

One Estuary, Many Plans: How Will They Work Together?

Moderator: Felicia Marcus, Chair, State Water Resources Control Board

Most Californians who track water issues feel that we are poised as a state to make monumental decisions on water allocation, habitat restoration, adaptation to climate change, and conveyance that will affect us and the next several generations. This session will discuss how these major planning and regulatory processes will work together and how they will support more resilient Delta farms and communities, a more robust future California water landscape, and a healthier estuary.

The following items will be discussed:

- 1) *What do the dual goals, “reliable water supply and ecosystem restoration”, and the concept of the Delta as an evolving place, require the state to accomplish—i.e., what does success look like?*
- 2) *One of the key findings of our 2011 State of the Bay report is that the estuary is experiencing a chronic state of drought that has greatly impacted the health of the waters and habitats in the Bay Delta system; how do the current plans address this chronic drought condition? What are the barriers to addressing this realistically?*
- 3) *There are several significant processes underway including the DSC’s newly completed Delta Plan, the BDCP activities, the work of the Delta Protection Commission, and the SWRCB’s Bay-Delta Water Quality Control Plans update. As a body of plans, policies and projects, how will these efforts integrate? How will they collectively move the State of California toward a more water wise future that addresses the interdependency of the environment, economics and the geographic regions of the state?*

Keywords: Delta, Water Allocation, Ecosystem Restoration, Water Landscape

Session Title: Day 2 Plenary Session: Future Challenges: Water Quantity, Water Quality

Panel Members:

Charlton Bonham, Director Department of Fish and Wildlife

Mark Cowin, Director, Department of Water Resources

Randy Fiorini, Vice Chair, Delta Stewardship Council

Michael Machado, Immediate Past Executive Director, Delta Protection Commission

Felicia Marcus, Chair, State Water Resources Control Board

Speaker Biography: Charlton “Chuck” H. Bonham, Director of the California Department of Fish and Wildlife, was appointed September 6, 2011. Prior to his appointment as Director of Fish and Wildlife, Mr. Bonham served in a number of roles for Trout Unlimited over ten years, including since 2004 as the organization’s California Director. Mr. Bonham also served on the Board of Directors of the Delta Conservancy. Mr. Bonham received his J.D. and Environmental and Natural

Resources Law Certificate from the Northwestern School of Law of Lewis and Clark College, in Portland, Oregon. Before his work at Trout Unlimited, he was a Peace Corps volunteer in Senegal, West Africa, and an instructor and guide at the Nantahala Outdoor Center, in Bryson City, N.C.

Speaker Biography: Mark W. Cowin, Director of the California Department of Water Resources, was appointed by Governor Brown in 2012. Mr. Cowin has extensive experience with California water resources management and has served as Director and Acting Director of DWR since 2010. Prior to becoming Director, Mr. Cowin served as Deputy Director of Integrated Water Management for DWR overseeing DWR's flood management and dam safety programs, implementing Integrated Regional Water Management, coordinating DWR's efforts related to climate change, and updating and implementing the California Water Plan. Mr. Cowin also served for five years as Chief of DWR's Division of Planning and Local Assistance and served as an Assistant Director for the CALFED Bay-Delta Program with responsibility for the Bay-Delta Program's water management planning activities. He received a B.S. in Civil Engineering from Stanford University in 1980.

Speaker Biography: Randy Fiorini, Board Member of the Delta Stewardship Council, comes from Turlock, CA, where he has been managing partner of Fiorini Ranch since 1975. Fiorini Ranch, established in 1909, produces peaches, wine grapes, almonds and walnuts. He is Past President and board member of the Association of California Water Agencies, Past Board President and Director of Turlock Irrigation District and Past President and Board Member of the California Farm Water Coalition. Mr. Fiorini holds a Bachelor of Science in Fruit Science from California Polytechnic State University, San Luis Obispo. He was appointed to the Delta Stewardship Council in March 2010.

Speaker Biography: Michael Machado is the Immediate Past Executive Director of the Delta Protection Commission, a position he has held since September 2010. Prior to his appointment, he served in the California State Senate, from 2000-2008, representing the 5th District; and in the California State Assembly, from 1994-2000, representing the 17th District. While in the Legislature, Senator Machado worked extensively on water issues. He served on the Natural Resources Water Committee in the Senate and chaired the Water, Park, and Wildlife Committee in the Assembly. Senator Machado earned a Master's Degree in Agricultural Economics from UC Davis, and an undergraduate degree in Economics from Stanford University. He and his family own and operate a farm in San Joaquin County.

