

Program

***Meeting Irrigation Demands in a
Water-Challenged Environment***

SCADA and Technology: Tools to Improve Production



USCID

The U.S. society for irrigation and drainage professionals

**September 28 - October 1, 2010
Fort Collins, Colorado**

Conference Program

Tuesday, September 28

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

7:30 a.m. - 11:30 a.m. **Field Tour**

The Field Tour will travel east of Fort Collins to visit a USDA-ARS Limited Irrigation Research Farm. The Farm uses drip irrigation to develop water:yield relationships for Central Plains crops. Then, tour participants will visit innovative gate and control structures along the New Cache La Poudre Irrigating Company's #2 canal. A new reservoir, an equalizer reservoir, a pump station and actuated gates near Greeley will also be visited.

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

Moderator — **Mark Svendsen**, President, USCID, and Consultant, Philomath, OR

Conference Opening Keynote Address

Michael Gabaldon, Director, Technical Resources, Bureau of Reclamation, Denver, CO

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

Moderator — **Gerald A. Gibbens**, Conference Chairman, and MWH Americas, Inc., Fort Collins, CO

Keynote Presentation — Interstate Compacts

Dick Wolfe, State Engineer and Director of the Colorado Division of Water Resources, Denver, CO

Keynote Presentation — Remote Sensing

Luis Garcia, Head, Department of Civil and Environmental Engineering, Colorado State University, Fort Collins, CO

Keynote Presentation — Platte River Recovery Implementation Program

Jerry Kenny, Executive Director, Platte River Recovery Implementation Program, Kearney, NE

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

Panel Discussion — The Future of Irrigated Agriculture

Steven C. Macaulay, West Yost Associates, Davis, CA
Mark Sponsler, Colorado Corn Growers Association, Greeley, CO

Jeffrey J. Lukas, CIRES-NOAA Western Water Assessment, University of Colorado, Boulder, CO

Eric Wilkinson, Northern Colorado Water Conservancy District, Berthoud, CO

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

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

Wednesday, September 29

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. **Plenary Session 1 — Water Policy and Water Law**

Moderators — **Richard Belt**, Aqua Engineering, Inc., Fort Collins, CO; and **Mark A. Crookston**, Northern Colorado Water Conservancy District, Berthoud, CO

The Colorado Satellite-Linked Water Resources Monitoring System: 25 Years Later

Thomas W. Ley, **Phil L. DeArcos**, **Russell V. Stroud** and **David G. Hutchens**; Colorado Division of Water Resources, Denver, CO

Using State Water Law for Efficient Water Use in the West

Laura A. Schroeder and **Therese A. Ure**, Schroeder Law Offices, P.C., Portland, OR

On-Farm Strategies for Deficit or Limited Irrigation to Maximize Operational Profit Potential in Colorado's South Platte Basin

Stephen W. Smith, Regenesys Management Group, Denver, CO

Knowledge Management for the 21st Century

John Winchester, High Country Hydrology, Boulder, CO

10:00 a.m. - 10:30 a.m. **Break in Exhibit Hall**

10:30 a.m. - 12:00 noon **Plenary Session 1 — Water Policy and Water Law (continued)**

Economics of Groundwater Management Alternatives in the Republican Basin

Raymond J. Supalla and **Christopher L. Thompson**, University of Nebraska, Lincoln, NE

Effects of Policies Governing Water Reuse on Agricultural Crops

Jeffrey Pfeifer, **Leeann DeMouche**, **Rhonda Skaggs** and **Adrian Hanson**, New Mexico State University, Las Cruces, NM

Environmentalists and Urban Water Managers Join with Agriculture in the Colorado River Basin to Find Innovative Ways to Share Water

MaryLou Smith, **James Pritchett** and **Reagan Waskom**, Colorado State University, Fort Collins, CO

