



EPA's Approach to Developing Permitting Guidance for Oil and Gas Hydraulic Fracturing Activities Using Diesel Fuels

EPA Discussion with Tribal Representatives

June 2, 2011

U.S. Environmental Protection Agency
Office of Ground Water and Drinking Water



Purpose

- EPA is accepting input on *guidance approaches* to assist with permitting of hydraulic fracturing using diesel fuels under the Safe Drinking Water Act (SDWA), Underground Injection Control (UIC) Class II regulations
 - SDWA requires a permit
 - Current UIC Class II regulations apply
 - Regulations provide for additional permit conditions as needed



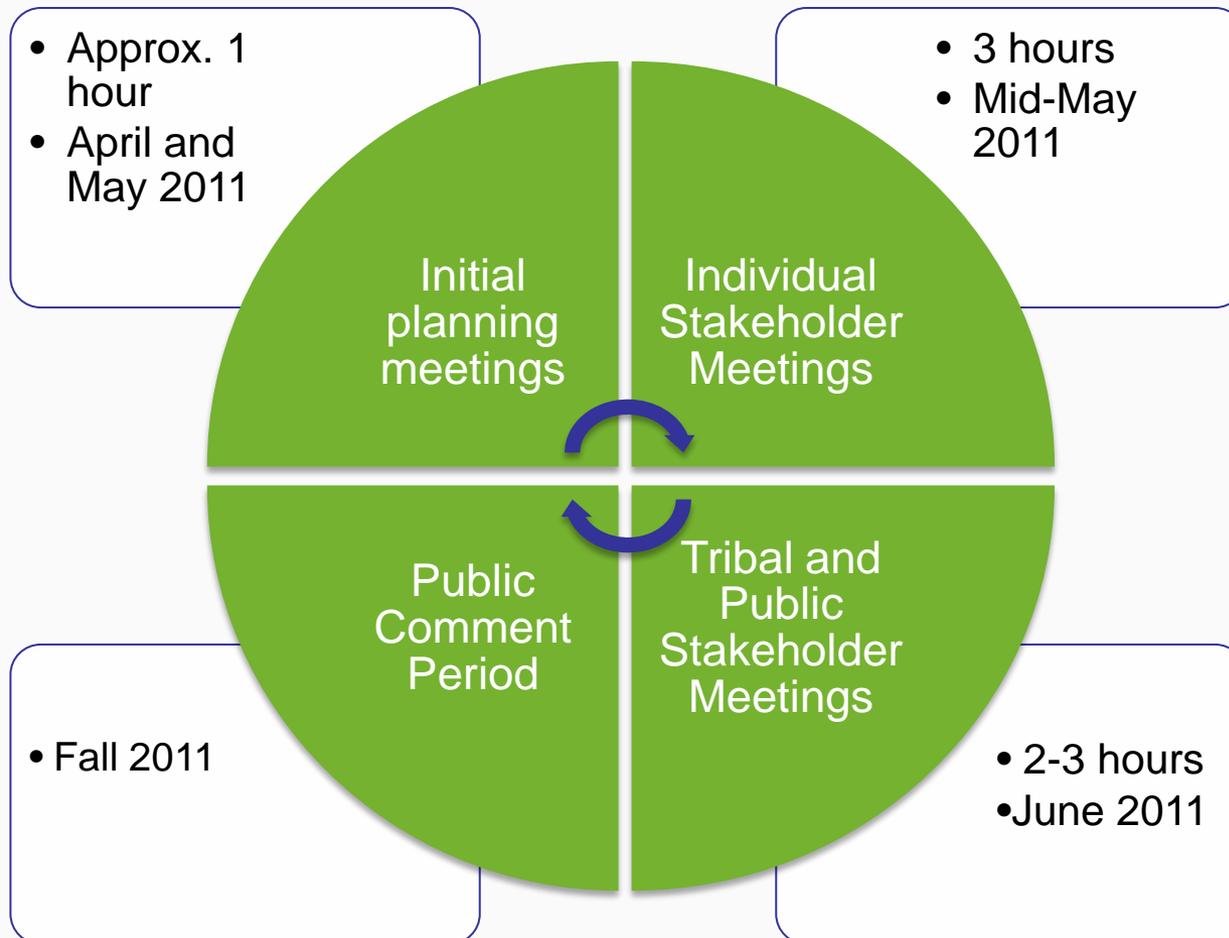
Timeline 2011



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Stakeholder Process



EPA's Approach to Developing Permitting Guidance for Oil and Gas Hydraulic Fracturing Using Diesel Fuels



