMS

A. Technical Advisory Group (TAG) members will receive presentations from representatives of each of the four major vineyard and winery certification programs operating in Napa County, pose questions and provide feedback to staff and participants. Duncan MadEwan, ERA Economics, Anna Britain, Napa Green, Jodi Wilson, California Sustainable Winegrowing Alliance (CSWA), Beth Vukmanic, SIP Certified, and Laurel Marcus, Fish Friendly Farming gave presentations with discussion. No action required.

6. FUTURE AGENDA ITEMS

None.

7. ADJOURNMENT

Meeting adjourned to May 9, 2024, regular meeting.

_____

ALBERT FILLIPELLI, Chairperson
ATTEST: Jamison Crosby, Natural Resources Manager

_____

ALEXANDRIA QUACKENBUSH, Clerk of the Committee

Key

Vote: MC = Monica Cooper; AF = Albert Filipelli; MK = Mathias Kondolf; JC = Julie Chambon; MG = Miguel Garcia.

The maker of the motion and second are reflected respectively in the order of the recorded vote.

Notations under vote: N = No; A = Abstain; X = Excused

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Groundwater Technical Advisory Group **Agenda Date:** 5/9/2024 **File ID #:** 24-796

TO: Technical Advisory Group for the Napa County Groundwater Sustainability Agency

FROM: Brian D. Bordona - Director of Planning, Building and Environmental Services

REPORT BY: Jamison Crosby, Natural Resources Conservation Manager

SUBJECT: California Environmental Flows Framework application within the Napa River Watershed Presentation by Dr. Sarah Yarnell

RECOMMENDATION

Technical Advisory Group (TAG) members will receive a presentation from Dr. Sarah Yarnell, Center for Watershed Sciences at UC Davis and a member of the technical team that developed the California Environmental Flows Framework (CEFF). CEFF, an environmental flows assessment, is being applied to the Napa River under the Interconnected Surface Water and Groundwater Dependent Ecosystems Workplan to understand existing aquatic and terrestrial species health and determine what flows may be necessary to sustain these species.

BACKGROUND AND DISCUSSION

The California Environmental Flows Framework (CEFF) is a management approach that provides technical guidance to help managers efficiently develop scientifically defensible environmental flow recommendations that balance human and ecosystem needs for water. The purpose of CEFF is to support the development of ecological flow criteria, which are quantifiable metrics that describe the ranges of flows necessary to support the natural functions of healthy ecosystems. After the development of ecological flow criteria, environmental flow recommendations can be developed by managers to take human use and other water management objectives into consideration. Application of CEFF to the Napa River Watershed is underway in the Interconnected Surface Water and Groundwater Dependent Ecosystems Workplan (ISW and GDEs Workplan). Dr. Yarnell will speak to steps necessary to establish ecological flow criteria at the six intensive monitoring sites that emerged from the ISW/GDE Workplan development.

Procedure
Staff introduces.
Questions and answers with the TAG.
Public comments.

ENVIRONMENTAL IMPACT

ENVIRONMENTAL DETERMINATION: The proposed action is not a project as defined by 14 California Code of Regulations 15378 (State CEQA Guidelines) and therefore CEQA is not applicable.

SUPPORTING DOCUMENTS

A. CEFF PowerPoint Presentation by Dr. Sarah Yarnell, May 2024

Napa Valley and River, 1885, by Manuel Valencia. Collection of the Hearst Gallery, Saint Mary's College of California

CA Environmental Flows Framework: Importance of Groundwater and Nexus with SGMA

Sarah Yarnell, UC Davis

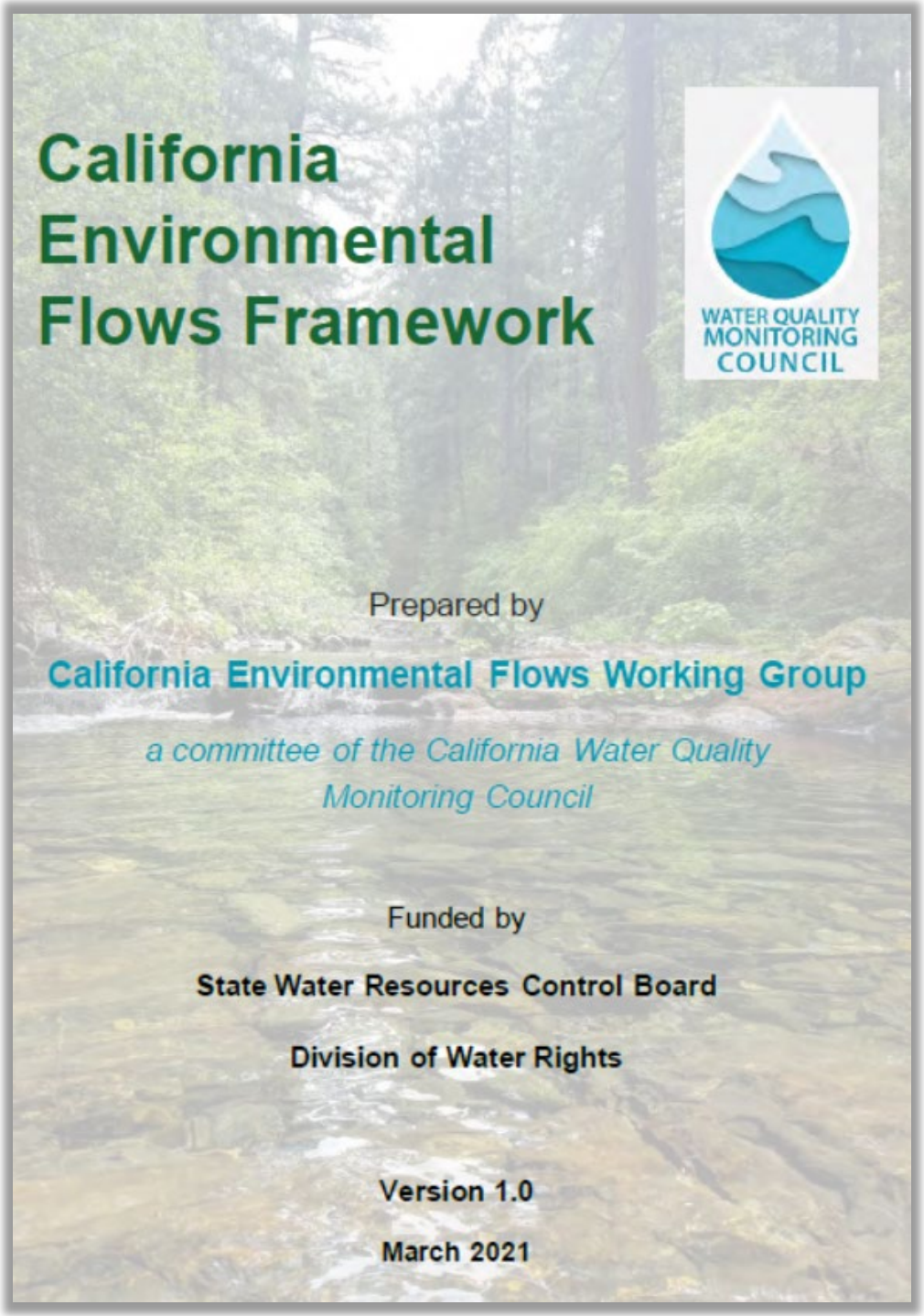
May 9, 2024

Napa County GSA TA

Topics

- Overview of California Environmental Flows Framework (CEFF)
- Nexus of CEFF with SGMA
- CEFF case studies
  - Aliso Creek (south Orange County)
  - Little Shasta & Cosumnes River
- Implementation and Adaptive Management

Napa River Napa River Ecological Preserve
Photo by Robin Grossinge



CEFF TECHNICAL TEAM

- CA Department of Fish and Wildlife
- State Water Resources Control Board
- Southern CA Coastal Water Research Project
- The Nature Conservancy
- Utah State University
- CalTrout
- University of California, Davis
- University of California, Berkeley

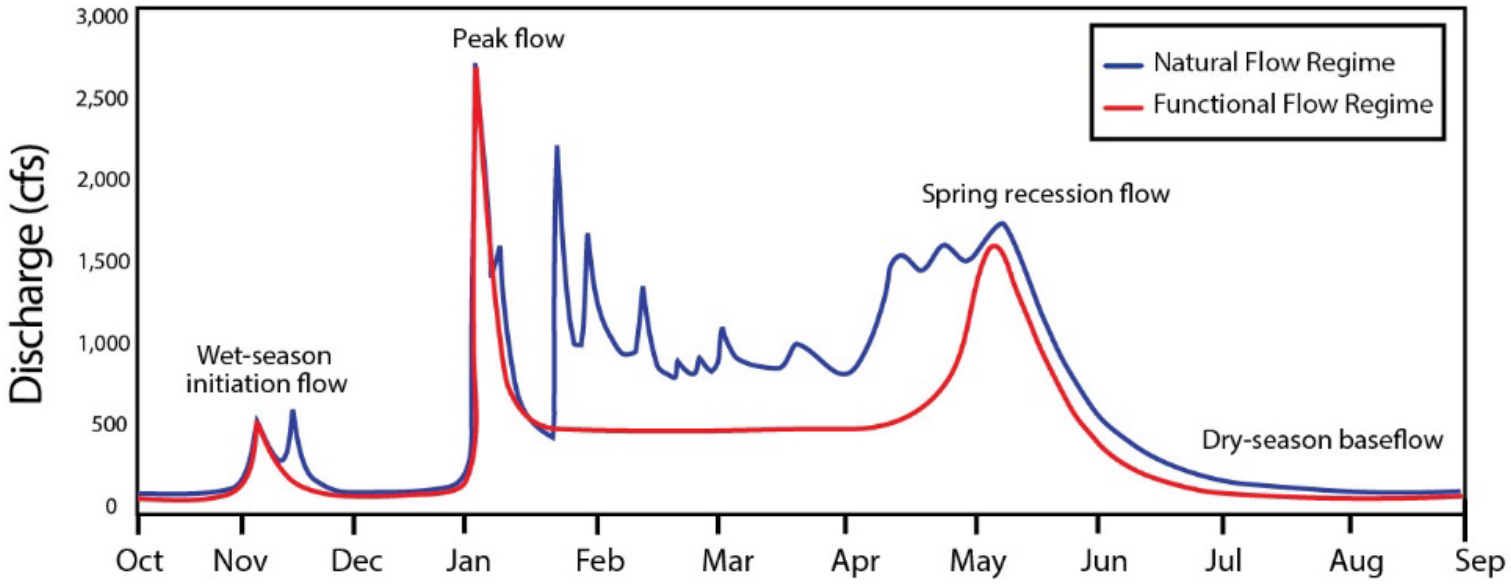
ceff.ucdavis.edu

Functional Flows Approach

Environmental Flows - focus on hydrograph flow components that:

- Support natural disturbances
- Promote physical dynamics
- Drive ecosystem functions
- Support high biodiversity

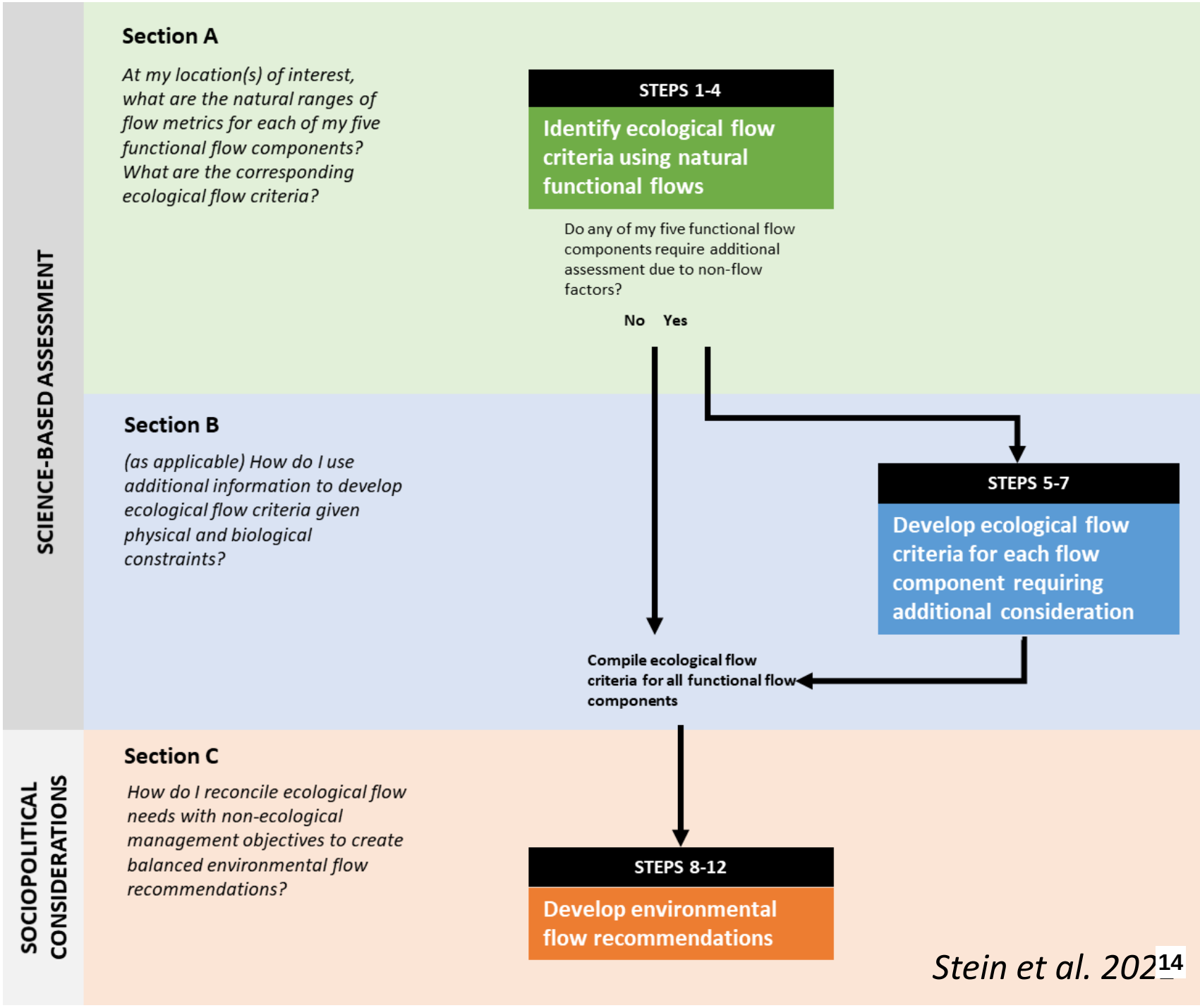
Consideration of geomorphic setting and channel-floodplain dynamics



