

Implementing Environmental Flow Programs: Status, Challenges and Needs

Presentation to Commission – December 9, 2021

Eric Stein – Biology Department

What Has Been Happening Lately?

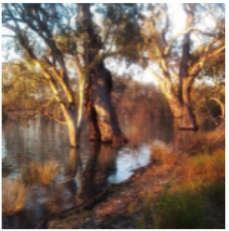
- State framework (CEFF) and local projects have been completed
 - ✓ Tools developed and ready for use
- Implementation has taken several forms
 - ✓ Planning support
 - ✓ Prescriptive requirements
- Opportunities for integration with other management programs are emerging

Status Updates

- CEFF – framework finalized
 - ✓ Initial statewide implementation through cannabis cultivation policy
- LA River – completed
 - ✓ Working with WRPs on use of scenario analysis tools
 - ✓ Assessing implications of channel restoration under LA River Master Plan
- OC Flow-ecology Special Study
 - ✓ Phase 1 models and tools complete
 - ✓ Waiting for co-permittees to use tools to inform future actions
- Flow-duration analysis tools
 - ✓ First two regions released
 - ✓ Additional regions currently being developed

CA Environmental Flows Framework (CEFF)

Provides statewide technical guidance for managers to develop scientifically defensible environmental flow recommendations following a functional flows approach.



Research Topic

Environmental Flows in an Uncertain Future

- SCCWRP special topic co-editor
- 20 papers, 8 related to CEFF
- 6 w/SCCWRP co-authorship

ORIGINAL RESEARCH
published: 28 October 2021
doi: 10.3389/fenvs.2021.769943



The California Environmental Flows Framework: Meeting the Challenges of Developing a Large-Scale Environmental Flows Program

Eric D. Stein^{1*}, Julie Zimmerman², Sarah M. Yarnell³, Bronwen Stanford⁴, Belize Lane⁵, Kristine T. Taniguchi-Quan¹, Alyssa Obester⁴, Theodore E. Grantham⁶, Robert A. Lusardi³ and Samuel Sandoval-Solis^{3,7}

