



Underground Injection Control (UIC) Class VI Program

Summary of the EPA's Responses to
Public Comments Received on the Draft
Class VI Well Recordkeeping,
Reporting, and Data Management
Guidance for Owners and Operators

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Summary of the EPA's Responses to Public Comments Received on the Draft Class VI Well Recordkeeping, Reporting, and Data Management Guidance for Owners and Operators

Introduction

In March 2013, the U.S. Environmental Protection Agency (EPA) published the guidance document titled *Geologic Sequestration of Carbon Dioxide: Draft Underground Injection Control (UIC) Program Class VI Well Recordkeeping, Reporting, and Data Management Guidance for Owners and Operators* (EPA 816-P-13-001). Following publication of the draft document, the EPA invited the public to comment over a 60-day period ending on May 11, 2013.

The EPA received submittals from three commenters, representing the organizations shown in the table below. Please note that this document is intended to be a summary of the comments presented; while attempts were made to capture all commenter arguments and suggestions, every individual comment may not be included in this condensed document.

| Commenter | Type of Affiliation |
|--|--|
| American Petroleum Institute (API) | Energy industry |
| Carbon Sequestration Council (CSC) | Carbon capture and storage (CCS) association |
| North American Carbon Capture and Storage Association (NACCSA) | CCS association |

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The following tables present the EPA's responses to the comments received on the *Draft UIC Program Class VI Well Recordkeeping, Reporting, and Data Management Guidance for Owners and Operators*. Throughout the tables, page numbers used by the commenters refer to the March 2013 draft of the guidance document. Comment identification numbers displayed in the first column of the table were assigned by EPA to facilitate the comment response process.

A. General Comments on the Recordkeeping, Reporting, and Data Management Guidance for Owners and Operators

| ID# | Commenter | Comment | EPA Response |
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| 1 | API | <p>API appreciates the opportunity to provide comment on this proposed guidance and wishes to express its support for the comments being submitted by the North American Carbon Capture and Storage Association (NACCSA). API, like NACCSA, is very concerned that provisions in the draft Guidance document could impact CO2 Enhanced Recovery (ER) operations. In particular, we are concerned that some statements in the guidance erroneously imply that a UIC Program Director, EPA, or anyone other than an owner or operator could determine when that owner or operator's ER operations change to geologic storage or sequestration (GS), thereby possibly requiring a Class VI permit instead of a Class II permit. Since this decision is inherently a question of intent, only the owner or operator has the power to make this "primary purpose" determination.</p> | <p>Given that this guidance document focuses on reporting and recordkeeping, the EPA made every effort to remove any policy statements or perceived policy statements regarding carbon dioxide enhanced recovery operations from the guidance. The details of a Class II to Class VI transition will be explained in a forthcoming guidance, <i>UIC Program Guidance on Transitioning Class II Wells to Class VI Wells</i>. We will consider your comment in the context of that guidance document.</p> <p>Until that time, the EPA's April 2015 memo, <i>Key Principles in EPA's Underground Injection Control Program Class VI Rule Related to Transition of Class II Enhanced Oil or Gas Recovery Wells to Class VI</i>, serves as the EPA's most current policy on the Class II to Class VI transition.</p> |
| 2 | CSC | <p>We commend the general approach reflected in both documents of first describing the regulatory requirements by reference to the actual rule provisions before separately stating the additional information EPA is recommending be submitted. This approach makes clear that not all of the information suggested for inclusion is actually required to be submitted. We think there are some places where this distinction could be made more effectively, and we have identified those places in the detailed comments on each of the two draft guidance documents. We also identify places where the data requirements of the regulations should be stated more accurately in the guidance. In the remainder of this letter, we present several overarching concerns about the approaches taken in these draft guidance documents.</p> | <p>The EPA acknowledges the comment. We have made clearer distinctions between requirements and recommendations where necessary throughout the document, and have specifically addressed each of your comments below. Additionally, the EPA confirms that, as indicated in this and other guidance documents, none of the guidance documents seek to impose any binding requirements on any party beyond what is expressly required by the Class VI Rule.</p> |

| ID# | Commenter | Comment | EPA Response |
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| 3 | CSC | <p>Inadequate Provisions for Protecting Against Electronic Theft or Loss of Proprietary and Confidential Data and Models.</p> <p>As noted, the guidance documents appear to recommend that applicants submit enough of the computational models and supporting equations, data and parameters so that the UIC Director (whether the EPA or a state agency) will have the complete model and may “replicate” the calculations. This means that the EPA is recommending that the actual code for running the models as well as the approach, the assumptions, and the raw data inputs and outputs should be submitted. The guidance documents do not, however, recognize that these computational models and some of the associated data and information may be highly competitively valuable and sensitive information. Much of the input data and the modeling software are likely to be private property that has been acquired or developed at very great cost. Hence, if the EPA chooses to try to include such sensitive and proprietary information in a centralized data management center, it will need to recognize that these items are confidential business information and to develop extremely robust security to ensure the integrity of the information. Given the high level of international competition involving the use of reservoir modeling for the exploration and production of oil and gas resources in addition to the use of such models in developing CCS projects, such models and data could even become the object of electronic data theft (not inconceivably by foreign governments). Similarly, the models and data could be sought via Freedom of Information Act requests where the EPA would have to be certain that it could appropriately protect the confidential business information (which, after all, could never be simply “recalled” if, for example, it were accidentally provided in error to a requesting party as has occurred on more than one occasion in the past).</p> <p>Finally, the wisdom of including so much sensitive data in a single centralized data facility is questionable and is likely to lead to complications that could interfere with the creation, operation and maintenance of the central data system to address the data and information actually required to be submitted to EPA under the Class VI rule. In effect, the EPA is planning to put all this additional model information in a single centralized location – putting “all the eggs in one basket”. While there might be some modest advantages in terms of convenience of access, the agency appears to ignore the very great disadvantages in terms of the risk of organized theft or accidental failure to</p> | <p>The EPA does not require the “actual code” as suggested by the commenter. The guidance document clarifies this and provides examples of what types of information might be submitted to meet the Class VI requirements and facilitate the EPA’s review and permit decision making. The regulations do not require nor do we ask that applicants submit their models, code, or other proprietary information.</p> <p>Additionally, the EPA respects the proprietary nature of models and their supporting information, if they are designated by the applicant as such. The guidance provides information on the approach an applicant should take with respect to any claims of confidential business information (CBI).</p> <p>In early permitting, the EPA has worked with applicants to ensure that we have appropriate information to be able to evaluate their models using non-proprietary information applicants were willing to disclose, such as their assumptions. In the event that an applicant is submitting CBI to EPA, we will follow agency procedures for CBI.</p> |

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| | | <p>protect data integrity. The Interagency Task Force Report to which the Guidance document refers mentioned the thought in addressing possible ways to reduce the processing burden on state agencies but did not contain any discussion or analysis of the drawbacks of a centralized approach. Nor did the Task Force Report recommend a centralized system for sensitive proprietary modeling information, but merely mentioned it in a single sentence in one of the Appendices and only with respect to required programmatic information.</p> <p>We understand for example that some of the computational models themselves may come within the scope of regulation by the Bureau of Industry and Security (BIS) of the U.S. Department of Commerce, designed to preclude the export of certain sophisticated computational modeling software or computer hardware. We highly recommend that the EPA coordinate its plans with the BIS personnel as well as with the owners and users of the models to facilitate compliance with applicable statutes and regulations.</p> <p>We would urge the Agency to reconsider whether it needs to have physical custody of proprietary models, as opposed to such access to the modeling inputs and results as needed to discharge its regulatory responsibilities. If the Agency determines that it cannot discharge its regulatory responsibilities without taking actual custody of the modeling software, then it must explain what authority it has to do so and what steps it will take to protect the integrity of the private intellectual property that it intends to take into its custody and control. In addition, it should first work out the details of its obligations to indemnify the owners in the event the Agency is ultimately unable for whatever reason to maintain data integrity and security.</p> <p>Even with this change in approach, the guidance documents should explain that it is possible to protect the proprietary details of models and other information by identifying these as confidential business information in accordance with applicable EPA requirements. Particularly if EPA wants to encourage the submission of detailed codes and other elements of these models, the Agency needs to explain how the intellectual property associated with these models will be treated and protected.</p> | |

| ID# | Commenter | Comment | EPA Response |
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| 4 | CSC | <p>Interim Data Management Guidance</p> <p>The draft guidance documents notes in several places that the central data system for Class VI data is still under development, but no guidance is provided for data reporting and management during the interim period until the central data system is fully functional. The guidance needs to provide an explanation of how applicants and permittees are expected to comply with the requirement of 146.91(e) before that central data system is in place because the requirement is already effective. We anticipate that any interim data reporting and management procedures would be spelled out in Class VI permits that are issued in advance of the availability of the central data system, but these procedures should be developed and explained in the guidance if it is issued before the system is functional.</p> | <p>The EPA acknowledges this comment and has restructured the guidance to specifically address the commenter's concerns. The Geologic Sequestration Data Tool (GSDT) is now fully functional. During early permitting, the EPA worked cooperatively with applicants to phase in the use of the GSDT while it was in development.</p> |
| 5 | CSC | <p>Interim Data Management Guidance</p> <p>We are also concerned that the guidance contains significant detail about the form that electronic submittals should take but does not explain how the documents and data should be submitted. That should be spelled out in the guidance even if the current process is temporary. If these should be sent by email, that should be explained along with the addresses to which those emails should be directed. If the reports and data should be uploaded to a website, that information should be presented. Having included a requirement to submit everything directly to EPA (in addition to being submitted to any primacy state UIC Program Director), EPA should explain how operators will be expected to comply with that requirement.</p> | <p>The EPA acknowledges this comment and has restructured the guidance to specifically address the commenter's concerns.</p> |
| 6 | CSC | <p>Avoiding Duplicative Reporting</p> <p>The draft guidance identifies as a potential advantage of electronic reporting that it can “[r]educ[e] the burden on owners or operators for data submittal and recordkeeping”, claiming that this will help to fulfill a recommendation of the Report of the Interagency Task Force on Carbon Capture and Storage (CCS). The qualifier on that recommendation is that it is intended to promote efficiency, which can only occur if the central data system does not impose a requirement for duplicate reporting. To avoid that particular inefficiency, EPA</p> | <p>The EPA designed the GSDT to be usable by and accessible to states and encourages its use. UIC Program Directors in states with primacy will be able to control the data they require through the data tool by having the same level of access as the EPA. There is sufficient flexibility built into the GSDT such that any additional reporting required by the state could be accommodated.</p> <p>However, EPA acknowledges that Class VI UIC Program Directors in primacy states may opt to create their own data system for Class VI projects.</p> |

| ID# | Commenter | Comment | EPA Response |
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| | | <p>should be cognizant of the need for primacy state UIC Program Directors to control the data that must be submitted by permittees to the state agency. Instead, EPA appears to be operating under a notion that all operators will submit all data directly to EPA and that state primacy UIC program Directors will have access to the data only through the EPA central data system and will not require separate submission of the data. That approach fails to recognize that the state agencies will be accountable to their own legislatures and executive agencies and will need to have direct control over the data they require to be submitted. Accordingly, the EPA central data system should be designed to collect the data from the state data systems through means that will allow a single reporting process for operators through which data can be submitted directly to the UIC Program Director (regardless of whether that Director is in an EPA Regional office or a state agency). The UIC Program Director should have primary ownership and control of the data. Once into the system, the data can be exchanged and compiled on a central basis, but any discrepancies, corrections and quality control should always be at the UIC Program Director level in a primacy state. Any other approach is likely to require duplicate reporting and to introduce a significant additional potential for discrepancies through inconsistencies in the data contained within the separate state and federal databases. That is an outcome that would not be a fulfillment of the data system recommendation by the Interagency Task Force.</p> | |
| 7 | NAACSA | <p>First, we must repeat that the Guidance goes too far in including advisory recommendations that go well beyond what the final Class VI Rule requires [FN 2]. We appreciate that EPA is trying to be helpful in providing guidance but because the regulatory regime is new, advisory statements are apt to become binding despite the fact that the Class VI Rule is premised on the appropriate notion of meeting performance standards in light of local geologic conditions.</p> <p>[FN 2: Final Rule: Federal Requirements Under the Underground Injection Control (UIC) Program for Carbon Dioxide (CO₂) Geologic Sequestration (GS) Wells, 75 Fed. Reg. 77230 (December 10, 2010), codified at 40 CFR 144.1, et seq. (hereafter "Class VI Rule").]</p> | <p>In response to this and other comments, we have made clearer distinctions between requirements and recommendations where necessary throughout the document, and we have addressed specific comments where noted. Additionally, as indicated in this and other guidance documents, none of the guidance documents seek to impose any binding requirements on any party beyond what is expressly required by the Class VI Rule.</p> |

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| 8 | NAACSA | <p>Second, the sheer scope of the guidance is problematic. The regulatory regime is new and untested, and now EPA is in the midst of promulgating voluminous amounts of guidance that could have the unintended consequence of creating more uncertainty about the permitting process. EPA has finalized guidance documents on the following four topics: (i) Financial Responsibility; (ii) Well Construction; (iii) Project Plan Development; and (iv) Well Testing & Monitoring. The comment period on the following three guidance documents has closed: (i) Primacy Application & Implementation; (ii) Well Site Characterization; and (iii) Area of Review Evaluation & Corrective Action. EPA states that the following three draft guidance documents will be released for comment in the future: (i) Well Plugging, Post Injection Site Care, and Site Closure; (ii) Injection Depth Waivers; and (iii) Transitioning from Class II to Class VI [FN 3]. Along with this Guidance and the PA Guidance, that makes a total of twelve (12) guidance documents already issued or in process.</p> <p>The Class VI Rule was largely built on performance standards, recognizing that the CCS industry is in its infancy and the specific techniques and technology for meeting the regulatory standards will evolve as projects are built and begin operations over time. EPA's issuance of voluminous and overly prescriptive guidance documents will tend to foreclose that innovation. They will tend to "lock in" whatever techniques or procedures EPA selects today, rather than allowing industry and regulators alike to ride up the learning curve as projects are developed in the years ahead .</p> <p>[FN 3: EPA recently has dropped references to forthcoming guidance for Class V experimental technology wells. This development confirms our understanding that EPA is no longer permitting Class V wells for experimental CCS injections. We believe that policy to be unwise as it will discourage CCS R&D and negatively impact the academic community. EPA has emphasized repeatedly that Class VI is for commercial wells only. Requiring the R&D community to comply with Class VI is a recipe for impaired, not enhanced, CCS technology development.]</p> | <p>The EPA committed to providing technical guidance when finalizing the Class VI Rule. This, like other guidance documents, is designed to support permitting. Additionally, it has the benefit of 'lessons learned' from early permitting. We want to eliminate as much uncertainty as possible in the permitting process.</p> <p>This guidance was not intended to contain any specific technology or procedural requirements. As stated in the disclaimer, "While EPA has made every effort to ensure the accuracy of the discussion in this document, the obligations of the regulated community are determined by statutes, regulations, or other legally binding requirements. In the event of a conflict between the discussion in this document and any statute or regulation, this document would not be controlling." We have built flexibility into the rule, and this flexibility is now noted throughout the document.</p> <p>Class V well permitting decisions and policies are outside the scope and purpose of this guidance document and the associated comment period.</p> |

| ID# | Commenter | Comment | EPA Response |
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| 9 | NAACSA | <p>Third, the issuance of Class VI guidance in piecemeal fashion makes it difficult for the regulated community to provide comments and to understand the regulatory regime. The guidance documents referenced above are interrelated to some extent. We cannot comment on guidance that has not yet been issued, of course, nor can we thoughtfully assess the entire regulatory regime until all of the guidance has been issued. Even this Guidance is incomplete, with a placeholder at section 7 (<i>Guidance</i>, p. 86) for a central management system that does not yet exist [FN 4]. These comments are thus necessarily preliminary and subject to later modification as additional guidance is issued and when the Guidance and PA Guidance are supplemented.</p> <p>[FN 4: <i>Guidance</i>, p. iv note 1.]</p> | <p>The EPA believes that the issuance of this final guidance will provide additional clarity to Class VI permit applicants and owners or operators regarding reporting and recordkeeping. Additionally, EPA has made efforts to ensure that this document is complementary to all existing Class VI guidance documents, which focus on specific rule requirements.</p> <p>The GSDT is now fully developed and in use by permit applicants and owners or operators. Section 7, referenced by the commenter, has been removed and references to the use of the GSDT have been made throughout the document for reporting, recordkeeping, and data management purposes.</p> |
| 10 | NAACSA | <p>Fourth, the mounting volume and complexity of the Class VI guidance collectively lead us to reaffirm our oft-stated observation that the Class VI program simply will not work for many industrial sources, pipeline operators, and oil & gas companies that intend to engage in concurrent EOR/sequestration under UIC Class II. Section 144.19 of title 40 of the Code of Federal Regulations provides an explicit regulatory path for concurrent EOR/sequestration to be conducted under UIC Class II, and that path is likely to be frequently used. We understand that the Guidance does not apply to owners and operators making use of the Class II pathway under the Class VI Rule.</p> | <p>The EPA acknowledges the comment. Comments on the Class VI Rule are outside the scope and intent of this guidance comment period. The EPA concurs that this guidance document does not apply to Class II owners or operators.</p> |
| 11 | NAACSA | <p>Fifth, we remain concerned that the mounting volume of guidance confirms that the Class VI Rule is straying from its intended focus on commercial projects. Class VI is for commercial projects and is intended primarily to achieve the regulatory outcome of protecting USDWs; Class VI does not allow the collection of data for data's sake as one might do in an experimental or research & development project. As explained in greater detail below, the Guidance suggests that EPA wants as much data as possible in all instances without regard to the legal limits on data collection under the Safe Drinking Water Act ("SDWA") and protection of specific regulatory endpoints under that statute. If EPA wants R&D information, it should reinstate CCS permitting under Class V. Having shut down CCS permitting under Class V, it is unlawful for EPA to endeavor to convert via guidance Class VI into a combination commercial R&D program.</p> | <p>The Class VI Rule is not defined as applying specifically or exclusively to "commercial" projects but rather is available for injection of carbon dioxide not related to enhanced recovery. Both the rule and guidance documents afford Class VI owners or operators flexibility to meet the requirements and facilitate the collection of the information needed to support risk-based permitting decisions.</p> |

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| 12 | NAACSA | Sixth, the Guidance impermissibly construes each regulatory provision of the Class VI Rule as a "recordkeeping, reporting and data management" requirement. Appendix A to the Guidance, for example, effectively itemizes each and every regulatory provision of the entire Class VI Rule -even those that establish criteria for the Director's use in approving permits --and then attempts to describe the relevant "information" at issue for each provision. The Class VI Rule contains discrete recordkeeping, reporting and information submission requirements but it is not accurate to suggest that each regulatory provision somehow imposes "recordkeeping, reporting and data management" requirements on owners or operators. We are aware of no other program where the agency has attempted to set forth in laborious detail potentially relevant "information" under each regulatory provision, even those that do not impose any requirements on regulated parties. | We have addressed specific comments where noted and have made clearer distinctions between requirements and recommendations where necessary throughout the document. The guidance does not impose any additional requirements beyond the Class VI Rule. Appendix A has been removed from this guidance. |

B. Comments on the Introductory Sections

The EPA did not receive any comments specific to the following sections of the draft guidance document: Disclaimer, Acronyms, Section 1.2.3 (Post-Injection Phase Reporting), and Section 1.3 (Organization of this Document).

