

Program
Tenth International Conference on Irrigation and Drainage

***Finding the Balance — Improving
Infrastructure, Water Management,
and the Environment in a World with
Limited Funding and Ample Regulations***



USCID

The U.S. society for irrigation and drainage professionals

Cooperating Organization

Groundwater Resources Association of California

October 24 -27, 2017

**Lions Gate Hotel and McClellan Conference Center
Sacramento, California**

Program

Tuesday, October 24

7:00 a.m. - 5:30 p.m. **Registration**

8:00 a.m. - 11:30 a.m. **Field Tour**

This half-day field trip will visit the Yolo County Flood Control and Water Conservation District's new canal automation project on the Winters Canal, a 100-year-old, 16-mile-long canal that has recently been retrofitted with 25 automatic level/flow control gates. The tour will include a review of the District's SCADA System and visits to several canal sites, including Aqua System 2000 LOPAC and Langemann gates, and a Watch Technologies slide gate.

12:00 noon - 1:15 p.m. **Lunch with Speaker**

Moderator — **Brian T. Wahlin**, WEST Consultants, Inc., and President, USCID, Tempe, AZ

Speaker — **Joel Ledesma**, Deputy Director, State Water Project, California Department of Water Resources, Sacramento, CA

1:30 p.m. - 3:00 p.m. **Opening Plenary Session**

Moderator — **Charles M. Burt**, California Polytechnic State University, San Luis Obispo, CA

Keynote Address

David Palumbo, Deputy Commissioner, Bureau of Reclamation, Washington, DC

Interaction Between Groundwater and Surface Water: Water and Fisheries Management Issues and Challenges

Steve Macaulay, Geosyntec Consultants, Snohomish, WA; and **Bob Anderson**, Geosyntec Consultants, Seattle, WA

Increasing Managed Aquifer Recharge in California, A Framework of Actions for a 5-year Strategy

Chris Petersen, President, Groundwater Resources Association of California; and GEI Consultants, Inc., Rancho Cordova, CA

3:00 p.m. - 3:30 p.m. **Break**

3:30 p.m. - 5:00 p.m. **Opening Plenary Session, (continued)**

Status of the Centennial Dam Project

Remleh Scherzinger, General Manager, Nevada Irrigation District, Grass Valley, CA

The Use of Geosynthetics in Canal Irrigation Projects

Herve L. Plusquellec, Consultant, Washington, DC

Nitrogen Contamination Issues — California State Water Resources Control Board

Theresa Dunham, Somach Simmons & Dunn, Attorneys at Law, Sacramento, CA

5:00 p.m. - 5:15 p.m. **USCID Update**

5:15 p.m. - 5:45 p.m. **Meet the Exhibitors**

5:45 p.m. - 7:30 p.m. **Networking Reception, Exhibition and Poster Session**

Lysimetric Determination of Evapotranspiration and Crop Coefficients for Drip-Irrigated Processing Tomato

Florence Cassel, Touyee Thao and **Dave Goorahoo**, California State University, Fresno, Fresno, CA

Modeling Brackish Water Migration in the Lower Rio Grande Valley, Texas

Sorab Panday, GSI Environmental Inc, Herndon, VA; **William R. Hutchison**, Independent Groundwater Consultant, Jamaica Beach, TX; **James Rumbaugh**, Environmental Simulations Inc., Leesport, PA; and **Staffan Schorr**, Montgomery & Associates, Tucson, AZ

Wednesday, October 25

7:00 a.m. - 5:00 p.m. **Registration**

7:00 a.m. - 8:00 a.m. **Continental Breakfast with Exhibits and Poster Papers**

8:00 a.m. - 9:30 a.m. **Panel Discussion — Surface Water/Groundwater Interactions**

Moderator — **Steve Macaulay**, Geosyntec Consultants, Snohomish, WA

Panel Members:

Bob Anderson, Geosyntec Consultants, Seattle, WA
Thaddeus L. Bettner, Glenn-Colusa Irrigation District, Willows, CA

