

# **Managing Irrigation Systems in Today's Environment**

*USCID Water Management Conference*

*Pre-Conference Workshop — Irrigation District Modernization*



**USCID**

*The U.S. society for irrigation and drainage professionals*

**November 12 - 16, 2012  
Reno, Nevada**

# Program

## Monday, November 12

12:00 noon - 1:00 p.m. **Registration**

1:00 p.m. - 5:30 p.m. **Workshop on Irrigation District Modernization**

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

### Topics

- Justifications for modernization
- Developing a strategy for physical and organizational modernization efforts
- Typical first steps in modernization efforts
- Typical costs
- True versus perceived water conservation
- New measures to minimize canal seepage losses
- Flow measurement options for canals and pipelines
- SCADA and options for control versus monitoring

## Tuesday, November 13

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

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

The tour will visit the rebuilt **Fernley Canal**, owned by the Bureau of Reclamation and operated by the **Truckee-Carson Irrigation District**. The canal ruptured in January 2008, flooding hundreds of homes and causing millions of dollars of damage.

10:00 a.m. - 11:00 a.m. **Speaker Workshop**  
Sponsored by **Macaulay Water Resources**

*10 Do's and Don'ts for USCID Presentations: A Practical Guide for Improving Your PowerPoint Slides and Talks*

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

12:00 noon - 1:15 p.m. **Lunch with Speaker**  
Sponsored by **WEST Consultants, Inc.**

Moderator — **Jerrold D. Gregg**, USCID President, and Bureau of Reclamation, Boise, ID

Speaker — **Robert K. Martinez**, Nevada Division of Water Resources, Carson City, NV

1:30 p.m. - 5:00 p.m. **Opening Plenary Session**

Moderator — **Charles M. Burt**; Conference Co-Chair and California Polytechnic State University, San Luis Obispo, CA

### Keynote Address

**Laurie Tollefson**, Vice President, International Commission on Irrigation and Drainage, and Agriculture and Agri-Food Canada, Outlook, Saskatchewan, Canada

*Australia's Water for the Future Investment in Improved Irrigation Water Use Efficiency*

**Richard McLoughlin**, Department of Sustainability, Environment, Water, Population and Communities, Canberra, Australia

### Bay Delta Issues

**Jason Peltier**, Westlands Water District, Fresno, CA

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

*Recent DRI Applications for Estimating Crop Consumptive Use Across the Western U.S. using Traditional and Remote Sensing Methods*

**Justin Huntington** and **Charles Morton**, Desert Research Institute, Reno, NV; **Richard Allen**, University of Idaho, Twin Falls, ID; **Tim Minor**, Desert Research Institute, Reno, NV; **Dave King**, **Alan Harrison** and **Mark Spears**, Bureau of Reclamation; Denver, CO; and **Jim Thomas**, Desert Research Institute, Reno, NV

### California Water Issues

**Gary Bardini**, California Department of Water Resources, Sacramento, CA

### Water Quality

**Danny Merkley**, California Farm Bureau Federation, Sacramento, CA

5:00 p.m. - 5:30 p.m. **Meet the Exhibitors**

5:30 p.m. - 7:30 p.m. **Networking Reception and Exhibition**

## Wednesday, November 14

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

7:00 a.m. - 8:00 a.m. **Continental Breakfast in Exhibit Hall**

8:00 a.m. - 10:00 a.m. **Concurrent Session 1A — Governance**

Moderators — **Laura A. Schroeder**, Schroeder Law Offices, Portland, OR; and **David E. Bradshaw**, Imperial Irrigation District, Imperial, CA

*Innovative Finance for Agricultural Water Infrastructure*  
**Ian Carroll**, Rabobank, N.A., Roseville, CA; and **Vernon Crowder**, Rabobank Food and Agribusiness Research and Advisory, Fresno, CA

*Case Study: Groundwater/Surface-Water Interaction and Mitigation Credits in Eastern Idaho: Part I*

