



# Permitting Guidance for Oil and Gas Hydraulic Fracturing Activities Using Diesel Fuels: Response to Summary Comments

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## Introduction and Overview

As noted in the Federal Register (79 FR XXXXX, February 12, 2014), the U.S. Environmental Protection Agency (EPA) has released an interpretive memorandum to clarify Underground Injection Control (UIC) program requirements under the Safe Drinking Water Act (SDWA), as amended by the Energy Policy Act of 2005, for underground injection of diesel fuels in hydraulic fracturing (HF) for oil and gas extraction and a technical guidance containing recommendations for EPA permit writers to consider in implementing these UIC Class II requirements.

The EPA has developed the memorandum and technical guidance to achieve the following objectives: 1) to explain the existing legal requirement under the 2005 statutory amendments to the SDWA and the EPA's implementing regulations regarding applicability of UIC program permitting requirements, that any owner or operator who injects diesel fuels in HF for oil or gas extraction must obtain a UIC Class II permit before injection; 2) to explain the agency's interpretation of the statutory term "diesel fuels in hydraulic fracturing for oil or gas extraction" as used in the SDWA; and 3) to describe existing UIC Class II program requirements for permitting underground injection of diesel fuels in HF and to provide recommendations for EPA permit writers to consider in implementing these requirements to ensure protection of underground sources of drinking water (USDWs).

Prior to publishing the revised guidance, the EPA released draft guidance for public review and comment. Through a May 10, 2012, *Federal Register* notice (FRN) (77 FR 27451), the EPA provided background on and announced the availability of the draft guidance document and requested public response to specific questions<sup>1</sup> related to:

- A. the draft guidance diesel fuels description and three alternative descriptions
- B. the appropriateness of a diesel fuels *de minimis* threshold for purposes of regulation
- C. information on the purpose of using diesel fuels in HF and data on the frequency and volume of such usage
- D. the availability of additional permit approaches to effectively address Class II well closure, plugging and abandonment requirements
- E. the delineation of the well's area of review (AoR) to effectively meet Class II requirements
  - o additional or alternative AoR approaches that would be effective for permitting diesel fuels HF
  - o methods to ensure that the AoR appropriately accounts for the horizontally drilled sections of the well without being computationally burdensome
  - o a description of the circumstances in which it may be appropriate to use the standard approaches for determining an AoR

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<sup>1</sup> For the exact wording of the EPA's request for comment questions, please refer to: <https://www.federalregister.gov/articles/2012/05/10/2012-11288/permitting-guidance-for-oil-and-gas-hydraulic-fracturing-activities-using-diesel-fuels-draft#h-28>

- F. the appropriateness of recommending the submission of standard industry research and exploration data, certain geomechanical characteristics, seismic study results, or other information to be submitted with the permit application,
- G. monitoring to ensure diesel fuels HF operations do not endanger underground sources of drinking water (USDWs)
  - o additional approaches for monitoring of well integrity
  - o the utility of microseismic/tiltmeter monitoring to ensure that the fracture network does not pose a potential risk to USDWs
  - o the inclusion of baseline and periodic water quality monitoring as a requirement

In addition to requesting comments via the *Federal Register*, the EPA met with several stakeholders during the comment period to discuss the guidance and receive input on these questions.

The EPA received comments from both the docket and through the stakeholder meetings regarding the specific questions posed in the *Federal Register* as well as on topics such as the use of rulemaking under SDWA, UIC Class II regulations, and the processes of horizontal drilling and HF.

This document provides an overview of the EPA's consideration of the comments received through the docket in response to its request in the *Federal Register*, as well as the EPA's response to a summary of major public comments on the draft guidance. The EPA has used this opportunity to provide additional explanation surrounding its interpretation of statutory and regulatory requirements, the technical recommendations for the implementation of those requirements, and any changes in the agency's interpretations or recommendations resulting from public comments since issuance of the draft guidance. Please note that this document is a response to a summary of major comments. As such, not every comment submitted is specifically addressed in this document and there are comments reflected in the revised guidance that are not highlighted here. The response to summary comments is organized into three thematically different sections: response to comments requested by the EPA, response to comments on the technical recommendations and response to comments on statutory and regulatory issues.

## Response to Comments Requested by the EPA

This section provides a brief overview of the comments the EPA received in response to its request in the *Federal Register* and a short explanation of how the EPA considered this input in the revised guidance. This section is organized by the questions listed above.

### A. Draft Diesel Fuels Description and Three Alternatives

The EPA received a large number of comments recommending that the agency narrow or expand the definition of diesel fuels as provided in the draft guidance. The revised definition captures five substances with Chemical Abstract Service Registry Numbers<sup>2</sup> (CASRN) that are specifically identified as “diesel fuels” by their primary name, or their common synonyms. The EPA eliminated one of the CASRN from the draft definition, as it did not have “diesel fuels” in its primary name or synonym. Expanded consideration of comments submitted on the diesel fuels definition is found below in the *Diesel Fuels Definition* section starting on page 35.

### B. De minimis Threshold

The EPA received numerous comments supporting, or arguing against the use of a *de minimis* threshold of diesel fuels in HF fluids or propping agents for determining if an injection activity is subject to UIC Class II regulation. The EPA has not included a *de minimis* threshold for diesel fuels for purposes of regulation. More information on this issue is found below in the *Diesel Fuels Definition* section (page 38).

### C. Diesel Fuels Usage

The EPA received several letters with comments on the volume and frequency of diesel fuels usage. Some of the commenters provided general opinions on the frequency of diesel fuels usage and cited the chemical disclosure website: FracFocus<sup>3</sup>, as a source for detailed data. No comments were submitted on the availability or feasibility of substitutes for diesel fuels in HF fluids. While FracFocus data are not statistically representative of the actual usage of diesel fuels in HF fluid in the U.S., these data in combination with industry claims and other sources support the notion that diesel fuels are infrequently utilized in HF operations. The EPA considered this information in generating the memorandum and revised guidance.

### D. Permit Approach Alternatives

The EPA received several letters that offered additional or alternative approaches for setting permit duration to effectively address Class II well closure, plugging and abandonment requirements. Some commenters supported the use of an UIC permit that allows a well to be subject to state requirements only during periods when diesel fuels HF

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<sup>2</sup> Chemical Abstract Service Registry Number, *CAS REGISTRY and CAS Registry Number FAQs*, <http://www.cas.org/content/chemical-substances/faqs> (2013)

<sup>3</sup> FracFocus (<http://fracfocus.org/>) is the national HF chemical registry managed by the Ground Water Protection Council and Interstate Oil and Gas Compact Commission

is not taking place. Other commenters argued that UIC permits should be issued for the life of the injection/production well to take into account any issues that may arise after diesel fuels HF has been completed. The revised guidance provides additional detail on the available options for permitting and managing diesel fuels HF wells under the UIC Class II program. Expanded consideration of the above input and related issues raised by commenters are addressed below under the *Permit Application Submission and Review Process* (page 6) and the *Permit Duration and Well Closure* (page 12) sections.

## **E. Area of Review**

The EPA received numerous comments that considered alternative approaches to AoR delineation, the need for AoR to account for laterally drilled sections, and the appropriateness of using the standard UIC Class II AoR approach for diesel fuels HF wells. However, most of these comments did not provide specific suggestions or substantive input. The recommended approach for AoR in the revised guidance was not significantly modified from the draft guidance. The *Area of Review* section (page 14) below provides detailed responses to select comments on the UIC program AoR approach.

## **F. Information Submitted with the Permit Application**

The EPA received comments in support of and against a recommendation to include additional information with the permit application. Some commenters suggested that the information listed in the *Federal Register* request and recommended in the draft guidance for the submittal constitutes a burden in excess of the UIC Class II program requirements. Others fully supported recommending the submittal of the information listed in the *Federal Register* through the guidance. The revised guidance does not require the submittal of new or additional information by applicants seeking permits for diesel fuels HF wells. Rather, the revised guidance describes existing regulatory requirements for information to be submitted with the permit application and provides technical recommendations for EPA permit writers to consider in implementing these existing requirements. In-depth consideration of the aforementioned issues and others that were raised are found below in the *Information Submitted with the Permit Application* section (page 8).

## **G. Monitoring**

The EPA received numerous comments in response to the agency's request for input on the potential inclusion of additional monitoring under UIC Class II permits for diesel fuels HF. Some commenters suggested that the monitoring listed in the *Federal Register* request and recommended in the draft guidance for the submittal constitutes a burden in excess of the UIC Class II program requirements. Others fully supported the monitoring listed in the *Federal Register* and suggested additional monitoring the EPA should recommend for Class II diesel fuels HF permits. The revised guidance includes an updated monitoring section that more clearly explains the existing UIC Class II regulatory requirements for monitoring and includes recommendations for monitoring activities for EPA permit writers to consider when implementing these requirements. The *Monitoring and Reporting* section (page 22) and the *Mechanical Integrity Testing* section

(page 18) below provide thorough responses to key comments related to diesel fuels HF monitoring under the UIC Class II program and a detailed overview of the flexibility the UIC Class II program has with regard to the application of monitoring requirements.

## Response to Comments on Technical Recommendations

The comments and responses in this section capture a summary of substantive issues raised by commenters regarding the technical recommendations for permitting diesel fuels HF by EPA permit writers along with the EPA's consideration of this input. Comments and responses are organized under sections that correspond to the technical recommendation section headings in the revised technical guidance.

### Permit Application Submission and Review Process

1. **Comment:** The EPA should set a definitive diesel fuels HF permit review timeframe. Open-ended permit review periods could delay the development and production of an oil or gas resource.

**Response:** The UIC Class II regulations do not specify a definitive time-frame for permit review. The EPA is not recommending any such specific time-frame in the revised technical guidance, as the amount of time needed to evaluate the application and set appropriate permit requirements that prevent the movement of contaminated fluids and adequately protect USDWs can vary greatly depending on local conditions, the amount of information submitted for consideration, the size and complexity of the proposed activity, and the completeness of the application. The EPA UIC Program Director will use available options to expedite the review of applications while ensuring that such review allows full consideration of all information required by 40 CFR 146.24 and development of permit limits that are protective of USDWs. The EPA further notes that a Class II UIC permit may not be issued unless the application is complete (40 CFR 144.31(d)). The amount of time necessary for Class II permit review depends in part on the completeness and adequacy of the data submitted by the applicant with the permit application. The EPA is committed to working with applicants to make certain the information they provide meets the Class II regulatory requirements in order to minimize the time needed for diesel fuels HF permit review.

2. **Comment:** The EPA should put a process in place to show consistency in permit reviews and avoid conflicts of interest.

**Response:** Existing regulations governing the UIC program provide the framework for consistent, unbiased permit reviews. Regulations under 40 CFR 124 specify the EPA's procedures for issuing, modifying, revoking and reissuing, or terminating a number of different agency permits, including permits for diesel fuels HF. Subpart A contains general procedural requirements applicable to all permit programs covered by these provisions. Subparts B through D and Subpart G supplement these general provisions with requirements that apply to only one or more of the EPA's programs.

3. **Comment:** In some areas an owner or operator will have to work with both state and federal regulators simultaneously to receive the permits required for diesel fuels HF. This

could lead to an owner or operator having to make changes to their proposed operation at the behest of one party that conflict with the changes suggested by the other.

**Response:** The EPA recognizes that oil and gas wells using diesel fuels may be subject to permitting requirements of multiple agencies at the state, tribal and/or federal levels, but this should not present significant conflicts. The EPA UIC program has extensive experience with successful state and federal agency coordination to meet underground injection permit requirements and to issue permits in a timely fashion. The technical guidance recommends that EPA UIC Program Directors continue to coordinate with state oil and gas programs and the appropriate Bureau of Land Management (BLM) office to establish a mechanism to inform owners or operators of applicable UIC program requirements and application deadlines. This recommendation to coordinate with appropriate state and federal programs is consistent with the Secretary of Energy Advisory Board's (SEAB) Shale Gas Production Subcommittee 90-Day Report and Second 90-Day Report<sup>4</sup> (August 18 and November 18, 2011) recommendations to improve communication among federal and state regulators.

In most major oil and gas producing states, the same agency that administers other oil and gas extraction-related permits (e.g., wastewater discharge permits under the Clean Water Act) also issues UIC permits. Where possible, in areas where the EPA is the UIC Class II direct implementation authority, the EPA will work with other permitting agencies to fulfill permit requirements with compatible technical specifications to reduce burden and minimize conflicts for owners and operators, while preventing endangerment of USDWs from diesel fuels HF wells.

4. **Comment:** The EPA should consider the provisions detailed in the Bureau of Land Management (BLM) Oil and Gas; Hydraulic Fracturing on Federal and Indian Lands; Proposed Rule<sup>5</sup> to ensure as much consistency as possible between the HF programs of both agencies.

