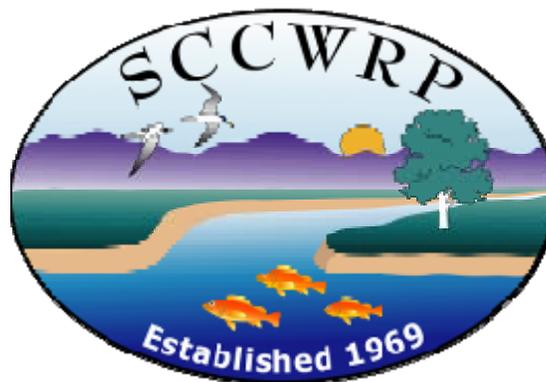


# Southern California Coastal Water Research Project Authority

## *Quarterly Director's Report To the SCCWRP Commission*

***August 2012***

(Detailing activities May 4, 2012 - August 2, 2012)



Stephen B. Weisberg  
Executive Director

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# HIGHLIGHTS

## News:

### Construction begins on SCCWRP's new molecular lab

Construction commenced July 13 on SCCWRP's new molecular laboratory. The new lab will have specialized airflow, bench tops, and other "clean" amenities to support research using molecular and genetic material from microorganisms, invertebrates, and other marine animals. It is being constructed in a space reserved five years ago in anticipation of new research directions. SCCWRP is already engaged in a number of projects that will benefit from the new facilities, including [DNA barcoding](#), [rapid beach water quality monitoring](#), development of [molecular tools for toxicity evaluation](#), and tests for [contaminants of emerging concern](#). Questions about the lab should be directed to [Dr John Griffith](#).



### 2013 Bight Regional Monitoring Program kickoff meeting

A kickoff meeting to initiate planning for the 2013 [Southern California Bight Regional Monitoring Program](#) (Bight '13) will be held September 24. The meeting will focus on discussions about the aim and scope of the next large regional survey. Over 100 participants from a variety of institutions are expected to attend, and contribute to the collaborative regional monitoring effort. The most recent Bight '08 program engaged over 90 agencies in six different study components (coastal ecology, offshore water quality,

shoreline microbiology, rocky reefs, Areas of Special Biological Significance, and coastal wetlands and estuaries). Questions about Bight '13 should be directed to [Ken Schiff](#).

### **SCCWRP donates thousands of specimens to museum**

To prepare for construction of SCCWRP's new molecular laboratory, thousands of fish and invertebrate animal specimens were donated to the [Natural History Museum of Los Angeles](#) in June. The specimens included many rare taxa collected during trawl monitoring surveys dating as far back as 1976. The collection is being cataloged and will be used for educational purposes, and also made available on loan to scientists for future use. For additional information, please contact [Ken Schiff](#).



### **SCCWRP mourns the loss of George Hlavka**

With sadness we announce the passing of George Hlavka, SCCWRP's first director. George served as Director from 1969-1973 and was responsible for hiring the organization's initial staff. He also oversaw production of SCCWRP's first major product: the [State of the Southern California Bight Report](#). We are indebted to George for the fine start he gave the organization. More information about George's life can be found [here](#).

*SCCWRP Scenes:*



Photo credit: Bruce Bealer

*Marine amphipods are collected following exposure to contaminated sediment. Their RNA will be extracted and divided for distribution to multiple participants in a laboratory intercalibration exercise to refine the amphipod microarray test method.*

# PEOPLE

## *Honors and Awards:*

- Nothing to report

## *Personnel:*

- Meredith Raith, a Research Technician in SCCWRP's Microbiology department, was promoted to Senior Research Technician.
- Elizabeth Scott, a Research Technician in the Microbiology department, left SCCWRP to pursue a new opportunity with Helix Environmental Planning in San Diego, CA.
- Christine Pham, previously a laboratory assistant at SCCWRP for several years, was hired full-time as a Research Technician in the Microbiology department.

## *Commission:*

- Nothing to report

## *Commission's Technical Advisory Group:*

- Dean Pasko retired from the Orange County Sanitation District on June 1 after representing OCSD on CTAG the past five years. His replacement at OCSD is Dr. Jeff Armstrong. Ron Coss will be OCSD's new CTAG representative.
- Dr. Maria De La Paz Carpio-Obeso replaced Dominic Gregorio as CTAG representative for the California State Water Resources Control Board. Gregorio was a CTAG representative for eight years, serving as both Chair and Vice-Chair. He is currently managing the Board's Watershed, Ocean, and Wetland section and plans to retire next year.



*Raith*



*Scott*

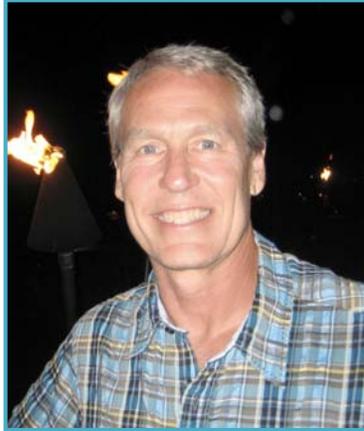


*Pham*

- Dr. Bram Sercu replaced Arne Anselm for the Ventura County Watershed Protection District.



*Gregorio*



*Pasko*



*Carpio-Obeso*

## Spotlight on Staff:

### Dr. Karen McLaughlin - Biogeochemist



Dr. Karen McLaughlin is a scientist in SCCWRP's Biogeochemistry department who specializes in nutrient source tracking and biogeochemical cycling of nutrients and organic matter in streams and estuaries. She contributes to a number of SCCWRP projects, including regional monitoring, ocean acidification issues, tools to support numeric nutrient objectives, and characterizing sources of nutrients to waterways.

Karen was born in Cherry Hill, New Jersey (New Jersey joke: it's exit 4 from the turnpike), and also lived in Huntsville, Alabama and Collegeville, Pennsylvania while growing up. Showing an early interest in science, she and her brothers performed numerous "experiments" with a microscope and chemistry kit. She attended Penn State for college, changing majors several times before a course in general geology ultimately piqued her interest in Geosciences. She next traveled cross-country to Stanford to earn a PhD in geologic and environmental sciences, developing a stable isotopic tracer for phosphate in marine and estuarine environments. A side project at Stanford led to an interest in bacterial contamination, and following graduation she took on a post-doc position at UC Irvine to trace the sources and fate of fecal contamination in Newport Bay. This naturally led her to engage with SCCWRP, where she ended up in 2007

McLaughlin appreciates the applied nature of the environmental science field. She says, "The goal, improving environmental quality, is clear, even if the path to that endpoint is not clear". Working at SCCWRP, Karen most enjoys the collaborative environment among the scientists at SCCWRP and the managers and stakeholders impacted by their research. Freedom to pursue research topics of personal interest, and the ability to put results directly into the hands of the people who can use them, are other fulfilling qualities.