Yarnell et al. 2015

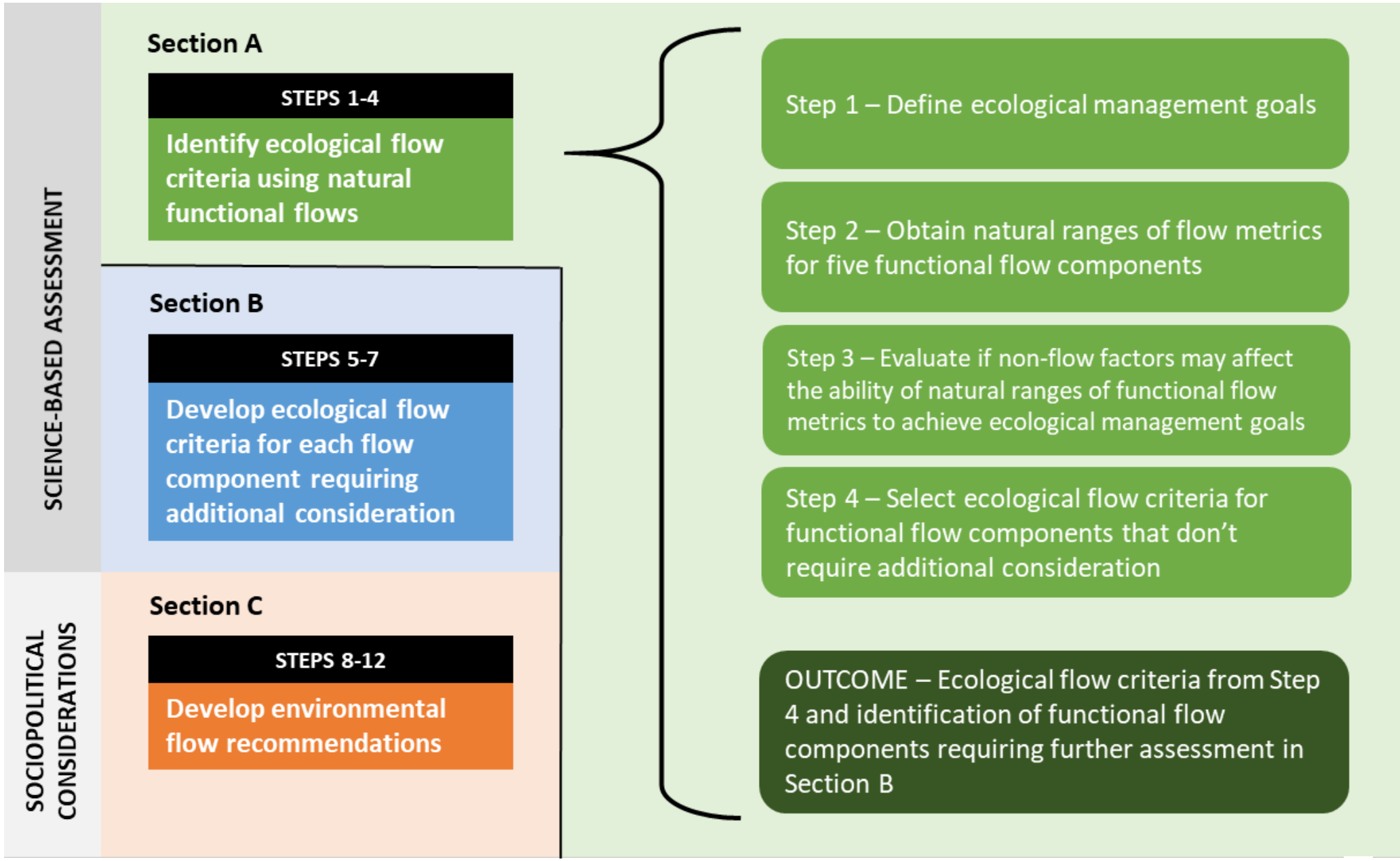
CEFF Steps Overview

ceff.ucdavis.edu

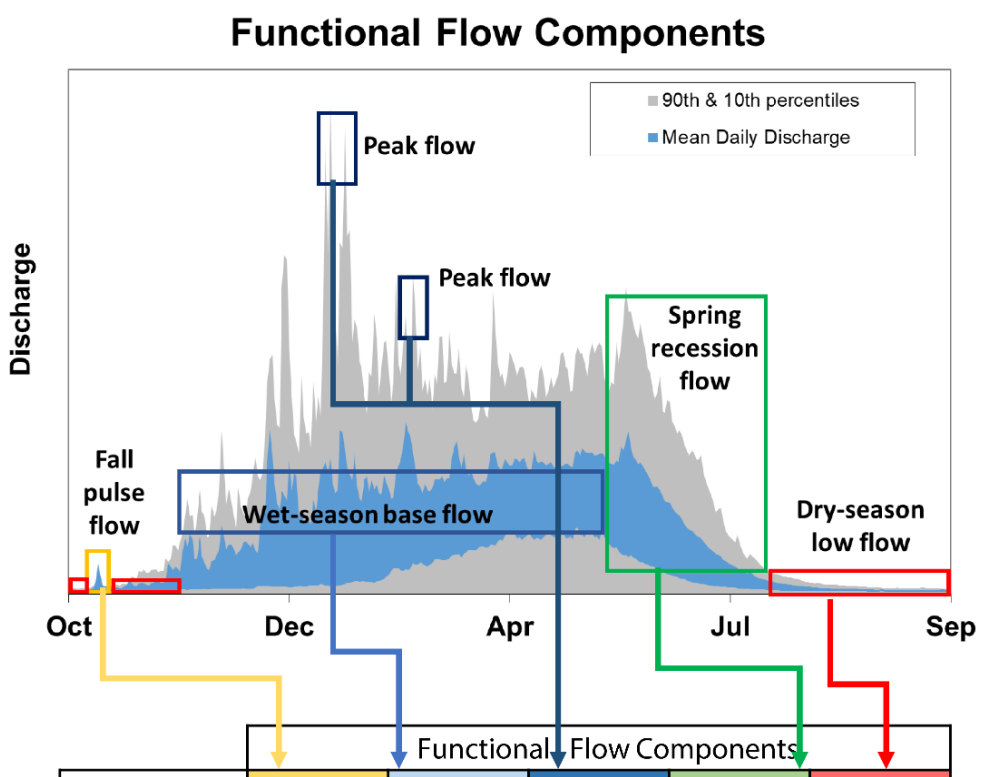


Stein et al. 202

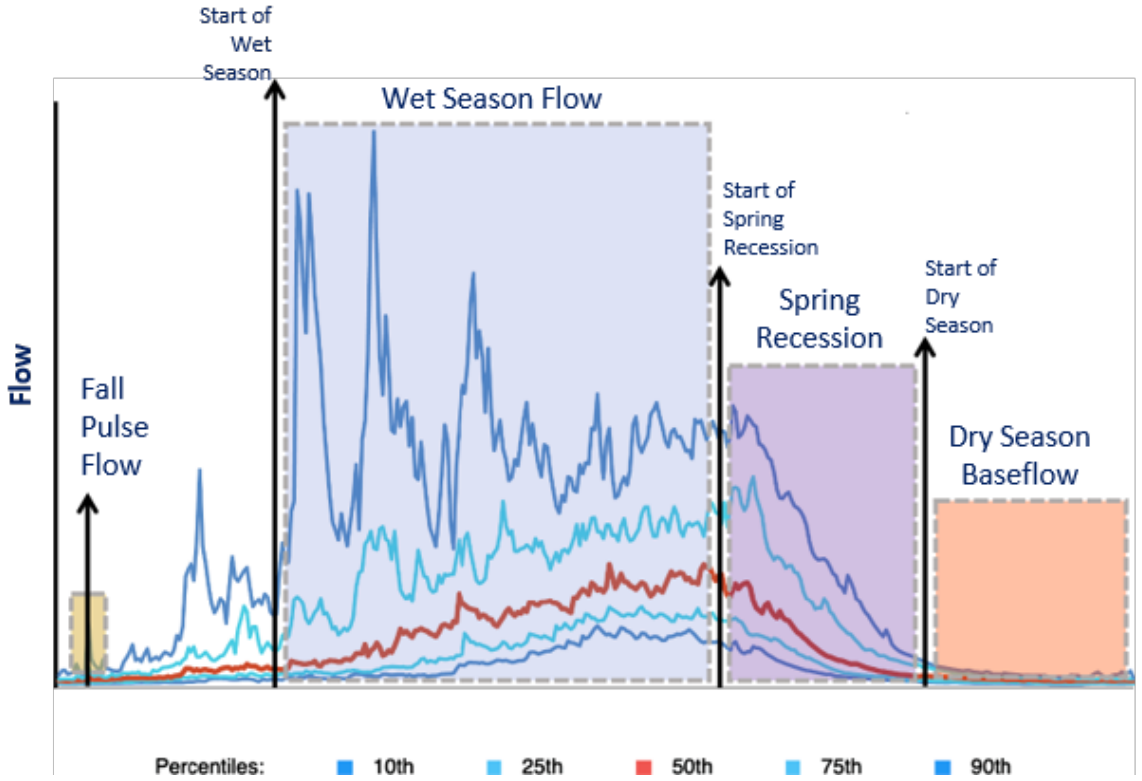
CEFF Section A



Functional Flows Approach



Flow Characteristics	Functional Flow Components: Fall Pulse	Wet Baseflow	Peak Flow	Spring Recession	Dry Low Flow
Magnitude	X	X	X	X	X
Timing	X	X	X	X	X
Duration		X	X	X	X
Frequency			X		
Rate of Change				X	X

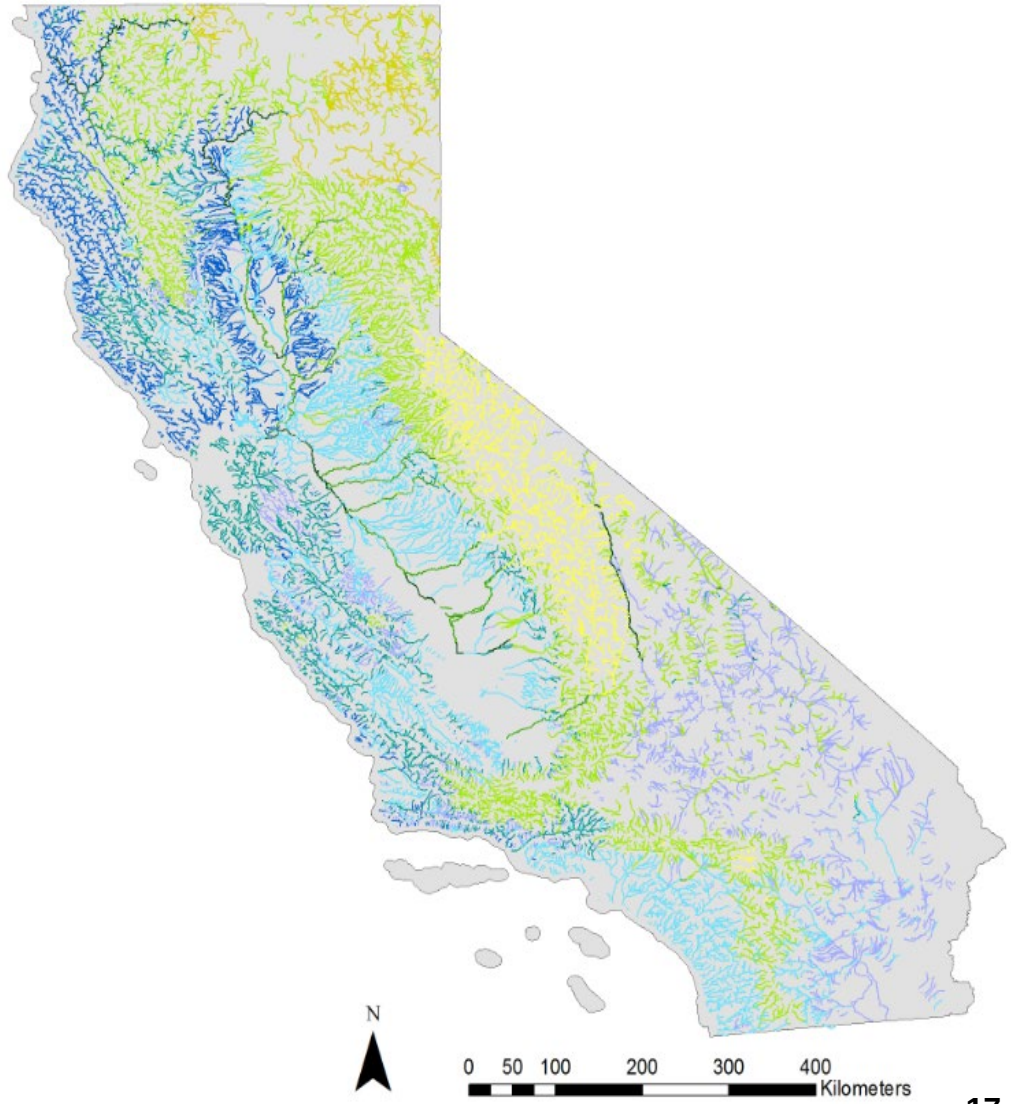


- 24 functional flow metrics quantify 5 flow components
- Metrics calculated from daily flow timeseries using signal processing techniques at all reference gages in California

Yarnell et al. 2020; Patterson et al. 2020

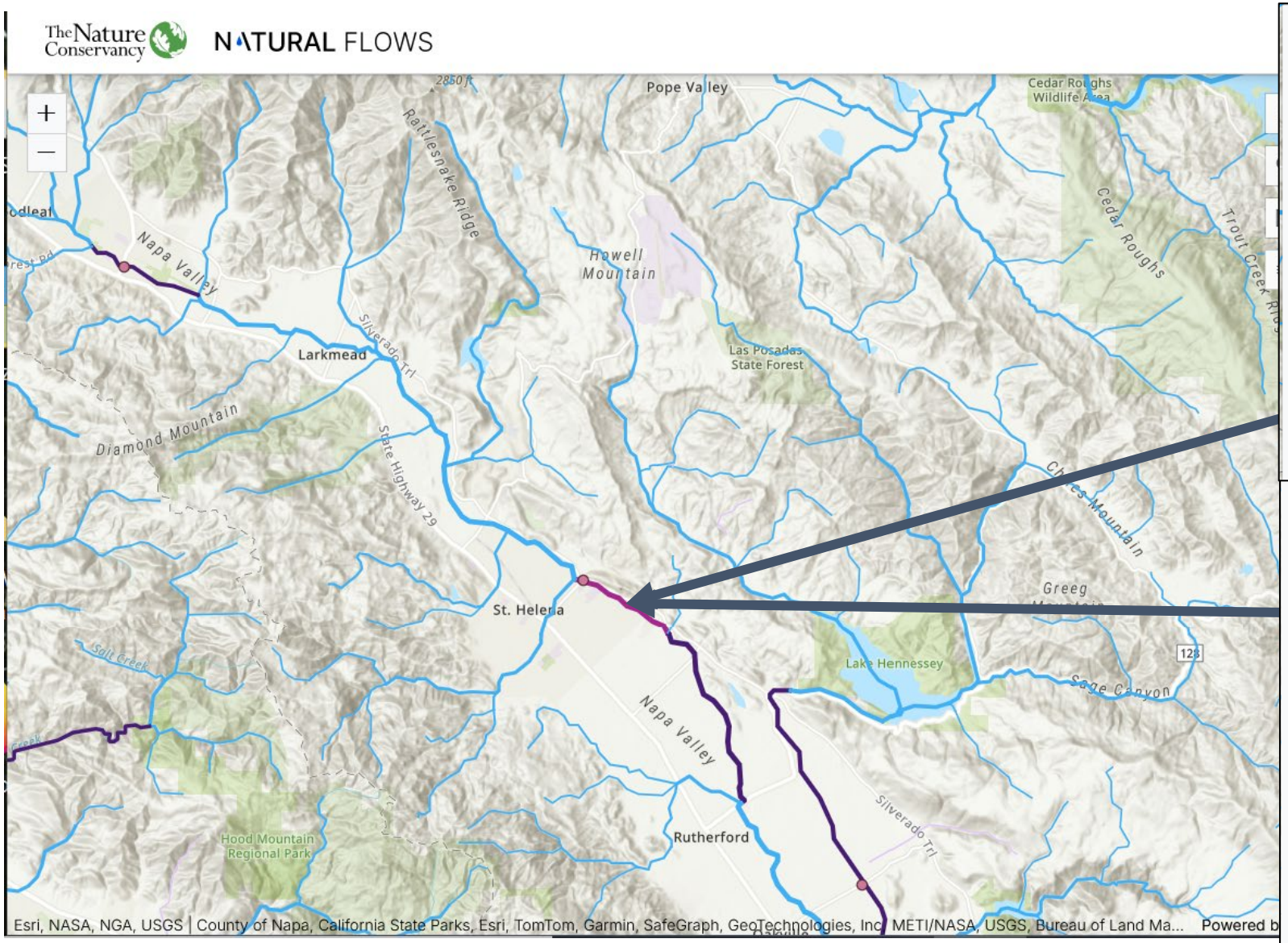
Modeled Natural Functional Flows

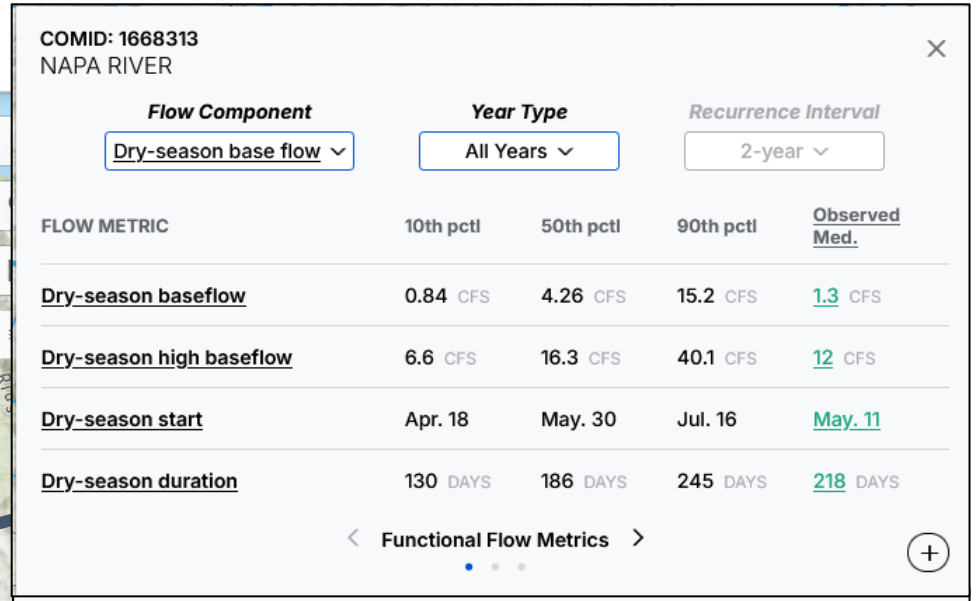
- Predictions of natural functional flow metric ranges at every stream in the state
- Modeled predictions based on physical and climate characteristics of basin
- Hydrologic model predictions used for 16 metrics and observed, reference-gage data used for 8 metrics
- Ranges reported by water-year type for most metrics

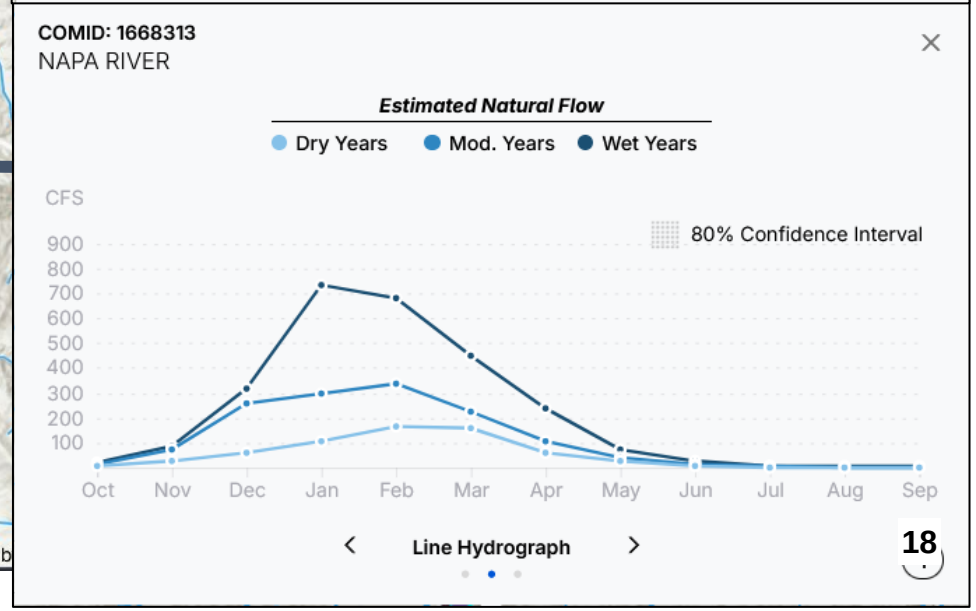


Grantham et al. 2022 FES

Natural Flows Web Tool: rivers.codefornature.org







Outcomes of Section A

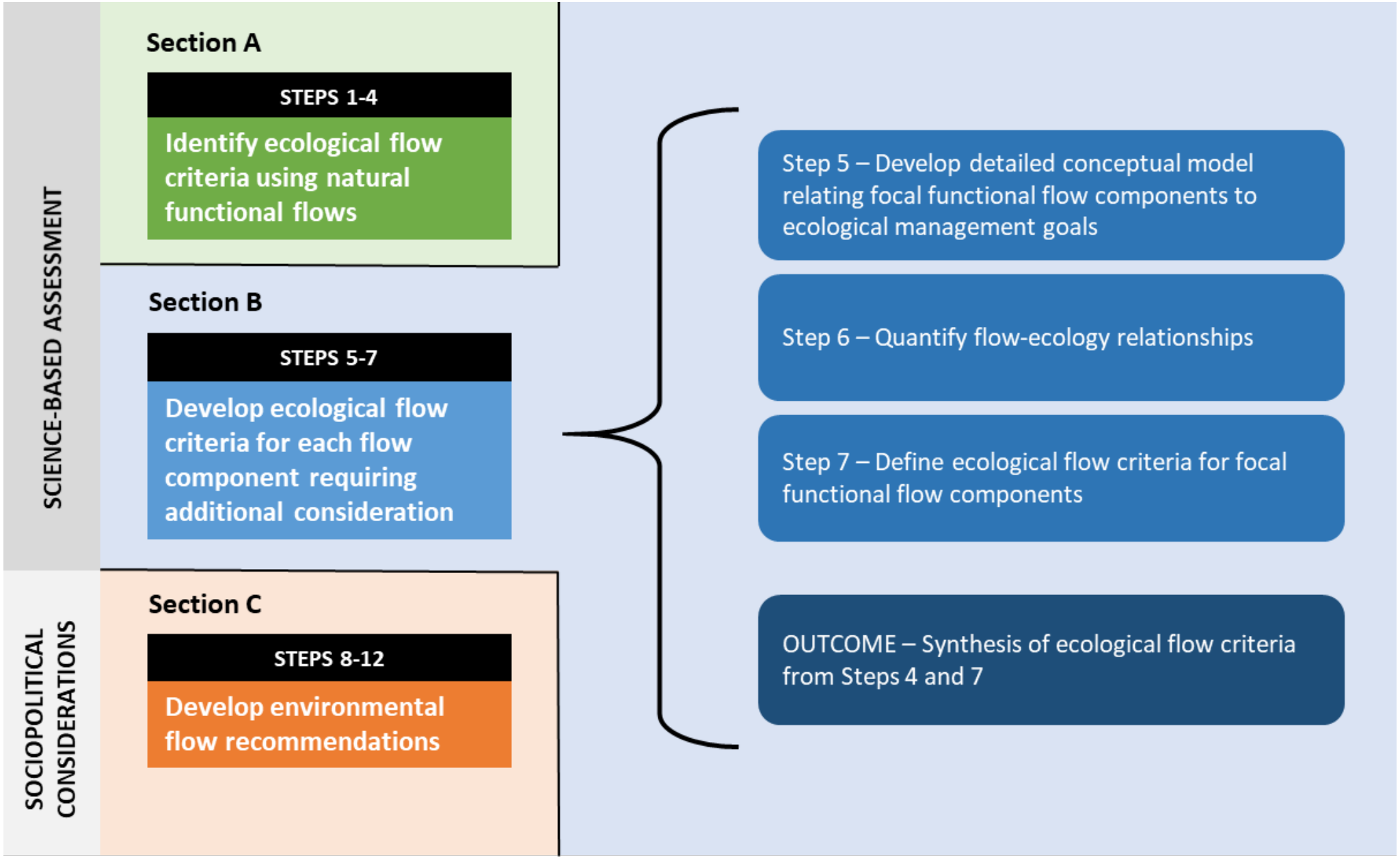
Natural Range of Functional Flow Metrics as Ecological Flow Criteria