**Response:** In development of the revised technical guidance, the EPA worked closely with the BLM to ensure that the EPA's recommendations for implementing the Class II UIC regulations were consistent with the BLM's proposed requirements where possible. However, the EPA notes that the recommendations in the technical guidance were based on the requirements in the SDWA and its implementing regulations, which differ from the statutory and regulatory requirements upon which the BLM's proposed rule was based. In developing recommendations in this revised guidance, the EPA was constrained by the discretion authorized under the existing statutory and regulatory requirements for

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<sup>4</sup> US Department of Energy, *Secretary of Energy Advisory Board Shale Gas Subcommittee 90 Day Report, August, 18 2011*, [http://www.shalegas.energy.gov/resources/081811\\_90\\_day\\_report\\_final.pdf](http://www.shalegas.energy.gov/resources/081811_90_day_report_final.pdf) and

US Department of Energy, *Secretary of Energy Advisory Board Shale Gas Subcommittee Second Ninety Day Report, November, 18 2011*, [http://www.shalegas.energy.gov/resources/111811\\_final\\_report.pdf](http://www.shalegas.energy.gov/resources/111811_final_report.pdf)

<sup>5</sup> DOI Bureau of Land Management, *Oil and Gas; Hydraulic Fracturing on Federal and Indian Lands; Proposed Rule (43 CFR 3160)*, <http://www.gpo.gov/fdsys/pkg/FR-2013-05-24/pdf/2013-12154.pdf>, (Federal Register Vol. 78 No. 101, May 24, 2013)

UIC Class II permitting. Consistency with the BLM's proposed regulation is only possible to the extent permitted under such existing requirements.

The EPA further notes that the revised technical guidance may be different than the BLM proposed rule in a number of places due to differences in the agencies' missions. Authorized by the Federal Land Policy and Management Act of 1976, BLM works to sustain the health, diversity, and productivity of America's public lands for the use and enjoyment of present and future generations. The EPA under the SDWA focuses on protection of current and future drinking water supplies. BLM's authority and HF program is much larger in scope than the EPA UIC program, which is restricted to HF where diesel fuels are used in the fracturing fluid and/or propping agents.

### **Information Submitted with the Permit Application**

1. **Comment:** The draft guidance recommendations require the submittal of a quantity of information above the requirements under the UIC Class II program or under any state oil and gas program without a justification that such information is needed to ensure USDWs are safe from diesel fuels HF.

**Response:** The EPA is not requiring the submittal of new or additional information by applicants seeking permits for HF using diesel fuels. Rather, the technical guidance describes existing regulatory requirements for information that must be submitted by all applicants for UIC Class II permits, and provides recommendations for EPA permit writers to consider in implementing these existing requirements with respect to permits for HF using diesel fuels. The recommendations included in the guidance are in some cases similar to practices recommended by the American Petroleum Institute (API)<sup>6</sup>, and on a case-by-case basis, EPA permit writers may find such information and conditions to be necessary to prevent the migration of fluids into USDWs. The practices outlined in the technical guidance help to ensure the protection of water quality and to further develop HF best practices to improve short-term and cumulative environmental outcomes as advocated by the SEAB. In addition, the EPA notes that the information required to be submitted with the application is not static for all Class II wells. EPA UIC permit writers have latitude to require more or less information for permit application reviews on a case-by-case basis to reflect the details of the individual proposal and to provide protection of USDWs (40 CFR 144.52(a)(9)).

2. **Comment:** A requirement for applicants to submit seismic data and a determination that injection would not cause seismicity that interferes with the containment of fluids as part of the Class II permit application is unnecessary and burdensome.

**Response:** The EPA disagrees that seismicity-related information submission is unnecessary. The EPA's Class II regulations specify that applicants may be required to provide information on faults within the AoR (40 CFR 146.24(a)(2)) and are required to

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<sup>6</sup>American Petroleum Institute, *API HF1, Hydraulic Fracturing Operations-Well Construction and Integrity Guidelines*, [http://www.api.org/~media/Files/Policy/Exploration/API\\_HF1.pdf](http://www.api.org/~media/Files/Policy/Exploration/API_HF1.pdf) (October 2009)

provide appropriate geologic data on the injection and confining zones (40 CFR 146.24(a)(5)), which can include seismic data. The regulations also authorize permit writers to “impose such additional conditions as are necessary to prevent the migration of fluids into [USDWs],” which may also include submission of seismicity-related information (40 CFR 144.52(a)(9)). Geomechanical data related to seismic risk has been a regular part of deep well injection permits under the UIC Class II and Class VI programs. A review of geologic data related to potential seismic activity is supported by other institutions; in its “Golden Rules” report, the International Energy Agency (IEA) notes the importance of surveying the geology of an area to assess the potential for seismic activity as a result of drilling and HF<sup>7</sup>. The revised guidance recommends that the EPA UIC Program Director request information of seismic history to be submitted with the permit application only if prior seismic activity in the area leads to concern about the endangerment of USDWs. Additionally, the EPA UIC program will continue to evaluate the need for seismic data to be included with the permit application.

3. **Comment:** The recommendations for applicants to submit standard industry exploration and field collection information and to submit geomechanical data as part of the UIC Class II permit application, as specified in the May 10, 2012, FRN, is not needed for the EPA UIC permit writer to determine if a proposed Class II diesel fuels HF well will endanger nearby USDWs.

**Response:** The EPA agrees that the submittal of exploration and field collection data (e.g., outcrop and core samples) is in most cases not necessary for determining if an underground injection activity will result in the movement of fluids containing contaminants into USDWs. However, if needed, such information may be requested on a case-by-case basis per 40 CFR 144.52(a)(9). The EPA also agrees that the addition of a separate recommendation in the guidance to request the submittal of geomechanical data is unnecessary. Generally, such geomechanical information may be requested for review at the EPA UIC Program Director’s discretion along with the injection and confining zone data submitted to fulfill 40 CFR 146.24(a)(5). This discretion has been noted in the revised technical guidance.

4. **Comment:** A demonstration of confining zone integrity should be achieved by the applicant before approval of diesel fuels HF.

**Response:** The EPA agrees. In order to receive an underground injection permit under the SDWA, the applicant seeking authorization must satisfy the UIC Program Director that such underground injection will not endanger USDWs (SDWA Section 1421(b)(1)(B)). The revised technical guidance details the obligation of the UIC program director to consider a substantial amount of information submitted with the application,

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<sup>7</sup> International Energy Agency, *Golden Rules for a Golden Age of Gas, World Energy Outlook Special Report on Unconventional Gas*, <http://www.worldenergyoutlook.org/goldenrules/>, (May 29, 2012)

including geologic data on the injection zone and the confining zone, prior to issuance of a UIC Class II permit (40 CFR 146.24(a)(5)).

5. **Comment:** The migration of injected fluids following the HF activity is a threat to USDWs. The EPA should require with the UIC Class II permit application the submittal of a plan for periodic monitoring of USDWs within the AoR after diesel fuels HF and continuing until the well is closed.

**Response:** The EPA's regulations require the submittal of a plan with the application that meets the requirement for plugging and abandonment to prevent fluid movement into or between USDWs (40 CFR 144.31(e)(10)). The regulations also require that the owner or operator plug and abandon the well in accordance with the plan after a cessation of operation of two years, unless the owner or operator describes, to the satisfaction of the Regional Administrator, procedures the owner or operator will take to ensure the well will not endanger USDWs during temporary abandonment (144.52(a)(6)(ii)). The revised technical guidance specifically recommends the submittal of baseline USDW geochemical monitoring data with the permit application and that EPA permit writers include monitoring provisions for USDWs in the AoR in the plugging and abandonment plan, or in a pre-permit expiration plan per their authorized discretion under 144.52(a)(9). The technical guidance also recommends that where a well is converted out of the UIC program following HF, permit writers allow for adequate time to collect monitoring data prior to such conversion, in order to demonstrate that injection during HF has not endangered USDWs. Where a well is managed as temporarily abandoned during the period of production (i.e. while no injection is occurring), the guidance recommends that permit conditions should still require monitoring to ensure that injected fluids do not migrate out of the injection zone during production. These permit requirements and recommendations are designed to ensure that migration of injected fluids following HF do not pose a threat to USDWs.

Water quality monitoring is recommended by API in its HF1 guidance and suggested by the industry consortium: Appalachian Shale Recommended Practices Group<sup>8</sup> (ASRPG). In addition, the general concept of establishing baselines for environmental indicators, such as groundwater quality, is listed by the IEA as one of its "Golden Rules." The EPA technical guidance provides specific recommendations for the EPA UIC program manager to exercise their authorized discretion under the UIC Class II regulations to meet the statutory requirement to prevent underground injection which endangers drinking water sources (SDWA Section 1421(b)(1)(B)).

The EPA notes that even after a well's UIC permit has expired, the owner and operator may still be subject to the provisions of the SDWA Section 1431 in the event of an imminent and substantial endangerment to the health of persons.

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<sup>8</sup> Appalachian Shale Recommended Practices Group, *Recommended Standards and Practices*, [http://asrpg.org/pdf/ASRPG\\_standards\\_and\\_practices-April2012.pdf](http://asrpg.org/pdf/ASRPG_standards_and_practices-April2012.pdf), (April 2012)

6. **Comment:** The EPA does not have the authority to require disclosure of the complete chemical and physical characteristics of the injectate before injection. Instead, the EPA should only require the disclosure of the diesel fuels component of the fracturing fluid. In addition, the EPA should provide protections for confidential business information (CBI).

**Response:** This comment incorrectly asserts that the SDWA does not authorize the EPA to require disclosure of the chemical and physical characteristics of the injectate. Under the 2005 SDWA amendments, HF with diesel fuels is subject to the UIC Class II regulations – which specifically require the owner or operator to provide the EPA with the “chemical and physical characteristics of the injectate.” (40 CFR 146.24(a)(4)(iii)). The commenters’ argument appears to be that because Congress exempted only *diesel fuels* HF from the overall exclusion for HF, the EPA’s authority should be limited to requiring disclosure of only the diesel fuels – not other constituents – in the HF fluid. However, the regulations clearly require disclosure of the “injectate” – not of particular constituents of the injectate. Congress did not provide any indication that the regulations should somehow be applied differently for diesel fuels HF than for other Class II activities. For all UIC well permit applications, any information submitted to the EPA may be claimed as confidential by the submitter and will be treated as specified in 40 CFR part 2 (40 CFR 144.5).

7. **Comment:** The EPA should require the submittal of baseline geochemical data for all formations within the AoR as part of the UIC Class II permit application for diesel fuels HF wells.

**Response:** In the technical guidance, the EPA recommends that EPA UIC permit writers require the collection of baseline geochemical information because there may be instances where such baseline data would help permit writer determine the potential for USDW contamination. As was mentioned in response to question 5 of this section, baseline water quality data collection is recommended by a number of industry professional organizations and may be used as an industry best practice in combination with post-fracture monitoring, to help demonstrate whether or not fluid has migrated after HF using diesel fuels.

8. **Comment:** The EPA should not include the collection of baseline geochemical data for all USDWs and other “formations of interest” within the AoR because it may require the drilling and construction of costly monitoring wells providing another potential pathway of contamination.

**Response:** As is mentioned in response to comment 5 and comment 7 of this section, the collection of baseline water quality data is an integral part of USDW protection during diesel fuels HF injection and is recommended in the revised guidance. Baseline water quality data is often gathered by industry as a best management practice to enhance community outreach and reduce liability. While the EPA agrees that drilling a monitoring well to collect baseline geochemical data could potentially create a pathway for the

migration of fluids and contamination of USDWs, baseline monitoring wells can be and are often constructed in a manner that prevents any such contamination. Such wells are sometimes needed to meet requirements under the UIC Class VI program (40 CFR 146.82(a)(6)). The EPA recognizes that not all USDWs and other formations of interest are accessible through existing wells at the time of permit application submittal and that constructing monitoring wells may not be feasible due to cost. In such cases, the EPA UIC Program Director will work with the applicant to help fulfill the requirements under 146.22(b)(2)(i) and (f)(2) during the drilling and construction of diesel fuels HF wells to prevent endangerment of USDWs.

## **Permit Duration and Well Closure**

1. **Comment:** Re-applying for a permit to perform HF using diesel fuels in a well that was previously approved for diesel fuels HF is unnecessary and burdensome.

**Response:** The EPA UIC program allows for permitted wells to be managed as temporarily abandoned during times when injection ceases or is curtailed (40 CFR 144.52(a)(6)(ii)). This option may be preferable in situations where the well owner or operator plans to re-fracture the formation at some point in the future. During a period of temporary cessation of injection, the UIC Program Director may authorize alternative or reduced requirements for mechanical integrity, operation, monitoring and reporting other than those required in 40 CFR 146 and 144.52. This allows the requirements to be more appropriate to the short-term nature of diesel fuels HF to the extent that changes in requirements will not result in an increased risk of movement of fluid into a USDW (40 CFR 144.16). Alternatively, an UIC well owner or operator may convert the well out of the UIC program following diesel fuels HF injection and avoid being subject to UIC program requirements during the period of non-injection. However, once a diesel fuels HF well permit is closed, the USDW protections afforded by the permit no longer apply. Therefore, as they would with a new well, an owner and/or operator is required to submit information demonstrating that proposed diesel fuels HF injection through the well will not allow movement of any fluid containing a contaminant into a USDW (40 CFR 144.12(a)).

