

Colorado Ground Water Management Policy **FORUM PROGRAM**



This Water Forum has been made possible in part by an SB179 Water Supply Reserve Account grant through the Arkansas Basin Roundtable administered through the Colorado Water Conservation Board

LEGAL AND INSTITUTIONAL OPPORTUNITIES FOR AQUIFER RECHARGE AND STORAGE

An open interactive forum among experts and stakeholders to address how best to formulate policy that will allow for maximum utilization of Colorado's ground water resources in alignment with hydrologic reality, engineering capability, environmental needs and legal rights & obligations.



American Ground Water Trust

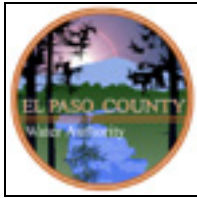


Arkansas Basin Roundtable

**Thursday, September 27th &
Friday, September 28th, 2007**

Doubletree Hotel - Colorado Springs, Colorado

FORUM SPONSORS



**El Paso County
Water Authority**



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**Aqua
Engineering, Inc.**



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Water Conservancy
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Background

Aquifer storage and recovery in Colorado Aquifers – What are the issues?

“We have appropriated more than is available””We need Aquifer Storage as the solution.”

“Those who put it in the ground should have the rights to take it out.”

“You can’t do it without huge court costs.””We’ve been doing it for years.”

“It’s what’s going to save us in the long run.” “Colorado law doesn’t allow it.”

“We just don’t have the amount of water we need”

“Maximizing use should be the objective”

“Litigation has never created a single drop of water.”

“What stands between the problem and a solution?”

Major Conference Questions

- ➔ Can aquifer recharge become a more significant part of Colorado’s water management toolbox?
- ➔ What can we learn from the experience of policy makers in states where aquifer recharge is a significant part of their portfolio of water management tools.
- ➔ If the hydrology and the engineering will work – is water available for recharge the constraint?
- ➔ Do we need new legislation or rules & regulations to facilitate artificial recharge?

Program Day 1 – Thursday, September 27th

7:30 – 8:30 Registration Open

8:30 – 8:45 Welcome and Introduction to the Conference

- ◆ Betty Konarski, President, El Paso County Water Authority, Colorado Springs, CO
- ◆ Lionel Rivera, Mayor, Colorado Springs, CO
- ◆ Amy Stephens, Colorado State Representative, House District 20, Northern El Paso County

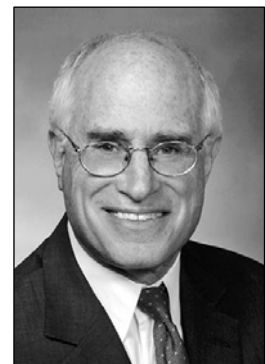
8:45 – 8:50 Introduction of Harris Sherman

- ◆ Alan Hamel, Chairman of the Arkansas Basin Roundtable and Executive Director of the Pueblo Board of Water Works, Pueblo, CO

8:50 – 9:20 SPECIAL GUEST

The Importance of Finding Solutions to Colorado’s Ground Water Issues

- ◆ **Harris Sherman, Executive Director,**
Colorado Department of Natural Resources, Denver, CO



9:20 – 9:30 Water Storage in Aquifers – Basic Concepts and Terminology

- ◆ Andrew Stone, Executive Director, American Ground Water Trust, Concord, NH

9:30 – 10:45 SESSION 1

Session 1: Use of Aquifers for Storage in Other States -- Problems Identified and Solved

- ➔ The “climate of opinion” regarding storage of water in aquifers for later use
- ➔ Legal frameworks for aquifer storage and retrieval
- ➔ Administrative structures that allow for conjunctive use of resources
- ➔ Lessons / templates that could be applied in Colorado

Moderator

- ◆ Denise Fort, Professor, University of New Mexico School of Law, Albuquerque, NM
Member of National Academy of Sciences Committee on “Sustainable Underground Storage of Recoverable Water”

Presenters

- ◆ Craig Miller, Assistant General Manager, Orange County Water District, Fountain Valley, CA
- ◆ Gregg Houtz, Deputy Counsel, Arizona Department of Water Resources, Phoenix, AZ
- ◆ Karl Dreher, VP, Brown & Caldwell, Golden, CO (former Director of Idaho Department of Water Resources)

10:45 – 11:15 COFFEE BREAK—brought to you by Colorado Springs Utilities

(Networking opportunity – meet the exhibitors)

11:15 – 11:45 The Challenges and Objectives of the Special Legislative South Platte Wells Task Force

- ◆ Alexandra Davis, Assistant Director for Water, Colorado Department of Natural Resources, Denver, CO

11:45 – 11:50 Introduction of Senator Fred Anderson

- ◆ Bob Longenbaugh, Consultant Engineer, Lakewood, CO

11:50 – 12:20 Background to the 1969 Water Rights Determination and Administration Act

- ◆ Fred Anderson, Former President of Colorado Senate, Loveland, CO

12:20 – 1:20 LUNCH

1:20 – 1:25 Introduction of Justice Gregory Hobbs

- ◆ Diane Hoppe, President, Colorado Foundation for Water Education, Denver, CO

1:25 – 1:55 KEYNOTE PRESENTATION

Where we are – Where we have been since 1969

- ◆ Gregory Hobbs, Colorado Supreme Court Justice, Denver, CO



1:55 – 3:20 SESSION 2

Session 2: Legal Issues and Experiences

- ➔ Legal parameters for implementing artificial recharge as a tool for ground water management in Colorado
- ➔ What is the difference between "ground water recharge" and "underground storage"?
- ➔ Do you have to maintain "dominion & control" in order to have an underground storage water right?
- ➔ How do Interstate Compacts impact artificial recharge?
- ➔ Who decides how much you get to take out?

Moderator

- ◆ Doug Kemper, Executive Director, Colorado Water Congress, Denver, CO

Presenters

- ◆ Michael Shimmin, Attorney, Vranesh & Raisch, Boulder, CO
- ◆ David Robbins, Attorney, Hill & Robbins, Denver, CO
- ◆ Melinda Kassen, Attorney, Colorado Trout Unlimited, Boulder, CO
- ◆ Sandy MacDougall, Attorney, MacDougall Wooldridge & Worley, Colorado Springs, CO
- ◆ Steven Sims, Attorney, Brownstein Hyatt & Farber, Denver, CO

3:20 – 3:40 BREAK

3:40 – 5:00 SESSION 3

Session 3: Recharge Stories from Colorado

Aquifer recharge as a management strategy has been taking place for decades in some parts of Colorado

- ➔ Where is it done? Why was it done? How is it done?
- ➔ Who pays? Who benefits?
- ➔ Where is the authority vested? Who makes the decisions?