- Download from Natural Flows database *-OR-*
- Assess local hydrologic data for potential additions/subtractions due to groundwater inputs/losses *-OR-*
- Develop local hydrologic model accounting for groundwater and use functional flow calculator to determine ranges of natural functional flow metrics

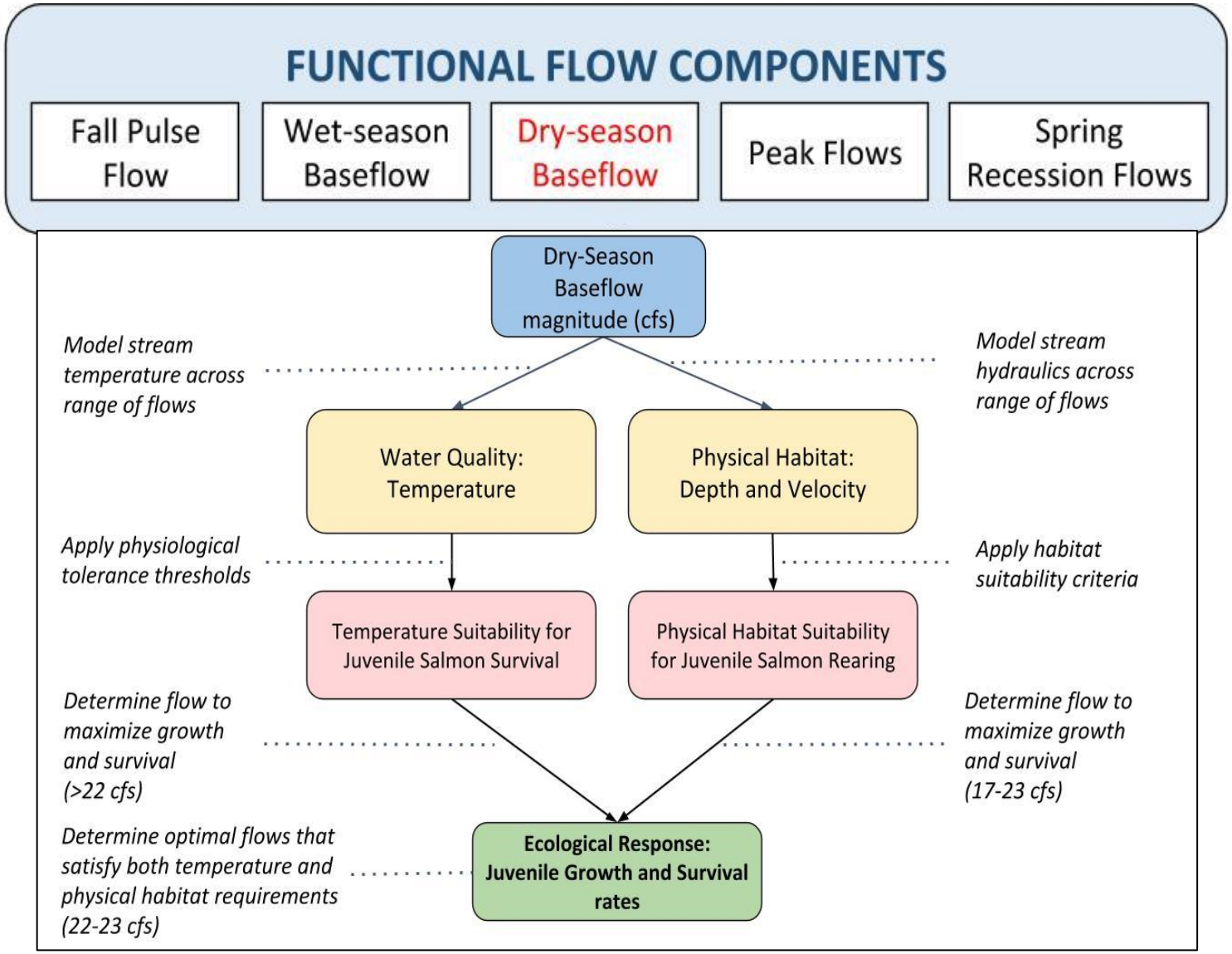
ID of Functional Flow Components that need more evaluation

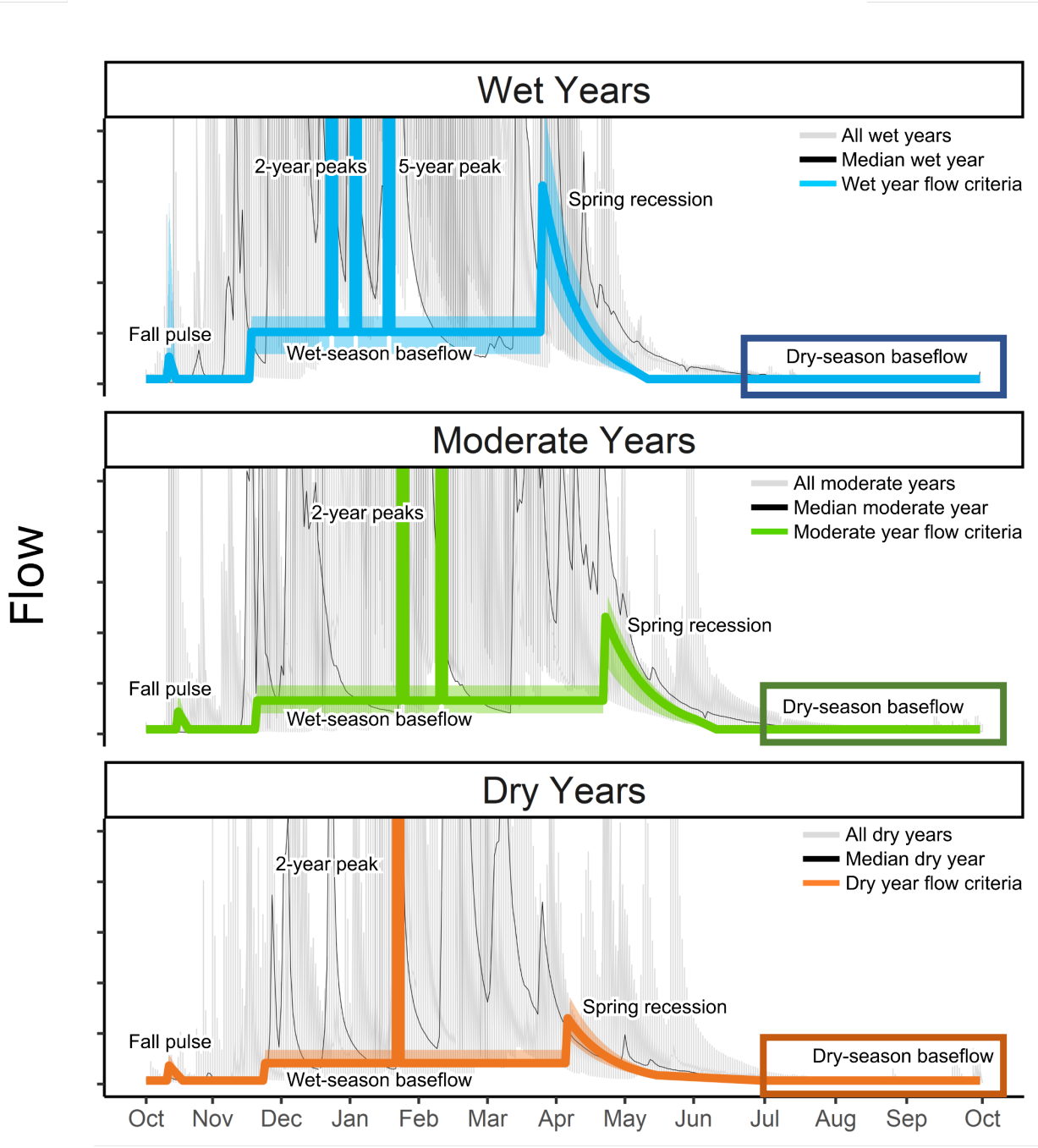
- Is there a reason section A criteria might *not* meet desired functions?
- Presume section A criteria will provide functionality unless evidence otherwise
- If needed for some components, assess further in section B

CEFF Section B



Section B: Investigating Specific Flow-Ecology Relationships

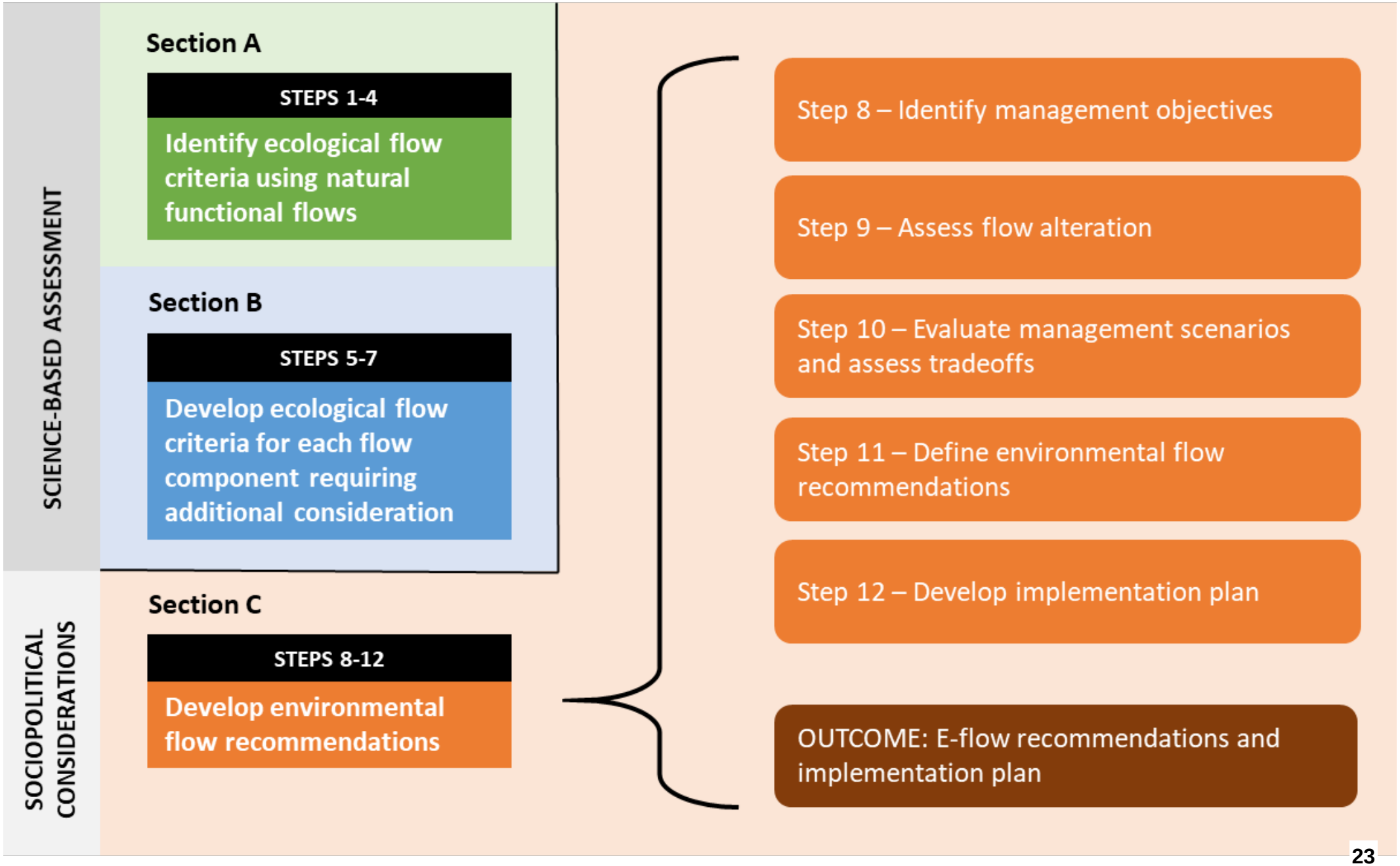




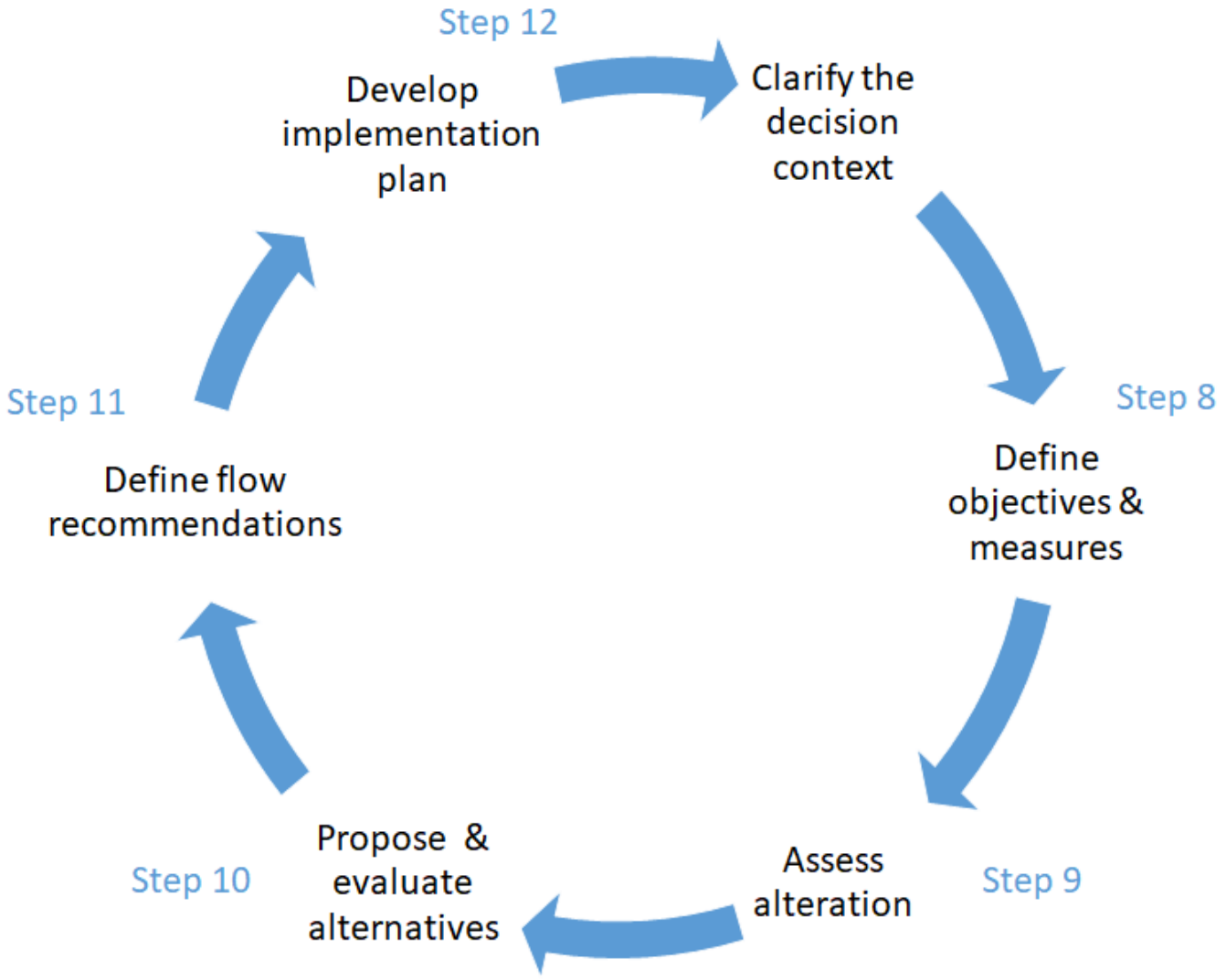
Outcomes from Section B

Ecological flow criteria can serve as measurable objectives that can vary by water year type