2. **Comment:** Managing wells as temporarily abandoned during periods of hydrocarbon production (i.e., non-injection) results in burdensome dual permit monitoring and reporting requirements to be fulfilled by well owners and/or operators.

**Response:** The EPA disagrees that managing a well as temporarily abandoned is necessarily burdensome. As noted in the technical guidance, the UIC Program Director may authorize reduced requirements for monitoring and reporting, among other Class II requirements, during periods of non-injection (40 CFR 144.16). The EPA recommends and encourages permit writers and UIC Program Directors to work with owners and operators of diesel fuels HF wells to appropriately exercise this discretion while maintaining protection of USDWs.

3. **Comment:** The option for reduced reporting requirements under temporary abandonment does not correspond with UIC Program Guidance #78, which says, “All monitoring and testing programs should remain in force until such time as the wells are either put back in service or properly plugged and abandoned.”

**Response:** The commenter has misinterpreted the purpose of the EPA’s UIC Program Guidance #78. The UIC Program Guidance #78 clarifies that for a temporarily abandoned well, all monitoring and testing programs approved by the Regional Administrator under 40 CFR 144.52(a)(6)(ii) must remain in place until that well is either closed or put back into active service, when it is subject to potentially different requirements. Under 40 CFR 144.16, the UIC Program Director has the ability to authorize less stringent permit requirements applicable to active injection wells. This includes monitoring during periods of temporary abandonment. Such an approved, but reduced, monitoring and testing program for a well would remain in place during periods of temporary abandonment as is specified in UIC Program Guidance #78.

4. **Comment:** The EPA should not utilize short duration permits and/or manage wells as temporarily abandoned with reduced monitoring requirements because this would not provide for USDW protection from long-term migration of injected diesel fuels.

**Response:** The EPA disagrees that managing wells as temporarily abandoned or use of short duration permits would result in insufficient protection for USDWs. In order for a UIC Class II diesel fuels HF well to be managed as temporarily abandoned, the well owner or operator must follow procedures to ensure that the well will not endanger USDWs. This includes preventing fluids from moving into or between USDWs. Specifically, before a well can be managed as temporarily abandoned, the owner or operator must describe actions and procedures they will take to ensure the well will not endanger USDWs during this period to the satisfaction of the EPA Regional Administrator (40 CFR 144.52(a)(6)). Wells that are plugged and abandoned under the UIC Class II program are required to be plugged and abandoned in a manner that will not allow the movement of fluids into or between USDWs (40 CFR 146.10). With respect to short-duration permits, if a UIC Class II diesel fuels HF well permit expires before plugging and abandonment or a well is converted out of the UIC program before plugging and abandonment, as it may be for hydrocarbon production, the EPA’s guidance recommends that permit writers still allow adequate time to collect monitoring data to demonstrate that injection during HF has not endangered USDWs, per their authorized discretion under 40 CFR 144.52(a)(9). The well may also still be subject to state and/or tribal regulation for plugging and abandonment. In addition, an owner or operator may be subject to the provisions of the SDWA Section 1431 after expiration of a UIC permit in the event of an imminent and substantial endangerment to the health of persons.

5. **Comment:** The inclusion of a well closure or plugging and abandonment plan with the permit is unnecessary and inappropriate for oil and gas production wells given that well closure will not occur for a long period of time after HF has ended.

**Response:** UIC regulations provide that UIC Class II wells be plugged with cement “prior to abandoning”, which is not necessarily immediately after injection. This allows for plugging to be postponed until the end of the facility’s life (40 CFR 146.10). Although the UIC well closure plan might not be enacted during the period of the permit or for years after underground injection has ceased, a well closure plan helps to ensure that appropriate plugging and abandonment measures will be taken at the end of the facility’s life. The EPA does allow for updates to the well closure plan over time to reflect changes in knowledge of local geology and financial requirements to meet the UIC goal of protecting USDWs from endangerment.

## Area of Review

1. **Comment:** The recommended AoR delineation approach in the draft guidance for HF with diesel fuels will force permit applicants to conduct expensive assessments over many square miles where no reasonable evidence of environmental risk associated with diesel fuels HF has been identified.

**Response:** The EPA disagrees with commenters and continues to recommend the AoR delineation approaches discussed in the draft guidance for this revised technical guidance. As is more fully explained in response to comment 4 in the *Safe Drinking Water Act and Other Statutory Authority* section of this document, the UIC Class II requirements, including AoR, apply to HF operations using diesel fuels pursuant to existing statutory and regulatory requirements. The revised guidance provides recommendations for how best to apply these existing Class II AoR requirements to HF activities using diesel fuels. Delineating and evaluating an AoR consistently with the recommended approaches in the revised guidance helps to ensure that there are no conduits in the vicinity of the injection well that could enable fluids to migrate into USDWs and identifies conduits that may be appropriately addressed by corrective action. Because of the directional component of many diesel fuels HF wells, the technical guidance recommends an expansion of the AoR beyond what is typically used for a vertical well, within the discretion authorized under the regulations.

AoR is not an unknown concept to owners and operators using HF. The Center for Sustainable Shale Development (CSSD) lists the establishment of an AoR which encompasses both the vertical and horizontal legs of the planned well prior to drilling as a performance standard to be put into practice by its members<sup>9</sup>. The CSSD AoR standard is similar to the UIC Class II approach; it includes a comprehensive characterization of subsurface geology, a demonstration of the presence of an adequate confining layer(s) above the production zone that will prevent adverse migration of HF fluids, and a thorough investigation of any active or abandoned wellbores within the AoR or other geologic vulnerabilities that penetrate the confining layer and adequately address identified risks.

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<sup>9</sup> Center for Sustainable Shale Development, *Surface and Ground Water Performance Standards*, <https://www.sustainableshale.org/performance-standards/>, (August, 2013)

2. **Comment:** The draft guidance proposed AoR approach ignores the limitations of a fracture stimulation treatment. To maximize recovery efficiency, fracture stimulation is designed to confine the fractures to the target formation within overlying and underlying confining beds. In addition, the fractures themselves extend no more than a few hundred feet from the bore hole with pressure influence within the formation just a few feet beyond the fracture. It is unlikely that diesel fuels HF performed thousands of feet below or above the nearest USDW will affect water quality, making the AoR unnecessary.

**Response:** The EPA disagrees with the comment that the AoR requirements in the UIC Class II regulations (40 CFR 146.6, 146.24(a)(2) and 146.24(a)(3)) are “unnecessary” for HF operations using diesel fuels. UIC Class II regulations applicable to HF using diesel fuels specifically require determination of the AoR (40 CFR 146.6) and the guidance provides recommendations to permit writers for how best to implement this requirement. The EPA recognizes that the extent of hydraulically stimulated fractures is intended to remain confined to the target formation to limit interactions with nearby non-productive reservoirs that can impact production. However, there is evidence of fracture stimulations communicating with adjacent wells.<sup>10</sup> There is also evidence of fractures propagating beyond the target formation possibly due to interaction with existing natural faults and fractures.<sup>11</sup> In addition, a number of studies have shown that hydraulic fractures can in rare instances extend to almost 2,000 feet<sup>12</sup> and can connect with natural fractures to create even greater fracture complexity.<sup>13</sup> The regulatory requirement to conduct an AoR, plus the EPA’s recommended approaches for implementing this requirement with respect to HF operations using diesel fuels, helps to ensure that the underground injection of fluids does not create or take advantage of available pathways of migration and result in contamination. It is therefore both reasonable and appropriate to apply the Class II regulations to HF operations using diesel fuels.

3. **Comment:** The proposed AoR should include consideration of additional elements, such as: the type of soil formation as provided by the well log, historic seismic activity, and geotechnical characteristics of the confining layer, to prevent the migration of diesel fuels to drinking water aquifers.

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<sup>10</sup> BC Oil and Gas Commission, *Communication During Fracture Stimulation, Safety Advisory 2010-03* <http://www.groundworkcanada.org/node/116>, (May 20, 2010)

“Hydraulic Fracturing; When Two Wells Meet, Spills Can Often Follow”, *Energy Wire*, August 5, 2013, <http://www.eenews.net/energywire/stories/1059985587>

<sup>11</sup> Research Partnership to Secure Energy for America and the Gas Technology Institute, *New Albany Shale Gas Project 07122-16 Final Report, Section 6.2*, <http://www.rpsea.org/media/files/project/6c833912/07122-16-FR-New-Albany-Shale-Gas-Project-11-23-10-P.pdf> (November 23, 2010).

<sup>12</sup> Fisher, K. and Warpinski, N., “Hydraulic-Fracture-Height Growth: Real Data”, *SPE Production & Operations* vol. 27 n1 (February 2012)

Davies et al., “Hydraulic Fractures: How far can they go?”, *Marine and Petroleum Geology*, (November 2012, vol 37, n 1): 1-6

<sup>13</sup> Fisher, M.K. et al., “Integrating Fracture-Mapping Technologies To Improve Stimulations in the Barnett Shale”, *Society of Petroleum Engineers: SPE Production & Facilities*, (May 2005): 85-93

**Response:** The EPA agrees that a well-balanced consideration of site elements is necessary in order to issue a permit for a diesel fuels HF well. The delineation of the AoR is one component of the permit review process that influences data collection. Applicants are required to submit extensive data for the well site as described in regulations 40 CFR 144.31, 146.22 and 146.24. Furthermore, the EPA UIC Program Director and EPA permit writer do have authority to review additional data not listed in the above regulations if such data are necessary to prevent the migration of fluids into USDWs (40 CFR 144.52(a)(9)).

4. **Comment:** The EPA should require a method for delineating and evaluating AoR that calls for use of the best available modeling and the addition of a protective buffer to account for uncertainty in the prediction of fracture length and location.

**Response:** The UIC regulations for AoR found at 40 CFR 146.6 do not specify the use of modeling or the addition of a protective buffer and the EPA cannot require such practices through a guidance document. However, where sufficient data and an appropriate model are available, owners and operators may consider the use of modeling and the inclusion of a protective buffer zone. As part of the application review process, the approach used to delineate the AoR for a proposed diesel fuels HF well is evaluated to prevent the migration of fluids into nearby USDWs.

5. **Comment:** The Class II AoR requirements are applied on a well-by-well basis. In areas of hydrocarbon development there are likely to be other wells penetrating the same formation proposed to be fractured that have themselves been previously fractured or will be fractured in the future. Thus, the approval of a well permit would be impossible based on the existence of potential pathways of migration identified through the AoR analysis.

**Response:** The EPA disagrees that the Class II requirements for AoR delineation and analysis would make approval of a diesel fuels HF well in an existing hydrocarbon production area impossible because of the current and expected presence of additional pathways of contamination (i.e., fractures) within the target formation. The UIC program AoR methodology can account for the characteristics of a developed hydrocarbon production area because the focus of the AoR is to prevent migration of fluids into or between USDWs. This does not preclude the existence of properly constructed wells accessing the same formation as the proposed diesel fuels HF well.

In addition, concerns about AoR evaluations in areas of hydrocarbon development may be addressed by the issuance of an area permit, which the EPA has recommended in the technical guidance. As provided in 40 CFR 144.33(a), an area permit authorizing multiple wells within the same well field, facility site, reservoir, project, or similar unit may be issued in lieu of an individual permit for each well. In the case of an area permit, only one AoR determination for the entire project area is required (40 CFR 146.6(a)(1)(ii)), which allows the avoidance of repetitive review of contamination pathways in a hydrocarbon development area.

## Diesel Fuels Hydraulic Fracturing Well Construction

1. **Comment:** The EPA recommendation to extend casing and cementing through the lowermost USDW does not take into account local geologic conditions where the diesel fuels HF target formation is above one or more USDW formations. The extension of casing and cementing through the target formation to reach lower USDWs would be an unnecessary expense and would provide a potential pathway for HF fluid migration.

**Response:** The EPA recognizes the validity of the above comment and has adjusted the well construction recommendations in the technical guidance to take into account such situations. For Class II diesel fuels HF wells, the EPA’s revised technical guidance recommends a combination of cement and casing to isolate the lowermost USDW encountered in the bore hole from the HF target formation(s). The EPA’s requirements and recommendations for well construction are consistent with federal conditions for several classes of injection wells, and are similar to practices recommended in API guidance, as well as to requirements for production wells in several states. Industry members of CSSD recognize the importance of designing and installing casing and cement to completely isolate the well and all drilling and produced fluids from surface waters and aquifers, to preserve the geological seal that separates fracture network development from aquifers, and prevent vertical movement of fluids in the annulus<sup>14</sup>. EPA UIC Class II requirements and the diesel fuels HF recommendations are intended to achieve a comparable standard. In addition, the EPA recommendations promote the adoption of best practices in well development and construction, as recommended by the SEAB to avoid methane migration and leakage during production.

