

# PRODUCED WATER FORUM

## AGENDA

August 17 - 18, 2016  
Oklahoma City, Oklahoma

### **AUGUST 17<sup>th</sup>**

6:00pm – 7:30pm

**Sheraton Downton OKC, Kiamichi, 2nd floor**  
Networking Reception

### **AUGUST 18<sup>th</sup>**

8:00am – 12:00pm

**Colcord Hotel, Terrace Room, 2nd floor**

7:30am – 8:30am

Registration

Breakfast provided

8:30am

**Welcome**

*Michel Paque, Executive Director, Ground Water Protection Council*

*Carl Michael Smith, Executive Director, Interstate Oil & Gas Compact Commission*

*Sam Wade, CEO, National Rural Water Association*

8:40am

**Setting the Ground Rules**

*Linda Capuano, Ph.D., Fellow in Energy Technology, Center for*

*Energy Studies, Baker Institute, Rice University*

8:45am

**Opening Remarks**

***Growing demands and concerns for water availability***

*Oklahoma Secretary of Energy & Environment Michael Teague*

Produced Water can be an important part of a water resilient strategy, especially for the more arid Western states. However, as will be discussed in the conference sessions, there are opportunities and challenges that need to be addressed so produced water will be available for use when needed in the future.

9:00am

**Defining Produced Water**

*John Veil, President, Veil Environmental, LLC*

For the purposes of these workshops, produced water will be defined as all water brought to the surface during oil and natural gas production. Produced water volumes are large enough to significantly impact the water plans of many states. The challenge is to capture, store, transport and treat for use. This session will answer the questions: Where is the Produced Water? What are the volumes and quality?

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9:30am

## Technological Advancements in Produced Water Treatment

Round table discussion: oil and gas operators

- *David McBride, Anadarko Petroleum Corporation*
- *Rick McCurdy, Chesapeake Energy*
- *Mike Mathis, Continental Resources*
- *Rick White, Devon Energy*
- *Mark Gross, Nalco Champion – an Ecolab Company*
- *Roy Hartstein, Southwest Energy*

Significant progress has been made in the treatment of produced water for reuse. For example, water management and treatment techniques continue to advance to the point where recycling/reuse of produced water at the oil and gas site is becoming more common. This displaces and thus reduces the need for fresh water, plus reduces the transportation impact on the environment of bring fresh water to the site.

However, there are still barriers. For example, water treatment, transport and storage pose challenges for use in irrigation, thermoelectric cooling and industrial applications.

10:15am

## Research Developments in the Reuse of Produced Water

Round table discussion: universities and labs

- *Linda Capuano, Rice University's Baker Institute for Public Policy*
- *Bethany Kurz, Energy & Environmental Research Center, University of North Dakota*
- *Mike Hightower, Sandia National Laboratory*
- *Jeri Sullivan Graham, Los Alamos National Laboratory & New Mexico Energy, Minerals & Natural Resources Department*

What do we know about current uses of produced water? In terms of the quality and other challenges and how can technology help? How is technology enabling and encouraging increasing the use of produced water in these applications

What are the challenges to extend the use of produced water to other applications and how can technology help? Include challenges in bringing produced water applications to scale.

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11:00am

## Understanding the Needs

Round table discussion: End Water Users

- *Doug Goehring, North Dakota Department of Agriculture*
- *David Baird, Delaware Sussex Conservation District (SCD)*
- *Tommy Foltz, Consumer Energy Alliance (CEA)*
- *Usha Turner, OGE Energy Corporation*
- *James Gammill, Oklahoma Rural Water Association*

What will it take to make produced water the water of choice? Competitive cost includes management, transportation, storage and other challenges. What are the performance requirements that will create competitive interest in produced water?

Discuss the opportunities and challenges for produced water to compete with and displace waters that are more desirable to conserve. For example, it is desirable to displace the use of ground water so as not to deplete aquifers, and to displace the use of fresh water to reduce the impact on energy use and the environment required in treating to freshwater quality.

12:00pm – 1:00pm

Lunch provided

**Feature speaker: Oklahoma Governor & IOGCC Chair Mary Fallin**

1:00pm - 5:00pm

## Identifying the Barriers to Deliver Results

Moderator: *Linda Capuano, Ph.D., Fellow in Energy Technology, Center for Energy Studies, Baker Institute, Rice University*

Review the opportunities and challenges captured during the morning session

- Clarify and consolidate items as appropriate. Add missing items.
- Capture participant opinion relative to the impact (high, medium or low) of overcoming the challenges by "vote" (pareto)
- Discuss the top 5 opportunities and challenges - What needs to be understood? Who are experts that can speak to the subject?
- Identify intersections of opportunity worth investigating that were not discussed earlier

This information will be used to guide future discussions

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## Ground Rules

- Chatham House Rules – comments can be repeated without attribution.
- Round table discussion – Podium will not be present.
- Comments should engage the broader group. Avoid detailed technical debates which are better discussed during breaks or lunch.
- If a point needs visual emphasis, i.e., a single slide makes the case for the opportunity or challenge, a hard copy can be distributed to attendees. However, the room will not be set up to project slides.
- One representative from each organization will be designated at the round table for discussion.
- Place your table tent in the vertical position if you have a comment or question.