Executive Summary

| ID# | Commenter | Comment | EPA Response |
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| 13 | CSC | <p>Page iv</p> <p>Guidance Statement: At the time this draft document was published, the central data system for Class VI data was under development. To avoid publishing incomplete information, this draft contains a placeholder for the description of GS data management through the use of the central data system.</p> <p>Discussion: Although it may seem desirable to provide a “placeholder”, that placeholder in this draft guidance is just a blank page. Until the data system is in place, EPA needs to provide guidance on how electronic reporting under 146.91(e) to UIC Directors and EPA should be conducted. We expect that this will be spelled out in each individual permit, but there is need for a general discussion here. In short, EPA needs to describe the interim electronic data</p> | The GSDT is now fully functional and is the path to compliance with Class VI reporting requirements. Resources that support the use of the GSDT and references to those resources are included throughout the document. |

| ID# | Commenter | Comment | EPA Response |
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| | | submission procedures and data management operations for owners and operators and UIC Program Directors. What is the plan for permits that are issued before the central data system is in place? These procedures should be described and presented in the guidance in lieu of a blank “placeholder” page. | |

Definitions

| ID# | Commenter | Comment | EPA Response |
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| 14 | CSC | <p>Page xii</p> <p>Guidance Statement: Computational code refers to a series of interrelated mathematical equations solved by computer to represent the behavior of a complex system. For the purposes of GS, computational models represent, at a minimum, the flow and transport of multiple fluids and components in varying phases through porous media. Computational codes offer the ability to predict fluid flow in the subsurface using scientifically accepted mathematical approximations and theory. The use of computational codes is necessary because the mathematical formulations describing fluid flow are complicated and in many cases, non-linear. Several codes have been specifically developed or tailored for injection activities similar to GS, and can be used for this purpose. <i>This definition was drafted for the purposes of this document.</i></p> <p>Discussion: Here and elsewhere throughout this guidance document, EPA needs to recognize and acknowledge that permit applicants and operators will not be submitting to EPA the “computational codes” of models used to conduct required delineations of the area of review, predict the extent of injected carbon dioxide plumes, support demonstrations of alternative post-injection site care timeframes, support injection depth waivers, and support nonendangerment demonstrations for closure. These models and their codes are often proprietary and contain sensitive intellectual property that has been developed at great cost for use in conducting the business of exploration and development of oil and gas resources. Moreover, EPA does not need the entire model and its codes in order to fully evaluate these demonstrations. For 25</p> | <p>The EPA acknowledges the comment. The guidance clarifies and the EPA affirms that the regulations do not require, nor do we ask, that applicants submit their models, code, or other proprietary information, and seek only enough information to make risk-based permitting decisions.</p> <p>In early permitting, we have worked with applicants to ensure that we have appropriate information to be able to evaluate their models using non-proprietary information applicants were willing to disclose, such as their assumptions. In the event that an applicant is submitting CBI to the EPA, we will follow agency procedures for CBI.</p> |

| ID# | Commenter | Comment | EPA Response |
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| | | <p>years EPA has evaluated the computational modeling conducted to support qualification for exemption from land disposal restrictions by Class I hazardous waste injection well facilities without requiring the submission of the models and computational codes used by the operators. A similar approach should be taken for UIC Program Director review of the computational modeling conducted under the Class VI program.</p> | |
| 15 | CSC | <p>Page xii</p> <p>Guidance Statement: Computational model means a mathematical representation of the injection project and relevant features, including injection wells, site geology, and fluids present. For a GS project, site specific geologic information is used as input to a computational code, creating a computational model that provides predictions of subsurface conditions, fluid flow, and carbon dioxide plume and pressure front movement at that site. The computational model comprises all model input and predictions (i.e., output). <i>This definition was drafted for the purposes of this document.</i></p> <p>Discussion: Here and elsewhere throughout this guidance document, EPA needs to recognize and acknowledge that permit applicants and operators will not be submitting to EPA the “computational codes” of models used to conduct required delineations of the area of review, predict the extent of injected carbon dioxide plumes, support demonstrations of alternative post-injection site care timeframes, support injection depth waivers, and support non-endangerment demonstrations for closure. These models and their codes are often proprietary and contain sensitive intellectual property that has been developed at great cost for use in conducting the business of exploration and development of oil and gas resources. Moreover, EPA does not need the entire model and its codes in order to fully evaluate these demonstrations. For 25 years EPA has evaluated the computational modeling conducted to support qualification for exemption from land disposal restrictions by Class I hazardous waste injection well facilities without requiring the submission of the models and computational codes used by the operators. A similar approach should be taken for UIC Program Director review of the computational modeling conducted under the Class VI program.</p> | <p>The EPA acknowledges the comment. The guidance clarifies and the EPA affirms that the regulations do not require, nor do we ask, that applicants submit their models, code, or other proprietary information, and seek only enough information to make risk-based permitting decisions.</p> <p>In early permitting, we have worked with applicants to ensure that we have appropriate information to be able to evaluate their models using non-proprietary information applicants were willing to disclose, such as their assumptions. In the event that an applicant is submitting CBI to the EPA, we will follow agency procedures for CBI.</p> |

| ID# | Commenter | Comment | EPA Response |
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| 16 | CSC | <p>Page xiv</p> <p>Guidance Statement: Primacy (primary enforcement responsibility) means the authority to implement the UIC Program. To receive primacy, a state, territory, or tribe must demonstrate to EPA that its UIC program is at least as stringent as the federal standards; the state, territory, or tribal UIC requirements may be more stringent than the federal requirements. (For Class II, states must demonstrate that their programs are effective in preventing pollution of USDWs.) EPA may grant primacy for all or part of the UIC program, e.g., for certain classes of injection wells. <i>EPA UIC glossary.</i></p> <p>Recommended Revision: Primacy (primary enforcement responsibility) means the authority to implement the UIC Program. To receive primacy, a state, territory, or tribe must demonstrate to EPA that its UIC program is at least as stringent as the federal standards; the state, territory, or tribal UIC requirements may be more stringent than the federal requirements. (For Class II, states must demonstrate that their programs are effective in preventing pollution of USDWs.) EPA may grant primacy for all or part of the UIC program, e.g., for certain classes of injection wells.</p> <p>Discussion: This statement, although accurate, is not particularly helpful because it does not address the question of what is meant by the expression “at least as stringent as”. In the past, EPA has had a very cabined view of this standard. The only defensible interpretation is that a state must demonstrate that its program provides as much or more protection of USDWs as the federal program. States should be free to tailor their programs to the geology and other conditions found within their borders without needing to match the federal requirements on a word-for-word, or even subsection by subsection basis. Furthermore, there is no reason to reference any standard for Class II in this guidance document which only addresses Class VI requirements.</p> | <p>The EPA made the suggested edit.</p> |

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| 17 | CSC | <p>Page xv</p> <p>Guidance Statement: Well bore refers to the hole that remains throughout a geologic (rock) formation after a well is drilled. <i>This definition was drafted for the purposes of this document.</i></p> <p>Recommended Revision: Well bore refers to the hole that remains throughout a geologic (rock) formation after a well is drilled including all tubulars, equipment and cement.</p> <p>Discussion: This is a more complete definition of how wellbore is used in the industry.</p> | <p>The EPA acknowledges the comment. No changes were made in response to this suggested definition revision.</p> |
| 18 | NAACSA | <p>Specific Comments 1. Definitions</p> <p>If the definitions used in the Guidance are intended to be the same as those in the Class VI Rule, they are redundant; to the extent they differ from those in the Class VI Rule, they are legally irrelevant because the definitions in the Class VI Rule will govern. It would be far preferable to delete the definitions in the Guidance and simply substitute a citation to the applicable definitions in the Class VI Rule or the SDWA. If that approach is not taken, the following definitions should be revised to ensure that they are identical to those provided in the Class VI Rule or the SDWA [FN 5].</p> <p>[FN 5: Unless otherwise specified, references to "sections" below are to the final Class VI Rule in the Code of Federal Regulations.]</p> | <p>Recognizing that definitions in this document are useful for users to reference, they remain in the document. The EPA has revised those definitions that the commenter references below and that are defined in the Class VI regulations or SDWA to adhere strictly to the regulatory definitions.</p> |
| 19 | NAACSA | <p>Aquifer exemption. With reference to 40 C.F.R. § 146.4, the Guidance's definition of "aquifer exemption" includes the following phrase that does not appear in the applicable regulatory definition: "and has no real potential to be used as [sic] drinking water source in the future." <i>Guidance</i>, p. xi. The corresponding regulatory language at 40 C.F.R. § 146.4(d)(3), which should be used instead, states as follows: "It is not reasonably expected to supply a public water system."</p> | <p>The EPA made the suggested edit.</p> |

| ID# | Commenter | Comment | EPA Response |
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| 20 | NAACSA | Carbon dioxide stream. The Guidance's definition of "carbon dioxide stream" is inconsistent with that provided in 40 C.F.R. § 146.81. The former refers to the "definition of a hazardous waste as defined by [RCRA] under 40 CFR part 261.3"; the latter, which should be used instead, refers to the "definition of a hazardous waste under 40 CFR part 261." | The EPA made the suggested edit. |
| 21 | NAACSA | Class I well. The Guidance's definition of "Class I well" is inconsistent with the regulatory definition at 40 C.F.R. § 144.6(a). The term "technically sophisticated," for example, does not appear in the regulations. The existing regulatory definition should be used. | The EPA revised the definition adhering strictly to the language from the regulatory definition. |
| 22 | NAACSA | Class II well. The Guidance's definition of "Class II well" is inconsistent with the regulatory definition at 40 C.F.R. § 144.6(b). The existing regulatory definition should be used. | The EPA revised the definition adhering strictly to the language from the regulatory definition. |
| 23 | NAACSA | <p>Corrosive. The Guidance's definition of "corrosive" includes the following unsupported and misleading statement: "Carbon dioxide mixed with water forms carbonic acid, which can corrode well materials." Carbon dioxide enters water through equilibrium with the atmosphere. And while aqueous CO₂ can react with water to form carbonic acid, only a small fraction exists as the acid [FN 6]. Carbonic acid is weak and occurs frequently in the natural world. It is also found in sodas, champagne, and blood. These and other critical subtleties are lost in the Guidance's definition of the term, which by blanket inference suggests that carbon dioxide and water form a corrosive material that can damage all well materials.</p> <p>The Guidance's definition of "corrosive" also ignores the detailed "characteristics of corrosivity" set forth in 40 C.F.R. § 261.22 of the RCRA program. These characteristics include, for example, a pH "less than or equal to 2 or greater than or equal to 12.5 as determined by a pH meter using Method 9040C" 40 CFR § 261.22(a)(1). It is unclear if carbonic acid would satisfy these conditions under all relevant conditions of long-term storage. Since EPA is separately poised to publish a final conditional exclusion for certain CO₂ streams under the RCRA program, it is important that the Guidance's references to RCRA terminology be precise.</p> <p>[FN 6: http://ion.chem.usu.edu/~sbialkow/Classes/3650/Carbonate/Carbonic%20Acid.html.]</p> | This definition is from the Class VI Rule; comments on the Class VI Rule are beyond the scope and intent of this guidance comment period. |

| ID# | Commenter | Comment | EPA Response |
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| 24 | NAACSA | Enhanced oil recovery. The Guidance's definition of "enhanced oil recovery" is too narrow: "the process of injecting carbon dioxide into an oil reservoir to thin (decrease the viscosity) of extractable oil, which is then available for recovery." One way in which this definition is too narrow is that it suggests miscibility as a requirement of EOR, when in fact immiscible floods are also used as a function of reservoir conditions and other factors. Instead of making up a new definition for purposes of this Guidance, we encourage EPA to make use of any of the State-based definitions of EOR that currently exist. The State of Texas, for example, defines an EOR project as the "use of any process for the displacement of oil from the reservoir other than primary recovery and includes the use of an immiscible, miscible, chemical, thermal, or biological process." Texas Administrative Code, title 16, part 1, chapter 3, Rule § 3.50(c)(6). | Because this term is no longer used in the guidance, the EPA removed this definition from the definitions section. |
| 25 | NAACSA | Geologic sequestration. The Guidance's definition of "geologic sequestration" includes the superfluous term "geologic" before each reference to "GS" in lines two/three and four of the definition, respectively. | The EPA made the suggested edits. |
| 26 | NAACSA | Injection depth waiver. We recommend that this definition be struck and replaced with a reference to the applicable waiver requirements at 40 C.F.R. § 146.96. The Guidance's definition uses ambiguous terms such as "non-USDW formations" and "protected from endangerment" that do not appear in the regulations, thus adding unnecessary ambiguity and uncertainty. | The EPA revised the definition adhering strictly to the language from the regulatory definition. |
| 27 | NAACSA | Injection zone. The Guidance's definition of "injection zone" includes the superfluous term "geologic" before the reference to "GS" in line three of the definition. | The EPA made the suggested edits. |
| 28 | NAACSA | Primacy (primacy enforcement responsibility). The Guidance's definition of "primacy (primary enforcement responsibility)" includes the following parenthetical that conflicts with the primacy standards for Class II wells under the SDWA: "For Class II, states must demonstrate that their programs are effective in preventing pollution of USDWs" (emphasis in original). The term "preventing pollution" is not part of the legal standard for State primacy of Class II wells. The SDWA stipulates instead the following standard: "effective program ... to prevent underground injection which endangers drinking water resources~" 42 U.S.C. § 300h-4(a). The Guidance should not introduce legal standards and terminology that differ from federal law. | The EPA removed the parenthetical from the definition. |

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|--|-----------------------------------|
| 29 | NAACSA | Site closure. The Guidance's definition of "site closure" differs from that provided in the applicable regulations at 40 C.F.R. § 146.81(d). The former refers to "specific point or time," for example, while the latter uses the more generic phrase "point/time." The former also includes a parenthetical reference to "Class VI injection well" that does not appear in the regulation. Finally, the Guidance's definition includes a superfluous reference to "geologic" before "GS" in lines two/three of the definition. | The EPA made the suggested edits. |

1. Introduction

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|---|--|
| 30 | NAACSA | <p>2. Introduction</p> <p>The Guidance's introductory section suggests that EPA's authority to impose requirements related to recordkeeping, reporting, and data management is based upon section 1445 of the SDWA: "Pursuant to Section 1445 of SDWA, owners or operators subject to requirements under SDWA must establish and maintain records, conduct monitoring, and provide any information that the Administrator... may require <u>by regulation</u> with the Act." <i>Guidance</i>, p. 1 (emphasis added). SDWA section 1445 states (42 U.S.C. § 300j-4(a) (emphasis added)):</p> <p>Every person who is subject to any requirement of this subchapter... shall establish and maintain such records, make such reports, conduct such monitoring, and provide such information as the Administrator <u>may reasonably require by regulation</u>.</p> <p>This language makes clear that the Class VI recordkeeping, reporting, and data management requirements may only be issued through regulation, not guidance, and also must be reasonable in light of the SDWA's statutory purposes.</p> | <p>This document does not impose additional requirements on owners and operators. Rather, the document includes recommendations for meeting the reporting and recordkeeping requirements of the Class VI Rule. These are noted clearly as recommendations and distinguished from regulation by avoiding the word "must."</p> <p>The EPA developed the GSDT to support regulatory compliance and affirms that the regulations govern reporting and recordkeeping for Class VI projects.</p> |

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|--|--------------|
| | | <p>Section 1445 further refers to four categories of information: (1) records; (2) reports; (3) monitoring; and (4) ancillary information as may be reasonably required. The term "data management" does not appear in Section 1445. Under the Class VI Rule, these four categories of information are addressed in the following regulatory provisions: (1) records -40 C.F.R § 146.91(f); (2) reports -40 C.F.R. § 146.919(a); and (3) monitoring -40 C.F.R. § 146.90. Provisions of the Guidance that go beyond these requirements are <i>ultra vires</i> as they conflict with section 1445's mandate that applicable information requirements be established "by regulation."</p> | |

1.1. Review of Class VI Monitoring Regulations

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|--|--|
| 31 | CSC | <p>Page 1</p> <p>Guidance Statement: The purpose of this guidance is to provide:</p> <p>A comprehensive description of the reporting and recordkeeping requirements of the Class VI Rule for each phase of a GS project and associated activities as shown in Figure 1-1.</p> <p>Discussion: This is provided in great detail but without any clear indication of the mechanics of just how these requirements should be met and how the flexibilities can be used effectively to tailor to site-specific circumstances.</p> | <p>Use of the GSDT for meeting Class VI reporting requirements is now described throughout the document. Additionally, requirements and recommendations are clearly and accurately noted.</p> |
| 32 | CSC | <p>Page 1</p> <p>Guidance Statement: A description of the reporting and data management process among the entities with access to Class VI well data.</p> <p>Final Rule Language: 146.91(e) Regardless of whether a State has primary enforcement responsibility, owners or operators must submit all required reports, submittals, and notifications under subpart H of this part to EPA in an electronic format approved by EPA.</p> | <p>The GSDT is now fully functional and is the path to compliance with Class VI reporting requirements. Resources that support the use of the GSDT and references to those resources are included throughout the document.</p> |

| ID# | Commenter | Comment | EPA Response |
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| | | <p>Discussion: This draft guidance does not explain anywhere just how the required electronic reporting of 146.91(e) should be conducted before “the centralized, integrated electronic reporting system maintained by EPA” comes into existence. Until that system is ready, this guidance should provide the necessary explanation. We assume that the specific requirements will be spelled out in individual permits, but a general discussion of the approach should be included. For example, the guidance should explain that electronic reporting can be accomplished by emailing appropriate documents to a specific address at EPA Regional or Headquarters offices. There are numerous statements about the form of electronic documents that can be used to embody the information without any indications of where and how these documents should be submitted. This is the place to do that. Even if EPA includes a temporary discussion that will ultimately be replaced when the “system” is in place, guidance should be provided.</p> | |