Karen's daughter Anna is 2 ½ and son Owen is 1. Her husband is a professor at UC Irvine and together they do their best to make nerds out of their children. (Anna has already learned about microbial decomposition of organic matter.) They also live with an ex-racing greyhound, which now spends its days lazing around.



For more information on Dr. McLaughlin and her research, please visit:  
<http://www.sccwrp.org/AboutSCCWRP/SCCWRPStaff/McLaughlinKaren.aspx>

## Spotlight on Partners:

### Dr. Nancy Denslow – University of Florida



Dr. Nancy Denslow is a professor in the Department of Physiological Sciences and Center for Environmental and Human Toxicology within the University of Florida (UF) College of Veterinary Medicine. Her primary research interest lies in discovering biomarkers related to fish exposure to environmental contaminants. In particular, she investigates the molecular mechanisms of action for endocrine-disrupting compounds and nanomaterials that adversely affect fish health and reproduction.

Nancy's father was a diplomat, so she was born in Mexico and traveled abroad quite a bit as a child. Denslow returned to the US to pursue a bachelor's degree in chemistry at Mary Washington College in Fredericksburg, Virginia. She next earned her Master's degree and PhD in biochemistry from Yale University and UF, respectively. After a brief turn as a visiting professor at the University of Ceara, Brazil, she returned to UF for a postdoctoral fellowship in 1977 and has been there ever since. While serving as the Director of the UF Protein Chemistry and Molecular Biomarkers Core Facility, her interest in ecotoxicogenomics was sparked by research uncovering protein biomarkers (including vitellogenin) in blood samples from fish with tumors. Denslow received the Pfizer Award for Research Excellence in 2007.

Denslow has partnered with SCCWRP on several recent projects, serving on both the State Water Resources Control Board's Advisory Panel for Contaminants of Emerging Concern (CECs) in Recycled Water and the State's Advisory Panel for Freshwater, Coastal, and Marine Ecosystems. These two panels provided expert advice for the State on how to approach monitoring and managing the many CECs potentially present in waterways. Nancy is currently working to move forward the [development of bioanalytical methods](#) (e.g., gene microarrays) to enable screening for multiple CECs that have the same type of effects in recycled water. In addition, she will co-chair a session on environmental transcriptomics with SCCWRP scientists at the November Society of Environmental Toxicology and Chemistry. She describes working with SCCWRP as "fabulous".

Nancy currently lives in Gainesville, Florida. She enjoys hiking and traveling to visit her family. She has one wonderful granddaughter. Her two daughters, who live in Tampa, Florida and North Carolina, have followed in her footsteps and are both scientists.



For more information on Dr. Denslow and her research, please visit:

<http://www.vetmed.ufl.edu/about-the-college/faculty-directory/nancy-denslow/>

## Spotlight on Commissioners:

### Gerhardt Hubner – Ventura County Watershed Protection District

Gerhardt Hubner is the Deputy Director of Public Works at the Ventura County Watershed Protection District. The Division he oversees assesses and manages surface and groundwater resources throughout Ventura County, including stormwater and TMDLs compliance and implementation. In addition to having served on the SCCWRP Commission for the last seven years, Gerhardt chairs the Ventura Countywide Stormwater Program and is Director and Vice Chair of the California Stormwater Quality Association.



Gerhardt is originally from southern California and has lived in different parts of the state, most recently the Central Coast area. Most of his youth was spent in Orange County (Placentia), where his family still resides. He held a college job at Disneyland, keeping the “environment” clean. While studying geological sciences at San Diego State University, Gerhardt discovered an interest in water resources management, which led him to work with both the Los Angeles and Central Coast Regional Water Quality Control Boards over a 15-year period. He later had the opportunity to attend graduate water law classes at Cal Poly San Luis Obispo, and became licensed as a Professional Geologist in the State of California. He was appointed to his current position at the County of Ventura in 2005.

Gerhardt’s interest in the water quality field is galvanized by a desire to improve the environment for this and future generations and “make a difference”. He loves working with SCCWRP and calls it “the perfect intersection and forum for representatives of federal, state, and local agencies with an interest in environmental and water resource policy to discuss the latest science”. His agency is currently gearing up for a [Quantitative Microbial Risk Assessment](#) (QMRA) pilot study at Kiddie and Hobie beaches in Ventura Harbor. QMRA evaluates site-specific human health risks based on microbial sources and characteristics. The project, which kicked off in April and will involve fieldwork throughout the summer, is the first of its kind in the nation, and its results will set a precedent for establishing site-specific beach water quality criteria. Gerhardt also has a strong interest in seeing where SCCWRP can contribute to advancing

knowledge and developing strategies to address the effects of climate change in California.



Gerhardt lives in Ventura with his wife, a child-advocate attorney, and three children ages five, seven, and ten. He loves to travel and recently planned a birthday celebration trip with his family to several countries in Europe. Gerhardt’s other interests, including skiing, sailing, and hiking, revolve around spending time outdoors.

# COMMUNICATIONS

## *Journal Articles - Published:*

- [A multi-beach study of Staphylococcus aureus, MRSA, and enterococci in seawater and beach sand](#). 2012. KD Goodwin, M McNay, Y [Cao](#), D Ebentier, M Madison, JF Griffith. *Water Research* 46:4195-4207.
- [Phytoplankton blooms detected by SeaWiFS along the central and southern California coast](#). 2012. NP [Nezlin](#), MA Sutula, RP Stumpf, A Sengupta. *Journal of Geophysical Research* 117:C07004.
- [Diurnal variation in Enterococcus species composition in polluted ocean water and a potential role for the enterococcal carotenoid in protection against photoinactivation](#). 2012. PA Maraccini, DM [Ferguson](#), AB Boehm. *Applied and Environmental Microbiology* 78:305-310.
- [Pyrethroids in southern California coastal sediments](#). 2012. W [Lao](#), L Tiefenthaler, DJ Greenstein, KA Maruya, SM Bay, K Ritter, K Schiff. *Environmental Toxicology and Chemistry* 31:1649-1656.
- [Continuous in situ characterization of particulate sizes in urban stormwater: Method testing and refinement](#). 2012. JS [Brown](#), D Ackerman, ED Stein. *Journal of Environmental Engineering* 138:673-679.
- [Comparing volunteer and professionally collected monitoring data from the rocky subtidal reefs of Southern California, USA](#). 2012. DJ [Gillett](#), DJ Pondella II, J Freiwald, KC Schiff, JE Caselle, C Shuman, SB Weisberg. *Environmental Monitoring and Assessment* 184:3239-3257.
- [Determining the health of California's coastal salt marshes using rapid assessment](#). 2012. CW [Solek](#), MA Sutula, ED Stein, C Roberts, R Clark, K O'Connor, KJ Ritter. *Wetland Science and Practice* 29:8-28.

