

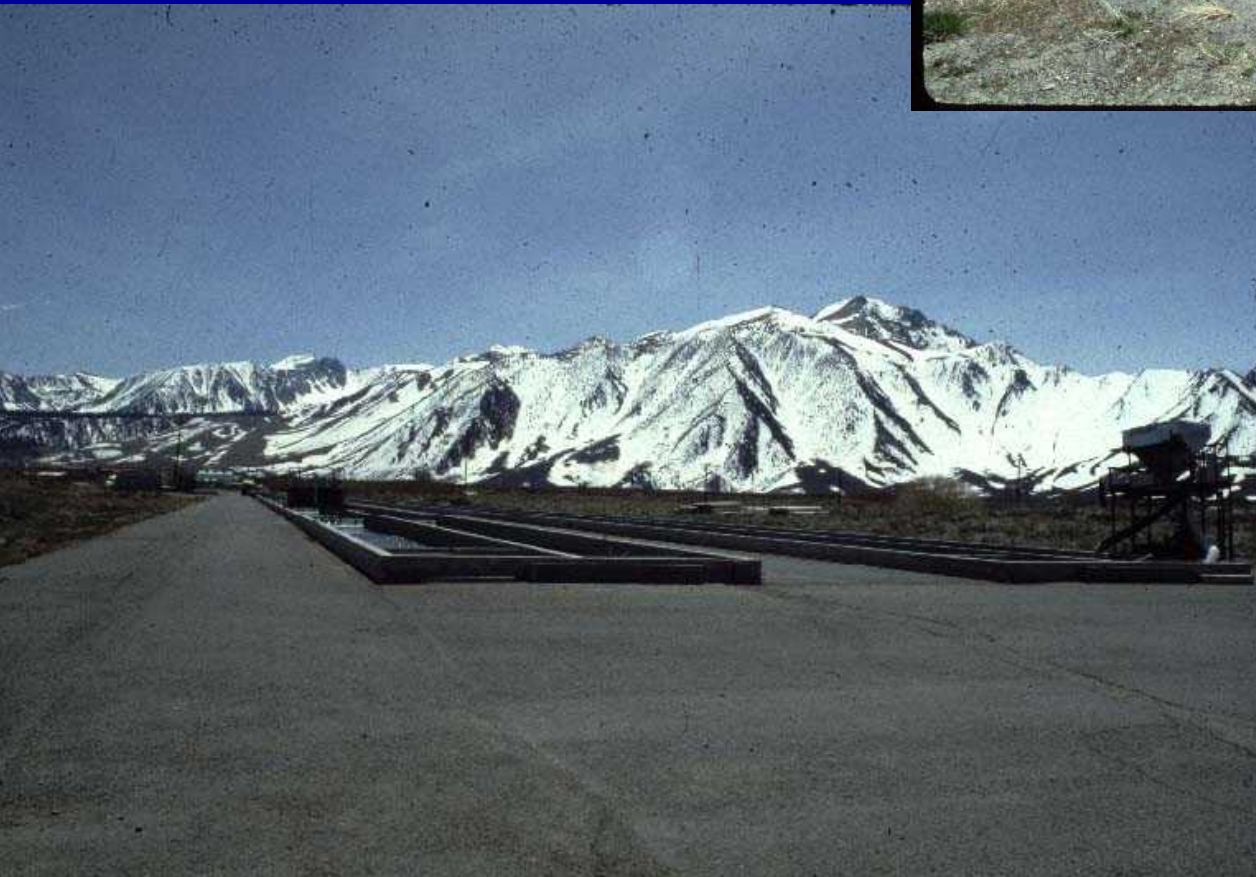


California's Successful Transition from Western Pilot EMAP to State Funded Bioassessment Program

Jim Harrington
California Dept. Fish and Game
WPCL Bioassessment Laboratory

California Department Of Fish and Game

Use of Bioassessment



**1993 Fish Hatchery
NPDES Permit**

Wildlife Areas

Rotenone Treatments

Enforcement of DFG Code 5650

Spill Response



Natural Resource Damage Assessment (NRDA)



