



Underground Injection Control (UIC) Class VI Program

Financial Responsibility Guidance

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Executive Summary

This document provides guidance to Underground Injection Control (UIC) Directors, Geologic Sequestration (GS) well owners or operators, independent third-party providers, and the general public on the financial responsibility requirements of the “Federal Requirements under the Underground Injection Control Program for Carbon Dioxide Geologic Sequestration Wells” Rule. The Federal Register Notice for this rule is available at:

http://water.epa.gov/type/groundwater/uic/wells_sequestration.cfm. Throughout this guidance document the terms corrective action, plugging, post injection site care and site closure, and emergency and remedial response are collectively referred to as “financial responsibility activities” or “required GS activities.” Financial responsibility requirements are designed to ensure that owners or operators have the resources to carry out required GS activities related to closing and remediating GS sites if needed, during injection or after wells are plugged, so that they do not endanger Underground Sources of Drinking Water (USDWs). These requirements are also designed to ensure that the private costs of GS are not passed along to the public. This guidance describes in detail the following:

- Financial instruments that owners or operators of Class VI GS wells can select to demonstrate financial responsibility, as well as the relative strengths and weaknesses associated with each instrument;
- Minimum specifications and conditions of financial coverage that owners or operators must use to demonstrate compliance with the rule requirements;
- Submission requirements for owners or operators demonstrating financial responsibility and review requirements for the Director; and
- Ongoing financial responsibilities of the owners or operators of GS wells and the Director.

Under the rule, owners or operators select financial coverage options from a list of qualified independent third-party instruments or self-insurance to cover the expected and unexpected costs of GS projects. Qualifying financial responsibility instruments offered by independent third-party institutions include trust funds, escrow accounts, surety bonds, letters of credit, and insurance. Self-insurance requires that the owner or operator demonstrate their financial condition. For all qualifying financial responsibility demonstrations, it is expected that the demonstration, including cost estimates, will be updated and verified over time to ensure that the project costs will fall within the coverage provided by the financial responsibility instrument(s).

Based on a review of available information and input from stakeholders on the potential for instrument failure and the resource implications for owners or operators and Directors, the financial responsibility instruments recommended for the following GS activities include:

- Corrective action: Trust funds, letters of credit, surety bonds, escrow accounts, and financial tests and corporate guarantees

- Injection well plugging: Trust funds, letters of credit, surety bonds, insurance, and financial tests and corporate guarantees
- Post-injection site care and site closure: Trust funds, insurance, and financial tests and corporate guarantees
- Emergency and remedial response: Insurance, letters of credit (during operation), surety bonds (during operation), and financial tests and corporate guarantees

This list is not exhaustive of all options available for each GS activity. Owners or operators can use other qualifying instruments or a combination of qualifying instruments to demonstrate financial responsibility for a specific phase of the GS project at the Director's discretion under 40 CFR 146.85.

The guidance provided in this document is based on EPA's current understanding of the best approach to regulating financial responsibility for GS. As such, it is important to note that EPA is pursuing an adaptive rulemaking approach to regulating GS; additional requirements or other changes to this guidance might be needed in the future to protect underground sources of drinking water and provide useful information on financial responsibility.

Purpose and Disclaimer

The category of Underground Injection Control (UIC) Class VI injection well was established by the rule “Federal Requirements under the Underground Injection Control Program for Carbon Dioxide Geologic Sequestration Wells.” The Federal Register Notice for this rule is available at: http://water.epa.gov/type/groundwater/uic/wells_sequestration.cfm.

The Safe Drinking Water Act (SDWA) provisions and EPA regulations cited in this document contain legally-binding requirements. This document does not substitute for those provisions or regulations, nor is it a regulation itself. Thus, it does not impose legally-binding requirements on EPA, states, or the regulated community, and may not apply to a particular situation based upon the circumstances. EPA and authorized state decision makers retain the discretion to adopt approaches on a case-by-case basis that differ from this guidance where appropriate. Any decisions regarding a particular facility or site will be made based on the applicable statutes and regulations. Therefore, interested parties are free to raise questions and objections about the appropriateness of the application of this guidance to a particular situation, and EPA will consider whether the recommendations or interpretations in the guidance are appropriate in that situation. EPA may change this guidance in the future. Mention of trade names or commercial products does not constitute endorsement or recommendation for use.

