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SPONSORING AGENCIES
This year’s conference is sponsored by the following organizations:

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Sacramento Region Water Forum
Sacramento State, College of
Natural Sciences and Mathematics
Sierra College Natural History Museum
United States Bureau of Reclamation
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Conference Chair
Ron Coleman
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Sacramento State

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California Extreme Precipitation Symposium

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Sacramento Area Council of Governments

Felix Smith
Save the American River Association

Christine Sotelo
California Regional Water Quality Control Board

Pat Stoner
Local Government Commission

Rob Swartz
Regional Water Authority

Bill Templin
American River Watershed Group

Tim Washburn
Sacramento Area Flood Control Agency

Leo Winternitz
Sacramento Area Water Forum

Otis Wollan
Placer County Water Agency
Dr. Gonzalez was appointed President of Sacramento State in July 2003, bringing new energy and a focused vision to the University. Comstock’s Business Magazine heralded Dr. Gonzalez’ arrival with an article titled, “Pure Oxygen Arrives at CSUS.” Just a few months after arriving, President Gonzalez launched an ambitious initiative to enhance Sacramento State’s reputation as a great university and a destination campus. This initiative called “Destination 2010” seeks to make Sacramento State a premier metropolitan university and the campus of choice for students in the Sacramento region and throughout the West. Among the projects included in Destination 2010 are the construction of the following: new academic buildings; new on-campus student housing; a 500-unit faculty and staff affordable housing project near the campus; a state-of-the-art weight and conditioning facility for the University’s football and track teams; the construction of a new student Recreation, Wellness and Events Center; the renovation of Hornet Stadium; and a planned 6,000 to 8,000 seat Arena.

Before coming to Sacramento, Dr. Gonzalez served from 1997 to 2003 as President of Cal State San Marcos. At San Marcos he oversaw a period of rapid growth as well as many successful fundraising campaigns. He also spent 18 years at Fresno State, starting as a faculty member in the Psychology Department, which he later chaired. From 1991 to 1997, he served as the university’s Provost and Vice President for Academic Affairs.

Dr. Gonzalez previously served on President Bush’s Advisory Commission on Educational Excellence for Hispanic Americans. His service on a number of other boards and commissions includes six years as a Commissioner for the Western Association of Schools and Colleges, the agency that accredits higher education institutions in the western United States. He also served as Chair of the Governing Board of the Hispanic Association of Colleges and Universities. His service to the CSU system includes serving on a work group that reviewed and recommended action on remedial education, and, more recently, as a member of a committee of presidents considering policy on enrollment management, the CSU’s Technology Steering Committee, and the Institute for Teaching and Learning.

Dr. Gonzalez holds a Doctorate and Masters degree in Psychology from UC Santa Cruz. He received his Bachelors degree in History from Pomona College, where he graduated with honors and was elected to Phi Beta Kappa. He spent a year at Stanford University as a postdoctoral fellow of the Ford Foundation and the National Research Council conducting research on the psychology of time. He also attended Harvard Law School.

Dr. Gonzalez is a member of the Board of Trustees at Pomona College. He also serves on the Board of Directors for Valley Vision.
SPECIAL DIGNATARIES

Heather Fargo  
*Mayor, City of Sacramento*

Mayor Fargo represents Sacramento. She became the first full-time city mayor after the passage of a Charter amendment. Mayor Fargo is a California native, serving in her second term as the Mayor for Sacramento. Prior, Mayor Fargo served on the City Council representing District One. Mayor Fargo serves in the board capacity for the Sacramento Area Flood Agency, Sacramento Area Council of Governments, Sacramento Area Commerce and Trade Organization, Downtown Sacramento Partnership, Crocker Art Museum, Healthy Kids Healthy Future Commission, Policy to End Homelessness, League of California Cities, U.S. Conference of Mayors, and Waterfront Advisory Committee.

Mayor Fargo has a Bachelors degree in Environmental Planning and Management.

Christopher Cabaldon  
*Mayor, City of West Sacramento*

First elected to the West Sacramento City Council in 1996, Christopher Cabaldon is serving his fifth term as Mayor of West Sacramento. He is the first Mayor elected directly by the people. Mayor Cabaldon is an active advocate for environmental quality. A board member for the Yolo-Solano Air Quality Management District, he helped craft and then implement an innovative regional program to replace high-polluting heavy duty truck engines, and fought to preserve the urban forest in his city. He has served as a member of the American Lung Association’s blue ribbon panel for the annual clean air awards. He fights for clean water, habitat enhancement, recreation, farmland preservation, and economic sustainability in the Sacramento-San Joaquin Delta as a member of the state’s Delta Protection Commission. As Mayor, he sponsored a city ordinance to remove gross polluting vessels from the Sacramento River. In 2001, the U.S. Secretary of Interior appointed Cabaldon to the Bay-Delta Committee guiding implementation of the CALFED water and environmental restoration program. In 2000, he was appointed by the Governor to the Central Valley Regional Water Quality Control Board. He is a member of the Governor’s advisory groups to improve the California Environmental Quality Act. Mayor Cabaldon is the California President for the National Brownfields Association.
PLENARY SPEAKERS

