

## **Kelly DiNatale, P.E., D.WRE, BCEE, CLM** *President, DiNatale Water Consultants*

Kelly DiNatale, PE, is the president of DiNatale Water Consultants, a seven-person water resources consulting firm. He started DiNatale Water in 2009 after 23 years of managing the water resources and treatment division for the City of Westminster, Colorado and 6 ½ years as a principal of CDM, a global consulting firm. He has been involved with numerous federal, state, regional and local water supply planning and permitting efforts, evaluations of water supply system reliability, raw and treated water demand forecasting, reservoir accounting and operations, water rights analysis and water court testimony, agricultural water use and efficiency, reservoir management, water quality and treatment, optimization of infrastructure, utility financial planning, and rate and tap fee analysis. He has spent much of his career providing implementable solutions to water challenges.

**Expert Testimony.** Mr. DiNatale has testified as an expert in Colorado Water Court, Division 1 on various water rights issues including augmentation plans, changes of water rights, exchanges, water rights and reservoir accounting and water quality issues. He has also served as a consulting expert. Mr. DiNatale has participated in numerous water court proceedings, both as an applicant and opposer. He has participated in negotiations with the Colorado State Engineer, Division Engineer, and opposers on water rights and reservoir accounting issues. In addition, he has testified as an expert on reservoir accounting before the Oklahoma Water Resources Board.

## **Water Rights**

**Water Rights and Water Supply.** Mr. DiNatale was the co-developer of the original Westminster Water Supply Yield Model. This model was successfully used and defended in Water Court litigation. He also supervised the development and use of several complex water supply models for statewide and regional planning and for local municipal and agricultural clients.

**Water Supply Acquisition and Development.** Mr. DiNatale was an originator of the concept and negotiator for the Clear Creek Water Agreement, a complex water rights exchange and water quality enhancement agreement that settled a 15-year water rights and water quality dispute on Clear Creek, Colorado among the cities of Golden, Thornton, and Westminster, and Coors Brewing Company. Mr. DiNatale developed reservoir and water rights accounting for the operations of Westminster's water supply system, as well as implementation of the Clear Creek Water Agreement, involving multiple water rights sources and shared reservoirs. As a consultant for CDM and President of DiNatale Water Consultants, he has advised numerous clients in multiple basins and states on water supply acquisition and development.

## **Experience**

President,  
DiNatale Water Consultants, Inc.  
2009-present

Principal and Senior Water Resources  
Engineer, CDM, 2003-2009

Water Resources and Treatment  
Manager, City of Westminster,  
Colorado, 1999-2003

Water Resources Manager, City of  
Westminster, Colorado, 1985-1999

## **Certifications**

Diplomate of Water Resources  
Engineering, American Academy of  
Water Resources Engineers

Board Certified Environmental  
Engineer, American Academy of  
Environmental Engineers

Certified Lake Manager, North  
American Lake Management Society

## **Registration**

Professional Engineer: Colorado

**Water Rights and Storage Valuations.** Mr. DiNatale has prepared numerous water rights and storage valuations also testified in district and water court on the value of water rights and storage. Mr. DiNatale has been responsible for the acquisition of water rights with a current market value of over \$500 million.

**Water Rights and Reservoir Accounting.** Mr. DiNatale has evaluated water rights and recommended water rights and reservoir accounting measures to conform with water court decree requirements and maximize beneficial use for municipal and agricultural users in the South Platte, Rio Grande, Colorado and White River basins. He prepared reservoir accounting designed to conform with a settlement between Oklahoma City, the Choctaw Nation, the Chickasaw Nation and the Oklahoma Water Resources Board.

**Ditch and Reservoir Operations.** Mr. DiNatale has served on multiple ditch and irrigation company board of directors in the South Platte basin and served as superintendent for one ditch. In addition, he was a ditch company shareholder for 23 years and assisted with ongoing maintenance. He has experience in ditch and reservoir operations and maintenance, diversion structures, flow measurements, evaluation of seepage, ditch lining methods, right-of-way issues, and ditch and reservoir rehabilitation.

## State and Regional Water Planning

**Regional and Statewide Water Supply Planning.** Mr. DiNatale served on a special committee convened by the State Attorney General and the Colorado Senate and House Agriculture and Natural Resources committees to develop legislation to resolve a South Platte River water rights dispute. In addition, Mr. DiNatale served on the Colorado Governor's Metropolitan Water Roundtable and was a technical committee member on the Denver Metropolitan Water Supply Investigations. He was a representative on Metro Denver's system-wide environmental impact statement. He is currently assisting Carollo Engineers on the Grand River Comprehensive Water Plan for the Grand River Dam Authority in Oklahoma.