or Bucks for Bugs



United States
Environmental Protection
Agency

**Rapid Bioassessment
Protocols
For Use In Streams And
Rivers**

**Benthic Macroinvertebrates
And Fish**



R. J. HANSEN

EPA/600/R-89/001

May 1989

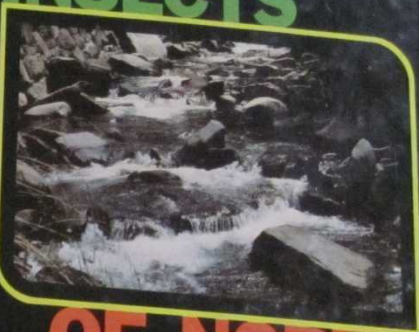
FAX: 513-489-8675

Nichols

Office of
Water
Diversity

AN INTRODUCTION TO THE

AQUATIC INSECTS

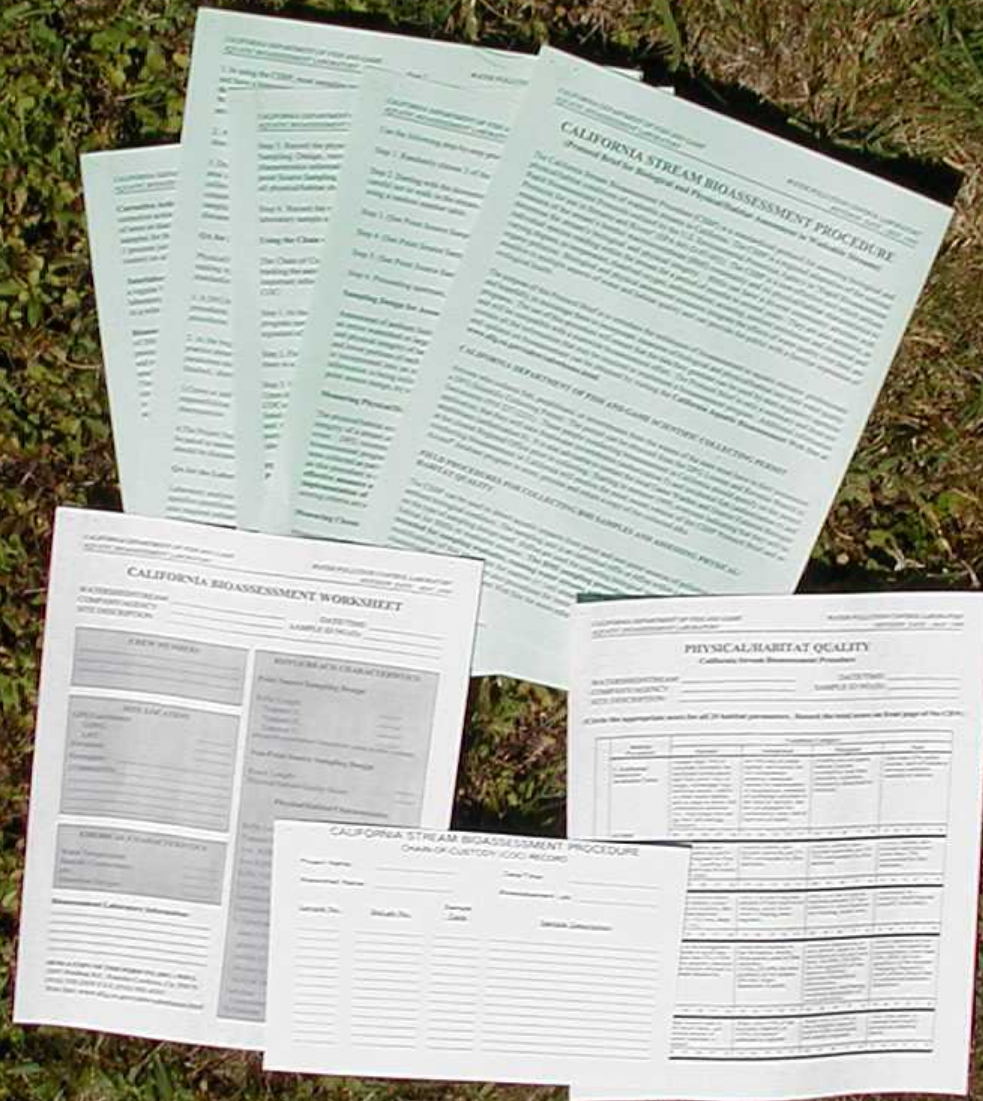


OF NORTH AMERICA

EDITED BY
R. W. MERRITT
K. W. CUMMINS



1993 California Stream Bioassessment Procedures (CSBP)





California Aquatic Bioassessment Workgroup Formed in 1994

to bring together all entities involved in bioassessment in California, disseminate information on implementing biocriteria and providing a forum for scientific review of protocols used to develop biocriteria in California



California Aquatic Bioassessment Workgroup

- 1994 Established as a forum to communicate and exchange information
- 1995 Finalization of the California Stream Bioassessment Procedures (CSBP)
- 1996 Formulate the process for developing biocriteria in California
- 1997-1999 Provided a forum for updating attendees on bioassessment and gave examples of current projects
- 2000- 20011 Changed format from 3 day workgroup to 2 day platform presentation and panel discussion

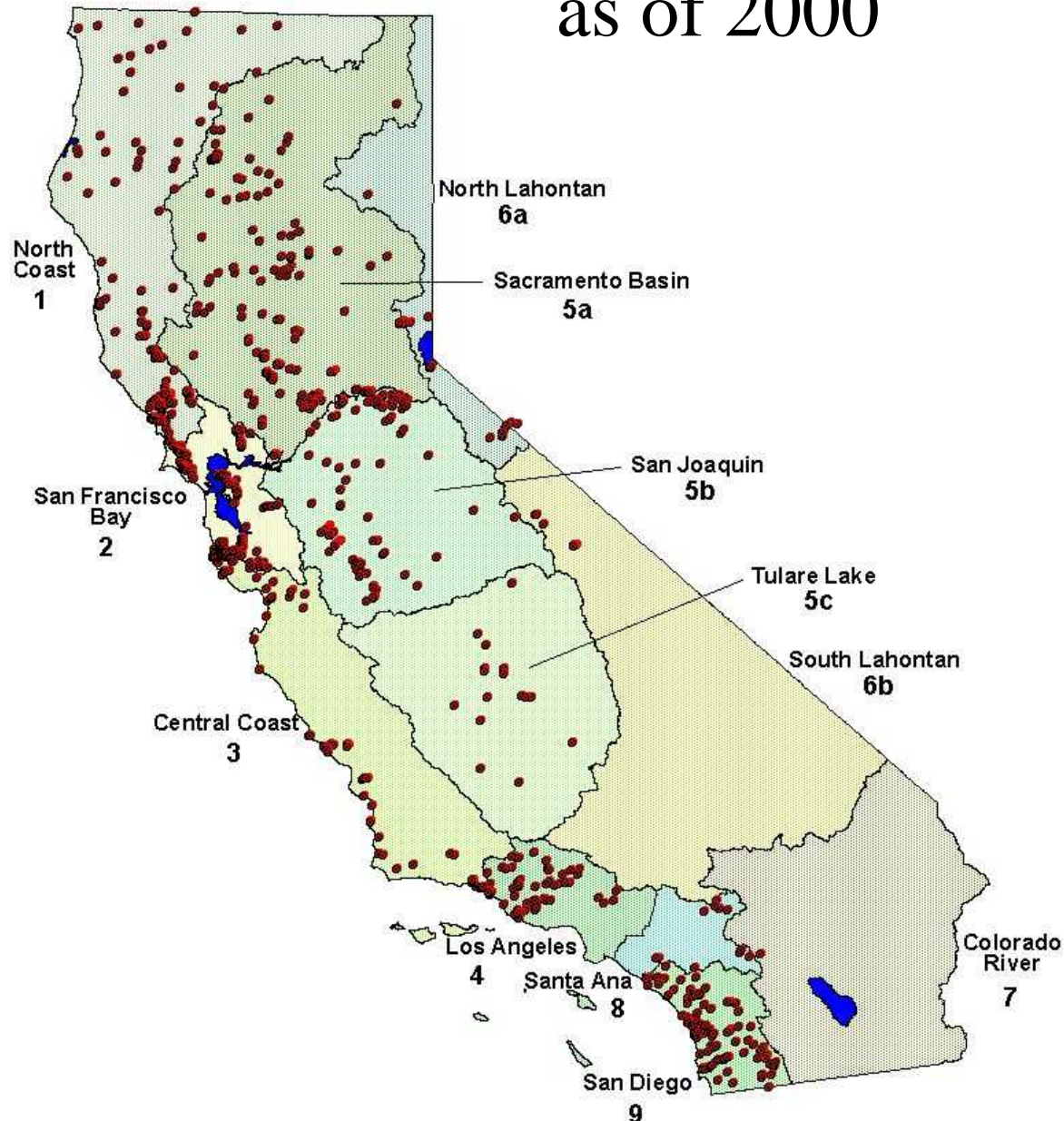
California Regional Water Quality Control Boards