California Environmental Flows Framework



Prepared by

California Environmental Flows Working Group

*a committee of the California Water Quality
Monitoring Council*

Funded by

State Water Resources Control Board

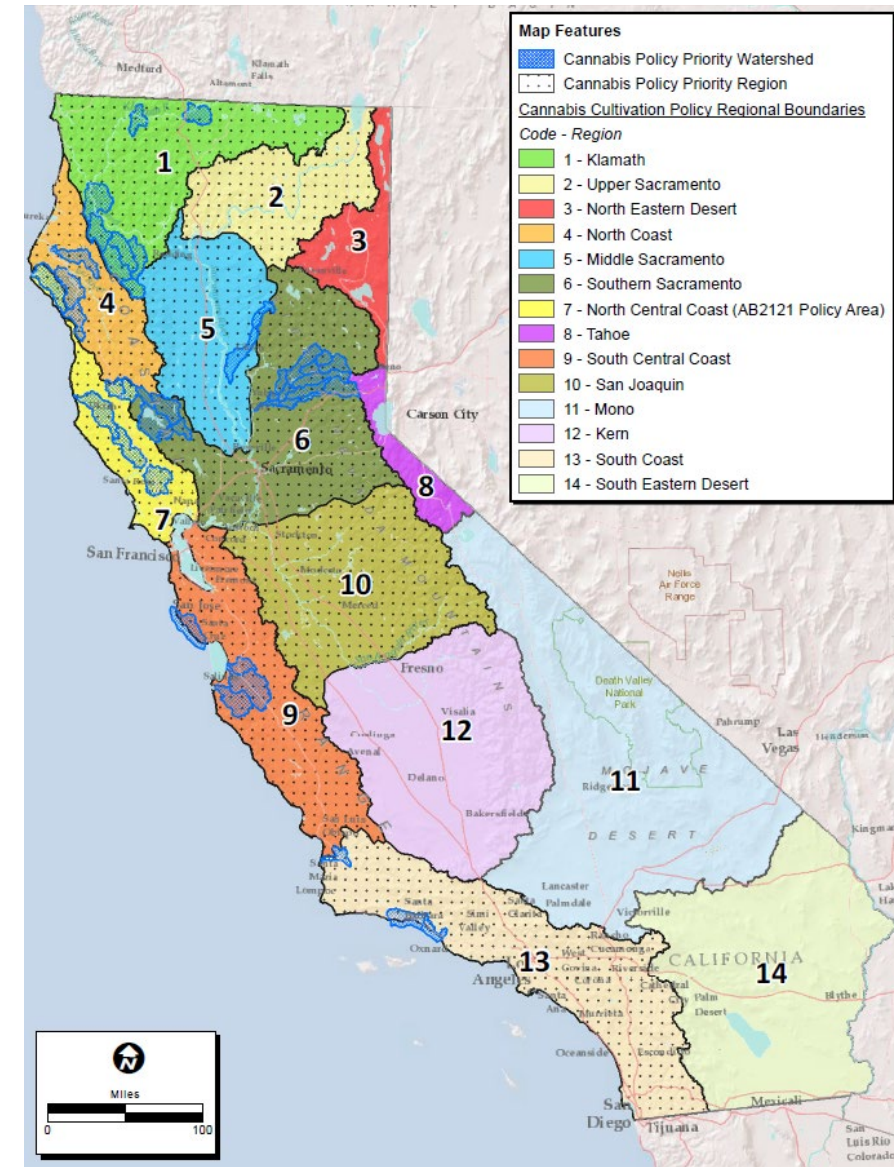
Division of Water Rights

Version 1.0

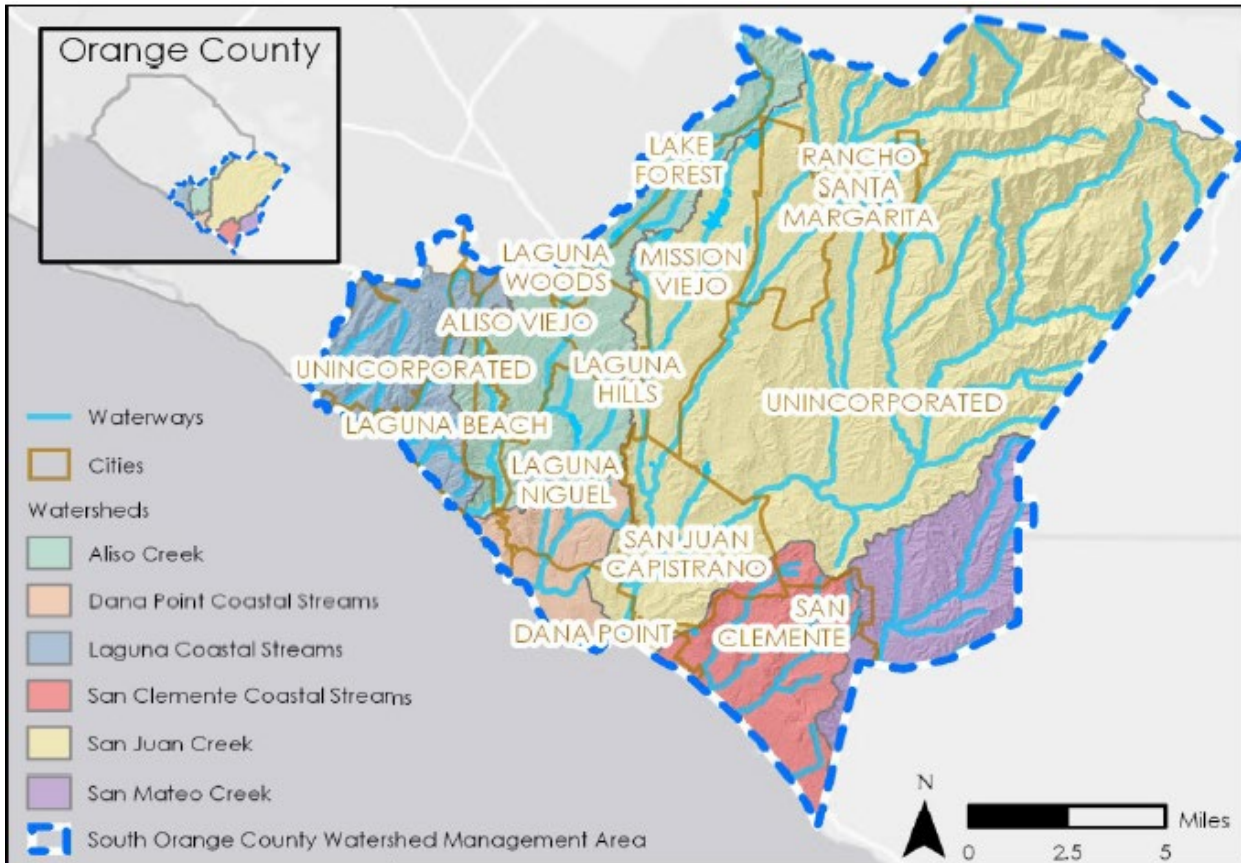
March 2021

CEFF Implementation