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

1:30 p.m. - 3:00 p.m. **Plenary Session 2 — Canal Operations and Management**

Moderator — **Khaled Bali**, University of California Cooperative Extension, Holtville, CA; and **Dan Steele**, FreeWave Technologies, Inc., Elk Ridge, UT

Flow Calibration of the Bryan Canal Radial Gate at the United Irrigation District

Gabriele Bonaiti, Eric Leigh, Askar Karimov and **Guy Fipps**, Texas A&M University, College Station, TX

Considering Canal Pool Resonance in Controller Design

Albert J. Clemmens, Agricultural Research Service, USDA, Maricopa, AZ

Synthetic Canal Lining Evaluation Project

Eric Leigh, Askar Karimov and **Guy Fipps**, Texas A&M University, College Station, TX

3:00 p.m. - 3:30 p.m. **Break in Exhibit Hall**

3:30 p.m. - 5:30 p.m. **Plenary Session 2 — Canal Operations and Management (continued)**

South Platte Ditch Company — Demonstration Flow Monitoring and Data Collection Project

Tom Gill, Bureau of Reclamation, Denver, CO; and **Charles Bartlett**, South Platte Ditch Company, Merino, CO

The Case for Ditch-Wide Water Right Analysis in Colorado

Donald O. Magnuson, New Cache La Poudre Management Company, Lucerne, CO; and **Stephen W. Smith**, Regenesys Management Group, Denver, CO

Bore Wells — A Boon for Tail End Users

Rajeev Kumar Goyal, Punjab Irrigation Department, Rajuwala, Punjab, India

Irrigation Efficiency and Water Users Performance in Water Management: A Case Study on Heran Distributary Sanghar, Sindh, Pakistan

Bakhshal Lashari, Mehran University of Engineering and Technology, Jamshoro, Pakistan; and **Rubina Siddiqui**, International Water Management Institute, Pakistan

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

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

Moderator — **Mark Svendsen**

The Water Ditch, Basis of Civilization in the Americas

Gregory J. Hobbs, Justice, Colorado Supreme Court, Denver, CO

Thursday, September 30

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

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

Automatic Control of Canal Flow Disturbances

Albert J. Clemmens, Agricultural Research Service, USDA, Maricopa, AZ

Comparison of Neutron Moisture Meter and Watermark Sensor Readings in a Field Experiment of Full and Limited Irrigation of Corn

K.C. DeJonge, A.A. Andales and **N.C. Hansen**, Colorado State University, Fort Collins, CO; and **J.C. Ascough II**, Agricultural Research Service, USDA, Fort Collins, CO

Economies of Canal Water

Rajeev Kumar Goyal, Punjab Irrigation Department, Faridkot, India

Sustaining Irrigation Infrastructure of India

Rajeev Kumar Goyal, Punjab Irrigation Department, Faridkot, India

Assessment of Economic and Hydrologic Impacts of Reduced Surface Water Supply for Irrigation via Remote Sensing

Duncan MacEwan, University of California, Davis, Davis, CA; **Byron Clark** and **Bryan Thoreson**, SEBAL North America, Inc., Davis, CA; **Richard Howitt** and **Josue Medellin-Azuara**, University of California, Davis, Davis, CA; and **Grant Davids**, SEBAL North America, Inc., Davis, CA

Agricultural Water Conservation Clearinghouse: An Online Tool for Water Resource Professionals, Managers and Academia

Faith Sternlieb, Julie Kallenberger, Reagan Waskom and **Troy Bauder**, Colorado State University; and **Jim Bauder**, Montana State University

8:00 a.m. - 9:30 a.m. **Concurrent Session 3A — SCADA Implementation I**

Moderators — **Darell D. Zimelman**, Rubicon Systems America, Inc., Loveland, CO; and **Samuel W. Schaefer**, GEI Consultants, Bookman-Edmonston Division, Bakersfield, CA

Systematic Approach to Modeling, Designing and Implementing Open Channel Controllers