1.2 GS Project Phases and Reporting Requirements

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|--|---|
| 33 | CSC | <p>Page 3</p> <p>Guidance Statement: A GS project consists of three main phases: (1) the pre-injection phase, during which the owner or operator submits a permit application (and, in some cases, an injection depth waiver report or a request to expand the areal extent of an aquifer exemption) and the UIC Program Director reviews this information and authorizes well construction and, later, injection;</p> <p>Recommended Revision: A GS project consists of three main phases: (1) the pre-injection phase, during which the owner or operator submits a permit application (and, in some cases, an injection depth waiver report or a request to expand the areal extent of an aquifer exemption) and the UIC Program Director reviews this information and authorizes well construction, associated logging and testing and, later, injection;</p> <p>Discussion: The draft description is incomplete, and the suggested revision will make it more complete.</p> | <p>In response to this comment and experience gained in permitting, we have divided the pre-injection phase and associated discussion into pre-construction and pre-operation phases.</p> |

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|--|---|
| 34 | CSC | <p>Page 3</p> <p>Guidance Statement: (3) the post-injection phase, when the owner or operator plugs the injection well and conducts PISC activities, the UIC Program Director makes compliance and oversight determinations after all injection has ceased and until the finalization of site closure, and the site is closed.</p> <p>Recommended Revision: (3) the post-injection phase, when the owner or operator plugs the ceases injection well and conducts PISC activities, the UIC Program Director makes compliance and oversight determinations after all injection has ceased and until the finalization of site closure is finalized and the site is closed.</p> <p>Discussion: The injection well may be used for monitoring during the PISC phase. See <i>Draft Underground Injection Control (UIC) Program Guidance on Class VI Well Plugging, Post-Injection Site Care, and Site Closure (May 2013)</i> at p. 4: “However, the immediate plugging of the injection well is not a requirement, as some owners or operators may elect to convert an injection well to a monitoring well.”</p> | <p>The EPA modified this sentence in response to the commenter’s suggestion to clarify that a Class VI injection well need not be plugged immediately if it is being used for monitoring.</p> |

1.2.1 Pre-Injection Phase Reporting

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|---|--|
| 35 | CSC | <p>Page 6</p> <p>Guidance Statement: The permit application is accompanied by a significant amount of supporting information about the well, the proposed injection operation, and the GS site, as well as a series of project-specific plans.</p> <p>Recommended Revision: The permit application is accompanied by a significant amount of supporting information about the well, the proposed injection operation, and the GS site, as well as a series number of project-specific plans.</p> <p>Discussion: Series suggests there is some order or interconnectedness that is not necessarily true.</p> | <p>The EPA modified this sentence in response to this comment.</p> |

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|--|--|
| 36 | CSC | <p>Page 6</p> <p>Guidance Statement: To gain authorization to drill a new Class VI well or convert and existing well for GS, owners or operators must submit an initial permit application that contains all of the information identified at 40 CFR 146.82(a).</p> <p>Recommended Revision: To gain authorization to drill a new Class VI well or convert and existing well for GS, owners or operators must submit an initial permit application that contains all of the information identified at 40 CFR 146.82(a).</p> <p>Discussion: The suggested revision corrects a typographical error.</p> | <p>In response to comments, the EPA has substantially revised the guidance document and this sentence no longer appears in the document.</p> |
| 37 | CSC | <p>Page 6</p> <p>Guidance Statement: Before the owner or operator may inject carbon dioxide, they must submit the information specified at 40 CFR 146.82(c); much of this information will update information submitted pursuant to 40 CFR 146.82(a) or be gathered through the planned tests described in the initial permit application. These two pre-injection phases are described in Section 3 (activities conducted prior to construction) and Section 4 (activities conducted prior to injection).</p> <p>Final Rule Language: § 146.82 This section sets forth the information which must be considered by the Director in authorizing Class VI wells. For converted Class I, Class II, or Class V experimental wells, certainn [<i>sic</i>] maps, cross-sections, tabulations of wells within the area of review and other data may be included in the application by reference provided they are current, readily available to the Director, and sufficiently identified to be retrieved. In cases where EPA issues the permit, all the information in this section must be submitted to the Regional Administrator.</p> <p>(a) Prior to the issuance of a permit for the construction of a new Class VI well or the conversion of an existing Class I, Class II, or Class V well to a Class VI well, the owner or operator shall submit, pursuant to § 146.91(e), and the Director shall consider the following:</p> | <p>In response to comments, the EPA has substantially revised the guidance document and this sentence no longer appears in the document.</p> |

| ID# | Commenter | Comment | EPA Response |
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| | | <p>* * * *</p> <p>(8) Proposed pre-operational formation testing program to obtain an analysis of the chemical and physical characteristics of the injection zone(s) and confining zone(s) and that meets the requirements at §146.87;</p> <p>Recommended Revision: Before the owner or operator may inject the permitted carbon dioxide stream(s), they must submit the information specified at 40 CFR 146.82(c); much of this information will update information submitted pursuant to 40 CFR 146.82(a) or be gathered through the planned tests described in the initial permit application. These two pre-injection phases are described in Section 3 (activities conducted prior to construction) and Section 4 (activities conducted prior to injection).</p> <p>Discussion: The owner or operator may propose to conduct formation testing with carbon dioxide before gaining authorization to inject the proposed carbon dioxide streams.</p> | |
| 38 | CSC | <p>Page 6</p> <p>Guidance Statement: Owners or operators seeking a waiver of the requirement to inject below the lowermost USDW must also submit a waiver application report as required at 40 CFR 146.95(a) at the same time as the permit application [40 CFR 146.82(d)].</p> <p>Recommended Revision: Owners or operators seeking a waiver of the requirement to inject below the lowermost USDW must also submit a waiver application report as required at 40 CFR 146.95(a) at the same time as before the permit application can be granted [40 CFR 146.82(d)].</p> <p>Discussion: Making this change in the wording will clarify that the waiver application can be submitted separately; it is not necessary to save everything and submit it all at once. A staggered schedule for submitting may facilitate more efficient processing of the application components.</p> | <p>The EPA edited the text of the guidance statement to reflect the language of 40 CFR 146.95(a).</p> |

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|--|---|
| 39 | CSC | <p>Page 6</p> <p>Guidance Statement: Owners or operators of Class II enhanced recovery wells transitioning to GS may also need to submit information to support a determination of whether a Class VI permit is required for carbon dioxide injection in wells currently permitted as Class II [40 CFR 144.19(b)].</p> <p>Final Rule Language: 146.81(c) Owners or operators seeking to convert existing Class I, Class II, or Class V experimental wells to Class VI geologic sequestration wells must demonstrate to the Director that the wells were engineered and constructed to meet the requirements at § 146.86(a) and ensure protection of USDWs, in lieu of requirements at §§ 146.86(b) and 146.87(a).</p> <p>Recommended Revision: Owners or operators of Class II enhanced recovery wells transitioning to GS may also need to submit information to support a determination of whether a Class VI permit is required for carbon dioxide injection in wells currently permitted as Class II [40 CFR 144.19(b)].</p> <p>Owners or operators seeking to convert existing wells to Class VI geologic sequestration wells may also need to submit information to demonstrate to the Director that the wells were engineered and constructed to meet the requirements at § 146.86(a) and ensure protection of USDWs, in lieu of requirements at §§ 146.86(b) and 146.87(a).</p> <p>Discussion: The current statement is misplaced in this document because it relates to an assessment to be made with regard to a Class II permit rather than a Class VI permit, and this guidance only addresses Class VI permits. The suggested substitute correctly relates to information that may need to be presented in a Class VI application, and that information is not limited to Class II wells. Information of this type could be necessary for any type of well for which an application is submitted to convert to a Class VI well.</p> | <p>The EPA edited the guidance to include the final rule language at 146.81(c).</p> |

| ID# | Commenter | Comment | EPA Response |
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| 40 | CSC | <p>Page 6</p> <p>Guidance Statement: Owners or operators seeking to expand the areal extent of an existing aquifer exemption will need to apply to the UIC Program Director pursuant to the requirements at 40 CFR 144.7(d)(1).</p> <p>Recommended Revision: Owners or operators seeking to expand the areal extent of an existing aquifer exemption will need to apply to the UIC Program Director pursuant to the requirements at 40 CFR 144.7(d)(1).</p> <p>Discussion: This would be an application to the Class II UIC Program Director rather than the Class VI Program Director.</p> | <p>No change was made to the guidance in response to this comment.</p> |
| 41 | CSC | <p>Pages 6-7</p> <p>Guidance Statement: During the drilling and construction of a Class VI well, the owner or operator must run logs, surveys, and tests that will provide information on the relevant geologic formations; provide a final AoR delineation; and submit any updates to site data based on information gathered during [7] drilling and testing. The owner or operator must submit this pre-injection testing information to the UIC Program Director prior to approval of injection operations [40 CFR 146.82(c)].</p> <p>Recommended Revision: During In conjunction with the drilling and construction of a Class VI well, the owner or operator must run logs, surveys, and tests that will provide information on the relevant geologic formations; provide a final AoR delineation; and submit any updates to site data based on information gathered during [7] drilling and testing. The owner or operator must submit this pre-injection testing information to the UIC Program Director prior to approval of injection operations [40 CFR 146.82(c)].</p> <p>Discussion: This revision should be made because some of the testing will occur after well construction.</p> | <p>The EPA modified this sentence to provide clarity.</p> |

| ID# | Commenter | Comment | EPA Response |
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| 42 | NAACSA | <p>3. Section 1.2.1: Pre-Injection Phase Reporting</p> <p>The Guidance erroneously states that "[b]efore the owner or operator may inject carbon dioxide, they must submit the information specified at 40 CFR 146.82(c)." <i>Guidance</i>, p. 6. Section 146.82(c) does not purport to impose any data submission requirements on owners or operators. Section 146.82(c) identifies information that the "Director shall consider" before granting approval to operate a Class VI well.</p> | <p>This sentence was revised to reflect the rule requirements. The Class VI Rule, at 40 CFR 146.82(c), requires the UIC Program Director to consider certain types of information before authorizing injection, and the EPA expects that owners or operators will submit all of the information necessary to support the Director's review when that information has not otherwise been made available to the Director.</p> |

1.2.2 Injection Phase Reporting

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|---|--|
| 43 | CSC | <p>Page 7</p> <p>Guidance Statement: Following issuance of a permit to operate a Class VI well, the owner or operator is required to submit operating and monitoring information at varying time intervals throughout the injection phase of the GS project [40 CFR 146.91].</p> <p>Recommended Revision: Following issuance of a permit to construct and authorization to operate a Class VI well, the owner or operator is required to submit operating and monitoring information at varying time intervals throughout the injection phase of the GS project [40 CFR 146.91].</p> <p>Discussion: The wording of this statement should be revised to recognize that there is a series of steps in the process involving construction, testing and then authorization to inject.</p> | <p>This sentence was revised to clarify that there are a series of steps to achieve authorization to inject.</p> |

| ID# | Commenter | Comment | EPA Response |
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| 44 | CSC | <p>Page 7</p> <p>Guidance Statement: A comprehensive report containing operating data and the results of periodic monitoring and testing along with a description of any event which triggers an automatic shut-off device must be submitted semi-annually by the owner or operator pursuant to 40 CFR 146.91(a) or at a more frequent interval set by the permitting authority.</p> <p>Final Rule Language: 146.91 The owner or operator must, at a minimum, provide, as specified in paragraph (e) of this section, the following reports to the Director, for each permitted Class VI well: (a) Semi-annual reports containing:</p> <p>Recommended Revision: A comprehensive report containing operating data and the results of periodic monitoring and testing along with a description of any event which triggers an automatic shut-off device must be submitted semi-annually by the owner or operator pursuant to 40 CFR 146.91(a) or at a more frequent interval set by the permitting authority.</p> <p>Discussion: The Class VI rule does not explicitly authorize the Director to impose a requirement to report on a more frequent interval. The rule sets a minimum reporting requirement but does not set a minimum frequency with an allowance for more frequent reporting. Cf. 146.90(f), requiring “[a] pressure fall-off test at least once every five years unless more frequent testing is required by the Director based on site-specific information”.</p> | <p>In response to comments, the EPA has substantially revised the guidance document and this sentence no longer appears in the document.</p> |
| 45 | NAACSA | <p>4. Section 1.2.2: Injection Phase Reporting</p> <p>The Guidance states that section 146.91(a) allows the permitting authority to require the submission of semi-annual reports on a more frequent schedule. <i>Guidance</i>, p. 7. Nothing in section 146.91 authorizes the submission of semi-annual reports on anything but a semi-annual schedule.</p> | <p>In response to this and other comments, the EPA has substantially revised the guidance document and this sentence no longer appears in the document.</p> |

C. Comments on Class VI Rule Reporting and Recordkeeping Requirements

The EPA did not receive any comments specific to the following sections of the draft guidance document: Section 2 (Class VI Rule Reporting and Recordkeeping Requirements) and Section 2.2 (Data Format).

2.1 Electronic Reporting Requirement

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|--|---|
| 46 | CSC | <p>Page 10</p> <p>Guidance Statement: Reducing the burden on owners or operators for data submittal and recordkeeping.</p> <p>Discussion: This will be true only if duplicative reporting to both state and federal agencies is not required.</p> | <p>The EPA encourages the use of the GSDT by states and has designed the GSDT to be usable and accessible by states. There is no federal requirement for reporting to a particular state and the EPA separately. However, the EPA cannot prevent UIC Program Directors in primacy states from creating their own data system for Class VI projects should they choose to do so.</p> |
| 47 | CSC | <p>Page 10</p> <p>Guidance Statement: This is consistent with the recommendations of the <i>Report of the Interagency Task Force on Carbon Capture and Storage (CCS)</i>: “State UIC primacy agencies’ efforts could be aided by a national data system that would promote regulatory certainty, efficiency, and accountability, while allowing transparency of all geologic sequestration related information to improve public acceptance of CCS.”</p> <p>Discussion: The Interagency Task Force Report to which the Guidance document refers included this idea in a discussion of possible ways to reduce the processing burden on state agencies. It did not contain any discussion or analysis of the drawbacks of a centralized approach. Nor did the Task Force Report recommend a centralized system, but merely mentioned it in a single sentence in one of the Appendices. Moreover, the presumed benefits of using of a centralized system such as EPA is considering cannot be realized if that system results in duplicative reporting requirements for operators, the need to maintain duplicate – and potentially inconsistent – databases at the state and federal levels, and any inability of states to retain ownership and control of state data.</p> | <p>The EPA recommends use of the GSDT by states and has designed the GSDT to be usable and accessible by states. There is no federal requirement for reporting to a particular state and the EPA separately.</p> |

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|--|--|
| 48 | CSC | <p>Page 10</p> <p>Guidance Statement: Creating an instantaneous submission process, which is essential for the more frequent reporting required under the Class VI Rule, such as 24-hour emergency notifications.</p> <p>Discussion: Will this eliminate the need for additional 24-hour reporting? What about reporting required to primacy agencies?</p> | <p>This passage was revised to provide clarity. The subject phrase is provided as an example of one way in which the GSDT and this guidance complement the regulations and support regulatory compliance; the GSDT accommodates the submission of 24-hour emergency notifications.</p> <p>The EPA encourages the use of the GSDT by states/primacy agencies and has designed the GSDT to be usable and accessible to them. However, the EPA cannot prevent UIC Program Directors in primacy states from creating additional reporting requirements or requiring reporting to their own data system for Class VI projects should they choose to do so.</p> |
| 49 | CSC | <p>Page 10</p> <p>Guidance Statement: [I]f an owner or operator cannot submit the required data using EPA's electronic reporting system, EPA expects the UIC Program Director to seek EPA's approval regarding an alternate reporting format. Following EPA's approval of a non-electronic submittal format, an alternate reporting procedure may be allowed. However, the decision to allow non-electronic submission of data will be based on the inability or inefficiency of converting data to electronic formats.</p> <p>Discussion: Is this an indication of how EPA expects the program to operate during the period before any EPA data management system has been created?</p> | <p>This passage was revised to provide clarity. The GSDT is now fully functional and is the path to compliance with Class VI reporting requirements. During early permitting, the EPA worked cooperatively with applicants to phase in the use of the GSDT while it was in development.</p> <p>The EPA recognizes that there may be some circumstances where it will be necessary to submit data non-electronically or via an alternative electronic method. If any owners or operators cannot submit the required data using the GSDT, they should work with their UIC Program Director to identify an appropriate alternate reporting format or procedure to ensure regulatory compliance.</p> |

2.3 Recordkeeping Requirements

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|---|---|
| 50 | CSC | <p>Page 11</p> <p>Guidance Statement: All data collected under 40 CFR 146.82 for a Class VI permit application must be retained throughout the life of the GS project and for 10 years following site closure.</p> <p>Final Rule Language: (f) Records shall be retained by the owner or operator as follows: (1) All data collected under §146.82 for Class VI permit applications shall be retained throughout the life of the geologic sequestration project and for 10 years following site closure.</p> | <p>This sentence was taken directly from the Class VI Rule; comments on the Class VI Rule are beyond the scope and intent of this Guidance comment period. The EPA anticipates that any information that is collected, but not submitted, would be retained by the permit applicant if it supports submitted information. However, as indicated in the disclaimer to the guidance document, the Class VI Rule requirements are controlling in any cases of potential or perceived conflict.</p> |

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|---|--------------|
| | | <p>146.82 (a) Prior to the issuance of a permit for the construction of a new Class VI well or the conversion of an existing Class I, Class II, or Class V well to a Class VI well, the owner or operator shall submit, pursuant to § 146.91(e), and the Director shall consider the following:</p> <p>Recommended Revision: All data collected under 40 CFR 146.82 and submitted for a Class VI permit application must be retained throughout the life of the GS project and for 10 years following site closure.</p> <p>Discussion: EPA should clarify that this relates to information submitted to the permitting authority as part of the application process. Otherwise, this terminology is vague and ambiguous. What other would be covered?</p> | |

D. Comments on Pre-Injection Phase Reporting and Recordkeeping: Prior to Construction

The EPA did not receive any comments specific to the following sections of the draft guidance document: Section 3.2. (Site Characterization), Section 3.2.1 (Maps of AoR and Tabulation of Wells), Section 3.2.4 (Geophysical Characterization), Section 3.2.5 (Baseline Surface Air and/or Soil Gas Characterization), Section 3.2.7 (Demonstration of Storage Capacity), Section 3.3 (AoR Delineation and Corrective Action), Section 3.3.1 (AoR and Corrective Action Plan), Section 3.3.3 (Corrective Action), Section 3.4 (Financial Responsibility Demonstration), Section 3.4.1 (Financial Instruments), Section 3.4.2 (Cost Estimates), Section 3.5 (Proposed Activities and Project Plans), Section 3.5.1 (Proposed Project Plans), Section 3.6.1 (Site Characterization Data to Support Injection Depth Waivers), Section 3.6.4 (Testing and Monitoring), and Section 3.7.1 (Well Construction).