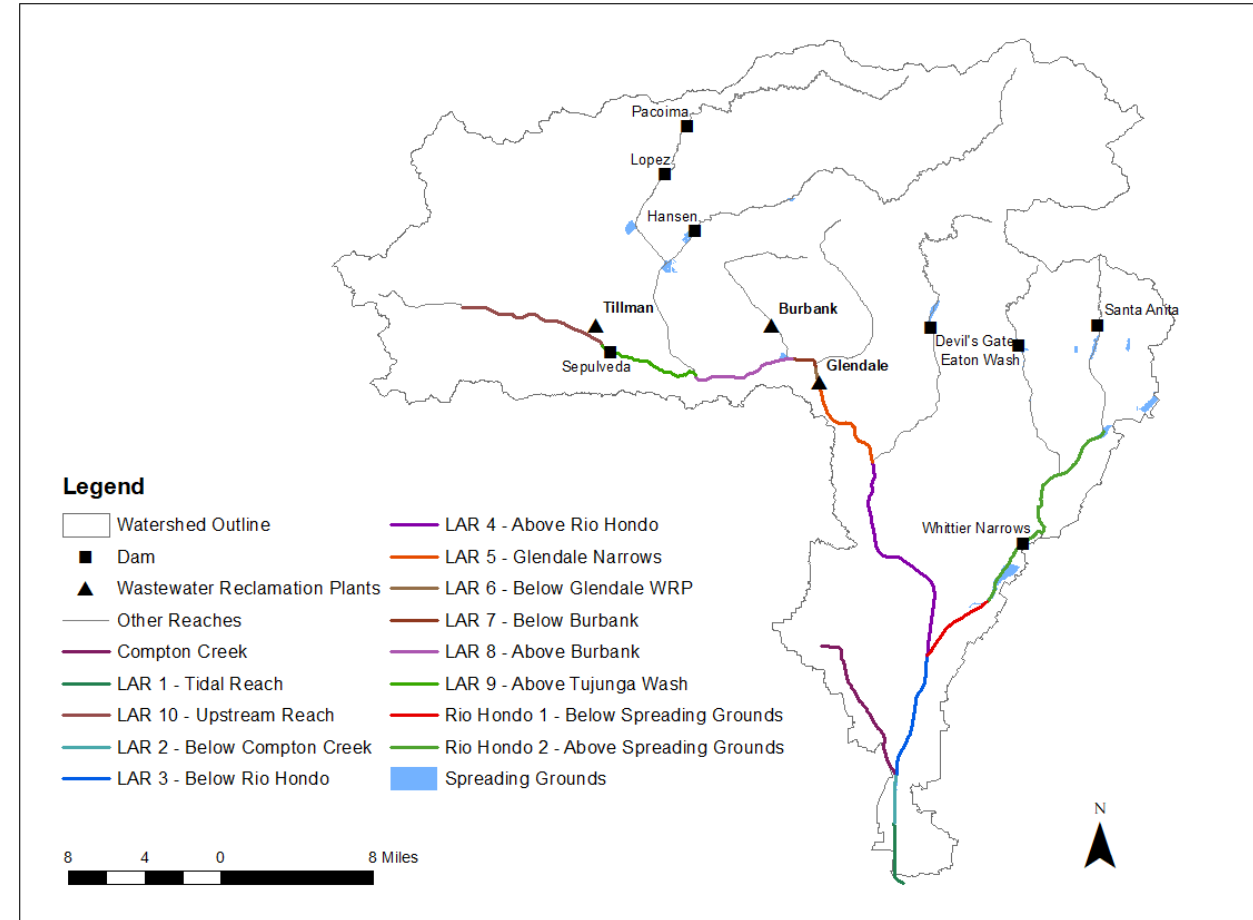
- State Water Board Division of Water Rights is implementing CEFF in priority regions through their Cannabis Policy
 - ✓ Starting in the North Coast
 - ✓ Will eventually apply statewide
- Products will be a series of user tools:
 - ✓ Flow criteria by stream type
 - ✓ Annual Flow diversion schedules
 - ✓ Risk evaluation tools (sensitivity to flow changes)