## *Journal Articles - Accepted:*

- Evaluation of reproductive endocrine status in hornyhead turbot sampled from southern California's urbanized coastal environments. JA Reyes, D [Vidal-Dorsch](#), D Schlenk, SM Bay, JL Armstrong, JR Gully, C Cash, M Baker, TD Stebbins, G Hardiman, KM Kelley. *Environmental Toxicology and Chemistry*.
- Integrated coastal effects study: Synthesis of findings. SM [Bay](#), DE Vidal-Dorsch, D Schlenk, KM Kelley, KA Maruya, JR Gully. *Environmental Toxicology and Chemistry*.
- Performance of two southern California benthic community condition indices using species abundance and presence-only data: Relevance to DNA Barcoding. JA [Ranasinghe](#), ED Stein, PE Miller, SB Weisberg. *PLoS ONE*

- Metals and bacteria partitioning to various size particles in Ballona Creek stormwater runoff. JS [Brown](#), ED Stein, D Ackerman, JH Dorsey, J Lyon, PM Carter. *Environmental Toxicology and Chemistry*.
- Monitoring the condition of streams in the San Gabriel River Watershed using multiple indicators. K Morris, S Johnson, E Belden, R [Mazor](#). *Water Environment & Technology Magazine*.
- Nontargeted Comprehensive Two-Dimensional Gas Chromatography/Time-of-Flight Mass Spectrometry Method and Software for Inventorying Persistent and Bioaccumulative Contaminants in Marine Environments. E Hoh, NG [Dodder](#), SJ Lehotay, KC Pangallo, CM Reddy, KA Maruya. *Environmental Science and Technology*.
- Distribution and sources of polybrominated diphenyl ethers in the Southern California Bight. NG [Dodder](#), KA Maruya, GG Lauenstein, J Ramirez, KJ Ritter, KC Schiff. *Environmental Toxicology and Chemistry*.
- Contaminants of concern in the marine environment: The need for new monitoring and assessment strategies. GI Scott, M Fulton, SB [Weisberg](#), KA Maruya, G Lauenstein. *Journal of Marine Biology & Oceanography*.

### *Technical Reports:*

- [Characterization of the Rocky Intertidal Ecological Communities Associated with Southern California Areas of Special Biological Significance](#) 2012 P Raimondi, K Schiff, D Gregorio Technical Report 703 Southern California Coastal Water Research Project Costa Mesa, CA
- [Final Report on Bioassessment in Nonperennial Streams](#) . 2012. R Mazor, K Schiff, P Ode, ED Stein. Technical Report 695. Southern California Coastal Water Research Project, Costa Mesa, CA.
- [Management of Brine Discharges to Coastal Waters Recommendations of a Science Advisory Panel](#). 2012. S Jenkins, J Paduan, P Roberts, D Schlenk, J Weis. Technical Report 694. Southern California Coastal Water Research Project Costa Mesa, CA.
- [Monitoring Strategies for Chemicals of Emerging Concern \(CECs\) in California's Aquatic Ecosystems: Recommendations of a Science Advisory Panel](#). 2012. PD Anderson, ND Denslow, JE Drewes, AW Olivieri, D Schlenk, GI Scott, SA Snyder. Technical Report 692. Southern California Coastal Water Research Project. Costa Mesa, CA.

### *Conference Presentations:*

#### Southern California Academy of Sciences Annual Conference - May 2012

- Historical condition of Ballona Estuary. How open is open? How closed is closed? - ED [Stein](#), DK Jacobs, T Longcore, S Dark

- [Historic Ecology as a tool for informing restoration planning in the San Gabriel Watershed](#) - ED [Stein](#), S Dark, T Longcore, R Grossinger, J Casanova

### **Society for Freshwater Science Annual Meeting - May 2012**

- [Managing hydromodification at the watershed scale to protect in-stream communities](#) - ED [Stein](#), F Federico, DB Booth, BP Bledsoe, E Berntsen, and G Gearheart
- [Application of molecular taxonomy to bioassessment: Bugs to barcodes – What does it all mean?](#) - ED [Stein](#), R Mazor, E Pilgrim, and P Miller
- [Moving DNA barcoding toward routine bioassessment application: Roadmap of challenges and solutions](#) - ED [Stein](#), P Miller, B Sweeney, and E Pilgrim
- [Representing the perfect in an imperfect world: California’s approach to creating and evaluating a network of reference streams](#) - RD [Mazor](#), P Ode, A Rehn, D Gillett, K Schiff, and E Stein
- [Can barcoding tools improve bioassessment? A case study from southern California](#) - RD [Mazor](#), B White, ED Stein, P Miller, B Sweeney, J Battle, J Jackson, D Pickard, and J Slusark
- [Cryptic biodiversity in streams – a comparison of macroinvertebrate communities based on morphological and DNA barcode identification](#) - JK Jackson, JM Battle, B White, ED [Stein](#), EM Pilgrim, P E Miller, and BW Sweeney
- [Do DNA barcoding delimitation methods affect our view of stream biodiversity?](#) - B [White](#), E Pilgrim, R Mazor, and E Stein
- [Modeling biological condition of California streams at statewide and regional geographic scales](#) - LR Brown, JT May, RD [Mazor](#), AC Rehn, and PR Ode
- [Alternatives levels of effort for algal bioassessment in wadeable streams according to monitoring needs](#) - AE [Fetscher](#), R Stancheva, JP Kocielek, RG Sheath, RD Mazor, ED Stein, PR Ode, and LB Busse
- DNA barcodes, species delimitation, and bioassessment: issues of diversity, analysis, and standardization - E Pilgrim, LM Boykin, B [White](#)
- Why (and how) you should evaluate your reference sites: California's approach to creating and evaluating a network of reference streams - R [Mazor](#), P Ode, A Rehn, D Gillett, K Schiff, E Stein
- Application of barcoding to bioassessment - E [Stein](#), E Pilgrim, B Sweeney, and P Miller (co-chairs)
- Do DNA barcoding delimitation methods affect our view of stream biodiversity? - B [White](#), E Pilgrim, R Mazor, E Stein