Gerald A. Gibbens, Northern Water, Berthoud, CO
Shane Lindstrom, Pima-Maricopa Irrigation Project, Sacaton, AZ

Laura A. Schroeder, Schroeder Law Offices, PC, Portland, OR

9:30 a.m. - 10:30 a.m. **Break with Exhibits and Poster Papers**

10:30 a.m. - 12:00 noon **Panel Discussion — Surface Water/Groundwater Interactions (continued)**

12:00 noon - 1:15 p.m. **Lunch with Speaker**

Moderator — **Brian T. Wahlin**

Speaker — **Charles J. Mathews**, Rice Grower and Member, Board of Directors, Yuba County Water Agency, Marysville, CA

1:30 p.m. - 3:00 p.m. **Concurrent Technical Session A — Groundwater I**

Moderators — **Sara Harper**, Dewberry, Sacramento, CA; and **Randy Hopkins**, Provost & Pritchard Consulting Group, Clovis, CA

Irrigation Water Governance and Ground Water Modeling in Ontario Canada

Rebecca Shortt, Ontario Ministry of Agriculture, Food and Rural Affairs, Simcoe, ON, Canada

Implementing the Sustainable Groundwater Management Act in the Colusa Sub-Basin: An Irrigation District Perspective

Thaddeus L. Bettner, Glenn-Colusa Irrigation District, Willows, CA; **Grant Davids** and **Byron Clark**, Davids Engineering, Inc., Davis, CA; and **David Ceppos**, California State University, Sacramento, CA

Application of Remote Sensing Technology for Calculating Groundwater Recharge of Lower Rio Grande Basin

Pooneh Pahlevani and **Zohrab Samani**, New Mexico State University, Las Cruces, NM

1:30 p.m. - 3:00 p.m. **Concurrent Technical Session B — Water Balance and On-Farm Issues**

Moderators — **David Buras**, Stantec Consulting Services, Inc., Phoenix, AZ; and **Jeff Shaw**, Stantec Consulting Services, Inc., Rocklin, CA

Evaluating the Utility of Hydretain to Reduce the Irrigation Need for Corn Production in Sandy Soils in Semi-Arid Conditions

Michael Davidson, Climate Smart Irrigation, Altadena, CA

Almond Irrigation Improvement Continuum Outreach

Spencer Cooper, Almond Board of California, Modesto, CA; and **Terry Prichard** and **Larry Schwankl**, University of California, Davis, CA

Crop Coefficients for Drip-Irrigated Sugarbeets in a Semi-Arid Environment

Touyee Thao, **Florence Cassel**, **Anthony Mele** and **Dave Goorahoo**, California State University, Fresno, CA; and **James E. Ayars**, ARS, USDA, Parlier, CA

1:30 p.m. - 3:00 p.m. **Concurrent Technical Session C — Environment**

Moderators — **David E. Bradshaw**, Imperial Irrigation District, Imperial, CA; and **Reed R. Murray**, U. S. Department of the Interior, Provo, UT

Estimating Rice Yield Loss Using Remote Sensing

Stephanie Tillman, **Chris Stall**, **Joel Kimmelshue**, **Mica Heilmann** and **Zhongwu Wang**, Land IQ, LLC, Sacramento, CA

Achieving Recovery through Cooperation: A Case Study of an Endangered Species in Utah Lake

Michael Mills, Central Utah Water Conservancy District, Orem, UT

Diamond Fork Stream Flow Study, Utah

W. Russ Findlay, U.S. Department of the Interior, Provo, UT; and **Melissa Stamp**, Utah Reclamation Mitigation and Conservation Commission, Salt Lake City, UT

3:00 p.m. - 3:30 p.m. **Break with Exhibits and Poster Papers**

3:30 p.m. - 5:30 p.m. **Concurrent Technical Session A — Groundwater I (continued)**

Moderators — **Sara Harper** and **Randy Hopkins**

A Perspective on the Potential Impacts of the Sustainable Groundwater Management Act of 2014 on Agriculture