2. **Comment:** Oil and gas production wells that may be used for subsequent diesel fuels HF that were constructed prior to the publication of Underground Injection Control Guidance #84 should be exempt from EPA UIC Class II permitting requirements because they were built in compliance with applicable state oil and gas permit regulations.

**Response:** UIC regulations provide that “[a]ny underground injection, except into a well authorized by rule or except as authorized by permit issued under the UIC program, is prohibited” (40 CFR 144.11). Because Congress has defined “underground injection” in the 2005 Energy Policy Act to include HF using diesel fuels, an owner or operator who injects diesel fuels during HF, even through an already constructed oil or gas production well, must obtain a UIC Class II permit before injection begins. This requirement is a function of the statute and regulations, not a function of the revised guidance, which only explains the existing statutory and regulatory requirements. The fact that construction of the well predates the issuance of the guidance does not change the underlying statutory and regulatory obligation to obtain a UIC Class II permit for HF using diesel fuels – which exists irrespective of the issuance of the guidance.

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<sup>14</sup> CSSD, *Ibid*, Standard No. 7

A previously constructed oil and gas production well built in compliance with applicable state oil and gas permit regulations may, in some cases, meet the all or some of the Class II permit requirements, particularly where the well has maintained mechanical integrity. In such cases, the EPA will work to the extent possible with owners and operators seeking permits for diesel fuels HF wells to ensure injection does not endanger USDWs.

### **Mechanical Integrity Testing**

- 1. Comment:** The EPA UIC program requirement for a mechanical integrity test (MIT) to be performed on Class II wells on a five-year interval is unnecessary for diesel fuels HF wells. After the diesel fuels HF activity has been completed, the well is engaged in the production of hydrocarbons and is therefore not subject to the high injection pressures associated with underground injection during this period. The execution of MITs for production wells on such a schedule will interrupt production resulting in significant cost to the owner with no environmental benefit.

**Response:** The EPA recognizes that interruption of oil and gas production to determine well integrity may be unnecessary in many cases. There is flexibility under the UIC Class II requirements to allow production to continue. Following the completion of diesel fuels HF injection, the permitted well may be converted out of the UIC program and would thus no longer be subject to MIT requirements. For wells managed as “temporarily abandoned” after completion of diesel fuels HF, the UIC Program Director may authorize reduced or alternative requirements for mechanical integrity than those listed at 40 CFR 146.23(b)(3) (40 CFR 144.16). The revised technical guidance recommends waiving the requirement to conduct MITs on a five-year interval for diesel fuels HF wells to the extent that such a reduction in requirements will not result in an increased risk of movement of fluid into a USDW (40 CFR 144.16). While there is flexibility in determining the MIT requirements for a well managed as temporarily abandoned, it is important to note that industry experts recommend monitoring to ensure integrity over the life of the well. The API advocates for monitoring producing well conditions on an ongoing basis to ensure the integrity of the well and well equipment and for such monitoring to include mechanical integrity testing<sup>15</sup>.

- 2. Comment:** The draft guidance recommendation to perform a MIT after completion of diesel fuels HF is unnecessary because a well is not subject to high injection pressures during hydrocarbon production. This requirement will impose superfluous costs on industry by requiring the well owner/operator to coordinate the use of additional equipment upon completion of diesel fuels HF and delay production. In addition, performing MITs on production wells after diesel fuels HF completion could cause significant formation damage, unnecessary loss of reserves and production, and mechanical failure.

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<sup>15</sup> API, *Ibid*

**Response:** The EPA recognizes that a MIT may be difficult to perform immediately after diesel fuels HF completion due to the pressure of injectate/formation flowback. Such a test would require use of special equipment and/or waiting until well flowback reached manageable levels. The EPA also acknowledges that parameters (e.g., pressure, pump rate, volume, and etc.) monitored throughout diesel fuels HF operation can serve as an indicator of well integrity maintenance during and after periods of high injection pressure. Based on these considerations, the EPA is no longer universally recommending that permit writers require a post-fracture MIT, as this could unnecessarily impede subsequent hydrocarbon production. This is reflected in the revised guidance language with the caveat that the EPA UIC Program Director has the discretion, as necessary, to adjust the requirements for MIT to confirm compliance with UIC permit conditions and non-endangerment of USDWs before termination of the injection permit as per 40 CFR 144.51(q)(1).

3. **Comment:** The MIT methods recommended by the EPA in the draft diesel fuels HF permitting guidance for wells with a packer and tubing are not practical or useful for horizontal diesel fuels HF wells.

**Response:** The purpose of mechanical integrity testing is to ensure that all protective physical components of the well are competent prior to injection. The EPA's UIC Class II regulations at 40 CFR 146.8 specify methods for ensuring mechanical integrity of the well. The intent of the EPA's technical guidance is to provide recommendations for applying such existing requirements for HF using diesel fuels. The EPA recognizes that oil and gas wells utilize a variety of completions; the MIT recommendations in the revised guidance account for this more clearly. The MIT section of the revised technical guidance contains recommendations for tests and logging similar to those detailed in the API HF1, the Appalachian Shale Recommended Practices Group (ASPRG) Recommended Standards and Practices, and the Environmental Defense Fund's/Southwestern Energy's draft model regulatory framework<sup>16</sup> for hydraulically fractured production wells. The EPA UIC MIT recommendations for diesel fuels HF promote the adoption of best practices in well pressure management as recommended by the SEAB, to avoid methane migration and leakage and protect water quality. Importantly, if – due to a well's particular construction and/or completion – the recommended MIT methods described in the technical guidance are insufficient to demonstrate mechanical integrity as required by the regulations, the EPA UIC Program Director must otherwise ensure that permit reflects the mechanical integrity requirements in the regulations.

4. **Comment:** The EPA should follow the pressure testing requirements listed in BLM's proposed rule that consider a successful MIT if maximum anticipated treating pressure is applied and holds for 30 minutes with no more than a 10 percent pressure loss.

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<sup>16</sup> Environmental Defense Fund, *Model Regulatory Framework for Hydraulically Fractured Hydrocarbon Production Wells*, [http://portal.ncdenr.org/c/document\\_library/get\\_file?uuid=8356eb89-9c9f-4f8e-bb4d-4bb51b605575&groupId=8198095](http://portal.ncdenr.org/c/document_library/get_file?uuid=8356eb89-9c9f-4f8e-bb4d-4bb51b605575&groupId=8198095), (2012)

**Response:** Rather than a prescriptive pressure testing requirement, the UIC regulations for mechanical integrity stipulate performance-based requirements and provide options for the owner or operator to demonstrate that there is no significant leak in the casing, tubing, or packer (40 CFR 146.8 (a – b)). In addition, the EPA UIC Director may allow the use of a test to demonstrate mechanical integrity other than those listed in the regulations with the approval of the EPA Administrator (40 CFR 146.8(d)). This flexibility also allows the UIC program to adjust permit conditions to reflect developments in well integrity demonstration methods and technology.

5. **Comment:** The large amount of discretion given to EPA UIC permit writers in determining injection pressure limitations under the UIC program and highlighted in the draft guidance could result in arbitrary and inconsistent decisions that may prohibit an operator’s ability to sufficiently fracture a target formation.

**Response:** The EPA disagrees that the discretion given to EPA UIC permit writers could result in arbitrary and inconsistent decisions. The regulations at 40 CFR 146.23(a)(1) ban the injection of fluids at pressures beyond “a maximum which shall be calculated so as to assure that the pressure during injection does not initiate new fractures or propagate existing fractures in the confining zone adjacent to USDWs.” The regulation does not require pressure limits to ensure no fractures of the target formation, but rather, requires pressure limits to assure no fractures in the confining zone adjacent to USDWs. In addition, there is no reason to assume that EPA UIC permit writers would apply their discretion in determining maximum injection pressure for a diesel fuels HF well in an “arbitrary or inconsistent” way. Rather, consistent with this discretion, EPA UIC permit writers can work closely with all applicants to appropriately evaluate site specific conditions and considerations that are relevant to establishing the appropriate maximum pressure in a given situation to prevent injection activities that endanger USDWs. Moreover, an EPA permit writer’s technical judgment regarding maximum pressure limits is always subject to administrative and judicial challenge, thus providing a check on any “arbitrary or inconsistent” limits.

6. **Comment:** Evidence of meeting cementing objectives for purposes of demonstrating well integrity includes the evaluation of data and information from the execution of an HF job. A strong indicator of a success is that the job was performed as designed, without interruption, without unplanned lost circulation, according to the pumping schedule, with proper cement additive and density control, and with adequate cement volumes. Information of actual job results is all that is necessary to show mechanical integrity.

**Response:** The EPA agrees that setting well construction objectives and successfully following appropriate procedures that have been put in place represent a positive step toward achieving protection of USDWs. However, putting these goals in place and following procedures are not a substitute for an appropriate MIT. The procedures outlined by the commenter indeed may be likely indicators of mechanical integrity, but they do not assure it and are not sufficient to meet the MIT requirements under the Class

II regulations (40 CFR 146.8). Successful cement emplacement can only be assured by having the well pass an approved MIT. Use of appropriate MIT procedures after cementing the casing is not a novel procedure and is in fact recommended by the API<sup>17</sup>. Thus, the EPA maintains the recommendations for conducting a successful MIT for diesel fuels HF wells in the revised technical guidance for permit writers to consider in order to meet the MIT requirements of the regulations.

7. **Comment:** Running a cement bond log (CBL) for each casing string is not common practice, and is not required by state regulations for the surface casing. The EPA itself states that CBLs are not an approved MIT. CBLs are typically run on production casing and are used as a diagnostic tool in the event that cement emplacement is suspected of being compromised and re-cementing is necessary.

**Response:** A cement bond log (CBL) on its own does not provide a full assessment of external mechanical integrity. In the revised guidance, the EPA recommends the use of a cement evaluation log (CEL) (of which CBL is one type) accompanied by cementing records to demonstrate that there is no significant fluid movement in channels adjacent to the well bore as required under the UIC program. The placement of cement around the casing provides zonal isolation between different formations including USDWs and other hydrocarbon production zones and to provide structural support for the well. As is noted by the API,<sup>18</sup> “cement is fundamental to maintaining integrity throughout the life of the well”. The EPA’s cement integrity evaluation recommendations in the final guidance enable confirmation that cement is achieving its purpose.

8. **Comment:** Is it the intent of the EPA to suggest that geophysical logging is needed to verify cement integrity in all cases or only in those cases where there is minimal or questionable separation of the injection zone from the lowermost USDW?

**Response:** In response to stakeholder requests for clarity on the requirements for demonstrating internal and external well mechanical integrity, the EPA revised this section of the guidance to more clearly explain its recommendations for meeting the requirements under 40 CFR 146.8 for diesel fuels HF wells. The UIC regulations require permit conditions that prohibit injection operations until the permittee shows to the satisfaction of the Director that the well has mechanical integrity (40 CFR 144.52(a)(8)). The cement evaluation log (CEL) is a demonstration of external mechanical integrity submitted with the well completion report for review and approval by the EPA UIC Program Director (40 CFR 144.51(m)). As is recommended in the technical guidance, CELs may include, but are not limited to: radial cement bond log, ultrasound imager, magnetic resonance imager, and isolation scanner. The EPA recommends that permit writers consider accepting additional geophysical logs with the well report if the well owner or operator can prove that it demonstrates confirmation of well integrity (including

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<sup>17</sup> API, *Ibid*

<sup>18</sup> API, *Ibid*

cement integrity). In addition, the EPA UIC Program Director may request additional logs, including geophysical logging, if the results of a diesel fuels HF well's pressure testing and/or CELs cannot confirm that there is no significant leak in the casing, tubing or packer of the injection well and that there is no significant fluid movement into a USDW through vertical channels adjacent to the injection well bore (40 CFR 146.8(f)).

## Monitoring and Reporting

1. **Comment:** The EPA UIC program should require periodic testing and monitoring for Class II diesel fuels HF wells that continues after the fracturing event and for a period extending beyond oil and gas production well closure and abandonment to account for long term fluid migration and impact on USDWs.

**Response:** See the response to comment 5 in the *Information Submitted with the Permit Application* section.

2. **Comment:** The requirement of any monitoring and reporting after Class II permitted diesel fuels HF operations have ceased would constitute regulation of a producing oil or gas well. As such, obliging owners or operators to monitor and report on Class II diesel fuels HF wells during production is beyond the EPA UIC program's authority under the SDWA.

**Response:** Wells remain subject to UIC Class II requirements, including any monitoring and reporting requirements, while covered by a UIC Class II permit authorizing injection. If a well is converted out of the UIC program after injection ceases, it is no longer subject to Class II monitoring and reporting requirements. If the well is permitted for the life of the facility and is being managed as temporarily abandoned during periods of non-injection (e.g., production of hydrocarbons), the well remains subject to UIC Class II requirements. However, the EPA UIC Program Director may authorize reduced monitoring and reporting requirements during such periods (40 CFR 144.16). EPA UIC permit writers should work with owners planning to utilize temporary abandonment status to apply this flexibility where appropriate while maintaining protection of USDWs.