### Headwaters To Ocean (H2O) Conference - May 2012

- [The Southern California Bight Regional Monitoring Program: Evaluation of anthropogenic and natural nutrient loadings and their effects in the coastal Southern California Bight](#) - MDA [Howard](#), B Jones, G Robertson, M Sutula, D Caron, Y Chao, H Frenzel, MJ Mengel, N Nezlin, B Seegers, A Sen Gupta, and E Seubert
- [Magnitude and extent of eutrophication in Southern California Bight Estuaries: Results of the Bight '08 Regional Survey](#) - K [McLaughlin](#), M Sutula, L Busse, S Anderson, S Bergquist, J Crooks, R Dagit, D Gibson, and L Stratton
- [Terrestrial nitrogen and phosphorus loads to the Southern California Bight: Current estimates and contribution from urbanization of watershed land use](#) - A [Sengupta](#), M Sutula, MDA Howard, K McLaughlin, L Tiefenthaler, T Von Bitner, J Weber, C Cash, and A Anslem
- Evaluation of Anthropogenic and Natural Nutrient Loadings and Their Effects in the Coastal Southern California Bight - MDA [Howard](#), B Jones, G Robertson, M Sutula, D Caron, Y Chao, H Frenzel, M Mengel, N Nezlin, B Seegers, A Sen Gupta, and E Seubert
- [Extent and Magnitude of Eutrophication in Southern California Bight Estuaries](#) - K [McLaughlin](#), M Sutula, and L Busse
- [Findings of Review of Science Supporting Dissolved Oxygen Objectives in California Estuaries](#) - M [Sutula](#), H Bailey, C Swift

### American Water Resources Association (AWRA) Conference - June 2012

- Occurrence and fate of chemicals of emerging concern (CECs) in effluent-dominated river systems in southern California - A [Sengupta](#), M Lyons, D Smith, A Heil, D Heil, J Drewes, S Snyder, and K Maruya

### Society for Conservation Biology North America Congress for Conservation Biology (SCBNA / NACCB) - July 2012

- [An integrated hydromodification management framework to protect instream communities](#) - F Federico, E [Stein](#), B Bledsoe, C Bowles, E Berntsen, G Gearheart, and D Booth

### ESRI International User Conference - July 2012

- [Developing a regional monitoring geodatabase for the Southern California Bight](#) – RA [Schaffner](#) and SJ Steinberg

### *Other Presentations:*

- Eric [Stein](#) gave a guest lecture on aquatic bioassessment methods at California State University, Long Beach on May 1 in Long Beach, CA.
- Eric [Stein](#) participated in the California State University, Long Beach Marine Biology Career Day on May 2 in Long Beach, CA.
- Eric [Stein](#) conducted training on the hydromodification screening tool sponsored by the Floodplain Managers Association on June 19 in San Diego, CA.
- Eric [Stein](#) gave a presentation on integration of wetland and endangered species monitoring to the US Environmental Protection Agency, US Fish and Wildlife Service, and the Central Valley municipalities involved in habitat conservation planning on July 18 in Sacramento, CA.
- Chris [Solek](#) conducted field training in the California Rapid Assessment Method (CRAM) estuarine module for members of the Santa Monica Bay Restoration Commission on May 14 in Playa del Rey, CA.
- Chris [Solek](#) co-instructed a CRAM practitioner training on May 16-18 at SCCWRP.
- Chris [Solek](#) conducted field refresher training for the Southern California Stormwater Monitoring Coalition on May 29 in the San Gabriel Mountains.
- Chris [Solek](#) gave a presentation on CRAM implantation and quality control measures to the Surface Water Ambient Monitoring Program (SWAMP) Roundtable, which is considering the official adoption of CRAM as an indicator used by SWAMP, on June 12 in Sacramento, CA.
- Keith [Maruya](#) gave a presentation entitled "Monitoring strategies for CECs in California's aquatic ecosystems" at the San Francisco Estuary Institute on May 16 in Richmond, CA.
- Martha [Sutula](#) gave a presentation about SCCWRP's work in support of nutrient criteria development at the Orange County Coastal Coalition meeting on May 17 in Costa Mesa, CA.
- Ken [Schiff](#) gave a presentation on "Results from the Bight '08 Regional Marine Monitoring Program" to the Orange County Coastal Coalition on May 17 at SCCWRP.
- Ken [Schiff](#) gave an invited talk on "Copper contamination of marinas in southern California" to the City of Newport Beach City Council's Subcommittee on Water Quality on June 14 in Newport Beach, CA.
- Ken [Schiff](#) provided testimony at the Ventura County Board of Supervisors on the Quantitative Microbial Risk Assessment project being conducted at Kiddie and Hobie Beaches on July 24 in Ventura, CA.
- Ken [Schiff](#) gave an invited presentation entitled "Research opportunities for faculty and students at SCCWRP" to the National Science Foundation's Workshop on Research Opportunities at Undergraduate Institutions at California State University, Fullerton on July 27 in Fullerton, CA.

- Steve [Weisberg](#) gave an overview presentation about SCCWRP at the Orange County Coastal Coalition meeting on May 17 in Costa Mesa, CA.
- Steve [Weisberg](#) gave an overview presentation about SCCWRP to the Governing Board of the Santa Ana Watershed Project Authority on June 5 in Riverside, CA.
- Steve [Weisberg](#) made several presentations as facilitator for a workshop to develop an international ocean acidification monitoring program at the University of Washington on June 26-28 in Seattle, Washington.
- Donna [Ferguson](#) gave an invited talk on "Natural sources and regrowth of *Enterococcus* in coastal environments" at the Land and Sea Grant National Water Conference on May 22 in Portland.
- Ashmita [Sengupta](#) gave a presentation entitled "In search of modeling solutions to coastal urban water quality issues" on June 8 at the University of California, Irvine.

***Professional Appointments:***

- Nothing to report

***Meetings & Workshops Held at SCCWRP:***

Date	Meeting	SCCWRP Contact/ Sponsoring Agency
Aug 1	Coastal Change Analysis	<a href="#">Stein</a>
July 31	Commission Technical Advisory Group Sub-Group	<a href="#">Weisberg</a>
July 25	Physical Habitat	<a href="#">Stein</a>
July 19	R User Group	<a href="#">Steinberg</a>
July 18	Sediment Quality Objective Meeting	<a href="#">Bay</a>
July 3	Sediment Quality Objective Planning Meeting	<a href="#">Bay</a>
July 2	Infauna Quality Assurance	<a href="#">Schiff</a>
June 28	Stormwater Monitoring Coalition Executive Committee	<a href="#">Schiff</a>

June 26	Phase II Permit Workshop	<a href="#">Schiff</a>
June 22	Integrated Wetlands Regional Assessment Program	<a href="#">Solek</a>
June 20	Kelp Meeting	<a href="#">Weisberg</a>
June 8	R Workshop	<a href="#">Steinberg</a>
June 7-8	Casual Assessment	<a href="#">Schiff</a>
June 6	Wetland Monitoring Group	<a href="#">Solek</a>
June 4	Southern California Ichthyological Taxonomists and Ecologists	<a href="#">Schiff</a>
June 1	SCCWRP Commission	<a href="#">Weisberg</a>
May 31	Coastal Alliance	<a href="#">Weisberg</a>
May 30	California Water Quality Monitoring Council	<a href="#">Weisberg</a>
May 29	Center for Ocean Solutions Hypoxia Workshop	<a href="#">Weisberg</a>
May 24-25	Biological Objective Stake Holder Meeting	<a href="#">Schiff</a>
May 24	Sediment Quality Objectives Advisory Committee	<a href="#">Bay</a>
May 17	Orange County Coastal Coalition	<a href="#">Weisberg</a>
May 16-18	California Rapid Assessment Method: Riverine	<a href="#">Solek</a>
May 15	Stormwater Monitoring Coalition Workshop	<a href="#">Schiff</a>
May 14	Areas of Special Biological Significance Regional Monitoring	<a href="#">Schiff</a>
May 11	Seminar: Dr. Christine Whitcraft – <a href="#">“Challenges and successes in wetland restoration”</a>	<a href="#">Weisberg</a>
May 10	Commission Technical Advisory Group (CTAG)	<a href="#">Weisberg</a>
May 9	Beach Water Quality Work Group	<a href="#">Weisberg</a>