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, legally binding requirements take precedence.

Several chapters of this guidance document make suggestions and offer alternatives that go beyond the minimum requirements indicated by the rule. This is done to provide information and suggestions that could be helpful for implementation efforts. Such suggestions are prefaced by “may” or “should” and are to be considered advisory. They are not required elements of the rule.

EPA is subject to the Miscellaneous Receipt Act, 31 U.S.C. 3302, which requires EPA to deposit money it receives into the U.S. Treasury unless a federal statute authorizes EPA to retain the funds. Additionally, EPA must have statutory authorization to be the beneficiary of a trust or insurance policy. Because the SDWA does not authorize EPA to retain funds or be the beneficiary of a trust or insurance policy, this guidance provides that financial assurance will not provide funds to EPA or name EPA as the beneficiary of a trust or insurance policy.

EPA is taking an adaptive rulemaking approach to regulating Geologic Sequestration (GS), and EPA will continue to evaluate ongoing research and demonstration projects and gather other relevant information as needed to refine the rule. Consequently, this guidance is likely to change in the future. This is a living document and may be revised periodically without public notice.

For additional information contact: Joe Tiago, UIC Program, Drinking Water Protection Division, Office of Ground Water and Drinking Water (4606M), U.S. Environmental Protection Agency, 1200 Pennsylvania Avenue NW, Washington, D.C., 20460, Telephone: (202) 564-0340, Fax: (202) 564-3756, Email: tiago.joseph@epa.gov.

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Acronyms & Abbreviations

AoR	Area of Review
CE	Current Cost Estimate
CFO	Chief Financial Officer
CFR	Code of Federal Regulations
CO ₂	Carbon Dioxide
CV	Current Value (of trust fund or escrow account)
EPA	U.S. Environmental Protection Agency
FERC	Federal Energy Regulatory Commission
GAAP	Generally Accepted Accounting Principles
GS	Geologic Sequestration
NWC	Net Working Capital
RCRA	Resource Conservation and Recovery Act
SDWA	Safe Drinking Water Act
SEC	Securities and Exchange Commission
TNW	Tangible Net Worth
UIC	Underground Injection Control
USDWs	Underground Sources of Drinking Water
Y	Number of Years

Definitions

- *Director.* The person responsible for permitting, implementation, and compliance of the UIC Program. For UIC Programs administered by EPA, the Director is the EPA Regional Administrator; for UIC Programs in primacy states, the Director is the person responsible for permitting, implementation, and compliance of the state, Territorial, or Tribal UIC Program. The Director is responsible for approving the financial responsibility instrument and demonstration. This guidance aims to help Directors understand their role in complying with the required financial responsibility demonstration.
- *Owners or operators.* Owners or operators of injection wells that will be used to inject CO₂ into the subsurface for the purposes of GS. This includes owners or operators of CO₂ injection wells used for Class VI GS and owners or operators of existing CO₂ injection wells transitioning from Class I, II or V injection activities to Class VI GS. The rule requires the owner or operator to demonstrate and maintain financial responsibility and resources for corrective action, injection well plugging, post-injection site care and site closure, and emergency and remedial response.
- *Independent third-party providers.* An independent third party is a party who is not a parent, sibling, subsidiary, or any other company related to the owner or operator (i.e., no substantial business relationship with the owner or operator). In many cases, demonstrations of financial responsibility by an owner or operator will use an independent third party who holds funds or backs a liability. Independent third parties entering into a contractual relationship with an owner or operator have an interest in understanding the broader context within which the financial instrument is being used. Owners or operators will have to demonstrate that they have a contract with a qualified independent third-party provider and obtain the Director's approval.
- *General public.* The general public includes all individuals in the United States. The goal of requiring demonstrations of financial responsibility is to ensure that the costs associated with GS projects are ultimately not passed along to the general public.
- *Independent third-party instrument(s).* Independent third-party financial instruments are agreements that rely on an independent third-party's guarantee to hold funds, or directly fund or perform the financial responsibility activities. Banks, insurance companies, and surety companies are examples of independent third-party institutions that offer "cash holding" financial instruments such as trust funds and escrow accounts, as well as "risk management" financial instruments including surety bonds, insurance policies, and letters of credit. These instruments can be used by the owner or operator to demonstrate financial responsibility.
- *Self-insurance.* Self-insurance allows the owner or operator to submit financial statements and other information to prove that they are likely to remain in operation, based on indicators of the economic health of the organization, and that they will be able to complete all required GS activities. Self-insurance is only available if the owner or

