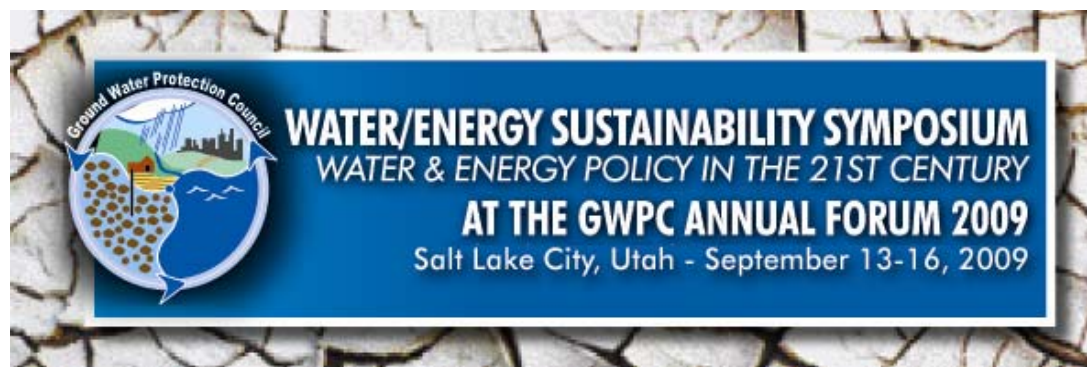

Sponsored by



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The Ground Water Protection Council (GWPC) is a national non-profit organization, founded in 1983. The *GWPC Annual Forum* brings together state and Federal agency representatives with the responsibility for ground water/drinking water protection with industry, researchers, and environmental groups in a congenial venue on the latest technology and policy developments. For the last 26 years, the *Annual Forum* has been a major gathering, which brings these groups together to foster discussions on safeguarding the nation's ground water supplies.

At the *Water/Energy Symposium* we will explore the complex relationships between water resources, quality, and sustainability, with energy development and generation, with the goal of informing policy decisions at state and federal levels. The gathering will investigate various energy sectors and their impacts on water quality and quantity, as well as those water-use-intensive institutions that need and rely on energy.

Hilton Salt Lake City Center, Salt Lake City, UT
September 13-16, 2009

The GWPC is a national association of state ground water and underground injection control agencies whose mission is to promote the protection and conservation of ground water resources for all beneficial uses, recognizing ground water as a critical component of the ecosystem.

The GWPC provides a forum for stakeholder communication and research in order to improve governments' role in the protection and conservation of ground water.

Acknowledgements: *Water/Energy Sustainability Partners*



www.NGWA.org



www.ASDWA.org



www.NRWA.org



www.PTTC.org



www.westgov.org/wswc



www.AllianceForWaterEfficiency.org



www.IOGCC.org



www.strongerinc.org



www.oilshaleassoc.org



www.NESC.wvu.edu



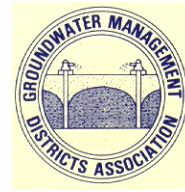
www.Groundwater.org



www.WCEE.org



www.Geosociety.org



www.GMDAUSA.org



www.RiverNetwork.org



www.WESTCAS.org



www.NACWA.org



www.WERF.org



www.PurposeFocusED.org



www.WaterResearchFoundation.org



www.WestGov.org



www.edf.org



www.WIPP.org



www.AWWA.org



www.ACWA.com



www.EWRInstitute.org

On behalf of the Symposium Planning Committee... **THANK YOU!**

Water/Energy Sustainability Symposium Committee

Leslie Savage – Chair - Texas Railroad Commission
Marty Link – Chair - Nebraska Department of Environmental Quality
Lori Wrotenbery - Oklahoma Corporation Commission
Dan Jarvis & Gil Hunt - Utah DNR Division of Oil & Gas & Mining
James Martin - West Virginia DEP, Office of Oil & Gas
Tom Tomastik - Ohio DNR Division of Oil & Gas & Mining
Bill Bryson – Kansas Geological Survey
Mark Fesmire - New Mexico Oil Conservation Division
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Dave Terry - Massachusetts Department of Environmental Protection
Jamie Crawford - Mississippi DEQ Office of Land and Water Resources
Pete Goodmann - Kentucky Division of Water
Doug Hansen - Utah DEQ
Beth Hall & Roy Simon - EPA Office of Ground Water & Drinking Water
Andy Crossland - EPA Office of Water
Sandra McSurdy - DOE, NETL Strategic Center for Natural Gas & Oil
Natenna Dobson - DOE Office of Oil and Natural Gas
Michael Bednarz - DOE, NETL, Western Region Clean Cities Program
Art Hartstein - TMS, Inc.
John Veil - Argonne National Labs
Mike Hightower - Sandia National Labs
Chris Reimer - National Ground Water Association
David Alleman - ALL Consulting
Cat Shrier, WaterCat Consulting
Mary Musick - Musick Groundwater Consulting
Rebecca Thingelstad - Anadarko Petroleum Corporation
Mike Parker - Exxon Mobil
GWPC Staff

Water/Energy Sustainability Symposium

@ the

2009 GWPC Annual Forum

Saturday, September 12

Pre-Conference Field Trip

Meet in Hilton lobby

Session Staff: Steve Musick

12:15-4:30 Tour of Bingham Canyon Mine and Water Treatment Facility (limited to first 45 people)

Stop 1: Bingham Canyon Mine overlook and Mining Museum

The Bingham Canyon Mine is an open-pit mining operation extracting a large porphyry copper deposit southwest of Salt Lake City, Utah in the Oquirrh Mountains. The mine has been in production since 1906 and has resulted in the creation of a pit over 0.75 miles deep, 2.5 miles wide and covering 1,900 acres. It is the world's largest man-made excavation.