3. Pre-Injection Phase Reporting and Recordkeeping: Prior to Construction

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|--|--|
| 51 | API | <p>Specific examples of where the draft guidance implies that the UIC Program Director could determine an ER project’s intent include:</p> <p>Page 13, second paragraph. The first sentence states that</p> <p>“... owners or operators of Class II enhanced recovery wells transitioning to Class VI may also need to submit information to support the UIC Program Director’s evaluation of whether there is increased risk to USDWs and, therefore, a Class VI permit would be required [40 CFR 144.19].”</p> | <p>Given that this guidance document focuses on reporting and recordkeeping, the EPA made every effort to remove any policy statements or perceived policy statements regarding carbon dioxide enhanced recovery operations from the guidance. The details of Class II to Class VI transitions will be explained in a forthcoming guidance, <i>UIC Program Guidance on Transitioning Class II Wells to Class VI Wells</i>. We will consider your comment in the context of that guidance document.</p> |

| ID# | Commenter | Comment | EPA Response |
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| | | <p>This is incorrect. It should read:</p> <p>“... owners or operators of Class II enhanced recovery wells <i>changing their primary purpose to geologic sequestration</i> may also need to submit information to <i>demonstrate if there is increased risk to USDWs, in which case a Class VI permit would be required</i> [40 CFR 144.19].”</p> <p>This change is necessary because an increased risk evaluation is only needed after an operator has changed its primary purpose to GS [40 CFR 144.19(a)]. If there is no increased risk to USDW, an operator may either remain permitted under Class II or choose voluntarily to apply for a Class VI permit. The operator may be forced to obtain a Class VI permit only if there are increased risks to USDWs <i>after</i> the operator decides to change its well’s primary purpose from ER to GS [40 CFR 144.19(b)]. An operator may use a Class II well for GS if it does not increase risks to USDWs.</p> <p>Additionally, the sentence as written by EPA also uses circular reasoning. EPA says that operators transitioning Class II wells to Class VI may need to submit information to show there’s an increased risk to USDWs. However, if operators make the determination to change well class from II to VI, as opposed to changing their primary purpose, they have already decided to subject themselves to Class VI with its more stringent application and information requirements, regardless of whether there’s an increased risk to USDWs. If an operator applies for a Class VI permit, the UIC Program Director doesn’t need to evaluate whether a Class VI permit is required – that decision was already made by the operator; the Director only needs to determine the permit conditions</p> | <p>Until that time, the EPA’s April 2015 memo, <i>Key Principles in EPA’s Underground Injection Control Program Class VI Rule Related to Transition of Class II Enhanced Oil or Gas Recovery Wells to Class VI</i>, serves as the EPA’s most current policy on Class II to Class VI transitions.</p> |
| 52 | CSC | <p>Page 13</p> <p>Guidance Statement: Owners or operators must submit certain information before receiving a permit for the construction of a new Class VI well or the conversion of an existing Class I, Class II, or Class V experimental technology well to a Class VI well [40 CFR 146.82(a)].</p> <p>Discussion: Guidance should explain how the “collected” of 146.91(f) relates to the “submitted” of 146.82(a).</p> | <p>The EPA anticipates that any information that is collected, but not submitted, would be retained by the permit applicant if it supports submitted information. However, as stated in the disclaimer to the guidance document, the Class VI Rule governs what is required in all cases.</p> |

| ID# | Commenter | Comment | EPA Response |
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| 53 | CSC | <p>Page 13</p> <p>Guidance Statement: In addition to the permit application information described in this section, owners or operators of Class II enhanced recovery wells transitioning to Class VI may also need to submit information to support the UIC Program Director's evaluation of whether there is increased risk to USDWs and, therefore, a Class VI permit is required [40 CFR 144.19(b)].</p> <p>Final Rule Language: 146.81(c) Owners or operators seeking to convert existing Class I, Class II, or Class V experimental wells to Class VI geologic sequestration wells must demonstrate to the Director that the wells were engineered and constructed to meet the requirements at § 146.86(a) and ensure protection of USDWs, in lieu of requirements at §§ 146.86(b) and 146.87(a).</p> <p>Recommended Revision: In addition to the permit application information described in this section, owners or operators of Class II enhanced recovery wells transitioning to Class VI may also need to submit information to support the UIC Program Director's evaluation of whether there is increased risk to USDWs and, therefore, a Class VI permit is required [40 CFR 144.19(b)]. seeking to convert existing wells to Class VI geologic sequestration wells may also need to submit information to demonstrate to the Director that the wells were engineered and constructed to meet the requirements at § 146.86(a) and ensure protection of USDWs, in lieu of requirements at §§ 146.86(b) and 146.87(a).</p> <p>Discussion: The current statement is misplaced in this document because it relates to an assessment to be made with regard to a Class II permit rather than a Class VI permit, and this guidance only addresses Class VI permits. The suggested substitute correctly relates to information that may need to be presented in a Class VI application, and that information is not limited to Class II wells. Information of this type could be necessary for any type of well for which an application is submitted to convert to a Class VI well.</p> | <p>The guidance document has been revised to refer to Class I, Class II, and Class V wells where appropriate throughout the document.</p> |

| ID# | Commenter | Comment | EPA Response |
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| 54 | CSC | <p>Page 13</p> <p>Guidance Statement: Owners or operators of transitioning wells may also submit information requesting the expansion of a Class II aquifer exemption [40 CFR 144.7(d)].</p> <p>Discussion: This would be submitted in an application to the Class II UIC Program Director rather than to the Class VI Program Director.</p> | <p>As a result of guidance revisions, this sentence is no longer in the final guidance.</p> |
| 55 | NAACSA | <p>5. Section 3: Pre-Injection Phase Reporting and Recordkeeping -Prior to Construction</p> <p>The second paragraph of this section, which discusses transitioning from Class II to VI, should be struck because: (1) EPA has not yet issued the guidance for 40 C.F.R. § 144.19; and (2) the transition discussion here is incomplete and subject to misinterpretation. For example, this section suggests that the Director may request well transition information from owners and operators of Class II wells. That is not what section 144.19 says. Section 144.19 includes the predicate requirement of "primary purpose for long-term storage" -a decision made by the owner/operator, not the Director. The Guidance's discussion here also fails to note that section 144.19 only applies where there is an increased risk to USDWs "compared to Class II operations."</p> | <p>Given that this guidance document focuses on reporting and recordkeeping, the EPA made every effort to remove any policy statements or perceived policy statements regarding carbon dioxide enhanced recovery operations from the guidance. The details of a Class II to Class VI transition will be explained in a forthcoming guidance, <i>UIC Program Guidance on Transitioning Class II Wells to Class VI Wells</i>. We will consider your comment in the context of that guidance document.</p> |

3.1 Permit Application Requirements

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|---|---|
| 56 | CSC | <p>Page 14</p> <p>Guidance Statement: These data must be retained throughout the life of the GS project and for 10 years following site closure [40 CFR 146.91(f)(1)].</p> <p>Discussion: Is this the data "collected"?</p> | <p>This passage has been revised to provide clarity. The EPA anticipates that any information that is collected, but not submitted, would be retained by the permit applicant if it supports submitted information. However, as indicated in the disclaimer to the guidance document, the Class VI Rule requirements are controlling in any cases of potential or perceived conflict.</p> |

3.2.2 Detailed Geologic and Hydrogeologic Site Characterization

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|--|---|
| 57 | CSC | <p>Page 20</p> <p>Guidance Statement: Any issues associated with extrapolation of results to a setting in which supercritical carbon dioxide is the non-wetting fluid.</p> <p>Discussion: Is this sensible?</p> | <p>The EPA removed this sentence from the guidance, as the focus of this guidance is on how owners and operators submit reports and information.</p> |
| 58 | NAACSA | <p>6. Section 3.2.2.2 -Faults and Fractures</p> <p>The Guidance "recommends that owners or operators obtain information on faults in both the injection and confining zone(s)." <i>Guidance</i>, p. 17. The applicable regulations, however, only require the submission of data related to "known or suspected faults and fractures that may transect the confining zone(s) in the area of review..." <i>40 CFR. § 146.82(a)(3)(U)</i>. This is an example of an advisory statement that goes beyond what the Class VI Rule requires, thereby creating uncertainty.</p> | <p>The EPA removed this sentence from the guidance, as the focus of this guidance is on how owners and operators submit reports and information. While providing some information on what to submit, this guidance also provides references to other technical guidance documents that explain what should be submitted in more detail. The EPA does not seek to create uncertainty by adding recommendations to guidance, but rather adds recommendations to provide options and suggestions for consideration to owners or operators and to support the EPA in making make risk-based permitting decisions.</p> |

3.2.3 Geochemical Characterization

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|---|---|
| 59 | CSC | <p>Page 23</p> <p>Guidance Statement: Laboratory reports, if available and required by the UIC Program Director, including methods used and quality assurance/quality control (QA/QC) samples.</p> <p>Recommended Revision: Laboratory reports, if available and required requested by the UIC Program Director, including methods used and quality assurance/quality control (QA/QC) samples.</p> <p>Discussion: These are EPA's recommendations and suggestions rather than statements of requirements. Accordingly, it is appropriate to say "requested by the Director" rather than "required by the Director".</p> | <p>The EPA acknowledges the comment and clarifies that the subject sentence was removed during document revisions. However, in response to this comment, the EPA has made this change throughout the document to conform to regulatory rule language.</p> |

3.2.6 Proposed Pre-Operational Formation Testing Program

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|--|---|
| 60 | CSC | <p>Page 25</p> <p>Guidance Statement: With the permit application, the owner or operator must submit a proposed pre-operational formation testing program to obtain an analysis of the chemical and physical characteristics of the injection zone(s) and confining zone(s) [40 CFR 146.82(a)(8)]. This proposed program must meet the requirements at 40 CFR 146.87, which include elements related to both site characterization and well integrity. Components to include in the proposed testing program are as follows:</p> <p>Final Rule Language: (8) Proposed pre-operational formation testing program to obtain an analysis of the chemical and physical characteristics of the injection zone(s) and confining zone(s) and that meets the requirements at § 146.87;</p> <p>§ 146.87 Logging, sampling, and testing prior to injection well operation. (a) During the drilling and construction of a Class VI injection well, the owner or operator must run appropriate logs, surveys and tests to determine or verify the depth, thickness, porosity, permeability, and lithology of, and the salinity of any formation fluids in all relevant geologic formations to ensure conformance with the injection well construction requirements under § 146.86 and to establish accurate baseline data against which future measurements may be compared.</p> <p>Recommended Revision: With the permit application, the owner or operator must submit a proposed pre-operational formation testing program to obtain an analysis of the chemical and physical characteristics of the injection zone(s) and confining zone(s) [40 CFR 146.82(a)(8)]. This proposed program must meet the requirements at 40 CFR 146.87 applicable to formation testing. The requirements at 40 CFR 146.87, which include elements related to both site characterization formation testing and well integrity testing and logging. Only those elements relating to formation testing need to be addressed in the formation testing program. Components to include in the proposed formation testing program are as follows could include:</p> | <p>The EPA revised the referenced language to more clearly reflect the rule requirements.</p> |

| ID# | Commenter | Comment | EPA Response |
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| | | <p>Discussion: This section of the draft document presumes that the “formation testing program” should include all of the elements of 40 CFR 146.87, but that section includes well testing elements in addition to formation testing elements. Saying that the formation testing program is “to include” all of the well testing elements will confuse the purpose of the formation testing program, which should be directed specifically to “obtain an analysis of the chemical and physical characteristics of the injection zone(s) and confining zone(s)”. The well testing elements should be enumerated in a different section than formation testing.</p> | |
| 61 | CSC | <p>Page 26</p> <p>Guidance Statement: A plan for well logging before and upon installation of the surface casing. This plan must include resistivity, spontaneous potential, and caliper logs before the casing is installed[40 CFR 146.87(a)(2)(i)].</p> <p>A plan for well logging before and upon installation of the long string casing. This plan must include the following logs before the casing is installed: resistivity, spontaneous potential, porosity, caliper, gamma ray, fracture finder, and any other logs the UIC Program Director requires [40 CFR 146.87(a)(3)(i)].</p> <p>Final Rule Language: (2) Before and upon installation of the surface casing: (i) Resistivity, spontaneous potential, and caliper logs before the casing is installed; and (ii) A cement bond and variable density log to evaluate cement quality radially, and a temperature log after the casing is set and cemented. (3) Before and upon installation of the long string casing: (i) Resistivity, spontaneous potential, porosity, caliper, gamma ray, fracture finder logs, and any other logs the Director requires for the given geology before the casing is installed; and (ii) A cement bond and variable density log, and a temperature log after the casing is set and cemented.</p> | <p>The EPA removed this sentence from the guidance, as the focus of this guidance is on how owners and operators submit reports and information. While providing some information on what to submit, this guidance also provides references to other technical guidance documents that explain what should be submitted in more detail.</p> |

| ID# | Commenter | Comment | EPA Response |
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| | | <p>Recommended Revision: A plan Procedures for well logging before and upon installation of the surface casing. This plan must include resistivity, spontaneous potential, and caliper logs before the casing is installed [40 CFR 146.87(a)(2)(i)].</p> <p>A plan Procedures for well logging before and upon installation of the long string casing. This plan must that includes the following logs before the casing is installed: resistivity, spontaneous potential, porosity, caliper, gamma ray, fracture finder, and any other logs the UIC Program Director requires [40 CFR 146.87(a)(3)(i)].</p> <p>Discussion: The draft guidance has been carefully worded to focus on the formation testing elements of 146.87, but it would be better to say that the “plan” should include “procedures” for carrying out these elements rather than calling each subcomponent of the “formation testing plan” a “plan” in itself.</p> | |
| 62 | CSC | <p>Page 26</p> <p>Guidance Statement: Sampling plans for cores (whole cores or sidewall cores), including proposed number and locations of core samples [40 CFR 146.87(b)], analyses to be performed on cores, and coring methods to be used.</p> <p>A plan for obtaining formation fluids from the injection zone(s), including proposed sampling method (e.g., wireline) [40 CFR 146.87(b)], and analyses to be performed on fluids.</p> <p>Final Rule Language: (b) The owner or operator must take whole cores or sidewall cores of the injection zone and confining system and formation fluid samples from the injection zone(s), and must submit to the Director a detailed report prepared by a log analyst that includes: Well log analyses (including well logs), core analyses, and formation fluid sample information. The Director may accept information on cores from nearby wells if the owner or operator can demonstrate that core retrieval is not possible and that such cores are representative of conditions at the well. The Director may require the owner or operator to core other formations in the borehole.</p> | <p>The EPA removed this sentence from the guidance, as the focus of this guidance is on how owners and operators submit reports and information. While providing some information on what to submit, this guidance also provides references to other technical guidance documents that explain what should be submitted in more detail.</p> |

| ID# | Commenter | Comment | EPA Response |
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| | | <p>Recommended Revision: Sampling plans procedures for cores (whole cores or sidewall cores), including proposed number and locations of core samples [40 CFR 146.87(b)], analyses to be performed on cores, and coring methods to be used.</p> <p>A-plan Procedures for obtaining formation fluids from the injection zone(s), including proposed sampling method (e.g., wireline) [40 CFR 146.87(b)], and analyses to be performed on fluids.</p> <p>Discussion: See the Discussion in ID 62 above.</p> | |
| 63 | CSC | <p>Page 26</p> <p>Guidance Statement: A plan for measuring fluid temperature, pH, conductivity, reservoir pressure, and static fluid level in the injection zone(s), including identification of the type of apparatus to be used [40 CFR 146.87(c)].</p> <p>Final Rule Language: (c) The owner or operator must record the fluid temperature, pH, conductivity, reservoir pressure, and static fluid level of the injection zone(s).</p> <p>Recommended Revision: A-plan Procedures procedures for measuring fluid temperature, pH, conductivity, reservoir pressure, and static fluid level in the injection zone(s), including identification of the type of apparatus to be used [40 CFR 146.87(c)].</p> <p>Discussion: See the Discussion in ID 62 above.</p> | <p>The EPA removed this sentence from the guidance, as the focus of this guidance is on how owners and operators submit reports and information. While providing some information on what to submit, this guidance also provides references to other technical guidance documents that explain what should be submitted in more detail.</p> |