May 4	Southern California Association of Marine Invertebrate Taxonomists	<a href="#">Schiff</a>
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*Upcoming Commission/CTAG Meetings:*

- The next [CTAG](#) meeting will be held on Thursday, August 9 from 9:00 to 4:00 at SCCWRP.
- The next [Commission](#) meeting will be held on Friday, September 7 at SCCWRP.

# PROJECTS

**Note:** The following progress updates describe accomplishments for each of SCCWRP's projects in the last quarter. More details about each project can be found in SCCWRP's [2012-2013 Research Plan](#).

## ***Projects with significant activity this quarter:***

[Non-targeted Chemical Analyte Analysis Method Development](#)

[DNA Barcoding](#)

[Coastal Hypoxia Investigation](#)

[Pilot Monitoring with Autonomous Underwater Vehicle \(AUV\)](#)

## **A. ENVIRONMENTAL ASSESSMENT METHOD/TOOL DEVELOPMENT**

### **1. Chemistry Assessment**

#### **a. [Analytical Methods for Toxaphene](#)**

Purpose: Develop analytical methods for quantifying toxaphene residues in environmental sample extracts

Update: The analytical protocol for addressing interfering analytes (i.e., PCBs) was completed and a manuscript was submitted to the *Journal of Chromatography A*. Next, project staff will compile instructions and materials for a laboratory intercalibration study with fish tissue and spiked marine sediment.

Lead Investigator: [Maruya](#)

#### **b. [Non-targeted Analysis](#)**

Purpose: Develop analytical methods for identifying unknown contaminants of emerging concern (CECs) in tissue, sediment, and water samples

Update: Staff completed development of the mass spectrometry-based method and software for non-targeted tissue analysis, and documented this effort in an article to be published in *Environmental Science and Technology*. The software and mass spectral library was also released at: [http://orgmasspecr.r-forge.r-project.org/libraries.html](http://orgmassspecr.r-forge.r-project.org/libraries.html). Over the next quarter, staff will continue to identify and catalogue contaminants in samples collected from marine mammals in the southern California Bight.

New  
Project  
Highlight

Lead Investigator: [Dodder](#)

### **c. [Passive Samplers](#)**

Purpose: Evaluate whether passive samplers can be used in coastal sediments to predict bioaccumulation and sediment toxicity

Update: Pilot experiments were designed and completed to test the pre-loading of surrogate compounds into solid phase microextraction (SPME) samplers. The project team, including researchers and graduate students from the University of Southern California and Loyola Marymount, met on June 15 at SCCWRP to discuss the data obtained from co-deployment of samplers and mussels (*Mytilus* spp.). A preliminary agenda was sent to invitees of the November Workshop on Passive Sampling Methods (PSMs) for Contaminated Sediment Management, to be co-sponsored by SCCWRP, the Society of Environmental Toxicology and Chemistry, and others. Over the next quarter, staff will design field deployment experiments with pre-loaded SPME samplers, document the findings of the field co-deployment in a final project report and journal manuscript, and prepare final materials and logistic arrangements for the PSM Workshop.

Lead Investigator: [Maruya](#)

### **d. [Bioanalytical Screening Tools](#)**

Purpose: Evaluate and optimize bioanalytical methods for monitoring CECs in recycled water and ambient waters that receive treated wastewater effluent and/or stormwater discharge

Update: The project team finished the Quality Assurance Project Plan and completed comparison of bioassay test kits from multiple vendors for a single endpoint. Over the next quarter, they will evaluate the performance of bioassay test kits from the selected vendor(s) for all endpoints of interest.

Lead Investigator: [Maruya](#)

## **2. Toxicity Assessment**

### **a. [Traditional Toxicity Identification Evaluation Methods](#)**

Purpose: Develop and refine analytical methods for identifying the specific constituents responsible for toxicity in marine sediments

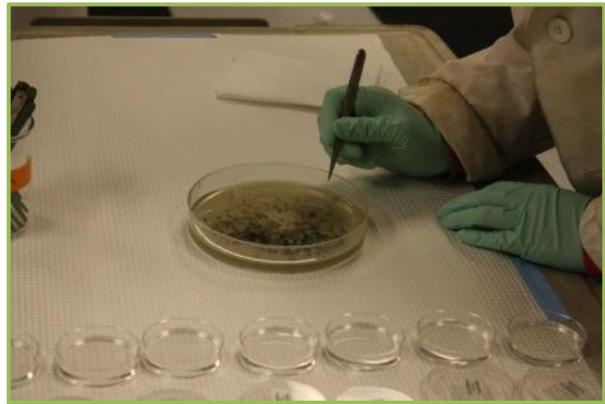
Update: A November workshop is being planned in conjunction with the UC Davis Marine Pollution Studies Laboratory to determine the cause of sediment toxicity in San Francisco Bay.

Lead Investigator: [Bay](#)

### **b. [Molecular Tools for Toxicity Identification Evaluation](#)**

Purpose: Develop new methods for evaluating sediment toxicity via gene microarrays that reveal molecular-level responses in sentinel organisms (eg, marine fish and invertebrates)

Update: An interlaboratory comparison of a differential gene expression analysis using a microarray developed for the amphipod *Eohaustorius estuarius* is underway. Samples of amphipods exposed to a pyrethroid pesticide will be analyzed by six laboratories in the US and Canada. In addition, samples of liver and gonad tissue from hornyhead turbot are being sequenced for development of an improved gene microarray for fish.



Lead Investigator: [Bay](#)

### 3. Biological Assessment

#### a. [Rocky Reefs](#)

Purpose: Develop an assessment index to interpret the ecological integrity of rocky reefs

Update: Initial planning for this project started. Working in collaboration with the Marine Protected Area Monitoring Enterprise, staff will help organize an expert workshop to carry out a "best professional judgment" (BPJ) exercise that ranks the biological integrity of rocky reef sites. The BPJ exercise will form the gold standard for developing and evaluating quantitative assessment tools.