Stop 2: Southwest Reclamation Area

Stop 3: Bingham Canyon Water Treatment Plant – Tour

The Southwest Jordan Valley Groundwater Project extracts precious groundwater from deep aquifers in the southwestern Salt Lake Valley that have been impacted by historic mining activities and treats it through reverse osmosis in the Bingham Canyon Water Treatment Plant, constructed and operated by Kennecott Utah Copper Corporation. The treated water is then delivered to the local conservancy district where it is tested, pumped, conveyed, stored and delivered to the cities of West Jordan, South Jordan, Riverton and Herriman.

Sunday, September 13

8:00 am - Registration open

9:30-11:30

Room: Topaz

Session Staff: Mike Paque

GWPC Board of Directors Business Meeting (open to everyone)

11:30-1:00 LUNCH on your own

1:00-5:00 National Ground Water Strategies Advisory Committee Workshop

Room: Alpine West

Abstract #1

Session Staff: Mary Musick

The NGWSAC was formed by the GWPC Board of Directors to provide an organized venue to evaluate the need for a coordinated, national plan of action emphasizing the protection and sustainable use of ground water, and providing for adequate support to state, regional, and local ground water protection, management, and conservation programs.

The NGWSAC, with the assistance of GWPC and NGWA, will host a workshop as the first step in a more formal process of collaboration and coordination with other interested parties to identify key elements that should be part of national ground water policies/strategies. The purpose of this workshop will be to: identify the fundamental, over-arching principles regarding ground water protection, management, and sustainability and to identify the top 5 to 7 'tenets' that should serve as the framework for a national ground water policy/strategy.

Based upon the discussions at the workshop and additional future meetings, the NGWSAC will identify the key principles of national ground water protection, management, and conservation program strategies, key constraints and benefits, key stakeholders and important implementation requirements.

4:30-6:00

Room: Seminar Theater

Abstract #2

Session Staff: Mike Nickolaus

GWPC Water /Energy Division Meeting

Division Chair- Leslie Savage, Texas Railroad Commission

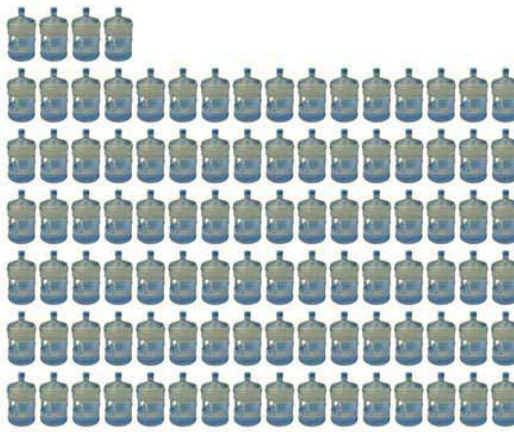
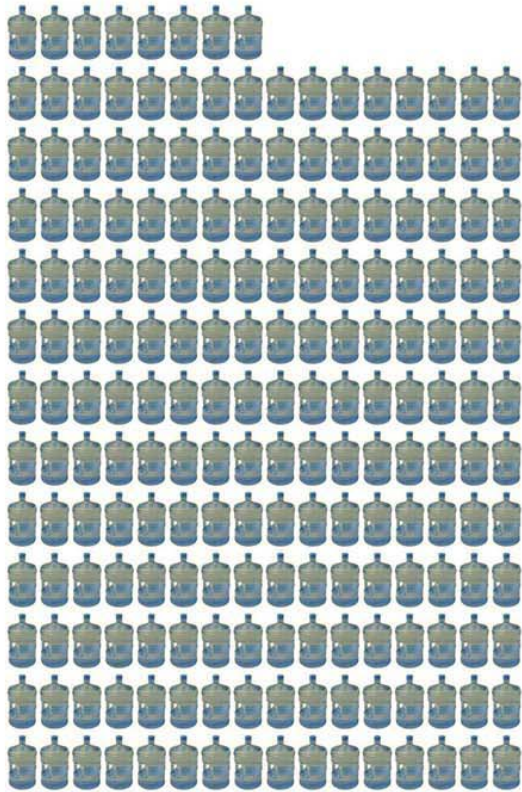
This meeting is devoted to covering the subject of *Hydraulic Fracturing*

Interactive discussion with panel members and attendees

2009 - 2010 GWPC Board of Directors

<u>Representing</u>	<u>Director - State</u>	<u>Term of Office</u>	<u>Executive Committee</u>
Region 1	Sarah Pillsbury - NH	9/2008 – 9/2010	
Region 2	John Barndt - DE	9/2008 – 9/2010	
Region 3	Joseph Lee - PA	9/2008 – 9/2010	President
Region 4	David Bolin, AL	9/2008 – 9/2010	
Region 5	Scott Kell - OH	9/2008 – 9/2010	Past President
Region 6	Jon Craig - OK	9/2008 – 9/2010	
Region 7	Marty Link - NE	9/2008 – 9/2010	
Region 8	Kevin Frederick - WY	9/2008 – 9/2010	
Region 9	Sonja Massey - AL	9/2008 – 9/2010	
Region 10	John Norman - AK	9/2008 – 9/2010	
Region 1	Dave Terry - MA	9/2009 – 9/2011	At Large
Region 2	Brad Field - NY	9/2009 – 9/2011	
Region 3	David Asbury – VA	9/2009 – 9/2011	
Region 4	Jamie Crawford - MS	9/2009 – 9/2011	Treasurer
Region 5	Mike Lemcke - WI	9/2009 – 9/2011	
Region 6	Leslie Savage - TX	9/2009 – 9/2011	At Large
Region 7	Stan Belieu - NE	9/2009 – 9/2011	Vice President
Region 8	Tom Richmond - MT	9/2009 – 9/2011	
Region 9	Hal Bopp - CA	9/2009 – 9/2011	
Region 10	Audrey Eldridge - OR	9/2009 – 9/2011	