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|---|---|
| 64 | CSC | <p>Page 26</p> <p>Guidance Statement: A plan for characterizing the injection and confining zones, including a formation integrity test for determining fracture pressure [40 CFR 146.87(d)(1)] and any other tests for determining the physical and chemical characteristics of the injection and confining zone(s) and formation fluids in the injection zone(s) [40 CFR 146.87(d)(2) and (3)].</p> <p>Final Rule Language: (d) At a minimum, the owner or operator must determine or calculate the following information concerning the injection and confining zone(s):</p> | <p>The EPA removed this sentence from the guidance, as the focus of this guidance is on how owners and operators submit reports and information. While providing some information on what to submit, this guidance also provides references to other technical guidance documents that explain what should be submitted in more detail.</p> |
| | | <p>(1) Fracture pressure; (2) Other physical and chemical characteristics of the injection and confining zone(s); and (3) Physical and chemical characteristics of the formation fluids in the injection zone(s).</p> <p>Recommended Revision: A plan Procedures for characterizing the injection and confining zones, including a formation integrity test for determining fracture pressure [40 CFR 146.87(d)(1)] and any other tests for determining the physical and chemical characteristics of the injection and confining zone(s) and formation fluids in the injection zone(s) [40 CFR 146.87(d)(2) and (3)].</p> <p>Discussion: See the Discussion in ID 62 above.</p> | |

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|---|---|
| 65 | CSC | <p>Page 26</p> <p>Guidance Statement: Plans for a pressure fall-off test and either a pump test or injectivity test to verify the hydrogeologic characteristics of the injection zone(s).</p> <p>Final Rule Language: (e) Upon completion, but prior to operation, the owner or operator must conduct the following tests to verify hydrogeologic characteristics of the injection zone(s): (1) A pressure fall-off test; and, (2) A pump test; or (3) Injectivity tests.</p> <p>Recommended Revision: Plans Procedures for a pressure fall-off test and either a pump test or injectivity tests to verify the hydrogeologic characteristics of the injection zone(s). Tests can take a variety of forms. For example, the operator could choose, with the approval of the UIC Director, to inject carbon dioxide as part of an injectivity test to determine relative permeability under two phase flow conditions.</p> <p>Discussion: Having missed the opportunity to make this observation in the Testing and Monitoring Guidance, this would be a good place to make this point, which addresses a significant question raised during the EcoReg Matters workshop on December 15, 2011.</p> | <p>The EPA removed this sentence from the guidance, as the focus of this guidance is on how owners and operators submit reports and information. While providing some information on what to submit, this guidance also provides references to other technical guidance documents that explain what should be submitted in more detail.</p> |
| 66 | CSC | <p>Page 26</p> <p>Recommended Revision: Although 146.87 as written in the rule identifies a number of specific logs and tests to be conducted, the rule also provides flexibility to adapt to developments in methodologies and in knowledge about existing methodologies by providing the UIC Director the authority under 146.87(a)(5) to approve and/or require “[a]ny alternative methods that provide equivalent or better information”.</p> <p>Discussion: Recommended addition to follow the preceding statement. (See comment #66 above.)</p> | <p>In response to this and other comments, the EPA describes the flexibility in 40 CFR 146.87 in several sections of the final guidance.</p> |

3.3.2 AoR Delineation

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|--|---|
| 67 | CSC | <p>Excessive Modeling Information Requests</p> <p>The information that is recommended to be submitted in support of the computational modeling efforts is directed at providing the entire model and all of the information necessary for the UIC Program Director to rerun the same model. This is an unrealistic approach and requests much more information than is necessary in order to review the modeling results. As EPA has recognized in its review of Class I hazardous injection well demonstrations to qualify for “no migration” exemptions from hazardous waste injection land disposal restrictions, that the UIC Program Director is likely to be reviewing the modeling results by running an alternative model rather than exactly the same model that has been used by the injection well owner or operator to generate the demonstrations submitted in support of the application. Many of the models used by either the applicants or the UIC Program Directors will be proprietary, and the owners of these models will not be prepared to allow all of the details and codes for the models to be disclosed on the public record; nor should that be necessary. The UIC Program Directors will need enough information to understand the essential details of the approach that is being taken and the underlying assumptions upon which the modeling is based. And this is the type of information that should be submitted in support of the modeling demonstrations.</p> | <p>The EPA acknowledges the comment. The guidance clarifies and the EPA affirms that the regulations do not require, nor do we ask, that applicants submit their models, code, or other proprietary information, and seek only enough information to make risk-based permitting decisions.</p> <p>In early permitting, we have worked with applicants to ensure that we have appropriate information to be able to evaluate their models using non-proprietary information applicants were willing to disclose, such as their assumptions. In the event that an applicant is submitting CBI to EPA, we will follow agency procedures for CBI.</p> |

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|--|---|
| 68 | CSC | <p>Page 28</p> <p>Guidance Statement: EPA recommends that owners or operators of Class VI wells submit all information that the UIC Program Director would need for the evaluation and possible replication of the AoR delineation. EPA recommends that the following information be submitted to support the AoR delineation:</p> <p>Recommended Revision: EPA recommends that owners or operators of Class VI wells submit all information that the UIC Program Director would need for the evaluation and possible replication of the AoR delineation. EPA recommends that the following information be submitted to support the AoR delineation:</p> <p>Discussion: Because applicants will be using either their own or a consultant's models to perform the AoR delineation and other projections necessary for the Class VI permit application, EPA needs to be sensitive to the protections necessary to protect the intellectual property of the modeler. EPA should not contemplate that it will be receiving all of the model, allowing it to rerun the model to compare results. As has been the case with Class IH permitting and EPA's review of no migration exemption demonstrations, EPA would be in a position to run its own models as a basis for comparison. But EPA should not be asking to receive everything necessary to conduct the same model to see if it obtains the same results.</p> | <p>The EPA acknowledges the comment. The guidance clarifies and the EPA affirms that the regulations do not require, nor do we ask, that applicants submit their models, code, or other proprietary information, and seek only enough information to make risk-based permitting decisions.</p> <p>In early permitting, we have worked with applicants to ensure that we have appropriate information to be able to evaluate their models using non-proprietary information applicants were willing to disclose, such as their assumptions. In the event that an applicant is submitting CBI to the EPA, we will follow agency procedures for CBI.</p> |

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|---|---|
| 69 | CSC | <p>Page 28</p> <p>Guidance Statement: The conceptual site model and all supporting data on which the model is based, including the description of geologic stratigraphy and any relevant geologic features.</p> <p>Recommended Revision: The A conceptual description of the site model and all supporting data on which the model is based, including the description of geologic stratigraphy and any relevant geologic features.</p> <p>Discussion: If there are channels in a reservoir, their spatial location in the model will probably be determined by discussion between the geologist, geophysicist and the reservoir modeler and will be based on the interpretation of the geology. So , I am not sure how these can be incorporated by the EPA when they do their own modeling.</p> | <p>The EPA removed this sentence from the guidance, as the focus of this guidance is on how owners and operators submit reports and information. While providing some information on what to submit, this guidance also provides references to other technical guidance documents that explain what should be submitted in more detail.</p> |
| 70 | CSC | <p>Page 29</p> <p>Guidance Statement: The attributes of the code used to create the computational model (e.g., code name, name of the developing organization, governing equations employed, and simplifying assumptions).</p> <p>Discussion: Some of the relative permeability curves will probably be obtained from literature. Not every project will have a lab test to develop their own specific curves. Based on discussion with some modelers, some of them think that these curves can also be modified so there are also not very fixed numbers. But this statement might be argued by other modelers.</p> | <p>The EPA removed this sentence from the guidance, as the focus of this guidance is on how owners and operators submit reports and information. While providing some information on what to submit, this guidance also provides references to other technical guidance documents that explain what should be submitted in more detail.</p> |

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|--|--|
| 71 | CSC | <p>Page 29</p> <p>Guidance Statement: A description of the model's lateral and vertical extents, geologic layer thickness, and grid cell sizes, as presented on maps and cross sections.</p> <p>Discussion: These statements need to be revised to be consistent with an expectation that EPA will need enough information to understand the basic modeling approach but will not receive the actual model and all of its code.</p> | <p>The EPA removed this sentence from the guidance, as the focus of this guidance is on how owners and operators submit reports and information. The guidance clarifies what information is and is not required or recommended to support the EPA's evaluation of the delineated AoR. This guidance also provides references to other technical guidance documents that explain what should be submitted in more detail.</p> |
| 72 | CSC | <p>Page 29</p> <p>Guidance Statement: An accounting of all equations of state used to describe the thermophysical properties of all modeled fluids (e.g., ground water, carbon dioxide).</p> <p>Discussion: Why does EPA need thermo physical properties of ground water (bullet 3)? Did they mean brine/saline water in the saline reservoir? Operators will not inject CO2 into a USDW.</p> | <p>The EPA removed this sentence from the guidance, as the focus of this guidance is on how owners and operators submit reports and information. While providing some information on what to submit, this guidance also provides references to other technical guidance documents that explain what should be submitted in more detail.</p> |
| 73 | CSC | <p>Page 29</p> <p>Guidance Statement: The constitutive relationships of the permeable medium (e.g., relative permeability-saturation relationship) and a description of how they were determined.</p> <p>Discussion: These statements need to be revised to be consistent with an expectation that EPA will need enough information to understand the basic modeling approach but will not receive the actual model and all of its code.</p> | <p>The EPA removed this sentence from the guidance, as the focus of this guidance is on how owners and operators submit reports and information. The guidance clarifies what information is and is not required or recommended to support the EPA's evaluation of the delineated AoR. This guidance also provides references to other technical guidance documents that explain what should be submitted in more detail.</p> |
| 74 | CSC | <p>Page 29</p> <p>Guidance Statement: The values of all model parameters and a description of how model parameters were determined based on site characterization.</p> <p>Discussion: The guidance should indicate which parameters are needed rather than just saying 'all model parameters'.</p> | <p>The EPA removed this sentence from the guidance, as the focus of this guidance is on how owners and operators submit reports and information. The GSDT prompts users to identify and submit what are likely to be the most important parameters, but the EPA recommends that owners and operators contact their permitting authority to discuss needs based upon site-specific considerations.</p> |

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|---|--|
| 75 | CSC | <p>Page 29</p> <p>Guidance Statement: The model results, depicting the extent of carbon dioxide plume and pressure-front migration over the lifetime of the project as a function of time, as well as the results of simulations of the maximum risk scenario and the outcome of parameter sensitivity analyses.</p> <p>Recommended Revision: The model results, depicting the extent of carbon dioxide plume and pressure-front migration over the lifetime of the project as a function of time, as well as the results of simulations of the maximum comparison of risk scenarios and the outcome of from the parameter sensitivity analyses.</p> <p>Discussion: "Maximum risk scenario" is too vague and is not defined in Class VI. This should be re-phrased as comparison of the risk scenarios developed from the sensitivity analysis.</p> | <p>The EPA removed this sentence from the guidance, as the focus of this guidance is on how owners and operators submit reports and information. The EPA recommends that owners and operators contact their permitting authority to discuss needs based upon site-specific considerations.</p> |
| 76 | CSC | <p>Page 29</p> <p>Guidance Statement: Raw model input and output files, if requested by the UIC Program Director.</p> <p>Discussion: These statements need to be revised to be consistent with an expectation that EPA will need enough information to understand the basic modeling approach but will not receive the actual model and all of its code.</p> | <p>The EPA removed this sentence from the guidance, as the focus of this guidance is on how owners and operators submit reports and information. The guidance clarifies what information is and is not required or recommended to support the EPA's evaluation of the delineated AoR. This guidance also provides references to other technical guidance documents that explain what should be submitted in more detail.</p> |

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|---|---|
| 77 | CSC | <p>Page 35</p> <p>Guidance Statement: Site-specific chemical processes that will result in carbon dioxide trapping.</p> <p>Final Rule Language: 146.93(c)(1)(iv) A description of the site-specific processes that will result in carbon dioxide trapping including immobilization by capillary trapping, dissolution, and mineralization at the site;</p> <p>Recommended Revision: Site-specific chemical and physical processes that will result in carbon dioxide trapping.</p> <p>Discussion: These trapping processes may be physical as well as chemical.</p> | <p>The EPA agrees with this comment regarding trapping processes. However, the EPA removed this sentence from the guidance, as the focus of this guidance is on how owners and operators submit reports and information. While providing some information on what to submit, this guidance also provides references to other technical guidance documents that explain what should be submitted in more detail.</p> |

3.5.2 Alternative PISC Timeframe

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|--|---|
| 78 | CSC | <p>Page 36</p> <p>Guidance Statement: Any additional site-specific factors determined by the UIC Program Director.</p> <p>Final Rule Language: (xi) Any additional site-specific factors required by the Director.</p> <p>Recommended Revision: Any additional site-specific factors determined required by the UIC Program Director.</p> <p>Discussion: Use of the exact wording of the rule is preferable.</p> | <p>The EPA removed this sentence from the guidance, as the focus of this guidance is on how owners and operators submit reports and information. While providing some information on what to submit, this guidance also provides references to other technical guidance documents that explain what should be submitted in more detail.</p> |

3.5.3 Proposed Operating Information

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|--|---|
| 79 | CSC | <p>Page 36</p> <p>Guidance Statement: Owners or operators must also submit information on proposed operating procedures, outlining the steps necessary to conduct injection operation [40 CFR 146.82(a)(10)].</p> <p>Final Rule Language: 146.82(a)(10) Proposed procedure to outline steps necessary to conduct injection operation;</p> <p>Recommended Revision: Owners or operators must also submit information on the injection operation. EPA recommends that this information provide proposed operating procedures by outlining the steps necessary to conduct injection operation [40 CFR 146.82(a)(10)].</p> <p>Discussion: It may be that the requirement in the rule is stated a little awkwardly, but it is not appropriate to revise that requirement and restate it as a requirement. The rule requirement is what it is. Here, it is more appropriate to provide a recommendation for the information to be submitted.</p> | <p>The EPA revised the referenced language to more clearly reflect the rule requirements.</p> |

3.5.4 Proposed Well Construction Information

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|--|---|
| 80 | CSC | <p>Page 36</p> <p>Guidance Statement: The owner or operator must submit schematics showing details of the well construction and proposed construction procedures.</p> <p>Final Rule Language: (11) Schematics or other appropriate drawings of the surface and subsurface construction details of the well; (12) Injection well construction procedures that meet the requirements of § 146.86;</p> <p>Recommended Revision: The owner or operator must submit construction and proposed construction procedures and also schematics showing details of the well.</p> | <p>The EPA revised the referenced language to more clearly reflect the rule requirements.</p> |

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|---|---|
| | | <p>Discussion: As presently worded, it could appear that the schematics are for “construction procedures” in addition to the well.</p> | |
| 81 | CSC | <p>Page 37</p> <p>Guidance Statement: Completion details, including perforated zones and material to be used.</p> <p>Recommended Revision: Completion details, including perforated zones and materials of construction to be used.</p> <p>Discussion: This provides a useful clarification.</p> | The EPA revised and clarified the sentence. |
| 82 | CSC | <p>Page 37</p> <p>Guidance Statement: References to any standards or best management practices to be used in construction (e.g., American Petroleum Institute (API) specifications) to be followed.</p> <p>Recommended Revision: References to any standards or best management practices to be used in construction (e.g., American Petroleum Institute (API) specifications) to be followed.</p> <p>Discussion: Avoid duplication with “used” and “to be followed”</p> | The EPA revised and clarified the sentence. |
| 83 | CSC | <p>Page 37</p> <p>Guidance Statement: A list of logs or measurements that will be made to guide/verify the construction process.</p> <p>Recommended Revision: A list of logs or measurements that will be run or made to guide/verify the construction process.</p> <p>Discussion: Useful parallel structure, as “logs” are typically “run” or “used” rather than “made” (as measurements are).</p> | The EPA agrees with this comment regarding logging and measurements. However, the EPA removed this sentence from the guidance, as the focus of this guidance is on how owners and operators submit reports and information. |

3.6 Injection Depth Waivers

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|---|---|
| 84 | CSC | <p>Page 39</p> <p>Guidance Statement: Owners or operators must submit a waiver application report at the same time as the Class VI permit application [40 CFR 146.82(d) and 146.95(a)].</p> <p>Final Rule Language: 146.95 (a) In seeking a waiver of the requirement to inject below the lowermost USDW, the owner or operator must submit a supplemental report concurrent with permit application.</p> <p>Recommended Revision: Owners or operators must submit a waiver application report at the same time as concurrent with the Class VI permit application [40 CFR 146.82(d) and 146.95(a)].</p> <p>Discussion: The statement “at the same time as” could connote something more than is intended. Recognizing that the permit application process typically extends over a period of time with exchanges back and forth between the applicant and the reviewer, it is better to use the rule language, which is more likely to allow the supplemental report to be submitted during the permitting process even though not on the same day as the initial permit application.</p> | <p>The EPA made the suggested edit.</p> |

3.6.2 Modeling Demonstration that USDWs Above and Below the Injection Zone are Protected

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|--|--|
| 85 | CSC | <p>Page 40</p> <p>Guidance Statement: This modeling must be conducted in conjunction with the AoR delineation required at 40 CFR 146.84 and is expected to be similar in format and type to the information described in Section 3.3.2 of this guidance document.</p> | <p>The EPA agrees with the comment. However, the EPA removed this sentence from the guidance, as the focus of this guidance is on how owners and operators submit reports and information.</p> |

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|--|--|
| | | <p>Final Rule Language: 146.95(a) (3) A demonstration, using computational modeling, that USDWs above and below the injection zone will not be endangered as a result of fluid movement. This modeling should be conducted in conjunction with the area of review determination, as described in § 146.84, and is subject to requirements, as described in § 146.84(c), and periodic reevaluation, as described in § 146.84(e).</p> <p>Recommended Revision: This modeling must should be conducted in conjunction with the AoR delineation required at 40 CFR 146.84 and is expected to be similar in format and type to the information described in Section 3.3.2 of this guidance document.</p> <p>Discussion: Use of the rule language is more appropriate because the inclusion of “must” could be read to alter the requirement.</p> | |
| 86 | CSC | <p>Pages 40-41</p> <p>Guidance Statement: Information submitted to satisfy this requirement as part of the waiver application report may include (but is not limited to) the following:</p> <ul style="list-style-type: none"> •Attributes of the code used to create the computational model (e.g., code name, name of the developing organization, governing equations employed, and simplifying assumptions). •Additional input parameters beyond those developed as part of the Class VI AoR delineation (e.g., formation elevation and thickness, intrinsic permeability, porosity, and characteristic curve parameters describing the lower confining zone, lowermost USDW, and any zones intermediary to the lower confining zone and lowermost USDW). •The conceptual model, accounting for additional formations above and below the injection zone(s) and all supporting data (e.g., structural geology including folding and fracture and fault systems). •The model results, showing the vertical fluid migration and pressure changes above and below the injection zone as well as the lateral extent of the AoR. •A description of the model’s lateral and vertical extents, geologic layer thickness, and grid cell sizes as presented on maps and cross sections. | <p>The EPA removed this sentence from the guidance, as the focus of this guidance is on how owners and operators submit reports and information. While providing some information on what to submit, this guidance also provides references to other technical guidance documents that explain what should be submitted in more detail.</p> <p>The guidance clarifies and the EPA affirms that the regulations do not require, nor do we ask, that applicants submit their models, code, or other proprietary information, and seek only enough information to make risk-based permitting decisions. In early permitting, we have worked with applicants to ensure that we have appropriate information to be able to evaluate their models using non-proprietary information applicants were willing to disclose, such as their assumptions. As noted above, in the event that an applicant is submitting CBI to the EPA, we will follow agency procedures for CBI.</p> |