Southern California CEFF Applications



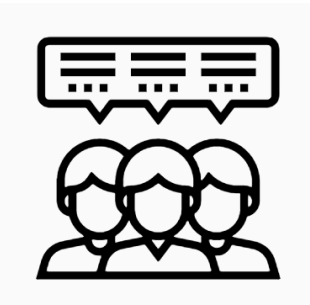
South Orange County Unnatural Water Balance Study



Los Angeles River Environmental Flows Study

Overall Outcomes

- We have developed a set of **tools** that can be used to inform decisions about establishing flow management targets
- The tools are **highly flexible** and **transferable**
- There is **broad agreement among stakeholders** on the application and utility of these tools



What areas should be prioritized for management?

Prioritization for Additional Analysis

Based on Biologically-Relevant Flow Alteration

Thresholds of Alteration

of flow metrics altered:

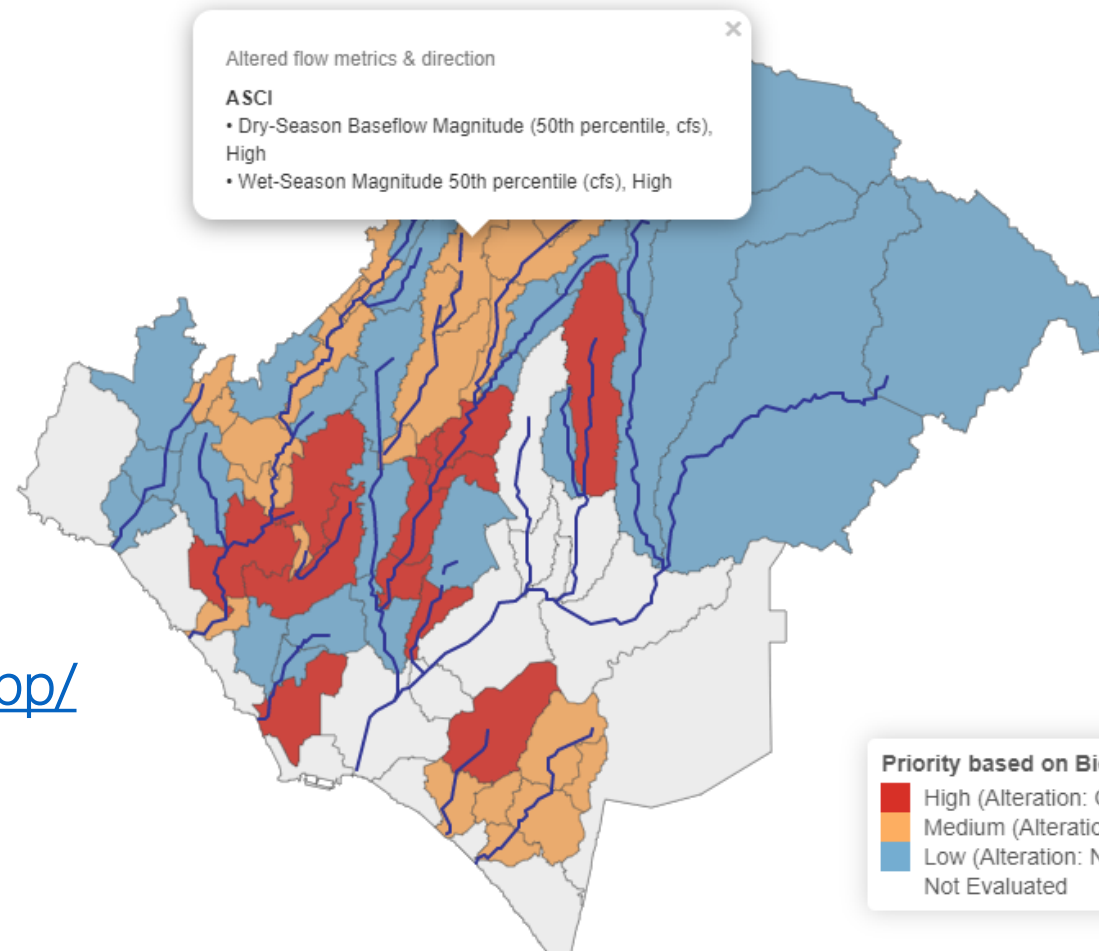
2

% of years altered:

0% 51% 100%

0 10 20 30 40 50 60 70 80 90 100

Download data



https://sccwrp.shinyapps.io/socfess_shinyapp/

Application of Tools to Support Restoration Planning

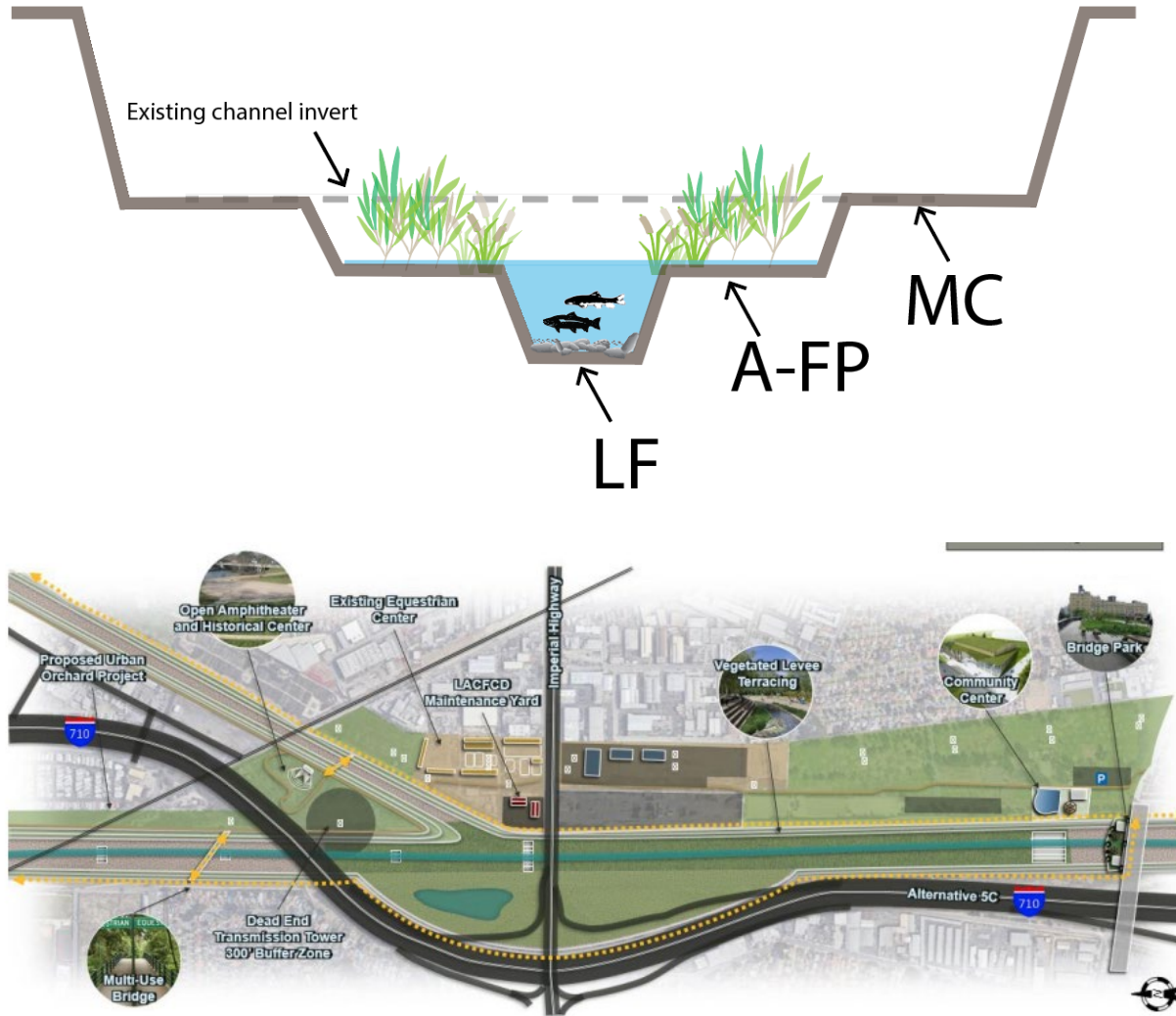
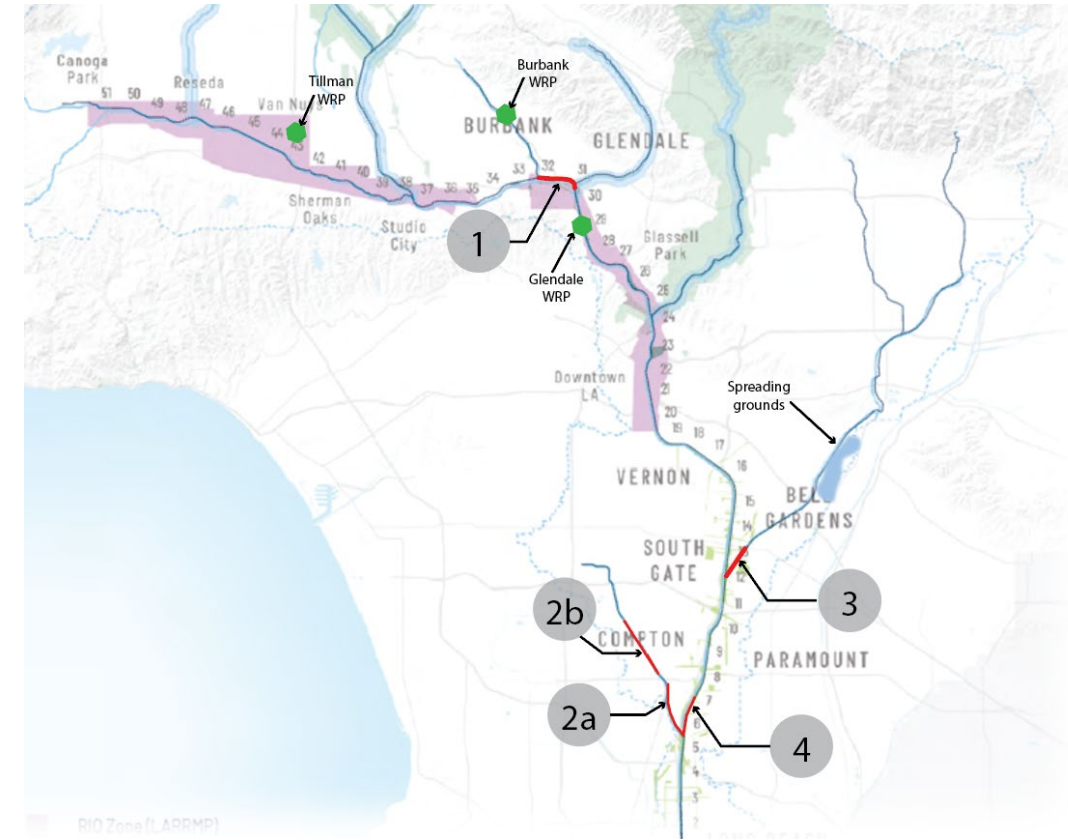