**State of Colorado Statewide Water Supply Initiative.** Mr. DiNatale served as Technical Director for the Colorado Statewide Water Supply Initiative (SWSI), a \$2.7 million study of water supply, use, and needs for the Colorado Water Conservation Board (CWCB). This was the first comprehensive analysis of water demands and supplies and alternatives for meeting the future needs of municipal and industrial, agricultural, and recreational users and the environment. Projections of agricultural, municipal, and industrial demands and analysis of water supply availability was conducted. Supply availability was analyzed using the StateMod water allocation model. In a follow up phase, technical round tables addressed water conservation, alternatives to permanent agricultural dry-up, environmental, and recreational needs and alternatives for addressing statewide water supply gaps. SWSI was awarded the 2005 American Consulting Engineering Council of Colorado (ACEC-Colorado) Engineering Excellence Award.

**Technical Director, State of Colorado Inter Basin Compact Process.** Mr. DiNatale served as the initial Technical Director for the Inter Basin Compact Round Table Process, an ongoing process for analyzing and resolving water supply issues across river basins for the Colorado Department of Natural Resources (DNR). This process is a follow up to the Statewide Water Supply Initiative and includes analysis of consumptive and nonconsumptive needs and water supply availability in all river basins through an extensive stakeholder and public involvement process through a basin round table process.

**Rio Grande Basin Implementation Plan.** Colorado Water Conservation Board (CWCB). DiNatale Water Consultants, in conjunction with the Rio Grande Basin Round Table, developed the Rio Grande Basin Implementation Plan for the Rio Grande Basin to address its agricultural, municipal and industrial,

recreational, and environmental needs. The Implementation Plan is being used to assist the basin to proactively meet water needs, through completion of currently planned projects, re-prioritized projects, and development of new projects, operational agreements, flow protections, or other methods as needed. The Basin Plan utilizes existing information developed for the Rio Grande Decision Support System (RGDSS) Groundwater modeling, the ongoing Rio Grande Cooperative and Radar Projects, and other information that is available and relevant to the process. As part of the Implementation Plan, DiNatale Water Consultants developing a RiverWare water rights model of the Rio Grande basin for use in analyzing future water supply scenarios. Over 500 water rights and numerous reservoirs were included in the daily time step model.

**South Metro Water Supply Authority Regional Water Supply Master Plan.** For the South Metro Water Supply Authority Regional Water Supply Authority (SMWSA), Mr. DiNatale directed a Master Planning effort. The SMWSA is composed of 13 water providers, including municipalities and water districts that are primarily dependent on non-renewable groundwater but are seeking renewable surface water supplies in a highly competitive water market. The plan identified future water buildout interim, mid and long-term options, and optimization of raw water storage. Additional investigations evaluated identified regional water supply and infrastructure opportunities and raw water storage requirements. A mid-term plan was developed and adopted. The Regional Water Master Plan was awarded the 2007 ACEC-Colorado Engineering Excellence Merit Award.

**Oklahoma Comprehensive Water Plan.** Mr. DiNatale served as the task leader for the analysis of surface and groundwater supply availability for the Oklahoma Comprehensive Water Plan for the Oklahoma Water Resources Board. This effort included the analysis of the physical and legal availability of groundwater, surface water, and reservoir yields under all hydrologic conditions, water allocation modeling, impacts of climate change on supplies and demands, identification of areas of vulnerability and surplus, and alternatives for meeting future gaps between supplies and demands.

## Local Water Supply Planning

**East Cherry Creek Valley Water and Sanitation District and Arapahoe County Water and Wastewater Authority Conjunctive Use Alluvial Aquifer Recharge Program.** DiNatale Water Consultants is assisting East Cherry Creek Water and Sanitation District and Arapahoe County Water and Wastewater Authority in the south Metro Denver area to develop a permanent renewable water supply through the development and implementation of an innovative alluvial aquifer recharge and augmentation program. These two water providers were reliant on a non-renewable groundwater source and were facing significant reductions in existing water supply due to declining groundwater levels and reduced well yields. This fast-track project commenced delivery of a renewable water supply to East Cherry Creek Valley in 2006 and Arapahoe County in 2013. DiNatale Water is assisting the District and Authority on water supply planning and operations and water quality and reverse osmosis concentrate management issues on the project. In addition, complex reservoir accounting, river exchanges, well pumping depletions, and recharge accretions are required, and DiNatale Water Consultants has developed detailed reservoir and water rights accounting to meet the requirements of the water court decrees.