1,000 Gallons of Water to
Grow 19 lbs of Corn

+

400–500 Gallons of Water to
Convert Corn to Ethanol

=

1 Gallon of Gas



The actual amount of water needed to produce one gallon of ethanol varies depending on the climate in which the corn is grown, the conversion method used, and the efficiency of the ethanol produced. Read more in the [Ground Water Report to the Nation: A Call to Action](#).

1:15-5:20 Joint Opening Session *Water/Energy Sustainability Symposium/2009 GWPC Annual Forum*

Room: Grand Ballroom C

Session Staff: Dan Yates

1:15-2:40 *The Water-Energy Relationship: Why it is Important (State, Federal, and Local Views)*

Moderator- *Joe Lee, Pennsylvania Department of Environmental Protection & GWPC President*

Welcome - *John Baza, Director, Division of Oil, Gas, & Mining, Utah Department of Natural Resources* Abstract #5

Deanna Archuleta, Deputy Assistant Secretary for Water and Science, US Department of Interior Abstract #5

Tony Willardson, Western States Water Council, Water and Energy in the West – Now and Later Abstract #6

Nancy Johnson, Director Environmental Science and Policy Analysis, Office of Oil and Natural Gas, US Department of Energy Abstract #5

2:40-3:00 BREAK - in Exhibit Hall Grand Ballroom A&B

Room: Grand Ballroom C

Session Staff: Dan Yates

3:00-5:00 *What are the Water-Energy Interrelationships and Who Is Impacted*

Moderator- *Scott Kell, Ohio Division of Natural Resources, Oil & Gas Division & GWPC Past-president*

Mike Hightower, Sandia National Laboratories – Water and Energy – Emerging Issues and Challenges Abstract #7

Jared Ciferno, NETL's Technology Manager for Existing Plans, Emissions & Capture – The Water energy Interrelationship Abstract #8

Jan Dell, CH2M Hill – Relationships in the Energy Production Industry Abstract #9

Bob Goldstein, Electric Power Research Institute - Electric Power/Water Sustainability Abstract #10

Rick Holmes, Southern Nevada Water Authority – Water-Energy Interrelationships: A Municipal Perspective Abstract #11

Jeff Niemeyer, Salt Lake City Public Utility Department –Energy Water Nexus: Water and Wastewater View Abstract #12

5:00-5:20 Special Guest Presentation *Don Johnson, Actor – WaterFix: Water Treatment Technology & Applications*