**Bryce A. Contor** and **W. Roger Warner**, Rocky Mountain Environmental Associates, Inc., Idaho Falls, ID; and **David R. Tuthill, Jr.**, Idaho Water Engineering, LLC, Boise, ID

*Humboldt Project Title Transfer — The Good, The Bad and The Ugly*

**Franklin Dimick**, Dimick Water Resources Engineering, Monroe, UT

*Mining and Water: The Tug of War*

**Therese A. Ure**, Schroeder Law Offices, Reno, NV

8:00 a.m. - 10:00 a.m. **Concurrent Session 1B — Irrigation Management**

Moderators — **Robert S. Gooch**, Salt River Project, Phoenix, AZ; and **Brian T. Wahlin**, WEST Consultants, Inc., Tempe, AZ

*Modeling the Spatial and Temporal Impacts of Salinity and Waterlogging with the CSUID Model*

**Ayman Alzraiee** and **Luis Garcia**, Colorado State University, Fort Collins, CO

*Retrofitting Existing Dams with Inflatable Gates for Improved Operation*

**Brian W. Sauer** and **Ernie Bachman**, Bureau of Reclamation, Boise, ID; and **Ron Shurtleff**, Water District No. 65, Payette, ID

*Irrigated Agriculture and River Habitats in the Eastern Plains of Colorado*

**Ramchand Oad**, **L. L. Fardal**, **L. K. Riley**, **E. D. Wachob**, and **S. D. Griffin**, Colorado State University, Fort Collins, CO

*Advanced Weather Forecasting for Irrigation System Decision Support*

**Michael McMahon**, HDR Engineering, Inc., Denver, CO

10:00 a.m. - 10:30 a.m. **Break in Exhibit Hall**  
Sponsored by **Rubicon Water**

10:30 a.m. - 12:00 noon **Concurrent Session 1A — Governance (continued)**

*Poso Creek IRWM Plan: 25-Year Groundwater Banking, Transfer, and Exchange Program*

**Sam Schaefer**, GEI Consultants, Inc., Santa Barbara, CA; and **Paul Oshel**, Semitropic Water Storage District, Wasco, CA

*Domestic Water System Disputes: Can Old Water Systems Learn New Tricks?*

**Sarah R. Liljefelt**, Schroeder Law Offices, P.C., Portland OR

*Springs Buy-Out for Conjunctive Administration Mitigation*

**Dean Stevenson**, Magic Valley Ground Water District, Paul, ID

10:30 a.m. - 12:00 noon **Concurrent Session 1B — Irrigation Management (continued)**

*Wireless Sensor Technology for Enhanced Spatial and Temporal Knowledge of Crop Growing Conditions*

**Bernd Maier**, **Max P. Bleiweis**, **David W. Dubois** and **Manoj K Shukla**, New Mexico State University, Las Cruces, NM

*Challenges of Metergate Calibration to Comply with California's SB7-7*

**Alejandro Paolini**, Henry Miller Reclamation District #2131, Dos Palos, CA; and **Charles M. Burt**, California Polytechnic State University, San Luis Obispo, CA

*Basin-Wide Remote Sensing of Actual Evapotranspiration and its Influence on Regional Water Resources Planning*

**Daniel J. Howes**, **Charles M. Burt** and **Kyle Feist**, California Polytechnic State University, San Luis Obispo, CA

12:00 noon - 1:15 p.m. **Buffet Lunch in Exhibit Hall**

1:30 p.m. - 3:00 p.m. **Concurrent Session 2A— Integrated Water Resources Management**

Moderators — **Steven C. Macaulay**, Macaulay Water Resources, Davis, CA; and **Todd L. Hillaire**, California Department of Water Resources, Red Bluff, CA

*Transition from a Traditional Irrigation District to a Regional Water Resource Agency*