3. **Comment:** The monitoring and reporting recommendations listed in the draft guidance and the May 10, 2012 FRN require owners and operators to be accountable for information that is above and beyond the current UIC Class II regulations.

**Response:** The recommendations for monitoring and reporting in the technical guidance are within the discretion accorded to permit writers under the UIC Class II regulations. Although some of the recommendations for monitoring and reporting in the revised technical guidance are not specifically required under the Class II regulations, the regulations authorize EPA UIC permit writers to modify the monitoring and reporting approaches required under the Class II permit to account for the nature of diesel fuels HF wells (40 CFR 144.52(a)(9)). The non-binding recommendations in the revised technical guidance are intended to assist EPA UIC permit writers to appropriately exercise their discretion under the Class II regulations such that:

- The permit writer has adequate information to determine that each planned HF operation using diesel fuels will not endanger USDWs.
- The regulatory burdens on diesel fuels HF well owners and operators are reduced where possible, such as during periods of non-injection.

As is mentioned above in response to comment 2 in the *Information Submitted with the Permit Applications Requirements* section, the importance of obtaining baseline data on water quality prior to operations and continued monitoring during operations is recognized by a number of industry professional organizations including API, ASPRG, and IEA. The revised technical guidance recommendations are consistent with many protective measures common to other UIC well classes, industry best practices (including those detailed in API HF1), and updated state oil and gas rules. The data generated by the UIC monitoring and reporting recommendations will allow the EPA to apply best practices in well development and construction by informing future permit conditions to help protect USDWs. Such data combined with UIC program flexibility will help facilitate the establishment of effective field monitoring and enforcement protocols that can inform ongoing assessment of cumulative community and land use impacts as recommended by the SEAB.

4. **Comment:** The recommendation to require baseline and periodic water quality monitoring of all USDWs would in many cases require the construction of expensive monitoring wells. In addition to imposing an unnecessary cost, these wells would also provide a potential pathway of contamination for injected and interstitial underground fluids that previously did not exist. The EPA should not require the construction of such wells.

**Response:** Please see the EPA’s response to comment 8 in *Information Submitted with the Permit Application* above.

5. **Comment:** Monitoring of Class II diesel fuels HF wells should include all chemicals used in the fracturing fluid as well as baseline and periodic sampling of constituents in the formation brines.

**Response:** The EPA agrees that owners or operators of HF wells using diesel fuels should provide information regarding all chemicals used in the fracturing fluid. The UIC Class II regulations require that owners/operators submit “an appropriate analysis of the chemical and physical characteristics of the injection fluid” (146.24(a)(4)(iii)). The EPA revised guidance recommends that this analysis include a detailed chemical plan describing the fracturing fluid composition, including the volume and range of concentrations for each constituent. In addition, as described in the revised guidance, the regulations require monitoring of the nature of injected fluids, at a frequency sufficient to yield data representative of the fluid characteristics (40 CFR 146.23(b)(1)). Consistent with their authorized discretion under 144.52(a)(9), EPA permit writers should require monitoring of the chemicals used in the fracturing fluids as necessary to ensure that there is no migration of fluids into USDWs.

The EPA also agrees that owners or operators of HF wells using diesel fuels should conduct sub-surface geochemical baseline and periodic sampling. The guidance specifically recommends that permit writers require the collection of such information from USDWs and other subsurface formations of interest within the AoR and require the characterization of formation fluids through logging and testing during drilling that may be needed given site conditions (40 CFR 146.22(b)(2)(i) and (f)(2)). As discussed in the guidance, the collection of fracturing fluid composition data and baseline monitoring enables the EPA to protect water quality and provide assurance to the public that HF operations using diesel fuels are being conducted safely. This approach is consistent with those recommended by various industry groups and adopted by state oil and gas programs.

6. **Comment:** In the May 10, 2012 FRN, the EPA requested comment on the need to perform microseismic monitoring for every diesel fuels HF injection activity. In practice, microseismic monitoring is only used in specific circumstances where a company is interested in gathering data to inform HF techniques, stimulation models, and other practices. The EPA should not require such monitoring for each event because it would significantly increase the cost of diesel fuels HF, making it economically infeasible.

**Response:** In response to stakeholder input the EPA has not included a recommendation in the revised technical guidance for the EPA UIC permit writer to require microseismic or tiltmeter monitoring to be collected for all Class II diesel fuels HF wells. However, the EPA did clarify in the revised technical guidance that permit writers may consider any microseismic or tiltmeter data submitted, as optional forms of monitoring data, to evaluate the extent of the fracture network and confirm the integrity of the confining zone and non-endangerment of USDWs.

## **Public Notification and Financial Responsibility**

1. **Comment:** The EPA should limit public involvement in the Class II diesel fuels HF permitting process so that only certain parties within the AoR are allowed to comment or request a hearing.

**Response:** The EPA is bound by regulation to provide public notice and opportunity for comment for all UIC permit actions (40 CFR 124.10). The regulations specifically provide that “*any interested person* may submit written comments on the draft permit... and may request a public hearing.” (40 CFR 124.11) (emphasis added). Therefore, per these regulations, the EPA cannot limit public involvement in the permitting process to only certain parties. Moreover, these regulatory requirements and the EPA’s public notification recommendations enable engagement with local communities and stakeholders to improve the dissemination of information about diesel fuels HF projects and shale gas operations and to help increase general understanding and awareness of the complex scientific questions surrounding them. Public engagement is encouraged by a number of organizations including the previously mentioned ASPRG, IEA, and SEAB. The EPA is committed to working with owners and/or operators to minimize the impact

UIC public notification requirements may have on diesel fuels HF and subsequent production planning and scheduling. The revised guidance recommends various ways in which EPA permit writers can ensure that the public notification requirements are met, while minimizing impact on the project schedule where possible.

2. **Comment:** Oil and gas production and HF often takes places in remote or rural areas. The EPA should utilize mass media to notify the local public within the AoR as well as the surrounding communities of draft Class II diesel fuels HF well permit decisions.

**Response:** The EPA agrees that it is important to inform the public about draft permits. The revised technical guidance includes a recommendation for the EPA UIC Program Directors to post all draft diesel fuels HF well permit decisions on their regional websites. Generally included with the Class II draft permits are:

- A plain language summary of USDW protections and relative risk of community drinking water supply and the surrounding environment
- Contact and/or informational session for the public to cover questions as needed
- A list of fracturing fluid constituents

3. **Comment:** Applying UIC Program financial responsibility requirements is not appropriate, due to the intermittent nature of injection during the lifetime of a HF well.

**Response:** The UIC Class II regulations require a demonstration of financial responsibility to cover the costs of closing, plugging and abandoning an underground injection well (40 CFR 144.52(a)(7)). Class II wells using diesel fuels for HF operations will at some point cease injection and begin oil and gas production. Per the regulations, financial responsibility must be maintained under the UIC permit until the well has been closed, plugged, and abandoned or at least for the duration of the permit in cases where wells are converted out of the UIC Program and into oil and gas production. An owner or operator who does not wish to meet the financial responsibility requirements under an UIC permit after completion of diesel fuels HF could utilize a short duration permit and convert the well out of the UIC program for hydrocarbon production. The revised guidance section, "How Should EPA UIC Permit Writers Establish Permit Duration and Apply UIC Class II Requirements After HF at a Well Ceases?" provides recommendations for addressing the intermittent nature of injection with regard to permit duration and well conversion.

4. **Comment:** The EPA should ensure that operators are held responsible for costs associated with HF operations, including costs for associated environmental remediation or public health actions.

**Response:** Under the UIC Class II regulations, the permittee is required to demonstrate and maintain financial responsibility until a well has been plugged and abandoned in accordance with an approved plan or the well has been properly converted out of the UIC program (40 CFR 144.52(a)(7)). If any water quality monitoring of an USDW indicates the movement of any contaminant into the underground source of drinking water, the

UIC Program Director is obligated to prescribe additional requirements for construction, corrective action, operation, monitoring, or reporting (including closure of the injection well) as are necessary to prevent such movement (40 CFR 144.12(b)). In addition, in cases where a contaminant may cause an imminent and substantial endangerment to public health, and state and local officials have not acted, the EPA can require operators to take corrective and remedial actions under SDWA Section 1431.

## Response to Comments on Statutory and Regulatory Issues

The comments and responses in this section capture a summary of substantive issues raised by commenters regarding statutory and regulatory authority and interpretation along with the EPA's consideration of this input. Comments and responses are organized by subject-matter under five sections: Safe Drinking Water Act and other Statutory Authority, Underground Injection Control Program Rulemaking, Diesel Fuels Description, EPA Primacy Oversight and Enforcement, and Other.

### Safe Drinking Water Act and Other Statutory Authority

1. **Comment:** The EPA does not have legal authority to regulate HF using diesel fuels. Even if the EPA does obtain the legal authority to regulate HF using diesel fuels, the EPA should exercise its discretion and not regulate this activity at least until it first makes a finding that the practice may reasonably result in contamination as required by the SDWA.

**Response:** Several commenters asserted that the EPA lacks legal authority to regulate diesel fuels diesel fuels HF. These commenters argued that the statute requires the EPA to first make a finding that the practice may reasonably result in contamination, that regulation is “essential” to protect USDWs, and that the EPA has failed to make such findings. The EPA disagrees with these comments.

In amending the SDWA, Congress not only authorized but specifically *required* the EPA to regulate diesel fuels HF – without requiring any further findings of risk. Congress revised the SDWA definition of “underground injection” to exclude from UIC regulation 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.” (SDWA Section 1421(d)(1)(B)) (emphasis added). Through this amendment, Congress excluded many HF operations from regulation under UIC programs, but it specifically did not extend this exclusion to HF operations using diesel fuels. By limiting the exclusion in this fashion, Congress made clear that HF operations using diesel fuels remain subject to regulation under the UIC programs pursuant to the SDWA. In most relevant part, these operations remain subject to Congress’ mandate that UIC programs to be implemented by the states and the EPA must prohibit underground injections not authorized by a permit (SDWA Section 1421(b)(1)(A)); *see also* 40 CFR 144.11 (providing that “any underground injection, except into a well authorized by rule or except as authorized by permit issued under the UIC program, is prohibited”).

Some commenters suggested that despite Congress’ explicit exclusion of diesel fuels HF from the statutory exemption, the agency still has some sort of inherent discretion to decline to regulate the activity. In support of this notion, one commenter points to one case, about an entirely different statute and program, which suggests that “inherent in

most statutory schemes” is an agency’s authority to overlook *de minimis* circumstances, and not regulate “trifling matters.” *Alabama Power Co. v. Costle*, 636 F.2d 323, 360 (D.C. Cir. 1979). However, it is important to note that this case specifically stated that this exemption authority is “narrow in reach,” and found that the EPA’s attempt to expand the statutory exemption at issue in that case to include sources beyond those specified in the statute exceeded the agency’s exemption authority. *See also NRDC v. Costle* (holding that the EPA lacked the power to exempt categories of point sources from permit requirements under the Clean Water Act, stating that “[c]ourts may not manufacture for an agency a revisory power inconsistent with the clear intent of the relevant statute.”). 568 F.2d 1369, 1377 (D.C. Cir. 1977). Similarly, here, the EPA cannot expand the scope of the HF exemption to include diesel fuels HF – where Congress clearly indicated its intent to regulate such activity under the UIC program. Given the specific exclusion of diesel fuels HF from the statutory exemption, it is difficult to imagine that Congress believed the activity to be a “de minimus circumstance.”

The EPA also disagrees with the assertion made by certain commenters that in order to regulate diesel fuels HF, the EPA must first make a finding that the practice may reasonably result in contamination. The statute does not require any such finding. Rather, the statute and regulations flatly prohibit *any* underground injection unless authorized by permit or rule (*see* SDWA Section 1421(b)(1)(A) (UIC regulations “shall prohibit... any underground injection ... which is not authorized by a permit”); 40 CFR 144.11 (“[a]ny underground injection, except into a well authorized by rule or except as authorized by permit issued under the UIC program, is prohibited”). Because Congress defined “underground injection” to include diesel fuels HF, any underground injection of diesel fuels in HF is prohibited unless authorized by permit or rule. There is no showing required that such injection would result in contamination in order for the EPA to regulate it.

In support of their argument, several commenters pointed to SDWA Section 1421(b)(1), which provides that regulations for state underground injection programs shall contain minimum requirements “to prevent underground injection which endangers drinking water sources...” Commenters interpreted this provision to require the EPA to demonstrate that diesel fuels in HF fluid will endanger USDWs before the EPA can require permits for such operations. This interpretation turns the statute on its head. As discussed above, the EPA is not required to first demonstrate endangerment before it requires a permit; rather, the EPA must require a permit if there is “any underground injection” – and then, “*the applicant* for the permit to inject must satisfy the State that the underground injection will not endanger drinking water sources.” (SDWA Section 1421(b)(1)(B)(i)) (emphasis added). In other words, it is not the EPA’s burden to demonstrate endangerment in order to require a permit for underground injection – rather, it is the burden of the applicant to show, through the permitting process, that the proposed injection activity would not endanger USDWs. *See United States v. King*, 660 F.3d 1071, 1076 (9<sup>th</sup> Cir. 2011) (holding that in order to bring an enforcement action for underground injection without a permit, the EPA “does not need to show that an injection

will have ... an [adverse] effect on a USDW. The government need only show the absence of a permit under [the applicable] UIC program.”)