Moderator

- ◆ Cortney Brand, R.W. Beck Co., Denver, CO

Presenters

- ◆ Gary Thompson, President, W.W. Wheeler & Associates, Englewood, CO
(**Forty years history of the Widefield Channel Recharge Project - How the initial and subsequent legal challenges have been solved**)
- ◆ Steven Vandiver, General Manager, Rio Grande Water Conservancy District, Alamosa, CO
(**How the Rio Grand River Compact impacts day to day operation decisions in the San Luis Valley**)
- ◆ Joe Frank, General Manger, Lower South Platte Water Conservancy District, Sterling, CO
(**The challenges of water right constraints on recharge operations**)
- ◆ John Hendrick, General Manager, Centennial Water & Sanitation District, Highlands Ranch, CO
(**Recharge of confined aquifers in the Denver Basin**)

5:00 – 5:15 Summary of Day One - QUESTIONS and ANSWERS

Chair of Q & A session

- ◆ MaryLou Smith, Vice-President, Aqua Engineering, Inc., Fort Collins, CO

5:15 Cash Bar and Reception

8:00 – 8:30 Registration open

8:30 – 8:45 Framing the Issues for Day Two

- ◆ Gary Barber, Recorder, Arkansas Basin Roundtable, Pueblo, CO and,
- ◆ MaryLou Smith, Vice President, Aqua Engineering, Inc., Ft. Collins, CO

8:45 – 10:00 SESSION 4

Session 4: Practical Decision-making issues – The Problems

- ➔ What are the sources of water for artificial recharge?
Treated wastewater? Spring snow-melt river flow? Stormwater? Produce water from oil & gas?
- ➔ Are there environmental concerns related to the sources of recharge water?
- ➔ Are there currently regulatory or legal constraints to implementing artificial recharge?
- ➔ What type of water management institutions are needed for successful artificial recharge projects?
- ➔ Too much of a good thing? The perils of excessive recharge to alluvial ground water aquifers.

Moderator

- ◆ Don Shawcroft, Chairman of the Colorado Agricultural Water Alliance and VP of Farm Bureau, Centennial, CO

Presenters

- ◆ Tim Gates, Professor, Department of Civil and Environmental Engineering, CSU, Fort Collins, CO
- ◆ Dave Stewart, President, Stewart Environmental, Fort Collins, CO
- ◆ Kathy Hare, President, Upper Black Squirrel Creek Ground Water Management District, Peyton, CO
- ◆ Valois Shea, Environmental Scientist, EPA Region 8, Denver, CO

10:00 – 10:15 COFFEE BREAK—brought to you by El Paso County Water Authority

(Networking opportunity – meet the exhibitors)

10:15 – 11:30 SESSION 5

Session 5: What is holding up our moving forward?

- ➔ What are the opportunities to better use the alluvial aquifers of Colorado?
- ➔ What are the impediments to implementing those ideas?
- ➔ What is the next step to move the concept forward?

Moderator

- ◆ Deanna Durnford, Professor, Department of Civil and Environmental Engineering, CSU, Fort Collins, CO

Presenters

- ◆ Ralph Topper, Senior Hydrogeologist, Colorado Geological Survey, Denver, CO
- ◆ Gordon McCurry, Principal, CDM, Denver, CO
- ◆ Dennis McGrane, Associate, Leonard Rice Engineers, Denver, CO

11:30 – 1:00 WORKING LUNCH SESSION FOR FORUM PARTICIPANTS

Identifying the Solutions

- ◆ **Moderator / facilitator, MaryLou Smith, Vice-President, Aqua Engineering, Inc., Fort Collins, CO**

- ➔ Participant opportunity to contribute to the state's artificial recharge discussion
- ➔ Collective ideas from all participants in a table by table discussion over lunch
- ➔ Opportunity for ALL ideas and suggestions to be brought forward without attribution to specific individuals
- ➔ All ideas and suggestions will be incorporated in a post-forum report

1:00 – 1:30 KEYNOTE PRESENTATION

Administration of Artificial Recharge for Maximum Utilization of Colorado's Water Resources

◆ Dick Wolfe, Assistant State Engineer, Denver, CO

1:30 – 3:15 SESSION 6

Session 6: Colorado Legislators

- ➔ Ideas from Day 1 & Ideas/Concepts/Proposals from Working Lunch Session: Do any of these take us to a greater utilization of Colorado's groundwater?
- ➔ Do the interstate compacts dictate a different set of rules for each basin for alluvial aquifer management?
- ➔ What does it mean to recharge a designated basin with water subject to the 1969 Act?
- ➔ What are the challenges for the General Assembly?
- ➔ How can Colorado's water professionals assist the legislature?

Moderator

◆ Jim Broderick, Executive Director, Southeastern Colorado Water Conservancy District, Pueblo, CO

Legislators

- ◆ Gail Schwartz, Colorado State Senator, District 5
Vice-Chair, Agriculture, Natural Resources & Energy Committee
Vice-Chair, Local Government Committee
Business, Labor & Technology Committee
- ◆ Jack Taylor, Colorado State Senator, District 8
Agriculture, Natural Resources & Energy Committee
Business, Labor & Technology Committee
- ◆ Kathleen Curry, Colorado State Representative, District 61
Chair, Agriculture, Livestock & Natural Resources Committee
Local Government Committee
- ◆ Cory Gardner Colorado State Representative, District 63
Agriculture, Livestock and Natural Resources Committee
- ◆ Mary Hodge, Colorado State Representative, District 30
Agriculture, Livestock, and Natural Resources Committee
Chair, Local Government Committee
- ◆ Marsha Looper, Colorado State Representative, District 19
Agriculture, Livestock and Natural Resources Committee
- ◆ Frank McNulty, Colorado State Representative, District 43
Agriculture, Livestock and Natural Resources Committee
Appropriations Committee
Transportation & Energy Committee

3:15 – 3:45 Update on the Progress of Basin Roundtable Initiatives

◆ Eric Hecox, Manager, Office of Interbasin Compact Negotiations, DNR, Denver, CO

3:45 – 4:00 Closing Remarks

◆ Betty Konarski, President, El Paso County Water Authority, Colorado Springs, CO

4:00 ADJOURN

American Ground Water Trust

The American Ground Water Trust is a national, non-profit public education organization that has been providing ground water information, awareness and education since 1986. The Trust's mission

- Promoting efficient and effective ground water management
- Communicating the environmental and economic value of ground water
- Showcasing ground water science and technology solutions
- Increasing citizen, community and decision-maker awareness
- Facilitating stakeholder participation in water resource decisions

Arkansas Basin Roundtables

The Arkansas Basin Roundtable was formed simultaneously with the Interbasin Compact Committee and eight other basin roundtables as mandated by the Colorado legislature in the Colorado Water for the 21st Century Act in 2005. The fifty four voting members of the Arkansas Basin Roundtable represent all counties, municipalities and conservancy districts, along with individuals representing agriculture, recreation and the environment, within the Arkansas River basin. The Roundtable is supported by liaisons from the Colorado Water Conservation Board, state and federal agencies, and includes non-voting members who are stakeholders in the basin. The Arkansas Basin Roundtable approved funding for this conference via a grant from the Water Supply Reserve Account to further the understanding of groundwater and aquifer recharge issues in the State of Colorado.