**Chris M. Kapheim**, Alta Irrigation District, Dinuba, CA; and **Jim Wegley**, Keller-Wegley Engineering, Visalia, CA

*Water Supply and Ecologic Flow Improvement through Reservoir Re-Operation and Conjunctive Management*

**Thaddeus Bettner**, Glenn-Colusa Irrigation District, Willows, CA; **Grant Davids**, Davids Engineering, Inc., Davis, CA; and **Greg Thomas**, The Natural Heritage Institute, San Francisco, CA

*Water Resources of the Little Truckee River and Prosser and Donner Creek Basins*

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

1:30 p.m. - 3:00 p.m. **Concurrent Session 2B — Panel Discussion**

3:00 p.m. - 3:30 p.m. **Break in Exhibit Hall**  
Sponsored by **Rubicon Water**

3:30 p.m. - 5:30 p.m. **Plenary Session 2A— Integrated Water Resources Management**  
(continued)

*Flood Control Issues Resulting from the Urbanization of the Salt River Project Service Area*

**Robert S. Gooch** and **Daniel T. Killoren**, Salt River Project, Phoenix, AZ; **Timothy S. Phillips**, Flood Control District of Maricopa County, Phoenix, AZ; and **Robert E. Larchick**, Salt River Project, Phoenix, AZ

*Water for Agriculture in the Colorado River Basin: What Do Farmers Think about its Future?*

**MaryLou Smith**, **Peter Leigh Taylor**, **Reagan Waskom**, **Julie Kallenberger** and **Faith Sternlieb**, Colorado State University, Fort Collins, CO

*Implementation of Basin-Wide Real-Time Salinity Management: a Managed Seasonal Wetland Exemplar*

**Nigel Quinn**, Lawrence Berkeley National Laboratory and Bureau of Reclamation, Berkeley, CA; and **Virginia Lelu**, **Olga Epshtein**, **Monique de Brito Guedes** and **Taiki Rumakirii**, Lawrence Berkeley National Laboratory, Berkeley, CA

*The Murray-Darling Basin: Australia's Progress with Implementing Major Water and Irrigation Reforms at a Basin Scale*

**Richard McLoughlin**, Department of Sustainability, Environment, Water, Population and Communities, Canberra, Australia

3:30 p.m. - 5:00 p.m. **Concurrent Session 2B — Panel Discussion**

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

7:00 p.m. - 9:30 p.m. **Dinner with Speaker**  
Sponsored by **Merced Irrigation District**

Moderator — **Jerrold D. Gregg**

*Northern Nevada Memoirs*

**Joseph I. Burns**, Consultant, Sacramento, CA

**Thursday, November 15**

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

7:00 a.m. - 8:00 a.m. **Continental Breakfast and Poster Session**

*Impact of Wastewater Application Uniformity on Spatial Variability of Hydraulic Conductivity and Sodium Content*

**Pradip Adhikari**, **Manoj K. Shukla**, and **John G. Mexal**, New Mexico State University, Las Cruces, NM

*Comparative Effects of Deficit Irrigation in Landrace and Commercial Chile (Capsicum annum) Cultivars*

**Israel Calsoyas**, New Mexico State University, Las Cruces, NM

*Alternating Partial Soil Surface Wetting to Optimize Leaching – A Model Analysis*

**J. Gonzalez**, **M. Tuller**, **D. Slack** and **M. Mirjat**, University of Arizona, Tucson, AZ

*Measuring the Performance of a Rainout Shelter Design*

**Patrick M. Hofer**, South Dakota State University, Brookings, SD

7:30 a.m. - 8:00 a.m. **USCID Members Meeting**

Moderator — **Jerrold D. Gregg**

8:00 a.m. - 10:00 a.m. **Concurrent Session 3A — Regulatory Issues**

Moderators — **David K. Thaemert**, Oregon Institute of Technology, Klamath Falls, OR; and **Bryce A. Contor**, Rocky Mountain Environmental Associates, Inc., Idaho Falls, ID