Iven Mareels, The University of Melbourne, Melbourne, Australia; and **Anthony Oakes, Tugba Erol** and **Sumith Choy**, Rubicon Systems, Hawthorn East, Melbourne, Australia

Initiating SCADA Projects in Irrigation Districts

Askar Karimov, Eric Leigh and **Guy Fipps**, Texas A&M University, College Station, TX

Use of GIS as a Real Time Decision Support System for Irrigation Districts

Gabriele Bonaiti and **Guy Fipps**, Texas A&M University, College Station, TX

8:00 a.m. - 9:30 a.m. **Concurrent Session 3B — Evapotranspiration**

Moderators — **Luis Garcia**, Colorado State University, Fort Collins, CO; and **Thomas J. Trout**, Agricultural Research Service, Fort Collins, CO

Nebraska Water and Energy Flux Measurement, Modeling, and Research Network (NEBFLUX)

Suat Irmak, University of Nebraska-Lincoln, Lincoln, NE

Mapping ET in Southeastern Colorado Using a Surface Aerodynamic Temperature Model

José L. Chávez, Colorado State University, Fort Collins, CO; **Dale Straw**, Colorado Division of Water Resources, Denver, CO; **Luis A. Garcia**, Colorado State University, Fort Collins, CO; **Thomas W. Ley**, Colorado Division of Water Resources, Denver, CO; and **Allan A. Andales**, **Lane H. Simmons** and **Michael E. Bartolo**, Colorado State University, Fort Collins, CO

Alfalfa Crop Coefficients Developed Using a Weighing Lysimeter in Southeast Colorado

Hamdan AlWahaibi and **Allan Andales**, Colorado State University, Fort Collins, CO; **Dale Straw**, Colorado Division of Water Resources, Pueblo, CO; **Lane Simmons** and **Michael Bartolo**, Colorado State University, Fort Collins, CO; **Thomas Ley**, Colorado Division of Water Resources, Pueblo, CO; **Thomas J. Trout**, Agricultural Research Service, USDA, Fort Collins, CO; and **José Chávez** and **Neil Hansen**, Colorado State University, Fort Collins, CO

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

10:30 a.m. - 12:00 noon **Technical Session 3A — SCADA Implementation I (continued)**

Interaction of Advanced Scientific Irrigation Management (ASIM) with I-SCADA System for Efficient and Sustainable Production of Fiber on 10,360 Hectares

Nabil Mohamed, Greenwood Resources Boardman Tree Farm, Boardman, OR

Improving Irrigation System Performance in the Middle Rio Grande through Scheduled Water Delivery

Nathi Manana, Colorado State University, Fort Collins, CO; **Kristoph-Dietrich Kinzli**, Florida Gulf Coast University, Fort Myers, FL; **Ramchand Oad**, **Luis Garcia** and **David Patterson**, Colorado State University, Fort Collins, CO; and **Nabil Shafike**, New Mexico Interstate Stream Commission, Albuquerque, NM

Cost-Effective SCADA Development for Irrigation Districts: A Nebraska Case Study

Clinton Powell, Bureau of Reclamation, Grand Island, NE; and **Tom Gill**, Bureau of Reclamation, Denver, CO

10:30 a.m. - 12:00 noon **Technical Session 3B — Evapotranspiration (continued)**

Developing Crop Coefficients for the South Platte Using Remote Sensing

Luis Garcia, Colorado State University, Fort Collins, CO

Turfgrass ET from Small Lysimeters in Northeast Colorado

Mark A. Crookston and **Mary Hattendorf**, Northern Colorado Water Conservancy District, Berthoud, CO

Monitoring Turf Water Status with Infrared Thermometry

Mary J. Hattendorf and **Mark A. Crookston**, Northern Colorado Water Conservancy District, Berthoud, CO