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|---|--------------|
| | | <ul style="list-style-type: none"> •Additional constitutive relationships of the permeable medium (e.g., relative permeability-saturation relationship) and a description of how they were determined. •The values of additional model parameters and a description of how model parameters were determined based on site characterization. •If requested by the UIC Program Director, raw model input and output files. <p>Discussion: These statements need to be revised to be consistent with an expectation that EPA will need enough information to understand the basic modeling approach but will not receive the actual model and all of its code.</p> | |

3.6.3 Well Design and Construction

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|--|---|
| 87 | CSC | <p>Pages 41-42</p> <p>Guidance Statement: Construction plans and procedures that demonstrate that the wellbore will not act as a conduit for fluid movement out of the injection zone and indicate the placement and location of all casing strings in relation to the injection zone, upper and lower confining zones, and all USDWs above and below the injection zone.</p> <p>Final Rule Language: (4) A demonstration that well design and construction, in conjunction with the waiver, will ensure isolation of the injectate in lieu of requirements at 146.86(a)(1) and will meet well construction requirements in paragraph (f) of this section.</p> <p>Recommended Revision: Construction plans and procedures that demonstrate that the wellbore will not act as a conduit for fluid movement out of the injection zone and indicate the total depth of the wellbore in relation to the well and lower confining zone, the placement and location of all casing strings in relation to the injection zone, upper and lower confining zones, and all USDWs above and below the injection zone.</p> | <p>The EPA removed this sentence from the guidance, as the focus of this guidance is on how owners and operators submit reports and information. While providing some information on what to submit, this guidance also provides references to other technical guidance documents that explain what should be submitted in more detail.</p> |

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|--|--------------|
| | | <p>Discussion: It is appropriate here to emphasize the concern about the wellbore itself apart from the well to provide an avenue for migration. The guidance should explain how the demonstration relating to well construction will show protection under considerations in stead of the 146.86(a)(1) requirements.</p> | |

3.6.5 Site Resource Use Information

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|--|--|
| 88 | CSC | <p>Page 43</p> <p>Guidance Statement: The Class VI Rule requires that owners or operators submit information on public water supplies served by USDWs in the AoR and USDWs that may be affected by Class VI activities [40 CFR 146.95(a)(6)].</p> <p>Final Rule Language: 146.95(a)(6) Information on the location of all the public water supplies affected, reasonably likely to be affected, or served by USDWs in the area of review.</p> <p>Recommended Revision: The Class VI Rule requires that owners or operators submit information on public water supplies served by USDWs in the AoR, focusing in particular on public water supplies and USDWs that may be affected by Class VI activities [40 CFR 146.95(a)(6)].</p> <p>Discussion: The statement in the draft guidance is not completely consistent with the requirement of 146.95(a)(6). This suggested revision will make them consistent and emphasize the importance of assessing whether public water supplies may be affected.</p> | <p>In response to this and other comments, the EPA revised this section of the guidance.</p> |

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|--|--|
| 89 | CSC | <p>Page 43</p> <p>Guidance Statement: EPA recommends that owners or operators submit the following information related to current drinking water resources in or near the AoR:</p> <p>Final Rule Language: 146.95(a)(6) Information on the location of all the public water supplies affected, reasonably likely to be affected, or served by USDWs in the area of review.</p> <p>Recommended Revision: EPA recommends that owners or operators submit the following information related to current drinking water resources public water supplies that are likely to be affected or that are served by USDWs in or near the AoR:</p> <p>Discussion: The current statement in the draft guidance changes the focus of the requirement from public water supplies to “current drinking water resources” without regard to the involvement of USDWs and public water supplies.</p> | <p>In response to this and other comments, the EPA revised this section of the guidance.</p> |
| 90 | CSC | <p>Page 43</p> <p>Guidance Statement: Locations of private drinking water wells within the AoR.</p> <p>Recommended Revision: Delete</p> <p>Discussion: This is not a requirement of the rule. There is no reference to “private drinking water wells” in the Class VI rule.</p> | <p>The EPA removed this sentence.</p> |

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|---|--|
| 91 | CSC | <p>Page 43</p> <p>Guidance Statement: Maps showing aquifers currently in use and their relationship to the injection and/or storage formation.</p> <p>Final Rule Language: 146.95(a)(6) Information on the location of all the public water supplies affected, reasonably likely to be affected, or served by USDWs in the area of review.</p> <p>Recommended Revision: Maps showing aquifers currently in use for public water supplies and their relationship to the injection and/or storage formation.</p> <p>Discussion: These demonstrations relate to USDWs being used as public water supplies by public water systems.</p> | <p>In response to this and other comments, the EPA revised this section of the guidance.</p> |
| 92 | CSC | <p>Page 43</p> <p>Guidance Statement: The UIC Program Director's evaluation must address planned needs and potential and/or future use of USDWs and non-USDWs [40 CFR 146.95(b)(1)(vi)].</p> <p>Final Rule Language: 146.95(b)(1)(v) Community needs, demands, and supply from drinking water resources; (vi) Planned needs, potential and/or future use of USDWs and non-USDWs in the area;</p> <p>Recommended Revision: The UIC Program Director's evaluation must address planned community needs and potential and/or future use of USDWs and non-USDWs [40 CFR 146.95(b)(1)(vi)].</p> <p>Discussion: These requirements relate to planned community needs and the needs of public water systems.</p> | <p>The EPA agrees with the suggested revision. However, in response to comments and the course of document revisions, the sentence was removed, as the focus of this guidance is on how owners and operators submit reports and information.</p> |

3.6.6 Emergency and Remedial Response and Financial Responsibility

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|---|---|
| 93 | CSC | <p>Page 45</p> <p>Guidance Statement: The Class VI Rule requires that the UIC Program Director provide to the Regional Administrator an evaluation of the owner or operator's proposed Emergency and Remedial Response Plan and demonstration of financial responsibility [40 CFR 146.95(b)(1)(iv)].</p> <p>Final Rule Language: (b) To inform the Regional Administrator's decision on whether to grant a waiver of the injection depth requirements at §§ 144.6 of this chapter, 146.5(f), and 146.86(a)(1), the Director must submit, to the Regional Administrator, documentation of the following: (iv) All other site characterization data, the proposed emergency and remedial response plan, and a demonstration of financial responsibility;</p> <p>Recommended Revision: The Class VI Rule requires that the UIC Program Director provide to the Regional Administrator an evaluation of the owner or operator's proposed Emergency and Remedial Response Plan and demonstration of financial responsibility [40 CFR 146.95(b)(1)(iv)].</p> <p>Discussion: The rule provisions do not talk about "an evaluation of" the Emergency and Remedial Response Plan and demonstration of financial responsibility. If EPA wants to recommend that the UIC Director provide an evaluation of these two items in addition to the plan and financial responsibility demonstration, then this should be presented as a recommendation rather than a requirement.</p> | <p>The EPA agrees with the suggested revision. However, the EPA removed this sentence from the guidance, as the focus of this guidance is on how owners and operators submit reports and information.</p> |

3.7 Wells Transitioning from Class II to Class VI

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|--|--|
| 94 | API | <p>Specific examples of where the draft guidance implies that the UIC Program Director could determine an ER project's intent include:</p> <p>Page 46, Section 3.7. The first sentence:</p> <p>“Class II wells must be re-permitted as Class VI if a determination is made that the primary purpose of the carbon dioxide injection is for GS and there is an increased risk to USDWs compared to Class II operations” is generally correct, because both elements (i.e. change in purpose and increased risk to USDW) must be present to force an operator to obtain a Class VI permit. However, it implies that someone other than the owner or operator may determine if the primary purpose changes, which is incorrect.</p> <p>It should be rewritten to say:</p> <p>“Class II wells must be re-permitted as Class VI <i>if the owner or operator changes the primary purpose of the well from ER to GS and determines, or a UIC Program Director determines from information submitted by the owner or operator after the primary purpose change, that there is an increased risk to USDWs compared to Class II operations</i> [40 CFR 144.19].”</p> | <p>Given that this guidance document focuses on Class VI reporting and recordkeeping, the EPA made every effort to remove any policy statements or perceived policy statements regarding carbon dioxide enhanced recovery operations from the guidance. The details of a Class II to Class VI transition will be explained in a forthcoming guidance, <i>UIC Program Guidance on Transitioning Class II Wells to Class VI Wells</i>. We will consider your comment in the context of that guidance document.</p> <p>Until that time, the EPA's April 2015 memo, <i>Key Principles in EPA's Underground Injection Control Program Class VI Rule Related to Transition of Class II Enhanced Oil or Gas Recovery Wells to Class VI</i>, serves as the EPA's most current policy on the Class II to Class VI transition.</p> |
| 95 | CSC | <p>Page 46</p> <p>Guidance Statement: Following re-permitting as a Class VI project, the owner or operator must comply with all Class VI requirements.</p> <p>Final Rule Language: 146.81(c) Owners or operators seeking to convert existing Class I, Class II, or Class V experimental wells to Class VI geologic sequestration wells must demonstrate to the Director that the wells were engineered and constructed to meet the requirements at § 146.86(a) and ensure protection of USDWs, in lieu of requirements at §§146.86(b) and 146.87(a).</p> | <p>The EPA acknowledges the comment and clarifies that this particular sentence was removed during document revisions. However, in response to this comment, the EPA has made this change throughout the document to ensure clarity.</p> |

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|---|--|
| | | <p>Recommended Revision: Following re-permitting as a Class VI project, the owner or operator must comply with all applicable Class VI requirements.</p> <p>Discussion: Wells transitioning from Class I, II or V to Class VI are not necessarily required to comply with "all" Class VI requirements.</p> | |
| 96 | NAACSA | <p>7. Section 3.7: Wells Transitioning from Class II to Class VI</p> <p>We recommend that this section be struck because EPA has not issued transition guidance. If EPA elects to retain this section, we recommend that it merely repeat verbatim the regulatory language of section 144.19 as creating uncertainty around this topic will impede CCS.</p> <p>If EPA elects to provide transition guidance here, this section needs to be rewritten to ensure that it accurately describes what section 144.19 says. The Guidance states that "Class II wells must be re-permitted as Class VI if a determination is made that the primary purpose of the carbon dioxide injection is for GS and there is an increased risk to USDWs compared to Class II operations." <i>Guidance</i>, p. 46. Section 144.19(a) states: "Owners or operators that are injecting carbon dioxide for the primary purpose of long-term storage into an oil and gas reservoir must apply for and obtain a Class VI ... permit when there is an increased risk to USDWs compared to Class II operations." The Guidance's rendition of this provision is erroneous in the following respects: (1) there is no "determination" of the primary purpose test -instead, the only "determination" that is made pertains to increased risks to USDWs, which is further confirmed by the explicit language of section 144.19(b) ("The Director shall determine when there is an increased risk to USDWs"); (2) the primary purpose evaluation is entirely at the discretion of the owner/operator; (3) the primary purpose evaluation deals with "long-term storage," not "GS"; and (4) the decision to apply for a Class VI permit rests with the owner/operator, not the Director. This fourth and [mal element is confirmed by section 146.81(c) (emphasis added), which states: "This subpart also applies to owners or operators of ... Class II ... projects <u>who seek to apply</u> for a Class VI ... permit"</p> | <p>Given that this guidance document focuses on Class VI reporting and recordkeeping, the EPA made every effort to remove any policy statements or perceived policy statements regarding carbon dioxide enhanced recovery operations from the guidance. The details of a Class II to Class VI transition will be explained in a forthcoming guidance, <i>UIC Program Guidance on Transitioning Class II Wells to Class VI Wells</i>. We will consider your comment in the context of that guidance document.</p> <p>Until that time, the EPA's April 2015 memo, <i>Key Principles in EPA's Underground Injection Control Program Class VI Rule Related to Transition of Class II Enhanced Oil or Gas Recovery Wells to Class VI</i>, serves as the EPA's most current policy on the Class II to Class VI transition.</p> |

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|--|--|
| 97 | NAACSA | <p>The Guidance's discussion of aquifer exemptions in the Class II context is also inaccurate. <i>Guidance</i>, p. 46. With reference to section 144.7(d), the Guidance states that Class II to VI conversion may be required for injections into exempted aquifers. Section 144.7(d) (emphasis added) says nothing about transitioning from Class II to VI, but instead states that owners or operators of Class II wells "<u>may request</u> that the Director approve an expansion to the areal extent of an aquifer exemption" Section 144.7(d) is not a transition provision, it is an aquifer exemption provision. Section 144.7(d)'s use of the "may request" language separately buttresses the point that all matters pertaining to this topic are at the election of the owner or operator, not the Director.</p> | <p>Given that this guidance document focuses on Class VI reporting and recordkeeping, the EPA made every effort to remove any policy statements or perceived policy statements regarding carbon dioxide enhanced recovery operations from the guidance. The details of a Class II to Class VI transition will be explained in a forthcoming guidance, <i>UIC Program Guidance on Transitioning Class II Wells to Class VI Wells</i>. We will consider your comment in the context of that guidance document.</p> <p>Until that time, the EPA's April 2015 memo, <i>Key Principles in EPA's Underground Injection Control Program Class VI Rule Related to Transition of Class II Enhanced Oil or Gas Recovery Wells to Class VI</i>, serves as the EPA's most current policy on the Class II to Class VI transition.</p> |
| 98 | NAACSA | <p>The Guidance refers to the transition guidance as if it already exists, stating: "The DIC Program Guidance on Transitioning Class II Wells to Class VI Wells contains additional information about aquifer exemption expansions." <i>Guidance</i>, p. 47. That guidance document has not been proposed so we are unable to comment on references to it in this Guidance.</p> | <p>EPA acknowledges the comment. The guidance in question is forthcoming. Until that time, the EPA's April 2015 memo, <i>Key Principles in EPA's Underground Injection Control Program Class VI Rule Related to Transition of Class II Enhanced Oil or Gas Recovery Wells to Class VI</i>, serves as the EPA's most current policy on the Class II to Class VI transition.</p> |
| 99 | NAACSA | <p>Over the next several years, it is likely that the vast majority of CO₂ that will be captured from emissions sources and geologically stored will be injected via UIC Class II-permitted wells and used and incidentally or concurrently stored during routine CO₂-EOR operations. This is already the case, whether the CO₂ is captured from the coal gasification plant in North Dakota, ammonia production in Oklahoma, methane steam reformers in Texas or from natural gas processing facilities in West Texas and southwest Wyoming. We cannot stress strongly enough the importance of not creating a regulatory disadvantage for captured CO₂ if it is used and stored via Class II wells in an EOR operation.</p> <p>All of our comments above apply with equal force to the PA Guidance which also delves into transition issues. <i>PA Guidance</i>, pp. 9-10. Like the Guidance, for example, the PA Guidance erroneously states that the primary purpose test is subject to a "determination." <i>PA Guidance</i>, p. 9.</p> | <p>The EPA acknowledges the comment but notes that the issue is beyond the scope and intent of this guidance comment period.</p> |

3.7.2 Aquifer Exemptions

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|--|---|
| 100 | API | <p>Specific examples of where the draft guidance implies that the UIC Program Director could determine an ER project's intent include:</p> <p>Page 46, Section 3.7.2. The second sentence states:</p> <p>“However, Class II enhanced recovery wells injecting into exempted aquifers may need to transition to Class VI, and owners or operators of these wells may request an expansion of the areal extent of the previously approved aquifer exemption”</p> <p>where the phrase “may need to transition” implies that EPA or a UIC Program Director may force a Class II ER well operator to obtain a Class VI permit. It should read:</p> <p>“However, <i>owners or operators of Class II enhanced recovery wells injecting into exempted aquifers may change their well's exclusive purpose to GS and request an expansion of an aquifer exemption, in which case they must apply for a Class VI well permit</i> [40 CFR 144.7(d)].”</p> <p>Class II owners or operators only “need to transition to Class VI” if they affirmatively change their primary or exclusive purpose for the well to GS, then they determine that risks to USDWs would increase or they request an expansion of an aquifer exemption.</p> | <p>In response to this comment, the EPA modified this sentence.</p> |
| 101 | CSC | <p>Page 48</p> <p>Guidance Statement: The expanded aquifer exemption area will be based upon the predicted extent of the injected carbon dioxide plume, the associated pressure front, and any mobilized fluids that may result in degradation of water quality over the lifetime of the project [40 CFR 144.7(d)(2)(ii)]. This prediction will be informed by the computational modeling performed for the AoR determination required at 40 CFR 146.84(c)(1).</p> <p>Discussion: This is a good summary of the area that should be included in an expanded Class II aquifer exemption.</p> | <p>The EPA acknowledges the comment.</p> |

3.8 Reporting and Recordkeeping Schedule

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|--|---|
| 102 | CSC | <p>Page 49</p> <p>Guidance Statement: All information submitted as part of the permit application must be retained throughout the life of the GS project and for 10 years following site closure [40 CFR 146.91(f)(3)].</p> <p>Final Rule Language: (f) Records shall be retained by the owner or operator as follows: (1) All data collected under §146.82 for Class VI permit applications shall be retained throughout the life of the geologic sequestration project and for 10 years following site closure.</p> <p>Discussion: May need to provide an explanation of the difference between “collected” and “submitted”. We agree with the interpretation, but this is the document in which to include that discussion.</p> | <p>The EPA anticipates that any information that is collected, but not submitted, would be retained by the permitting authority if it supports submitted information. However, as indicated in the disclaimer to the guidance document, the Class VI Rule requirements are controlling in any cases of potential or perceived conflict.</p> |
| 103 | CSC | <p>Page 49</p> <p>Guidance Statement: Pursuant to 40 CFR 146.82(d) and 146.95(a), the waiver application report must be submitted at the same time as the Class VI permit application.</p> <p>Final Rule Language: 146.95 (a) In seeking a waiver of the requirement to inject below the lowermost USDW, the owner or operator must submit a supplemental report concurrent with permit application.</p> <p>Recommended Revision: Owners or operators must submit a waiver application report at the same time as concurrent with the Class VI permit application [40 CFR 146.82(d) and 146.95(a)].</p> <p>Discussion: The statement “at the same time as” could connote something more than is intended. Recognizing that the permit application process typically extends over a period of time with exchanges back and forth between the applicant and the reviewer, it is better to use the rule language, which is more likely to allow the supplemental report to be submitted during the permitting process even though not on the same day as the initial permit application.</p> | <p>The EPA made the suggested edit.</p> |

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|--|--|
| 104 | CSC | <p>Page 49 Table 3-1</p> <p>Guidance Statement: With the initial permit application, before well construction or conversion [40 CFR 146.82(a)]</p> <p>Recommended Revision: Concurrent with the initial permit application, before well construction or conversion [40 CFR 146.82(a)]</p> <p style="text-align: center;">Or</p> <p>With the initial permit application, before well construction or conversion [40 CFR 146.82(a)]</p> <p>Discussion: See above (See Discussion in ID 104 above). Double check this.</p> | <p>The EPA acknowledges the comment and clarifies that this particular sentence was removed during document revisions.</p> |
| 105 | CSC | <p>Page 50</p> <p>Guidance Statement: Demonstration of criteria related to expanding the areal extent of an aquifer exemption (if applicable)</p> <p>Recommended Revision: Demonstration of compliance with criteria related to expanding the areal extent of an aquifer exemption (if applicable)</p> <p>Discussion: Clarification</p> | <p>The EPA acknowledges the comment and clarifies that this particular sentence was removed during document revisions.</p> |

E. Comments on Pre-Injection Phase Reporting and Recordkeeping: Prior to Injection

The EPA did not receive any comments specific to the following sections of the draft guidance document: Section 4.1 (Final AoR and Corrective Action Status), Section 4.2 (Site Characterization), Section 4.2.1 (Well Logs and Core Analyses), Section 4.2.2 (Injection Zone Conditions), Section 4.2.3 (Confining Zone and Injection Zone Properties), Section 4.2.4 (Updates to Site Characterization Data), Section 4.4 (Final Project Plans and Alternative PISC Timeframe), and Section 4.5 (Reporting and Recordkeeping Schedule).