Judith Corbett
Executive Director, Local Government Commission

Judith A. Corbett is the founder of the Local Government Commission and has served as its Executive Director since 1980. Ms. Corbett was co-developer of Village Homes, the highly acclaimed model for sustainable development in Davis, CA. She has co-authored three books on resource efficient land use and building design, and published over 50 policy guidebooks for local government officials on topics ranging from hazardous waste reduction, recycling and energy conservation to resource-efficient land use patterns. Ms. Corbett has served as a featured speaker at conferences throughout the United States, Canada, Mexico, and Europe. She was named by Time Magazine as a “Hero for the Planet” in 1999 and received the 2005 National Leadership in Planning Award from the American Institute of Planning. She serves as a board member for several organizations including the Congress for the New Urbanism and the Rail-Volution Conference. Ms. Corbett holds a Masters in Ecology from the University of California, Davis.

David Yates, PhD
Project Scientist, National Center for Atmospheric Research

David Yates is a Project Scientist in the Research Applications Laboratory at the National Center for Atmospheric Research, Boulder Colorado and Research Associate with the Stockholm Environment Institute’s US Center in Davis, CA. His research has focused both on local scale hydrologic problems (flash floods, land use-land cover, climate change), as well as climate change impacts on water and agricultural systems. Dr. Yates is PI on an EPA Office of Research and Development Project which is developing an analytic tool- the Water Evaluation and Planning model—looking at the combined effects of climate change and land-use on ecological resources and freshwater services. This tool was partially developed with funding from the AWWA Research Foundation, to help water utilities with long-range planning that includes climate change impacts. With Kathleen Miller and support from the AWWA Research Foundation, Dr. Yates has helped develop an educational primer for use by the drinking water utility industry that outlines the current state of scientific knowledge regarding the potential impacts of global climate change on water utilities, including impacts on water supply, demand and relevant water quality characteristics. Dr. Yates received his Bachelors, Masters, and Doctorate from the University of Colorado in Civil Engineering in 1989, 1990 and 1995, where he emphasized water resource systems modeling of surface water and groundwater hydrology, water quality, and water and agricultural systems.

Tom Philp
Senior Associate Editor, Sacramento Bee

Tom Philp is the Senior Associate Editor on the editorial board of the Sacramento Bee. He drafts the newspaper’s editorials on water, agriculture, forestry, energy, health, telecommunications and various regional issues. He has been on the board since 1997. Previously he was a reporter for the Bee for six years, and prior to that, a reporter for the San Jose Mercury News for eight years. In 2004 Mr. Philp won three national journalism awards for an editorial series examining the spending behavior of California water districts. In 2005 he won the Pulitzer Prize for editorial writing for a series proposing to restore Yosemite National Park’s Hetch Hetchy Valley.
Thursday, April 12, 2007

8:00 a.m. – 9:00 a.m.  Registration and Continental Breakfast
9:00 a.m. – 9:05 a.m.  Welcome and Introductions
9:05 a.m. – 10:50 a.m. Plenary Session
10:50 a.m. – 11:15 a.m. Break
11:15 a.m. – 12:45 p.m. Concurrent Session One
12:45 p.m. – 1:45 p.m. Lunch
1:45 p.m. – 3:15 p.m. Concurrent Session Two
3:15 p.m. – 3:30 p.m. Break
3:30 p.m. – 5:00 p.m. Concurrent Session Three
5:00 p.m. – 6:15 p.m. Poster Session and Reception

Friday, April 13, 2007

7:30 a.m. – 8:30 a.m. Registration and Continental Breakfast
7:45 a.m. – 4:30 p.m. California Extreme Precipitation Symposium
8:30 a.m. – 10:10 a.m. Concurrent Session Four
10:10 a.m. – 10:30 a.m. Break
10:30 a.m. – 12:00 p.m. Concurrent Session Five
12:00 p.m. – 1:00 p.m. Lunch
1:00 p.m. – 2:30 p.m. Concurrent Session Six
2:30 p.m. – 2:50 p.m. Refreshment Break
2:50 p.m. – 4:30 p.m. Concurrent Session Seven
4:30 p.m. Adjourn
PROGRAM AGENDA

Thursday April 12, 2007

8:00 a.m. – 9:00 a.m.  Registration and Continental Breakfast  .............. University Ballroom Foyer

9:00 a.m. – 9:05 a.m.  Welcome and Introductions ........................... University Ballroom I and II
Alexander Gonzalez, PhD, President, Sacramento State

9:05 a.m. – 10:50 a.m.  Opening Plenary Session
Panel Discussion: Climate Change, Land Use and the American River: How Will the Region Face Its Future?