**But DFG
Is not the DEQ**

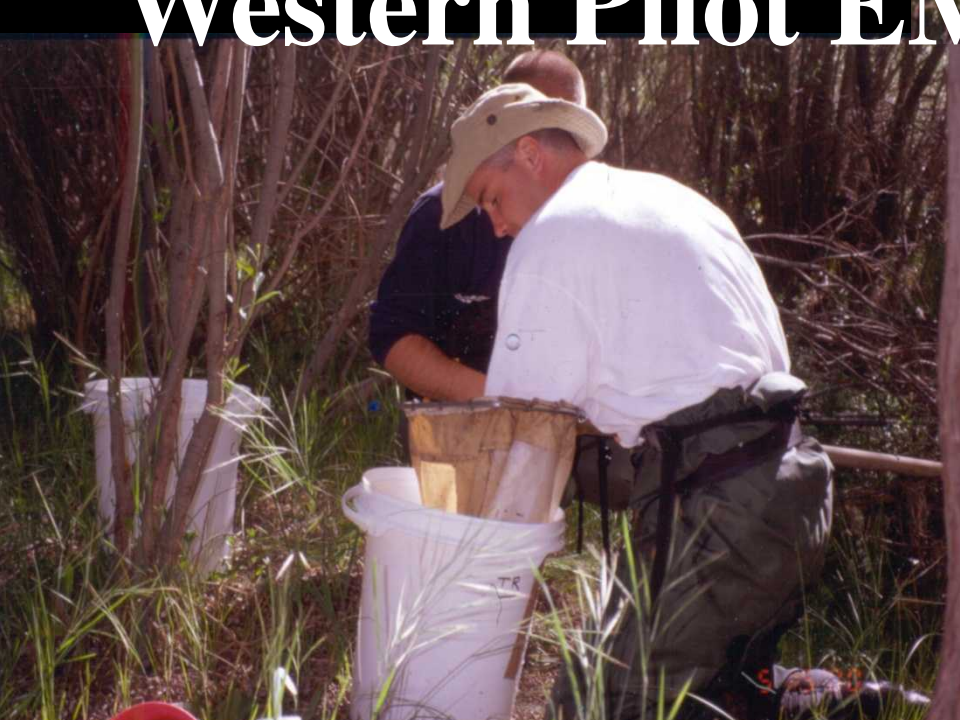


Targeted Sampling Site from Various Contracts as of 2000



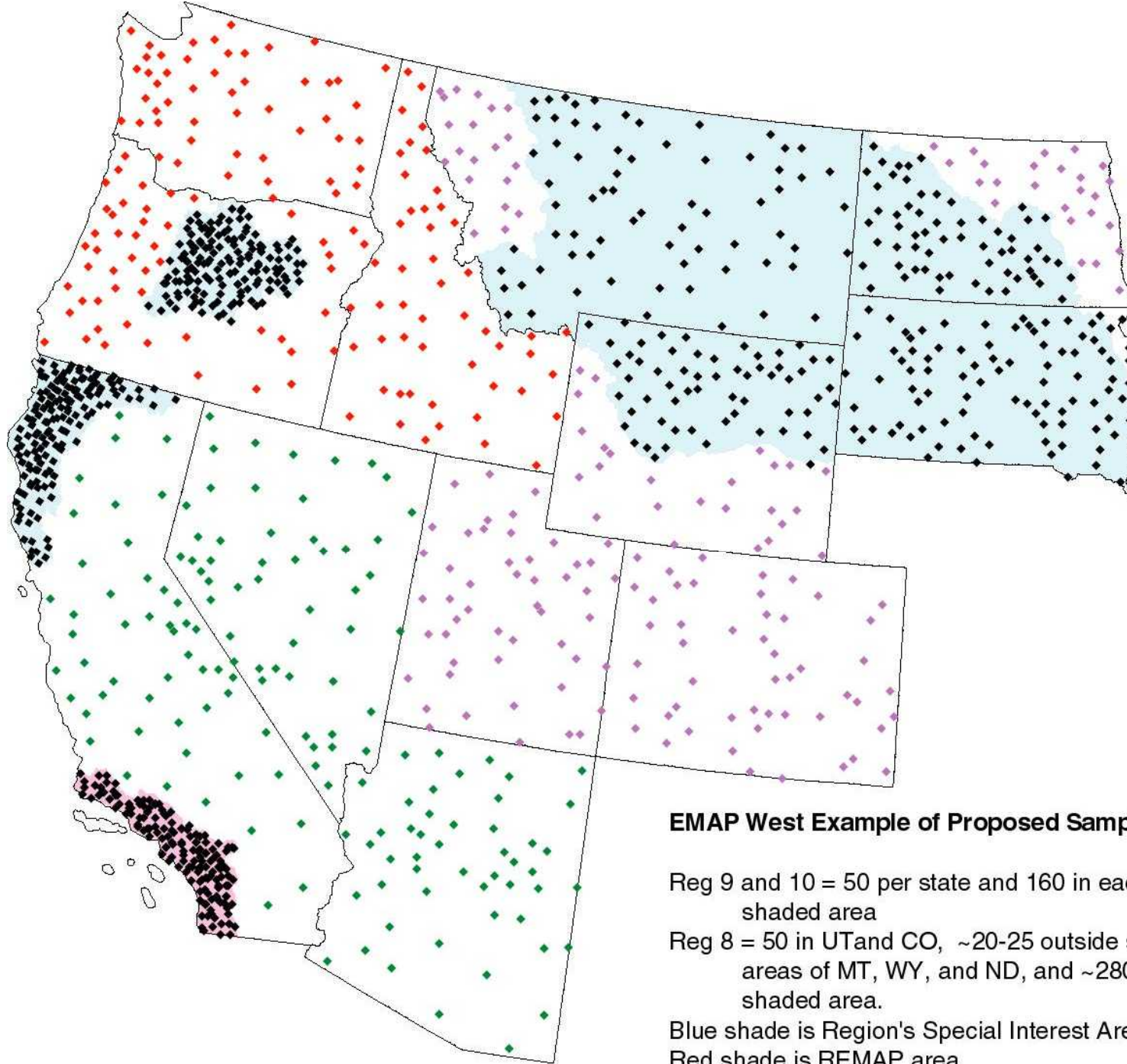
**2000
through
2007**

Western Pilot EMAP and CMAP



**CDFG
U.S. EPA
SWRCB
RWQCB**

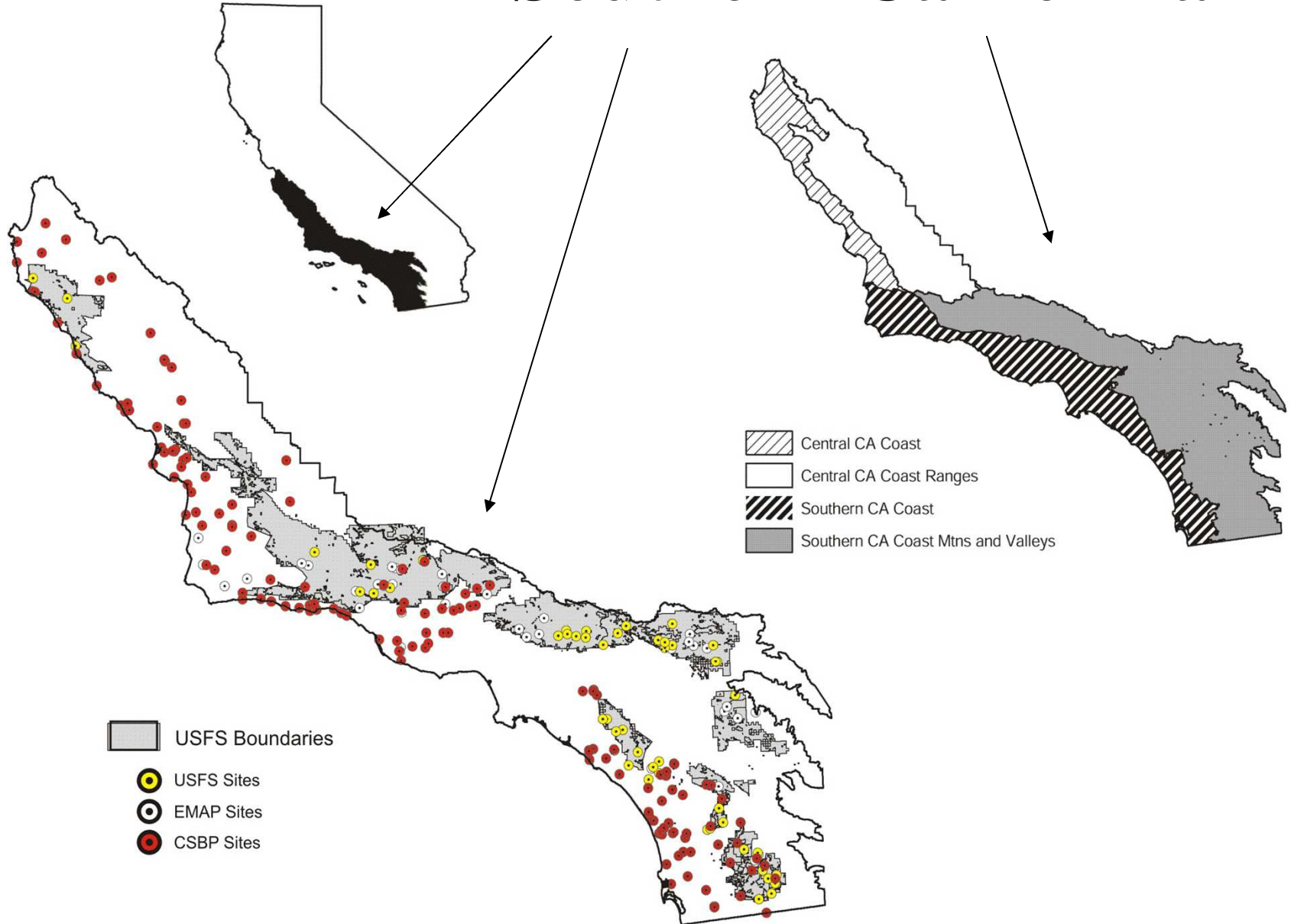




EMAP West Example of Proposed Sample scheme.

- Reg 9 and 10 = 50 per state and 160 in each shaded area
- Reg 8 = 50 in UT and CO, ~20-25 outside shaded areas of MT, WY, and ND, and ~280 within shaded area.
- Blue shade is Region's Special Interest Areas