Steve R. Knell, Oakdale Irrigation District, Oakdale, CA

Sustainable Groundwater Management — A Cooperative Agreement Between Modesto Irrigation District and the City of Modesto

Carrie Loschke, **John Mauterer**, **John B. Davids** and **Gordon Enas**, Modesto Irrigation District, Modesto, CA

Enhancing Groundwater Recharge for Agricultural Applications

Larry Ernst, Wood Rodgers, Inc., Sacramento, CA

Groundwater Management in Yuba County, California

W. Martin Roche, Consulting Engineer, Grass Valley, CA

3:30 p.m. - 5:30 p.m. **Concurrent Technical Session B — Water Balance and On-Farm Issues** (continued)

Moderators — **David Buras** and **Jeff Shaw**

A Practical Approach to Water Budgets

Owen E. Kubit, Provost & Pritchard Consulting Group, Clovis, CA

California Statewide Agricultural Land Use Mapping for Informed Decision Making and Consumptive Use Estimates

Joel Kimmelshue, **Mica Heilmann**, **Zhongwu Wang**, **Seth Mulder**, **Chris Stall** and **Diya Chowdhury**, Land IQ, LLC, Sacramento, CA

Comprehensive Water Budgets in California – A Pilot Study to Develop a Water Budget Framework and Dashboard

Todd Hillaire, California Department of Water Resources, Red Bluff, CA; and **Abdul Khan** and **Paul Shipman**, California Department of Water Resources, Sacramento, CA

Enhancing the District Scale Water Balance Toolset for Decision Support in the Modesto Irrigation District

Jason Smesrud, CH2M, Portland, OR; and **Chad Tienken** and **John Davids**, Modesto, CA

3:30 p.m. - 5:30 p.m. **Concurrent Technical Session C — Environment** (continued)

Restoring the Biological Might of the Sacramento Valley Floodplains — an Engineer's Experience

Lewis Bair, Reclamation District 108, Grimes, CA

Irrigated Agriculture and Connected Environmental Issues

Sajid Ali Bhutto, Irrigation Department, Government of Sindh, Hyderabad, Sindh, Pakistan

Real-time, Crowd-Sourced Flood Mapping & Analytics via Mosaic

Sanjeev Sreetharan and **Sang-Duk Seo**, Deep Stratus, Inc., New York, NY

Honolulu Bar Flood Plain Enhancement Project — Stanislaus River,

Steve R. Knell, Oakdale Irrigation District, Oakland, CA

6:30 p.m. - 7:00 p.m. **Reception**

7:00 p.m. - 9:00 p.m. **Awards Dinner with Speaker**

Moderator — **Brian T. Wahlin**

Speaker — **Tage I. Flint**, General Manager, Weber Basin Water District, Layton, UT

Thursday, October 26

7:00 a.m. - 5:00 p.m. **Registration**

7:00 a.m. - 8:30 a.m. **Continental Breakfast with Exhibits and Poster Papers**

8:00 a.m. - 10:00 a.m. **Concurrent Technical Session D — Groundwater II**

Moderators — **Blair L. Stringam**, New Mexico State University, Las Cruces, NM; and **Todd Hillaire**, California Department of Water Resources, Red Bluff, CA

Drought, Climate Change, and Litigation on the Rio Grande Project

J. Phillip King, New Mexico State University, Las Cruces, NM

Increasing Groundwater Recharge and Conveyance Capacity in Poso Creek Integrated Regional Water Management Plan, Kern County, California

Sam Schaefer, GEI Consultants, Inc., Santa Barbara, CA; **Dana Munn**, Shafter-Wasco Irrigation District, Wasco, CA; **Isela Medina**, Semitropic Water Storage District, Wasco, CA; and **Ram Venkatesan**, North Kern Water Storage District, Bakersfield, CA

Groundwater Interaction with Surface Water: A 30-Year Perspective from the Pacific Northwest

Bob Anderson, Geosyntec Consultants, Seattle, WA

Keeping Groundwater Irrigating: Oregon's Complex Groundwater Regulation

Laura A. Schroeder and **Sarah Lilljefelt**, Schroeder Law Offices, PC, Portland, OR