Important Points to Remember about the Guidance Approaches

Based on existing Underground Injection Control Class II program requirements

Focuses on oil and gas hydraulic fracturing

Recommends approaches for permit writers to consider in writing permits

Cannot set new regulations or change existing regulations



AUTHORITIES

- Safe Drinking Water Act
- UIC Regulations
- UIC Program Implementation

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Hydraulic Fracturing Using Diesel Fuels



Safe Drinking Water Act

- Mandate to UIC Program
 - Protect underground sources of drinking water (USDWs) from endangerment caused by underground injection
- What is an underground source of drinking water?
 - Any aquifer or portion of an aquifer that contains water that is less than 10,000 PPM total dissolved solids or contains a volume of water such that it is a present, or viable future, source for a Public Water System



SDWA Requires a Permit for Underground Injection

- Definition of “underground injection” (as revised by 2005 Energy Policy Act section 1421(d)(1)(B)) excludes:
 - (i) the underground injection of natural gas for purposes of storage; and
 - (ii) the underground injection of fluids or propping agents **(other than diesel fuels)** pursuant to hydraulic fracturing operations related to oil, gas, or geothermal production activities.
- 1421(b)(1)(A) requires state and tribal UIC programs to prohibit underground injection not authorized by a permit issued by a state (or permitted by rule)
- EPA developed the UIC program regulations to protect underground sources of drinking water during injection



Underground Injection Control Regulations

- Six classes of injection wells
- Class II - oil and natural gas-related injection
 - Wells injecting fluids brought to the surface in connection with natural gas storage, conventional oil or natural gas production
 - Enhanced recovery of oil or natural gas
 - Storage of liquid hydrocarbons
- UIC Class II requirements provide a framework



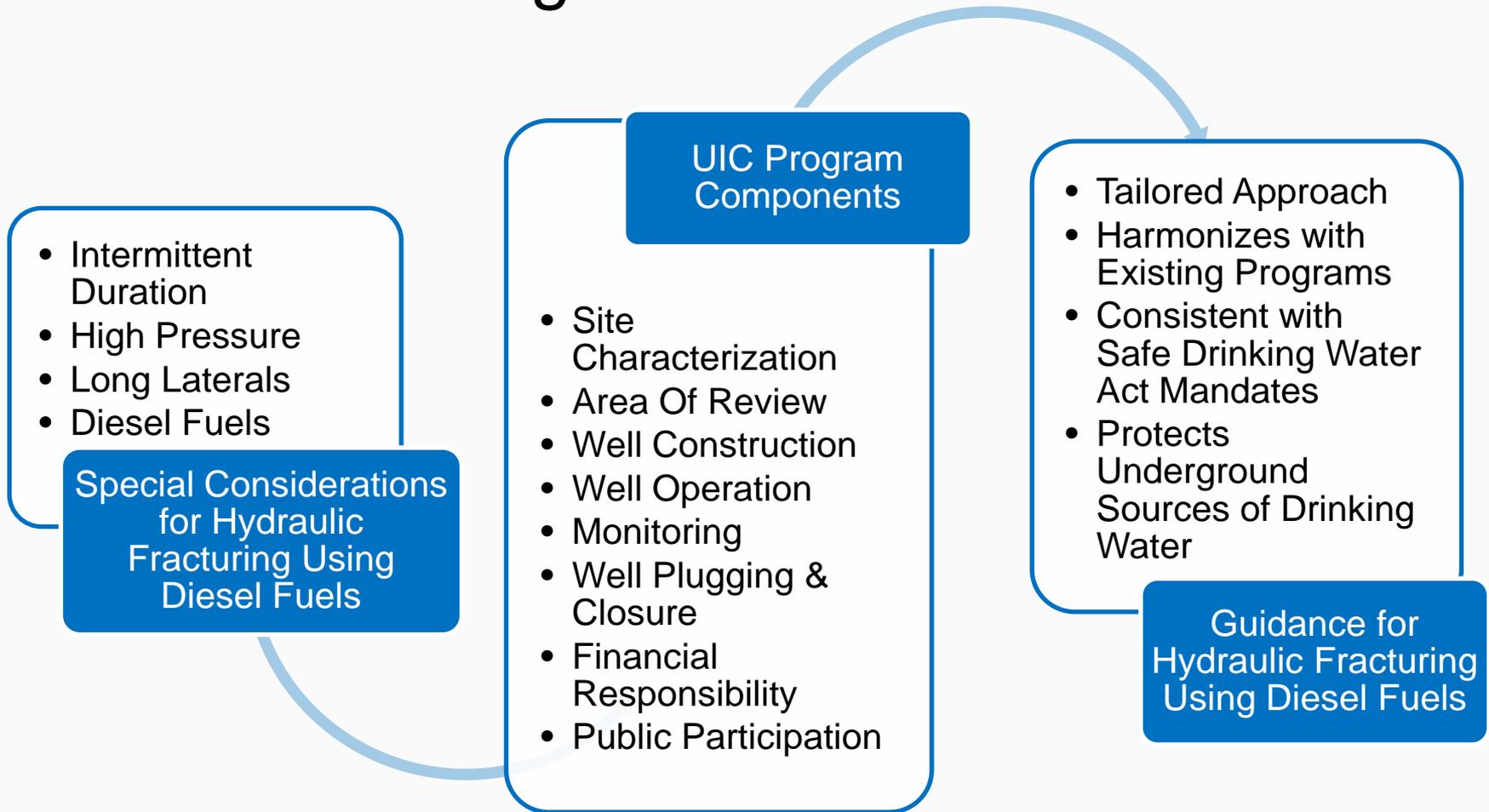
Underground Injection Control Regulations