CEFF Section C

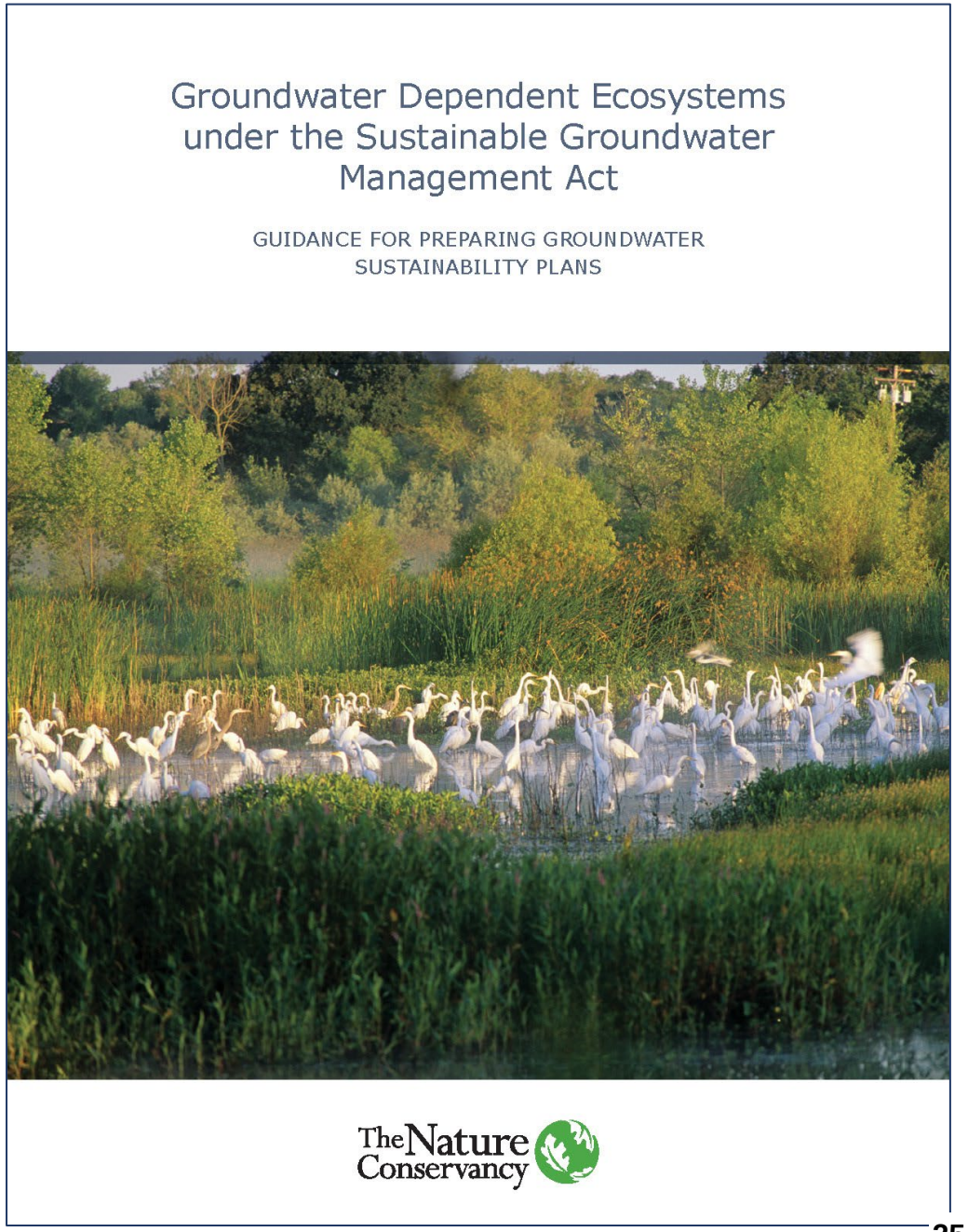


Section C:
Develop Environmental Flow Recommendations

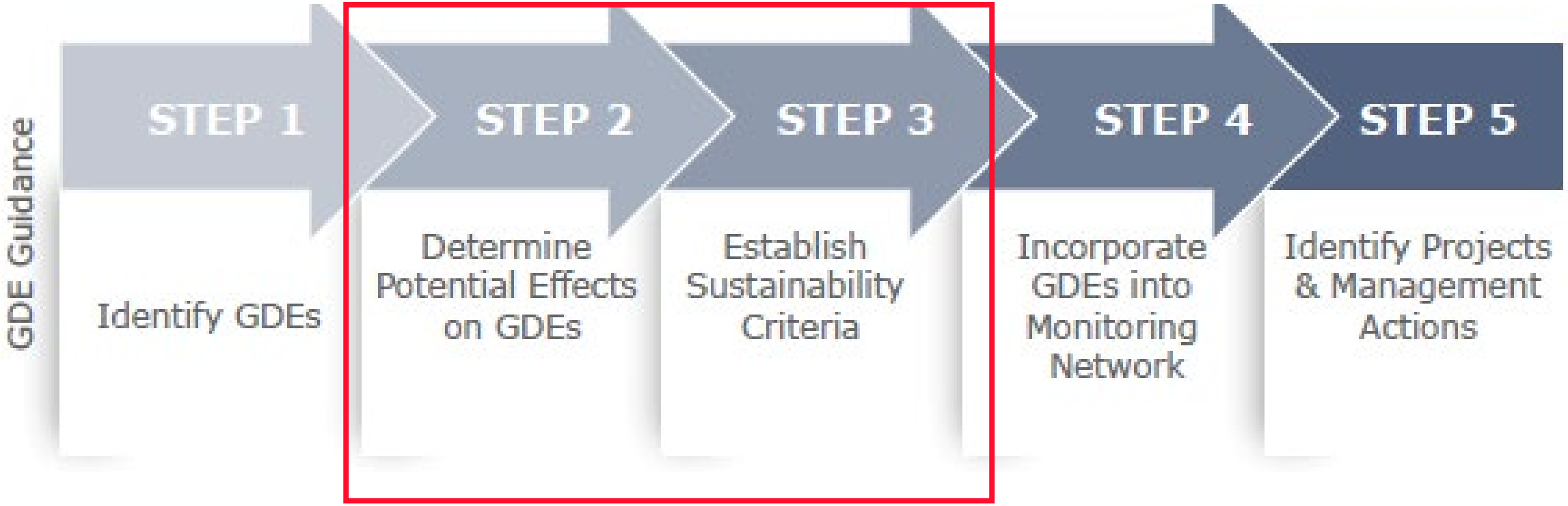


Groundwater-Dependent Ecosystems

SGMA does not explicitly consider environmental flow needs, but adverse effects to groundwater-dependent ecosystems (GDE) must be avoided

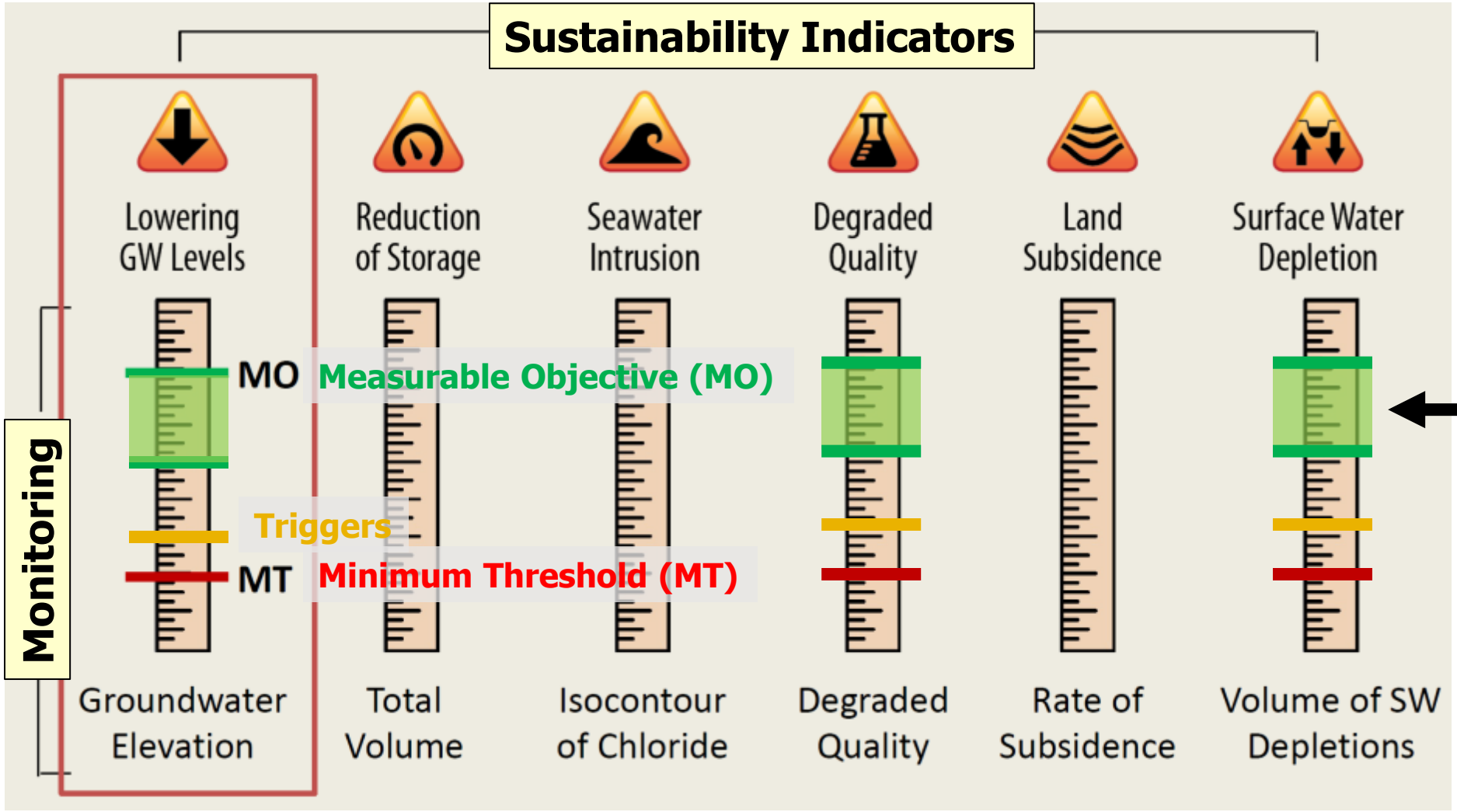


CEFF and SGMA



The Nature Conservancy 2018

GSP: CEFF can Inform Monitoring and Managing Sustainability



modified from CADWR 2016

Case Studies Implementing CEFF

- South OC Flow Ecology Study
- LA River Environmental Flows Study
- Cosumnes River
- Little Shasta River
- South Fork Eel
- Mill Creek
- Others

Photo: TNC

Photo: Ann Willis

https://www.frontiersin.org/articles/10.3389/fenvs.2022.787631/full

ORIGINAL RESEARCH article

Developing ecological flow needs in a highly altered region: Application of California Environmental Flows Framework in southern California, USA

Provisionally accepted
The final version of the article will be published here soon pending final quality checks

Notify me

Kristine T. Taniguchi-Quan[1*], Katie Irving[1], Eric D. Stein[1], Aaron Poresky[2], Richard A. Wildman, Jr.[2], Amanda Aprahamian[3], Cindy Rivers[3], Grant Sharp[3], Sarah Yarnell[4] and Jamie Feldman[2]

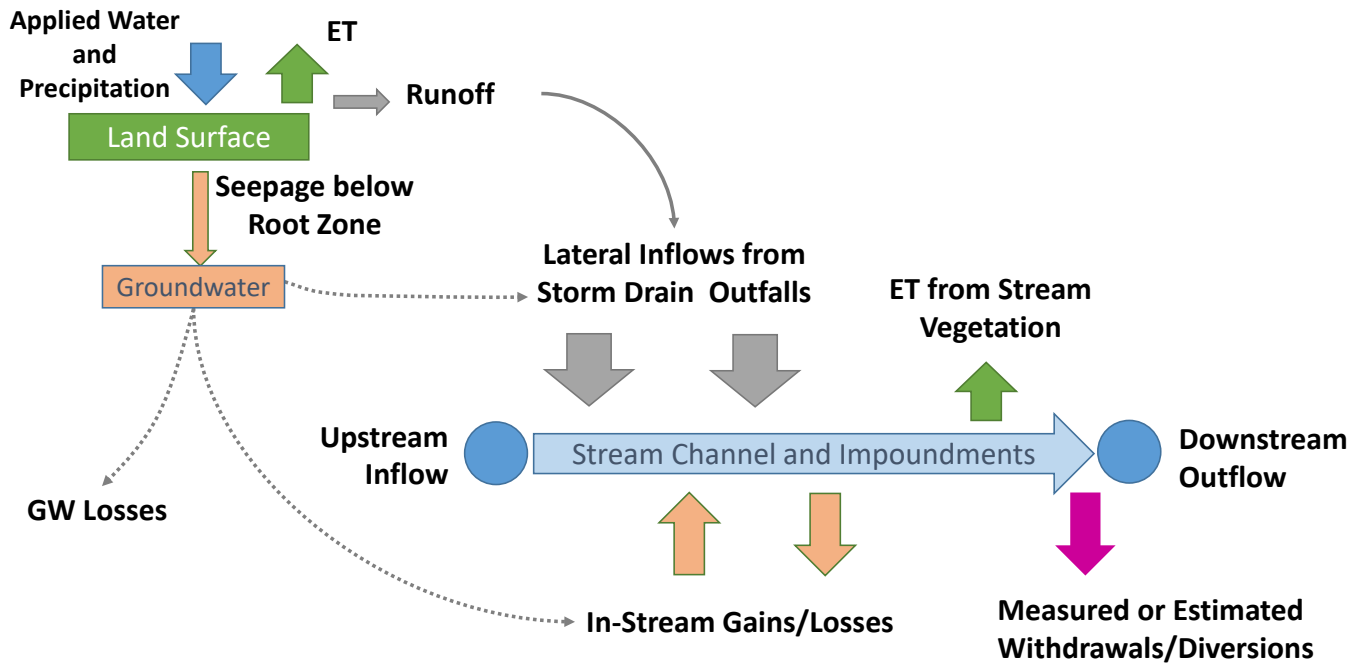
[1]Southern California Coastal Water Research Project, United States
[2]Geosyntec Consultants, Inc., United States
[3]Orange County Public Works, United States
[4]Center for Watershed Sciences, University of California, Davis, United States

CEFF Application – South Orange County, Aliso Creek

- Highly modified watershed where establishing reference-based flows may be challenging
- Flow modifications are from diffuse non-point sources
- Groundwater may be a significant contributor to summer baseflows

Hydrologic Modeling – Section A

- Utilized isotope analysis to quantify groundwater contribution to summer baseflows
- Developed watershed model that accounts for groundwater inputs



Used Loading Simulation Program in C++

Current condition

- Current land use and flow management measures
- Recent climate: 1990-2019; Recent irrigation patterns: 2010-2019
- Calibrated to streamflow gages, outfall monitoring, and water isotope data

Reference condition

- Remove urban land, irrigated agriculture, diversions, and impoundments
- Same time period

Future scenarios

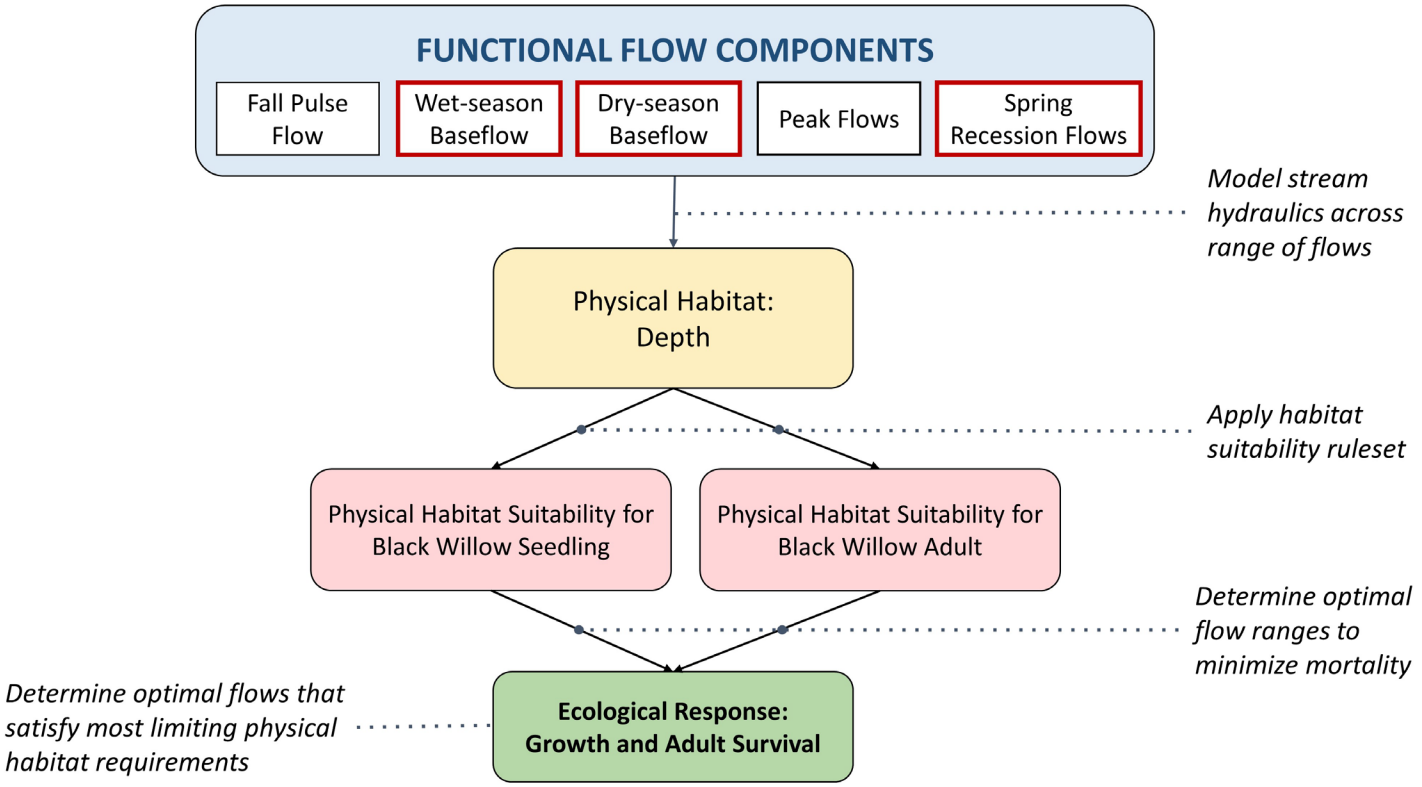
- Climate change at mid-century
- Increased water conservation progress

Non-Flow Limiting Factors – Section B

Functional Flow Component	Potential Limiting Factor	Affected Ecosystem Function(s)
Fall pulse flow	None identified	None
Peak flows	None identified	None
Wet-season baseflow	**Altered channel morphology**	Potential limited habitat availability to support migration, spawning, and residency of aquatic organisms; Potential limited access to shallow groundwater (riparian)
Spring flow recession	**Altered channel morphology**	Potential limited floodplain inundation and hydrologic conditions for riparian species recruitment and seed dispersal
Dry-season baseflow	**Altered channel morphology**	Potential limited habitat availability (i.e., depth) for native aquatic species; Potential limited riparian soil moisture