Moderator: Tom Philp, Senior Associate Editor, Sacramento Bee

Panel Members:
Mayor Heather Fargo, City of Sacramento
Mayor Christopher Cabaldon, City of West Sacramento
Judith Corbett, Executive Director, Local Government Commission
David Yates, PhD, Project Scientist, National Center for Atmospheric Research

10:50 a.m. – 11:15 a.m.  Break

11:15 a.m.  – 12:45 p.m.  Concurrent Session One

1A - Watershed Assessment Process: 101 ................................. Redwood Room

Fraser Shilling, PhD, Department of Environmental Science and Policy, University of California, Davis
Barbara Washburn, PhD, Office of Environmental Health Hazard Assessment
Chris Keithley, PhD, California Department of Forestry and Fire Protection

The process of watershed assessment includes: 1) the development of goals or questions for the assessment, 2) collecting and analyzing data corresponding to these goals/questions, 3) interpreting the analytical results, 4) synthesizing a description of watershed condition relative to goals and expectations, and 5) reporting the description in a way that is useful to decision-making. We will introduce and explain this process using the California Watershed Assessment Manual (CWAM) as our reference. We will lay the foundation for carrying out watershed assessment and for the ensuing talks, which go into more detail about assessing watershed condition.

1B - Folsom Dam: Physical and Operational Improvements to Meet the Demands of the 21st Century ............................ University Ballroom I

Moderator: Tim Washburn, Sacramento Area Flood Control Agency
Chuck Rairdan, Project Manager, Folsom Dam Modifications and Raise Projects, US Army Corps of Engineers, Sacramento District

Sacramento currently presents the greatest risk of flooding among major metropolitan areas in the United States. In cooperation with local project sponsors, the U.S. Army Corps of Engineers (Corps) is designing and constructing several flood damage reduction and ecosystem restoration projects along the lower American River and at Folsom Dam and Reservoir as components of the overall American River Watershed Project. The Folsom Dam modifications and raise projects, scheduled for completion by 2016, will significantly increase the level of flood protection for Sacramento. These projects will make it possible for the Corps to adopt a new water control plan for Folsom Dam that substantially improves the flood control operation.
11:15 a.m. – 12:45 p.m.  

**1B Continued**  
**University Ballroom I**

**Rick Johnson, United States Bureau of Reclamation**

Federal Dam safety standards require that Folsom Dam have adequate spillway capacity to pass the probable maximum flood (PMF) without overtopping. To comply with this standard the U.S. Bureau of Reclamation and the Corps have formed an unprecedented partnership known as the Joint Federal Project to design and implement an auxiliary spillway that safely passes the PMF and provides opportunities for more efficient use of the reservoir storage space at Folsom Dam. BOR has a significant interest in seeing that these efficiencies are employed to balance the competing uses of the reservoir.

**Beth Faber, PhD, Research Hydrologist, Hydrologic Engineering Center, US Army Corps of Engineers, Davis**

The Corps' adoption of a new water control plan for Folsom Dam will likely create opportunities for incorporating weather forecasting into the updated water control plan as a means of further reducing flood risk and minimizing the impacts of the flood control operation on the other beneficial uses of the reservoir.

**Joe Countryman, PE, DWRE, President, MBK Engineers, Sacramento**

Outlines the accomplishments of efforts to promote forecast-coordinated operations at Oroville Dam and New Bullard's Bar Dam on the Feather and Yuba Rivers have yielded important lessons that may be applicable to updating the water control plan at Folsom Dam.

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12:45 p.m. – 1:45 p.m.  

**Boxed Lunch**  
**University Ballroom III**

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1:45 p.m. – 3:15 p.m.  

**Concurrent Session Two**

**2A - Watershed Sciences and Overview**  
**Redwood Room**

**Chris Keithley, PhD, California Department of Forestry and Fire Protection**

Wildland fire is a primary form of disturbance in most of California’s watersheds. Current research suggests that decades of fire suppressions has resulted in watersheds with much higher fuel loads that when burned produce more frequent high severity fires. This presentation discusses methods for evaluating fuel conditions and risk of wildfire. In addition a number of commonly available vegetation, fire, and fuels data sets are reviewed.
1:45 p.m. – 3:15 p.m. (cont.)

2A Continued ......................................................... Redwood Room

The goal of the presentation is to encourage groups to consider an evaluation of fire risk and fuel conditions when preparing a watershed assessment.

Prioritizing Restoration of Riparian Vegetation

Richard Harris, PhD, Cooperative Extension Specialist, University of California, Berkeley

Dr. Harris will present a system for prioritizing restoration of riparian vegetation. The system provides information on the distribution of riparian communities and conditions at the watershed, stream reach and site scales. It utilizes a combination of data on stream geomorphology and vegetation collected from mapping, aerial photographs and field surveys. It has been applied in at least two southern California watersheds to date, most recently at Escondido Creek by the San Elijo Lagoon Conservancy.