**Halligan Water Management Project Environmental Impact Statement.** DiNatale Water Consultants is serving as hydrology, water supply modeling and alternatives consultant for the Army Corps of Engineers' third-party contractor team for the Halligan Water Supply Project for the City of Ft. Collins in northern Colorado. The project involves preparing an environmental impact statement for the enlargement of Halligan

Reservoir. Modeling involves the extensive use of the MODSIM water allocation model platform as well as customized Excel-based models and the development of logic for reservoir operations.

**United Water and Sanitation District, Water Supply, Water Quality, Infrastructure, and Operations**

**Planning.** DiNatale Water Consultants is assisting the United Water and Sanitation District in planning and implementation of water supply projects to meet the needs of various Colorado water providers. The District's goals are to facilitate the acquisition, diversion, storage, carriage delivery, treatment, transmission, distribution, and provision of water to those who voluntarily choose to use the system. Activities include water acquisition and transfer, design, finance and construction of diversion structures, pumping facilities, reservoirs, and wells. Mr. DiNatale is assisting the District on water supply planning and operations and has developed Excel-based modeling tools to analyze and optimize reservoir storage and alternative project configurations. DiNatale Water serves as the water rights operations and accounting expert on United's water court cases.

**City of Northglenn Integrated Water Resources Plan.** Mr. DiNatale managed the development of an Integrated Water Resources Plan (IWRP) for the City of Northglenn, a suburb in the metropolitan Denver area that is experiencing declining water supplies due to the urbanization within its agricultural exchange project. Modeling of reservoir firm yield water supply and alternatives was conducted, and decision support tools were used to evaluate renewable water supply alternatives. The primary recommendations of the IWRP were successfully implemented by Northglenn.

**Water Resources Implementation Plan. Town of Castle Rock, Colorado and the Castle Pines and Castle Pines North Metro Districts.** Mr. DiNatale evaluated alternatives for maximizing beneficial reuse of treated wastewater and utilizing available surface water rights. Decision support modeling and facilitated workshops guided the evaluation of diverse alternatives. He assisted in developing an implementation plan to maximize the beneficial use of these renewable supplies.

**Castle Pines North Metropolitan District Integrated Water Resources Plan.** For the Castle Pines North Metropolitan District in Colorado, Mr. DiNatale led the development of an Integrated Water Resources Plan (IWRP) and long-range water supply. The District was dependent upon non-renewable Denver basin groundwater sources. The long-term yield of existing groundwater supplies was evaluated, and decision support tools used to evaluate renewable water supply alternatives. This project included extensive public involvement. Recommendations of the IWRP were successfully implemented by Castle Pines North.

**Santa Fe Long-Range Water Supply Plan.** Mr. DiNatale served as a technical advisor on the City of Santa Fe, New Mexico's long-range water supply plan, assisting with the development of a water supply and reservoir model using STELLA, decision support tools, analysis of water rights and water supply alternatives, and recommendations and implementation strategies for meeting Santa Fe's long-range water supply needs.

**South Platte Decision Support System (SPDSS) Surface Water Model St. Vrain Basin. Colorado Water Conservations Board (CWCB).** DiNatale Water Consultants, in conjunction with Brown and Caldwell, is developing a StateMod surface water model of the St. Vrain River as part of the SPDSS. The model uses a data-centered approach that incorporates data from the State's hydrologic database, HydroBase, consumptive use analyses, and other data collected as part of the SPDSS over the past decade. The resulting StateMod model will be integrated with models of other major watersheds in the South Platte basin to form a basin-wide planning tool.

## Cooperative Water Supply Projects

**Rio Grande Cooperative Project.** The San Luis Valley Irrigation District (Irrigation District) and Colorado Parks and Wildlife (CPW), with the financial assistance of the Colorado Water Conservation Board (CWCB) developed the Rio Grande Cooperative Project. The CWCB provided grants and loans that are being used to fund the rehabilitation of Rio Grande Reservoir. DiNatale Water Consultants served as the project manager on the Rio Grande Cooperative Project, a collaborative effort between the Irrigation District and CPW to develop operational scenarios designed to optimize the operations of Rio Grande and Beaver Park Reservoirs to enhance yields for the Irrigation District, CPW and other water users, and provide for environmental and recreational enhancements. DiNatale Water Consultants developed a water rights and operations model of the mainstem Rio Grande River in Colorado to analyze the impacts of alternative scenarios of coordinated operations for municipal and industrial uses, augmentation, environmental and recreation purposes, Rio Grande River Compact compliance, and overall river administration.