Certain commenters also pointed to SDWA Section 1421(b)(2) as requiring the EPA to first “make a finding that regulatory action is ‘essential’ to protect USDWs” in order to issue this guidance. The EPA notes that this statutory provision applies only to “[r]egulations of the Administrator under the section for State underground injection control programs” – that is, where the EPA is issuing regulations for State UIC programs. The EPA met this requirement when it promulgated the Class II regulations that apply to oil- and gas-related injection wells. Here, the EPA is not issuing any regulations – but rather, is providing its interpretations of a statutory amendment and existing regulations as well as non-binding technical recommendations for implementing such existing requirements – and therefore, is not required to make the findings specified in SDWA Section 1421(b)(2). Congress clearly considered the use of diesel fuels in HF to be of sufficient importance to explicitly include it within the scope of regulation under the UIC program – and did not require the EPA to make any further findings of risk in order to do so.

2. **Comment:** The EPA should ban the use of diesel fuels in HF/ban HF altogether.

**Response:** Many commenters submitted the suggestion that the EPA should ban the use of diesel fuels in HF or ban HF altogether. The EPA notes that it is not authorized or required to impose such a ban. The SDWA requires that EPA regulations contain “minimum requirements for effective programs to prevent underground injection which endangers drinking water.” (SDWA Section 1421(b)(1)). That is, the EPA’s regulations are to specify the “minimum requirements” necessary to prevent endangerment of USDWs. While a complete ban on HF with diesel fuels – or a ban on HF generally – would certainly prevent endangerment due to HF, the EPA does not have evidence to indicate that a complete ban is in fact necessary to prevent such endangerment. The EPA’s existing Class II regulations contain well siting, construction, mechanical integrity and other requirements designed specifically to prevent endangerment of USDWs from underground injection associated with oil and gas production. Absent record evidence indicating that such requirements are insufficient to prevent endangerment of USDWs associated with diesel fuels HF, the EPA is neither required nor authorized under the SDWA to ban the use of diesel fuels in HF or HF generally. However, states may be able to ban the use of diesel fuels in HF (or ban HF altogether) under their own state authorities.

The EPA also disagrees with the commenters that the EPA could ban the use of diesel fuels in HF under its emergency authority under SDWA Section 1431. Under this provision, the EPA must demonstrate that the use of diesel fuels in HF presents an “imminent and substantial endangerment to the health of persons.” As discussed above, the EPA does not have any evidence to suggest that this is the case on a nationwide basis – and the commenter does not point to any. The commenter asserts that “existing program implementation does not provide adequate protection from the injection of

diesel during fracking,” but does not provide any example in which the EPA has definitively concluded that diesel fuels in HF have caused endangerment of USDWs. Although the EPA tentatively found “likely impact to groundwater” in Pavillion, Wyoming, the findings in that case do not relate to injection of diesel fuels specifically and have not been finalized. In addition, in order to use its emergency authority to enact a nationwide ban under SDWA Section 1431, the EPA would also have to show that “State and local authorities have not acted” nationwide to prevent the endangerment. The EPA does not believe this standard could be met nationwide, particularly in light of the more stringent controls being enacted by many states to address HF.

3. **Comment:** The EPA should regulate or ban all HF – not just HF with diesel fuels.

**Response:** Several commenters indicated that the EPA should regulate all HF – not just HF using diesel fuels. These commenters correctly note that this would require a Congressional amendment to the SDWA – as under the statutory exclusion in the 2005 SDWA amendments, the EPA is not authorized to regulate HF, other than where diesel is used. Similarly, the EPA is not authorized to ban HF generally, as suggested by other commenters, because the statutory exemption removes HF from the purview of the SDWA altogether, other than where diesel fuels are used.

4. **Comment:** The EPA’s authority to regulate diesel fuels HF under the UIC Class II program is limited to only the diesel fuels aspects of the process.

**Response:** Some commenters suggested that because Congress exempted only *diesel fuels* HF from the overall statutory exclusion for HF, the EPA is overreaching its authority in regulating the entire injectate, and not just the diesel fuels component of the injectate. These commenters assert that the EPA’s authority is limited to requiring monitoring and disclosure of only the diesel fuels – not other constituents – in the HF fluid. However, as discussed in comment 1 above, under the 2005 SDWA amendments, HF with diesel fuels is subject to the UIC Class II regulations – which specifically require the owner or operator to provide the EPA with the “chemical and physical characteristics of the *injectate*.” (40 CFR 146.24(a)(4)(iii)) (emphasis added). The regulations clearly require disclosure of the “injectate” – not of particular constituents of the injectate. Congress did not provide any indication that the regulations should somehow be applied differently for diesel fuels HF than for other Class II activities. Moreover, contrary to one commenter’s assertion, requiring disclosure of the constituents of the injectate used in diesel fuels HF would not somehow “grant the EPA unlimited authority to regulate hydraulic fracturing fluids.” Rather, under the 2005 amendments to the SDWA, the EPA’s authority to regulate HF fluids is in fact limited to the very small percentage of HF operations where diesel fuels are used.

5. **Comment:** Even if authorized to regulate diesel fuels HF, the EPA should not do so because state oil and gas regulations adequately protect USDWs.

**Response:** The EPA recognizes that – as numerous commenters point out – many states already have extensive state regulations in place for HF. However, the existence of state regulations does not exempt states from regulation under the federal UIC program. As discussed in comment 1 above, the statute requires that diesel fuels HF be subject to federal UIC regulation. The UIC regulations are intended to create a national minimum floor for protecting USDWs; state programs must meet the requirements of these regulations (to obtain primacy under SDWA Section 1422), or must be as “effective” as these regulations (to obtain primacy under 1425). States could continue to apply any state oil and gas regulations for HF that meet the primacy requirements, or that are more stringent than federal requirements.

6. **Comment:** Even if authorized to regulate diesel fuels HF, the EPA should not apply Class II regulations.

**Response:** Several commenters suggest that that even if diesel fuels HF is subject to regulation under the UIC program, the EPA should not apply the existing Class II requirements for oil and gas-related injection, but rather, should create a separate new subclass of wells for diesel fuels HF. The EPA disagrees with this comment.

First, while the EPA is certainly authorized to create a separate subclass and requirements for diesel fuels HF, it is not required to do so – as injection of fluids for HF fits within the EPA’s regulatory definition for Class II wells. *See* 40 CFR 144.6 (defining Class II wells as those that “inject fluids ... [w]hich are brought to the surface in connection with ... conventional oil or natural gas production,” or for “enhanced recovery of oil and natural gas”). Moreover, a U.S. Court of Appeals has specifically found that that the EPA’s Class II requirements apply to HF. *Legal Environmental Assistance Foundation Inc v. EPA*, 276 F.3d 1253, 1263 (11<sup>th</sup> Cir. 2001) (finding that “wells used for the injection of hydraulic fracturing fluids fit squarely within the definition of Class II wells”). In amending the SDWA, Congress could have, but did not, designate a different classification for diesel fuels HF or required the EPA to conduct rulemaking to designate a different classification for diesel fuels HF. Under these circumstances, it can be assumed that Congress was aware of the *LEAF* decision and chose not to disturb the Eleventh Circuit’s conclusion that HF is subject to the UIC Class II requirements.

Second, the EPA disagrees that a separate subclass is necessary, as the existing Class II requirements for oil and gas-related injection allow for appropriate regulation of diesel fuels HF. Specifically, as detailed in the technical recommendations, the Class II regulations provide significant flexibility for permit writers to be able to develop requirements appropriate for diesel fuels HF.

Industry commenters point to various examples to try to demonstrate incompatibilities between the Class II regulations and diesel fuels HF. However, many of these examples are based on a flawed reading of the regulations. For example, one commenter argues that the Class II regulatory limits on injection pressure would prevent an operator from sufficiently fracturing a formation, thus defeating the purpose of HF. The EPA notes that

the regulation does not require pressure limits to ensure no fractures – as the commenter suggests – but rather, requires pressure limits to assure no fractures “*in the confining zone adjacent to USDWs.*” (40 CFR 145.23(a)(1)) (emphasis added). Therefore, the pressure limits established by permit writers would not – as the commenter suggests – prohibit fracturing altogether, but just prohibit the causing of fractures in parts of the formation that could endanger drinking water sources, which is the underlying purpose of the statute and regulations. Similarly, another commenter argues that application of the plugging and abandonment regulations at 40 CFR 146.10 to diesel fuels HF would lead to “absurd results.” However, this commenter mistakenly characterizes the regulation as requiring plugging a well with cement “once the injection activity has ceased” – which of course would not make sense for diesel fuels HF that is then followed by production activities. However, the regulation provides that wells be plugged with cement “prior to abandoning” a Class II well – not necessarily immediately after injection – which would allow for plugging to be postponed until the end of the facility’s life.

A significant concern of certain industry commenters appears to be not that the regulations do not provide sufficient flexibility to address diesel fuels HF, but rather, that they provide *too much* flexibility to permit writers, and may result in “arbitrary or inconsistent” limits for diesel fuels HF. The EPA notes that the regulations accord this level of discretion for *all* oil and gas related injection activities – not just diesel fuels HF – to allow permit writers the necessary flexibility to tailor requirements based on site-specific geology and other factors. Moreover, the EPA notes that a permit writer’s technical judgment regarding implementation of regulatory requirements is always subject to administrative and judicial challenge, thus providing a check on any “arbitrary or inconsistent” limits.

7. **Comment:** The guidance ignores the use of diesel fuels and other potentially dangerous substances at oil and gas well drilling sites for purposes other than injection that could impact surface waters and the surrounding environment through common use and/or accidental spillage.

**Response:** The EPA recognizes that the use of diesel fuels and other substances on oil and gas drilling sites may have the potential to impact the environment on a variety of scales. The EPA has authorities under statutes such as the Clean Water Act (CWA) and the Clean Air Act (CAA) that allow it to address some of these issues. However, the inclusion of activities performed under such authorities is not appropriate for the technical guidance and interpretive memorandum documents. The purpose of these documents is to describe the existing SDWA statutory and regulatory requirements for permitting diesel fuels HF activities and to provide recommendations for EPA permit writers to consider in implementing these requirements to ensure protection of USDWs. Consideration of the EPA’s authorities outside the SDWA UIC program and discussion of activities not permitted under the UIC program would not be relevant for EPA UIC permit writers.

## Underground Injection Control Program Rulemaking

1. **Comment:** The EPA must undertake formal rulemaking in order to apply Class II regulations to diesel fuels HF and to define “diesel fuels”.

**Response:** Many commenters asserted that, even if the EPA were authorized to apply Class II requirements to diesel fuels HF, the EPA could do so only through formal Administrative Procedures Act (APA) notice and comment rulemaking to require application of Class II requirements and to define “diesel fuels” – not through guidance.

The EPA disagrees that formal rulemaking is required to apply Class II regulations to diesel fuels HF. APA notice and comment requirements apply only to legislative rules – not to interpretive statements, which “are rules or statements issued by an agency to advise the public of the agency’s construction of the statutes and rules it administers.” *Attorney General’s Manual on the Administrative Procedure Act* at 30 n. 3 (1947). *See also American Mining Congress v. Mine Safety and Health Admin. (MSHA)*, 995 F.2d 1106, 1108 (D.C. Cir. 1993). Here, the EPA is simply advising the public of its interpretation of the existing 2005 SDWA amendments to require applicability of the Class II UIC regulations to diesel fuels HF, for the reasons discussed in comment 1 of the *Safe Drinking Water Act and Other Statutory Authority* section above (page 27) – it is not creating new law. Similarly, in listing substances meeting the definition of “diesel fuels,” the EPA is not engaging its rulemaking authority – but rather, is describing how it interprets the statutory term “diesel fuels” in implementing the program and therefore is not subject to notice and comment requirements. Although these are the interpretations that the EPA intends to follow in its oversight and implementation of the UIC program, they constitute interpretations of the underlying existing statutory and regulatory requirements, not new substantive requirements, and are therefore exempt from notice and comment rulemaking under the APA. As the D.C. Circuit noted,

“Where a statute or legislative rule has created a legal basis for enforcement, an agency can simply let its interpretation evolve ad hoc in the process of enforcement or other applications ... The protection that Congress sought to secure by requiring notice and comment for legislative rules is not advanced by reading the exemption for ‘interpretive rule’ so narrowly as to drive agencies into pure ad hocery – an ad hocery, moreover, that affords less notice, or less convenient notice, to affected parties.”