Lead Investigator: [Schiff](#)

New  
Project

## b. [Periphyton](#)

Purpose: Produce tools that utilize benthic soft-bodied algae and diatom assemblages for biological assessment of stream condition, anthropogenic disturbance, and nutrient levels

Update: The first draft of the final project report is nearly complete. In addition, a manuscript on the development of the algal IBI and alternative options for IBI implementation depending upon management needs and interim monitoring outcomes was submitted to *Ecological Indicators*. A presentation on the same topic was made at the annual Society for Freshwater Science conference in Louisville, Kentucky in May.

Lead Investigator: [Fetscher](#)

## c. [DNA Barcoding](#)

Purpose: Assess the efficacy of DNA barcoding for rapidly identifying marine and freshwater benthic invertebrate and algal species

Update: This project has progressed in three areas:

1) Marine barcoding – Approximately 700 specimens that represent both cryptic and cosmopolitan (i.e., broadly distributed) species from southern California have been obtained, processed, and sequenced for barcodes by the University of Guelph. Approximately 200-300 specimens from the Oregon and Washington coasts remain to be processed. Most of these are either recently collected or are still being identified by taxonomists.

2) Freshwater barcoding – Data analysis is complete from the freshwater hydromodification study and SCCWRP researchers are currently working on two manuscripts with our project partners at the Stroud Water Research Center based on the results of this work. A follow-up study is being conducted in the San Gabriel Watershed to test the effect of molecular-based taxonomy on resolution of bioassessment indices across a gradient of condition. All samples have been collected and are awaiting taxonomic identification. Molecular analysis will begin in fall 2012.

3) Method development – Three method development studies progressed over the past quarter. First, a manuscript evaluating performance of two marine benthic assessment tools (the BRI and AMBI) based on presence-only data was accepted for publication in PLoS-One. This study showed the lack of abundance data associated with next-generation sequencing should not be an impediment to application of traditional marine indices. Second, data analysis was completed for the study evaluating various sample preservation methods and researchers are writing a manuscript based on these results. The study showed use of 70% ethanol as a sample preservative did not significantly reduce barcoding success for samples stored for up to six months. Third, composite samples were prepared for evaluating next-generation, bulk processing methods. Each contains approximately 50 previously barcoded individual specimens across 10 taxa, and were sent “blind” to partnering labs at the US Environmental Protection Agency and Life Technologies. The labs will test three different next-generation methods to try to identify the composition of the samples.

Highlight

Lead Investigator: [Stein](#)

**d. [Cyanobacteria](#)**

Purpose: Increase understanding of environmental drivers for cyanobacterial bloom occurrence and toxin production in streams and wetlands

Update: This summer, SCCWRP is partnering with the Southern California Stormwater Monitoring Coalition and State Surface Water Ambient Monitoring Program to incorporate assessment of cyanotoxins into ongoing stream and depressional wetland monitoring efforts. The samples will be analyzed by SCCWRP and collaborators at the University of California, Santa Cruz. Results will provide a more comprehensive understanding of the distribution of cyanotoxin production in California fresh water bodies, and will help to inform planning for future research on timing of blooms and the potential ecological drivers of toxic events. In addition, new technologies for cyanotoxin sampling using passive samplers (“SPATT bags”) are being tested in depressional wetlands.

Lead Investigators: [Fetscher](#), [Howard](#)

**4. Microbiological Assessment**

**a. [Rapid Water Quality Indicators](#)**

Purpose: Develop and test application of rapid methods for enumerating indicator bacteria at high-risk beaches

Update: This quarter, staff assisted the City of Los Angeles in preparing to test rapid qPCR measurement methods for *Enterococcus* at Los Angeles County beaches. Over the next quarter, staff will be working with partners at the City of Los Angeles, Los Angeles County Public Works, and Los Angeles County Health Department to compare three new qPCR chemistries for susceptibility to environmental interferences.

Lead Investigator: [Griffith](#)

**b. [Microbial Source Tracking and Identification](#)**

Purpose: Develop and implement protocols for identifying microbial contamination sources to beaches throughout the state

Update: Researchers have been preparing reports to describe the results of the Microbial Source Identification Method Evaluation Study. During the next quarter, SCCWRP and its partners will implement microbial source identification methods in field studies.

Lead Investigator: [Griffith](#)

New  
Project

### c. [Quantitative Microbial Risk Assessment \(QMRA\)](#)

Purpose: Apply QMRA to characterize the risk of illness to swimmers at a southern California marine beach impacted by non-human sources of fecal indicator bacteria

Update: The first two steps for this project have been initiated. First, a Management Review Committee was created to guide the project, and the Committee approved the project work plan. Second, staff launched the first phase of sampling and analysis designed to identify sources of fecal indicator bacteria at the study sites: Hobie and Kiddie beaches in Ventura County. Daily sampling at more than a half-dozen sites will continue through August. The Ventura County Department of Environmental Health is analyzing samples for fecal indicator bacteria, pathogens, and source markers including those indicative of human hosts.

Lead Investigator: [Schiff](#)

## 5. Biogeochemical Cycling Assessment

New  
Project

### a. [Coastal Hypoxia](#)

Purpose: Investigate trends in oxygen conditions in southern California waters and assess the relative importance of natural versus anthropogenic drivers

Update: Project staff analyzed dissolved oxygen data from quarterly discharger monitoring data and presented [preliminary findings](#) to CTAG and the Commission. They will next prepare a manuscript describing these findings, and attend a 2-day workshop in Monterey, CA to summarize and review the project results with collaborators.

Lead Investigator: [Sutula](#)

New  
Project

### b. [Harmful Algal Blooms](#)

Purpose: Improve understanding of conditions leading to *Pseudo-nitzschia* blooms and toxin production in Monterey Bay and San Pedro, California

Update: Preparations are underway for this year's field sampling effort around the OCSD outfall diversion.

Lead Investigator: [Howard](#)

New  
Project

### c. [Microbial Response to Environmental Gradients in Streams](#)

Purpose: Evaluate the efficacy of microbial community analysis as a bioassessment tool in streams and rivers

Update: Site selection and sampling design were finalized in April. Researchers are currently engaged in sample collection and archiving, which will continue through the end of the dry season. Samples will be batch-analyzed after collection is complete.

Lead Investigator: [Cao](#)

## **B. TECHNICAL SUPPORT FOR MANAGEMENT/REGULATORY PROGRAMS**

### **a. [Nutrient Objectives in Streams](#)**

Purpose: Support state nutrient objectives program by developing stream eutrophication indicators related to nutrient concentrations, algal biomass, and algae and macroinvertebrate taxonomy

Update: A quality assurance plan was prepared to govern analysis of statewide bioassessment data. These data will be used to: 1) identify tipping points or thresholds between algal biomass and benthic invertebrates, and 2) validate the nutrient numeric endpoint spreadsheet tool. In addition, a work plan is being developed for the monitoring and modeling activities in the Santa Margarita River watershed.