**Rio Grande Reservoir Multi-purpose Enlargement Feasibility Study and Preliminary Design.** DiNatale Water Consultants served as the project manager on a series of studies for the San Luis Valley Irrigation District examining the potential for a multi-purpose enlargement of the existing 55,000 AF Rio Grande Reservoir. A water allocation model was developed that displayed how releases could be timed to provide for environmental and other instream needs while maximizing deliveries for irrigation, M&I, and compact deliveries. Geotechnical, water rights, interstate compact, and environmental permitting considerations were included in the preliminary design. Implementation of plan recommendations is underway. DiNatale Water Consultants assisted Western Land Group in the federal land exchange and environmental assessment with the U.S. Forest Service that will allow the reservoir to be rehabilitated. Mr. DiNatale worked with the Army Corps of Engineers on the on the issuance of the 404 permit required for the rehabilitation.

**Farmers Reservoir Irrigation Company Alternative Agricultural Transfer Methods Project.** DiNatale Water Consultants lead a team of consultants and Colorado State University researchers on the analysis of alternative agricultural transfer methods. The project included interviews of agricultural and municipal and industrial users, water market experiments, analysis of the water court transfer challenges, and development of an operations model to retime deliveries using alluvial recharge.

**Rio Grande Watershed Emergency Action Coordination Team (RWEACT). Hinsdale County.** DiNatale Water Consultants lead the initial RWEACT effort to bring together local, state, and federal partners to develop an effective, coordinated approach in the deployment of immediate actions to directly address fire-caused natural hazards resulting in the need for the emergent protection of human life and property and the natural health of the Rio Grande River watershed and its environment. This included immediate implementation of monitoring efforts to determine risk and a subsequent public information campaign for safety relating to flash floods and debris flows. RWEACT also focused on increased collaboration and leverage with mission-aligned agencies for fire recovery efforts and the identification of economic impacts and potential recovery opportunities.

**Use of Alternative Transfer Methods (ATM) to Increase Supplies for Conejos Basin Agriculture, Municipal and Environmental Purposes. Conejos Water Conservancy District.** Mr. DiNatale evaluated a potential ATM project that involved enlarging Trujillo Meadows Reservoir, located in southern Colorado. The project is intended to preserve agriculture in the Conejos Water Conservancy District and provide a reliable augmentation supply for the towns located within the Conejos Water Conservancy District that currently rely on groundwater for municipal supply. In addition, the project also analyzed other possible multiple-objective benefits, including enhanced recreational opportunity at Trujillo Meadows Reservoir, potential environmental benefits such as enhanced riparian habitat and re-timing of streamflows on the Rio de los

Pinos and on the Conejos River below Platoro Reservoir. A follow up project, the Conejos Cooperative Project, is underway evaluating alternative reservoir sites, Rio Grande Compact issues, river administration, additional modeling, and expanded multi-use benefits.

## Water Conservation Planning

**Castle Pines North Water Conservation Plan.** Mr. DiNatale served as technical advisor for the development of the Castle Pine North Metro District Long-Range Water Conservation Plan. This was the first water conservation plan to be developed under new guidelines developed by the Colorado Water Conservation Board (CWCB) and was funded in part by a grant from the CWCB.

**East Cherry Creek Valley Water Conservation Plan.** Mr. DiNatale prepared the East Cherry Creek Valley Water Conservation Plan and served as an advisor on the 2018 update to the Water Conservation Plan.

**Town of Erie Water Conservation Plan.** Mr. DiNatale served as project manager for the Town of Erie Water Conservation Plan.

**Water Demand Analysis.** Mr. DiNatale has led water demand forecasting efforts for a variety of local and regional water providers and for the Colorado Statewide Water Supply Initiative. Mr. DiNatale partnered with the Home Builders Association of Metropolitan Denver on determining actual water use for various residential user classes, evaluating water demand reduction strategies and the development of a GIS project that linked parcel, aerial photos, land use, and utilities GIS coverages with water billing, tax assessor, and building permit databases, creating a powerful tool for analyzing water demand.