Room: Alpine Ballroom

Session Staff: Dan Yates

5:30-7:30

Joint *Water/Energy Sustainability Symposium & 2009 GWPC Annual Forum*

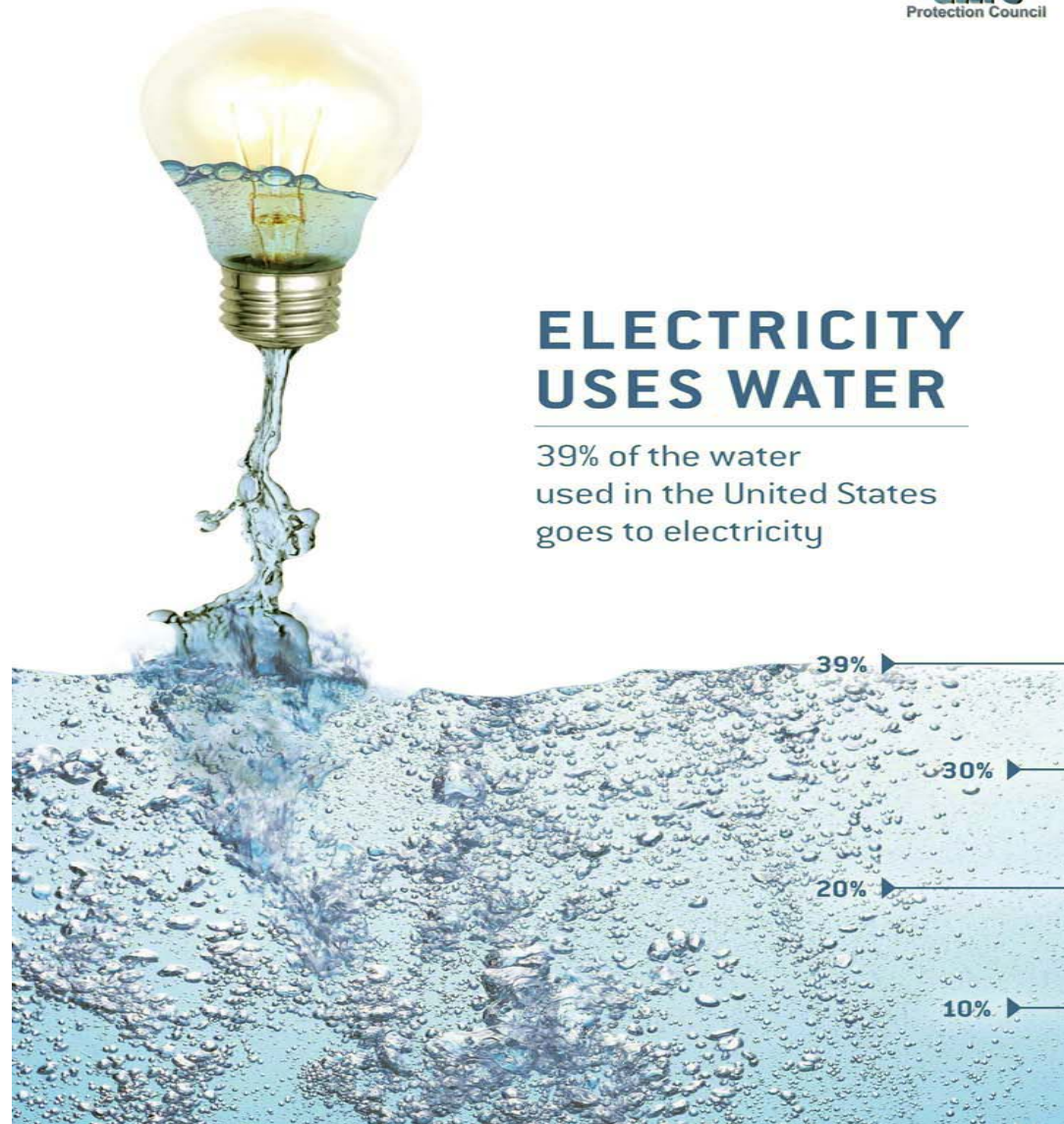
Welcome/Networking Reception

Special Presentations by:

Manna Energy – "Inspired from Space: Sustainable Global Clean Water Solutions-- the Energy Water Nexus"

Center for Affordable Water and Sanitation Technology

Reception Sponsored by: Chesapeake Energy Corporation



The amount of water needed to produce electricity is an estimate provided by several sources. Read more in the [Ground Water Report to the Nation: A Call to Action](#).

Tuesday, September 15

Morning Reception - 7:00am – in Exhibit Hall - Grand Ballroom A&B

Morning Receptions Sponsored by BP

7:55-10:00

Morning Sessions

Water/Energy Sustainability Symposium Tracks

GWPC Annual Forum Tracks

Room: Grand Ballroom C Session Staff: Mike Nickolaus
Water for Energy

Room: Alpine West Session Staff: Steve Musick
Water Availability & Sustainability
Water Management Tools

Room: Alpine East Session Staff: Mary Musick
Water Quality
Potential Ground Water Impacts:

Moderator- Mike Parker, ExxonMobil

Moderator- Chris Carlson, USDA Forest Service

Moderator- Audrey Eldridge, OR DEQ

8:00-8:20 Abstract #13
Water Use Efficiency of Energy Production and Power Generation Technologies – Tamim Younos, Virginia Polytechnic Institute and State University.

8:00-8:20 Abstract #19
A Framework for Estimating the Water Needs for Groundwater Dependent Ecosystems on National Forest System Lands - Joseph Gurrieri, USDA Forest Service

8:00-8:20 Abstract #25
Wastewater disposal and ground water
How to Meet the 10 mg/l Nitrate MCL in Treated Effluent – Paul Krauth, Utah DWQ

8:20-8:40 Abstract #14
Simulating the Impacts of Energy Production, Climate Variability, and Climate Change on Water Resources in the Upper Colorado River Basin with the WARMF Model – Daniel Levitt, LANL

8:20-8:40 Abstract #20
Regional Water Assessment for the Powder River Basin – Bobbie Coughlin, ALL Consulting

8:20-8:40 Abstract #26
Water quality impact from uranium production
Assessment of Potential Uranium Emissions from a Uranium Mill on Water, Sediments, and Plants Located near Ute Mountain Ute Reservation, Utah – Ryan Rowland, USGS

8:40-9:00 Abstract #15
Trends in Thermoelectric Power Water use in the United States – Susan S. Hutson, USGS

8:40-9:00 Abstract #21
Development of a Statewide Water Level Monitoring Network for New Hampshire – Stephen Roy, NHDES

8:40-9:00 Abstract #27
On-site septic disposal
On-Site Systems - a Sustainable Option for Wastewater Treatment - Judith L. Sims, Utah Water Research Lab.

9:00-9:20 Abstract #16
An Analysis of the Effects of Drought Conditions on Electric Power Generation in the Western United States - Leslie Poch, Argonne, National Laboratory

9:00-9:20 Abstract #22
Has the Rule of Capture Become an Endangered Species? - Brad L. Cross, LBG-Guyton Associates

9:00-9:20 Abstract #28
Oil & Gas production
Natural Gas Development Impacts to Shallow Aquifers – Is there a monitoring silver bullet - Gregory Oberley, USEPA Region 8

9:20-9:40 Abstract #17
Optimization of Water Usage in Petroleum Refineries – Ross M. Osterberg, Petroleum and Petrochemicals Group at Guernsey

9:20-9:40 Abstract #23
Texas Development of General Permit for Desalination Concentrate and Drinking Water Treatment Residual – Ben Knappe, TCEQ

9:20-9:40 Abstract #29
Pharmaceuticals
Impact of EDCs on Trout in an Effluent Dominated Stream
Michael Luers, Snyderille Basin Water Reclamation District

9:40-10:00 Abstract #18
Quantifying Water Needs for Electricity Generation: Additional Sources of Consumption - Katherine Young, National Renewable Energy Laboratory

9:40-10:00 Abstract #24
National Smart Water Grid - Ronald Beaulieu, Lawrence Livermore National Laboratories

9:40-10:00 Abstract #30
Rock blasting
Development of BMPs for Rock Blasting Activities to Protect Water Resources – Brandon Kernan, NHDES