- Red shade is REMAP area

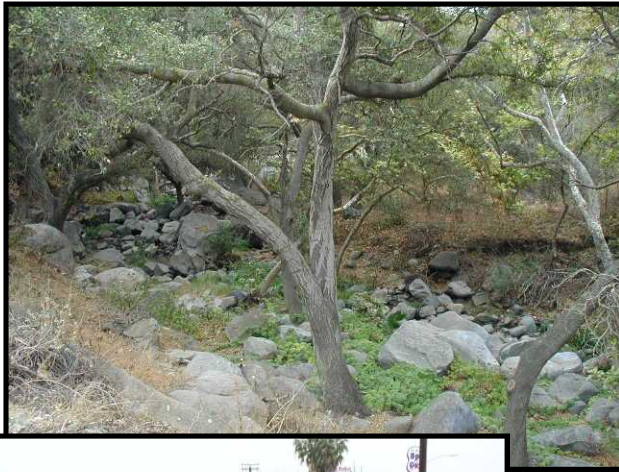
Southern California IBI



Application of a benthic invertebrate IBI to regional 305(b) reporting in southern California

Peter R. Ode, Andrew C. Rehn and Jason T. May

Aquatic Bioassessment Laboratory
Water Pollution Control Laboratory
California Department of Fish and Game
California State University, Chico



Ode, P.R., A.C. Rehn and J.T. May. 2005. A quantitative tool for assessing the integrity of southern coastal California streams. *Environmental Management*. 35:493-504