Associations and Organizations Endorsing the Forum

American Council of Engineering Companies of Colorado
American Public Works Association (Colorado Chapter)
American Society of Civil Engineers (Colorado)
American Water Resources Association (Colorado Chapter)
Arkansas River Basin Water Forum
Colorado Environmental Coalition
Colorado Ground-Water Association
Colorado Institute of Public Policy
Colorado Water Congress
Colorado Water Resources and Power Development Authority
Colorado Water Resources Research Institute
Colorado Watershed Assembly
Colorado Water Well Contractors Association
Colorado Beverage Association
Natural Resources Law Center
Trout Unlimited
South Platte Forum
Western Resource Advocates
Western State College - Colorado Water Workshop

Presenters and Moderators - Biographical Information

Fred E. Anderson, Senator: Senator Anderson was first elected to the Colorado State Senate in 1966. He is a 4th generation Coloradan who was raised and worked on a farm and feeding operation east of Loveland. He served sixteen years in the senate before retiring in 1982. During his service in the senate, he was elected President of the Senate for eight years. The major focus of his legislative work was Colorado water law. He carried a majority of legislation in both water rights and water quality. He served as president of the National Conference of State Legislatures and on the national Commission on Intergovernmental Relations. He was in the State Senate when the Colorado Legislature recodified Colorado water law in 1969.

Gerald L. (Gary) Barber: Mr. Barber is a graduate of Manitou Springs High School ('72) and the U.S.A.F. Academy ('76). Gary pursued a career in commercial real estate development in the Washington, D.C. area in the mid-80's. That led to a role as Development Manager of a private toll road company in Leesburg, Virginia, where he gained experience in the privatization of public works. Since a return to Colorado in 1993, Gary has been involved in commercial real estate brokerage, water rights brokerage and consulting to government entities on water resource development. He currently represents the El Paso County Water Authority and the Pikes Peak Regional Water Authority. He was active in the Statewide Water Supply Initiative and serves as the Recorder for the Arkansas Basin Roundtable.

Cortney C. Brand, R.W. Beck, Inc.: Mr. Brand is a Senior Consultant with R.W. Beck in Denver, Colorado. He previously worked in the Water Supply Department at Colorado Springs Utilities, and as a water resources consultant for URS Corporation. He holds Bachelor's and Master's degrees in Geology, as well as a Master's degree in Business Administration. He specializes in water supply planning and development, water rights, aquifer storage and recovery (ASR), program management, and utility business administration. He previously served as Colorado Springs' representative on the SWSI Phase II Alternative Agricultural Transfers Technical Roundtable and the South Platte Basin Roundtable, and currently serves on the Board of Directors of the Castle Pines North Metropolitan District.

Mr. Brand has been involved with underground water storage projects in several Western states, both as a consultant and as an owner. He has planned and conducted feasibility studies as well as permitted and implemented pilot- and full-scale programs. He is very familiar with groundwater recharge techniques and applications, and understands the water rights and policy-related issues associated with underground water storage.

James W. Broderick, Southeastern Colorado Water Conservancy District: Mr. Broderick has over 20 years experience in water. Hired in January 2003 by the Board of Directors to serve the Southeastern Colorado Water Conservancy District as Executive Director, due to his vast knowledge in water. During his tenure with Tucson Water he embraced the titles of Business Administrator, Project Manager, Chief Operation Officer, and Management Coordinator. Mr. Broderick currently serves on the Colorado River Advisory Council, the Arkansas Valley Preservation Committee, Statewide Water Initiative Roundtable Committee, as a Board of Director member of the Colorado River Water Users Association, a member of the National Water Resources Association, a member of the Family Farm Alliance Advisory Committee, Colorado State University's Colorado Water Resource Institute Advisory Committee, and is an Advisory member of the National Water Resources Association's and Family Farm Alliance Bureau of Reclamation's Action Plan for the 21st Century Managing for Excellence Program. He received his Masters degree specializing in Public Management and Environmental Resource Planning, and has a Bachelors degree in Public Administration and Policy in Environmental Science, Biology, Chemistry, Economics and Political Science. Mr. Broderick is married to Cindy and has a daughter, Amy.

Kathleen Curry, House Representative, District 61: Representative Curry is the Chair of the House Committee on Agriculture, Livestock and Natural Resources. She was elected in 2004 to the house and has served 3 years. Rep. Curry lives in Gunnison when she is not in Denver and has two sons, aged 11 and 14. She and her husband ranch and run a natural beef business. Rep. Curry got her graduate degree at CSU in water management and specialized in irrigation systems. Rep. Curry is a Colorado native and has worked in the water industry her entire career.

Alexandra Davis, Colorado Division of Water Resources: Ms. Davis works with the Colorado Division of Water Resources, the Colorado Water Conservation Board, the Division of Wildlife and other state agencies regarding interstate river compacts, state water rights issues and federal reserved water rights.

Ms Davis was the First Assistant Attorney General in Colorado prior to joining the Natural Resources Department. In her previous role, she supervised the attorneys working in the attorney general's water unit. She served as an assistant attorney general, litigating water rights cases for the State Engineer's Office, the Colorado Water Conservation Board and the Division of Wildlife for over 11 years. She spent one year in Billings Montana, as a Special Assistant U.S. Attorney representing the Department of Interior Agencies in the Montana general water rights adjudication.

She is a graduate of Pitzer College in California and the University of Colorado School of Law.

Presenters and Moderators - Biographical Information

Karl J. Dreher, Brown and Caldwell: Mr. Dreher is Vice President of Brown and Caldwell and has more than 30 years of experience in developing and managing water resources covering a broad spectrum of disciplines including water law, water policy, hydrologic analysis and modeling, environmental issues, interstate negotiations, planning, program and project management, construction management, personnel management, contract negotiations, hydraulic analysis and design, structural analysis and design, water treatment, and permitting for projects. Mr. Dreher has been involved with water resource issues and projects in various countries throughout the world and has served as a consultant to a number of public as well as private organizations engaged in the development and management of water resources. From 1995 through 2006, he was Director of the Idaho Department of Water Resources, and from 2002 through 2004 he was also chairman of the Western States Water Council, an adjunct of the Western Governors Association.

Deanna Durnford, Colorado State University: Dr. Durnford is Professor of Civil Engineering at Colorado State University. She has a B.S. from the University of Wisconsin and M.S. and Ph.D. degrees from Colorado State University. Her research concerns are in groundwater contamination, the flow of immiscible organics in porous media, and transport processes in the vadose zone. Specific areas of interest include the physics of gasoline, jet fuel, and other immiscible contaminants in soils; laboratory studies of leaching and hydraulic properties; solute transport processes; and the use of models for pesticide pollution potential. Her work has been funded by the National Science Foundation, the Colorado Water Resources Research Institute, and the U. S. Air Force. Previously, she worked as a consulting engineer and as a faculty member at Cornell University and as a Faculty Fellow at the Environics Laboratory, Tyndall Air Force Base.

Denise Fort, University of New Mexico: Dr. Fort is the Director of the Water Resources Administration Program and a member of the faculty at the University of New Mexico's School of Law. She has been a member of the New Mexico Bar since 1976. Ms. Fort has extensive experience in environmental and natural resources law and policy. She currently serves as a member of the National Academy of Sciences Committee on "Sustainable Underground Storage of Recoverable Water",

In the mid 90's she served as chair of the Western Water Policy Review Advisory Commission, a Presidential commission that prepared a report on western water policy concerns. In earlier positions, she served as director of New Mexico's Environmental Improvement Division, as a staff representative to the National Governors Association, as an environmental attorney, and in other capacities concerned with environmental and natural resource matters.

Fort began her career as an environmental attorney with New Mexico Public Interest Research Group and Southwest Research and Information Center then became a special assistant attorney general in the state's Taxation and Revenue Department. When she was 31, she served as cabinet secretary of the state Taxation and Revenue Department. She moved on to head the state Environmental Improvement Division.