Section B: Willow

Conceptual Model



Suitability Ruleset

Life Stage	Functional Flow Metric	Lower Limit	Upper limit
Adult	Wet-Season Baseflow Magnitude	Discharge necessary to maintain at least 3 cm depth of flow in the river, under the assumption that roots can reach water table	Maximum flow that would not inundate the overbank area to limit oversaturated soils in the overbanks
	Dry-Season Baseflow Magnitude		
Adult & Seedling	Spring Recession Start Magnitude	Discharge necessary to inundate 10 cm depth in the overbank areas for seed dispersal and to provide soil moisture in the overbanks prior to the start of the dry-season	No upper limit, used the reference 90th percentile if > lower limit (only refined the lower limit to ensure overbank inundation at the start of spring recessi

Ecological Flow Criteria

[a] High baseflow criteria due to enlarged channel morphology. Channel modifications needed for suitable baseflow depths

Flow Component	Flow Metric	Natural Range of Flow Metrics median (10th - 90th)	Ecological Flow Criteria: Black Willow
Fall pulse flow	Fall pulse magnitude	2.4 (1.7 - 5) cfs	Same as natural range
	Fall pulse timing	Nov 29 (Oct 24 - Dec 3)	Same as natural range
	Fall pulse duration	11 (3 - 16) days	Same as natural range
Wet-season baseflow	Wet-season baseflow magnitude	3 (2 – 5) cfs	**0.1 – 12 cfs**
	Wet-season timing	Dec 15 (Oct 10 – Jan 25)	Same as natural range
	Wet-season duration	67 (30 - 133) days	Same as natural range
Peak flows	2-year peak flow magnitude	31 cfs	Same as natural range
	2-year peak flow duration	4 (1 – 25) days	Same as natural range
	2-year peak flow frequency	2 (1 – 8)	Same as natural range
	5-year peak flow magnitude	423 cfs	Same as natural range
	5-year peak flow duration	3 (1 - 6) days	Same as natural range
	5-year peak flow frequency	3 (1 - 4) event(s)	Same as natural range
Spring recession flows	Spring recession start magnitude	15 (3 - 528) cfs	**33** - 528 cfs
	Spring timing	Mar 3 (Feb 22 - Mar 18)	Same as natural range
	Spring duration	109 (76 - 125) days	Same as natural range
	Spring rate of change	1.4 (0.9 – 1.9) % decline per day	Same as natural range
Dry-season baseflow	Dry-season baseflow magnitude	2 (0.5 – 4) cfs	**0.1 – 12 cfs**
	Dry-season timing	June 20 (May 9 - Jul 10)	Same as natural range
	Dry-season duration	198 (116 - 220) days	Same as natural range

Functional Flows in Groundwater-Influenced Streams

Application of the California Environmental Flows Framework to Determine Ecological Flow Needs

Sarah M. Yarnell, Ann Willis, Alyssa Obester, Ryan A. Peek, Robert A. Lusardi, Julie Zimmerman, Theodore E. Grantham, and Eric D. Stein

Funded by Wildlife Conservation Board Streamflow Enhancement Program, American River Conservancy, and The Nature Conservancy

Photo: Carson Jeffres

https://www.frontiersin.org/articles/10.3389/fenvs.2021.788295/full

Application of CEFF in Groundwater-Influenced Streams

1) Evaluation of groundwater sources contributing to streamflow (section A)
2) Consideration of channel morphology controls on surface-groundwater interactions (section B)
3) Discussion of management actions that could be expected to sustain surface-groundwater interactions that are critical to stream ecosystem health

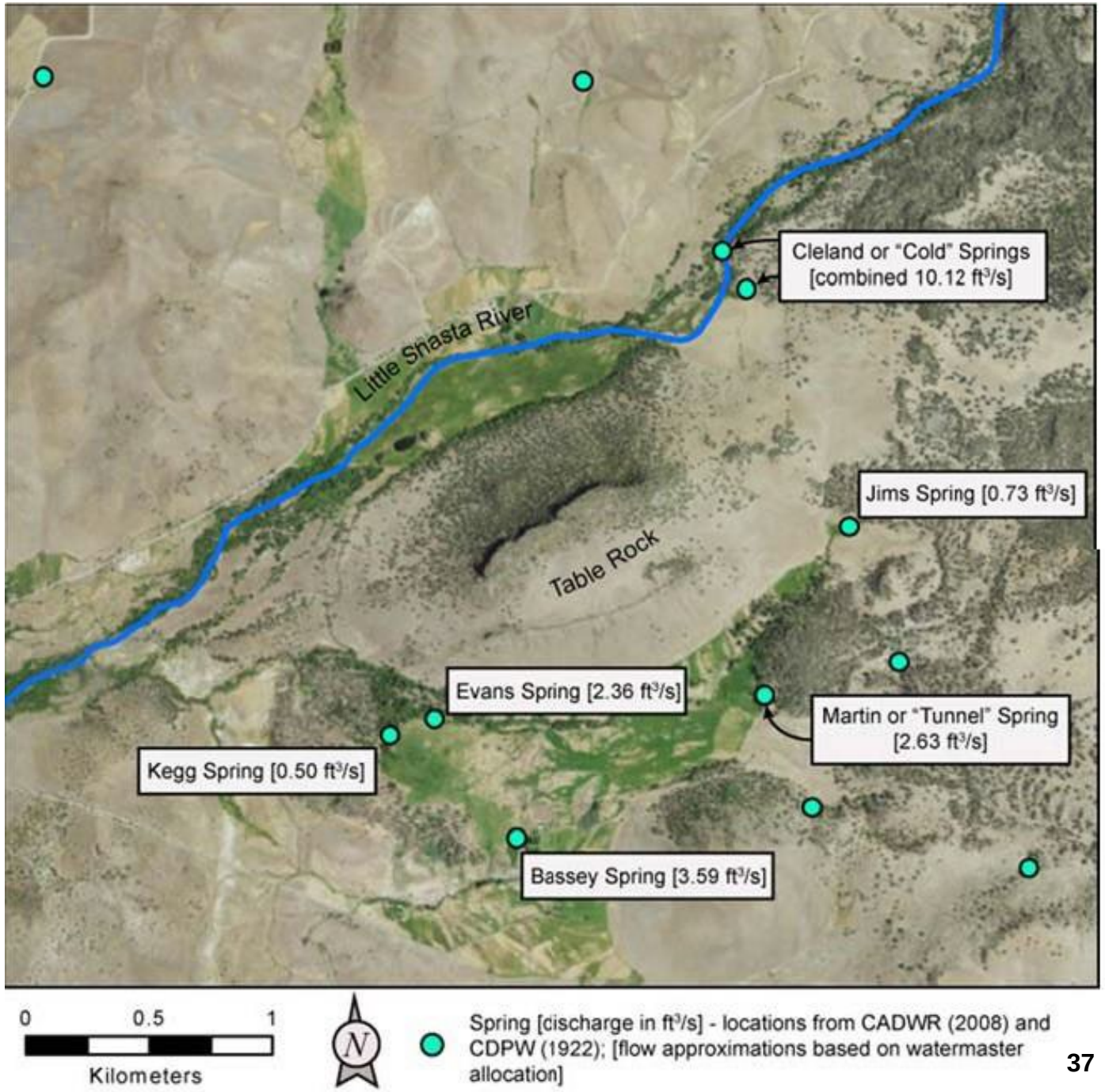
Section A - Groundwater

Little Shasta River

- Discrete springs historically contributed to Little Shasta River
- All diverted since early 20th century
- Not accounted for in natural functional flow metric predictions
- Added 10 cfs to baseflow

Lower Cosumnes River

- Potential baseflow contributions from perched aquifers – more study needed



Section B - Channel Incision

Little Shasta River

- No impacts at foothills
- Modest incision in bottomlands but not limiting to 2-year flood lateral connectivity
- No adjustments to metrics
- Monitor potential grazing impacts

Photo: Ann Willis

Lower Cosumnes River

- Moderately incised in upper reaches
- Heavily incised in middle reaches
- Increased 2-year peak magnitude
- Increased fall pulse minimum magnitude for fish passage in modified channel conditions

Photo: David Marson

Section C - Potential Management Actions

Maintain direct spring/groundwater contributions to support high water quality

- Support funding for supplemental water sources for agriculture
- Restore riparian habitat

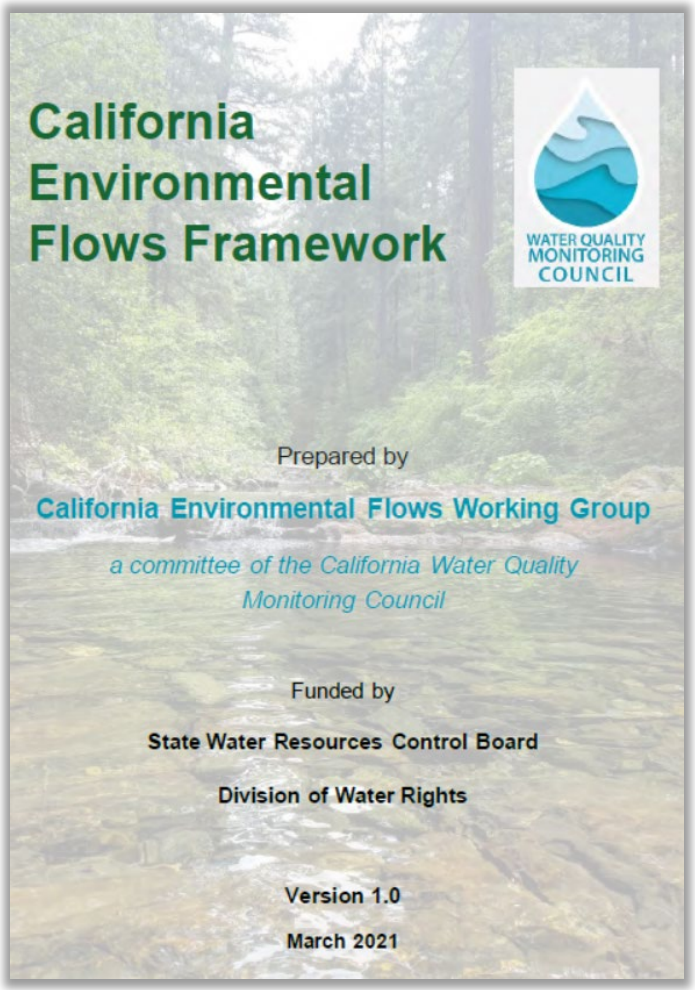
Increase groundwater levels

- Floodplain reconnection
- Managed riparian recharge
- Relocation of shallow wells adjacent to riparian/GDEs

Photos: Carson Jeffres, Andrew Nichols

Lessons Learned to Date

- CEFF provides flexible guidance
  - ➢Multiple approaches can be implemented in Section B
- When determining ecological flow criteria, important to:
  - ➢Evaluate groundwater contributions to instream flow
  - ➢Consider impact of mediating factors (i.e., channel alteration) on instream flow
- CEFF can be used to inform groundwater sustainability plans
  - ➢Ecological flow criteria can serve as measurable objectives
  - ➢Inform design of channel restoration that benefits instream flows, groundwater dependent ecosystems, and groundwater sustainability



Implementation and Adaptative Management

- Integration of CEFF with SGMA requires good monitoring
  - Monitor link between groundwater and surface water levels
  - Monitor ecological and water quality objectives
- Interannual flow variability key
  - Maximize geomorphic diversity with flow diversity to build resilience
  - Maintain natural ranges of flow exceedances, limit ‘managed drought’
- Flexible adaptive management
  - Take advantage of real-time data to adjust with changing water conditions
  - Assess, revaluate, and adjust if needed (learn from actions)

Napa County

Board Agenda Letter

1195 THIRD STREET
SUITE 310
NAPA, CA 94559
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Main: (707) 253-4580

Groundwater Technical Advisory Group **Agenda Date:** 5/9/2024 **File ID #:** 24-792

TO: Technical Advisory Group for the Napa County Groundwater Sustainability Agency

FROM: Brian D. Bordona, Director of Planning, Building and Environmental Services

REPORT BY: Jamison Crosby, Natural Resources Conservation Manager

SUBJECT: California Sustainable Winegrowing Alliance Dry Farming Advisory Group

RECOMMENDATION

Technical Advisory Group (TAG) members will receive a presentation from Lauren Pesch, Project Manager, on the Dry Farming Advisory Group, a California Sustainable Winegrowing Alliance grant received from the California Department of Water Resources, to explore opportunities to produce educational resources for dry farming practices.

BACKGROUND AND DISCUSSION

The California Sustainable Winegrowing Alliance (CSWA) received a $2 million grant from the California Department of Water Resources to research and produce educational resources to help promote dry farming practices. The contract for this work will take place between September 2023 and August 2026. The Advisory Group for the project is comprised of grapegrowers and researchers looking to produce actionable educational resources demonstrating the practices and benefits related to dry farming.

Laura Pesch is a Partner at Leeds & Pesch Vineyard Consulting and a Partner at Chavez Leeds Family Vineyards.

Potential TAG Discussion Questions:

- How could communications and engagement with stakeholders and grapegrowers through the Groundwater Pumping Reduction and Water Conservation Workplans tie into the work of the Dry Farming Advisory Group?
- How could the GPR and WC Workplans integrate with or showcase the work of the advisory group?

Procedure
Staff introduces.
Questions and answers with the TAG.
Public comments.

ENVIRONMENTAL IMPACT

ENVIRONMENTAL DETERMINATION: The proposed action is not a project as defined by 14 California Code of Regulations 15378 (State CEQA Guidelines) and therefore CEQA is not applicable.

SUPPORTING DOCUMENTS

- CSWA PowerPoint Presentation: Dry Farming Education for Coastal Winegrapes, May 2024

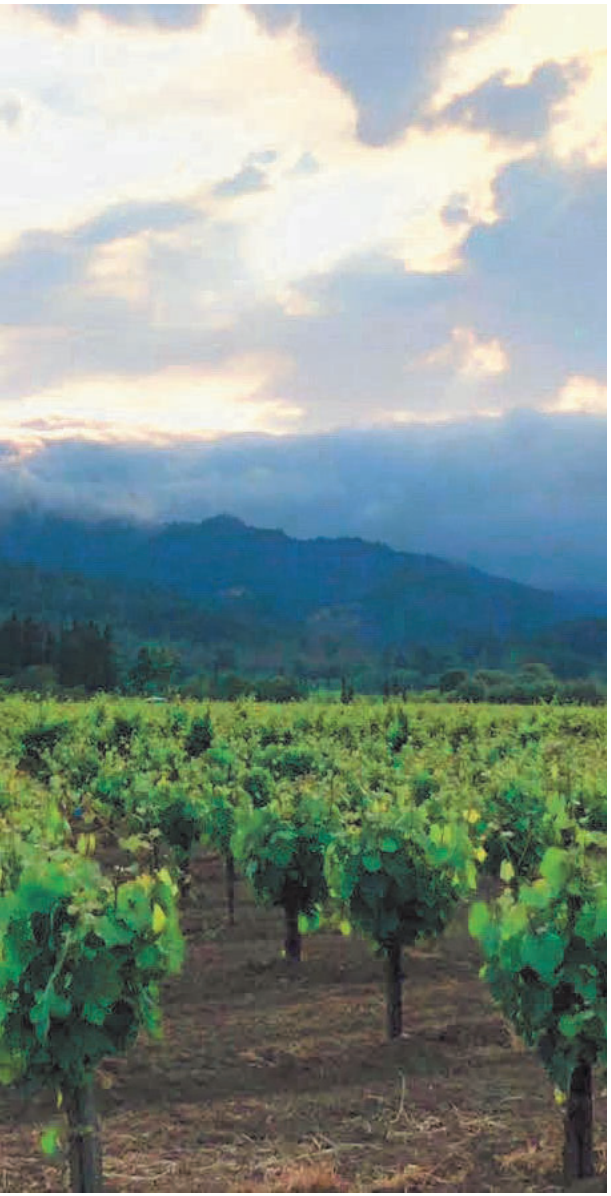
CALIFORNIA
SUSTAINABLE WINEGROWING
ALLIANCE

Dry Farming Education for Coastal Winegrapes

California Sustainable Winegrowing Alliance

Department of Water Resources

- $2M contract
- 3-year project
- September 1, 2023 – August 31, 2026



Advisory Group

- Zureal Bernier – Bernier Vineyard
- Miguel Garcia – Napa RCD
- Steve Gliessman – Condor's Hope
- Frank Leeds – Frog's Leap Winery
- Riggs Lokka – Emeritus Vineyards
- Jordan Longborg – Tablas Creek
- Tod Mostero – Dominus
- Stephanie Tillman - LandIQ
- Vince Tofanelli – Tofanelli Family Vineyard
- Yvonne Socolar – UC Berkeley

Project Partners

- Lauren Pesch, Project Manager
- Community Alliance with Family Farmers
- Leeds and Pesch Vineyard Consulting
- LandIQ
- UC Davis Agricultural & Resource Economics
- Ag Economist (TBD)
- Dry Farming/Water Efficiency Experts (TBD)
- SureHarvest
- Groundwater Recharge Expert (TBD)

Project Objectives

1) Build Dry Farming Expertise and Networks
2) Work Directly with Growers for Site-Specific Education & Implementation Assistance
3) Develop Dry Farming Case Studies
4) Develop Other Educational Resources
5) Host Educational Workshops, Webinars and Field Days
6) Communicate and Promote Adoption of Dry Farming Practices

Definition Of Dry Farming in Coastal California

Dry Farming is a farming technique that relies solely on utilizing the water naturally present in the soil, captured by the rain, to meet the needs of an established vine, without irrigation. In a Mediterranean climate, with dry summers, this requires capturing winter and spring rain. This long-standing practice encourages deep root growth, resulting in high quality grapes that reflect the terroir of the vineyard.