*FERC Relicensing Issues for Irrigation Districts*

**Timothy Welch**, Federal Energy Regulatory Commission; Washington, DC

*Mitigation Strategies for FERC Relicensing*

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

*FERC Relicensing Issues — A Consultant's Perspective*

**James Lynch**, HDR Engineering, Sacramento, CA

*FERC Relicensing Issues — A Water District's Perspective*

**Bryan Kelly**, Merced Irrigation District

8:00 a.m. - 10:00 a.m. **Concurrent Session 3B — Flow Measurement**

Moderators — **W. Martin Roche**, Consulting Engineer, Grass Valley, CA; and **Bryan P. Thoreson**, Davids Engineering, Davis, CA

*Overshot Gate Development and History*

**Blair L. Stringam**, New Mexico State University, Las Cruces, NM; **Ken Craig**, Aqua Systems 2000 Inc., Lethbridge, Alberta, Canada; **Murray McCaig**, CALM Water, Littleton, CO; **Jozef Prozniak**, APC Holdings Inc., Lethbridge, Alberta, Canada



*Submerged Flow Calibrations for Overshot Gates*

**Albert Clemmens** and **Brian Wahlin**, WEST Consultants, Inc., Tempe, AZ

*Creative, Accurate and Cost-Effective Farm-Gate Delivery Measurement Approaches*

**Jeffrey C. Davids**, Davids Engineering, Chico, CA; **Grant G. Davids**, Davids Engineering, Davis, CA; **Lewis E. Bair**, Reclamation District No. 108, Grimes, CA, and **Eric A. Miller**, Richvale Irrigation District, Richvale, CA

*Evaluation of Weir Boxes and Orifice Gates for Farm Gate Delivery Measurement*

**Matthew V. Thiede** and **Jeffrey C. Davids**, Davids Engineering, Inc., Chico, CA

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

10:30 a.m. - 12:00 noon **Concurrent Session 3A — Evapotranspiration**

*Spatial Variability in Evapotranspiration Related to Irrigation System Distribution Uniformity*

**Daniel J. Howes**, **Lucas Hoffman** and **Franklin Gaudi**, California Polytechnic State University, San Luis Obispo, CA

*Internet Evapotranspiration Tool to Help Water Users Estimate Water Requirements*

**Blair Stringam**, **Max P. Bleiweiss** and **A. Salim Bawazir**, New Mexico State University, Las Cruces, NM

*Estimating Seasonal Crop Water Use For Alfalfa Using A Surface Energy Balance Model (ReSET - Raster)*

**Luis A. Garcia** and **Aymn Elhaddad**, Colorado State University, Fort Collins, CO

10:30 a.m. - 12:00 noon **Concurrent Session 3B — Groundwater**

*Groundwater/Surface-Water Interaction and Mitigation Credits in Eastern Idaho: Part II*

**Bryce A. Contor** and **W. Roger Warner**, Rocky Mountain Environmental Associates, Inc., Idaho Falls, ID

*Groundwater/Surface-water Interaction and Mitigation Credits in Eastern Idaho: Part III*

**Bryce A. Contor** and **W. Roger Warner**, Rocky Mountain Environmental Associates, Inc., Idaho Falls, ID; and **David R. Tuthill, Jr.**, Idaho Water Engineering, LLC, Boise, ID

*Case Study — Analysis of Aquifer Effects During Large Scale Agricultural Pumping*

**Joseph B. Turner** and **Timothy Godwin**, Brown and Caldwell, Rancho Cordova, CA; **Paul Gosselin**, Butte County Water and Resources Conservation, Oroville, CA; and **Andrew Kopania**, EMKO Environmental, Inc., El Dorado Hills, CA