Current Issues in Water/Sediment Quality Analysis

Stephanie Fong, Environmental Scientist, Central Valley Regional Water Quality Control Board

Water column toxicity testing has long been used in watershed assessments in the region. There has been a growing need for sediment toxicity testing data to assess the effects of sediment-bound toxicants such as pyrethroid pesticides in watersheds. As pyrethroids replace organophosphorus pesticides, effects of their use are becoming evident. Recent studies show pyrethroids bound to sediment in the American River watershed at concentrations high enough to cause negative impacts.

2B - Post Hurricane Katrina - Levee and Channel Maintenance and Habitat:
Is Balanced Management Still Possible in the Sacramento Valley’s Rivers? ........................................ University Ballroom I

Moderator: Steve Chaine, Senior Resource Ecologist, EDAW

Jim Sandner, Chief, Operations and Readiness, Corps of Engineers
Howard Brown, Fishery Biologist, NOAA Fisheries
Keith Swanson, Chief, Operations and Maintenance Branch, Department of Water Resources
Jeffery Hart, PhD, Principal, HART Restoration, Inc.
Diana Jacobs, PhD, Deputy Director - Science Advisor (Retired), California Department of Fish and Game

2C - Climate Change and Drought: American River Hydrology and the WEAP Model (Watershed Evaluation and Assessment Protocol) ........ University Ballroom II

David Purkey, PhD, Stockholm Institute
Liz Mansfield, Watershed Management Coordinator, El Dorado Irrigation District

Linking Water and Land Use Session – see page 16

Smart Stormwater: Planning and Design Solutions for Water Use Development

3:15 p.m. – 3:30 p.m.  Break

3:30 p.m. – 5:00 p.m.  Concurrent Session Three
3:30 p.m. – 5:00 p.m. (cont.)

3A Continue ................................................................. Redwood Room

California Watershed Assessment Manuel Project Team

A conceptual model is a graphical representation of how a system works. They are commonly used in ecological and management modeling to depict possible or known relationships among “compartments” of systems. This tool has useful application in watershed assessment and adaptive management because it allows stakeholders to jointly develop a picture of their watershed, while providing a reference point for increasing understanding and carrying out adaptive management. We will explain the principles and process of conceptual modeling and adaptive watershed management. We will provide hands-on practice in conceptual modeling using the American River and other Sierra Nevada watersheds as reference points.

3B - Updating the State Plan for Flood Control and Risk Management in the Lower Sacramento Valley ......................................................... University Ballroom I

Moderator: Scott Shapiro, Attorney, Downey/Brand Attorneys
Stein Buer, Sacramento Area Flood Control Agency
Les Harder, Deputy Director, Flood Management, Department of Water Resources
Ronald Stork, Policy Advocate, Friends of the River

3C - Climate Change and Ecosystem Transformation in the American River Watershed ......................................................... University Ballroom II

Carol Kennedy, Watershed Scientist, United State Forest Service, Tahoe National Forest

Linking Water and Land Use Session – see page 17

Implementing the Principles: Getting to Water-wise Land Use in the Sacramento Region

5:00 p.m. – 6:15 p.m. Poster Session and Reception ........................................ University Ballroom III
**Friday, April 13, 2007**

7:30 a.m. - 8:30 a.m. Registration and Continental Breakfast ................. University Ballroom Foyer

8:30 a.m. - 10:10 a.m. Concurrent Session Four


Moderator: Tom Gohring, Water Forum Executive Director

Jeff Loux, PhD, Director, Land Use and Natural Resource Program, University of California, Davis Extension

Paul Bratovich, HDR / SWRI

Jim White, California Department of Fish and Game

Panelists:

Roger Guinee, United States Fish and Wildlife Service

Mike Finnegan, United States Bureau of Reclamation

John Baker, NOAA Fisheries Service

Leo Winternitz, Former Water Forum Executive Director

Since 1999, the Water Forum, in conjunction with the U.S. Bureau of Reclamation, the U.S. Fish and Wildlife Service, NOAA Fisheries, the California Department of Fish and Game and other agencies, has been working toward an updated and improved flow management standard for the lower American River. The objective of the improved standard is to improve the pattern of fishery flow releases from Folsom Reservoir, consistent with the Water Forum Agreement and the Central Valley Project Improvement Act. This session will include presentations on the history of the Water Forum, the development of the flow standard, and how it meets the State’s fishery protection needs. Panelists will discuss how the flow standard will be implemented in integration with Central Valley Project operations and the ongoing process to formalize the standard.