## Infrastructure Planning

**Master Planning Efforts.** For a number of clients and the City of Westminster, Mr. DiNatale has been involved as project manager and technical director on the development and implementation of raw water supply, treated water, wastewater, and reclaimed water master plans.

**Capital Improvement Projects.** Mr. DiNatale has provided project management, technical direction or oversight for several major capital improvement projects (CIPs) including:

- Preliminary design of the rehabilitation of a 52,000 acre-foot reservoir
- Renovation of a 43,000 AF reservoir
- Permitting, planning, and implementation of an alluvial storage and recovery project including wells and groundwater recharge, initial phase 10 MGD reverse osmosis water treatment plant, 32 mile 48" pipeline and two pump stations
- Permitting, design, and construction of new raw water storage
- Rehabilitation and process optimization of a 44-mgd water treatment facility and high service pump station
- Pre-design of an expansion of a 9.2-mgd wastewater treatment facility
- Design-build of a 12 MGD microfiltration membrane water treatment facility.

**Town of Erie Non-potable System.** Mr. DiNatale led a team that prepared a Non-potable Water Master Plan for the Town of Erie. The plan included projected demands, supply analysis, reclaimed reservoir operations, and an infrastructure layout that included potential coordinated operations of non-potable ditch and reclaimed deliveries. Recommendations on non-potable water rates and tap fees were also developed.

**Water Treatment Pilot Testing and Evaluations.** Mr. DiNatale has been involved with pilot testing of various treatment processes for reclaimed water and potable water treatment including pretreatment and continuous backwash filters micro, ultra and reverse osmosis membrane filtration processes and reverse osmosis brine minimization, and zero liquid discharge.

**Water Rates and Tap Fees Development.** Mr. DiNatale, for numerous municipal clients, has developed water and wastewater rates and tap fees and analyzed various rate and tap fee structures for cost of service and revenue requirements. Experience includes increasing block rate and water budget rate structures and tap fees (system development charges) based on alternate methods such as irrigated area and user type to improve utility cost recovery and customer equity compared to other methods such as meter size.

**Water and Reclaimed Treatment Facility Design / Construction/ Operation.** Mr. DiNatale provided oversight for the design, construction, and operation of a 6-mgd reclaimed water treatment facility, which went online in 2000. He also provided oversight for a 15-mgd membrane water treatment facility, which went online in 2002.

## **Water Quality and Lake and Reservoir Management**

**Rivanna Water and Sewer Authority Reservoir Management Plan.** DiNatale Water Consultants teamed with Dr. Alex Horne of Alex Horne Associates, an internationally experienced limnologist, on developing reservoir management strategies for five reservoirs owned by the Rivanna Water and Sewer Authority in Charlottesville, VA. Mr. DiNatale assisted Authority staff in establishing a reservoir monitoring program, conducted analysis and trending of water quality data, and recommended reservoir operations strategies. Rivanna is in the process of implementing the installation of an oxygenation system for Beaver Creek Reservoir.

**East Cherry Creek Valley Water and Sanitation District Reverse Osmosis Return Flow Discharge Permitting.** DiNatale Water Consultants assisted the East Cherry Creek Valley Water and Sanitation District with Colorado Department of Public Health and Environment NPDES discharge permitting for the return flow from its planned 10 million gallon per day reverse osmosis water treatment facility. DiNatale Water is also assisting the District in ongoing water quality monitoring and protection activities.

**Water Quality, Watershed Protection and Reservoir Management.** DiNatale Water Consultants served as a Board member for the Barr-Milton Watershed Association and is currently a Technical Committee member. BMW developed total Maximum Daily Loads (TMDLs), for Barr and Milton Reservoirs in Colorado. Mr. DiNatale previously led the establishment of the Standley Lake and Clear Creek water quality monitoring programs and was the lead negotiator for the Clear Creek Watershed Management Agreement. At the time he started at Westminster in 1980, Standley Lake was experiencing significant and regular taste and odor events. The successful implementation of the comprehensive watershed and reservoir management plan has resulted in no taste and odor events since 1988 and the delay of the need to implement hypolimnetic aeration. He also proposed and implemented the in-situ testing for Eurasian water milfoil control. Mr. DiNatale presented expert testimony in Colorado Division 1 Water Court on the impacts of wastewater

discharges on reservoir and drinking water quality that contributed to a favorable court ruling, eventually leading to a comprehensive settlement of water quality issues on Clear Creek.