Figure 3.4-10. Configuration 3 Conceptual Layout - Soft-Bottom River with Relief Drain




Streamflow Duration Assessment

- Changes to federal rules on WOTUS from one administration to the next have may impact CWA jurisdiction
 - ✓ May affect regulatory requirements under Sections 401, 402, 404 CWA
 - ✓ Waters of the State: Much more expansive than WOTUS.
- SCCWRP is technical lead for USEPA on development of tools to assess streamflow duration for jurisdictional determinations
 - ✓ Field-based tools where long term hydrologic data is not available
 - ✓ Protocols and data management
 - ✓ User tools and training

Eventual Nationwide Application


Regional SDAMs

Completed


 Pacific Northwest


Beta version


 Arid West


 Western Mountains

In development

 Northern Great Plains

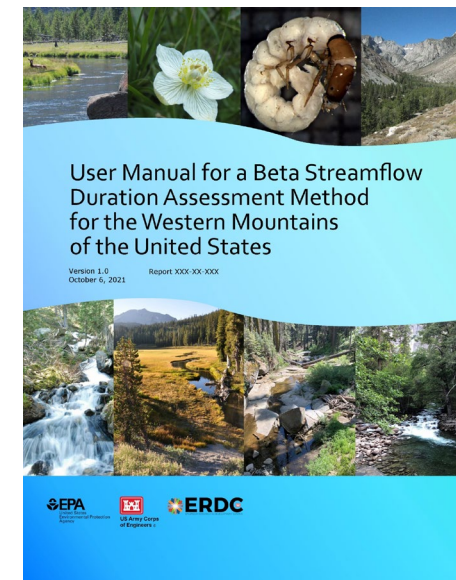
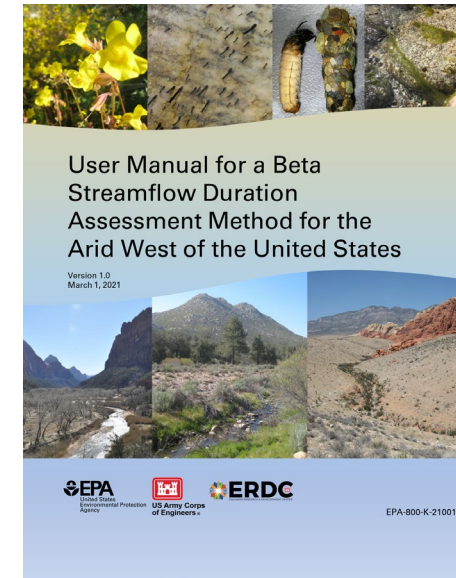
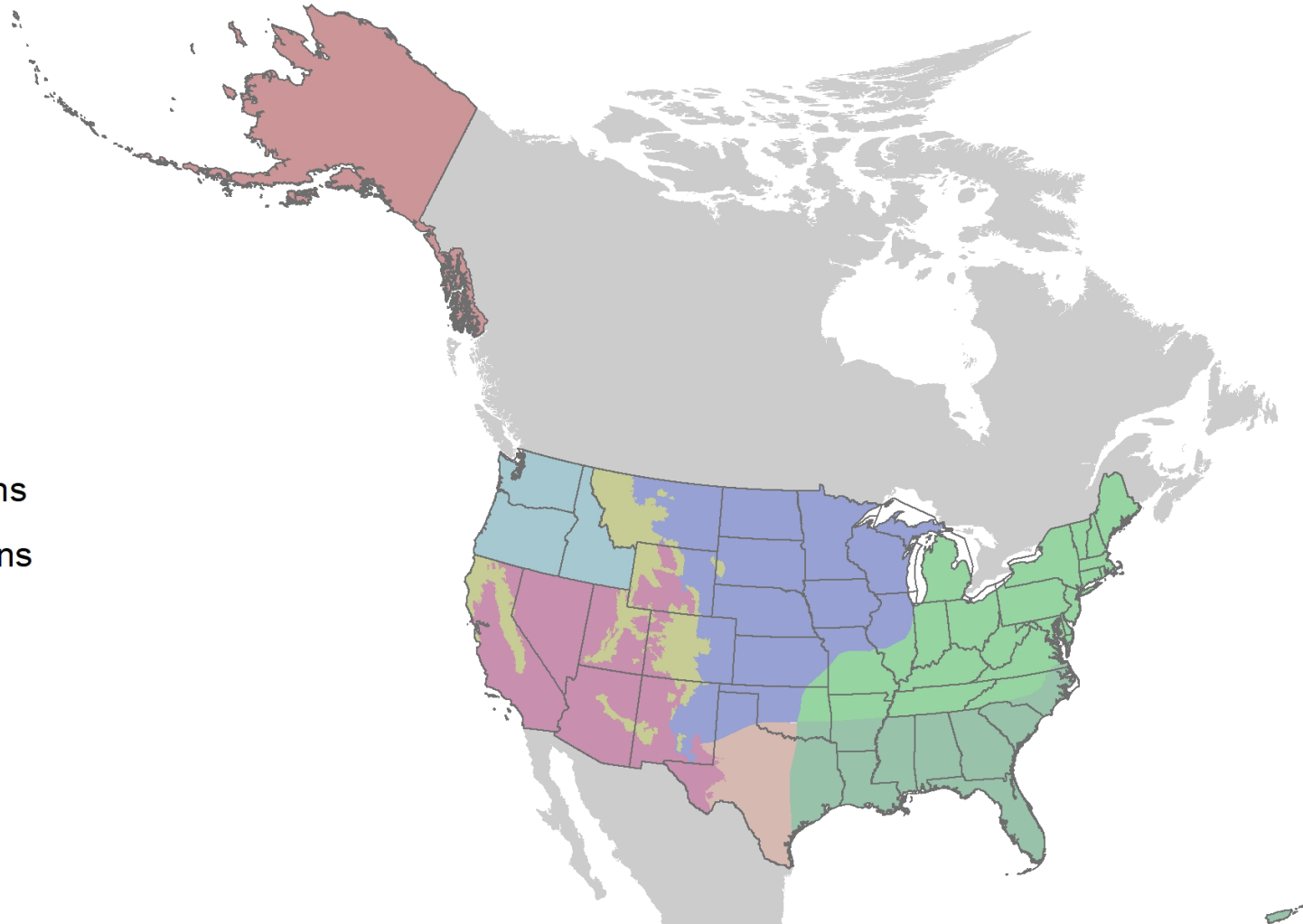
 Southern Great Plains