**4B - Stormwater Management: Approaches, Regulations, and Tasks** ........ University Ballroom II

**Wag the Dragon: Linking Stormwater Strategies to Desired Water Quality Outcomes**

Greg Gearheart, Senior Water Resource Control Engineer, State Water Resources Control Board

California waters and, more importantly, the users who benefit from these waters, are facing many challenges in the near future. The population in California is projected to grow to 48 million by 2030 (currently we are at about 38 million). How California “develops” to accommodate these 10 million more people will drive many of the water quality problems we face. Storm water “regulation” needs to change in order to adequately address the problems presented by population pressure. And storm water inspector community is on the front line.

One of the problems we hope to avoid is hydromodification resulting from new development pressure. The Water Boards and local governments are already applying new standards to new and redevelopment projects – inspectors will play a key role in evaluating project compliance (and performance) with regards to post-construction, hydromodification standards.

Another problem we face is plastic debris in our waters. Plastic debris in our waters is not just a local (State) problem; it has global impacts as well. Plastic (both trash from residents/consumer and raw materials – called nurdles – used to manufacture plastic products) is transported to receiving waters primarily by storm water. Inspectors will play a key role in
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8:30 a.m. - 10:10 a.m.

4B - Continued ........................................ University Ballroom II
Enforcement: What to Expect From the State Water Board, and What to Look for Locally

Mark Bradley, Senior Water Resource Control Engineer, State Water Resources Control Board

There are a number of Enforcement Options available to the Water Boards to address violations affecting water quality, human health and the environment. The Water Boards’ enforcement options are a good model for what enforcement tools should be available to and effective local program designed to protect the environment.

Working to Protect Local Water Resources: The Sacramento Phase I Municipal Storm Partnership

Bill Busath, Stormwater Quality Improvement and Program Manager, City of Sacramento

The Sacramento Stormwater Quality Improvement Partnership (Partnership) includes the County of Sacramento and the Cities of Sacramento, Folsom, Elk Grove, Ranch Cordova, Citrus Heights and Galt. The Partnership’s goals are to reduce the pollutants in urban discharges and protect the beneficial uses of the areas local creeks and rivers. The Partnership was started in 1990 and is a proactive, water quality based program that has been recognized by EPA as the top Phase I Municipal Stormwater Program in the Nation in 1997 and as the second best in 2004. Bill will give an overview of the partnership’s programs and discuss the many challenges of improving the quality of urban discharges.

California Extreme Precipitation Symposium - see page 18

10:10 a.m. - 10:30 a.m. Break

10:30 a.m. - 12:00 p.m. Concurrent Session Five

10:30 a.m. - 12:00 p.m.

5A - Management of the Lower American River and its Resources—cont’d ................................ University Ballroom I
American River Steelhead and Pacific Lamprey Spawning

John Hannon, United States Bureau of Reclamation

We refined a method to estimate in-river steelhead spawner abundance in the American River by conducting steelhead spawning surveys each year since 2002. By mapping redds in GIS, we documented how flows affect steelhead spawning locations, identified steelhead redd dewatering areas and estimated effects of proposed and actual flow regimes (dam releases) on egg survival. Most in-river steelhead spawners we could identify were hatchery produced fish and spawning peaked later in the river than in the hatchery. Near real time information on steelhead distribution and abundance in the American River throughout the year provides input for managing dam operations. We applied an area under the curve population estimate using residence time of steelhead holding on redds and a redd count based population estimate using hatchery male to female ratios and an assumed number of redds per female. Hatchery returns were greater than the in-river spawner abundance estimates (200-500 in-river spawners and 935-2,800 hatchery returns). We collected Pacific lamprey spawning information coincident to the steelhead surveys. The two species utilize similar spawning habitats but high density spawning areas for the two species did not overlap. Based on four years of spawner surveys in the American River, the lamprey spawning population fluctuated more between years (highest peak survey count of 350 redds in 2002 to lowest peak count of 15 redds in 2004) than the populations of steelhead and Chinook salmon fluctuated over the same time period.
Lower American River King Salmon Escapement

Shawn Fresz, Fisheries Biologist, Pacific States Marine Fisheries Commission/California Department of Fish and Game

Lower American River Salmon Escapement Surveys have been conducted as part of a Central Valley wide effort to estimate spawning trends over time. This information is valuable for the assessment of long term trends in population abundance, timing of fish migration and the utilization of spawning habitat. The King Salmon monitoring programs are the foundation that guides the development and evaluation of management deacons including stream flow regime and commercial and sport ocean harvest allotments.