In 1991, Professor Fort became director of the Water Resources Administration Program at UNM and also joined the law school faculty at that time. Fort has published extensively and spoken at numerous conferences on water issues. She continues to serve on the boards of a variety of environmental organizations; most recently, she founded the Western Water Alliance, in an effort to bring together people concerned about water issues throughout the West. She received her B.A. from St. John's College and her J.D. from the Catholic University of America's School of Law.

Joe M. Frank, Lower South Platte Water Conservancy District: Mr. Frank is the General Manager for the Lower South Platte Water Conservancy District. He has been with the District for nearly four years and has served as the manager for three years. The District serves approximately 400,000 acres in Morgan, Washington, Logan and Sedgwick Counties in Northeastern Colorado. He also represents the District on the South Platte Basin Roundtable, is a board member of Colorado Water Congress, and sits on various committees for the Statewide Water Supply Initiative and the South Platte Decision Support System. He previously worked for JeHN Engineering in Arvada as a Project Manager. He holds a Bachelor's degree in Civil Engineering from the Colorado School of Mines and is a licensed Professional Engineer in the State of Colorado. Mr. Frank also manages the District 64 Reservoir Company, provides augmentation accounting for numerous well users' groups, and provides technical assistance and coordination in developing and operating various augmentation plans and water supply projects.

Cory Gardner, House Representative, District 63: Representative Gardner is a fifth generation Coloradan, hailing from the agricultural community of Yuma, Colorado. After graduating from Colorado State University, Cory enrolled in the University of Colorado School of Law. Shortly after graduation from law school, he began working for the National Corn Growers Association, eventually serving as the organization's Director of Communications. In 2002, Cory joined the staff of U.S. Senator Wayne Allard. While in Senator Allard's office, Cory served as Legislative Director and General Counsel. In June 2005, a vacancy committee appointed Cory to the Colorado House of Representatives. He was elected to his first full term in November of 2006. Cory has worked hard to represent rural Colorado and agriculture, passing legislation to increase renewable fuel use and development, increase telemedicine opportunities across the state, to expand renewable energy development and to promote Colorado agriculture. Gardner serves on the House Agriculture and Education committees, as well as on the Water Resources Committee. Representative Gardner has been named legislator of the year by the Colorado Livestock Association, Colorado Corn Growers Association and Champion of Rural Colorado by the Independent Bankers. He

Presenters and Moderators - Biographical Information

maintains a private law practice and remains active in the family farm equipment dealership, a business started by his great-granddad in 1915. He and his wife, Jaime, have a three year old daughter, Alyson Grace.

Timothy K. Gates, Colorado State University: Dr. Gates is a water resources systems engineer and a Professor of Civil and Environmental Engineering at Colorado State University. Prof. Gates has served on the faculty at CSU for eighteen years where he has taught academic courses in open channel flow, fluid mechanics, hydraulic engineering, hydraulic structures/systems, hydrology, groundwater engineering, and solid dynamics. His research has focused on analysis, design and operation of open channel flow systems; stochastic simulation and optimization of water resources systems; modeling and analysis of shallow groundwater flow and salt transport; management of water quality (especially salinity and selenium) for irrigated agriculture; drainage of salinity affected regions; multi objective river basin planning; and monitoring and evaluation of irrigation and drainage systems.

Prof. Gates has directed or co-directed numerous research and training projects over the last 19 years, including leading an extensive research effort involving field data collection and modeling of the irrigation-stream-aquifer system of the Lower Arkansas River Valley in Colorado for the last 8 years. In addition, he has served as an independent consulting engineer with the United States Agency for International Development; the United Nations Development Program; Camp, Dresser & McKee, Inc.; Keller-Bliesner Engineering; D'Appolonia Environmental Services; the Denver Water Dept., the Governance Committee of the Platte River Cooperative Agreement, Devon Energy, Pennaco, ARCADIS & GM, the Riverside Ditch Company, Greg Lewicki and Associates, and the City of Pueblo Wastewater Department on projects related to irrigation-and-drainage hydraulics, salinization of irrigated agricultural regions, water quality for irrigated agriculture, irrigation-induced pollutant loading to rivers, and river-basin modeling.

He has designed and conducted numerous short courses and special training programs in open channel flow, irrigation and drainage engineering, and groundwater. Prof. Gates spent a total of about four years in Egypt working on various irrigation projects. He also has consulted in India, Sri Lanka, and Australia on irrigation projects.

Alan Hamel, Arkansas Round Table: Mr. Hamel was appointed as Executive Director of the Board of Water Works of Pueblo in September of 1982. He began his water career as a student in 1960, when he was employed for two summers before being hired as a fulltime pump station operator in 1962. He held various management positions within the organization before accepting the Executive Director position. Alan earned his bachelor of science degree in Business Administration from CSU-Pueblo. Within the local community, he is currently vice-chair of the Historic Arkansas Riverwalk of Pueblo and from 1994 to 2001 served on the Historic Arkansas of Pueblo Commission (past chair). He has been active since 1993, as an ex-officio Board member of the Pueblo Economic Development Corporation. For sixteen years Alan was a director with the Southeastern Colorado Water Conservancy District (past chair), and he maintains involvement in that group in an advisory capacity. In addition, he serves as a board member with the Colorado Foundation for Water Education. He is actively involved in the Colorado State Interbasin Compact Committee (vice-chair) and its ancillary group, the Arkansas Basin Roundtable (chair). In conjunction with that, he has been a member of the Statewide Water Supply Initiative since its inception. Professionally he is a member of the American Water Works Association (George Warren Fuller awardee in 2003) and its section group, the Rocky Mountain AWWA (Council member, trustee). Alan was appointed by the State Governor to serve on the following: Colorado Water Conservation Board (vice chair) from 1995-1999; Colorado Water Resources Power Development Authority (1993-1997); Front Range Water Forum & Arkansas River Coordinating Committee (1995-1996).

Cathy Hare, Upper Black Squirrel Creek Ground Water Management District: Ms. Hare is a writer and journalist for the New Falcon Herald, and serves as President of the Board of the Upper Black Squirrel Creek Ground Water Management District. She graduated from the University of Colorado, Colorado Springs with a major in environmental science. As a long time resident of El Paso County, with concerns about development and resource issues she has taken an active role in promoting water conservation and water management for sustainability, first as a member of the Falcon Property Owners' Association and in recent years as an elected member of the UBSCGWMD Board.

Eric Hecox, Interbasin Compact Process, DNR: Mr. Hecox manages the Interbasin Compact Process for the State of Colorado. The Interbasin Compact Process was created in 2005 through the Colorado Water for the 21st Century Act (HB05-1177), a law that recognizes that meeting the state's water needs required a new process for negotiating and managing Colorado's complex water issues. At the heart of this process is the fundamental notion that dialogue and understanding – between users and between basins – is essential to meeting our long-term needs. To implement this process and encourage dialogue, the legislation created the Interbasin Compact Committee (IBCC) and nine Basin Roundtables. Eric manages the implementation of this process and coordinates the activities of the nine Basin Roundtables and the IBCC.

Prior to joining the State, Eric served as a Natural Resource Specialist to the Bureau of Land Management's National Science and Technology Center under a Presidential Management Fellowship. Under the Presidential Management Fellowship program, Eric worked on rotation with DNR where he assisted Director George in researching and developing the idea of interbasin compacts and provided a framework for House Bill 05-1177 "Colorado Water for the 21st Century Act."