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

Moderator — **Mark Svendsen**

Speaker — **Marvin E. Jensen**, Consultant, Fort Collins, CO

1:30 p.m. - 3:00 p.m. **Concurrent Session 4A — SCADA Implementation II**

Moderator — **Stephen W. Smith**, Regenesys Management Group, Fort Collins, CO; and **Tony Wahl**, Bureau of Reclamation, Denver, CO

Integrated Hybrid Radio Communications Networks

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

Hydraulic Simulation of Simple Operating Rules for a Demand-Based Automated Canal

Wynn R. Walker, Utah State University, Logan, UT

Integrating Fish Screen Requirements, Flow Measurement, Level Control, and SCADA — What Works

Kenneth B. Schuster, Watch Technologies, Grants Pass, OR

1:30 p.m. - 3:00 p.m. **Concurrent Session 4B — Water Management and Quality Issues**

Moderator — **Suat Irmak**, University of Nebraska, Lincoln, NE; and **Larry J. Schluntz**, Consultant, Longmont, CO

Training Tool for On-Farm Water Management Using Heuristic Simulation Software

Mohammed Z. Shaban and **Gary P. Merkley**, Utah State University, Logan, UT

Water Production Functions for High Plains Crops

Thomas J. Trout, **Walter Bausch** and **Gerald Buchleiter**, Agricultural Research Service, USDA, Fort Collins, CO

Water Banking and Exchanges Among Federal and Non-Federal Water Districts

Samuel W. Schaefer, GEI Consultants, Santa Barbara, CA; and **Rick Iger**, GEI Consultants, Bakersfield, CA

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

3:30 p.m. - 5:30 p.m. **Concurrent Session 4A — SCADA Implementation II (continued)**

Accomplishments from a Decade of SCADA Implementation in Idaho's Payette Valley

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

Low Cost Linear Actuators for Canal Gate Control

Blair L. Stringam, New Mexico State University, Las Cruces, NM; and **Tom Gill**, Bureau of Reclamation, Denver, CO

Canal Enhancement for Return of Water from Semitropic Water Storage District Water Bank

Samuel W. Schaefer, GEI Consultants, Santa Barbara, CA; **Paul Oshel**, Semitropic Water Storage District, Wasco, CA; and **Doug Stevens** and **Mike Lehmkuhl**, Concepts in Controls, Inc., Visalia, CA

Critical Success Factors for Large Scale Automation — Experiences from 10,000 Gates

Anthony Oakes and **Gino Ciavarella**, Rubicon Systems, Hawthorn East, Australia; and **Remy Halm**, Rubicon Systems America, Fort Collins, CO

3:30 p.m. - 5:00 p.m. **Concurrent Session 4B — Water Management and Quality Issues(continued)**

Stormwater and Irrigation Canals — Emerging Issues

Richard L. Belt, and **Kyle Abbott**, Aqua Engineering, Inc., Fort Collins, CO

Assessment of Dissolved Solids Concentrations and Loads in the South Platte River Basin, Northeastern Colorado

Paul A. Haby and **Jim C. Loftis**, Colorado State University, Fort Collins, CO

Using Enhanced Regional Ground Water Models of the Lower Arkansas River Valley to Evaluate Alternative Irrigation and Drainage Strategies

Eric Morway and **Timothy K. Gates**, Colorado State University, Fort Collins, CO

Friday, October 1

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

This day-long tour will begin with a visit to the Colorado State University Hydraulics Laboratory. The tour will then make the short trip to Horsetooth Reservoir, part of the Bureau of Reclamation's Colorado-Big Thompson Project, and the proposed Glade Reservoir site, which would be an integral component of the Northern Colorado Water Conservancy District's proposed Northern Integrated Supply Project.

The tour will continue through the beautiful Big Thompson Canyon to the town of Estes Park and Rocky Mountain National Park, with a chance to hear and watch elk bugle during the fall mating season.

The tour will conclude with a visit to Carter Lake, near Loveland, to visit the newly completed Carter Lake Outlet project.

(Updated August 3, 2010)