Speaker Biography: Felicia Marcus is Chair of State Water Resources Control Board. Before her appointment to the Water Board, Felicia was the Western Director for the Natural Resources Defense Council (NRDC), a national environmental leader in bringing science, law, and policy expertise to solving our world's pressing environmental and conservation challenges. Prior to joining NRDC, Felicia was the Executive VP/COO of the Trust for Public Land, a national non-profit devoted to conserving land for people. Before coming to TPL, Felicia served as the Regional Administrator of the U.S. EPA Region IX in the Clinton Administration where she was known for her work in bringing unlikely allies together for environmental progress and for making the agency more responsive to the communities it serves, particularly Indian Tribes, communities of

color, local government, and agricultural and business interests. While at EPA, Felicia worked extensively on the range of environmental issues under EPA's jurisdiction, most heavily in air quality, Bay-Delta water, tribal, and US-Mexico border issues. Prior to that, Felicia headed Los Angeles' Department of Public Works at a time when the City went from garnering lawsuits to garnering national awards for environmental excellence. Felicia came to Public Works after extensive experience as a public interest lawyer and community organizer in Los Angeles. She currently serves and has served in the past on many non-profit boards and Advisory Councils including the Public Policy Institute of California, Urban Habitat, Kesten Institute for Public Finance and Infrastructure Policy, and the Center for Diversity and the Environment. She is also currently an Obama Administration appointee to the Commission on Environmental Cooperation-Joint Public Advisory Council (US, Mexico, Canada) and was a Schwarzenegger Administration appointee to the Delta Stewardship Council prior to being appointed to the Water Board.

Signs that the Bay's Resistance to Nutrient Pollution is Weakening

James Cloern, U.S. Geological Survey, jecloern@usgs.gov

The world's estuaries have been enriched with nutrients derived from fertilizer runoff, fossil fuel combustion, and sewage discharge. Nutrient enrichment promotes fast production of phytoplankton biomass, and in places such as Long Island Sound and Chesapeake Bay the metabolism of that biomass depletes oxygen from water and creates dead zones devoid of fish and shellfish. San Francisco Bay receives higher nutrient loads than these estuaries, primarily from river inputs to North Bay and treated sewage in South Bay, yet it does not have problems of high phytoplankton biomass or low oxygen because it has attributes that give resistance to the harmful effects of nutrient enrichment such as strong tides, high turbidity, fast grazing by clams. However, signs of change after 1999 suggest that this resistance is weakening in South Bay: clam abundance has declined; a red tide developed in 2004; the phytoplankton community includes harmful species not present earlier; phytoplankton biomass has increased significantly. These changes suggest that the Bay could be on a trajectory toward the kinds of impairments seen in other nutrient-rich estuaries. However, there is great uncertainty about how the future will unfold. As a result, the San Francisco Water Board is developing a nutrient strategy for the Bay in partnership with the Regional Monitoring Program, wastewater dischargers, and the scientific community. Goals are to answer questions to guide nutrient-management policies: is the Bay on a trajectory toward nutrient impairment; what changes would indicate that an impairment threshold has been crossed; what levels of nutrient removal from municipal wastewater would be required to mitigate impairment? Much is at stake because the capital costs of nutrient removal are \$5-10 billion. Keys to sound decisions will be continued surveillance, development of nutrient criteria, and use of models to project outcomes under scenarios of environmental change and nutrient reduction.

Keywords: Nutrients, Water Quality, Phytoplankton, Dissolved Oxygen, Regional Monitoring Program, Policies

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Speaker Biography: Jim Cloern is a senior research scientist at the U.S. Geological Survey where he has worked since 1976. His research addresses comparative ecology and biogeochemistry of estuaries to understand how they respond as ecosystems to climatic-hydrologic variability and human disturbance. He leads a team investigation of San Francisco Bay that has studied primary production, nutrient cycling, algal and zooplankton community dynamics, ecosystem metabolism and food web dynamics, disturbance by introduced species, Bay-Ocean connectivity, ecosystem restoration, and projected responses to climate change. Jim has been a Fulbright Research Scholar at the Centre d'Océanologie de Marseille, mentored postdoctoral scientists and graduate students, teaches scientific writing, is Consulting Professor at Stanford University, served as Co-Editor of *Estuaries and Coasts*, and received the 2010 B.H. Ketchum Award from the Woods Hole Oceanographic Institution and 2012 Brown-Nichols Award from the Delta Science Program.

