

SCCWRP and the Biointegrity Policy

- **SWRCB decided they wanted to use biology as a tool for judging waterbody condition**
 - chemical, physical and biological health
- **Asked SCCWRP to provide the technical foundation**
 - Collaboration with CDFW
- **Three main tasks**
 - Reference condition
 - Scoring tool
 - Causal assessment

Linking Causal Assessment to Biointegrity Policy

- **Not every stream is going to be in “good” biological condition**
- **When a stream is non-compliant, site-specific causes need to be determined for remediation**
- **Causal Assessment approaches have not been well-vetted in California**

Our Technical Challenge

- **Produce a Guidance Document as a resource for stakeholders and regulatory agencies**
- **Utilize case study summaries as teaching illustration**
 - This led to our relationship with EPA
- **Highlight important considerations**
 - Optimize stressor identification designs for California
 - Distinguish tools that work (or don't work)
 - Identify data gaps or new tools that need to be refined/created

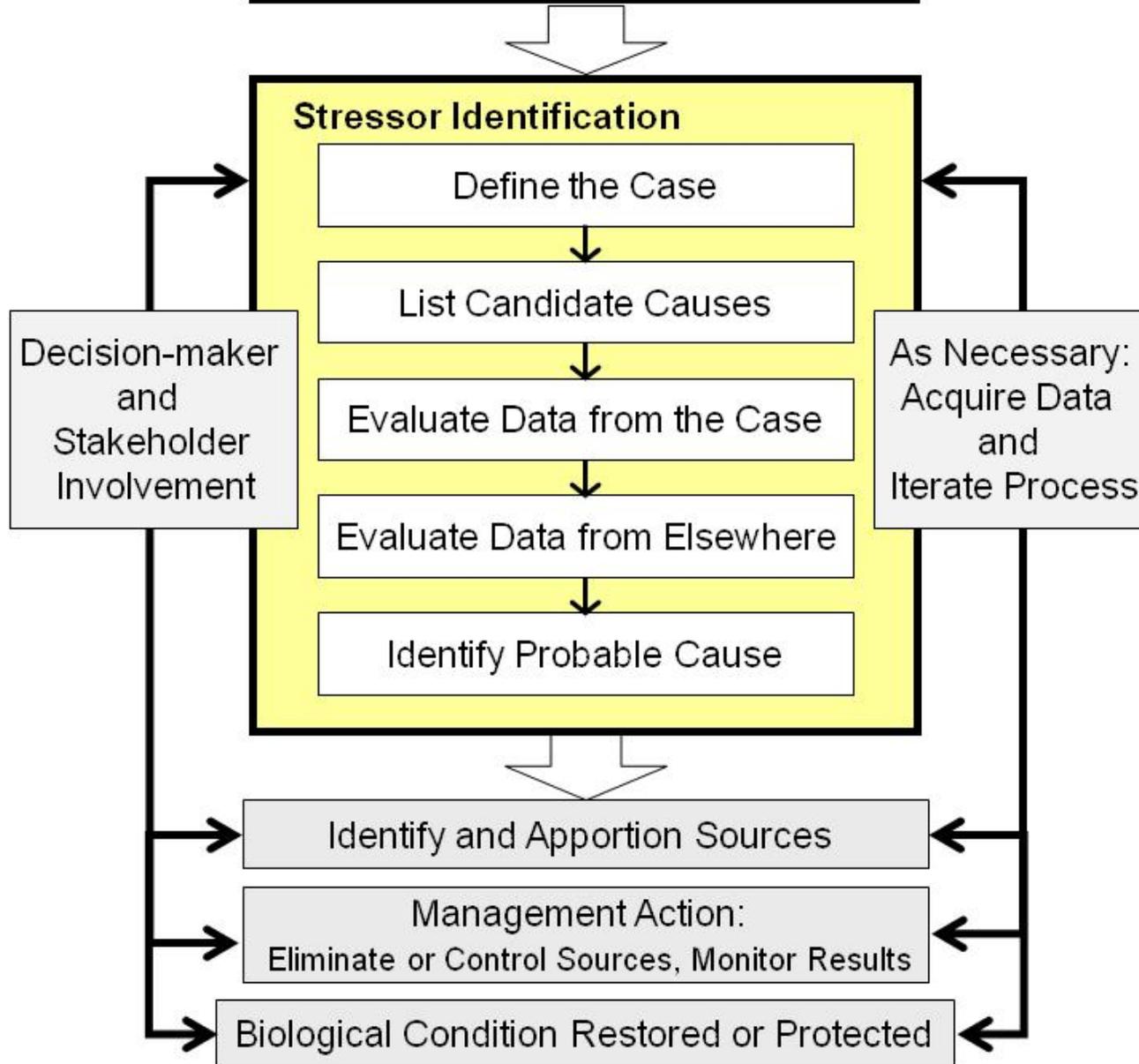
Our Final Outcome

- **Created a Guidance Manual**
 - Provides an evaluation of CADDIS
- **Our evaluation of CADDIS was positive**
 - Stakeholders need to recognize its limitations
- **We were able to identify a list of likely candidate causes in all four case studies**
 - We were also able to identify unlikely causes

Case Study Sites

Watershed	Geographically Representative	Range of Stressors	Range of Biological Condition	Data Availability	Willing Partners
Garcia River	Northern California	Timber	Good to Poor	Fair	RWQCB, Conservation Cooperative
Salinas River	Central California	Agriculture	Fair to Very Poor	Fair	RWQCB, Agricultural Cooperative
San Diego River	Southern California	Urban Stormwater	Poor to Very Poor	Good	RWQCB, MS4
Santa Clara River	Southern California	Urban Wastewater	Poor to Very Poor	Very Good	RWQCB, POTW

Detect or suspect biological impairment



Case Study Summary

Candidate Cause	Garcia River	Salinas River	Santa Clara River	San Diego River
Increased Sediments	Likely	Likely		
Reduced Physical Habitat	Likely	Likely	Unresolved	Unresolved
Ionic Strength	Unlikely	Unlikely	Likely	Likely
Altered Flow	Unlikely			
Dissolved Oxygen	Unresolved	Unlikely		
Temperature	Unresolved		Unresolved	
Nutrients	Unresolved	Unlikely	Unlikely	Unresolved
pH	Unlikely			
Pesticides		Unresolved	Unlikely	Likely
Metals		Unresolved	Unlikely	Unlikely
River Discontinuity			Unresolved	

Our Overall Evaluation

- **Bioobjectives needs a stressor identification component to be successful**
- **CADDIS is an appropriate framework, but it isn't perfect**
 - **Has strengths and weaknesses**
- **A guidance manual has been written**
 - **Because California has some unique issues, implementing the recommendations will be important**

CADDIS Strengths For California

- **Already built and documented**
 - **Creates a solid foundation for regulatory interactions**
- **Adept at ruling out causes**
- **Wonderful communication tool**

CADDIS Weaknesses For California

- **Don't expect to always find the smoking gun**
 - nonpoint, cumulative stressors are difficult to diagnose
- **Challenges finding appropriate comparator sites**
- **Need for additional data analysis tools and approaches**

Recommendations

- **Take advantage of our large statewide data set for comparator site selection**
 - Can be automated
- **Reduce uncertainty by creating new data analysis tools**
 - Will streamline analysis increasing speed and decreasing cost
- **Post-assessment steps need similar guidance**
 - How to use the causal assessment results for effective improvements

Stakeholder and Regulatory Committee Issues with Causal Assessment?

- Cautiously positive
- Before or after 303(d) listing?
- Who is responsible for conducting?
- Linkage to remediation success?