8:00 a.m. - 10:00 a.m. **Concurrent Technical Session E — Water Management**

Moderators — **Brad J. Arnold**, California Department of Water Resources, Sacramento, CA; and **Khaled Bali**, University of California, Parlier, CA

Case Study: Modernization of the Walker River Irrigation District

Stuart W. Styles, Irrigation Training and Research Center, San Luis Obispo, CA; **Robert C. Bryan**, Walker River Irrigation District, Yerington, NV; and **Sierra Layous**, Irrigation Training and Research Center, San Luis Obispo, CA

A Multi-purpose Real-time Operations and Decision Support Model for Merced Irrigation District to Support Present and Future District Operations

Marco A. Bell, Merced Irrigation District, Merced, CA; and **Ted Cassidy**, **Bibek Joshi** and **Dean Ta**, Dewberry, Sacramento, CA

Physical Model of a Diversion Dam on the Elbow River, Alberta, Canada

John Menninger, Stantec Consulting Services Inc., Cincinnati, OH; **Frederick Lux III**, Stantec Consulting Services Inc., Lexington, KY; and **George V. Sabol**, Stantec Consulting Services Inc., Phoenix, AZ

Design Factors That Improve Canal Downstream PI Controller Performance and Eliminate Instability Problems

B.L. Stringam, New Mexico State University, Las Cruces, NM; **B.T. Wahlin**, WEST Consultants, Inc., Tempe, AZ; and **T.L. Wahl**, Bureau of Reclamation, Denver, CO

8:00 a.m. - 10:00 a.m. **Workshop — Understanding, Completing, and Implementing State and Federal Water Management Plans: A Workshop for Districts, Agencies and Consultants**

Workshop Goal: the California Department of Water Resources and the Bureau of Reclamation both require Water Management Plans from water agencies meeting specific criteria. DWR and Reclamation have also been actively changing and updating their WMP regulations.

The Workshop will include presentations on the regulations, examples of successful WMPs, and tools that water agencies can use to develop WMPs in a cost effective manner.

USCID will partner with DWR and Reclamation to develop the framework for the Workshop. Water agencies in the process of developing plans or now having to develop new plans are encouraged to attend. The content will be aimed at managers, engineers, and consultants who are actively engaged in the development of WMPs.

Agency Perspective

Moderator — Thaddeus L. Bettner, Glenn-Colusa Irrigation District, Willows, CA

Agricultural Water Management Plans

Peter Brostrom, California Department of Water Resources, Sacramento, CA

Water Management Plans

David White, Bureau of Reclamation, Sacramento, CA

Diversion Reporting

representative, State Water Resources Control Board

Sustainable Groundwater Management Act

Trevor Joseph, California Department of Water Resources, Sacramento, CA

10:00 a.m. - 10:30 a.m. **Break with Exhibits and Poster Papers**

10:30 a.m. - 12:00 noon **Concurrent Technical Session D — Groundwater II** (continued)

Moderators — **Blair L. Stringam** and **Todd Hillaire**

Impact of Subsurface Stratigraphy on Water Migration during On-Farm Water Recharge

Peter S. Nico, **Craig Ulrich**, **Yuxin Wu** and **Mark Conrad**, Berkeley National Laboratory, Berkeley, CA; **Taqi Alyousuf**, University of California, Berkeley, Berkeley, CA; **Greg Newman**, Berkeley National Laboratory, Berkeley, CA; **Jamie Rector**, University of California, Berkeley, Berkeley, CA; **William Stringfellow**, **Christine Doughty** and **Yingqi Zhang**, Berkeley National Laboratory, Berkeley, CA; and **Helen Dahlke**, University of California, Davis, Davis, CA

Design Summary of the McMullin On-Farm Flood Capture Project

Calvin Monreal, Provost & Pritchard Consulting Group, Clovis, CA; **Philip Bachand**, Bachand & Associates, Davis, CA; **David Merritt**, Kings River Conservation District, Fresno, CA; and **Don Cameron**, Terranova Ranch Inc., Helm, CA