Lead Investigator: [Sutula](#)

### **b. [Nutrient Objectives in Estuaries](#)**

Purpose: Support state nutrient objectives program by developing estuarine eutrophication indicators related to algae, nutrients, and dissolved oxygen

Update: Data analysis was completed and manuscript preparation began for experiments and field studies related to macroalgae biomass thresholds in intertidal flats and shallow subtidal habitats, as well as the Bight '08 eutrophication assessment in southern California. In addition, field experiments began to quantify the effect of macroalgae on seagrass. Continuing work on the San Francisco Bay nutrient numeric endpoints (NNE) nutrient strategy, SCCWRP scientists participated in a two-day workshop to develop conceptual models governing the scientific approach. They also wrote an article on NNE application for the San Francisco Estuary Institute publication "Pulse of the Delta".

Lead Investigator: [Sutula](#)

### **c. [Biological Objectives](#)**

Purpose: Support state bio-objectives program by developing biological condition assessment tools for perennial streams and rivers

Update: The project team has been finalizing assessment tool development, which includes a multi-variate model focused on the presence of expected species from reference sites (observed to expected model). In addition, the project team has been exploring an alternative multi-variate assessment tool based on modeled biological metrics, such as the proportion of intolerant species. Finally, they have been testing causal assessment tools in collaboration with the US EPA Office of Research and Development, so that regulated and regulatory agencies can determine what actions should be taken if the bio-objectives are not achieved. A Science Advisory Panel meeting will be held October 17 (location TBD), and a joint meeting of the State Water Board's Regulatory and Stakeholder Advisory Groups will

be held on September 20 in Sacramento. In addition, the State Board will hold four California Environmental Quality Act (CEQA) scoping meetings; the southern California scoping meeting will be held at the Santa Ana Regional Board on September 5.

Lead Investigators: [Schiff](#), [Stein](#)

#### **d. [Sediment Quality Objectives \(SQOs\)](#)**

Purpose: Support implementation of an assessment framework for evaluating the indirect effects of bay and estuarine sediment contamination on human health

Update: A meeting of the SQO advisory and agency coordinating committees was held at SCCWRP on May 24. Updates to the assessment framework and the schedule for policy adoption were discussed, and priorities for policy guidance development were identified. Revisions to the draft indirect effects (human health) technical report are in progress. Next steps include developing guidance for Tier III assessments and applying the framework to California water bodies.

Lead Investigator: [Bay](#)

#### **e. [Hydromodification Assessment and Management](#)**

Purpose: Support state and local management programs by developing tools to evaluate hydromodification causal factors and susceptibility to hydromodification effects

Update: SCCWRP staff conducted a second training on the hydromodification risk screening tool on June 19 in San Diego, CA. The course was sponsored by the Floodplain Managers Association and attended by approximately 35 practitioners. Work also continued on the Hydromodification Monitoring Plan template document, which will provide an outline for developing hydromodification monitoring approaches. Finally, a manuscript evaluating the effect of bank armoring activities (i.e., direct hydromodification) on bioassessment indicators (e.g., California Rapid Assessment Method, benthic invertebrates, and in-stream algae) was completed and submitted to the *Journal of the American Water Resources Association*.

Lead Investigator: [Stein](#)

### **C. REGIONAL MONITORING**

#### **1. Regional Marine Monitoring**

##### **a. [Southern California Bight Regional Monitoring Program](#)**

Purpose: Coordinate the Bight '13 Program to monitor regional trends in environmental conditions

Update: The Bight '13 kickoff meeting will be held September 24 at SCCWRP. Staff members have begun preparing by compiling invitation lists, setting an agenda, and interviewing participants about their priority monitoring questions.

Lead Investigator: [Schiff](#)

#### **b. [Pollutant Sources Data Cataloguing](#)**

Purpose: Continue estimating mass pollutant emissions from different sources to assess relative risk and track trends over time

Update: Compiled stormwater mass emissions data was sent out to several agencies to address data gaps.

Lead Investigator: [Sutula](#)

#### **c. [Mussel Watch](#)**

Purpose: Characterize spatial and temporal trends in coastal legacy and emerging contaminant levels by providing regional data for the nationwide Mussel Watch Program

Update: The project team completed data analysis for contaminants of emerging concern (CECs) in mussel tissue and passive sampling devices from the 2009-10 pilot survey in California. Over the next quarter, the team will document project findings in a series of manuscripts to appear in a special issue of *Marine Pollution Bulletin*.

Lead Investigator: [Maruya](#)

#### **d. [Areas of Special Biological Significance \(ASBS\)](#)**

Purpose: Develop a monitoring program for evaluating projects to reduce pollution inputs into ASBS

Update: Project staff reviewed all 14 ASBS grantees' monitoring and quality assurance plans, to ensure appropriate data will be collected to estimate pollutant reductions from structural best management practice (BMP) installation. The data will partly be used by the State Water Board for reporting to the state legislature on the success of this water bond. In addition, SCCWRP is coordinating three ASBS regional monitoring groups (Southern, Central, and Northern California), specifically to measure the status of ASBS chemical, toxicological, and ecological integrity. Sampling is set to begin this winter.

Lead Investigator: [Schiff](#)

## **2. Regional Watershed Monitoring**

#### **a. [Stormwater Monitoring Coalition \(SMC\) Regional Watershed Monitoring](#)**

Purpose: Support implementation of the SMC's regional watershed monitoring program for southern California's coastal streams and rivers

New  
Project

Update: Staff organized the fourth year of sampling, which started in May and will be completed this summer. Approximately 100 sites are being sampled by the SMC participating agencies for benthic macroinvertebrates, algae, toxicity, nutrients, trace metals, pesticides, major ions, physical habitat condition, riparian condition (California Rapid Assessment Method), flow, etc.

Lead Investigator: [Schiff](#)

#### **b. Background Concentrations of Contaminants in San Diego Reference Streams**

Purpose: Derive natural background-level numeric targets for bacteria, nutrients, and heavy metals in streams in the San Diego region using various bioassessment tools

Update: Researchers completed wet weather monitoring for the season and initiated dry weather sampling of nutrients, metals, bacterial and algal biomass. Dry weather sampling will continue over the next three quarters.

Lead Investigator: [Sutula](#)

#### **c. Atmospheric Deposition of Nutrients to Coastal Watersheds**

Purpose: Refine measurement techniques and estimate rates of atmospheric nutrient deposition in southern California watersheds

Update: Field sampling began and will continue through next quarter.