Presenters and Moderators - Biographical Information

As a Presidential Management Fellow with the Bureau of Land Management, Eric provided expertise to federal, state, and field offices on water rights, water quality, water management, and water policy. In this capacity he also taught water rights courses in Montana and New Mexico, compiled state water quality law summaries, and developed an on-line Introduction to Water Law course.

Eric received his B.A. in biology from Lawrence University and prior to graduate school was a Fulbright Scholar at the University of Zimbabwe where he studied community-based natural resource management. He earned a Masters of Science in Environmental Science and a Masters of Public Affairs from Indiana University. As a graduate student, Eric completed a thesis entitled "Collaborative Water Resource Management: Stakeholder Participation in the Colorado River Basin."

John D. Hendrick, Centennial Water and Sanitation District: Dr. John Hendrick has been active in water supply development and district management for the 22,000-acre Highlands Ranch development near Denver, Colorado since its beginnings. His experience with Colorado water rights and water development dates from 1967 when he first worked on the Fryingspan-Arkansas Project as a hydraulic engineer with the Bureau of Reclamation in Pueblo. He was instrumental in developing surface water sources to meet the majority of supply for Highlands Ranch in addition to the deep well groundwater system.

John is a registered Professional Engineer and has a Ph.D. degree in civil engineering from Colorado State University, and undergraduate degrees from the University of Illinois and Cornell University.

As a Director and past president of the South Metro Water Supply Authority, he plays a major role in guiding cooperative regional water supply planning. He is also past president of the Rotary Club of Littleton, President of the Metro Denver Water Authority, and a board member of the Douglas County Water Resources Authority. He is the General Manager of the Centennial Water and Sanitation District which serves Highlands Ranch.

Gregory Hobbs, Colorado Supreme Court: Justice Hobbs was appointed to the Colorado Supreme Court by former Governor Roy Romer in 1996. Colorado voters retained him for a 10-year term which expires in 2009. He was born in Gainesville, Florida in 1944. He received A.B. in History, Magna Cum Laude, from University of Notre Dame, 1966 and received J.D. from the University of California at Berkeley (Boalt Hall), 1971. After law school, he clerked for Judge William Doyle on the 10th Circuit and took up private practice in San Francisco. He moved back to Denver in October, 1973 where he joined the Environmental Protection Agency doing air pollution enforcement. He then moved to the Colorado Attorney General's Office. He returned to private practice, joining Davis, Graham, & Stubbs in 1979 where he started working for the Northern Colorado Water Conservancy District and became their general counsel.

Justice Hobbs is a Member of the American, Colorado and Denver Bar Associations, American Bar Foundation, Colorado Bar Foundation. Admitted to practice in Colorado and California (inactive). Former Adjunct Professor, Environmental Law, Master's Program in Environmental Policy and Management, University of Denver. He serves as Vice-President of the Colorado Foundation for Water Education; Co-Convener, Dividing the Waters (Western Water Judges Project). Former Vice-Chair, Colorado Air Quality Commission. He taught sixth grade in New York City and served with the Peace Corps in South America.

Diane Hoppe, Colorado Foundation for Water Education: Ms. Hoppe has more than 20 year of experience working on water and natural resource issues. Prior to employment as a water resources consultant, she worked in both the public policy arena and private sector before serving eight years in the Colorado General Assembly. Representative Hoppe was the first woman to chair the House Agriculture, Livestock and Natural Resources Committee and in addition to other legislative duties she served in a leadership capacity as the House Minority Whip.

A native of Sterling, Colorado, she is a founding member of the Colorado Foundation for Water Education and is the President of the Foundation's Board of Directors.

Gregg A. Houtz, Department of Water Resources, State of Arizona: Mr. Houtz has been with the Arizona Department of Water Resources since 1994. As Deputy Counsel with the Department's Legal Division, Gregg's work includes Colorado River, Arizona Water Banking Authority, tribal water issues and settlements, underground storage and recovery projects, rural planning, and environmental issues.

Prior service includes: legislative counsel to the Secretary of the Interior; minority counsel to the U.S. House of Representatives Committee on Interior and Insular Affairs; district director for Arizona U.S. Congressman Jay Rhodes; and a private consultant. Gregg received his Juris Doctorate from the Georgetown University Law Center, Washington, D.C.

Melinda Kassen, Trout Unlimited: Ms. Kassen directs Trout Unlimited's Western Water Project, whose mission is to protect and restore coldwater fisheries and their habitat by ensuring sufficient flows of clean water. Since 1998, in Colorado, the project has helped expand the state's instream flow protection program, successfully defeated several proposed water projects that would have threatened fisheries, preserved the US Forest Service's duty to protect flows during permitting, and issued a number of reports, including most recently *Gone to the Well Once Too Often*, which explains why river

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advocates should care about ground water management. She is the environmental and recreational interest representative on Colorado's Interbasin Water Compact Committee. Her water experience includes working at the Environmental Defense Fund's Rocky Mountain Office, where she was involved in the fight to stop Two Forks Dam and representing water quality and water rights clients with the Colorado Attorney General, including the Water Conservation Board for its instream flow program. Melinda also worked for ICF Kaiser, primarily on the clean up of the Rocky Flats site, was Environmental Counsel to the House Armed Services Committee in the 103rd Congress., spent a year teaching environmental and administrative law courses at the University of Denver College of Law and started her law career as a prosecutor in Los Angeles. Born and raised in Cleveland, Ohio, she graduated from Dartmouth College *magna cum laude* and from Stanford Law School.

Doug Kemper, Colorado Water Congress: Mr. Kemper is the Executive Director of the Colorado Water Congress. He served on the Board of Directors from 1990 through 2003 and was elected CWC President (1994) and Treasurer (1996-2003). Prior to joining the Water Congress, Doug spent 20 years as the Water Resources Manager with Aurora Water. He was responsible for the planning, development, and operation of the city's raw water supply system. His activities included water policy and legislative analysis, acquisition of new water supplies, system modeling, and development of intergovernmental agreements.

Doug began his water resources experience by working for 4 years as an engineer with Rocky Mountain Consultants (now Deere & Ault). His primary duties were analysis of agricultural water use, water supply modeling, dam safety risk assessments, and water quality remediation studies. He holds degrees in Water Resources Engineering from University of Colorado (Masters) and Vanderbilt University (Bachelors) and is a registered Professional Engineer.

Betty Konarski, El Paso County Water Authority: Ms. Konarski, Ed.D., is President of El Paso County Water Authority. Betty is the former mayor of the Town of Monument and is Vice President Rampart Realty, Inc. Dr. Konarski has spent her professional life alternating between business and higher education administration. In 1998 she vacated her position as Associate Dean of the School for Professional Studies with Regis University, in Denver, Colorado. Prior to her role with Regis, she directed the Small Business Development Center at Seattle University's Albers School of Business and operated three retail businesses within a shopping center she was part of developing.

While in the Northwest, she served on the Boards of Directors of The Greater Seattle Chamber of Commerce, Seattle/King County Economic Development Council, the Private Industry Council, United Way of King County, and Leadership Tomorrow of Seattle/King County. She has recently joined a group of Tri-Lakes community members to start Tri-Lakes Views, a not-for-profit organization to support the arts and preserve the history of the area.