4. Pre-Injection Phase Reporting and Recordkeeping: Prior to Injection

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|--|--|
| 106 | CSC | <p>Page 51</p> <p>Guidance Statement: Information on the compatibility of the carbon dioxide stream with fluids in the injection zone(s) and minerals in both the injection and the confining zone(s), based on the results of the formation testing program, and with the materials used to construct the well (see Section 4.2.6).</p> <p>Final Rule Language: 146.86(b)(1) All well materials must be compatible with fluids with which the materials may be expected to come into contact and must meet or exceed standards developed for such materials by the American Petroleum Institute, ASTM International, or comparable standards acceptable to the Director.</p> <p>Recommended Revision: Information on the compatibility of the carbon dioxide stream with fluids in the injection zone(s) and minerals in both the injection and the confining zone(s), based on the results of the formation testing program, and with the materials used to construct the well that are expected to contact the carbon dioxide stream (see Section 4.2.6).</p> <p>Discussion: But 146.82(c)(3) Information on the compatibility of the carbon dioxide stream with fluids in the injection zone(s) and minerals in both the injection and the confining zone(s), based on the results of the formation testing program, and with the materials used to construct the well;</p> | <p>The EPA acknowledges the comment. This particular sentence was removed during document revisions.</p> |

4.2.5 Verification of Hydrogeologic Characteristics of the Injection Zone(s)

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|---|---|
| 107 | CSC | <p>Page 56</p> <p>Guidance Statement: Pump test and injectivity tests:</p> <ul style="list-style-type: none"> • Test parameters (e.g., injection time, fluid viscosity, temperature, wellbore diameter, pressure gauge type and location). <p>Recommended Revision: Pump test and injectivity tests:</p> <ul style="list-style-type: none"> • Test parameters (e.g., injection time, test fluid, fluid viscosity, temperature, wellbore diameter, pressure gauge type and location). <p>Discussion: The list should include the “test fluid” in recognition that a formation test may be conducted using carbon dioxide or some other fluid other than water or brine.</p> | <p>The EPA removed this sentence from the guidance, as the focus of this guidance is on how owners and operators submit reports and information. While providing some information on what to submit, this guidance also provides references to other technical guidance documents that explain what should be submitted in more detail.</p> |

4.2.6 Compatibility of the Carbon Dioxide Stream with the Subsurface and Well Components

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|---|---|
| 108 | CSC | <p>Page 57</p> <p>Guidance Statement: Any of the following types of information may be submitted regarding interactions between the injectate and formation fluids and the well tubular and cement materials:</p> <p>Final Rule Language: 146.86 (b) <i>Casing and Cementing of Class VI Wells.</i> (1) Casing and cement or other materials used in the construction of each Class VI well must have sufficient structural strength and be designed for the life of the geologic sequestration project. All well materials must be compatible with fluids with which the materials may be expected to come into contact and must meet or exceed standards developed for such materials by the American Petroleum Institute, ASTM International, or comparable standards acceptable to the Director.</p> | <p>The EPA removed this sentence from the guidance, as the focus of this guidance is on how owners and operators submit reports and information. While providing some information on what to submit, this guidance also provides references to other technical guidance documents that explain what should be submitted in more detail.</p> |

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|--|--------------|
| | | <p>Recommended Revision: Any of the following types of information may be submitted regarding interactions between the injectate and formation fluids and the well tubular and cement materials and should include an indication of the extent to which the well tubular and cement materials may be expected to come into contact with the fluids:</p> <p>Discussion: The compatibility information is useful but should be considered within the context of the applicable requirement that “[a]ll well materials must be compatible with fluids with which the materials may be expected to come into contact”.</p> | |

4.3 Injection Well Construction and Testing

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|---|--|
| 109 | CSC | <p>Page 58</p> <p>Guidance Statement: Owners or operators must submit a descriptive report prepared by a log analyst that includes an interpretation of the results of these logs and tests.</p> <p>Final Rule Language: 146.87(a) (5) Any alternative methods that provide equivalent or better information and that are required by and/or approved of by the Director.</p> <p>Recommended Revision: The Class VI Rule authorizes the UIC Program Director to require or approve any alternative methods that provide equivalent or better information. Owners or operators must submit a descriptive report prepared by a log analyst that includes an interpretation of the results of these logs and tests that are conducted.</p> <p>Discussion The guidance should recognize and remind the operators that the Director has this authority to require or approve alternatives.</p> | <p>The final guidance highlights the flexibility inherent in the requirements.</p> |

F. Comments on Injection Phase Reporting and Recordkeeping

The EPA did not receive any comments specific to the following sections of the draft guidance document: Section 5. (Injection Phase Reporting and Recordkeeping), Section 5.1 (Injection Well Operation), Section 5.2.1 (Carbon Dioxide Stream Monitoring), Section 5.2.2 (Corrosion Monitoring), Section 5.2.3 (Continuous Monitoring to Demonstrate Internal Mechanical Integrity), Section 5.2.4 (External MIT), Section 5.2.5 (Pressure Fall-Off Testing), Section 5.2.6 (Ground Water Quality and Geochemistry Monitoring), Section 5.2.7 (Pressure-Front Tracking), Section 5.2.8 (Carbon Dioxide Plume Tracking), Section 5.2.9 (Surface Air and/or Soil Gas Monitoring), Section 5.2.10 (Additional Monitoring), Section 5.4 (Financial Responsibility Updates and Notifications), Section 5.5 (Project Plan Updates), Section 5.7 (Reporting and Recordkeeping Schedule).

5.1.1 Injection Well Monitoring

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|---|---|
| 110 | CSC | <p>Page 61</p> <p>Guidance Statement: If chemicals are to be used in stimulation, a determination that the chemicals will not react with the confining layer and/or compromise the effectiveness of the confining layer.</p> <p>Recommended Revision: If chemicals are to be used in stimulation, a determination that the chemicals will not react with the confining layer and/or to compromise the effectiveness of the confining layer.</p> <p>Discussion: The mere occurrence of reaction with the confining layer is not remarkable if the reaction does not compromise the effectiveness of the confining layer.</p> | <p>The EPA removed this sentence from the guidance, as the focus of this guidance is on how owners and operators submit reports and information. While providing some information on what to submit, this guidance also provides references to other technical guidance documents that explain what should be submitted in more detail.</p> |

5.1.2 Alarms and Automatic Shut-Off Devices

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|--|--|
| 111 | CSC | <p>Page 62</p> <p>Guidance Statement: If an alarm triggers the automatic shut-off device or a loss of mechanical integrity is detected, the owner or operator must cease injection and report the incident to the UIC Program Director [40 CFR 146.88(f)(3)].</p> | <p>The EPA removed this portion of the sentence from the guidance, as the focus of this guidance is on how owners and operators submit reports and information. While providing some information on what to submit, this guidance also provides references to other technical guidance documents that explain what should be submitted in more detail.</p> |

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|--|--|
| | | <p>Final Rule Language: 146.88(f) If a shutdown (i.e., down-hole or at the surface) is triggered or a loss of mechanical integrity is discovered, the owner or operator must immediately investigate and identify as expeditiously as possible the cause of the shutoff. If, upon such investigation, the well appears to be lacking mechanical integrity, or if monitoring required under paragraph (e) of this section otherwise indicates that the well may be lacking mechanical integrity, the owner or operator must:</p> <p>(1) Immediately cease injection;</p> <p>Recommended Revision: If an alarm triggers the automatic shut-off device or a loss of mechanical integrity is detected, the owner or operator must cease injection immediately investigate to determine whether the well appears to be lacking mechanical integrity. If upon investigation the well appears to be lacking mechanical integrity, the owner or operator must immediately cease injection, take other required steps and report the incident to the UIC Program Director [40 CFR 146.88(f)(3)].</p> <p>Discussion: The statement in the current draft is not a correct statement of the regulatory requirement. It should be corrected as indicated.</p> | |
| 112 | CSC | <p>Page 62</p> <p>Guidance Statement: Prior to resuming injection, the owner or operator must demonstrate to the UIC Program Director that mechanical integrity has been restored to the well [40 CFR 146.88(f)(4)].</p> <p>Recommended Revision: Prior to resuming injection after a required shutdown, the owner or operator must demonstrate to the UIC Program Director that mechanical integrity has been restored to the well [40 CFR 146.88(f)(4)].</p> | <p>The EPA removed this portion of the sentence from the guidance, as the focus of this guidance is on how owners and operators submit reports and information. While providing some information on what to submit, this guidance also provides references to other technical guidance documents that explain what should be submitted in more detail.</p> |
| 113 | CSC | <p>Page 62</p> <p>Guidance Statement: These notices may be submitted to the UIC Program Director as PDF files.</p> <p>Discussion: What about email notifications?</p> | <p>Since the draft guidance was issued and this comment was received, the GSDT has been completed to serve as the EPA-approved submittal mechanism. Submittal recommendations for various required materials have been noted throughout the document.</p> |

5.2 Operational Testing and Monitoring

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|--|--|
| 114 | CSC | <p>Page 62</p> <p>Guidance Statement: This section outlines the types of information that may be submitted to meet the testing and monitoring requirements of the Class VI Rule, as well as EPA's recommendations regarding data formats.</p> <p>Recommended Revision: This section outlines the types of information that may be submitted to meet the reporting requirements associated with the testing and monitoring requirements of the Class VI Rule, as well as EPA's recommendations regarding data formats.</p> <p>Discussion: This guidance is about submitting information, not with meeting the regulatory requirements.</p> | <p>The EPA removed this sentence from the guidance, as the focus of this guidance is on how owners and operators submit reports and information.</p> |

5.3 AoR Reevaluation and Phased Corrective Action

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|---|--|
| 115 | CSC | <p>Page 71</p> <p>Guidance Statement: When observations based on monitoring data agree with the predicted AoR, a reevaluation may simply consist of a demonstration to the UIC Program Director that monitoring data validate modeled predictions [40 CFR 146.84(e)(4)]. However, if monitoring data and modeling predictions differ significantly, then the owner or operator must revise the computational model and submit updated AoR delineation results.</p> <p>Discussion: Good statement!</p> | <p>The EPA acknowledges the comment.</p> |

5.6 Emergency and Remedial Response

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|---|---|
| 116 | CSC | <p>Page 74</p> <p>Guidance Statement: EPA recommends that this notification be submitted in a PDF file.</p> <p>Discussion: Submitted as an email?</p> | <p>Since the draft guidance was issued and this comment received, the GSDT has been completed to serve as the EPA-approved submittal mechanism. Submittal recommendations for various required materials have been noted throughout the document.</p> |

G. Comments on Post-Injection Phase Reporting and Recordkeeping

The EPA did not receive any comments specific to the following sections of the draft guidance document: Section 6.1.1 (Notice of Intent to Plug the Well), Section 6.1.2 (Well Plugging Report), Section 6.2 (PISC and Site Closure), Section 6.2.1 (Updated PISC and Site Closure Plan), and Section 6.3 (Reporting and Recordkeeping Schedule).

6. Post-Injection Phase Reporting and Recordkeeping

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|--|---|
| 117 | CSC | <p>Page 78</p> <p>Guidance Statement: Following cessation of injection, the injection well(s) at a GS project must be plugged, and the project enters the post-injection phase.</p> <p>Recommended Revision: Following cessation of injection, the injection well(s) at a GS project must be plugged, and the project enters the post-injection phase.</p> <p>Discussion: The Class VI rule does not require the immediate plugging of the injection well. This is something that should be addressed in the post-injection site care plan. It is possible that one or more of the injection wells might be used for PISC monitoring. See <i>Draft Underground Injection Control (UIC) Program Guidance on Class VI Well Plugging, Post-Injection Site Care, and Site Closure (May 2013)</i> at p. 4: “However, the immediate plugging of the injection well is not a requirement, as some owners or operators may elect to convert an injection well to a monitoring well.”</p> | <p>The EPA modified this sentence in response to the commenter’s suggestion to clarify that a Class VI injection well need not be plugged immediately if it is being used for monitoring.</p> |

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|--|---|
| 118 | CSC | <p>Page 78</p> <p>Discussion: This guidance in particular should include a paragraph explaining the relationship between the reporting requirements applicable during the operational phase and the reporting requirements applicable during the PISC and site closure phases. Some of the operational phase requirements may carry over into the PISC & SC phases and others do not. The guidance should explain the relationship and the applicable requirements.</p> | <p>The EPA agrees with the comment and has noted applicable requirements for both phases.</p> |

6.1 Injection Well Plugging

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|---|---|
| 119 | CSC | <p>Page 78</p> <p>Guidance Statement: Requirements for injection well plugging are provided in the Class VI Rule at 40 CFR 146.92. The sections below provide guidance on the information to submit to meet those requirements.</p> <p>Recommended Revision: Requirements for injection well plugging are provided in the Class VI Rule at 40 CFR 146.92. <i>In many cases, injection well plugging is likely to take place shortly after the cessation of injection for the project, but there may be cases where one or more of the injection wells will be used for PISC monitoring. In those cases, the requirements for injection well plugging will apply at the time when the decision is made to plug the injection well. The sections below provide guidance on the information to submit to meet these the applicable requirements whenever the injection well is plugged.</i></p> <p>Discussion: See <i>Draft Underground Injection Control (UIC) Program Guidance on Class VI Well Plugging, Post-Injection Site Care, and Site Closure (May 2013)</i> at p. 4: “However, the immediate plugging of the injection well is not a requirement, as some owners or operators may elect to convert an injection well to a monitoring well.”</p> | <p>The EPA has modified this sentence in response to the commenter’s suggestion to clarify that a Class VI injection well need not be plugged immediately if it is being used for monitoring.</p> |

6.2.2 Monitoring During PISC

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|---|--|
| 120 | CSC | <p>Pages 80-81</p> <p>Guidance Statement: During this time, owners or operators will continue to conduct AoR reevaluations according to the schedule specified in the AoR and Corrective Action Plan (see Section 5.3). EPA expects that most reevaluations in the post-injection phase will not result in changes to the AoR delineation or the AoR and Corrective Action Plan.</p> <p>Discussion: Good statement!</p> | <p>The EPA acknowledges the comment.</p> |
| 121 | CSC | <p>Page 81</p> <p>Guidance Statement: Identification of any changes to the monitoring program during the reporting period (e.g., drilling of new monitoring wells, closure of monitoring wells).</p> <p>Recommended Revision: Identification of any changes to the monitoring program during the reporting period (e.g., drilling of new monitoring wells, closure of injection and monitoring wells).</p> <p>Discussion: This revision recognizes that some injection wells may continue in operation as monitoring wells but would still be plugged in accordance with the injection well plugging plan.</p> | <p>The EPA acknowledges the comment and clarifies that this particular sentence was removed during document revisions. However, the EPA has clarified in the guidance that a Class VI injection well need not be plugged immediately if it is being used for monitoring.</p> |

6.2.3 Non-Endangerment Demonstration

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|---|--|
| 122 | CSC | <p>Page 82</p> <p>Guidance Statement: A summary of monitoring results, including images, that shows that migration of the carbon dioxide plume has stabilized.</p> <p>Final Rule Language: 146.93(b)(2) If the owner or operator can demonstrate to the satisfaction of the Director before 50 years or prior to the end of the approved alternative timeframe based on monitoring and other site-specific data, that the geologic sequestration project no longer poses an endangerment to USDWs, the Director may approve an amendment to the post-injection site care and site closure plan to reduce the frequency of monitoring or may authorize site closure before the end of the 50-year period or prior to the end of the approved alternative timeframe, where he or she has substantial evidence that the geologic sequestration project no longer poses a risk of endangerment to USDWs.</p> <p>(3) Prior to authorization for site closure, the owner or operator must submit to the Director for review and approval a demonstration, based on monitoring and other site-specific data, that no additional monitoring is needed to ensure that the geologic sequestration project does not pose an endangerment to USDWs.</p> <p>Recommended Revision: A summary of monitoring results, including images, that shows that migration of the carbon dioxide plume has stabilized. showing that no additional monitoring is needed to ensure that the geologic sequestration project does not pose an endangerment to USDWs.</p> <p>Discussion: Demonstrating that the plume has “stabilized” is not in the requirements.</p> | <p>The EPA has removed references to plume stabilization, instead noting applicable regulatory requirements and recommendations.</p> |

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|--|--------------|
| | | <p>See <i>Draft Underground Injection Control (UIC) Program Guidance on Class VI Well Plugging, Post-Injection Site Care, and Site Closure (May 2013)</i> at p. 41-42: Under certain conditions, the separate-phase and aqueous-phase carbon dioxide plumes may continue to migrate after injection ceases, as influenced by (1) the presence or lack of a stratigraphic trap; (2) the presence or lack of a structural trap; (3) carbon dioxide moving up-dip at the injection zone/confining zone interface; (4) the presence of significant highly permeable pathways that lead to preferential plume migration; and (5) the persistence of a pressure differential that results in fluid movement.</p> <p>For both the separate- and aqueous-phase plumes, the risk to USDWs may be low even in the event of some plume migration. This is the case if plume migration rates are extremely small, and/or if a demonstration can be made that no leakage pathways exist in the direction(s) of plume migration within long timeframes (e.g., hundreds to thousands of years). <i>Id.</i> at 42.</p> | |

6.2.4 Site Closure-Related Reporting

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|--|---|
| 123 | CSC | <p>Page 83</p> <p>Guidance Statement: EPA recommends that this notification take the form of a letter and be submitted as a PDF file.</p> <p>Discussion: How should it be submitted? Will there be a dedicated website, or is this notification to be sent by email?</p> | <p>Since the draft guidance was issued and this comment was received, the GSDT has been completed to serve as the required submittal mechanism. Submittal recommendations for various required materials have been noted throughout the document.</p> |

H. Comments on GS Data Submission and Management

The EPA did not receive any comments specific to Section 7 (GS Data Submission and Management).