10:00-10:20 BREAK - in Exhibit Hall - Grand Ballroom A&B

Posters will be displayed Monday –Tuesday in the Exhibit Hall (presenters will be available during breaks and lunches as noted)

Understanding the Birds Nest Aquifer in Uintah County, Utah: A Potential Source for Large-Scale Saline Water Disposal - Michael D. Vanden Berg, Utah Geological Survey Abstract #31a

Remediation of Methane in Ground Water, Huerfano County, Colorado - Dan Jackson, USEPA Region 8 Abstract #31b

10:20-12:10 Mid-Morning Sessions		
<p>Room: Grand Ballroom C Session Staff: Mike Nickolaus</p> <p style="text-align: center;">Energy for Water</p> <p>Moderator- Michael Webber, University of Texas</p>	<p>Room: Alpine West Session Staff: Mary Musick</p> <p style="text-align: center;">Joint Water Availability & Sustainability/Water Quality Session</p> <p style="text-align: center;">National Initiatives</p> <p>Moderator- Chris Reimer, NGWA</p>	<p>Room: Alpine East Session Staff: Paul Jehn</p> <p style="text-align: center;">National UIC Database</p> <p style="text-align: center;">End to End Electronic Flow of UIC Data: State Success Stories & Opportunities</p> <p>Moderator- Kurt Hildebrandt, USEPA 7</p>
<p>10:20-10:40 Abstract #32</p> <p>Coping With an Increase in Energy Usage at Drinking Water Facilities – Cynthia Lane, American Water Works Association.</p>	<p>10:20-10:40 Abstract #38</p> <p>Walk Before You Run – Piloting and Partnering Toward a National Groundwater Monitoring Network - Robert Schreiber, CDM</p>	<p>10:20-12:10 Abstract #40</p> <p>Kurt Hildebrandt, EPA Region 7; EPA Co-chair, DMSC DI: Class 5 program experience</p>
<p>10:40-11:00 Abstract #33</p> <p>Potential Impacts of Climate Change on California’s Water-Energy Relationship – Shahid Chaudhry, California Energy Commission</p>	<p>10:40-11:00 Abstract #39</p> <p>Source water protection and climate change mitigation: An ecosystem services view - Chi Ho Sham, The Cadmus Group, Inc.</p>	<p>Jim Halvorson, Montana Oil and Gas Commission: Class 2 Program Experience (using RBDMS)</p> <p>Kevin Frederick, Wyoming DEQ: Class 1, 3, 5 Experience</p>
<p>11:00-11:20 Abstract #34</p> <p>Reducing Electric Power Consumption in Small Water Systems - John Regnier, National Rural Water Association</p>	<p>11:00- 12:10</p> <p>Panel: The Nexus Between Water Quality & Quantity – A National and State Perspective</p> <p>Moderator - David Terry, MA DEP.</p> <p><u>Panelist:</u></p> <p>Deirdre Mason, Association of State Drinking Water Administrators;</p> <p>James Martin, UT DNR, Division of Drinking Water; &</p> <p>Brandon Kernen, NH DES</p>	<p>Carl Reeverts, EPA OGWDW: Opportunities to build end to end E-capability through sharing tools, data, and experiences</p> <p>Kurt Hildebrandt, EPA Region 7: Functions and projects of the EPA/State UIC Data Management Steering Committee – Opportunities to steer the UIC data base in the future</p>
<p>11:20-11:40 Abstract #35</p> <p>Energy Demand and Associated Issues for Wastewater Utilities – Cynthia Finley, National Association of Clean Water Agencies</p>		
<p>11:40-12:00 Abstract #36</p> <p>Minimizing Energy Cost Impact of Jordanian Water Allocation Policy - Richard Peralta. Utah State University</p>		
<p>12:00-12:10 Abstract #37</p> <p>Summary Remarks – Michael Webber, University of Texas</p>		
<p>12:10-1:20 Session Staff: Dan Yates</p> <p style="text-align: center;">Networking Box Lunch and Discussion in Exhibit Hall - Grand Ballroom A&B</p>		
<p>Posters will be displayed Monday –Tuesday in the Exhibit Hall (presenters will be available during breaks and lunches as noted)</p> <p>BLM Utah Ground Water Protection Associated with Oil & Gas Exploration and Development - Mike McKinley, BLM Utah State Office Abstract #41</p>		