Development of a Constant Fractional Marking Program for Fall-run Chinook Salmon at Central Valley Hatcheries

Alice Low, Fisheries Biologist, California Department of Fish and Game

Central Valley hatcheries release more than 32 million fall-run Chinook salmon annually, which contribute substantially to commercial and sport fisheries. Over 4 million of these fish are reared at Nimbus Fish Hatchery on the lower American River. For many years, releases of fall-run Chinook salmon from Central Valley hatcheries have been sporadically marked and tagged, providing fishery biologists with sparse and inconsistent data with which to manage these populations. This spring, the California Department of Fish and Game, U.S. Fish and Wildlife Service, and the Pacific States Marine Fisheries Commission are initiating a major new marking and tagging program for fall-run Chinook salmon raised at Central Valley hatcheries. Over 8 million fish, 25% of the production releases of fall-run Chinook, will be marked and tagged annually. More than $6.7 million is being provided by the CALFED Ecosystem Restoration Program over the next two years to implement this project. This new marking program will provide important data on harvest rates in the ocean and inland fisheries, and the proportion of hatchery and natural fish returning to the Central Valley to spawn.

Thinking Locally: How Homeowners Play a Role in Storm Water Management

Eric Berntsen, State Water Resources Control Board

Storm water runoff pollution is the major cause of water quality problems in most urban watersheds. The “watershed behaviors” of urban, suburban, and rural homeowners can have a strong impact on water quality. This presentation will highlight seven broad areas: lawn fertilization, pesticide application, dog walking, septic cleaning, car washing, fluid changing, and runoff reduction. Each homeowner can take simple steps in each of these areas to minimize our collective impact on watersheds and water quality.

Current Phase II Small Municipal Stormwater Programs in our Watershed

Christine Sotelo, Environmental Scientist, Central Valley Regional Water Quality Control Board
Dannas Berchtold
Mark White

California Extreme Precipitation Symposium - see page 18
Concurrent Session Six

6A - Climate Change, Flows and Temperature: Reservoir Operational Opportunities and System Constraints for Providing Cold Water. University Ballroom I

**Moderator:** Felix Smith, *Save the American River Association*
**Tom Stokely,** *Principle Planner, Trinity County Planning/Natural Resources*

California’s major rivers, including the American River, have been dammed. While anadromous fishery runs have been adversely affected by construction of the dams through loss of habitat and historic flows, these large reservoirs also contain large amounts of cold water which are now essential for the preservation, propagation and rehabilitation of salmon and steelhead fisheries in California. However, current and proposed water delivery schedules by BOR, CDWR and other agencies include plans to deliver unprecedented amounts of water during wet, normal and dry water years, such that large reservoirs will likely be drained to mud puddles during the next multi-year drought. In addition to widespread water shortages for agriculture, municipal, industrial and hydropower, the depletion of cold water supplies in major reservoirs will lead to reproductive failure and major fish kills of important commercial, recreational and tribal salmon fisheries. The end result will undo decades of salmon restoration work, wasting of hundreds of millions of dollars of restoration dollars and water allocated for fisheries, along with devastating economic, social and cultural impacts to fishery-dependent communities. The over-allocation of managed water supplies, combined with Global Warming will ultimately have a devastating effect on California’s remaining salmon and steelhead populations.

**Bill Bennett,** *Associate Research Ecologist, Center for Watershed Science, John Muir Institute, Bodega Marine Laboratory, University of California, Davis*

**Mike Deas,** *Watercourse Engineering, Davis, CA*

Climate change presents a considerable challenge to water resources managers. Although there are inherent uncertainties in estimating future conditions, prudent planning assessments can provide considerable insight into the range of possible system responses. Of primary concern in water management circles is the assessment of impacts on quantity. However, mainstem reservoirs in the Central Valley of California have placed an additional environmental burden on water resource managers - management of cold water supplies to maintain and restore salmon below dams. Thus, in addition to typical operational, storage, conveyance constraints, in meeting future demands, cold water supplies currently taken for granted may need to be considered.

6B - Stormwater Management: Approaches, Regulations, and Tasks. University Ballroom II

**Challenges in Stormwater Management - Pyrethroid Pesticides: Review of Current Monitoring Data**

**Robert Holmes,** *Environmental Scientist, Central Valley Regional Water Quality Control Board*

Pyrethroids have replaced organophosphates as the active ingredients in most insecticides available for urban uses in the United States. Ambient water and sediment quality monitoring in the Central Valley, CA have identified a high incidence of sediment toxicity linked to pyrethroid pesticides in sediment samples from several greater Sacramento area creeks receiving residential stormwater runoff. Nearly all creek sediment samples from Roseville, CA caused toxicity to the resident amphipod (Hyalella azteca), and about half of the samples (10 of 21) caused nearly complete mortality (>90%). Several pyrethroids were present in the creek sediment samples at acutely toxic concentrations. In the Sacramento creeks 98% of toxic sediment samples had sufficient pyrethroid pesticide concentrations to explain the observed aquatic toxicity.
The presentation will outline the study design and results from urban creeks in Roseville, present an overview of the Sacramento urban creek data, and describe current efforts related to monitoring and assessment of sediment toxicity and pyrethroid pesticides in urban stormwater areas of the State of California.