operator meets specified criteria, including either a financial ratio or bond rating test. An owner or operator may demonstrate financial responsibility utilizing self-insurance.

1. Introduction

This guidance describes some of the types of financial instruments that owners or operators of Underground Injection Control (UIC) Class VI Geologic Sequestration (GS) wells can choose to demonstrate compliance with the financial responsibility requirements of the rule. The intended audience of this guidance is Directors, GS well owners or operators, independent third-party providers, and the general public.

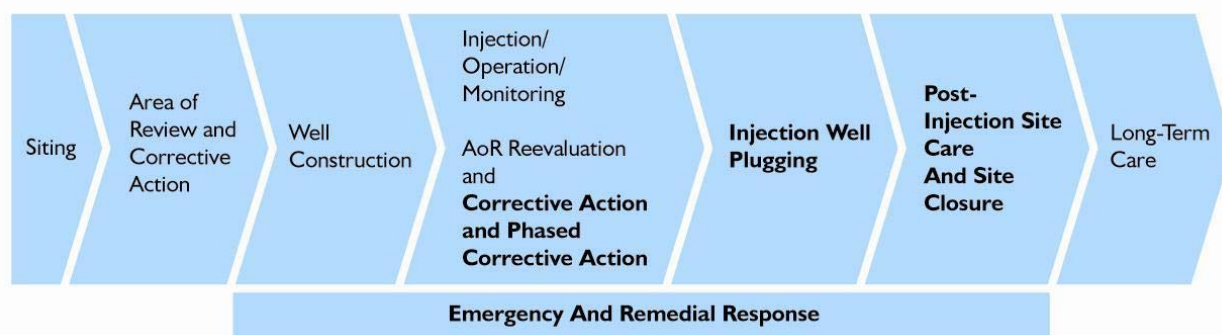
The U.S. Environmental Protection Agency (EPA) published federal regulations for Class VI wells that inject carbon dioxide (CO₂) underground for the purpose of GS on November 22, 2010. The Federal Register Notice for this rule is available at: http://water.epa.gov/type/groundwater/uic/wells_sequestration.cfm. Pursuant to 40 CFR 146.85(a), owners or operators of GS wells must demonstrate and maintain financial responsibility for corrective action on wells in the Area of Review (AoR), injection well plugging, post-injection site care and site closure, and emergency and remedial response phases. Financial responsibility requirements are designed to ensure that owners or operators have the resources to carry out activities related to closing and remediating GS sites if needed during injection or after wells are plugged, so that they do not endanger Underground Sources of Drinking Water (USDWs). The requirements will also help ensure that the costs from these GS project activities are not passed along to the public. Throughout this guidance document corrective action, plugging, post injection site care and site closure, and emergency and remedial response are collectively referred to as “financial responsibility activities” or “required GS activities.”

In the course of developing financial responsibility requirements and this guidance, EPA conducted research and analysis to inform the decision-making process. This information is published as “Research and Analysis in Support of UIC Class VI Program Financial Responsibility Requirements and Guidance” (EPA 816-R-10-017). Topics covered in the supporting document include: the information shared on financial instruments, additional research, analysis, and the rationale for selecting acceptable instruments for financial responsibility demonstrations; an analysis of options for the Director’s examination of third-party stability; rationale for the selection of self-insurance requirements; and an evaluation of the appropriate minimum tangible net worth for owners or operators.