1:20-3:20 Afternoon Sessions			
Water/Energy Sustainability Symposium Tracks		GWPC Annual Forum Tracks	
Room: Grand Ballroom C Session Staff: Paul Jehn Water Needs for Unconventional Oil & Gas Moderator- Art Hartstein, TMS, Inc.	Room: Canyon Session Staff: Dan Yates Green Building and Green Cities Moderator- Jeff Moeller, Water Environment Research Foundation	Room: Alpine West Session Staff: Steve Musick Water Availability & Sustainability Water Rights, Laws and Policy: Moderator- Bill Bryson, Kansas Geological Survey	Room: Alpine East Session Staff: Mike Nickolaus Water Quality Ground Water Quality and CO2 Geosequestration: Moderator- Scott Anderson, Environmental Defense Fund
1:20-1:40 Abstract #42 Water Needs and Issues for Oil Shale in the Western United States - Glenn Vawter , National Oil Shale Association	1:20-1:40 Abstract #47 Baltimore Charter for Sustainable Water Systems - Jeff Moeller , Water Environment Research Foundation	1:20-1:40 Abstract #52 Groundwater & Surface Water Conflicts in Colorado – An Alarming Trend - Tom Cech , Central Colorado Water Conservancy District	1:20-1:40 Abstract # 56 Carbon Sequestration and Water: A Department of Energy Perspective – Andrea McNemar , DOE Office of Fossil Energy
1:40-2:00 Abstract #43 System Dynamics Model of Water Consumption for Oil Shale Development – Earl D. Mattson , Idaho National Laboratory	1:40-2:00 Abstract #48 Integrated Resource Management: Dockside Green, Victoria - Patrick Lucey , Aqua-tex,	1:40-2:00 Abstract #53 Groundwater Investigation of Potential Quarry Dewatering and Depressurization Impacts on Kelleys Island, Erie County, Ohio – Tom Tomastik , Ohio DNR	1:40-2:00 Abstract #57 Evaluation of Groundwater Quality Changes in Response to CO2 Leakage from Deep Geological Storage – Liange Zheng , Lawrence Berkeley National Laboratory
2:00-2:20 Abstract #44 Deep Shale Natural Gas: Abundant, Affordable, and Surprisingly Water Efficient – Matt Mantell , Chesapeake Energy	2:00-2:20 Abstract #49 The Energy Related Promise of Integrated Watershed Management, Green Infrastructure / Low Impact Development (LID) and Sustainable Design Water Resource Designs - Robert Goo , U.S. EPA	2:00-2:20 Abstract #54 Groundwater Availability: Texas Style - Robert Mace , Texas Water Development Board	2:00-2:20 Abstract #58 Possible Impacts of Carbon Sequestration and Storage Enhancement Techniques on Ground Water Resources - D.L. Marrin , Water Sciences & Insights
2:20-2:40 Abstract #45 Chemical and biological treatment of produced water for sustainable operation of oil shales and similar operations – Liang Li , University of Utah	2:20-2:40 Abstract #50 Water Efficiency: How to Make Green Building More Blue – Mary Ann Dickinson , Alliance for Water Efficiency	2:20-2:40 Abstract #55 Balancing the Books: Kansas’ Water Past, Present, and Future – David Barfield , Kansas Department of Agriculture, Division of Water Resources.	2:20-2:40 Abstract #59 Basin-Scale Hydrological Impact of Geologic Carbon Sequestration in the Illinois Basin: A Full-Scale Deployment Scenario - Quanlin Zhou , Lawrence Berkeley National Laboratory
2:40-3:00 Abstract #46 Model Shale Gas Development in the United States: Water Issues – Dan Arthur , ALL Consulting	2:40-3:00 Abstract #51 The Bottom Line of Blue is Black - A Southeastern Case Study on Making Sustainable Building Pay - Margo Farnsworth , Cumberland River Compact	2:40- Open Discussion	2:40-3:00 Abstract #60 Update on EPA Rulemaking for Geologic Sequestration Wells: EPA Seeks Comments on New Information about Geologic Sequestration CO ₂ – Bruce Kobelski , EPA
3:20-3:40 BREAK - in Exhibit Hall – Grand Ballroom A&B			

3:40-5:40				Afternoon Sessions			
Water/Energy Sustainability Symposium Tracks		GWPC Annual Forum Tracks		Room: Grand Ballroom C		Room: Alpine West	
Room: Grand Ballroom C Session Staff: Steve Musick Water & Power Generation Moderator- Steven Pratt, USEPA R-8		Room: Canyon Session Staff: Dan Yates Water Needs for Wind, Hydro, Solar, and Nuclear Moderator – Shonnie Cline, Water Research Foundation		Room: Alpine West Session Staff: Mary Musick Joint Water Availability & Sustainability/Water Quality Session Supplemental Water Supplies: Moderator- John Taylor, USEPA R-5		Room: Alpine East Session Staff: Mike Nickolaus Hydraulic Fracturing and CO2 Geosequestration Needs Assessment Moderator: Stan Belieu, NOGCC	
3:40-4:00 Abstract #61 Department of Energy, National Energy Technology Laboratory, Energy-Water Research and Development Program - Jared Ciferno , DOE-National Energy Technology Laboratory.	3:40-4:00 Abstract #67 Windpower-Water Equivalency for the Western US Region – G. L. Toole , Los Alamos National Laboratory	3:40-4:00 Abstract #72 Challenges of Implementing Municipal Reclamation and Recharge Projects in Arizona: Reuse It our Lose It – Floyd L. Marsh , LAN, Inc.	3:40-5:00 In this session, states will initiate a needs assessment for Hydraulic Fracturing and CO ₂ Geosequestration. Discussion will focus on what states need to adequately regulate these programs. Input from industry will also be solicited regarding technical and financial limitations and types of data available. Discussion topics include. <ul style="list-style-type: none"> • Cost of program Implementation • Sources of funding • Staffing needs • Technical Capacity • Public outreach • Statutory authority • Types of data to be collected • How the data is managed • Data availability and reporting 				
4:00-4:20 Abstract #62 Produced Water Resources in the Illinois Basin as a Supplemental Source of Water for Coal-Based Power Plants - Seyed A. Dastgheib , University of Illinois	4:00-4:20 Abstract #68 Hydro and Wind Generation - Integration Challenges and Opportunities- Karl Wirkus , Bureau of Reclamation	4:00-4:20 Abstract #73 Opportunities & Challenges for Supplementing Water Supplies in California – a Local Approach - Tim Parker , Parker Groundwater					
4:20-4:40 Abstract #63 Water Conservation through Demand Side Management, lessons from the electric utilities – John Morris , Fluid Market Strategies	4:20-4:40 Abstract #69 Water Use, Electric Power, and Nuclear Energy: A Holistic Approach to Environmental Stewardship – William Skaff , Nuclear Energy Institute	4:20-4:40 Abstract #74 Dispersal or Reuse – Rodney Ruskin , Geoflow, Inc.					
4:40-5:00 Abstract #64 Fuel Cells: New Ideas for Carbon Capture and Water Conservation - Wayne A. Surdoval , National Energy Tech. Lab.	4:40-5:00 Abstract #70 Concentrating Solar Power Water Needs and the Impacts of Alternative Cooling Methods – Mark Lausten , SENTHCH, Inc.	4:40-5:00 Abstract #75 Non-Traditional Sources of Water for Coal-Fired Power Plants – David Alleman , ALL Consulting					
5:00-5:20 Abstract #65 Water Supply and Power Generation in Northeast New Jersey: Year 2001 Combined Cycle Turbine Power vs. Pumped Water Storage - Paul Schorr , NJ DEP	5:00-5:20 Abstract #71 Opportunities to Reduce Energy Consumption and Save Water in California – Abby Schneider , Association of California Water Agencies	Room: Seminar Theater 5:00-6:00 GWPC Water Quality Division Meeting Abstract #76 Division Chair- Jon Craig, OK DEQ <ul style="list-style-type: none"> • Division Overview • ASR Issues Roundtable • Stormwater / Green Projects Issues Roundtable • Open Discussion • Actions 					
5:20-5:40 Abstract #66 Water Requirements for Fossil-Based Electricity Plants with and without Carbon Capture - Erik P. Shuster , DOE National Energy Technology Laboratory	5:20-5:40 Discussion Session						