Land IQ Mapping

- Literature Review
- Suitability for dry farming
- Working on mapping component

UC Davis Cost Study

- Start date of Summer 2024
- Cost of establishing a dry farmed vineyard

Case Studies

- Napa RCD –Water holding capacity and soil moisture of dry farmed vineyards
  - Sampling Napa, Sonoma & Mendocino
- UC Berkeley & Lawrence Livermore National Laboratory- Relationship between carbon and water in agriculture
- Establishing a new dry farmed vineyard with cost/benefit analysis – using the technical assistance provided through the project
- Transitioning an existing vineyard with cost/benefit analysis – using the technical assistance provided through the project
- Biochar and/or other soil amendments
- Groundwater Recharge

Educational Workshops

- First Workshop – Establishing a dry farmed vineyard
- Mendocino – Pacini Vineyards Tuesday May 14th 8am-11am
- Napa – Frog's Leap Winery Tuesday May 21st 8am-11am
- Paso Robles - Tablas Creek - Thursday May 30th 8am-11am

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Main: (707) 253-4580

Groundwater Technical Advisory Group **Agenda Date:** 5/9/2024 **File ID #:** 24-811

TO: Technical Advisory Group for the Napa County Groundwater Sustainability Agency

FROM: Brian D. Bordona - Director of Planning, Building and Environmental Services

REPORT BY: Jamison Crosby, Natural Resources Conservation Manager

SUBJECT: Update on Spring 2024 Groundwater Conditions

RECOMMENDATION

Provide an update on the start of the Water Year 2024 with a focus on change in storage and future climate impacts.

BACKGROUND AND DISCUSSION

A core charge of the Technical Advisory Group (TAG) is to provide guidance on Napa County Groundwater Sustainability Agency responses to groundwater conditions occurring in the Napa Valley Subbasin. This update is to inform TAG members and public of the current groundwater conditions across the Napa Subbasin in response to precipitation events occurring during the first half of Water Year (WY) 2024 (October 1, 2023 through April 30, 2024).

Leading up to WY 2024 (October 1, 2023 through September 30, 2024), WY 2023 experienced total precipitation of 32.91 inches, or 128 percent of average. Temperatures and atmospheric demand were less than the historical average in WY 2023 and groundwater pumping was near the sustainable yield. All of these conditions led to higher groundwater levels and general recovery of groundwater storage throughout the Subbasin.

Precipitation in WY 2024 included near or above average precipitation from December 2023 through March 2024. Overall, as of April 26, 2024, the total precipitation is 22.19 inches, or 89 percent of water year average (24.86 inches). If no other precipitation falls during WY 2024, it will be classified as a Normal (below average), analogous to WY 2016 and WY 2021.

Groundwater storage is estimated based on spring water level data. Groundwater level data are interpolated from wells that are screened primarily or exclusively in the alluvial aquifer. The saturated thickness is calculated by comparing the interpolated groundwater elevation to the depth of the alluvial aquifer to estimated total groundwater in storage. The total groundwater in storage is compared spring-to-spring to estimate the change in groundwater storage. The Spring 2022 to Spring 2023 storage increased by approximately 19,000 acre-feet. Spring 2023 to Spring 2024 storage increased by approximately 3,500 acre-feet with a long-term

cumulative storage change of 8,300 acre-feet.

Interpolation of the groundwater elevation was improved in Spring 2024 due to the addition of eight new dedicated monitoring wells. These additional dedicated monitoring wells, which are designed to track groundwater levels in the unconfined part of the aquifer system, improve the quality of the data to track groundwater level responses to natural and human-influenced conditions and address important data gaps identified in the 2022 Groundwater Sustainability Plan.

Groundwater storage changes were not distributed equally across the Subbasin. The St. Helena and Yountville areas experienced the greatest increase in groundwater storage of approximately 1,800 acre-feet (0.33 acre-feet per acre) and 1,000 acre-feet (0.07 acre-feet per acre), respectively. The remaining areas, including Northeast Napa, Calistoga, and Napa saw increases of 130 (0.07 acre-feet per acre), 200 (0.03 acre-feet per acre), and 300 (0.02 acre-feet per acre), respectively.

The small increase in groundwater storage aligns with the knowledge of current conditions throughout the Subbasin, including near average precipitation in the first part of WY 2024 and groundwater pumping near the sustainable yield during the WY 2023 irrigation season. The estimated increase of 3,500 acre-feet is comparable to other Normal (below average) water years.

The increase in groundwater storage provides multiple benefits, including increased baseflow to the Napa River and additional water supply to buffer conditions during dry years. The recently released Fifth National Climate Assessment (https://nca2023.globalchange.gov/) published in 2023, presents current conditions as well as multiple climate scenarios for the United States. Four climate scenarios were assessed, which are based on 1.5° C (2.7°F), 2°C (3.6°F), 3°C (5.4°F), and 4°C (7.2°F) increases in global temperature. All four climate scenarios predict Napa County is likely to experience higher hot temperatures, higher low temperatures, more precipitation, and more extreme precipitation events under all scenarios.

While the degree of change resulting from future climate change is uncertain, national, state, and local data indicate shifting climate patterns and trends. Long-term adaptive management strategies and measures implemented to optimize recharge opportunities and conserve water can help minimize the local impact. Increases in extreme precipitation events provide potential opportunities to increase recharge through best management practices and on-farm strategies to retain precipitation, enhance infiltration, and augment groundwater supplies. Climate variability, including shifts in the timing and duration of precipitation events, can impact groundwater discharge to streams. The relationship between hydrologic variability, streamflow, and potential impacts to groundwater dependent ecosystems are key questions being investigated during implementation of the Interconnected Surface Water and Groundwater Dependent Ecosystems Workplan. Ongoing responses to climate change will require being prepared for potentially hotter years where precipitation events no longer occur in the same pattern as historical events. It is important to continue to embrace “Conservation as a Napa Way of Life” to help build resiliency.

Procedure
Staff introduces.
Questions and answers with the TAG.
Public comments.

ENVIRONMENTAL IMPACT

ENVIRONMENTAL DETERMINATION: The proposed action is not a project as defined by 14 California Code of Regulations 15378 (State CEQA Guidelines) and therefore CEQA is not applicable.

SUPPORTING DOCUMENTS

A. Napa County Groundwater Sustainability Agency, Current Conditions - Start of Water Year 2024 (LSCE, May 2024)

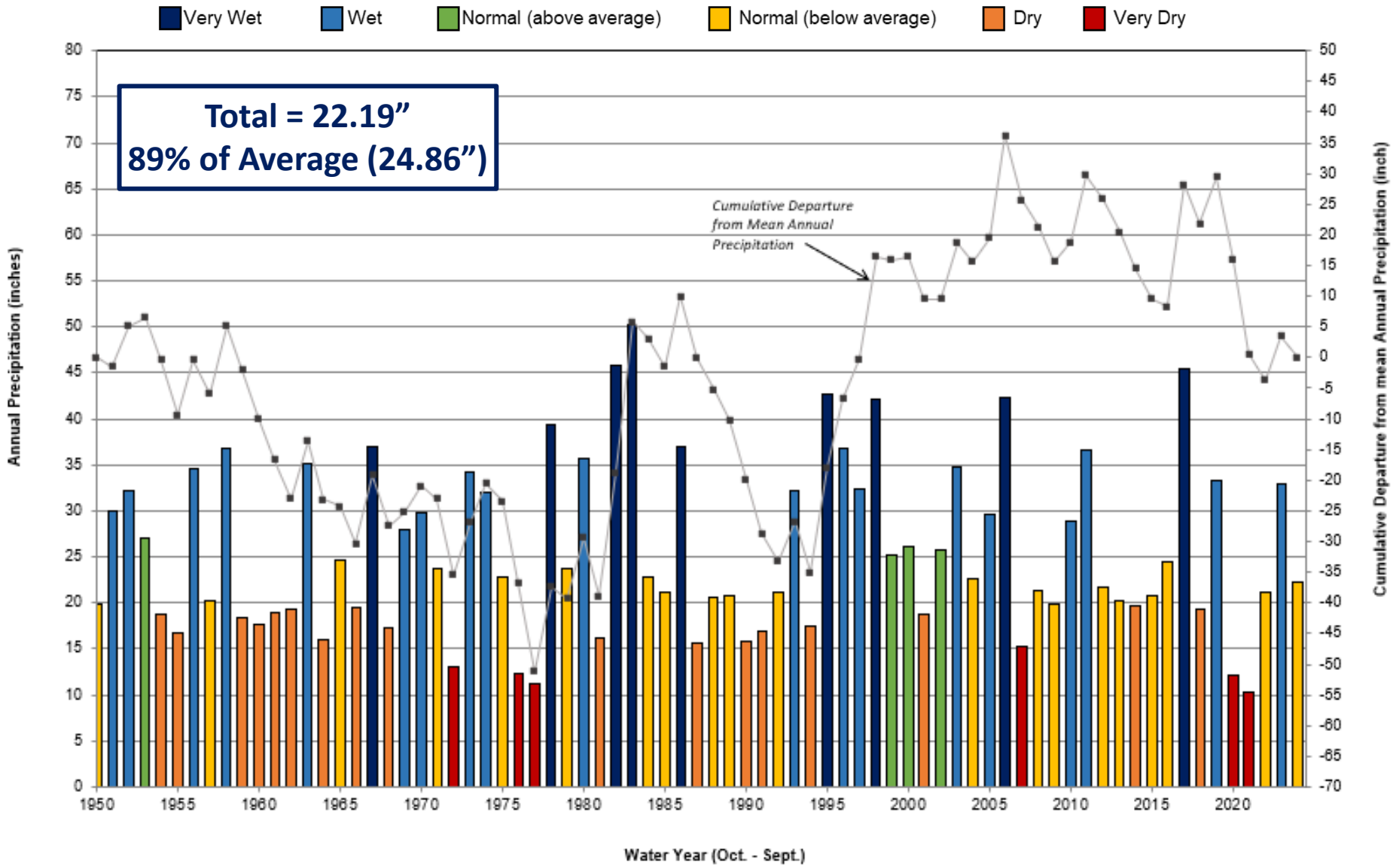
Napa County Groundwater Sustainability Agency

Current Conditions – Start of Water Year 2024

May 9, 2024

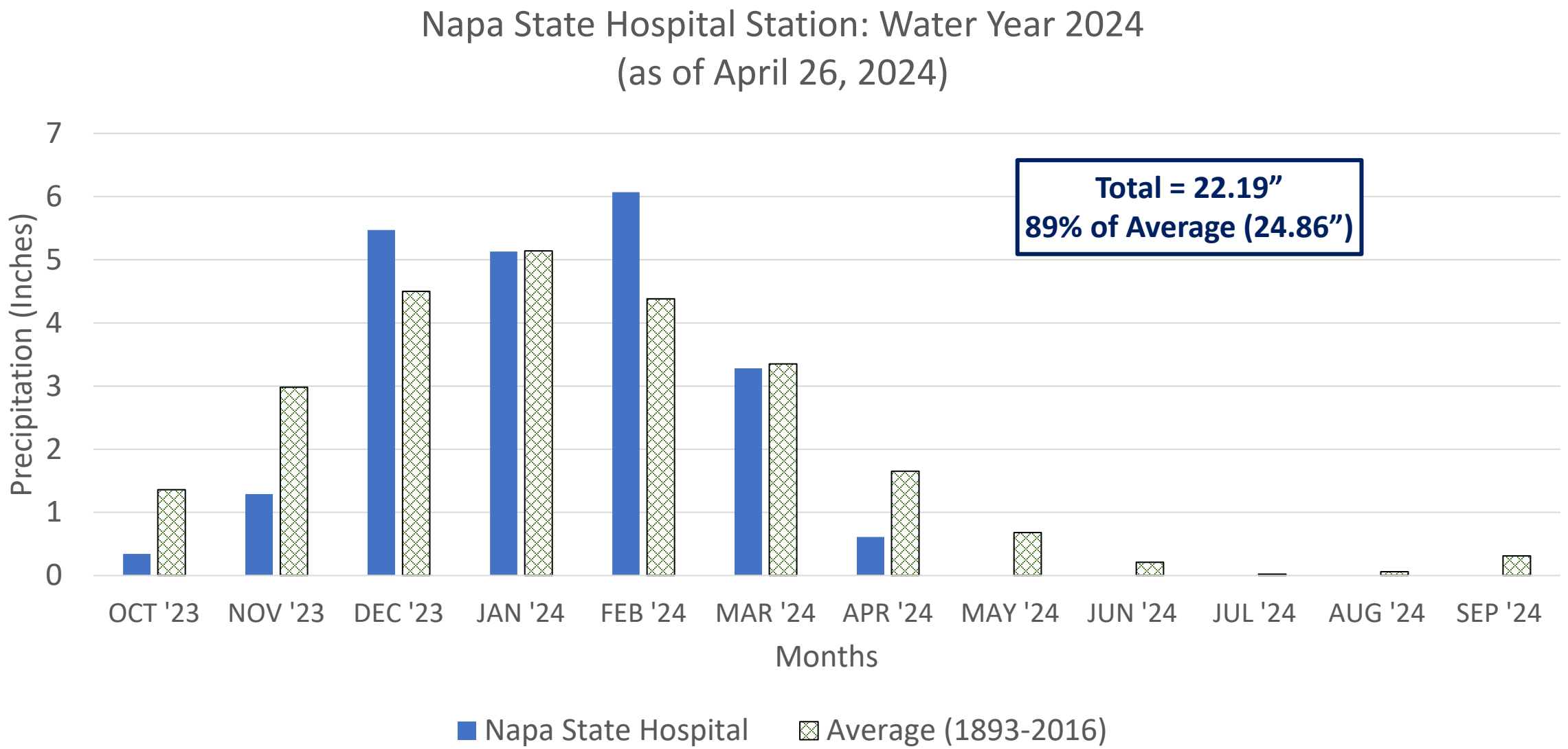
Luhdorff & Scalmanini
Consulting Engineers

Historical Precipitation at Napa State Hospital

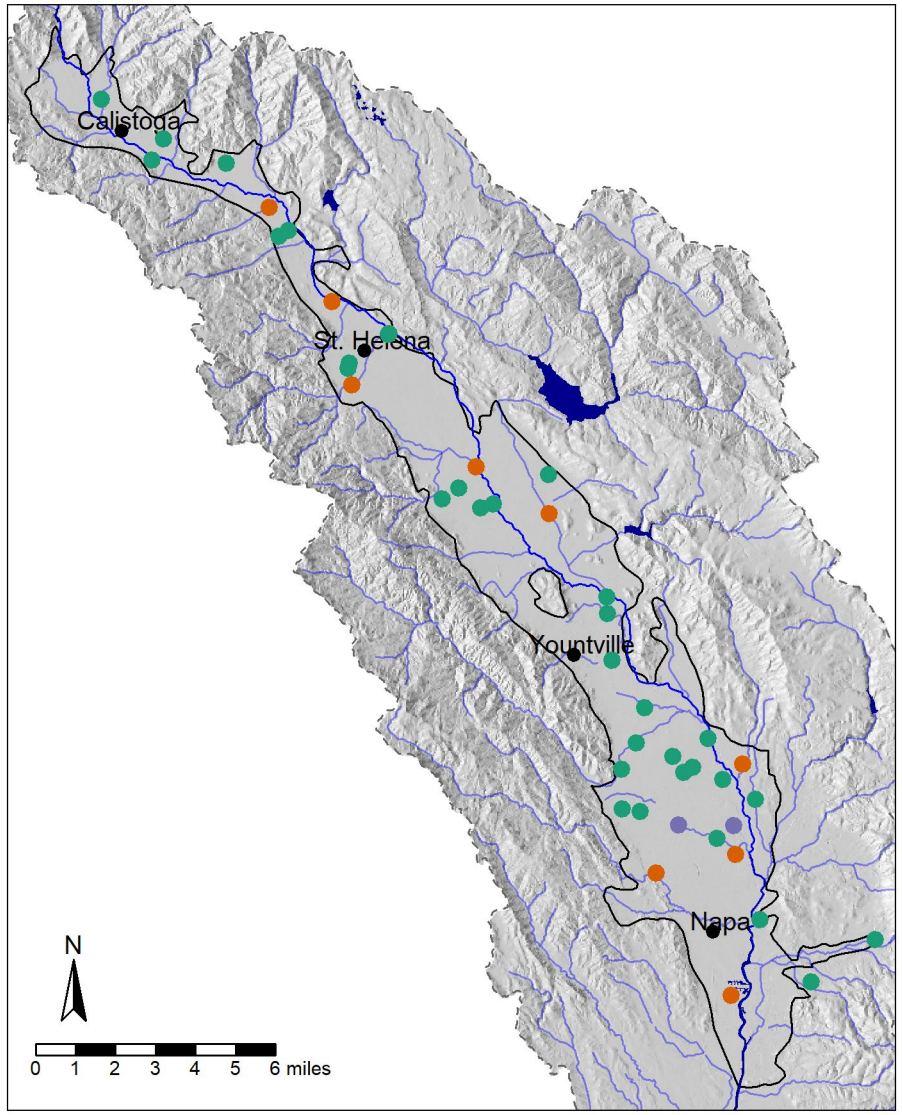


NOTE: Gaps in this data record have been reconstructed using data from the Oakville CIMIS station (77) and NOAA Saint Helena, CA station (GHCND:USC00047846).

Precipitation: Water Year 2024



Changes in Quaternary Alluvium (Qa) Monitoring Sites

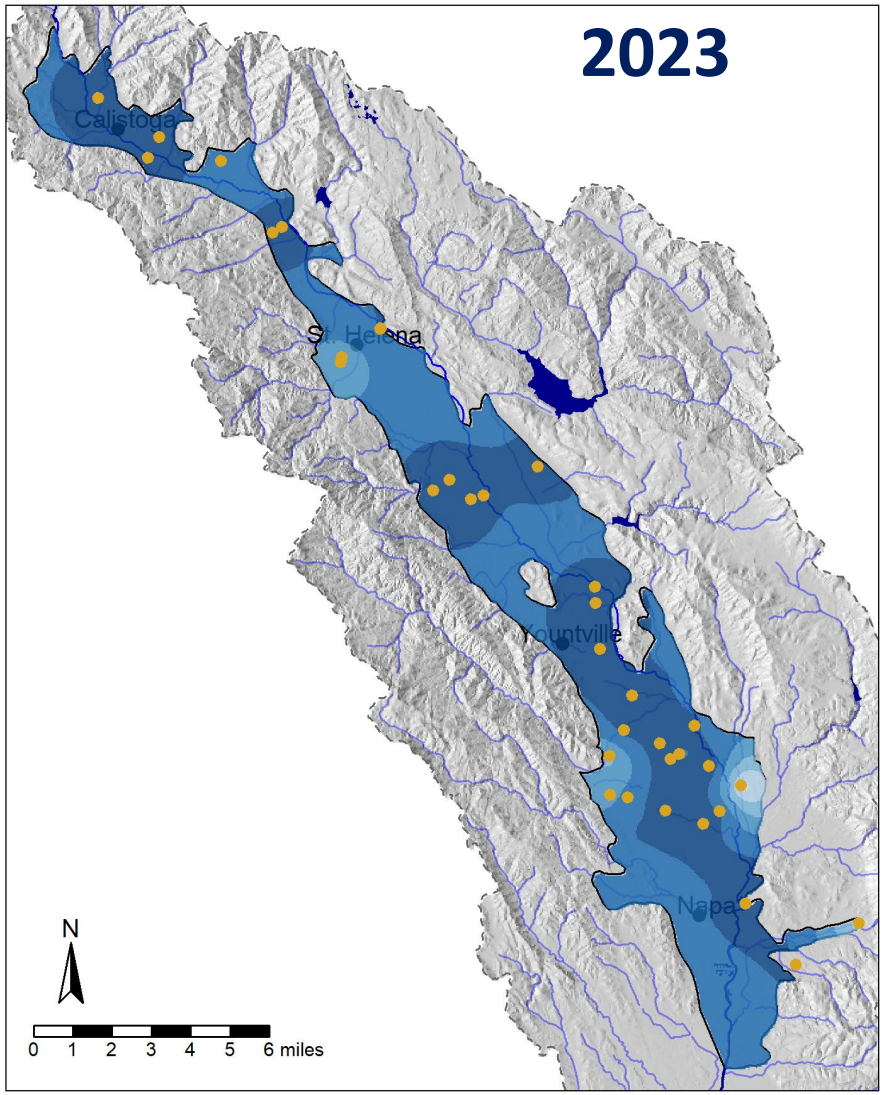


- Generally shallow wells screened within the alluvium are used to assess water table conditions.
- Total of 44 wells uses to assess storage in 2023/2024.
- Two wells were only measured in 2023.
- Nine wells only measured in 2024 (including the eight new ISW wells).