Lead Investigator: [McLaughlin](#)

### **3. Regional Wetland Monitoring**

#### **a. Wetlands Status and Trends**

Purpose: Develop tools for tracking wetland conditions and support implementation of state and national wetland monitoring programs

Update: The first phase of this project, including all technical analyses, is nearing completion. Validation studies were completed in two regions of California. These studies tested efficacy of the proposed design, and also provided estimates of error (i.e., confidence) associated with various program elements, such as inter-mapper calibration, protocol standardization, and classification crosswalks. A draft report containing recommendations for design and implementation of a statewide wetland status and trends program has been completed and is currently under review by the project's technical advisory committee (TAC). The seventh and final TAC meeting was held in Sacramento on August 17, where the final report recommendations were discussed and agreed upon. The final report will be delivered to the California Natural Resources Agency in late August. The next phase of this work will include development of the change assessment methodology, implementation manual production, statewide sample draw, and implementation of the program at approximately 200 plots across

California. Discussions have been initiated with the State Water Board and the Department of Fish Game regarding ultimate stewardship of this program.

For development of wetland restoration performance curves, researchers have been focusing on identifying potential study sites by interviewing staff at the Regional Water Quality Control Boards and the Army Corps of Engineers. To date, approximately 140 stream restoration projects have been identified that can potentially be used for performance trajectory development. Initial sampling of candidate sites is ongoing.

Lead Investigator: [Stein](#)

**b. [Depressional Wetlands](#)**

Purpose: Develop and test assessment tools and a monitoring approach for depressional wetlands throughout the state

Update: Site reconnaissance and field sampling was completed for the selected southern California depressional wetlands. A summary document detailing results of the site reconnaissance was distributed to the State and Regional Board members involved in this study. In brief, characteristics of 356 sites were assessed to narrow down locations that met the study requisites (e.g., freshwater, earthen-lined, water present). One hundred forty sites were then evaluated in the field and 25 were identified that met the study requirements. Sampling was conducted at 23 depressional wetlands (two sites were dry at the time of sampling) between May 15 and June 12 for water and sediment chemistry, sediment toxicity, benthic diatoms, and macroinvertebrates. Surveys using the California Rapid Assessment Method (CRAM) are underway. Sample and data analyses will take place over the next quarter.

Lead Investigator: [Stein](#)

**c. [Eelgrass](#)**

Purpose: Develop a system for tracking the extent and condition of eelgrass habitat in southern California

Update: Regional maps on the known extent and distribution of eelgrass in southern California bays and estuaries have been added to the [California Wetlands Portal](#). With the assistance of staff of the National Oceanic and Atmospheric Administration National Marine Fisheries Service, work continues on incorporating individual eelgrass mitigation projects and associated reports into the Portal database.

Lead Investigator: [Solek](#)

**d. [Historical Ecology](#)**

Purpose: Establish a framework for compiling historical data on watershed and wetland conditions, and evaluate changes in response to land use modification and resource management efforts

New  
Project

Update: Over the past quarter, data compilation continued for the north San Diego Lagoon historical ecology project. Work also continued on the second phase of digitization and analysis of historic coastal maps (t-sheets). All new t-sheets have been acquired and digitized and are currently being merged with the t-sheets processed under the earlier phase of this project. Development of the crosswalk between the historical and contemporary classification systems began and is being coordinated through the Wetland Recovery Project's Wetland Managers Group.

Lead Investigator: [Stein](#)

## **D. INFORMATION MANAGEMENT AND ANALYSIS**

### **a. [Database Management](#)**

Purpose: Oversee development and management of the California Environmental Data Exchange Network (CEDEN) and Beach Watch database

Update: With a large push over the previous quarter, more than 8 million water quality records have been processed to date by all four CEDEN regional data centers. As the Southern California Data Center, SCCWRP has processed over 1.6 million records for CEDEN, including integration of the statewide Beach Watch data stream.

Lead Investigator: [Steinberg](#)

### **b. [Dynamic Data Processing and Visualization](#)**

Purpose: Develop data visualization and geospatial visualization capabilities to support projects across SCCWRP's research portfolio and enhance management communication tools

Update: Several data processing and visualization projects were newly initiated, including oversight for the California Water Quality Monitoring Council's "Marine" and "Safe to Drink" portal development (the latter in collaboration with the Department of Public Health). Staff members also began developing a SCCWRP Geoportal, which provides access to SCCWRP datasets and associated metadata via a user-friendly web interface.

Lead Investigator: [Steinberg](#)

## **E. MEMBER AGENCY SUPPORT**

### **b. [Quality Assurance for Offshore Monitoring](#)**

Purpose: Prepare method quality objectives (MQOs) for quality assurance of statewide ocean monitoring data

New  
Project

Update: Staff met with SCCWRP member agencies and the Southern California Association of Marine Invertebrate Taxonomists (SCAMIT) to scope the important MQO attributes necessary for assessing the quality of benthic macro-invertebrate sampling and analysis. Before a similar scope can be created for trawl (fish) sampling and analysis, staff will meet with SCCWRP member agencies and the Southern California Ichthyological Taxonomists and Ecologists (SCAITE) to create an inventory of existing MQOs. The next SCAITE meeting is scheduled for September 17 at the Cabrillo Marine Museum in San Pedro.

Lead Investigator: [Schiff](#)

**c. [Pilot Monitoring with Autonomous Underwater Vehicle \(AUV\)](#)**

Purpose: Test application of an AUV (glider) for ocean monitoring in southern California

Update: Satellite and base station communications were established for the retrofitted Slocum glider from the National Oceanic and Atmospheric Administration, and the glider was successfully ballasted in a portable tank at SCCWRP. Initial sea trials with the City of Los Angeles demonstrated ease of deployment and retrieval from a vessel using an A-Frame, in addition to direct communications at sea. Co-deployment and calibration with the University of Southern California's glider were completed in March. Application was successful in waters near the Orange County Sanitation District (OCSD) for 13 days before the glider got caught in currents and ended up along the Newport Beach shoreline. Initial assessments indicate a strong canyon current may have pushed the glider toward the surf zone, where a small leak caused the propulsion system to malfunction. All data has been recovered and is in the process of being analyzed while the glider was shipped back to the manufacture for repairs. Upon its return, it will be used for observing plume movements during the OCSD ocean outfall diversion in September.



Lead Investigator: [Weisberg](#)

**d. [Effects of Ocean Outfall Diversion on Nutrient Cycling](#)**

Purpose: Assess changes in the Newport Coast nearshore waters related to nitrogen cycling and primary production resulting from diversion of the Orange County Sanitation District ocean outfall

Update: Scientists developed a study design and prepared for field sampling, to begin in August 2012.

Lead Investigator: [Howard](#)

New  
Project

e. **Newport Bay Watershed Model Monitoring**

Purpose: Facilitate a critical review of current monitoring efforts in the Newport Bay Watershed to improve effectiveness, cost-efficiency, and data synthesis

Update: A contract agreement to initiate this project was received from the State in late June.

Lead Investigator: [Schiff](#)