Room: Trofi Restaurant

Session Staff: Dan Yates

6:00-8:00 Joint *Water/Energy Sustainability Symposium & 2009 GWPC Annual Forum Reception*

Wednesday, September 16

Morning Reception - 7:00 – Grand Ballroom Foyer

7:55-10:00 Morning Sessions

Room: Grand Ballroom C
Session Staff: Paul Jehn
Treatment of Energy Water for Reuse
Moderator- Rebecca Thingelstad, Anadarko Petroleum

Room: Canyon
Session Staff: Mary Musick
Water, Energy and Agriculture
Moderator- Bruce Olsen, MN Department of Health

7:55-9:00
Room: Alpine West
Session Staff: Steve Musick
Joint Water Availability & Sustainability/Water Quality Session
Water Management Planning Efforts
Moderator- Marty Link, Nebraska DEQ

8:00-8:20 Abstract #77
Viable Treatment Technologies for Promoting Beneficial Use of Produced Water – Pei Xu, Colorado School of Mines

8:00-8:20 Abstract #83
The Impact of Biofuels on Projected Water Consumption for Energy Production and Other Use – Deborah Elcock, Argonne National Laboratory

8:00-8:20 Abstract #89
Groundwater Management and Aquifer Storage in the Atlantic Coastal Plain States - Cat Shrier, Watercat Consulting LLC and Aquifer Storage Issues LLC

8:20-8:40 Abstract #78
Beneficial Re-Use of Brackish Water by Desalination with Direct Contact Membrane Distillation Technology – Lucy Mar Camacho, New Mexico State University

8:20-8:40 Abstract #84
Analysis of Water Consumption in the Major Life Cycle Stages of Bioethanol – May Wu, Argonne, National Laboratory

8:20-8:40 Abstract #90
Enhanced Management for NW Kansas – Wayne Bossert, Northwestern Kansas Groundwater Management District 4

8:40-9:00 Abstract #79
New Ozonation Process for Water Treatment Toward Sustainable Energy Development – Andy Hong, University of Utah

8:40-9:00 Abstract #85
Partnerships Between Municipal Water Providers and Agriculture for Alternative Energy - Martha Davis, Inland Empire Utilities Agency

8:40-9:00 Abstract #91
Planning Combined Municipal Use of Groundwater and Surface Water: Technical and General Results from a Case Study - Robert Gailey, Consulting Hydrogeologist

9:00-9:20 Abstract #80
A Look at Future High Recovery Produced Water Treatment - Ken Klinko, CDM, Inc.

9:00-9:20 Abstract #86
Challenges and Opportunities in Permitting Hydropower Projects on Existing Irrigation Facilities - Kent Holsinger, Holsinger Law

Room: Seminar Theater
9:00-10:00
Session Staff: Steve Musick

GWPC Water Availability & Sustainability Division Meeting

Abstract #92
Division Chair- Jamie Crawford, MS DEQ

- Division Overview
- ASR Presentation
- Selection of Topics
- Open Discussion
- Actions

9:20-9:40 Abstract #81
Low Temperature Desalination: An Option of Sustainability and Energy Savings – Veera Gnanaswar Gude, New Mexico State University

9:20-9:40 Abstract #87
Collaborative, Stakeholder-Driven Water, Energy and Food Systems Modeling and Roadmapping - Howard Passell, Sandia National Laboratories

9:40-10:00 Abstract #82
Advances in Capacitive Deionization Using Reticule Carbon - Carl Nesbitt, University of Nevada, Reno.