Wells in 23/24

- Continuous
- Not Measured 2023
- Not Measured 2024

Depth to Water (DTW) for Spring 2023 and 2024

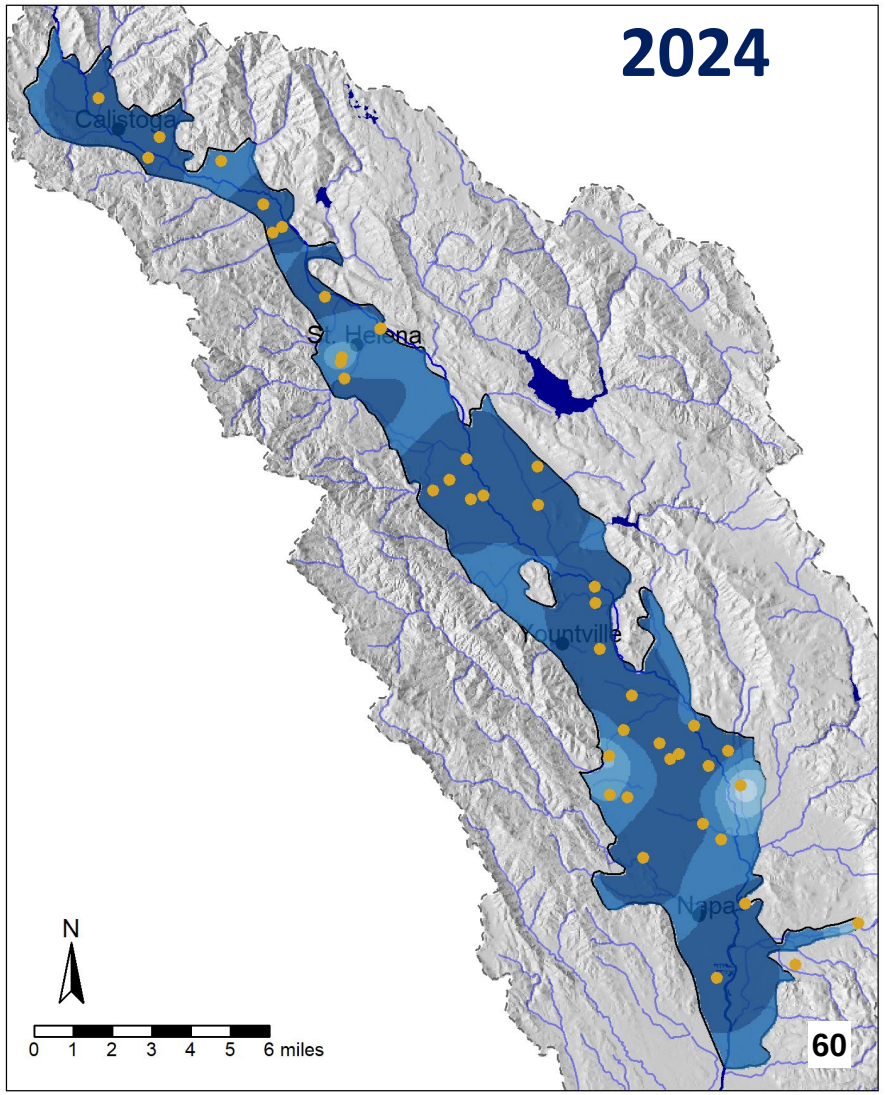


Similar pattern of DTW from 2023 to 2024. Generally, DTW are:

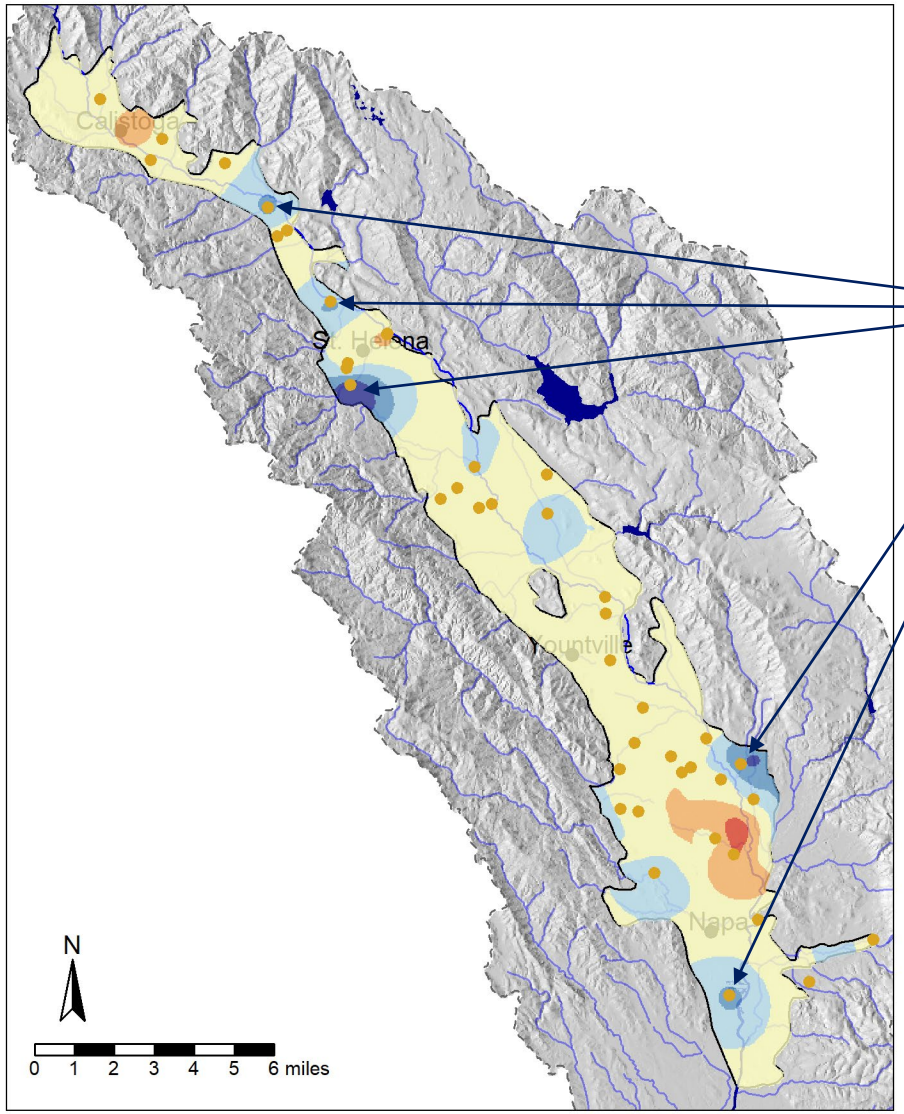
- Calistoga: 2-36 ft bgs
- St. Helena: 7-58 ft bgs
- Yountville: 4-26 ft bgs
- Napa: 4-88 ft bgs

Depth to Water
(ft below ground surface)
- 0 to 20
- 20 to 40
- 40 to 60
- 60 to 80
- 80 to 100
- 100 to 120

Groundwater Well (Qa)



Change in Saturated Thickness from 2023 to 2024



New wells had generally higher heads than would be expected based on previous interpolation of groundwater elevations.

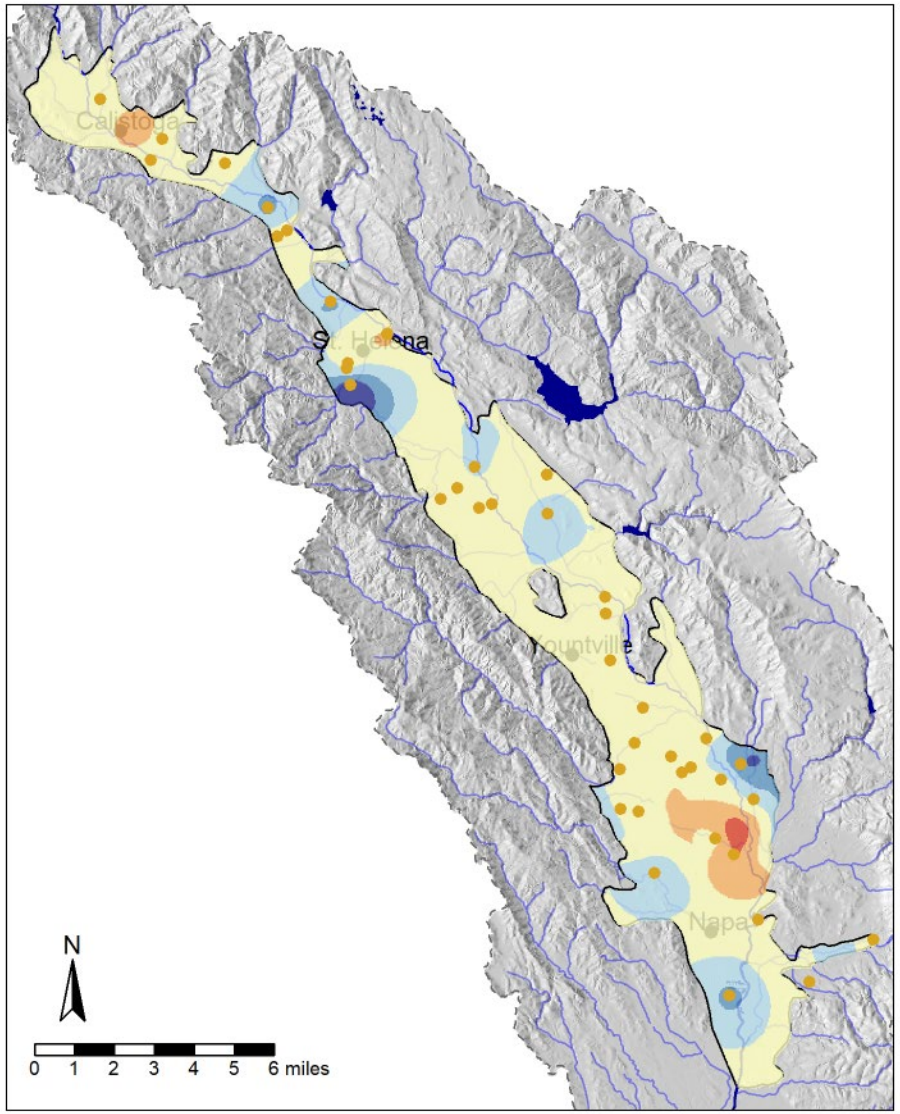
New wells addressed important data gaps throughout the Subbasin. Dedicated monitoring wells provide important measurements of water table conditions.

Groundwater Elevation Change
(2023 to 2024)

- -25 to -15 (ft; lower in 2024)
- -15 to -5
- -5 to 5
- 5 to 15
- 15 to 25
- 25 to 35 (ft; higher in 2024)

Groundwater Well (Qa)

Change in Saturated Thickness from 2023 to 2024



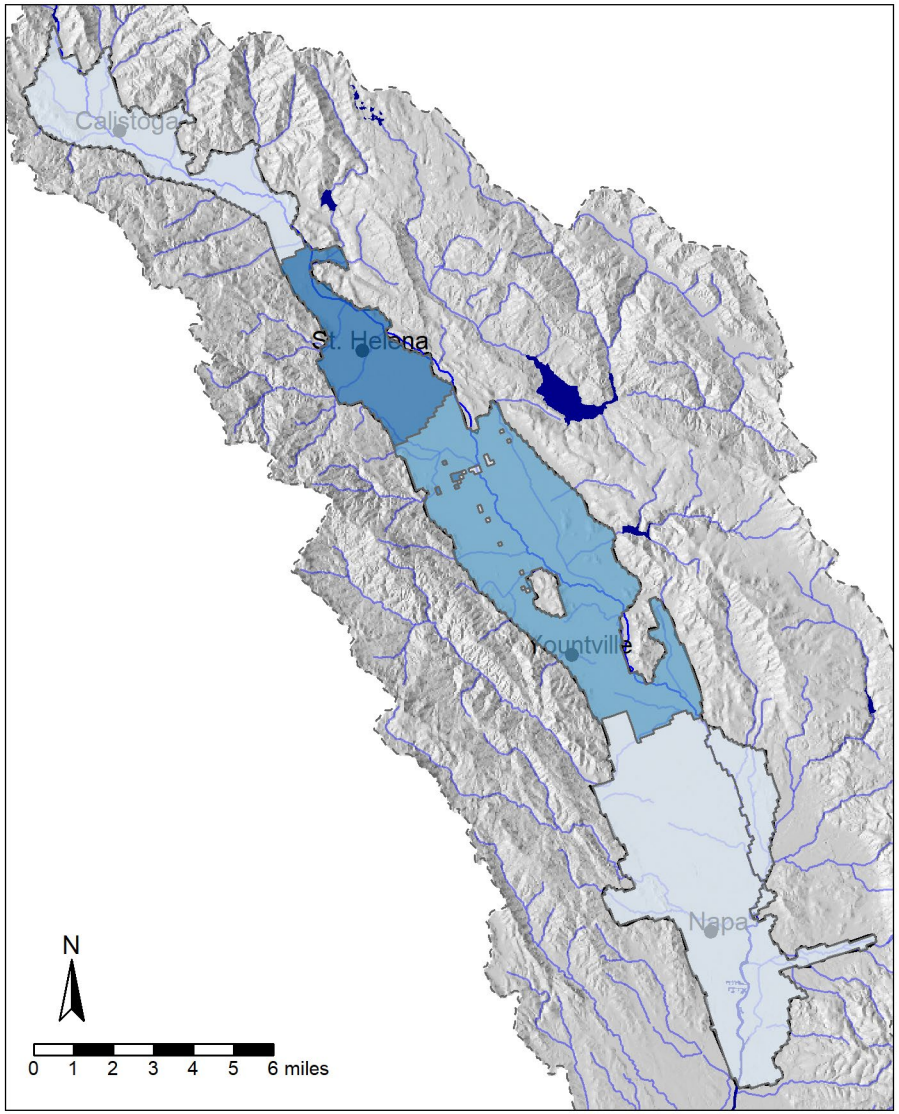
- For wells measured in both 2023 and 2024, year-to-year changes ranged from -7.9 decline to 8.2 increase (feet).
- Total estimated increase in groundwater storage of **3,500 acre-feet**.

Groundwater Elevation Change
(2023 to 2024)

- -25 to -15 (ft; lower in 2024)
- -15 to -5
- -5 to 5
- 5 to 15
- 15 to 25
- 25 to 35 (ft; higher in 2024)

Groundwater Well (Qa)

Change in Storage from 2023 to 2024 by Area

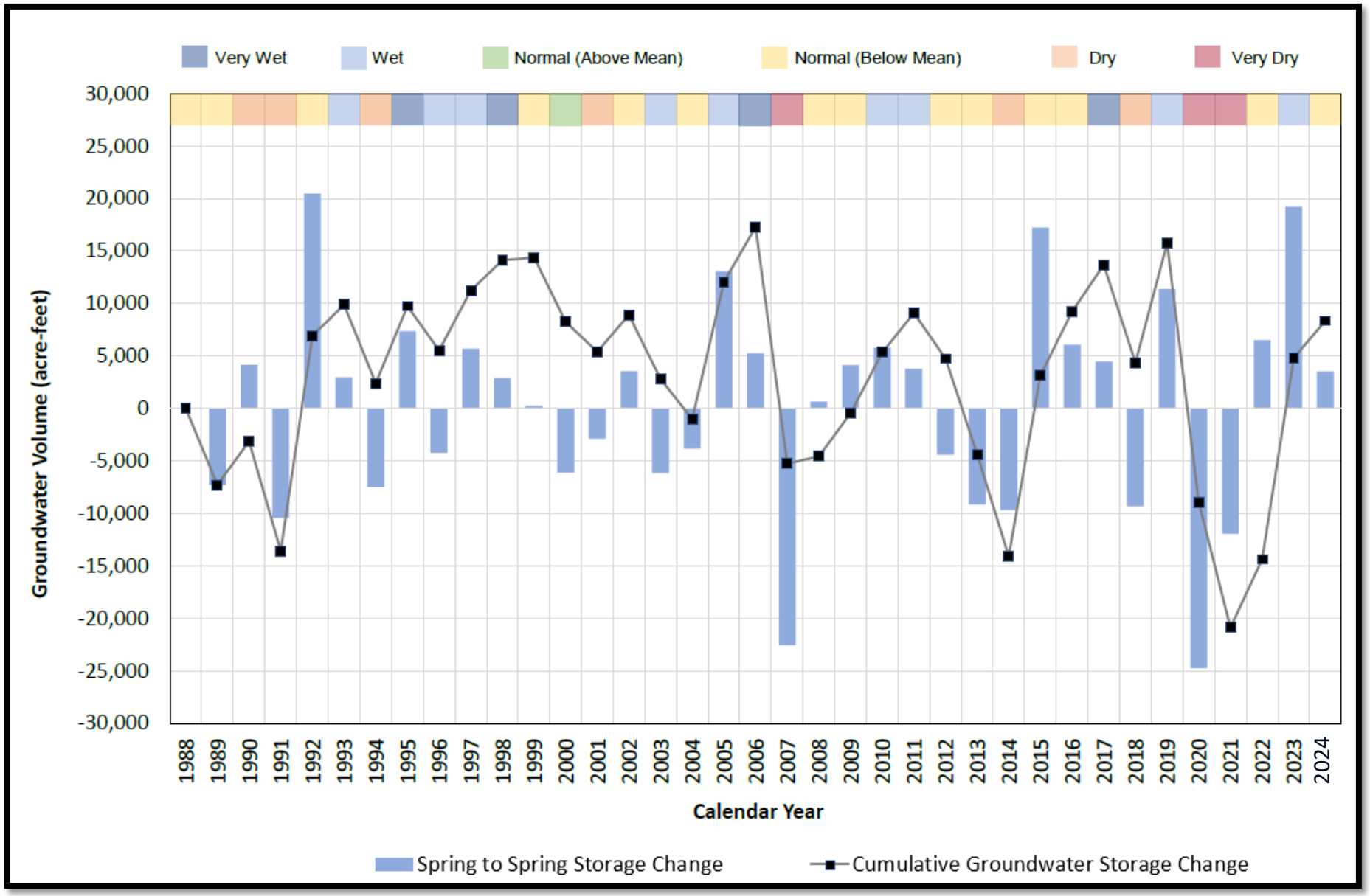


- All areas increased in storage.
- From north to south (in ac-ft), Calistoga (+200), St. Helena (+1,800), Yountville (+1,000), Napa (+300), and Northeast Napa (+130).
- St. Helena increased by ~0.33 ac-ft/ac, other areas ranged from 0.02-0.07 ac-ft/ac.
- Total estimated increase in groundwater storage of **3,500 acre-feet**.