Key Citations

- 40 CFR 144.12(a):
 - No owner or operator shall construct, operate, maintain, convert, plug, abandon, or conduct any other injection activity in a manner that allows the movement of fluid containing any contaminant into underground sources of drinking water...
- 40 CFR 144.52(a)(9):
 - *Additional Conditions.* The Director shall impose on a case-by-case basis such additional conditions as are necessary to prevent the migration of fluids into underground sources of drinking water.



Program Framework



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UIC Class II Implementation Considerations

- SDWA and the UIC regulations provide for the following implementation methods:
 - State implementation
 - SDWA 1422 requires states and tribes to meet EPA's minimum requirements for UIC programs
 - SDWA section 1425 allows states and tribes to demonstrate that their existing standards are effective in preventing endangerment of USDWs
 - Direct implementation by the EPA (Section 1422)



Class II Well Requirements

Injection of oil and gas production fluids

Protective Requirements:

Construction and Siting

- Cased and cemented to prevent movement of fluids into USDWs
- Construction and design of well (casing, tubing, and packer) varies

Monitoring and Testing

- Internal and external mechanical integrity test (MIT)
- Periodic monitoring and reporting

Recordkeeping and Reporting

- Plan for safe plugging and abandoning of wells





Key Issues for Developing Guidance

- What should be considered as “diesel fuels”?
- What public notification requirements or special environmental justice considerations should be considered for authorization of wells using diesel fuels for hydraulic fracturing?
- What are important siting considerations for hydraulic fracturing wells using diesel fuels?
- What suggestions do you have for reviewing the area around a hydraulic fracturing well using diesel fuels to ensure there are no conduits for fluid migration?
- What well construction requirements should apply to hydraulic fracturing wells using diesel fuels?
- What well operation and mechanical integrity requirements should apply to diesel fuels hydraulic fracturing wells?
- What monitoring and reporting requirements should apply to diesel fuels hydraulic fracturing wells?
- What should the permit duration be, considering the intermittent nature of diesel fuels hydraulic fracturing and Class II plugging and abandonment provisions?
- What are alternatives for authorizing/permitting Class II wells using diesel fuels for hydraulic fracturing?
- What information should be submitted with the diesel fuels hydraulic fracturing permit application?
- What should the time frame be for submitting a Class II diesel fuels hydraulic fracturing permit?
- How do the Class II financial responsibility requirements apply to wells using diesel fuels for hydraulic fracturing?



GUIDANCE APPROACHES

- General Permit Considerations
- Siting & Area of Review
- Construction
- Operation
- Monitoring & Reporting
- Financial Responsibility
- Public Notification & Environmental Justice Concerns



Goals of Diesel Fuels Hydraulic Fracturing Guidance

- UIC programs must issue permits for hydraulic fracturing using diesel
- Guidance objectives
 - describe unique issues when permitting diesel hydraulic fracturing as Class II
 - increase consistency of program implementation
 - streamline coordination with state and tribal oil & gas agencies
 - clarify permit expectations for well owner/operators



Guidance Approaches

General Permitting

Siting & Area of Review

Construction

Operation

Monitoring & Reporting

Financial Responsibility

Public Notification

Environmental Justice

- Definition of diesel fuels
- Permit application info
- Permit turnaround time
- Permit duration for intermittent activity
- Coordination with state and tribal oil & gas agency activities



Guidance Approaches

General Permitting

Siting & Area of Review

Construction

Operation

Monitoring & Reporting

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Siting

- Wells are located where oil & gas resources are located
- Permit applications should include info on confining layers, fracture pressure of injection zone, and existing faults or fractures

Area of Review

- Specific distance from well
- Identify artificial penetrations and features that might allow upward fluid movement



Guidance Approaches

General Permitting
Siting & Area of Review

Construction

Operation
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- Construction materials designed for life expectancy of well
- Casing and cementing prevents fluid movement into USDWs
 - Depth of casing?
 - Additional requirements?