An Overview of Stream-Aquifer Analysis Techniques: Assumption and Limitations

Luke Flores and **Ryan T. Bailey**, Colorado State University, Fort Collins, CO

10:30 a.m. - 12:00 noon **Concurrent Technical Session E — Water Management** (continued)

Moderators — **Brad Arnold** and **Khaled Bali**

Ute Indian Rights Settlement — Title V of the Central Utah Project Completion Act

Lee Baxter, U.S. Department of the Interior, Provo, UT; and **Lynn Hansen**, Lynn Hansen Consulting, Logan, UT

Conjunctive Management of Surface and Ground Water Resources for Strategic and Operational Planning, and Long-term Sustainability

Brian Westfall, Keller-Bliesner Engineering, LLC, Logan, UT; **Tim Flynn**, Aspect Consulting, LLC, Bainbridge Island, WA; and **Shane Lindstrom**, Pima-Maricopa Irrigation Project, Sacaton, AZ

Water Right Interference Agreements — An Indispensable Component of Reclamation Projects in Utah

Justin Record, Bureau of Reclamation, Provo, UT; **Lee Baxter**, U.S. Department of the Interior, Provo, UT; and **Jonathan S. Clyde**, Attorney, Salt Lake City, UT

10:30 a.m. - 12:00 noon **Workshop — Understanding, Completing, and Implementing State and Federal Water Management Plans: A Workshop for Districts, Agencies and Consultants** (continued)

Technical Basics I

Moderator — **Thaddeus L. Bettner**

Objective Based/Benefits of Water Management Plans
TBA

Water Balance Concepts

Bryan P. Thoreson, Davids Engineering, Inc., Davis, CA

ET Approaches and DWR Plans

Bekele Temesgen, California Department of Water Resources, Sacramento, CA

12:00 noon - 1:15 p.m. **Lunch with Speaker**

Moderator — **Brian T. Wahlin**

Speaker — **David J. Guy**, President, Northern California Water Association, Sacramento, CA

1:30 p.m. - 3:00 p.m. Concurrent Technical Session F — Irrigation District Maintenance

Moderators — **Michael Davidson**, Eagle-Spec Sales Group, Altadena, CA; and **David K. Thaemert**, Oregon Institute of Technology, Klamath Falls, OR

Central Valley Flood Protection Plan: Lessons Learned from the 2017 Update

Mary Jimenez and **Laura Hollender**, California Department of Water Resources, Sacramento, CA

Rapid Assessment of Flood Risk from Canal Embankment Failures

Brent Travis, **Brian Wahlin** and **Jesse Piotrowski**, WEST Consultants, Inc., Tempe, AZ

North Fork Siphon Condition Evaluation — Strawberry Aqueduct Collection System, Central Utah Project

Jared D. Hansen, **Kevin Workman**, **Troy Ovard** and **Blake Buehler**, Central Utah Water Conservancy District, Orem, UT

1:30 p.m. - 3:00 p.m. Concurrent Technical Session G — Funding

Moderators — **Ian Tod**, Ian Tod Associates, Aliso Viejo, CA; and **W. Martin Roche**, Consultant, Grass Valley, CA

Water Transfers Structured to Fund On-Farm Water Conservation Improvements

Steve R. Knell, Oakdale Irrigation District, Oakland, CA

Operation, Maintenance, and Replacement Reserves on the Central Utah Project

Reed Murray, U.S. Department of the Interior, Provo, UT; and **Rich Tullis**, Central Utah Water Conservancy District, Orem, UT

Holistic Financial Planning

Ricardo Aguirre, HELM, PLCC, Phoenix, AZ

1:30 p.m. - 3:00 p.m. Workshop — Understanding, Completing, and Implementing State and Federal Water Management Plans: A Workshop for Districts, Agencies and Consultants (continued)