Because of differences in the structure of the Class VI regulations, financial responsibility is required for more phases or activities than in other well classes of the UIC program. One additional activity is the financial responsibility required for post-injection site care. The rule describes specific conditions for financial responsibility while leaving significant areas and final decisions up to the Director’s discretion. The Director is expected to make binding decisions and can also specify additional requirements not included in this guidance to protect USDWs from being endangered.

The figure below shows the phases and major activities of a GS project. The activities for which financial responsibility must be demonstrated, under 40 CFR 146.85(a), are shown in bold. To comply with 40 CFR 146.85, owners or operators will need to demonstrate financial responsibility coverage for each of these activities at the time of permit application.

Figure 1: GS Project Activities



Please note that the timeframes in this exhibit are not to scale. Activities for which financial responsibility must be demonstrated are shown in **bold. Financial responsibility demonstrations will coincide with permitting (or revisions made after permitting), therefore Area of Review and Corrective Action prior to permitting (i.e., prior to well construction) are not activities for which financial responsibility must be demonstrated.*

Corrective action on wells in the AoR presents some uncertainty in terms of when it will occur and how much it will cost because it will depend on ongoing and subsequent AoR reevaluations. EPA anticipates that corrective action will most likely occur within a 20- to 30-year period. Injection well plugging occurs later in a GS project’s lifecycle, and EPA anticipates that it will take place over a period of weeks, not years. Post-injection site care and closure occurs last in the GS project’s lifecycle, lasting for at least 50 years unless an alternative timeframe has been approved by the Director, and site closure will occur at the Director’s discretion. Emergency and remedial response events are uncertain in terms of if and when these events will occur, but they have the potential to occur over the entire course of the GS project’s lifecycle.

Although financial responsibility is required for and occurs in different GS project activities over time, the owner or operator’s initial financial responsibility demonstration must cover all required GS activities. After the completion of specific activities, the owner or operator can request to be released from related aspects of financial coverage, but the owner or operator must retain coverage for all remaining activities.

It is important to note that EPA is pursuing an adaptive rulemaking approach to regulating GS. EPA plans to collect and review all project data on early GS projects, including financial responsibility instruments, to determine whether the appropriate amount and types of information and appropriate documentation were collected. Based on a review of the data, EPA plans to

GS Financial Responsibility Requirements in Context

Under the Safe Drinking Water Act (SDWA), the Underground Injection Control (UIC) Program requires the demonstration of “financial responsibility and resources to close, plug, and abandon the UIC operation” for *all well classes* as described at 40 CFR 144.28(d) and 144.52(a)(7)). To provide information and guidance on this general requirement for financial responsibility, EPA published in 1990 financial responsibility demonstration guidance for the owners or operators for Class II oil and gas wells (EPA 570/9-90-003).

Class I hazardous waste wells are uniquely regulated by both SDWA and the Resource Conservation and Recovery Act (RCRA). In contrast to the other UIC well classes, the information about options and the detailed requirements for owners or operators using those options are described by rule in 40 CFR 144.63.

The financial responsibility rule requirements for Class VI GS wells are more detailed than the general demonstration for well Classes II-V but less detailed than the Class I hazardous waste well requirements. This guidance compliments the GS rule requirements by providing general information on financial responsibility and recommendations from EPA.

publish a determination on whether additional requirements or guidance are needed to protect USDWs. This document provides guidance based on EPA's current understanding of the best approach.

This guidance document:

- Presents options for demonstrating financial responsibility;
- Provides an overview of coverage options, including the types of independent third-party instruments and self-insurance;
- Describes the different financial responsibility instruments that are available;
- Advises how to best match financial instruments to the specific GS project activities;
- Assists in explaining the submission requirements and procedures for the owner or operator; and
- Explains the ongoing finance-related responsibilities of the Director, the owner or operator, and the third parties involved in the GS project.

The appendices include:

- Regulatory Language for Financial Responsibility for Class VI GS Wells;
- Recommended Financial Responsibility Language for Class VI GS Wells;
- Methodology for Estimating Costs for Financial Responsibility Determinations for Class VI GS Wells; and
- Plugging and Abandonment Checklist for Financial Responsibility Cost Determination.