**Mixing and Matching: Pollutants, Source Control and Treatment**

*Brian Currier, Staff Research Engineer, Water Programs, Sacramento State*

California Extreme Precipitation Symposium - see page 19

**Refreshment Break**

University Ballroom III

**Concurrent Session Seven**

*7A - Some Management and Technical Issues*  
**Moderator: Felix Smith, Save the American River Association**

**Responses of Fish to Pulsed-flow Releases in the South Fork American River Watershed**

*Peter Klimley, PhD, Cooperative Extension, Department of Wildlife, Fish and Conservation Biology, University of California, Davis*

There are many anthropogenic causes of increased water flow (pulses) in California rivers, including electricity generation, flood control, and facilitating river rafting. The frequency, magnitude and late, warm-season timing of these flows represent significant deviations from the natural hydrograph, and may impact the distribution of native fish species. We have conducted both experimental and field studies to assess the impact of pulse flows on fish species that inhabit California rivers. We tracked rainbow trout carrying implanted radio and electromyogram beacons in the South Fork American River during daily pulses for whitewater rafting and hydroelectric power generation. During a single pulsed flow in Silver Creek, a tributary of the South Fork American River, we tracked rainbow trout and brown trout carrying implanted radio beacons, and we did pre- and post-pulse snorkel surveys of juvenile and adult trout distribution. We studied the responses of rainbow trout, hardhead, and Sacramento suckers to artificially pulsed flows in a longitudinal flume, and in a lateral displacement flume. These studies provide information that may assist decision makers involved in the management of water flows and fish. Our work also suggests additional research needed to address uncertainties regarding the effects of pulsed flows on stream ecosystems.

**Biological justification of a water temperature target for juvenile steelhead in the lower American River**

*Rob Titus, PhD, Biologist, Project Leader, California Department of Fish and Game*

Steelhead use tailwaters as production areas in California’s Central Valley, where preferred water temperatures are often exceeded in summer and early fall. During 2001 – 2005, juvenile steelhead were monitored on the lower American River to document their responses in distribution, relative abundance, site fidelity, growth, condition, and health relative to ambient thermal conditions. Mean daily water temperature exceeded a steelhead-protective temperature target of 18°C during much of summer and early fall in 2001 and 2004, but remained beneath the target in 2005. Even under supra-optimal thermal conditions, steelhead consistently reared at bar-complex habitats over the entire 26 km river reach available to them, displayed very high site fidelity, grew at very high rates, and tended to decrease only slightly in condition. However, beginning in August 2004, steelhead exhibited increasing frequencies of intestinal bacterial infection and anal prolapse in association with chronic exposure to mean daily temperature...
between 18 and 21°C. By October 2004, nearly 50% of steelhead observed was affected. In 2005, mean daily temperature remained below 18°C throughout the lower river, and frequency of bacterial infection was low. These results are discussed within a conceptual framework that demonstrates the significance of 18°C as an upper thermal limit for juvenile American River steelhead, including some comparative aspects of steelhead food and growth in coastal streams.

Erika Holland, Sacramento State Graduate Student
Tim Horner, PhD, Associate Professor, Geology Department, Sacramento State
Robyn Bilski, Sacramento State Graduate Student
Lisa Thompson, Assistant Specialist, Cooperative Extension, Department of Wildlife, Fish and Conservation Biology, University of California, Davis

California Extreme Precipitation Symposium - See page 19

4:30 p.m. Adjourn
Water and Land Use: Making the Connection

Local land use decisions have enormous impacts on the quality, availability and reliability of watersheds and the water resources they provide. This session will examine critical issues crossing the water and land use divide, and sort out solutions that can bridge the gaps between growth, water, and land use planning.

Where Are We Now? Sorting Out Big Problems and Good Solutions

An expert panel weighs in on challenges we face and the types of solutions that we need to solve them.

Jeff Loux, PhD, Director, Land Use and Natural Resource Program, UC Davis Extension
Jonas Minton, Planning and Conservation League
Ellen Hanak, PhD, Public Policy Institute of California
Erik Vink, Trust for Public Land; Vice Chair, Yolo County Flood Control and Water Conservation District
David Shabazian, Senior Planner, Sacramento Area Council of Governments

The Ahwahnee Water Principles: An Integrated Strategy for Water-Wise Growth

The Ahwahnee Water Principles are guidelines for linking water and land use to improve the reliability and quality of water resources. The principles provide practical actions that cities and counties can take to reduce the financial liabilities of new development and help protect water resources. What are the principles behind the principles?

Smart Stormwater: Planning and Design Solutions for Water-Wise Development

Conventional development replaces natural land cover in a watershed with a vast network of paved surfaces creating myriad impacts to local water supplies and aquatic resources. Past strategies for managing stormwater runoff from those areas have only exacerbated many of these impacts. Stricter regulations are forcing communities to rethink their stormwater options and decide how to accommodate future growth while protecting water resources. This session explores planning and design strategies that can prevent or minimize the impacts of new development on water resources.