*American Mining Congress*, 995 F.2d at 1112 (D.C. Cir. 1993).

Here, as discussed above, Congress authorized the EPA to implement and enforce the existing statutory and regulatory requirements for UIC Class II permits for diesel fuels HF – it did not require the EPA to engage in any rulemaking to develop new regulations for diesel fuels HF, or to define diesel fuels. Therefore, although the EPA could implement and enforce these provisions without issuing any sort of public interpretation, the EPA is choosing to do so in today’s implementation memorandum in an attempt to provide more clarity and notice to the public – and the APA does not require notice and comment for such actions. *See e.g., American Mining Congress*, 995 F.2d at 1112 (D.C.

Cir. 1993) (finding agency statement defining regulatory term to be interpretive, not legislative); *American Postal Workers Union v. U.S. Postal Service*, 707 F.2d 548, 558-59 (D.C. Cir. 1983) (finding agency statement defining statutory term to be interpretive, not legislative); *Fertilizer Inst. v. EPA*, 935 F.2d 1303, 1309-10 (D.C. Cir. 1991) (same).

Some commenters argued that because the EPA’s interpretation regarding Class II applicability is “binding,” it is therefore legislative and therefore requires formal rulemaking. The EPA agrees that its interpretation has practical effect – in that the agency intends to follow it in its implementation and oversight of the UIC program – but disagrees that this makes it a de facto legislative rule. Unlike policy statements, which cannot limit an agency’s discretion or have binding effect, (*see, e.g., NRDC v. EPA*, 643 F.3d 311, 321 (D.C. Cir. 2011)), interpretive rules construe existing statutory or regulatory provisions, and their mandatory force derives from the interpreted provision. *See American Mining Congress*, 995 F.2d at 1111 (D.C. Cir. 1993). As the D.C. Circuit noted, “an agency’s decision to use ‘will’ instead of ‘may’ may be of use when drawing a line between *policy statements* and legislative rules,... the endeavor miscarries in the interpretive/legislative rule context. Interpretation is a chameleon that takes its color from its context; therefore, an interpretation will use imperative language – or at least have imperative meaning – if the interpreted term is part of a command...” *Id.* In other words, an interpretation can use mandatory language if it is describing or explaining something the statute requires – such as the Class II requirements for diesel fuels HF.

For this reason, commenters’ references to the district court decision regarding the EPA’s Mountaintop Mining guidance (*Nat’l Mining Ass’n v. Jackson*, 10-cv-01220 (D.D.C July 31, 2012)) (“NMA decision”) are inapposite. This decision was specifically about policy statements, not interpretive rules. Therefore, the court’s finding that the guidance at issue in that case had binding effect and was therefore a de facto legislative rule does not have any implications with respect to the interpretative statements in this guidance document, as interpretive rules can use mandatory language if interpreting a statutory requirement, as discussed above.

Some commenters asserted that the EPA is required to provide formal notice and opportunity to comment because the EPA is *changing* its interpretation regarding applicability of the Class II regulations. The EPA acknowledges that, prior to the Eleventh Circuit’s decision in *LEAF v. EPA*, the EPA took the position that HF was not subject to all of the Class II regulatory requirements. The EPA also recognizes that some courts have held that an agency is required to undertake notice and comment rulemaking to change a prior interpretation, *see, e.g., Paralyzed Veterans of America v. D.C. Arena L.P.*, 117 F.3d 579, 586 (D.C. Cir. 1997), but notes that this is a narrow holding and has been specifically repudiated in other Circuits. Moreover, these cases would not apply to this situation, as here, a Court of Appeals has specifically rejected the EPA’s prior interpretation. *LEAF v. EPA*, 276 F.3d 253, 1263 (11<sup>th</sup> Cir. 2001). Where a court holds that an original interpretation is invalid because it is contrary to the law, an agency may adopt a new interpretation without notice and comment requirements. *See Monmouth Medical Center v. Thompson*, 257 F.3d 807, 814 (D.C. Cir. 2001).

One commenter suggested that the EPA continued to hold its earlier position regarding Class II applicability even after the 11<sup>th</sup> Circuit decision in *LEAF*. This is simply incorrect. After the *LEAF* decision, the EPA complied with the remand and specifically determined that Alabama’s program – including its regulation for HF – met the UIC Class II requirements. *See* 69 FR 42341, 42343 (July 15, 2004). While the EPA did note – as the commenter points out – that the Class II regulations were not specifically designed to address HF – nowhere does the EPA suggest that it would not apply Class II requirements to HF.

2. **Comment:** The EPA must do rulemaking in order to provide technical recommendations to permit writers in states where the EPA is the permitting authority.

**Response:** The EPA notes that the guidance documents being issued include both interpretive rules (as discussed above), and non-binding policy statements – specifically, the recommendations in the technical guidance, which permit writers may consider in implementing the UIC Class II requirements. That these technical recommendations are not subject to notice and comment requirements because they are entirely non-binding. Although EPA permit writers are required to comply with the Class II regulatory requirements, they are not required to comply with the technical recommendations described in the guidance. The technical recommendations are merely considerations, and permit writers have the discretion to adopt alternative approaches that are consistent with regulatory and statutory requirements – and therefore are not subject to notice and comment requirements. The EPA notes that a number of courts have found similar guidance documents to be non-binding, and therefore not requiring formal rulemaking. *See, e.g., Molycorp v. EPA*, 197 F.3d 543 (D.C. Cir. 1999); *Chem. Manuf. Ass’n v. EPA*, 26 F. Supp. 2d 180 (D.D.C. 1998); *American Paper Institute v. EPA*, 882 F.2d 287 (7<sup>th</sup> Cir. 1989).

Some commenters pointed to the *NMA* decision regarding the EPA’s Mountaintop Mining guidance as support for their argument that formal rulemaking is required. The EPA notes that it has appealed this decision; that this decision is inconsistent with other case law cited above finding similar guidance documents to be non-binding; and that even following the *NMA* line of reasoning, a court would likely find that the technical recommendations in today’s guidance are non-binding – as the recommendations attempt to *expand*, rather than limit, a permit writer’s discretion, by pointing to flexibilities in the regulations that would allow a permit greater discretion to establish appropriate limits for diesel fuels HF.

## Diesel Fuels Definition

1. **Comment:** The EPA definition of diesel fuels is overly broad and, once final, the EPA must go through rulemaking notice and comment to update the diesel fuels definition.

**Response:** Several commenters suggested that the EPA should adopt a more restricted definition of “diesel fuels.” The EPA disagrees with these comments as such a definition

would likely omit substances that Congress would have considered to be “diesel fuels” in amending the statute.

Since the EPA is not engaging its rulemaking authority, the EPA’s interpretation is tightly drawn from the plain language of the statute. The EPA interprets “diesel fuels” to mean substances with “diesel fuel” as its primary name or synonym, as found on well-recognized chemical registries, on the assumption that these are the types of substances Congress considered to be “diesel fuels” in amending the statute. The EPA believes that this approach constitutes an interpretation that is “sufficiently within the language of” the regulation and thus an interpretive – rather than a legislative – rule. *See American Mining Cong. v. MSHA*, 995 F.2d 1106 (DC Cir. 1993) (finding agency statement defining regulatory term to be interpretive, not legislative, despite petitioners’ arguments that term could be interpreted in other ways).

Some commenters suggest that the diesel fuels definition should be limited to only the two CASRNs that have “diesel fuel” as their primary name, not synonym. The EPA disagrees that it is inappropriate to consider synonyms in defining diesel fuels – as considering primary names only would exclude substances that are otherwise commonly known as or considered to be “diesel fuels.” Even if, as one commenter suggests, these synonyms may list “outdated names for the same chemical product,” consideration of synonyms may thus help to ensure inclusion of substances that Congress would have considered to be “diesel fuels” at the time of the 2005 SDWA amendments, even if their primary classification is not diesel today.

One commenter suggested that the EPA adopt a “narrower” definition of diesel fuels used in Title II of the Clean Air Act. The EPA notes that “diesel fuel” is not defined in the SDWA – and Congress did not provide any indication that it intended for the EPA to use the Clean Air Act definition of diesel fuels or the definition of diesel fuels in any other statute. Accordingly, in interpreting the term “diesel fuel” in the SDWA, the EPA is including only those substances that have the term “diesel fuel” as their primary name or synonym in well-known chemical registries, on the reasonable assumption that these are the types of substances Congress would have considered to be diesel fuels in amending the statute.

Some commenters suggested that the EPA should not include CASRN 8008-20-6 (kerosene), CASRN 68476-31-3 (No. 4 fuel oil) and CASRN 68410-00-4 (petroleum distillates/ crude oil) to be “diesel fuel” because the reliance on “common synonyms” to identify substances is unsupported and unscientific.

The EPA agrees that CASRN 68410-00-4 (petroleum distillates/ crude oil) does not meet the definition of diesel fuels because it is not identified as “diesel fuels” by its primary name or synonym. CASRN 68410-00-04 has been removed it from the list of substances meeting the definition of diesel fuels listed in the final memorandum and revised guidance. However, the EPA continues to consider both CASRN 8008-20-6 (kerosene) and CASRN 68476-31-3 (No. 4 fuel oil) to be “diesel fuels” for purposes of permitting diesel fuels HF under the UIC program. Both substances possess the common synonym,

“diesel fuel” as listed by the National Institute of Health (NIH) National Library of Medicine in the ChemIDPlus<sup>19</sup> database. ChemIDPlus is aggregated from a multitude of nationally and internationally recognized databases and is easily accessible via the internet, and thus constitutes a well-recognized chemical registry, reliance on which constitutes a reasonable approach for interpreting the statute, as discussed above.

One commenter suggested eliminating reference to the term “diesel fuel constituents”; the EPA agrees and has done so.

Some commenters incorrectly asserted that the EPA would have to go through formal notice and comment rulemaking in order to update its list of CAS numbers that meet the definition of “diesel fuel.” To the extent that there are new products developed with new CAS numbers that meet the EPA’s definition – i.e. that have the term diesel fuels in their primary name or synonym – the EPA would consider these to be “diesel fuels” consistent with its interpretation of the statute. Although the EPA would not be required to undertake a full rulemaking to update this list, the EPA may in its discretion decide to provide notice and an opportunity for comment on any new additions to the list of CAS numbers that the agency considers to be diesel fuels under the SDWA.

2. **Comment:** The EPA definition of “diesel fuels” is overly narrow.

**Response:** On the flip side, some commenters suggested that the EPA should define “diesel fuels” more broadly to encompass a broader range of substances that have similar properties to substances with diesel fuels in the primary name or synonym. One commenter has suggested that the EPA must use the broader definition of diesel fuels provided in the Toxic Substances Control Act (TSCA).

The EPA notes that “diesel fuel” is not defined in the SDWA – and Congress did not provide any indication that it intended for the EPA to use the TSCA definition of diesel fuels or the definition of diesel fuels in any other statute. Accordingly, in interpreting the term “diesel fuel” in the SDWA, the EPA is including only those substances that have the term “diesel fuel” as their primary name or synonym in well-known chemical registries, on the reasonable assumption that these are the types of substances Congress would have considered to be diesel fuels in amending the statute. Although the EPA recognizes that there are other possible definitions for the term “diesel fuel” – including the broad definitions advocated by the commenters – the EPA is using a definition that is most closely tied linguistically to the statutory term “diesel fuel” since this is an interpretive, not legislative, rulemaking. *See Syncor Intern. Corp. v. Shalala*, 127 F.3d 90, 94 (D.C. Cir. 1997) (“The distinction between an interpretive rule and a substantive rule...likely turns on how tightly the agency interpretation is drawn linguistically from the actual language of the statute”) (quoting *Paralyzed Veterans of Am. v. D.C. Arena L.P.*, 117 F.3d 579, 588 (D.C. Cir. 1997); *United Tech. Corp. v. EPA*, 821 F.2d 714, 719-720 (D.C.

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<sup>19</sup> US National Library of Medicine, *Factsheet: ChemIDplus*, <http://www.nlm.nih.gov/pubs/factsheets/chemidplusfs.html>, (2013)

Cir. 1987) (finding that the rule at issue was an attempt to “construe specific statutory provisions,” and was therefore interpretive – not legislative).

3. **Comment:** If the EPA regulates diesel fuels HF under the UIC program, the EPA should include a *de minimis* threshold of 1%.

**Response:** Some commenters suggested that the EPA adopt a *de minimis* threshold for diesel fuels, below which an operator does not need to obtain a UIC Class II permit for diesel fuels HF. The EPA disagrees. The SDWA provides that “diesel fuels” be subject to UIC requirements, without specifying any minimum threshold. Presumably, Congress could have set such a threshold or required the EPA to set a threshold if it had so intended. Moreover, to include a threshold where none is provided in the statute would likely be considered creating new law, rather than merely interpreting the existing statute and regulations, and therefore require notice and comment rulemaking. The EPA is therefore not including a 1% threshold in today’s interpretive rule.