**Denver Water Marston Reservoir In-Lake Treatment Alternatives and Oxygenation System Design.** Under Mr. DiNatale's direction, CDM working with Alex Horne Associates, conducted an evaluation of in-lake water quality management options to mitigate taste and odor issues at the Marston WTP. Denver Water then engaged CDM to design the selected approach -- a new oxygenation unit that was implemented on a fast-track schedule.

**Denver Water Conduit No. 15 Wetlands Pretreatment Alternatives Evaluation.** Under Mr. DiNatale's direction, CDM, working with Alex Horne Associates, prepared conceptual designs for constructed wetlands treatment to address emerging contaminants from an urbanizing watershed.

**Singapore Marina Barrage Reservoir Project.** Mr. DiNatale served as technical advisor on potential water quality impacts and evaluation of recreation management and carrying capacity of Singapore's Marina Barrage Reservoir, as the island nation has limited water supplies and must import water from Malaysia. Mr. DiNatale prepared an evaluation of the recreational carrying capacity of the reservoir, which was incorporated into the final report recommendations.

**Oklahoma City Swim Beach Study.** Mr. DiNatale assisted SRB and Carollo Engineers in a feasibility of installing swim beaches on several of its water supply reservoirs. Mr. DiNatale provided recommendations of swim beach design and monitoring plans and evaluated water quality data.

**Colorado Front Range Reservoirs Water Quality Studies.** Mr. DiNatale has studied the water quality in Colorado Front Range drinking water reservoirs for over 30 years. He has presented the results at regional and national forums.

## Professional Activities

American Water Works Association (Life Member)

American Water Resources Association (Colorado)

American Academy of Water Resources Engineers

American Academy of Environmental Engineers

North American Lake Management Society, Regional VIII Director 2000-2003

Colorado Lakes and Reservoir Management Society, President 1997, 2018

Colorado Water Congress



## Publications and Presentations

“Western Water Rights”. *North American Lake Management Society Annual Symposium*, November 2017.

“Evaluation of Management Methods for a System of Drinking Water Reservoirs in Virginia” (co-author with Alex Horne, Chris Newton and Andrea Terry.) *North American Lake Management Society Annual Symposium* November 2017.

“Survey of Drinking Water Reservoir Monitoring and Management Practices” (co-author with Alex Horne, Chris Newton and Andrea Terry.) *North American Lake Management Society Annual Symposium*, November 2017.

“Evaluation of External v. Internal Loading in Beaver Creek Reservoir, Crozet, Virginia” (co-author with Alex Horne, Chris Newton and Andrea Terry.) *North American Lake Management Society Annual Symposium*, November 2017.

“Water Provider and Water Owner Attitudes about ATMs and Real-life Hurdles to Success: (co-author with Drew Damiano.) Colorado Water Congress Summer Alternative Transfer Methods Workshop, Summer 2017.

“The Science Behind Water Quality” (co-presentation with Helen Dawson.) *35<sup>th</sup> Annual ABA Water Law Conference*, March 2017.

“ECCV Water Supply Project: Alluvial Groundwater, RO and Brine Disposal “ (co-author with Chris Douglass.) *2011 American Water Works Association Rocky Mountain Regional Conference*, September 2011.

“Planning, Permitting and Design of an Inland Brackish Groundwater Supply Project” (co-author with Dave Kaunisto and Doug Brown.) *2010 National Water Reuse Symposium*, September 2010.

“Colorado Water Rights: Opportunities and Constraints to Reuse” *2009 Water Reuse Workshop, Colorado Water Reuse, Rocky Mountain AWWA and WEF*, August 2009.

"Considerations in the Selection, Design and Installation of a Mile High Reservoir Oxygenation System" (co-author with Sarah Dominick, Alex Horne and Chris Fahlin.) *North American Lake Management Society Annual Symposium*, November 2008.

"Evaluation of Drinking Water Reservoir Inflow Pre-treatment Options to Address Conventional Pollutants and Micro-constituents" (co-author with Travis Bray, Alex Horne and Ted Johnson.) *North American Lake Management Society Annual Symposium*, November 2008.

“Oklahoma Comprehensive Water Plan – Statewide Water Supply and Demand Analysis” *Oklahoma Governor’s Water Conference*, October 2008

"Lessons Learned from the 2002 Drought: Implications for Municipal Water Supply Planning" *Colorado Governor’s Conference on Managing Drought and Climate Risk* 2008.

Water Law and Allocation in the Southwest, Lakeline (Publication of the North American Lake Management Society) Winter 2009.

