What is the Purpose of Proposed Rule 609?

• To document baseline groundwater conditions prior to initiation of oil and gas drilling or facility installation activities
• To ensure no impacts to underground sources of drinking water occurred in the near future from these activities
How Can Sampling/Monitoring Be Accomplished?

- Groundwater collection:
  - Domestic wells
  - Springs
  - Monitoring wells (optional)
What will the Sampling Tell Us?

- Baseline conditions in the immediate vicinity of the well/facility site
  - Will provide the State and homeowner with sample results
  - Will document limited aquifer/domestic well water quality
  - Will protect the operator from false claims from homeowners
  - Will provide a comfort factor to the homeowner
What will the Sampling Tell Us? (continued)

- **May** minimize adverse impacts to homeowners if mitigation practices are implemented to address:
  - existing (baseline) contamination that is discovered; or
  - subsequent contamination that is detected after drilling/fracing or facility construction is complete

- **May** help with early detection of an adverse impact from drilling operations and thus aid in early implementation of mitigation practices
What will the Sampling Tell Us? (continued)

- Will not prevent an adverse impact to an aquifer or homeowner
- Will not fully characterize water quality of an aquifer or the potentially impacted zone
- Will not address data quality issues that are inherent with domestic wells
- Is not fool proof! (i.e., two samples may not be enough to detect existing contamination or any potential contamination caused by the drilling activity/facility)
What Does All This Cost?

- Two GW samples from domestic wells or natural springs:
  - **Analytical costs:**
    - Approx. $600/sample (basic analytes)
    - Approx. $500/sample for gas compositional analysis and stable isotope analysis *if* methane detected in the initial basic analytes).
  - **Total analytical cost:** $1,200 - $2,200
  - **Sampling labor/ODCs:** approx. $1,500 – 2,000
  - **Total Cost:** $2,700 - $4,200 per well/facility
  - **Time:** 1 day

Note: significant implementation cost (1600 wells/$4.8M+)
Issues and Concerns

- Two GW samples may not be enough
  - Operator option: typical investigations include at least one upgradient and two downgradient sample locations
- Proximity to the project site (side gradient is not preferred)
- Proposed rule requires sampling of GW within a half mile radius of the well/facility site (i.e., well head). Operator option: additional sampling along the well lateral which could be as much as 7,000 feet; will increase sampling activity/cost
Issues and Concerns (continued)

- Access agreements with landowners
- Liability insurance
- Access to the well
  - Pumps, wires, tubing
- Sampling methods
  - Sample drawn from tap
  - Sample drawn from well (EPA preferred method)
- Potential damage to well from sampling process: indemnification, waivers
Issues and Concerns (continued)

• Questionable data due to unknowns associated with existing wells:
  ➢ Well Records
  ➢ Aquifer in which the well is drawing from
  ➢ Zone of influence
  ➢ Well integrity
  ➢ Well use (private, commercial, drinking, irrigation)
  ➢ Historical water quality
  ➢ Tampering

Note: this is a critical issue that should be considered during rulemaking and at least addressed during sampling planning stages.
How Can an Operator Deal With The Issues and Concerns?

- Collect additional samples (operator option)
  - All wells or a percentage of wells within the half mile radius from the project site
- Utilize wells that are upgradient or downgradient of the project site
  - Could install monitoring wells (operator option)
- Extend radius of concern to include the lateral
- Obtain access agreements with landowners in advance
- Apply for “exception” if satisfactory locations are not available or homeowners decline access
How Can an Operator Deal With The Issues and Concerns? (cont.)

• Make sure consultants (performing the sampling) have sufficient liability insurance
• Well inspections prior to sampling
• Discuss preferred sampling methods with Fed/State agencies
• Perform record searches with State agencies
• Homeowner questionnaire to document well construction details (depth, screen level, installation materials, seals, etc.)
Monitoring Wells (optional)

• Not required
• In some cases, operators may want to consider installing monitoring wells
  • Drill/install/develop/sample standard monitoring wells:
    • 2 shallow wells (<25 ft): $13K - $15K
    • 2 intermediate wells (≈100 ft): $30K - $40K
    • 2 deep wells (≈300 ft): $80K - $100K
Questions?

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