April 16: Well Construction/Operation

8:00 am  Registration/Check-in

8:30 am  Welcome and Introductions ................................................................. Ramona Trovato, US EPA

8:40 am  Opening Remarks .................................................................................. Glenn Paulson, Science Advisor, US EPA

8:45 am  Purpose of Workshop and Industry Perspective ...................................... Workshop Co-Chairs: Jennifer Orme-Zavaleta, US EPA  
Kris Nygaard, ExxonMobil Production Company

Session 1: Well Design and Construction to Protect Drinking Water

8:55 am  Panel:
- Proposed Analysis from the Well File Review .............................................. Jeanne Briskin and Nathan Wiser, US EPA
- Geophysical Logging for Characterization of Fresh- and Saline Water Flow Zones in the Fractured Bedrock of the Northern Appalachian Basin ................................................................. John Williams, USGS
- An Overview of Well Construction and Well Integrity Related to Hydraulically Fractured Wells ...... Talib Syed, TSA, Inc.
- Oil and Gas Well Cementing ........................................................................... D. Steven Tipton, Newfield Exploration Company

Questions of Clarification

Break (10 minutes)

Facilitated discussion among workshop participants focusing on key questions:

- What current techniques are designed to prevent leaks through production well tubulars and fluid movement along the wellbore?
- What factors are typically used to ensure adequate confinement of fluids that can move?
- How are ground water resources identified and documented prior to and during production well installation?
- What is the breadth of approaches?

12:00 pm  Summary of Session 1 ............................................................................ Workshop Co-Chairs:  
Jennifer Orme-Zavaleta, US EPA  
Kris Nygaard, ExxonMobil Production Company

12:30 pm  Lunch (on your own) and Poster Session
Session 2: Well Operation and Monitoring to Protect Drinking Water

2:00 pm  

**Panel:**

- **Wellbore Integrity: Failure Mechanisms, Historical Record, and Rate Analysis**
  
  Anthony Ingraffea, Cornell University

- **eWCAT (electronic Well Control Assurance Tool) and Process Safety**
  
  Marco op de Weegh, Shell Exploration & Production Company

- **Well Integrity and Long-Term Well Performance Assessment**
  
  Bill Carey, Los Alamos National Laboratory

- **Open Questions Regarding Well Construction and Hydraulic Fracturing**
  
  Courtney Hemenway, Hemenway Groundwater Engineering, Inc.

**Questions of Clarification**

**Break (10 minutes)**

*Facilitated discussion among workshop participants focusing on key questions:*

- What testing is conducted to verify issues do not exist prior to, during and after hydraulic fracturing?
- What testing or monitoring techniques ensure adequate confinement?
- What is the breadth of approaches?

4:45 pm  **Summary of Session 2**

Workshop Co-Chairs:

Jennifer Orme-Zavaleta, US EPA
Kris Nygaard, ExxonMobil Production Company

4:55 pm  **Closing Remarks**

Ramona Trovato, US EPA

5:00 pm  **Adjourn**
April 17: Subsurface Modeling

8:30 am  Introduction to Day Two

Session 3: Subsurface Modeling of Fluid Migration to Identify and Understand Potential Impact on Aquifers

8:35 am  Panel:

- Evaluating Scenarios of Potential Subsurface Impact Using Computational Models
  - Stephen Kraemer, US EPA

- Analysis of Feasibility of Extensive Fracture Development and Fault Activation Induced by Hydraulic Fracturing
  - George Moridis, Lawrence Berkeley National Laboratory

- Modeling of Leakage in Potential Failure Scenarios in Shale Gas Systems
  - George Moridis, Lawrence Berkeley National Laboratory

- Emergence of Delamination Fractures around the Casing During Wellbore Stimulation
  - Arash Dahi Taleghani, Louisiana State University

- Abandoned Wells as Potential Leakage Pathways: Lessons Learned from CO₂ Geological Storage
  - Michael Celia, Princeton University

Questions of Clarification

Break (10 minutes)

Facilitated discussion among workshop participants focusing on key questions:

- What additional potential failure scenarios not covered in the EPA study progress report should be investigated?

- What are the most important parameters and appropriate level of complexity for a model that studies the severity of the potential impact of hydraulic fracturing on drinking water resources?

- What are the advantages and disadvantages of different modeling approaches?

- What well performance data (e.g., microseismic testing, pressure, tracer or other) are available to EPA that would be useful to build and evaluate the model?

12:15 pm  Summary of Session 3

12:25 pm  Closing Remarks

12:30 pm  Adjourn
**Poster Session**

*Well Design and Construction in Texas*
Travis Baer, Railroad Commission of Texas

*Colorado’s Regulations on Wellbore Integrity and Hydraulic Fracturing*
Stuart Ellsworth, CO Oil and Gas Conservation Commission

*Simple Groundwater Modeling of Transport Pathways in Unconventional Natural Gas Plays*
Tom Myers, Great Basin Hydrology

*Long Term Risk of Potable Aquifer Contamination via Fracking Fluids*
George Pinder, University of Vermont

*Nonisothermal Multiphase Multicomponent Reactive Transport in a Deforming Fractured Porous Media*
Robert Podgorney, Idaho National Laboratory

*Modeling Near Wellbore Leakage Pathways in Shale Gas Wells: Investigating Short and Long Terms Wellbore Integrity*
Saeed Salehi, University of Louisiana at Lafayette