And Then Along Came SWAMP Surface Water Ambient Monitoring Program



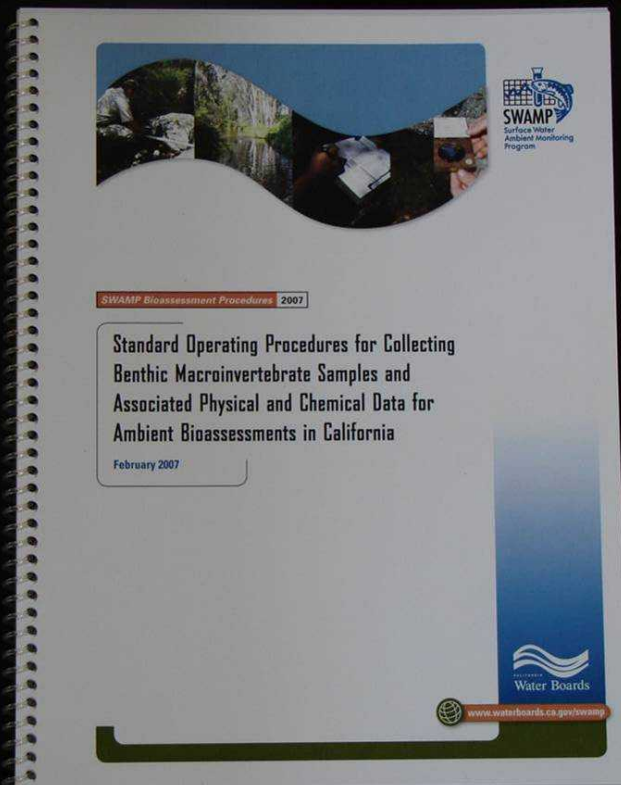
SWAMP Bioassessment Procedures

Finalized 2007

Based on NARS

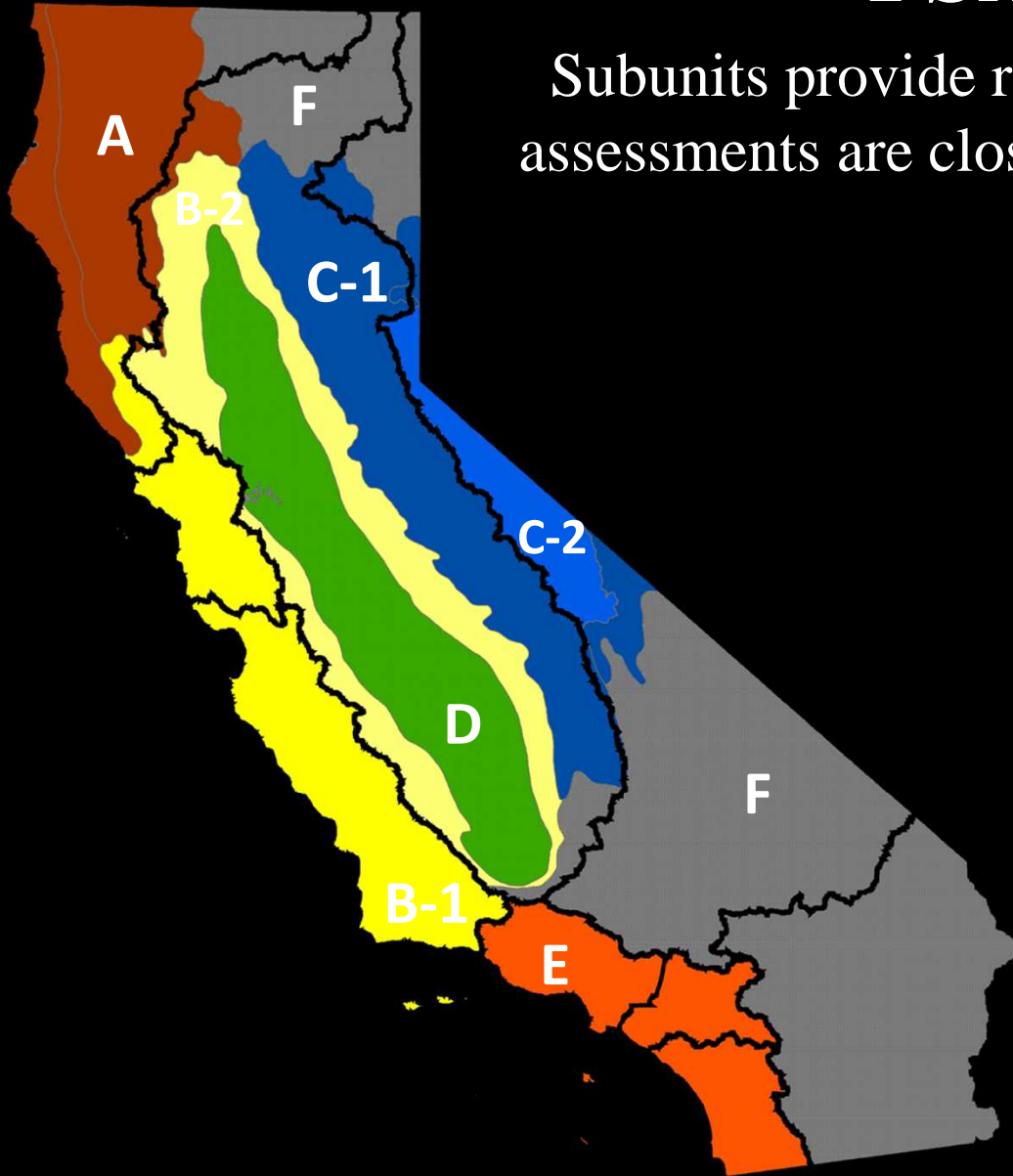
Incorporated other
protocol components

Calibrated data from
CSBP



PSA Regions

Subunits provide regional perspective ...and assessments are closer to the scale of regulation



A = North Coast

B = Oak Chaparral

1 = Coastal Chaparral

2 = Interior Chaparral

C = Sierra

1 = Main Sierra

2 = Central Lahontan

D = Central Valley

E = South Coast (SMC)

F = Other:

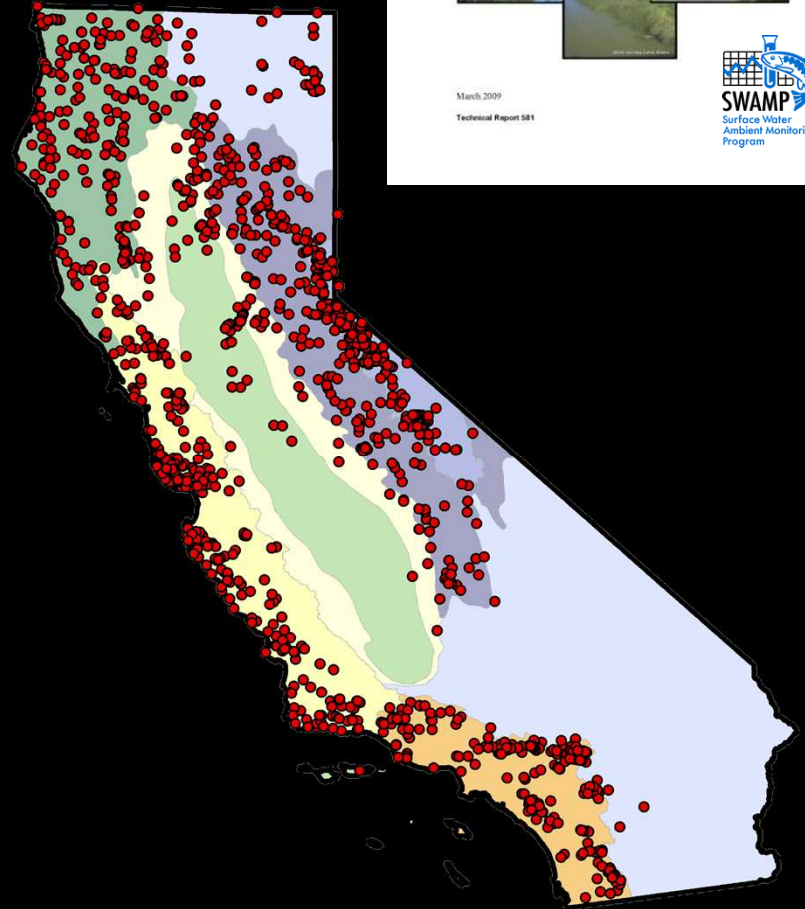
• Modoc Plateau

• Deserts

Reference Condition Management Plan

(adopted March 2009)

- RCMP is SWAMP's standardized process for identifying & sampling "reference sites" throughout CA
- Now in implementation phase:
 - ✓ Define reference criteria for streams throughout the state
 - ✓ Identify data gaps and collect bio/chem/hab data where missing
 - ✓ Monitor temporal variability (both inter-annual & intra-annual)



Recommendations for the development and maintenance of a reference condition management program (RCMP) to support biological assessment of California's wadeable streams
Report to the State Water Resources Control Board's Surface Water Ambient Monitoring Program (SWAMP)

Peter Cole, SWAMP Biassessment Coordinator
Aquatic Biassessment Laboratory/
Water Pollution Control Laboratory
California Department of Fish and Game
2005 Nimbus Road
Rancho Cordova, CA 95670