Needs of the Consulting Engineering Sector and Strengths and Weaknesses of Today's Graduates, Journal of Contemporary Research and Education, July 2008.

Meeting Colorado's Future Water Supply Needs: Opportunities and Challenges Associated with Agricultural Conservation Measures, co-author with Reagan Waskom and Todd Doherty, presented by the Colorado Agricultural Water Alliance, 2008.

"Integrated Water Resources Planning" *Utah Water Quality Alliance, 2008 Annual Retreat.*

"Enlarging the Rio Grande Reservoir: A Multi-Use Multi-Benefit Water Project" (co-author with Matt Bliss and Travis Smith) *American Water Resources Association Annual Symposium, 2007.*

"Developing Recreation Management Guidelines Compatible with 3-in-1 Goals: Singapore's Reservoir in the City" (co-author with Karen E. Kelley, Chang Chian Wui, Cheng Geok Ling and Ms Karen Kang. *North American Lake Management Society Annual Symposium, 2007.*

"Recapture of Return Flows: Emerging Trends in the Arid West" (co-author with Steve Witter, John Rehring, Dave Kaunisto and James McGrady.) *WateReuse Association Annual Conference, 2007*

"City of Northglenn Colorado Integrated Water Resources Planning Process" (co-author with David Allen.) *Rocky Mountain Section American Water Works Association Regional Conference, 2007*

"South Metro Water Supply Authority Regional Water Master Plan" *American Water Resources Association Colorado Chapter Annual Symposium, 2007*

"Water Quality Standards in Augmentation Plans and Exchanges: What are They and What Should They Be?" *Water Quality in Colorado Water Rights Cases Colorado Continuing Legal Education Workshop, 2006.*

"Municipal Water Supply Planning for Drought – A Colorado Perspective" (co-author with John Rehring and Courtney Pepler.) *Managing Drought Specialty Meeting Geological Society of America, 2006*

"Finding Win-Win Solutions to Colorado's Future Water Supply Challenges" (co-author with Susan Morea.) *Special Districts Association of Colorado Annual Meeting, 2006.*

"The Role of Conservation in the Statewide Water Supply Initiative" (co-author with Veva McCaig.) *Colorado Water Conservation Board sponsored Water Conservation Workshop, 2006.*

"Reserving Resources," (co-author with S. Morea and N. Rowan.) Published in *Public Works Magazine*. August 2006.

"Colorado's Statewide Water Supply Initiative" (co-author with Rick Brown, CWCB, and Sue Morea and Nicole Rowan, CDM.) *AWWA Water Sources Conference, 2006, AWWA Rocky Mountain Regional, 2005 and Colorado Water Congress, 2005.*

"Reuse Opportunities and Constraints: Colorado's Statewide Perspective" (co-author with John Rehring and Tim Cox.) *2005 WateReuse Annual Symposium.*

"Municipal Water Supply Planning for Drought." *Colorado Water Congress Annual Convention, 2005.*

“Evaluation of Concentrate Disposal Options for Inland Alluvial Brackish Groundwater Treated by Reverse Osmosis” (co-author Kevin McCurdy.) *Natrional Salinity Summit*, 2004.

“Cooling Colorado’s Water Wars,” (co-author with Rod Kuharich and Rick Brown, CWCB and Sue Morea and Nicole Rowan.) Published in *American City and County*. December 2004.

“A Successful Approach to a Membrane Water Treatment Plant Design/Build Project”, (co-author with Kent Brugler, Diane Phillips, Tom Settle, Tom Scribner, Paul Fischer, Vincent Hart and Mel Spangler.) *Rocky Mountain Section AWWA Regional Conference*, 2002.

“Getting the Most Out of Your Monitoring Data.” Chairman and presenter at the *Colorado Lakes and Reservoir Management Association Workshop*. 2002.

"Integrity Testing of Membranes" (co-author with Christian Colvin, Rod Brauer, and Tom Scribner.) *American Water Works Association Membrane Treatment Specialty Conference*. 2001.

"Comparison of Water Quality in Colorado Drinking Water Reservoirs" (co-authored with Tom Settle.) *North American Lake Management Society Annual Symposium*. 2001.

“Water Quality Monitoring Results for Colorado Front Range Drinking Water Reservoirs”, (co-author with Tom Settle and Jean Marie Boyer.) *Colorado Lake and Reservoir Management Association Fall Conference*, 2001.