Finally, the Safe Drinking Water Act (SDWA) provisions and EPA regulations cited in this document contain legally-binding requirements. This document does not substitute for those provisions or regulations and does not impose legally-binding requirements on EPA, states, or the regulated community. EPA and authorized Directors retain the discretion to adopt approaches on a case-by-case basis that differ from this guidance where appropriate.

The Scope of the GS Financial Responsibility Requirements

Financial responsibility is not required for all potential geologic sequestration (GS) activities. Instead, under 40 CFR 146.85(a), owners or operators must demonstrate and maintain financial responsibility for the following GS activities: performing corrective action on wells in the Area of Review, injection well plugging, post-injection site care and site closure, and emergency and remedial response.

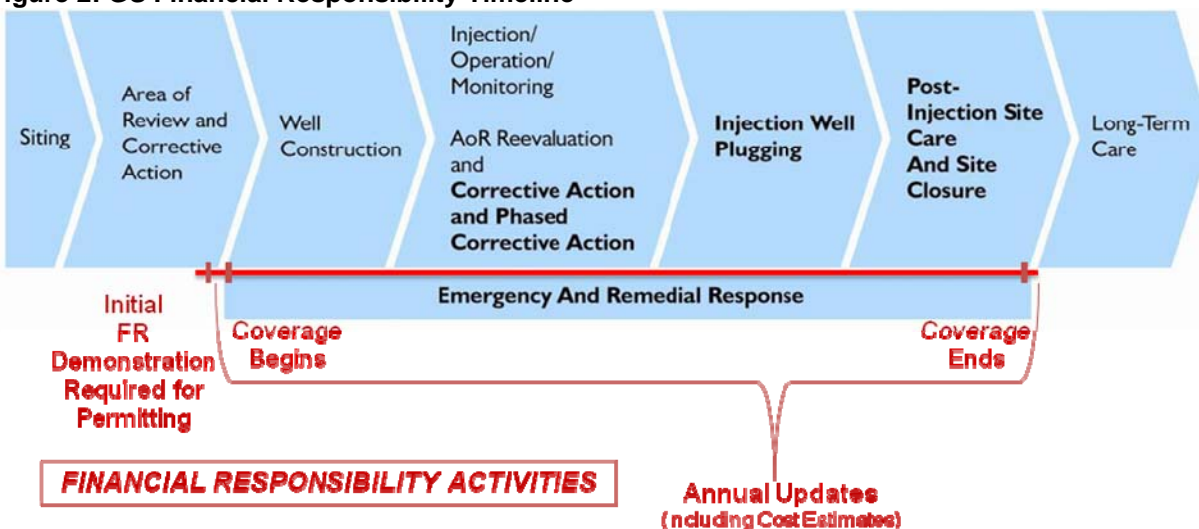
These activities are a subset of all potential activities that are likely to take place for a GS project. The purpose of the financial responsibility requirements is to ensure that owners or operators have the resources to carry out activities related to closing and remediating GS sites if needed during injection or after wells are plugged so that they do not endanger underground sources of drinking water (USDWs). The four GS activities requiring financial responsibility are the minimum activities EPA considered necessary to achieve this goal.

Although the owners or operators are not required to demonstrate financial responsibility after the post-injection site care period has ended, owners or operators are still financially liable for the site. Safe Drinking Water Act (SDWA) does not provide EPA with the authority to indefinitely release owners or operators from long-term responsibility for potential impacts to USDWs after the post-injection site care period has ended (e.g., for unanticipated migration that endangers a USDW). Under current SDWA provisions EPA does not have the authority to transfer liability from one entity to another.

2. Financial Responsibility Demonstrations

This chapter describes the methods owners or operators can elect to make financial responsibility demonstrations for GS wells. Under 40 CFR 146.85, the owner or operator must demonstrate that they have met the stated financial responsibility requirements before the Director can approve a permit for a Class VI well. 40 CFR 146.85(a) states that owners or operators must use a qualifying instrument sufficient to cover the cost of corrective action, injection well plugging, post-injection site care and site closure, and emergency and remedial response. See Figure 2 for a general GS financial responsibility timeline and Table 1 (next page) for the regulatory requirements as of November 22, 2010.