Dr. Konarski has published and delivered presentations on the topics of small business, the preparation of managers for international assignment, and developing leadership at all levels of an organization. In addition to many presentations across the United States, international presentations include Guongzhou, People's Republic of China, Wanganui, New Zealand, and Brisbane, Australia.

Robert Longenbaugh, Consultant Engineer: Mr. Longenbaugh was born in Durango, Colorado and grew up on an irrigated farm northwest of Cortez. He is a registered professional engineer in Colorado and has both BS and MS degrees from the Ag Engineering Department at Colorado State University.

He dedicated his professional career for 19 years at Colorado State University teaching and doing research on ground water hydrology and related topics, followed by 11 years as the Assistant State Engineer for Groundwater issues in the Colorado State Engineer's Office. Since 1991, he has practiced as a part time consultant water resource engineer and donated significant amounts of his time for public and professional education on the many important issues relative to the use and protection of groundwater, one of Colorado's most valuable resources.

Longenbaugh has served on the organization committee for this conference plus previous artificial recharge conferences sponsored by American Ground Water Trust.

Marsha Loooper, State Representative, District 19: Ms Loooper is a former IBM Network Engineer and a Novell Systems Engineer. Marsha started her own company, Computing Solutions Group, in 1993. She is now a partner in Big Sky Realty, and also owns and operates Phoenix & Associates, a small home building and remodeling company.

Marsha is the former Executive Director of a statewide coalition she helped form, Colorado Citizens for Property Rights, and Chair of the Eastern Plains Citizens Coalition, which opposes the Front Range Toll Road. Marsha currently belongs to the local, state and national Associations of Realtors, the NRA, and Pikes Peak Firearms Coalition, and is also a member of the El Paso County Soil and Water Conservation Society

As well as working the family's ranch in Calhan, the Loopers were co-owners of Waterworks Sales, a multi-state water and sewer pipe distribution company which was ultimately purchased by a national corporation, Hughes Supply, Inc. Lynn remains there as branch manager, but finds time to be active with the Pikes Peak Range Riders and to work on their "Pikes Peak Pivots" committee, which promotes our acclaimed Peaks Peak or Bust Rodeo throughout the country.

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Sandy MacDougall, MacDougall Woldridge & Worley, PC: Mr. MacDougall has been a student of Colorado Water Law since the 1960s. First inspired by Professor Clyde O. Martz at the University of Colorado Law School, Sandy spent his first year after graduation in 1962 as law clerk to Hon. Jean S. Breitenstein, Judge of the U.S. Court of Appeals for the Tenth Circuit. Judge Breitenstein was a scholar-advocate of Colorado Water Law. In 1963, Sandy was fortunate to land what amounted to on-the-job training as a staff attorney for the Board of Water Commissioners of the City and County of Denver. Chief counsel Glenn G. Saunders was one of the leading water lawyers in Colorado. Sandy left Denver for Colorado Springs in 1968, and now practices with the firm of MacDougall Woldridge & Worley, P.C., where he continues to study and practice Colorado Water Law.

Gordon McCurry, Camp Dresser & McKee: Dr. McCurry is a senior hydrologist with Camp Dresser & McKee in Denver, where he has worked since 1985. He is managing the groundwater portion of the South Platte Decision Support System project for the CWCB, which is developing a comprehensive database and groundwater flow model for that basin, and managed the Senate Bill 06-193 Underground Water Storage project that examined aquifer storage in the Arkansas and South Platte River basins' alluvial and bedrock aquifers. Gordon is currently involved with conjunctive use and water resources planning studies in Colorado, New Mexico, California, Oklahoma, Kansas, Texas and Arizona. He has a B.S. from Penn State, a M.S. from West Virginia University and a Ph.D. from the University of Colorado, where he focused on stream-aquifer interactions and water rights. Gordon is a Professional Geologist registered in Texas.

Dennis McGrane, Leonard Rice Engineers, Inc.: Mr. McGrane is a Colorado native who graduated from Dartmouth College in 1985. He has gained over 22 years of experience in the consulting business. He is a registered Engineer and Geologist. Over his career, he has worked for Bechtel; Layne Western; and Leonard Rice Engineers, where he is an Associate and leader of the ground water group. He is currently on the AWRA-Colorado section board of directors and on the ASCE Managed Aquifer Recharge standards committee. He enjoys ground water supply evaluations; well design and testing; pumping system design; computer modeling and evaluating the feasibility and performance of recharge feasibilities in Colorado.

Frank McNulty, State Representative, District 19: Mr. McNulty was raised in the south metro area. Educated at J.K. Mullen High School, Frank went on to undergraduate studies at the University of Colorado-Boulder. Upon graduation from CU, Frank accepted a position in the Office of Congressman Wayne Allard and continued to work for Allard upon his election to the U.S. Senate.

In 1998, Frank returned to Colorado to pursue his law degree at the University of Denver College of Law, where his studies emphasized natural resources and water law. Frank joined Governor Bill Owens' administration in 2000, and currently serves as Assistant Director for Water with the Colorado Department of Natural Resources. As Assistant Director, Frank is responsible for advising on, and the development of, statewide water policy. In 2005, Frank played a significant role in drafting and advocating for passage of legislation that the Denver Post called "the most significant step toward a rational statewide water policy in the last 50 years."

Craig Miller, Orange County Water District, CA: As the Assistant General Manager for the Orange County Water District, Mr. Miller is responsible for overseeing the departments of engineering, operations, hydrogeology, natural resources and resource management. His primary focus at OCWD is the development and operation of programs that sustain and protect the groundwater basin, as well as, maximizing sustainable water production out of the basin.

Prior to his work with the Orange County Water District, Mr. Miller spent three years in the private sector as a civil engineer. Before Mr. Miller's engineering career began, he spent three years traveling the world as a member of the professional tennis tour, playing in the Australian Open, U.S. Open and Wimbledon. His extensive experience at OCWD includes lead the District's pursuit of additional water rights on the Santa Ana River, the development and operation of the Anaheim groundwater replenishment facilities and the Prado Wetlands water quality enhancement facility, which have resulted in enhanced water recharge and reliable water quality for OCWD's recharge program.

Mr. Miller's extensive experience in groundwater recharge and resource management has provided OCWD with consistent, reliable and high quality water that 2.3 million Orange County residents rely on.

Lionel Rivera, Colorado Springs: Mayor Rivera was first elected to an at large City Council seat in April 1997 and re-elected again in April 1999. In April 2001 he was elected by his City Council colleagues to serve as Vice Mayor for a two year term. In April 2003, he was elected Mayor. He is the first Hispanic Vice Mayor and Mayor in the history of Colorado Springs.

Mr. Rivera holds a Bachelor's Degree in Microbiology from Texas Tech University and a Master's Degree in Business Administration from Jacksonville State University. He is Vice President of Investments at UBS Financial Services.

Originally from El Paso, Texas, Rivera came to Colorado Springs in 1984 as an Army Captain at Fort Carson. He has served on many community boards including being a founder and past president of the Colorado Springs Hispanic Chamber of Commerce, serving on the Colorado Springs Greater Chamber of Commerce Board and United Way Board of Trustees and Executive Committee and a co-chair of The Springs Community Action Plan. He is also a mentor in the Big Brothers - Big Sisters school based mentoring program and previously was a Big Brother for a one to one match.