 Northeast

 Southeast

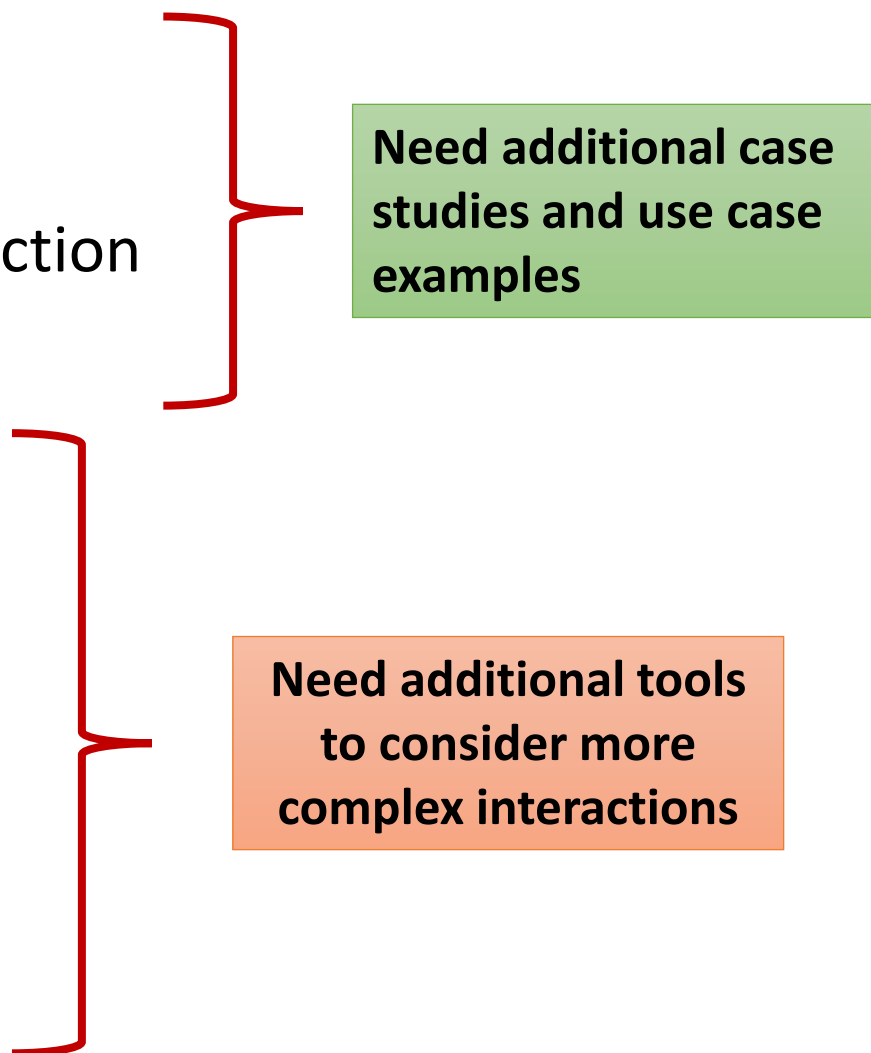
 Hawaii

 Alaska



Potential Applications of Flow-Ecology Tools

- Water recycling/reuse
- Flow diversions, stormdrain flow reduction
- Hydromodification management
- Groundwater recharge
- Temperature management
- Restoration/mitigation projects



Need additional case studies and use case examples

Need additional tools to consider more complex interactions

How Well Can We Address Various Needs?



Ready for
Application

- ✓ Water recycling/reuse
- ✓ Flow diversions
- ✓ Stormdrain retrofit



Need for
multi-stressor
biological
models

- ✓ Temperature management
- ✓ Habitat restoration



Need for
Coupled
Physical
Models

- ✓ Groundwater recharge
- ✓ Hydromodification management

How Will This Affect You?

IT DEPENDS!!

- **Prescriptive use (e.g., Cannabis Policy)**
 - ✓ Flow standards or criteria
 - ✓ Diversion schedules
 - ✓ Compliance targets
- **Planning applications (e.g., LA River Water Reuse)**
 - ✓ Tools to assess potential effects of diversions
 - ✓ Prioritization of locations for management or restoration
 - ✓ Restoration design guidelines



Discussion

Eric Stein

erics@sccwrp.org

www.sccwrp.org