Prioritizing Chemicals of Emerging Concern (CECs): Applying a Global Perspective to a Regional Strategy

Derek Muir, Dept. of Chemistry, University of Toronto, DMuir@chem.utoronto.ca

A Chemical of Emerging Concern (CEC) can be broadly defined as any synthetic chemical that is not regulated or commonly monitored in the environment but having the potential to enter the environment and cause adverse ecological or human health impacts. The potential for persistence, bioaccumulation, biodegradability, and adverse effects can be assessed from molecular structure by widely available quantitative structure-activity relationships (QSARs). Large lists of chemicals in commerce (i.e. “industrial” organic chemicals, pesticides, and pharmaceuticals) in Europe and the USA have been screened and categorized by QSARs. These studies, as well as ongoing priority setting by chemical regulators in the US EPA, individual US States, Canada, European Union, Japan and other countries have identified ~3% of about 100,000 substances which may be of concern. These screening exercises have generally not included possible degradation products, byproducts, and impurities and there is potential for false positives and negatives because the QSARs have been developed with a relatively small “training data set” of well-studied compounds. While screening and listing is useful, more detailed risk assessment can be challenging due to lack of information on use, properties, and on relevant toxicity information particularly for ecological effects such as impacts on microbial communities or endocrine disruption. Ionizable chemicals, such as those containing carboxylic or sulfonic acid groups, as well as organometallic chemicals, represent a high proportion of less studied commercial chemicals and are particularly difficult to assess. While deciding on what chemicals have the greatest potential for adverse effects is very challenging, it is worth noting that there is a relatively large international effort to develop new tools for rapid screening of chemical toxicity and improving QSARs. Also rapid advances in analytical capabilities are improving the ability to identify unknown chemicals and to assess biological effects of mixtures of chemicals isolated from environmental media.

Keywords: CECs, Commercial Chemicals, Adverse Effects, Emerging Chemicals, Screening, Risk Assessment

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Speaker Biography: Derek Muir is an Adjunct Professor in the Department of Chemistry, University of Toronto and the School of Environmental Sciences, University of Guelph and a Senior Research Scientist with Environment Canada. Identifying emerging chemicals of concern is a major focus of his research, and he has collaborated recently with Dr. Phil Howard (SRC Inc) on papers assessing persistent and bioaccumulative chemicals in commerce. Derek received the SETAC Founder’s Award in 2000 and was awarded the Royal Society of Canada’s Miroslaw Romanowski Medal in 2004 for work on persistent organic pollutants and mercury in Canada's North. Derek is author or co-author of about 500 peer reviewed papers, assessment reports, and book chapters, and is among the 10 most cited scientists in the Environmental Science/Ecology area of Science Citation Index for the period 2001-2011.

California's Safer Consumer Product Regulations: An Important Tool for Water Pollution Prevention

Debbie Raphael, Department of Toxic Substances Control, debbie.raaphael@dtsc.ca.gov

On October 1st of this year California's groundbreaking Safer Consumer Product Regulations went into effect. More than five years have passed since the underlying law was enacted and many voices have contributed to the final form of this program. This presentation will summarize the framework of the regulations, explain their potential for preventing pollution in California's water bodies, and offer some critical insertion points for input by those interested in protecting water quality.

Specifically, the regulations identify a list of around 1,200 chemicals that are known to be problematic for human health or the environment. Many of the chemicals are contaminants of concern for California's water bodies. Using this list, the Dept. of Toxic Substances Control will identify specific "Priority Products" that are formulated using one or more of these chemicals. Manufacturers who wish to sell a "Priority Product" into California must either reformulate the product or justify the continued use of the chemical(s) of concern by submitting a robust Alternatives Analysis. Based on the outcome of the Alternatives Analysis, the Department has the authority to regulate the sale of Priority Products utilizing a variety of regulatory responses.

This framework for looking at the constituents of consumer products represents a potentially powerful tool for public agencies and nonprofits trying to achieve source control of water contaminants. Potential threats to the program on the horizon include resource limitations, lack of information on chemical hazards and exposure pathways, and pre-emption at the Federal level. Regardless, California is poised to implement a significant new chapter in pollution prevention... and the world is watching.

Keywords: Pollution Prevention, Safer Consumer Product Regulations

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Speaker Biography: Debbie Raphael joined the California Department of Toxic Substances Control as Director in May 2011. In her 20-years of public service at the local and state level she has demonstrated a dedication to scientific inquiry, engagement and transparency, and forging partnerships that pave the way for meaningful and practical change. As a scientist, innovator and pragmatist, she relies on the best available science, robust stakeholder interaction and fairness to drive policy development. Recognizing that environmental burdens are not uniform across the state, she believes government must take extra steps to engage our most impacted communities. Ms. Raphael applies these principles to her key goals for the department: Implementing the Safer Consumer Products regulations; Resolving critical foundational issues within DTSC; and Reduce the generation and disposal of hazardous waste in California.