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David W. Robbins, Hill & Robbins: Mr. Robbins is president and co-founder of Hill & Robbins, P.C., where he specializes in the fields of water and natural resources law, water quality, and environmental law. Mr. Robbins received his B.A. from Stanford University in 1966 and his Juris Doctorate from the University of Wisconsin-Madison in 1969. Prior to entering private practice, Mr. Robbins served in the U.S. Army (Captain, 1969-1972) and with the U.S. Environmental Protection Agency, Region VIII (1973-1974). He then joined the Colorado Attorney General's Office as a First Assistant Attorney General and head of the Natural Resources Section at the (1975-77), and later appointed the Deputy Attorney General (1977-1978). Mr. Robbins represented the State of Colorado in a variety of interstate water matters, and served as counsel to the State Engineer in adjudication proceedings and trials concerning basin-wide rules and regulations. He also represented the Colorado Water Conservation Board, and successfully defended the constitutionality of the state's first instream flow protection law.

Since 1981, Mr. Robbins has served as general counsel to the Rio Grande Water Conservation District, where he has led the efforts to defeat speculative proposals to mine the ground water of Colorado's San Luis Valley (see *AWDI v. City of Alamosa*), which ultimately resulted in Congressional action to create the Great Sand Dunes National Park and Preserve. Since 1985, Mr. Robbins has served as Counsel of Record for the State of Colorado in the U.S. Supreme Court case of *Kansas v. Colorado*, No. 105 Original (October Term, 1985), involving the Arkansas River Compact, both before the Special Master and the Court. For over fifteen years Mr. Robbins has served as Special Counsel to the Southwestern Water Conservation District in matters related to negotiations with the Colorado Ute Indian Tribes and the Animas-LaPlata Project and, since its creation in 2004, as General Counsel to the Republican River Water Conservation District. Mr. Robbins also serves as Outside Counsel to the City of Colorado Springs in the areas of water resources, water quality and landuse.

Mr. Robbins is a former member of the Colorado Water Conservation Board (1980-89) and served as its Chairman in 1985-86. Mr. Robbins served as a member of the Colorado River Salinity Control Forum and the Colorado River Salinity Control Advisory Council, representing Colorado, continually from 1979 to 2003, he served as the Forum's Vice Chairman from 1981 to 1984, and as its Chairman from 1984 to 1990. He is a member of the Colorado Water Congress and has served on its Board of Directors for many years, including a term as President in 2005-6.

Mr. Robbins is a fellow of the American College of Trial Lawyers and the American Bar Foundation. He is a member of the American Bar Association and the Colorado Bar Association and is a past Chairman of the Water Law Section of the CBA. Mr. Robbins is admitted to the State Bars of Colorado and California.

Gail Schwartz, Colorado State Senator, District 5: Born and raised in Chicago, Gail Sheridan Schwartz has lived in Colorado since 1967. She resides in Snowmass Village. She holds a B.S. Business Degree in Marketing from the University of Colorado. Gail Schwartz gained recognition as an education leader serving as Vice-Chair of Colorado University Board of Regents. She is committed to organizations preserving Colorado's environment, protecting the state's water, natural resources and agricultural lands.

As Director of Development, and later Acting Director of the Pitkin County Housing Authority, Gail planned and built hundreds of units of affordable housing for her community's senior citizens and working families. In addition to her professional and volunteer efforts on behalf of socially beneficial causes, Schwartz has significant experience in the business world. She acted as a real estate and marketing consultant with banking institutions and developers for seven years as an executive with Sno-Engineering, Inc., a nationally recognized planning firm specializing in ski industry and resort/community development work.

Don Shawcroft, Colorado Agricultural Water Alliance: Mr. Shawcroft is the Chairman of the recently formed, Colorado Agricultural Water Alliance, formed to "empower Colorado agricultural producers to make the most informed and viable decisions regarding Colorado water". He is the Vice-President of Colorado Farm Bureau, the largest general farm organization of the state. Don was elected Vice-President in November of 2000, having served on the board 10 of the previous 14 years. A graduate of the Brigham Young University Agricultural Economics Department, Don is continuing his education as a full time student in the Conejos County branch of the "school of hard knocks". He and his wife, Ann, and their six children ranch with his Father and Mother in a family partnership based in Conejos County. Using some of the land originally settled by the Shawcrofts in the late 1800's, the ranch has expanded through the years and includes leases on US forest service and Bureau of Land Management lands. Don is actively involved with his church and is currently the chairman of the board of directors of the Conejos County Hospital and a director of Mountain States Legal Foundation.

Valois Shea, EPA, Region 8: Ms. Shea, geologist, has been with the EPA Region 8 Underground Injection Control (UIC) Program for 10 years. Ms. Shea leads the UIC Class V Direct Implementation for program for Colorado, and is involved with reviewing and authorizing injection activities for a number of aquifer storage and recovery projects in Colorado. She was also involved with the of Class V National Study, a technical and regulatory review of all Class V wells types, coordinating the technical review of the volume on Aquifer Recharge/Aquifer Storage and Recovery wells. Ms. Shea is also a member of the EPA National ASR Workgroup which is reviewing current regulatory practices and technical issues related to regulation of ASR wells. She is a graduate of Bryn Mawr, BA; and University of Colorado Boulder, MS.

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Harris Sherman, Colorado DNR: Mr. Sherman is the Executive Director of the Colorado Department of Natural Resources. He is a member of Governor Ritter's Cabinet and also serves as the Director of the Colorado Interbasin Compact Commission. This is the second time in his career that he has been DNR director, earlier serving under Governor Richard Lamm. As Director, he oversees Colorado's energy, water, wildlife, parks, and state lands programs.

Harris received his B.A. degree from Colorado College and his law degree from Columbia University Law School. As Managing and Senior Partner of the Denver office of Arnold & Porter, his law practice focused on natural resources, environmental, water, public land, real estate, and Indian law. He has also served on a wide variety of public and private agencies and organizations including Chairman of the Colorado Water Quality Control Commission; Chair of the Colorado Mined Land Reclamation Board; Chair of the Denver Regional Air Quality Council; Commissioner of Mines; Commissioner of the Denver Water Board; Trustee of the Boettcher Foundation; and Trustee of Colorado College. For several decades, he has been active in land conservation efforts with the Nature Conservancy, Colorado Open Lands, and the Trust for Public Land.

Michael D. Shimmin, Vranesh & Raisch, LLP: Mr. Shimmin has been a full time lawyer for the last 29 years, focusing his practice almost exclusively on water law. Mike's interest in water issues began while growing up on an irrigated farm in northeastern Colorado. He obtained his bachelor's degree from CSU in 1975 and his law degree from CU in 1978. His professional career has included extensive practice before the water courts, the Colorado Groundwater Commission, and the Colorado Supreme Court. He has also worked on legislation involving water issues, and has been a member of the Colorado Water Congress State Affairs Committee since 1985. Mike represents a broad range of clients which include municipalities, special districts, ditch companies, ground water management districts, and individual water users. Mike is an at-large member of the South Platte Basin Roundtable and a member of Colorado's Interbasin Compact Committee.