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

Moderator — **Jerrold D. Gregg**

*Bureau of Reclamation Programs for Water Districts*

**Richard Woodley**, Chief, Division of Resources Management, Mid-Pacific Region, Bureau of Reclamation, Sacramento, CA

1:30 p.m. - 3:00 p.m. **Concurrent Session 4A — Water Resources Planning**

Moderators — **Franklin E. Dimick**, Dimick Water Resources Engineering, Monroe, UT; and **Joe E. Blankenship**, Natel Energy, Inc., Scottsdale, AZ

*Rethinking Storage: Going Underground — An Oregon Study*

**Cortney Duke** and **Luke May**, Schroeder Law Offices, P.C., Portland, OR

*Factors Hampering Potential Yields of Major Crops: A Case Study from Sindh, Pakistan*

**Bakhshal Lashari**, Mehran University of Engineering and Technology, Jamshoro, Pakistan; and **Masood Mahesar**, Research and Development Foundation, Hyderabad, Pakistan

*Interface Between Irrigation Districts and Alternative Energy Sources*

**David E. Bradshaw**, Imperial Irrigation District, Imperial, CA

1:30 p.m. - 3:00 p.m. **Concurrent Session 4B — Technology**

Moderator — **James E. Ayars**, Agricultural Research Service, USDA, Parlier, CA; and **Blair L. Stringam**, New Mexico State University, Las Cruces, NM

*Contraction Coefficients for Radial and Sluice Gates in WinGate Software*

**Albert Clemmens**, WEST Consultants, Inc., Tempe, AZ; **Tony Wahl**, Bureau of Reclamation, Denver, CO; and **Gilles Belaud**, SupAgro, Montpellier, France

*New Spread Spectrum Radios for Today's Low Speed SCADA Networks*

**Dan Steele**, FreeWave Technologies, Inc., Boulder, CO

*Irrigation Pump Performance with Sand Wear*

**Charles Burt** and **Kyle Feist**, California Polytechnic State University, San Luis Obispo, CA

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

3:30 p.m. - 5:00 p.m. **Concurrent Session 4A — Low Head Hydro**

*Feasibility Investigations of Low Head Hydro*

**Stan Schweissing**, HDR Engineering, Inc., Pasco, WA

*Discussion and Progress of EBID's Innovative Low-Cost/Low-Head Hydropower for Irrigation Canals*

**Gary L. Esslinger** and **Zachary L. Libbin**, Elephant Butte Irrigation District, Las Cruces, NM; **Samuel H. Monger**, Northern Arizona University, Flagstaff, AZ; and **Fernando Cadena**, Engineering Consultant, Las Cruces, NM

*Hydropower Development and Ecological Sustainability*

**Eric Thompson**, Natel Energy, Inc., Alameda, CA; and **Joe E. Blankenship**, Natel Energy, Inc., Scottsdale, AZ

3:30 p.m. - 5:00 p.m.     **Concurrent Session 4B —  
Technology (continued)**

*Applications of the ITRC Flap Gate at the Turlock Irrigation District*

**Tou B. Her** and **Matthew W. Hazen**, Turlock Irrigation District, Turlock, CA

*The Ins and Outs of Regulating Reservoir Designs*

**Charles M. Burt** and **Sierra A. Orvis**, California Polytechnic State University, San Luis Obispo, CA

*West Canal Embankment Stability Improvements —  
Quincy-Columbia Basin Irrigation District*

**Darvin Fales**, Quincy–Columbia Basin Irrigation District, Quincy, WA; and **Stan Schweissing**, HDR Engineering Inc., Pasco, WA

## **Friday, November 16**

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

This day-long tour will feature a visit to facilities in the Lake Tahoe area. Following a short stop at the Lake Tahoe Overlook on the Mount Rose Highway, the tour will visit the South Tahoe Public Utility District office for a presentation about District facilities and programs. Following lunch, the tour will proceed to Indian Creek Reservoir and Diamond Valley (STPUD Wastewater Reuse Area).

(Updated October 23, 2012)