From River Killers to Fluvial Geomorphologists: Historical Perspectives on Stormwater Management Impacts to Our Receiving Waters from an Environmental Hydrologist

Chris Bowles, PhD, Principal, Philip Williams & Associates, Ltd.

Getting What We Plan For: Planning is the Solution, but it’s also the Problem...

Clark Anderson, Water and Land Use Planning Specialist, Local Government Commission

Putting Stormwater in its Place – A Community Design Approach to Stormwater Management

Clark Wilson, Associate Principle, Community Design and Architecture
Implementing the Principles: Getting to Water-Wise Land Use in the Sacramento Region

The View From the Field: What Existing Programs Teach us About the Road Ahead
Collaborative, coordinated, integrated, and science-based solutions are needed to solve the complex issues that link growth, water, and land use in the region. Implementing such solutions isn’t easy, but a number of local and regional programs are making strides we can learn from. What are the linkages and common themes between these efforts? What are the keys to reaching successful outcomes?

River Friendly Landscape Guidelines: The Multiple Benefits of a Whole Systems Approach

Dave Tamayo, Sacramento County Stormwater Program

Stormwater Quality Design Manual for Sacramento and South Placer Regions

Carmel Brown, Principle, CKB Environmental Consulting, Inc.

Placer Legacy: A Local Strategy Linking Water and Land Use

Edmund Sullivan, Placer County Planning Department, Senior Planner - Natural Resource Division

Learning from Regional Planning Efforts

Kristine Mazzei, Managing Partner, Valley Vision

An Agenda for Action: Where do we go from here?
This facilitated discussion will target common challenges and barriers, and identify what needs to be done to advance water-wise planning in the region. How can local and regional efforts be coordinated to take advantage of potential synergies? How can we build on existing efforts and programs? What are the next steps for linking water and land use?
2007 CALIFORNIA EXTREME PRECIPITATION SYMPOSIUM

Theme: “Estimating Extreme Floods in California’s Central Valley”

Friday, April 13, 2007
Hinde Auditorium

Morning Session

7:30 a.m. – 8:30 a.m. Continental Breakfast, Check-In, and On-Site Registration

8:30 a.m. – 9:00 a.m. Welcome and Introductions

Gary Estes, Symposium Coordinator

SPECIAL RECOGNITION AWARD presented to Maurice (Maury) Roos, PE, for his contributions to the water resources community for over 50 years.

A Half Century of Watching Floods

Maurice (Maury) Roos, PE, Chief Hydrologist (part time) California Department of Water Resources, Sacramento

9:00 a.m. – 9:35 a.m. Extreme Flood Concepts, An Historical Perspective

Darryl W. Davis, PE, DWRE, Senior Advisor, Institute for Water Resources, US Army Corps of Engineers, Davis

9:35 a.m. – 10:10 a.m. Flood Hydroclimatology: Insights into Mixed Flood Populations

Katherine (Katie) Hirschboeck, PhD, Associate Professor of Climatology, University of Arizona, Tucson

10:10 a.m. – 10:30 a.m. Break

10:30 a.m. – 11:15 a.m. Limitations on Extrapolating Flood Frequency Distributions

Beth Faber, PhD, PE, Research Hydraulic Engineer, Hydrologic Engineering Center, U.S. Army Corps of Engineers, Davis

11:15 a.m. – 12:00 p.m. Pitfalls of Risk Analysis in Designing Flood Control Projects

Joe Countryman, PE, DWRE, President, MBK Engineers, Sacramento
Afternoon Session

12:00 p.m. – 1:00 p.m.  Boxed Lunch ........................................ University Ballroom III

1:00 p.m. – 1:45 p.m.  Improved Tools for Estimating Extreme Floods
George H. Taylor, State Climatologist, Oregon State University, Corvallis

1:45 p.m. – 2:30 p.m.  Comparing Statistical Approaches to Estimate Floods
Joe DeVries, PhD, PE, PH, DWRE, David Ford Consulting Engineers, Sacramento

2:30 p.m. – 2:50 p.m.  Refreshment Break ................................. University Ballroom III

2:50 p.m. – 4:20 p.m.  Panel Discussion: How Do We Estimate the Size of the “Reasonably Foreseeable Flood” From Which Urban Areas Should Be Protected?
Moderator: Arthur Hinojosa, PE, Chief of Hydrology Branch, California Department of Water Resources, Sacramento
Maury Roos, PE, Chief Hydrologist (part time) California Department of Water Resources, Sacramento
Ronald Stork, Former Member, California Floodplain Management Task Force
George H. Taylor, State Climatologist, Oregon State University, Corvallis
Joe Countryman, PE, DWRE, President, MBK Engineers, Sacramento

4:20 p.m. – 4:30 p.m.  Symposium Feedback