Steven Sims, Brownstein Hyatt Farber Schreck: Mr. Sims is a Shareholder in Brownstein Hyatt Farber Schreck's Water and Public Lands law and Environmental and Land Use groups. He represents clients in all aspects of Colorado water law, including litigation, appeals, administrative and transactional matters. Mr. Sims is the former Senior Water Counsel and First Assistant Attorney General for the Water Unit of the Colorado Attorney General's Office, where he acted as the primary water law advisor for the State and Division Engineers, the Colorado Water Conservation Board, the Division of Wildlife, the Division of Parks and Outdoor Recreation, and other state agencies with water right issues. He is admitted to practice law before the State of Colorado, the United States District Court for the District of Colorado and the United States Supreme Court. He has degrees from University of Colorado, B.A., 1975 and University of Puget Sound School of Law, J.D., 1979

- He co-lead the U.S. Supreme Court original jurisdiction litigation between Kansas, Nebraska and Colorado concerning wells that use the Ogallala aquifer in the Republican River Basin
- Co-authored the 2004 Groundwater Rules for New Confined Aquifer Wells in the San Luis Valley.
- Lead counsel for the 2002 Amended South Platte Groundwater Rules litigation in both the Water Court and the Colorado Supreme Court
- Negotiated on behalf of the State Engineer for HB 02-1414 and SB 03-73, bills passed by the Colorado General Assembly concerning substitute water supply plans and South Platte well augmentation plans
- Lead counsel for the State of Colorado in the Park County Sportsmen's Ranch case. The issues in this case included a complex recharge and augmentation plan involving a five layer finite difference model
- Co-lead the State Engineer's 1996 Amended Arkansas River Groundwater Rules litigation in the division 2 Water Court. This case utilized the hydrologic-institutional model developed in the Kansas v. Colorado, U.S. Supreme Court original jurisdiction litigation

MaryLou Smith, Aqua Engineering, Inc: Ms. Smith is vice president of Aqua Engineering, Inc., an irrigation engineering firm based in Fort Collins, where she served as chief financial and human resources officer for 25 years. Currently she heads up the firm's water conflict facilitation and mediation services. Much of her work revolves around group process design and facilitation for various roundtables and work groups of the Interbasin Compact Process, as well as for water conservancy districts, ditch companies, and agricultural and environmental organizations. After growing up on a cotton and alfalfa farm irrigated by wells in the Pecos Valley of New Mexico, MaryLou earned a master's degree in educational psychology from New Mexico State University. She served twelve years on the Fort Collins Water Board, and now serves on a number of boards including CSU's Water Archives Advisory Board. MaryLou writes and speaks widely on the topic of water conflict, for both Colorado water groups and for the irrigation industry.

Amy Stephens, State Representative, House District 20, Northern El Paso County: Representative Stephens is from House District 20 - Northern El Paso County. Representative Stephens has lived in Colorado for 16 years working in public policy for ten years and owning her own consulting business, *Fresh Ideas Communication & Consulting*. Representative Stephens was elected to the legislature in 2006 and serves as the ranking Republican on the Business & Labor Committee and serves on the Judiciary Committee. Representative Stephens was appointed by the Governor to the P20 Data Technology Subcommittee on

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Education. Representative Stephens' House Joint Resolution HJR 1017 co-sponsored by Senator Jack Taylor on the Study of Alluvial Aquifers was the catalyst for the Colorado Groundwater Forum.

David R. Stewart, President, Stewart Environmental: Dr. Stewart has over 29 years of experience in the environmental engineering consulting business. He started his career with the US Public Health Service working on Indian Reservations and public health issues. He then joined CH2M Hill, one of the largest environmental engineering firms in the world. He was one of the lead engineers for the Denver Water Reuse facility in the early 1980's. He has significant experience with water reuse, for both municipal and industrial clients. He is now the president and CEO of Stewart Environmental Consultants, Inc. He has expertise in the air, water, wastewater, process design, hazardous waste and solid waste areas. He currently has several patents awarded or pending on his various industrial wastewater treatment systems. Dr. Stewart received his Masters Degree from the University of Arizona, and his BS, MBA and PhD from Colorado State University in Environmental Engineering. He is an adjunct faculty member at Colorado State University and teaches courses in industrial wastewater treatment as well as hazardous waste treatment and management.

Andrew Stone, American Ground Water Trust: Mr. Stone is a hydrogeology graduate from London University with additional academic qualifications in education, geography and geology. He has over thirty five years of ground water experience in Africa and the U.S. as a university professor, ground water consultant and ground water advocate & educator. He has first-hand experience of ground water exploration, well design and source protection in a wide variety of geologic environments. As the director of the Trust's education programs he has coordinated over forty conference programs related to aquifer management, Aquifer Storage Recovery, conjunctive use, water banking and well design. From 1990 to 2002, as adjunct professor, he taught an annual course on Ground Water Protection Policy in the Masters Degree Program at Antioch New England Graduate School.

Gary Thompson, W. W. Wheeler & Associates, Inc.: Mr. Thompson is a water resources engineer and president of W. W. Wheeler & Associates, Inc., where he has been employed for 33 years. He has B.S. and M.S. degrees in civil engineering from Texas Tech University and a law degree from the University of Denver. Gary has extensive experience in successful development of industrial and municipal water supplies for many entities throughout Colorado and has appeared as an expert witness in Water Court on numerous occasions. For over 20 years, he has acted as the "manager" of the Widefield Aquifer and has provided engineering for most of the entities that rely on this important water source.

Ralf Topper, Colorado Geological Survey: Mr. Topper is a ground water advocate. He has 26 years of professional geoscience experience and is currently senior hydrogeologist with the Colorado Geological Survey. Ralf has earned advanced degrees in Geology and Hydrogeology. He is a Certified Professional Geologist, Geological Society of America Fellow, President of the Colorado Ground-Water Association, and an active member of both national and state ground water societies. Ralf has authored numerous papers and publications on Colorado's ground-water resources including the recently published Ground Water Atlas of Colorado and Artificial Recharge of Ground Water in Colorado. He is a 20 year resident of Conifer, where he lives with his wife and two sons.

Steve Vandiver, Rio Grande Water Conservation District: Mr. Vandiver is General Manager for the Rio Grande Water Conservation District in the San Luis Valley whose office is in Alamosa, Colorado. As such he is involved in the operation of the Closed Basin Project, which extracts shallow ground water from a sump area of the San Luis Valley for use in deliveries to meet interstate Compact obligations. Mr. Vandiver was the Division Engineer of the Colorado Division of Water Resources for the Rio Grande Basin from 1981 to 2005, was the Engineer Adviser for Colorado for the Rio Grande Compact for 13 of those years and was on the Recovery team for the endangered Southwest Willow Flycatcher for several years. He holds a Bachelor of Science degree from the University of Colorado. Mr. Vandiver has served on the SWSI team and is a current member the Rio Grande Basin Roundtable and is serving as one of the Rio Grande Basin members to the IBCC.

Mr. Vandiver has been intimately involved in a large transition of irrigation practices and change of water rights that have allowed the recharge of aquifers in the San Luis Valley. He has worked with ditch companies in those proceeding to achieve a legal foundation for using their surface water to recharge the aquifer for later extraction from wells. This confirmed a longstanding practice of using ditch water for supporting the two extensive aquifers in the Rio Grande basin. These activities should be of particular interest to the attendees of the conference.