Ken Schaff, Deputy Director
Southern California Coastal Water Research Project
3555 Harbor Blvd., Suite 110
Costa Mesa, CA 92626



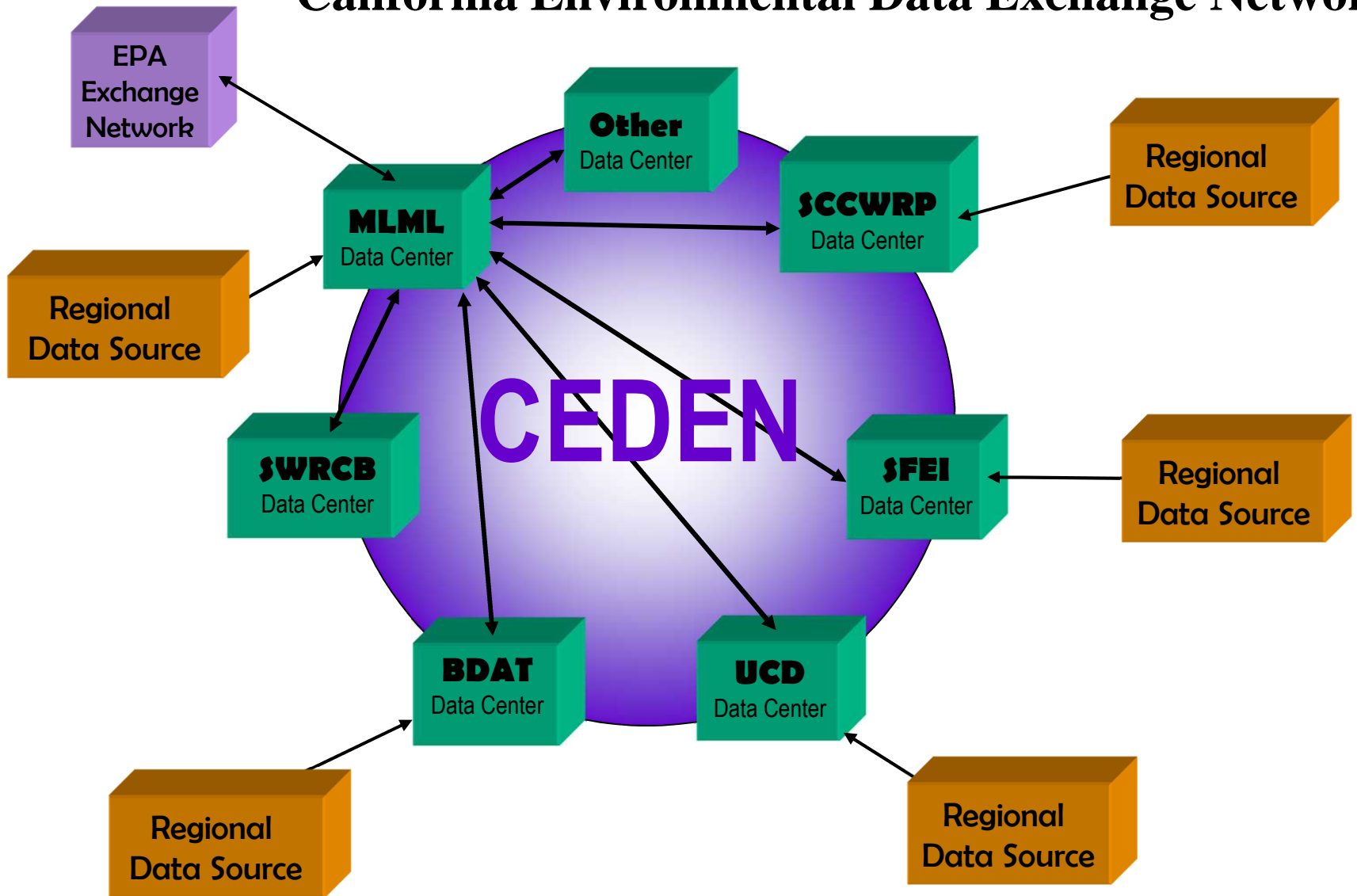
March 2009

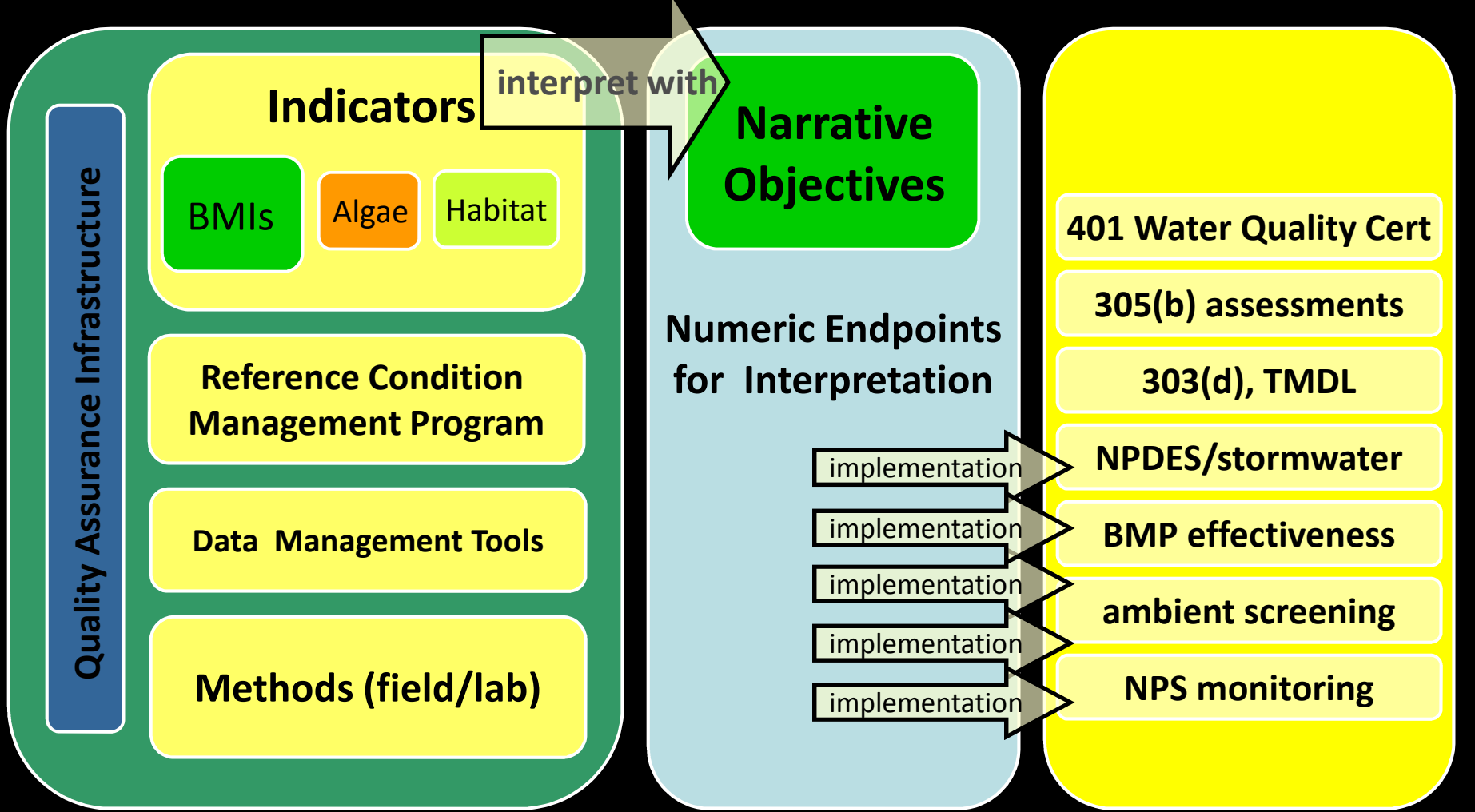
Technical Report 581



CEDEN Network

California Environmental Data Exchange Network





Technical Infrastructure

Regulatory Framework
(Objective +
Implementation Plan)

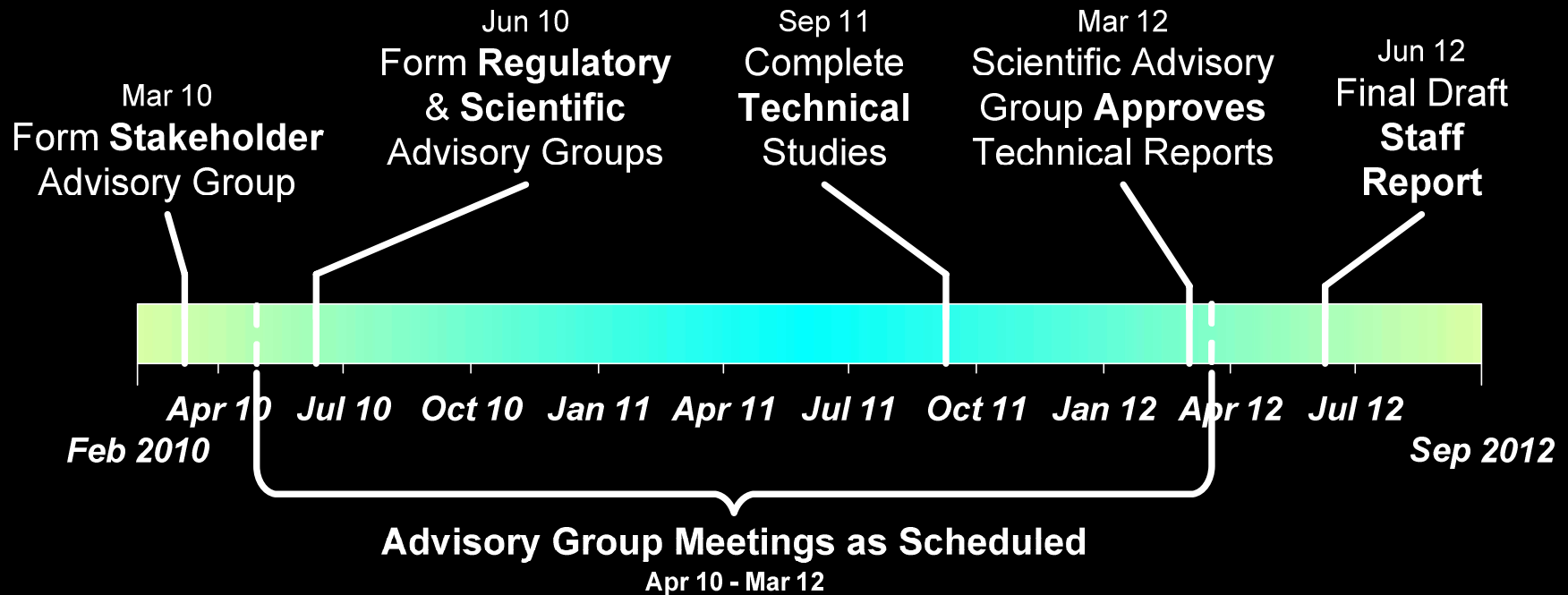
Regulatory Applications

SWAMP


Standards

Regulatory Programs

Timeline of BioObjectives



Standardize Taxonomy and Laboratory QA/QC Starting 1994 as CAMLnet and SAFIT since 2006



The screenshot shows a web browser window displaying the homepage of the Southwest Association of Freshwater Invertebrate Taxonomists (SAFIT). The browser's address bar shows the URL <http://www.safit.org/>. The page features a green navigation menu on the left with the following items: Home, About Us, Membership, Officers, Constitution / By-laws, Standard Taxonomic Effort, Tolerance Values & Functional Feeding Groups, Meetings / Events, Related Links, and Newsletters. The main content area has a blue header with the SAFIT logo and a map of the southwestern United States. Below the header, the text reads "Southwest Association of Freshwater Invertebrate Taxonomists". The "SAFIT Mission" section includes a paragraph describing the organization's goals and a list of five objectives. A small image of a damselfly nymph is shown to the right of the list, and a larger image of a damselfly nymph is at the bottom of the page. The Windows taskbar at the bottom shows the time as 8:37 AM on 5/3/2012.

Home | Members-Only | Contact Us



SAFIT

Southwest Association of Freshwater Invertebrate Taxonomists

SAFIT Mission

The mission of the Southwest Association of Freshwater Invertebrate Taxonomists (SAFIT) is to promote understanding of the taxonomy and systematics of inland freshwater invertebrates in support of biotic condition of inland aquatic ecosystems of the southwestern United States. Fundamental to this mission is the standardization of identification and reporting of freshwater invertebrate taxa. SAFIT fosters scientific research, education, and professional development in the environmental sciences, as they pertain to inland freshwater invertebrate taxonomy. To accomplish this mission SAFIT will:

1. Establish standard taxonomic procedures.
2. Provide/maintain standard taxonomic effort document.
3. Facilitate information exchange.
4. Improve taxonomic QA/QC methods.
5. Promote scientific and educational programs.



2011 Bug/Algae Field Classes

A group of six people, three men and three women, are standing outdoors in a grassy area. They are dressed in casual, outdoor-appropriate clothing like t-shirts, hats, and backpacks. Some are holding papers or clipboards. In the background, there is a tennis court, a building, and a range of mountains under a blue sky with scattered clouds.