9:40-10:00 Abstract #88
Sound Use of Water for Biomass Energy Production – Tom O'Connor, National Biodiesel Board

10:00-10:20 BREAK – Grand Ballroom Foyer

10:20- 12:00				Mid-Morning Sessions			
Room: Grand Ballroom C Session Staff: Mike Nickolaus <i>Applications of Energy Water for Water Supply</i> Moderator- Natenna Dobson, DOE		Room: Canyon Session Staff: Steve Musick <i>Water & Energy Underground</i> Moderator- Kevin McCray, NGWA		Room: Alpine West Session Staff: Paul Jehn Water Availability & Sustainability Water Resource and Demand Characterization: Moderator- Elaine Lai, USEPA R-8		Room: Alpine East Session Staff: Mary Musick Water Quality Ground Water Quality & Stormwater: Moderator- Bob Smith, US EPA	
10:20-10:40 Abstract #93 Evaluating the Impact of Subsurface Drip Irrigation with Coalbed Methane Produced Water on Crop Yield, Soil Properties, and Groundwater Quality - Richard Hammack , DOE, National Energy Technology Lab		10:20-10:40 Abstract #98 Water Use and Large-Scale Geothermal Energy Production - Corrie Clark , Argonne National Lab		10:20-10:40 Abstract #103 Ground Water Quality Classification Mapping for the Basin-fill Aquifers in Beaver and Cedar Valleys, Southwestern Utah - Janae Wallace , and Mike Lowe , Utah Geological Survey		10:20-10:40 Abstract #106 Integrated Stormwater Management in Utah – Candace Cady , UT Department of Environmental Quality	
10:40-11:40 Abstract #94 Coalbed Methane Produced Water Quality Variations across the Rocky Mountain Region Emphasis on the Potential for Beneficial Use – Katharine Dahm , Colorado School of Mines		10:40-11:00 Abstract #99 Reconciling Geothermal Resource Extraction with Western Water Law – Matthew Jensen , Smith Hartvigsen		10:40-11:00 Abstract #104 On the Front Lines of the Water/Energy Nexus: A Contractor’s Perspective of the Real World of Regulatory Oversight of Geothermal Heat Pump System Installation - Jack Henrich , Bergerson-Caswell, Inc, & NGWA president		10:40-11:00 Abstract #107 A Comparison of State Requirements of Stormwater Infiltration BMPs in New England– Ted Lavery , USEPA R1	
11:00-11:20 Abstract #95 Flue-Gas Water as a Resource for Carbon-Capturing Power-Plants – Danylo Oryshchyn , NETL		11:00-11:20 Abstract #100 Considerations for the Development of Thermal Energy Storage Systems in Abandoned Mine Workings - Fred Michel , Carleton University		11:00-11:20 Abstract #105 The Impact of Unsustainable Groundwater – Fred Bloetscher , Florida Atlantic University		11:00-11:20 Abstract #108 Stormwater Updates from EPA’s Underground Injection Control and Source Water Programs – Jeff Jollie , USEPA	
11:20-11:40 Abstract #96 Using Produced Water as a New Water Resource – David Stewart , Stewart Environmental Consultants		11:20-11:40 Abstract #101 Direct Exchange: What is it? What’s its Relationship to Ground Water? - John Kelly , Geothermal Heat Pump Consortium		Open Discussion		11:20-11:40 Abstract #109 Protecting the Edwards Aquifer through Stormwater Management-- Cary Betz , Texas Commission on Environmental Quality	
11:40-12:00 Abstract #97 Produced Water Treatment Catalog and Decision Tool – David Alleman , ALL Consulting		11:40-12:00 Abstract #102 Ground Source Heat Pump Systems: Assisting Energy Savings While Protecting Groundwater – Kevin McCray , National Ground Water Association				11:40-12:00 Tom Ward P.E. Deputy Director, Department of Public Utilities will present an overview of the Development of a Stream Riparian Corridor Overlay Protection Zone.	

12:00-1:30 Grand Ballroom A&B -Lunch Provided

Session Staff: Dan Yates

Speaker:

Alex Davis, Western States Water Council, Water Energy Chair / Assistant Secretary of Colorado Department of Natural Resources

1:30-5:15 Joint Closing Session

Room: Grand Ballroom C

Session Staff: Dan Yates

1:30-3:30 ***Moving Forward –Roadmapping Results and Integrated Water-Energy Planning***

Moderator- Mike Hightower, Sandia National Lab

Mike Hightower, Sandia National Laboratory – USDOE Water-Energy Roadmap Process Overview Abstract #110

Bill Horak, Brookhaven Nat. Lab- Water / Energy Planning and Management Issues – New York City Energy-Water Integrated Planning Pilot Study
Abstract # 111

Paul Wichlacz, Idaho Nat. Lab –Meeting the Energy and Water Needs of the Snake/Columbia River Basin in the 21st Century Abstract #112

John Veil, Argonne Nat. Lab –An Evaluation of Water Usage and Related Institutional Influences on Three Electric Generating Capacity Expansion Alternatives for the Western United States Abstract #113

Dan Birch, Colorado River Water Conservation District – Northwest Colorado Energy Development Water Needs Assessment Abstract #114

Robin Newmark, Lawrence Livermore National Laboratory - Data and Modeling Conflation Issues in Energy and Water Systems Abstract #115

3:30:3:50 BREAK – Grand Ballroom Foyer

Room: Grand Ballroom C

Session Staff: Dan Yates

3:50-5:15 ***Moving Forward – Emerging Energy Water National Legislation Interests and Directions***

Moderator- Art Hartstein, TMS, Inc.

Josh Johnson, Senate Committee on Energy and Natural Resources Abstract #116

Nicole Carter, Natural Resources Policy Analyst, Congressional Research Service, The Library of Congress Abstract #116

** Water-Energy Symposium Attendee Input Summary "Real-Time Report" **

Joe Lee, US DOE Symposium Wrap-up and Where We Go From Here Abstract #116

5:15-5:30 BREAK – Grand Ballroom Foyer

Room: Topaz

Session Staff: Mike Paque

5:30-7:00

GWPC Board Meeting - Resolutions & Other Board Business (*Open to Everyone*)