"An Excel-based, Mechanistic Water Quality Model for Standley Lake, Colorado" (co-author with Jean Marie Boyer, Steve Chapra, and Tom Settle.) *North American Lake Management Society Annual Symposium*. 2000.

"Pilot Testing of Membranes" (co-author with Rod Brauer, Christian Colvin, and Tom Scribner.) *American Water Works Association Annual Conference*, 2000.

"Show Me the Savings: Do New Homes use Less Water?" (co-authored with Peter Mayer and Bill DeOreo.) *American Water Works Association Annual Conference*, 2000.

"GIS Development and Application in the United States, Westminster, Colorado: A Case Study" (co-author with Sheila Beissel, Dawn Ortega, and Katie Leone). *Korea Geospatial Institute Conference on GIS*, 2000.

"Water Resources Challenges in the United States: Water Treatment and Water Reuse." *Korea Institute for Construction Technology and Korea University*, 2000.

"When Does a Royal Flush Beat a Full House of Water Rights?" (co-author with Lee Johnson, Cynda Lower, and Tom Settle.) *North American Lake Management Society Annual Symposium*, 1999.

“To Tower or not to Tower – Selecting a Reservoir Withdrawal System” (co-author with Tom Settle, Jean Marie Boyer and James. McCarthy.) *North American Lake Management Society Annual Symposium*, 1999.

"Westminster Membrane Pilot Plant Program" (co-author with Rod Brauer, Tom Scribner, and Christian Colvin.) *Rocky Mountain American Water Works Association and Water Environment Federation Joint Technical Advisory Committee Meeting*, 1999.

"Innovative Approaches to Water and Wastewater Tap Fees – Westminster, Colorado." *Rocky Mountain American Water Works Association and Water Environment Federation Joint Technical Advisory Committee Meeting*, 1999.

"Standley Lake Nutrient Control Alternatives" (co-author with James Wulliman and Tom Settle.) *North American Lake Management Society Annual Symposium*, 1998.

"Trophic State Indices – Do Any Make Sense for Colorado?" (co-author with Alex Horne and Tom Settle.) *Colorado Lake & Reservoir Management Association Fall Conference*, 1998.

"Pilot Plant Study for the Westminster, Colorado Reclaimed Water Treatment Facility" (co-author with Mark Maxwell, Harry Britton, and Tom Settle). *Water Environment Federation Annual Conference*, 1998.

"The Incorporation of End Use Water Data in Municipal Water Planning" (co-author with William DeOreo.) *American Water Works Association Annual Conference*, 1997.

"Evaluation of Nutrient Control Alternatives for a Municipal Supply Reservoir" (co-author with Alex Horne, Peter Binney, James Wulliman and Tom Settle.) *North American Lake Management Society Annual Symposium*, 1996.

"Development of Trophic Status Indicators for a Municipal Supply Reservoir" (co-author with Alex Horne and Tom Settle.) *North American Lake Management Society Annual Symposium*, 1996.

"Upper Clear Creek Watershed Management Model and Standley Lake Nutrient Standards" (co-author with Tom Settle.) *Association of Engineering Geologists (Colorado Chapter) Meeting*. 1995.

"Upper Clear Creek Watershed Management Model" (co-author with Susan Morea and Brian Janonis.) *American Water Works Association/Water Environment Federation Rocky Mountain Regional Conference*, 1994.

"Standley Lake Protection Efforts" (co-author with David Kaunisto.) *North American Lake Management Society Annual Symposium*, 1991.

"Implementation of Big Dry Creek Effluent Reuse for the City of Westminster, Colorado" (co-authored with Daniel Strietelmeier and Mark Van Nostrand.) *American Water Works Association/Water Environment Federation Rocky Mountain Regional Conference*, 1991.

"Establishing Rationale for Management Strategies to Protect a Water Supply" (co-author with George Budd and Annette Barnard.) *American Water Works Association Annual Conference*, 1984.

"Westminster's Increasing Block Rate Water Pricing Structure". *Colorado Water Congress Symposium on Impacts of Water Conservation*, 1983.

"Westminster's Comprehensive Water Conservation Program." *Southwestern Conference on Water Conservation*, 1982.

"An Assessment of Water Use and Policies in Northern Colorado Cities." Colorado Water Resources Research Institute Technical Report #28. 1981.

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"Municipal Water Use in Northern Colorado: Development of Efficiency-of-Use Criterion" (co-author with Joanne Greenberg, J. Ernest Flack, and Anne U. White). Colorado Water Resources Research Institute Completion Report #105. 1980.