Costa Mesa April 12-13

Moss Landing April 26-27

Sacramento May 18-19

Bishop June 7-8

Redding June 14-15

Arcata July 18-19

Bioassessment Competency Training

2-day Introductory Field Sampling

2-day Introductory Lab/Data Analysis



Field Calibration/Advanced Training



Field Audits



DFG Sampling Permit (LAI/MOU)



State of California - The Natural Resources Agency
 DEPARTMENT OF FISH AND GAME
 830 S Street
 Sacramento, CA 95814
 (916) 327-8840

ARNOLD SCHWARZENEGGER, Governor
 John McCamman Director



May 27, 2010

**MEMORANDUM OF UNDERSTANDING
 BY AND BETWEEN**

**Individuals Conducting Macroinvertebrate Bioassessment Coordinated with
 the Office of Spill Prevention and Response's Aquatic Bioassessment
 Laboratory**

AND

**CALIFORNIA DEPARTMENT OF FISH AND GAME (STATEWIDE)
 REGARDING ROUTINE FRESHWATER BIOASSESSMENT ACTIVITIES**

This Memorandum of Understanding (MOU) is made and entered into by and between the individual(s) listed under the List of Authorized Individuals (LAI) and the California Department of Fish and Game, California (Department). The Department has general authority to enter into MOUs in support of our missions. Each authorized individual has applied to conduct routine freshwater bioassessment activities that adhere to the protocols required by the Department's Office of Spill Prevention and Response's Aquatic Bioassessment Laboratory (ABL).

Routine freshwater bioassessment activities include: the collection of benthic macroinvertebrate (BMI) samples, measurements of physical/habitat parameters, laboratory analysis of BMI samples, incorporation of field and laboratory quality assurance procedures, and reporting of biological and physical/habitat data. Take of freshwater vertebrates is prohibited under the authority of this MOU.

It is understood by the Department that each monitoring event or program (ambient, compliance and enforcement) may have unique requirements (number of samples, sites, replicates and events per year). However all routine freshwater bioassessment activities follow the standardized Surface Water Ambient Monitoring Program (SWAMP) bioassessment procedures.

Therefore, it is mutually agreed and understood as follows:

PERMITEE

There are three designations under this MOU: a Primary Monitor, Field Monitor and supervised individuals. The authorized individual that oversees the activities is designated as the Primary Monitor. Field Monitors are the authorized individuals who may conduct routine bioassessment activities under the general oversight of the Primary Monitor although the Primary Monitor need not be physically present on-site. Any other individuals assisting in freshwater bioassessment activities must be

Conserving California's Wildlife Since 1870



State of California - The Resources Agency

JERRY BROWN, Governor

**FISH AND WILDLIFE WATER POLLUTION CONTRL LABORATORY
 OFFICE OF SPILL PREVENTION AND RESPONSE**



**LIST OF AUTHORIZED INDIVIDUALS
 Conducting Macroinvertebrate Bioassessment
 COORDINATED WITH
 The Office of Spill Prevention and Response's Aquatic
 Bioassessment Laboratory
 AND THE
 CALIFORNIA DEPARTMENT OF FISH AND GAME (STATEWIDE)**

This Letter of Authorized Individuals (LAI) is made and entered on April 18, 2011 as supplement to the Memorandum of Understanding (MOU) by and between the names listed and the California Department of Fish and Game (Department).

The Department has reviewed the qualifications of the following individual(s) and has determined they are eligible to be designated as Primary Monitor(s) or Field Monitor(s) as described in the MOU:

Names: Annie Gillespie - Primary Monitor
 Morro Bay National Estuary Program
 601 Embarcadero, Ste. 11
 Morro Bay, CA 93442

Anna Halligan - Field Monitor


Supervised individuals may conduct activities under this permit only under the direct on-site supervision of one of the above named individuals.

A copy of the MOU dated May 27, 2010 and Amendment 1 for 2011 must be carried with a copy of this LAI when conducting activities authorized by the MOU. The signature signifies his/her/their understanding of and agreement to abide by the conditions and authorizations of the MOU.

Date _____

Signature of PM _____

Contact Phone Number _____


 James Harrington
 Staff Environmental Scientist
 DFG Water Pollution Control Laboratory
 2005 Nimbus Road
 Rancho Cordova, CA 95670

This list is only valid if it is dated on or after the MOU issuance date.

Conserving California's Wildlife Since 1870

All incidentally caught vertebrates shall be released unharmed back into the waters from which they were taken. Any incidental take of a listed species shall cease all collection activities and be immediately reported to the appropriate regional DFG biologist.

No Fish, just bugs/algae

All sampling must be conducted during the appropriate Index Period. Note: It is important that macroinvertebrate samples be collected at the proper time of year for comparison to the appropriate criteria.

Proper Index Period

Macroinvertebrates must be identified according to the Standard Taxonomic Effort (STE) Level I or Level 2 of the Southwestern Association of Freshwater Invertebrate Taxonomists (SAFIT),¹ and using a fixed count of 600 organisms per sample.

Use SAFIT STE

To guarantee that the freshwater bioassessments are being conducted by qualified field and laboratory staff, Primary Monitor must prepare and make available to the Department, a Quality Assurance Project Plan (QAPP) that addresses field and laboratory activities. The QAPP should follow USEPA guidance and requirements as found in *USEPA Requirements for Quality Assurance Project Plans* (EPA QA/R-5, EPA/240/B-01-003, March 2001), and *USEPA Guidance for Quality Assurance Project Plans* (EPA QA/G-5, EPA/240/R-02/009, December 2002) or fall under the umbrella of the official SWAMP QAPP.

Need to Develop QAPP

The QAPP shall include, or be supplemented to include, a specific requirement for external quality assurance checks (i.e. verification of taxonomic identifications and correction of data where errors are identified). External QA checks shall be performed on one macroinvertebrate sample per year, or ten percent of the samples per year (whichever is greater). QA samples shall be randomly selected by the Primary Monitor and not by the taxonomic laboratory. The external QA checks shall be paid for by the Primary Monitor or the company/organization/agency that is responsible for the project, and performed by the Department's Aquatic Bioassessment Laboratory. An alternate laboratory with equivalent or better expertise and performance may be used if approved in advance by the Department.

Follow QAPP for field and BMI Laboratory so data will be CEDEN compatible

COORDINATION

The Department contact on matters relating to this MOU is the Department's Regional contact (Jane Vorpapel, Region 1; Carol Oz, Region 2; Tim Stevens, Region 3; Andrew G. Gordus, Ph.D., Region 4; and Dwayne Maxwell, PhD Region 5), and the Regional designee James Harrington, Aquatic Bioassessment Laboratory, 2005 Nimbus Rd., Rancho Cordova, 95670.

¹ The current SAFIT STEs (28 November 2006) list requirements for both the Level I and Level II taxonomic effort, and are located at: http://www.swrcb.ca.gov/swamp/docs/safit/ste_list.pdf. When new editions are published by SAFIT, they will supersede all previous editions. All editions will be posted at the State Water Board's SWAMP website.

Bioassessment Administrators

Permit Writers
Contract Administrators





Thanks for Listening

Jim Harrington

jharrington@ospr.dfg.ca.gov