Figure 2: GS Financial Responsibility Timeline



Please note that the timeframes in this exhibit are not to scale. Activities for which financial responsibility must be demonstrated are shown in **bold. Financial responsibility demonstrations will coincide with permitting (or revisions made after permitting), therefore Area of Review and Corrective Action prior to permitting (i.e., prior to well construction) are not activities for which financial responsibility must be demonstrated.*

EPA recommends that the owner or operator consider the financial responsibility demonstration at the onset of the project – during siting and Area of Review. Concurrently, the owner or operator should consider estimating the costs of corrective action, injection well plugging, post-injection site care and site closure, and emergency and remedial response. The rule requires, at 40 CFR 146.85(a)(2), that the financial responsibility instrument(s) need to provide a dollar amount of coverage that is at least equal to the sum of the cost estimates for these activities. The Director can set additional requirements for the financial responsibility demonstration under 40 CFR 146.85. For example, the Director might require more stringent requirements for third-party providers or owners or operators utilizing self-insurance. See Chapter 3 “Introduction to Qualifying Financial Responsibility Instruments” and Chapter 5 “Conditions of Coverage and Specifications for Financial Responsibility Demonstrations” for additional details.

If the Director approves the initial financial responsibility demonstration, pursuant to 40 CFR 146.85(c)(2), the owner or operator must provide an annually updated cost estimate to the Director for an annual review of the adequacy of demonstration. This is not considered re-permitting. The Director has the discretion to revoke the permit on an annual basis, as a result of

the annual review, if the existing documentation is inadequate or the owner or operator cannot subsequently provide adequate demonstration. EPA recommends that financial responsibility demonstrations be updated with revised cost estimates over time to verify that project costs will fall within the coverage provided by the financial responsibility instruments. Under 40 CFR 144.85(b) the owner or operator must maintain coverage during the life of the project until the Director receives and approves the final post-injection site care and site closure plan and determines that the site has reached the end of the post-injection site care period. See Chapter 8 “Ongoing Responsibilities” for additional details.

Table 1: Owner or Operator Submission Requirements and Director Responsibilities as Specified by 40 CFR 146.85

Key: ● = Submission or review requirement <i>**Note that requirements and responsibilities are paraphrased for the purposes of this table**</i>	Owner or Operator Submission Requirements and Director Review Responsibilities	
	Initial Demonstration for Permitting (See Ch. 6)	Ongoing to Maintain Permit or for Site Closure (See Ch. 8)
(a) The owner or operator must demonstrate and maintain financial responsibility	●	
(a) (1) Financial responsibility instrument(s) must be from the list of qualifying instruments	●	
(a) (2) The qualifying instrument(s) must be sufficient to cover required activity costs	●	
(a) (3) The financial responsibility instrument(s) must be sufficient to address endangerment of USDWs	●	
(a) (4) The qualifying financial instrument(s) must comprise protective conditions of coverage	●	
(a) (5) The qualifying financial responsibility instrument(s) must be approved by the Director	●	
(a) (5) (i) The Director must consider and approve the financial responsibility demonstration for all phases	●	
(a) (5) (ii) The Director must evaluate the financial responsibility demonstration annually to confirm that the instrument(s) used remain adequate for use		●
(a) (5) (iii) The Director may disapprove a financial instrument if it is not sufficient to fulfill obligations	●	●
(a) (6) The owner or operator may use one or multiple qualifying financial instrument for specific project phases	●	
(a) (6) (i) Instruments based on performance cannot be combined	●	
(a) (6) (ii) Third-party providers must meet minimum requirements	●	
(a) (6) (iii) Standby trust funds must be established for select third party instruments	●	
(a) (6) (v) An owner or operator may use self-insurance if it meets minimum requirements	●	