Technical Basics II

Moderator — **Thaddeus L. Bettner**

Surface Inflows/Outflows

Stuart W. Styles, Irrigation Training and Research Center, San Luis Obispo, CA

Groundwater

Charles M. Burt, California Polytechnic State University, San Luis Obispo, CA

Efficient Water Management Practices/Best Management Practices

TBA

3:00 p.m. - 3:30 p.m. Break with Exhibits and Poster Papers

3:30 p.m. - 5:30 p.m. Concurrent Technical Session F — Irrigation District Maintenance

(continued)

Moderators — **Michael Davidson** and **David K. Thaemert**

Maintenance of Ancient Irrigation Systems in Southern India

Ian Tod, Ian Tod Associates, Aliso Viejo, CA; **Shivendra K Agrawal**, Howe Engineering India Pvt. Ltd, Cambridge, United Kingdom; **B. Ravichandran**, Department of Water Resources, Tamil Nadu, India; and **Ian Hogg**, Independent Consultant, Cambridge, United Kingdom

Mixing Fences, Livestock Watering, and Irrigation — A Case Study of the Duck Valley Irrigation Project

Reginald J. Premo, Duck Valley Indian Reservation, Owayhee, NV; and **Charles Burt**, Irrigation Training and Research Center, San Luis Obispo, CA

Rehabilitation of the Gila River Indian Community Santan Laterals for Pima-Maricopa Irrigation Project, Arizona USA

David T. Phelps, Stantec Consulting Services Inc., Phoenix, AZ; and **Bill Eden**, Pima-Maricopa Irrigation Project, Sacaton, AZ

Upper Stillwater Dam — Maintenance of a Roller Compacted Concrete Dam

Rachel Musil, Bureau of Reclamation, Provo, UT; **Kevin Workman**, Central Utah Water Conservancy District, Duchesne, UT; and **Lee Baxter**, U.S. Department of the Interior, Provo, UT

3:30 p.m. - 5:30 p.m. Concurrent Technical Session G — Funding (continued)

Moderators — **Ian Tod** and **W. Martin Roche**

Funding Challenges Facing the Bureau of Indian Affairs' Irrigation Program

David Fisher, Bureau of Indian Affairs, Lakewood, CO; and **Charles M. Burt**, California Polytechnic State University, San Luis Obispo, CA

Following Program Third-Party Impact Case Studies

Richard McCann and **Elizabeth Stryjewski**, M.Cubed, Davis, CA

Water Transfer Between Palo Verde Irrigation District and Metropolitan Water District of Southern California

Bill Hasencamp, Metropolitan Water District of Southern California, Los Angeles, CA

Creating a Strategic Roadmap for Sustainable Operations and Resource Management — Merced Irrigation District's Water Resources Management Plan

Greg Eldridge, CH2MHILL, Sacramento, CA; and **Bryan Kelly**, Merced Irrigation District, Merced, CA

3:30 p.m. - 5:30 p.m. **Workshop —
Understanding, Completing, and Implementing
State and Federal Water Management Plans: A
Workshop for Districts, Agencies and Consultants**
(continued)

Panel Discussion — Benefits of Planning

Moderator — **Thaddeus L. Bettner**

Steven Knell, Oakdale Irrigation District, Oakdale, CA
tba, representative, Merced Irrigation District, Merced, CA
tba, representative, small water district
tba, representative, water district

Peter Brostrom, California Department of Water Resources,
Sacramento, CA

David White, Bureau of Reclamation, Sacramento, CA

Friday, October 27

8:00 a.m. - 5:30 p.m. **Field Tour with lunch**

The tour provides an opportunity to visit the irrigated agricultural area north of Sacramento. First will be a review of the Sacramento Valley Salmon Recovery Program, including visits to Wallace Weir, the River Garden Farms Salmon Rearing Habitat Structures and the Nigiri Fish Food Program. Then, the tour will go to the Bullock Bend Bank and to the Sacramento National Wildlife Refuge. A break for lunch will include an overview of the Pacific Flyway Habitat. The final stop will feature a visit to the proposed Sites Dam, which would create a 1,800,000 acre-foot reservoir.

(August 17, 2017)