Change in Storage 2024 (ac-ft)

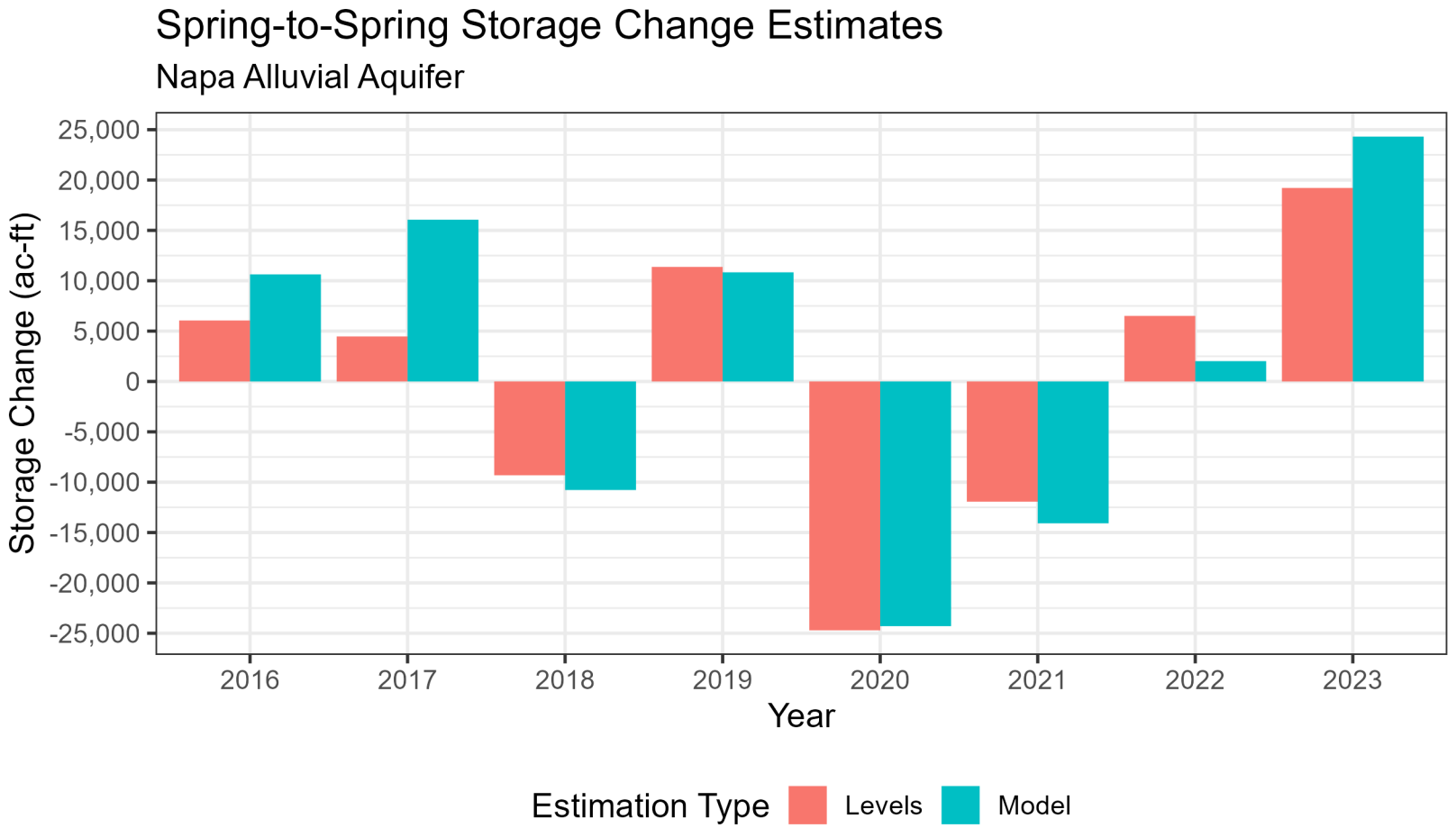
- 0 to 500
- 500 to 1,000
- 1,000 to 1,500
- 1,500 to 2,000

Subbasin Estimated Storage Change: Spring to Spring Groundwater Levels



- Spring 2024 marks the third year of increased groundwater storage.
- Average start to WY 2024 further increased storage across the Subbasin.
- Storage change was essentially stable in Calistoga and Napa with slight increases in St. Helena and Yountville.

Subbasin Estimated Storage Change: Comparing Modeled to Analytical Estimation



- Change in storage calculations, both through water levels and within the NVIHM, generally agree.
- Differences include:
  - Basin geometry/extent.
  - Water levels integrate all fluxes.
  - Model better accounts for areas without data.

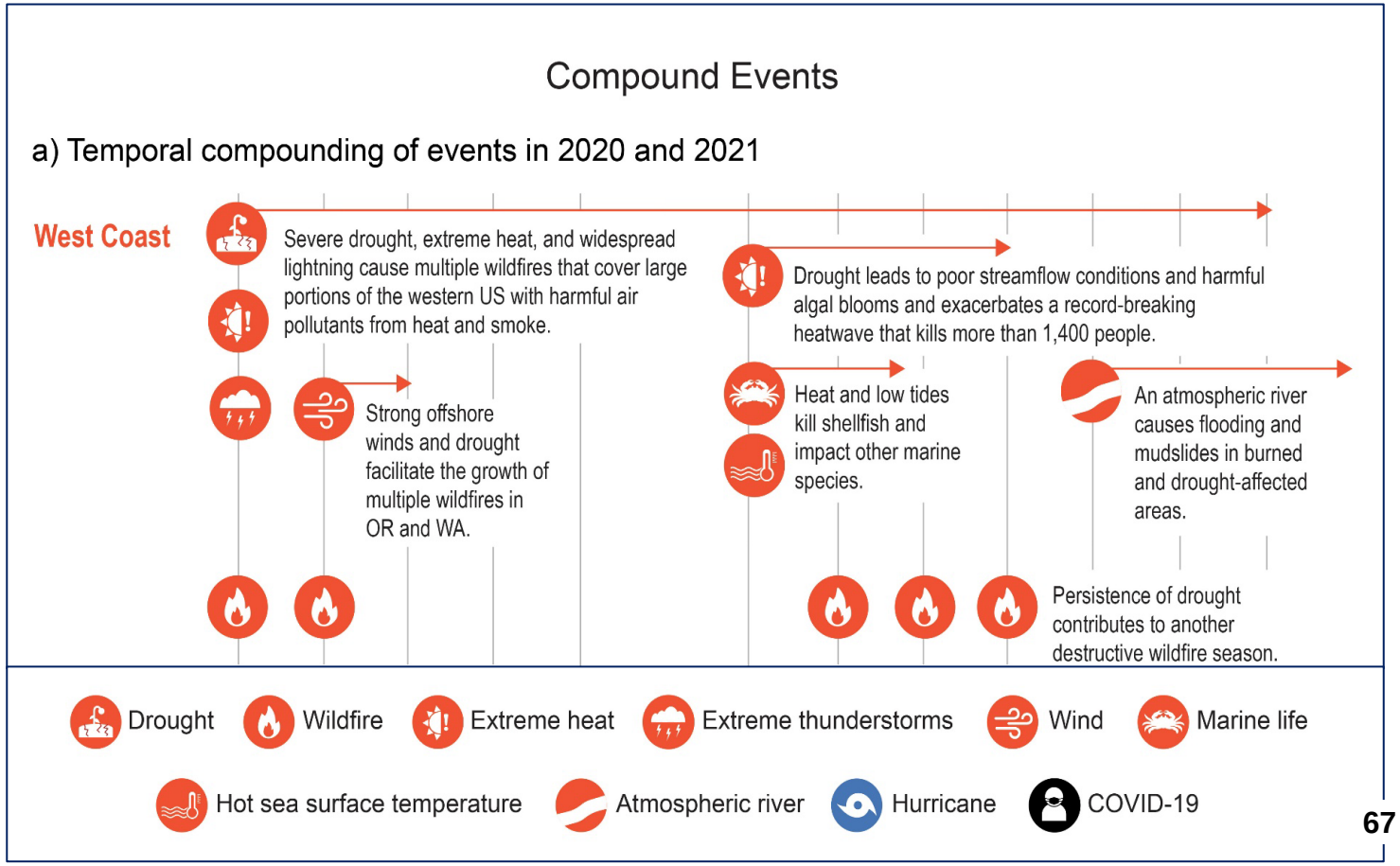
Climate Change and Potential Impacts From Fifth National Climate Assessment

- The Fifth National Climate Assessment (NCA5) was published in 2023 and provides tools for the entire country to assist decision makers in understanding climate impacts.
- Impacts to multiple sectors are detailed including water, energy, forest, ecosystems, agriculture, transportation, etc…
- County level impacts were assessed based on four climate scenarios, 1.5°C (2.7°F), 2°C (3.6°F), 3°C (5.4°F), and 4°C (7.2°F).

Jay, A.K., A.R. Crimmins, C.W. Avery, T.A. Dahl, R.S. Dodder, B.D. Hamlington, A. Lustig, K. Marvel, P.A. Méndez-Lazaro, M.S. Osler, A. Terando, E.S. Weeks, and A. Zycherman, 2023: Ch. 1. Overview: Understanding risks, impacts, and responses. In: *Fifth National Climate Assessment*. Crimmins, A.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, B.C. Stewart, and T.K. Maycock, Eds. U.S. Global Change Research Program, Washington, DC, USA.

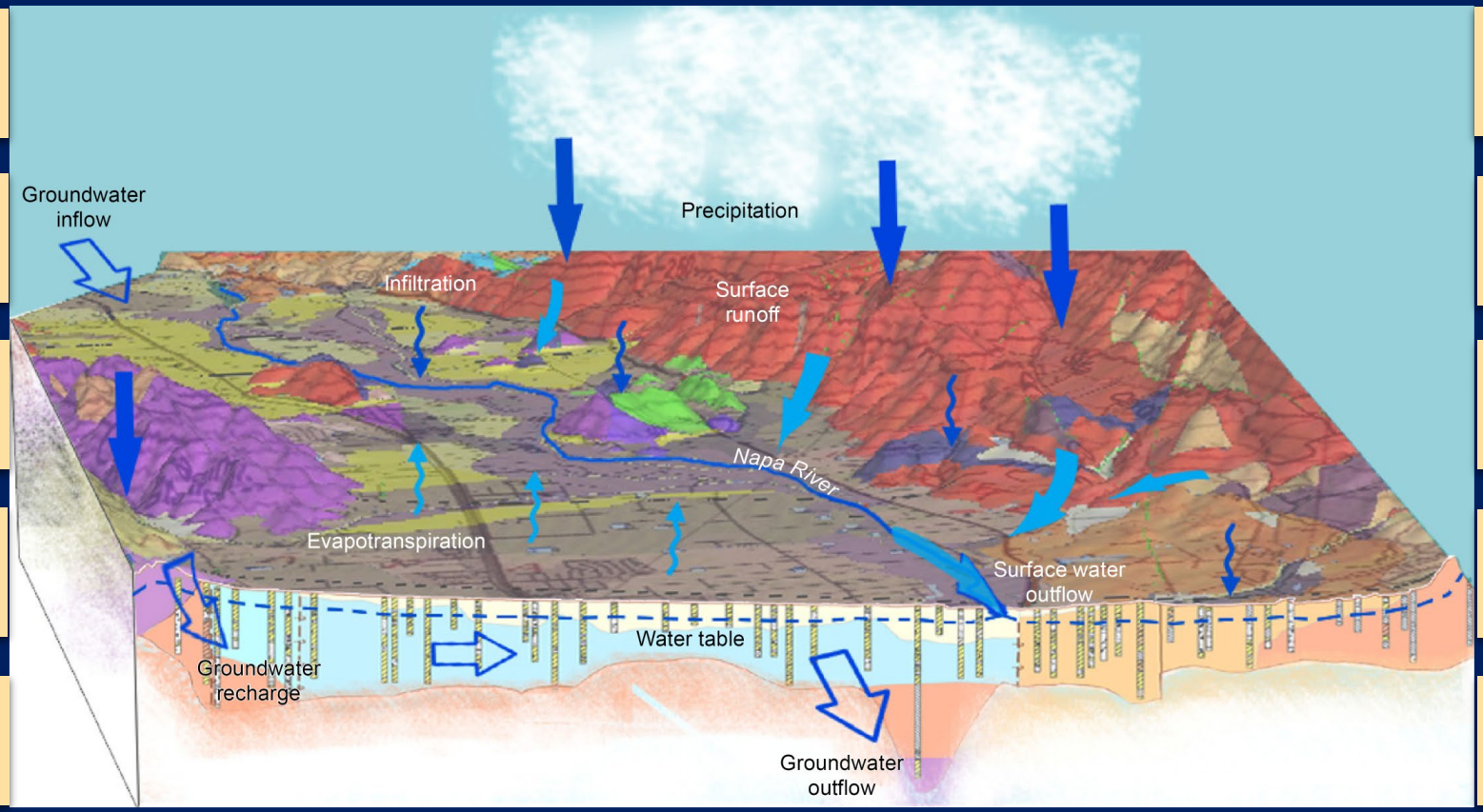
Key Takeaways from NCA5

- Increase in compound and cascading events:
  - Compound events result from occurrence of multiple climate drivers or hazards either in individual or multiple locations that, when combined, have greater impacts than isolated hazards.
- Hotter hot days as well as hotter minimum temperatures are expected.
- More precipitation is simulated under most climate scenarios.
- More high-intensity storms.



Addressing Climate Urgency

- Increasing Extreme Precipitation
- Changing Hydrological Variability
- Shifting Streamflow Timing
- Increasing Drought Severity
- Increasing Evaporative Demand



- Increase Avg/Extreme Air Temperature
- Increasing Wildfires
- Increasing Flooding
- Changing Groundwater Recharge
- Increasing Water Temperature

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

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

Cover Crops and building Soil Health

Vineyard-Specific BMPs: Conservation/ Recharge

SW Right: Winter Recharge

Tile Drainage: Capture and Store for In-Lieu Use

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

Adapting to Climate Change by Building Resiliency

BMPs to Recharge Groundwater

Maintain/Improve Groundwater Discharge to Streams

Maintain/Improve Functional Flows

Capture/Store Surplus Stormwater to Buffer Drought Effects

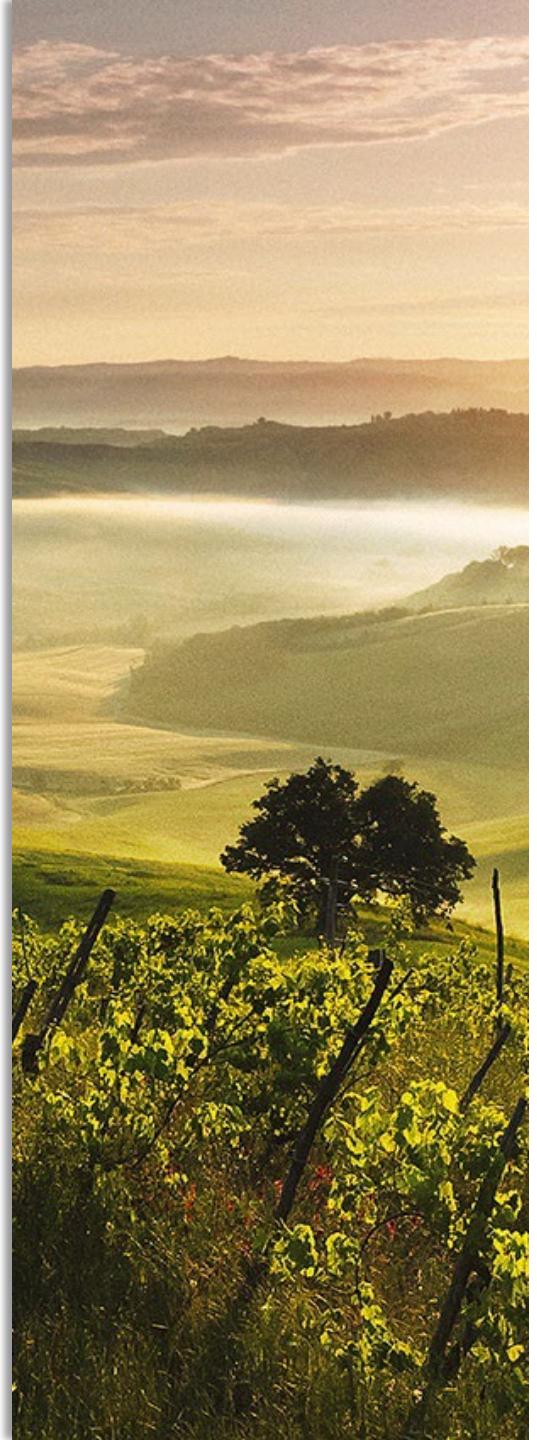
Enhance Soil Moisture Profile

Reduce GDE Drought Effects

Drought or Deluge: Conservation as a Napa Way of Life

- California is experiencing hotter/drier conditions, including uncertain climate with more extreme events.
- Approaches are needed to adapt to climate change, build resiliency, and better protect interconnected surface water.
- Napa Valley vineyards and wineries are widely recognized for their resource stewardship and conservation practices.
- These uncertain times and changing climate call for ***Conservation as a Napa Way of Life***.

4Rs: Retain – Replenish – Resilience – Reserves



Questions and Discussion

Thank You

Napa County Groundwater Sustainability Agency

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