Key: ● = Submission or review requirement <i>**Note that requirements and responsibilities are paraphrased for the purposes of this table**</i>	Owner or Operator Submission Requirements and Director Review Responsibilities	
	Initial Demonstration for Permitting (See Ch. 6)	Ongoing to Maintain Permit or for Site Closure (See Ch. 8)
(a) (6) (vi) A corporate parent may guarantee financial responsibility on behalf of the owner or operator	●	
(b) (1) The owner or operator must maintain financial responsibility and resources		●
(b) (2) The owner or operator may be released from a financial instrument in specific circumstances		●
(c) The owner or operator must have a detailed written estimate, in current dollars	●	●
(c) (1) The cost estimate must be performed for each phase separately and must be based on the costs to the owner or operator of hiring a third party	●	
(c) (2) During the active life of the GS project, the owner or operator must adjust the cost estimate for inflation		●
(c) (3) The Director must approve any decrease or increase to the initial cost estimate		●
(c) (4) Whenever the current cost estimate increases the owner or operator must either increase the face amount or obtain other financial responsibility instruments		●
(d) The owner or operator must notify the Director by certified mail of adverse financial conditions		●
(e) The owner or operator must provide an adjustment of the cost estimate to the Director within sixty days of notification by the Director		●
(f) The Director must approve the use and length of pay-in periods	●	

3. Introduction to Qualifying Financial Responsibility Instruments

It is recommended that an owner or operator first determine which financial coverage options they qualify for in order to make a financial responsibility demonstration. This chapter provides an overview of financial responsibility instruments that can be used as qualifying financial responsibility demonstrations for GS activities (see Figure 3). The intent of the instrument overviews is to provide general information on the functionality and defining characteristics of each instrument. Additional detailed information relating to each financial responsibility instrument is described in subsequent chapters. Specifically, standards for GS financial responsibility demonstrations using each instrument are described in Chapter 5 “Conditions of Coverage and Specifications for Financial Responsibility Demonstrations.”

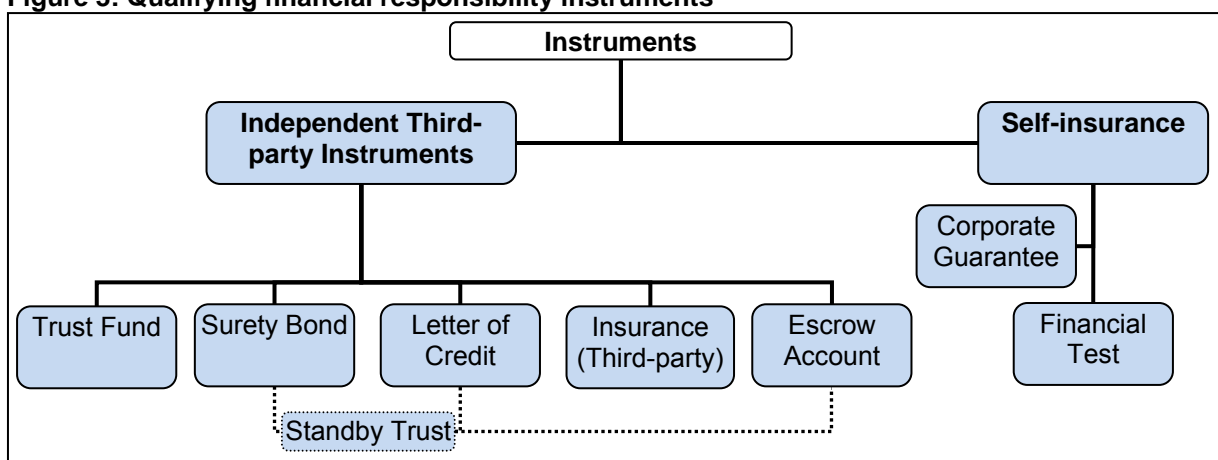
There are two broad categories of financial responsibility instruments: independent third-party instruments (i.e., financial instruments) and self-insurance (i.e., financial statements used to document financial ratios or bond ratings), as described below. Owners and operators can choose from various coverage options from the third-party instruments or elect to use self-insurance. However, some financial responsibility options might not be available or appropriate depending on the individual project.