Guidance Approaches

General Permitting
Siting & Area of Review
Construction

Operation

Monitoring & Reporting
Financial Responsibility
Public Notification
Environmental Justice

Goal

- Prevent fluid movement from well into USDWs

Strategies

- Mechanical integrity test (MIT)
- Blow-out preventer?

Frequency of MIT?



Guidance Approaches

General Permitting
Siting & Area of Review
Construction
Operation

Monitoring & Reporting

Financial Responsibility
Public Notification
Environmental Justice

Little to no M&R

- No added burden
- No info to demonstrate USDW Protection

More M&R

- Baseline USDW sampling
- Logging, sampling, testing – frequency?
- Nature of injected fluids
- Injection pressure, flow rate, cumulative volume

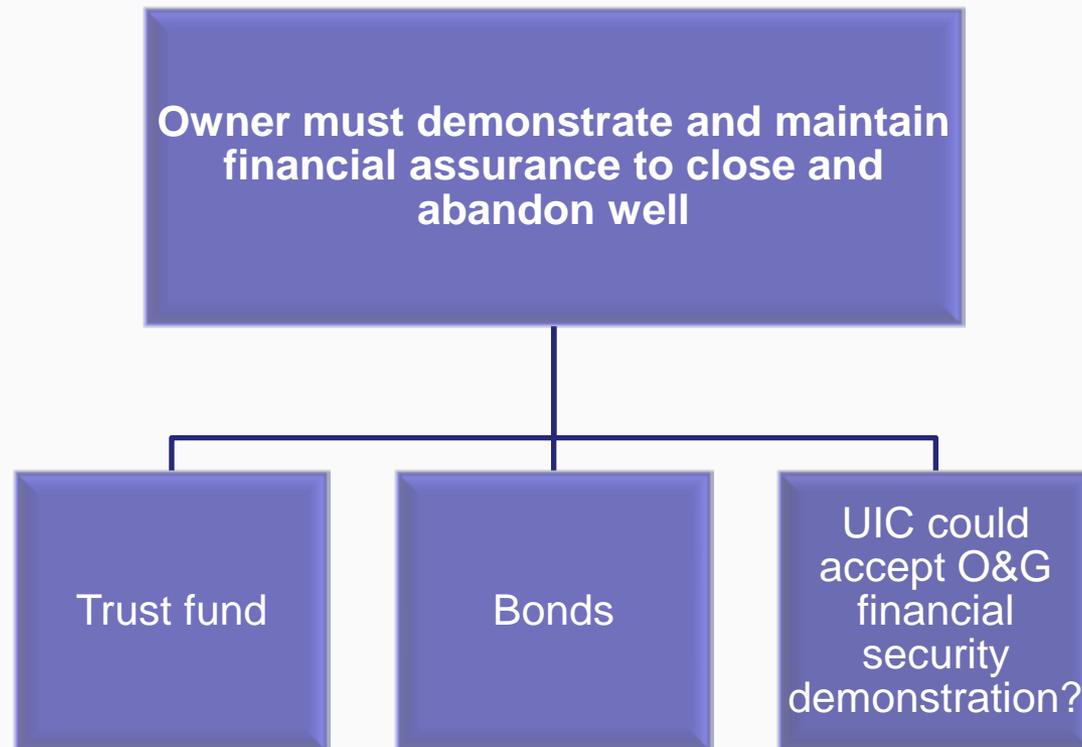


Guidance Approaches

General Permitting
Siting & Area of Review
Construction
Operation
Monitoring & Reporting

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Public Notification
Environmental
Justice

- 30-day written notice to public
- Public hearing
- Provide for public input upon request



Alternatives for authorizing/permitting Class II wells using diesel fuels for hydraulic fracturing

- Individual permits
- Area permits
 - Single operator, multiple wells in a defined area
- Permit by rule
 - Field rules and hearings – additional criteria and requirements in fields
- Regional general permits similar to Army Corps of Engineers



Questions or Comments?

Please use hydraulic.fracturing@epa.gov to submit written comments with subject as “Diesel Fuels Guidance Comments”

For more information about HF in the UIC Program:

<http://epa.gov/hydraulicfracturing>

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