I. Comments on Appendix A

Appendix A. Draft Class VI Rule Reporting Data Elements Matrix

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|--|--|
| 124 | NAACSA | <p>8. Appendix A -Draft Class VI Rule Reporting Data Elements Matrix</p> <p>Appendix A to the Guidance consists of a data element matrix that conflicts with the Class VI Rule in several respects, as follows.</p> <p>The Guidance does not acknowledge that 40 C.F.R. § 146.82 with respect to permit information for converted wells stipulates information may be provided "by reference" to other materials provided certain requirements are met. The Guidance instead erroneously suggests that all permitting information must be submitted de novo for converted wells. <i>Guidance</i>, p. A -1.</p> | <p>The EPA has removed the Appendix from this document and integrated its reporting and recordkeeping content throughout the document. In response to this comment, the guidance references the flexibility raised by the commenter.</p> |
| 125 | NAACSA | <p>The Guidance's description of Area of Review ("AoR") information required for the permit application is beyond the scope of the regulations. Sections 146.82 (dealing with AoR information needed for the permit) and 146.84 (dealing with the AoR plan for the application and periodic evaluation of the same) of the Class VI Rule set forth detailed requirements related to AoR information and data. With respect to the AoR, section 146.82 requires the application to include: (i) a map that shows the AoR (40 C.F.R. § 146.82(a)(2)); and (ii) the "[p]roposed [AoR] ... plan that meets the requirements under § 146.84." Section 146.84 then provides the information related to the AoR plan itself, including that which must be "submitted" to the Director as part of the application (40 C.F.R. § 146.84(b)). AoR information that must be submitted with the application falls into two buckets, according to the Class VI Rule: (i) the "<u>method</u>" for delineating the [AoR]" consistent with the regulations (40 C.F.R. § 146.84(b)(1) (emphasis added)); and (ii) a "<u>description</u>" of certain other pieces of information, all of which for present purposes pertain to a later reevaluation of the AoR (40 C.F.R. §§ 146.84(b)(2)(i), (ii), (iii) (emphasis added)). Nothing more is required to be submitted with the application.</p> | <p>The EPA removed this sentence from the guidance, as the focus of this guidance is on how owners and operators submit reports and information. While providing some information on what to submit, this guidance also provides references to other technical guidance documents that explain what should be submitted in more detail.</p> <p>The guidance clarifies and the EPA affirms that the regulations do not require, nor do we ask, that applicants submit their models, code, or other proprietary information, and seek only enough information to make risk-based permitting decisions. In early permitting, we have worked with applicants to ensure that we have appropriate information to be able to evaluate their models using non-proprietary information applicants were willing to disclose, such as their assumptions. In the event that an applicant is submitting CBI to the EPA, we will follow agency procedures for CBI.</p> |

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|--|--------------|
| | | <p>The Guidance converts the regulatory language above into the following list of "potential submittals" related to AoR information supporting the permit application:</p> <ul style="list-style-type: none"> • The conceptual site model and all supporting data on which the model is based; • Attributes of the code used to create the computational model (e.g., code name, name of the developing organization, governing equations employed, simplifying assumptions); • A description of the model's initial and boundary (vertical and lateral) conditions and layers as presented on maps and cross sections; • A description of numerical space discretization, solution methods/options employed, computational parameters, and time-stepping information; • An accounting of all equations of state used to describe thermophysical properties of all fluids models (e.g., ground water, carbon dioxide); • Constitutive relationships of the permeable medium (e.g., relative permeability-saturation relationship) and a description of how they were determined; • Values of all model parameters based on site characterization; • If requested by the UIC Program Director, raw input and output files; • Model results depicting the extent of carbon dioxide plume and pressure-front migration over the lifetime of the project as a function of time, and the results of simulations of maximum-risk scenario and the outcome of parameter sensitivity analyses; and v' If required by the DIC Program Director, the relevant qualifications and professional experience of any individuals and/or consulting firms responsible for model development, AoR delineation, and reevaluation, including examples of previous multiphase modeling studies conducted (<i>Guidance</i>, pp. A-2, A_3) [FN 7]. <p>None of these data elements is based upon a rational reading of what is required to be submitted with the application under the Class VI Rule. Some of the data elements might be interesting for an R&D researcher, but Class VI is a commercial program. If the agency desires R&D information, it should reinstitute CCS permitting under Class V.</p> | |

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|--|---|
| | | <p>The Guidance states that all of the above "potential submittals" must be "[r]etained throughout the life of the GS project and 10 years following site closure " <i>Guidance</i>, p. A-2. This statement explicitly conflicts with the Class VI Rule, which only imposes a 10-year information retention requirement on "inputs and data" used to support AoR reevaluations. <i>40 CFR</i>.§ <i>146.84(g)</i>.</p> <p>[FN 7: This language separately could be read to suggest that EPA desires that the owner/operator divulge the software code for the model. Such a requirement would be unlawful under the SDWA and raise troubling intellectual property considerations.]</p> | |
| 126 | NAACSA | <p>In referencing multiple confining zones, the Guidance diverges/rom the Class VI Rule. The Guidance states that the Class VI Rule requires the submission of the following information with the application: "Geomechanical information on fractures, stress, ductibility, rock strength, and in situ fluid pressures within confining <u>zones</u>." <i>Guidance</i>, p. A-5 (emphasis added). The Class VI Rule refers to "confining zone(s)" not "confining zones." <i>40 CFR</i>. § <i>146.82(a)(3)(iv)</i>.</p> | <p>The EPA has removed the Appendix from this document and integrated its reporting and recordkeeping content throughout the document. While the EPA has removed the Appendix, in response to this comment, the guidance now uses "confining zone(s)" when referencing 40 CFR 146.82.</p> |
| 127 | NAACSA | <p>The Guidance impermissibly suggests that "minimum criteria/or siting" are owner/operator data/information requirements. The Guidance suggests that the "minimum criteria for siting" under 40 C.F.R. § 146.83 are data elements (<i>Guidance</i>, pp. A-22, A-23) when in fact those criteria establish the regulatory test that is to be applied to application information to assess the suitability of a site. Section 146.83 does not require the submission of data or information, nor does it impose independent recordkeeping requirements.</p> <p>The Guidance also erroneously suggests that information under 40 C.F.R. § 146.83 must be retained throughout the life of the project and for 10 years following site closure "as required under 40 CFR 146.91(f)(1)." <i>Guidance</i>, p. A-23. Section 146.91(f)(1), which refers instead to section 146.82, imposes no such requirement related to minimum criteria for siting under section 146.83.</p> | <p>The EPA has removed the Appendix from this document and integrated its reporting and recordkeeping content throughout the document. In response to this comment, the EPA has clarified in the guidance that the required site characterization submittals are used to demonstrate that the project meets the minimum criteria for site suitability specified at 40 CFR 146.83.</p> |

| ID# | Commenter | Comment | EPA Response |
|-----|-----------|--|---|
| 128 | NAACSA | <p>The Guidance misstates the recordkeeping obligations for AoR data under section 146.84. Citing section 146.91(f)(1), the Guidance erroneously states that section 146.84 information must be retained for the life of the project and for 10 years following site closure. <i>Guidance</i>, p. A-24. Section 146.91(f)(1) does not reference section 146.84. This may be because section 146.84 contains its own recordkeeping requirement, which the Guidance fails to acknowledge. Section 146.84(g) states that "[a]ll modeling inputs and data used to support [AoR] reevaluations ... shall be retained for 10 years." Original AoR information is not subject to recordkeeping under section 146.84, and is only required to be retained as such information is included in the permit application under section 146.82 consistent with the explicit language of section 146.91 (f)(1).</p> | <p>The EPA has removed the Appendix from this document and integrated its reporting and recordkeeping content throughout the document. In response to this comment, the EPA has clarified references to the recordkeeping requirements throughout the document. The EPA has been careful in the guidance to differentiate between requirements and recommendations and clarifies that the guidance does not impose any additional requirements beyond the Class VI Rule.</p> |
| 129 | NAACSA | <p>The Guidance overstates information required for financial responsibility. The Class VI Rule states that the owner or operator must "demonstrate and maintain" financial responsibility according to specified conditions in section 146.85. Such "demonstration" must be included as part of the permit application under section 146.82(a)(14). Under section 146.85(a)(5)(i), the Director must approve the "demonstration" before issuing the permit. The Class VI Rule suggests that the "demonstration" consist only of the "qualifying financial responsibility instrument" selected by the owner and operator. <i>40 CFR. § 146.85(a)(5)</i>. Updated information "related to" the "financial responsibility instrument(s)" must be provided by the owner or operator annually. <i>40 CFR. § 146.85(a)(5)(ii)</i>. The Director approves or disapproves the "financial instrument" itself. <i>40 CFR. § 146.85(a)(5)(iii)</i>.</p> <p>The Class VI Rule provides that supporting or updated information must be provided in a handful of scenarios. For example, the use of a third-party instrument requires the owner or operator to provide "proof" of certain requirements. <i>40 CFR. § 146.85(a)(6)(i)</i>. During the active life of a project, inflation-adjusted cost estimates must be provided. <i>40 CFR. § 146.85(c)(2)</i>. Notice must also be given of adverse financial conditions. <i>40 CFR. § 146.85(d)</i>; see also <i>40 CFR. § 146.85(e)</i>.</p> | <p>The EPA has removed the Appendix from this document and integrated its reporting and recordkeeping content throughout the document. Additionally, in response to this comment, the phrase "proof of financial responsibility" is no longer used in the document. With respect to the comment about a detailed cost estimate, the EPA clarifies that a written estimate is required at 40 CFR 146.85(c). The EPA has been careful in the guidance to differentiate between requirements and recommendations and clarifies that the guidance does not impose any additional requirements beyond the Class VI Rule.</p> |

| ID# | Commenter | Comment | EPA Response |
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| | | <p>The Guidance exceeds these regulatory requirements in at least two ways. First, the Guidance refers to "proof of financial responsibility," contrary to the regulatory standard of "demonstration." <i>Guidance</i>, p. A-27. Second, by requiring the submission of discrete pieces of information (detailed cost estimates, for example), the Guidance departs from the Class VI Rule's focus on the Director's review of the financial responsibility instrument itself.</p> | |
| 130 | NAACSA | <p>The mass of injected CO₂ may be provided in lieu of volume. With respect to information requirements for tubing and packer (injection wells), the Guidance states that "[p]roposed injection rate (intermittent or continuous) and volume of the carbon dioxide stream" must be submitted. <i>Guidance</i>, p. A-31. This conflicts with section 146.86(c)(v), which provides that mass information may be provided in lieu of volumes.</p> | <p>The EPA removed the Appendix from this document and integrated its reporting and recordkeeping content throughout the document. This particular sentence was removed during document revisions.</p> |
| 131 | NAACSA | <p>The Guidance exceeds information requirements related to injection well operations. The injection well operating requirements at section 146.88 provide performance standards, not information requirements per se. The performance standards will likely be incorporated into individual permits on a case-by-case basis. The Guidance departs from this approach by conjuring up a wealth of potential data requirements (e.g., monthly average, maximum, and minimum values for injection pressure) that may or may not be relevant in a specific permit. We believe that the injection well operating requirements at section 146.88 are unambiguous as written, with no further guidance needed. Owners/operators and permit writers will address these matters case-by-case in specific permits.</p> <p>The Guidance also erroneously references section 146.91(f)(3) to support a requirement that injection well operating information be retained for 10 years after collection. Section 146.91(f)(3) refers to section 146.90, not section 146.88.</p> | <p>The EPA removed the Appendix from this document and integrated its reporting and recordkeeping content throughout the document. The EPA removed the referenced material from the guidance, as the focus of this guidance is on how owners and operators submit reports and information.</p> <p>The EPA also clarified references to the recordkeeping requirements throughout the document. The EPA has been careful in the guidance to differentiate between requirements and recommendations and clarifies that the guidance does not impose any additional requirements beyond the Class VI Rule.</p> |

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| 132 | NAACSA | <p>The Guidance's provisions regarding reporting/or mechanical integrity conflict with the recently finalized Well Testing and Monitoring Guidance. The Guidance's "potential submittals" for mechanical integrity testing are not specific but instead rely exclusively upon cross-references to other sections of the Guidance, making analysis difficult. <i>Guidance</i>, pp. A-41, A-42, A-43. At minimum, however, those cross-references appear to conflict with the provisions related to "reporting of MITs" in EPA's recently finalized guidance related to well testing and monitoring. <i>UIC Program Class VI Well Testing and Monitoring Guidance, EPA 816-R-13-001, pp. 27-28 (Mar. 2013)</i> ("MIT Guidance"). For example, the MIT Guidance suggests that the "name of the logging company and log analyst(s) must be reported" (<i>MIT Guidance, p. 28</i>), yet no comparable suggestion appears in the Guidance.</p> | <p>The EPA removed the Appendix from this document and integrated its reporting and recordkeeping content throughout the document; in so doing, we have made every attempt to resolve areas of conflict between the two guidance documents.</p> |
| 133 | NAACSA | <p>Surface air monitoring and/or soil gas monitoring is not mandated in all situations. With reference to section 146.90(h), the Guidance implies that air monitoring and/or soil gas monitoring is required in all instances. <i>Guidance</i>, p. A-48. Section 146.90(h) instead states that such monitoring "may" be required.</p> | <p>The EPA removed the Appendix from this document and integrated its reporting and recordkeeping content throughout the document. The EPA has clarified in the guidance that surface air and/or soil gas monitoring may be required at the discretion of the UIC Program Director.</p> |
| 134 | NAACSA | <p>With respect to reporting in the injection phase and post-injection period, project administration would be facilitated if all reporting was consolidated under section 146.91. The Guidance interprets section 146.91 -which is the only provision of the subpart H regulations entitled "reporting requirements" - as just one of many provisions requiring reporting during the injection-phase. <i>Guidance, pp. A-50, A-51, A-52.</i></p> <p>Section 146.91 is more properly read as the consolidated provision for all subpart H reporting during the injection phase and post-injection period. Section 146.91 contains sweeping reporting requirements that apply to activities in both the injection phase and post-injection period. This interpretation is supported by the MIT Guidance which suggests, for example, that CO2 compositional data only be reported in the semi-annual reports under section 146.91. <i>MIT Guidance, pp. 33-34, 40; see also id. p. 49</i> (reporting of corrosion monitoring data in semi-annual reports),<i>p. 73</i> (same for ground water monitoring). The Guidance would be shortened, simplified and brought into line with the Class VI Rule if EPA adopted this interpretation of section 146.91.</p> | <p>The EPA removed the Appendix from this document and integrated its reporting and recordkeeping content throughout the document. In the final guidance document, the EPA has used the structure of the 40 CFR 146.91 requirements to organize the sections on injection phase reporting.</p> |

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| 135 | NAACSA | There is no mandate to submit an amended post-injection site care ("PISC"? plan under section 146.93(a)(4). Referencing section 146.93(a)(4), the Guidance erroneously states that a modified PISC plan and site closure plan " <u>must</u> be resubmitted for approval by the Director within 30 days of any changes." <i>Guidance</i> , p. A-55 (emphasis added). Section 146.93(a)(4) (emphasis added) states instead: 'the owner or operator <u>may</u> modify and resubmit the [PISC] and site closure plan for the Director's approval within 30 days of such change.' | The EPA removed the Appendix from this document and integrated its reporting and recordkeeping content throughout the document. The final guidance document clarifies that, pursuant to 40 CFR 146.93(a)(4), owners or operators may submit a modified PISC and Site Closure Plan at any time during the life of the project. |
| 136 | NAACSA | The Guidance misquotes regulatory requirements for injection depth waivers under section 146.95(f)(2). The Guidance asserts that section 146.95(f)(2) requires the owner or operator to comply with all requirements of section 146.86 "and" additional modified requirements. <i>Guidance</i> , p. A-68. That is not an accurate reading of section 146.95(f)(2). Section 146.95(f)(2) (emphasis added) states that owners and operators must comply with the requirements of section "146.86 <u>with</u> [certain] modified requirements." The same comment applies to the Guidance's discussion of sections 146.95(f)(3) and 146.95(f)(4). <i>Guidance</i> , p. A-69. | The EPA removed the Appendix from this document and integrated its reporting and recordkeeping content throughout the document. The subject statement regarding 40 CFR 146.95(f)(2) has been removed. |