Also, the implementation of a *de minimis* threshold would be infeasible due to the challenges and the uncertainty it would impose on owners and operators pursuing HF, as well as on regulators. Because operators estimate fluid amounts in their fracturing and well completion plan, and adjust amounts real-time during HF, it is very possible for an operator to exceed the threshold and fall into non-compliance if any amount of diesel fuels are part of the fracturing fluid mixture.

4. **Comment:** The EPA should clarify that diesel fuels that are not injected do not require a UIC Class II permit.

**Response:** The EPA agrees that only *injection* of diesel fuels would trigger the need for a UIC Class II permit. Under the 2005 SDWA amendments, a permit is required if there is “underground injection” of diesel fuels pursuant to HF. “Underground injection” is defined as the “subsurface emplacement of fluids by well injection.” (SDWA Section 1421(d)(1)(A)). Accordingly, as long as there is no subsurface injection of diesel fuels, no Class II permit is required.

Some commenters specifically asked if the flowback water resulting from diesel fuels HF would be subject to UIC regulation if any portion of it were injected for purposes of subsequent HF. The EPA notes that flowback water resulting from diesel fuels HF typically does not contain diesel fuels because of changes to the chemical and physical properties of diesel fuels during the HF process. Thus, as long as the flowback water does not contain diesel fuels, injection of such flowback water for subsequent HF activities would not trigger the Class II requirements. Other commenters asked about the use of diesel fuels for freeze protection and pressure testing of pipelines. Again, it would depend on whether or not the diesel fuels are “emplaced subsurface through well injection” pursuant to HF. If so – whether used for purposes of freeze protection or pressure testing pipelines— it is within the scope of the Act and, under the EPA’s implementing regulations, a Class II permit is required. However, if the diesel fuels are not “emplaced

subsurface” – e.g., if pressure testing occurs at the surface and there is no subsurface injection of diesel fuels – then it would not be subject to UIC Class II permit requirements.

5. **Comment:** Depending on how the EPA defines “diesel fuels,” the need to issue UIC Class II well permits could result in a massive increase in the workload for state UIC permitting and enforcement staff.

**Response:** The EPA recognizes that issuing and enforcing UIC Class II permits for diesel fuels HF may present additional work for some state agencies. However, it can be assumed that Congress recognized the regulatory structure and potential for increased workload when it decided by statute to require a UIC permit for diesel fuels HF. In addition, a review of entries in the FracFocus chemical disclosure registry and supporting research indicates that there are readily available, widely used substances that serve the same purpose – as a diesel fuels constituent in HF fluid. States may choose to ban the use of substances subject to UIC Class II permits or encourage the use of alternatives to diesel fuels.

## **EPA Primacy Oversight and Enforcement**

1. **Comment:** The EPA should clarify how the guidance would apply in primacy states.

**Response:** Several commenters requested clarification on how the guidance would apply in primacy states. In response to these requests, the EPA is providing this clarification in an interpretive memorandum. The memorandum describes the EPA’s interpretation of key existing legal requirements that apply to diesel fuels HF – specifically, the applicability of the Class II regulations, and the interpretation of the term “diesel fuels” in the statute – which the EPA intends to apply in its oversight of UIC Class II primacy programs. The EPA is also releasing a revised guidance document consisting primarily of technical recommendations. These are non-binding policy statements directed at EPA permit writers for consideration in implementing the statutory and regulatory requirements in non-primacy states – although permit writers in primacy states may also find them useful.

Some commenters suggested that the EPA cannot require application of UIC Class II regulations for diesel fuels HF in primacy states, without first amending the approved primacy programs pursuant to the designated processes under SDWA. The EPA notes that these processes apply where the EPA amends *regulations* imposing new requirements on previously approved state programs. *See, e.g.,* SDWA Section 1422(b)(1)(B) (requiring that within 270 days of “any amendment of a regulation,” primacy states must submit a notice showing that the state program meets the revised regulatory requirement). Here, the EPA is not amending any regulations – rather, the EPA is simply describing what is already required under the existing statute and regulations – and therefore these processes do not apply.

Further, the EPA notes that it does not expect that primacy states will need to amend their approved primacy programs in order to apply Class II regulations to diesel fuels HF – primacy states that have approved Class II programs would simply need to apply these approved requirements for oil and gas related injection activities to diesel fuels HF. The EPA is not currently aware of any states whose approved UIC Class II program requirements would not allow for application of Class II requirements to diesel fuels HF. Therefore, as long as states applied their approved UIC Class II program requirements to diesel fuels HF, the EPA does not expect that there would be primacy concerns. However, to the extent that state programs or implementation thereof did not meet SDWA primacy requirements, the EPA would work with primacy states over time to bring their programs into compliance.

Some commenters incorrectly suggested that the EPA lacks both enforcement and oversight authority to ensure application of Class II requirements in primacy states. With respect to enforcement, SDWA Section 1423(a) authorizes the EPA to issue an enforcement order or file a civil action for a violation of “a requirement of an applicable underground injection program,” if the state has not commenced appropriate enforcement action within 30 days. The “applicable underground injection program” refers to the program that has been adopted by the State and approved by the EPA. Where a state has an approved primacy program to issue permits for a particular well class, it is required to issue permits for all operators that require such permits. In light of the 2005 SDWA amendments, requiring Class II permits for diesel fuels HF, all states that have Class II primacy must issue permits for HF operators that use diesel fuels – and the EPA could bring enforcement actions against diesel fuels HF operators that did not obtain such permits. As indicated above, the EPA is not aware of any approved primacy programs that would somehow preclude primacy states from issuing Class II permits for diesel fuels HF.

The EPA also has oversight authority over primacy states to ensure that they continue to meet the SDWA requirements. *See* SDWA Section 1422(b)(1)(B)(3); 1425(c)(2). The EPA’s regulations specifically provide that the EPA may withdraw program approval when a state primacy program no longer complies with the regulatory requirements, including where the state “fail[s] to exercise control over activities required to be regulated under this part, including failure to issue permits.” (40 CFR 145.33(a)(2)(i)).

Several commenters expressed concern that outside groups may petition the EPA to withdraw state UIC primacy, where states are not requiring UIC Class II permits for diesel fuels HF. The EPA agrees that this could occur, but notes that this is the case even if the EPA does not issue the guidance – as the legal requirement for states to issue Class II permits for diesel fuels HF already exists, created by Congress in the 2005 SDWA amendments. The EPA further notes that it intends to work with primacy states over time to bring their programs into compliance with the existing statutory and regulatory requirements, in order to avoid the risk of such petitions.

2. **Comment:** The EPA should clarify how the guidance would apply in states where the EPA is the permitting authority

**Response:** The EPA intends to use the interpretations provided in the interpretive memorandum (application of Class II requirements, and diesel fuels definition) in implementing and enforcing the UIC Class II program in states where the EPA is the permitting authority. With respect to the technical recommendations in the guidance, these are non-binding recommendations that EPA permit writers may consider in issuing UIC Class II permits for diesel fuels HF, although they have the discretion to consider alternative approaches that are consistent with statutory and regulatory requirements.

Some commenters expressed concern that diesel fuels HF operators could face citizen suits based on the EPA's interpretation – and that this could present a risk of inconsistent holdings by district courts. The EPA notes that this is the case even without issuance of this guidance. That is, citizens could bring suits against operators that engaged in diesel fuels HF without a Class II UIC permit – as this is required by existing statute and regulations. By issuing this guidance, the EPA may in fact lessen the risk of citizen suits by providing clarity and notice to the affected public regarding the agency's interpretation of what constitutes diesel fuels and therefore who is required to obtain a permit.

3. **Comment:** The EPA must clarify applicability of its permitting authority for diesel fuels HF on federal and tribal lands

**Response:** Some commenters sought clarification on whether diesel fuels HF operations on federal lands located in states that have Class II primacy would have to obtain a UIC Class II permit from the EPA or the state. In this case, the state that had Class II primacy would issue the permit. Similarly, if a Tribe has UIC Class II primacy, the Tribe would issue the Class II permit for diesel fuels HF.

4. **Comment:** The EPA cannot enforce the guidance retroactively

**Response:** Some commenters ask the EPA to clarify that it will not enforce the guidance retroactively – specifically, that any liability for failing to obtain a Class II permit would only be prospective from the date of the revised guidance. The EPA notes that the interpretations in this guidance are based on *existing* statutory and regulatory requirements, and that the EPA did not need to issue this guidance in order to enforce such existing requirements for both past and current violations. The EPA does not have a policy regarding enforcement actions for past violations of these requirements.

## Other

1. **Comment:** The EPA should postpone adoption of the guidance until after completion of the Office of Research and Development (ORD) study on the impacts of HF on drinking water.

**Response:** The EPA does not plan to postpone release of the revised guidance until after completion of the study. The interpretation in the guidance – that UIC Class II permits

apply to diesel fuels HF – is based on existing statutory and regulatory requirements and is not dependent on the results of the research effort. The EPA recognizes that its technical recommendations for implementing the Class II requirements could evolve based on the results of the research initiative, and expects that permit writers will consider any such new information in issuing permits for diesel fuels HF in the future.

2. **Comment:** Diesel fuels HF related to geothermal reservoir development and production should not be exempt from the scope of the EPA guidance.

**Response:** While it is correct that the technical recommendations in the guidance are not aimed at addressing geothermal HF activities using diesel fuels, this does not exempt such activities from any existing federal statutory or regulatory requirements. The SDWA specifically provides that “underground injection of fluids or propping agents... pursuant to hydraulic fracturing operations related to oil, gas, or *geothermal* production activities” is subject to the statutory requirements (emphasis added). The EPA focused the technical guidance document on permitting recommendations relating to oil and natural gas HF because its use has expanded rapidly and into new geographic areas. In addition, the vast majority of environmental concerns related to diesel fuels HF have arisen in the oil and natural gas area. Geothermal wells, including those that use diesel fuels HF for purposes of enhancing geothermal production, are regulated under the UIC Class V program<sup>20</sup> to help ensure the non-endangerment of USDWs near geothermal activities. The EPA is not required to issue guidance in order to implement SDWA requirements for diesel fuels HF pursuant to geothermal production and does not plan to at this time.

3. **Comment:** The EPA must conduct the National Environmental Policy Act (NEPA) review before issuing final guidance and any permits.

**Response:** Some commenters asserted that the EPA must conduct a review of the environmental impacts of permitting the injection of diesel fuels pursuant to NEPA. The EPA disagrees that it is required to conduct a NEPA review prior to issuing the revised guidance or issuing individual permits for diesel fuels HF. The EPA’s regulations specifically provide that UIC permits are not subject to the environmental impact statement provisions of NEPA. (40 CFR 124.9(b)(6)). This regulation codifies the “functional equivalence” doctrine in the case law, under which formal compliance with NEPA is not necessary when a federal agency is engaged primarily in an examination of environmental questions and where substantive and procedural standards ensure full and adequate consideration of environmental issues. *Warren Cty v. North Carolina*, 528 F. Supp. 276, 286 (E.D. N.C. 1981). Under this doctrine, courts have found the EPA to be exempt from NEPA procedural requirements for actions under the SDWA. *See Western Nebraska Resources Council v. EPA*, 943 F.2d 867 (8<sup>th</sup> Cir. 1991); *In re American Soda*, UIC Appeal No. 00-1 and 00-2, 9 EAD 280,291 (June 30, 2000).

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<sup>20</sup> US Environmental Protection Agency, *Underground Injection Control Program*, <http://water.epa.gov/type/groundwater/uic/index.cfm>, (2013)

4. **Comment:** Class II permit requirements will result in significant delays in oil and gas development.

**Response:** The EPA recognizes that there are differences in permit requirements between the UIC Class II program and state oil and gas programs and that in some cases, UIC Class II permits may impose requirements on HF operations using diesel fuels that are not similarly required under state oil and gas permits. However, it can be assumed that Congress recognized the regulatory structure (and possibility for legal challenges and associated delays) when it decided to subject diesel fuels HF to UIC Class II requirements. The EPA also notes that, aside from the SDWA obligations, owners and operators are quite familiar with balancing the schedules to meet permitting requirements by multiple state and federal agencies for their operations, from Clean Water Act, Endangered Species Act, and state laws.

5. **Comment:** The EPA does not provide references to studies, reports, or cases in the guidance that support the inclusion of new permitting requirements which are not currently part of the Class II program.

**Response:** The EPA disagrees with this comment. The revised technical guidance does not establish any new permitting requirements for HF using diesel fuels, but describes the EPA's interpretation of existing legal requirements as well as non-binding recommendations to consider in applying UIC Class II regulations to HF when diesel fuels are used in fracturing fluids or propping agents. UIC Class II regulations provide considerable flexibility to the UIC Program Director and permit writers to include permit conditions for site-specific attributes, in order to help prevent migration of fluids into or between USDWs. Non-binding recommendations were made to assist EPA UIC permit writers apply the Class II regulations to the unique conditions of diesel fuels HF. Recommendations are based on analysis of protective measures common to other UIC well classes, industry best practices, and updated state oil and gas rules.