## More Information

- Dress code for both the reception and forum is business casual attire.
- Participants are free to depart when needed.
- A report will be compiled following this first forum and distributed to all participants.
- Participants will be contacted after the forum for follow-up and asked for participation in future forums.

## Thank you...

We want to thank each one of you for taking time to participate in this national discussion on identifying the barriers to the potential beneficial uses of produced water. With your help, we can reshape the future by providing a new source of water that remains mostly untapped.



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## Participants Roster

Scott Anderson, Senior Policy Director, Natural Gas, Environmental Defense Fund

David Baird, District Manager, Sussex Conservation District / NRW

Gerry Baker, Associate Executive Director, Interstate Oil and Gas Compact Commission

Larry Bengal, Director, Arkansas Oil and Gas Commission

Legion Brumley, Supervisory Petroleum Engineering Technician, Bureau of Land Management

Linda Capuano, Fellow in Energy Technology, Baker Institute Rice University

Tommy Foltz, Executive Vice President, Consumer Energy Alliance

Jeffrey Frithsen, Associate Director for Ecology, U.S. EPA

James Gammill, CEO, Oklahoma Rural Water Association

Doug Goehring, Commissioner, North Dakota Department of Agriculture

Holly Green, Acting Chief, Prevention Branch, Office of Ground Water and Drinking Water, U.S. EPA

Mark Gross, Director - Water Solutions, Nalco Champion - Ecolab Company

Roy Hartstein, Vice President - Strategic Solutions, Southwestern Energy Company

Lynn Helms, Director, North Dakota Industrial Commission - Department of Mineral Resources

Mike Hightower, Distinguished Member Technical Staff, Sandia National Laboratories

Nancy Johnson, Senior Advisor, Environmental Science and Policy Analysis, U.S. Department of Energy

James Kenney, Senior Policy Advisor for Unconventional Oil and Natural Gas, U.S. EPA

Beth Kurz, Principal Hydrogeologist, Energy and Environmental Research Center, University of North Dakota

Matt Lepore, Director, Colorado Oil and Gas Conservation Commission

Mike Mathis, Regulatory Affairs Advisor, Continental Resources

David McBride, Vice President, Health, Safety & Environment, Anadarko Petroleum

Rick McCurdy, Manager - Corrosion, Chemicals & Water, Chesapeake Energy

Timothy C. Olson, Senior Project Manager, Energy and Environment Program, The Aspen Institute

Mike Paque, Executive Director, Ground Water Protection Council

Carl Michael Smith, Executive Director, Interstate Oil and Gas Compact Commission

J.D. Strong, Director, Oklahoma Water Resources Board

Jeri Sullivan Graham, Senior Scientist, Los Alamos National Laboratory and New Mexico, Energy, Minerals and Natural Resources Department

Michael Teague, Secretary of Energy and Environment, State of Oklahoma

Anita Thompkins, Director, Drinking Water Protection Division, Office of Ground Water and Drinking Water, U.S. EPA

Scott Thompson, Executive Director, Oklahoma Department of Environmental Quality

Usha Maria Turner, Director, Corporate Environmental, OG&E Energy

John Veil, President, Veil Environmental, LLC

Sam Wade, CEO, National Rural Water Association

Rick White, Vice President Production Operations Excellence, Devon Energy

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## Attendees Roster

Carol Booth, Communications Manager, Interstate Oil and Gas Compact Commission

Shellie Chard-McClary, Water Quality Division Director, Oklahoma Department of Environmental Quality

Greg Deranleau, Manager - Environmental Unit, Colorado Oil and Gas Conservation Commission

Stratton Edwards, Legislative Counsel, Capitol Hill Consulting Group

Jeff Everett, Water Quality Specialist, OG&E Energy

Jason Grev, Director - Government Relations, Ecolab

Ben Grunewald, Chief of Operations, Ground Water Protection Council

Todd Harris, Regional Director Executive Accounts, Nalco Champion - Ecolab Company

Matt Holmes, Deputy CEO, National Rural Water Association

Mike Keegan, Analyst, National Rural Water Association

Brian Meier, Regional Office Manager, Burns and McDonnell

Katie Miller, Utility Management Consultant, Burns and McDonnell

Owen Mills, Director of Water Planning, Oklahoma Water Resources Board

Tyler Powell, Deputy Secretary of Environment, Office of Oklahoma Secretary of Energy and Environment

Tom Robins, Deputy Secretary of Energy, Office of Oklahoma Secretary of Energy and Environment

Jimmy Seago, DEO, Oklahoma Rural Water Association

Craig Smith, District Director, U.S. Representative Steve Russell

Ty Swirin, Natural Resource Specialist, Bureau of Land Management

Carl Symcox, Environmental Program Specialist, Oklahoma Department of Environmental Quality

Jake White, Associate Environmental Engineer, Burns and McDonnell

Steven Willems, Natural Resource Specialist, Bureau of Land Management

Dan Yates, Associate Executive Director, Ground Water Protection Council

Maggi Young, Senior Environmental Representative, Chesapeake Energy Corporation