- *Independent third-party instrument(s)*. Using a financial instrument to demonstrate financial responsibility is the simplest way to ensure that funds sufficient to cover the cost estimates for the GS activities are available. Financial instruments are agreements that rely on an independent third-party institution’s guarantee to hold funds, or directly fund or perform the financial responsibility activities. Banks, insurance companies, and surety companies are examples of independent third-party institutions that offer “cash holding” financial instruments such as trust funds and escrow accounts, as well as “risk management” financial instruments including surety bonds, insurance policies, and letters of credit. Insurance policies may be established both for certain activities (e.g., life insurance) and uncertain activities (e.g., automobile insurance). If the owner or operator submits an acceptable independent third-party financial instrument that meets or exceeds the cost estimate and receives the Director’s approval, then the owner or operator has adequately demonstrated financial responsibility coverage.
- *Self-insurance*. A second option, using self-insurance, is only available if the owner or operator meets specified criteria, including either a financial ratio or bond rating test. At the Director’s discretion, the owner or operator might be required to pass both the financial ratio and bond rating test. This financial responsibility demonstration generally allows the owner or operator to submit financial statements and other information to prove they are likely to remain in operation, based on indicators of the economic health of the organization, and they will be able to complete all required GS activities. Owners or operators can expect to provide documents such as annual financial statements that show profits and losses for the year, and statements verifying total net worth and net working capital. This information will be confirmed by an independent auditor, who will look for consistency between a letter from the Chief Financial Officer (CFO), annual reports and Security Exchange Commission (SEC) reports, irregularities in annual income from one year to the next, and the values for ratios of profit and loss. Financial

documents of the owner or operator that have already been audited can be used to supplement a financial test, including the SEC Form 10-K and the Federal Energy Regulatory Commission (FERC) Form 2.

Under 40 CFR 146.85(a) the owner or operator must submit the information necessary to demonstrate financial responsibility and receive and maintain a permit. Pursuant to 40 CFR 146.85(b) the owner or operator must also submit information to be released from financial responsibility requirements. For third-party instruments, if the owner or operator fails to complete the required activities and the Director subsequently calls on the instrument to cover the environmental liability, the instrument may be retired after the activity has been completed. In the case of owner or operator failure when self-insurance has been used, the Director does not have the option to draw upon a third-party instrument, thus resulting in instrument failure.

Figure 3: Qualifying financial responsibility instruments



* Dotted connection to standby trust from surety bond, letter of credit, and escrow account represents the need for a standby trust when EPA is the Director. If authorized by applicable law, a standby trust might not be needed when a state or tribe is the Director and is named as the beneficiary.

Trust fund

To demonstrate financial responsibility, owners or operators can establish an irrevocable trust fund. Trust funds serve as a repository for money set aside for a specific purpose. A trust fund is established at a bank or other financial institution that is a “neutral party” and is regularly examined and regulated by a federal or state entity. The trust is administered and, if necessary, managed by a trustee who is designated by the owner or operator establishing the trust. EPA recommends that the Director confirm that the independent third-party institution administering the trust has a proven track record of effectively managing trusts, using information provided during the demonstration review (e.g., list of past trusts managed of a similar size, revenue threshold, time in business). The trustee’s financial stability must be demonstrated to the Director by the owner or operator pursuant to 40 CFR 146.85.

In the financial responsibility demonstration, the owner or operator is required to deposit the required amount of money into the trust prior to permitting or may have the option to exercise a “pay-in period” specified by the Director.

EPA recommends that the trust fund agreements established by owners or operators describe the acceptable ways that the trustee can invest the fund and applicable legal principles, show proof that the trust was established at the direction of the owner or operator's board of directors or principal owners, and identify the conditions under which the Director can authorize payments to complete a required activity under the GS rule. EPA recommends that the agreements include the timeframe in which the trustee will submit statements of the value of the trust (at least annually) to the Director and the process of how to accept additional deposits or release funds with the Director's concurrence.

Subject to investment restrictions¹ set forth in the trust agreement, trust funds will likely yield interest over time. This accrued interest can be reinvested to cover increases in the cost of materials and labor for GS activities due to inflation. Otherwise, at the discretion of the Director, interest payments can be paid to the owner or operator if the amount held in the fund exceeds the cost estimates of the financial responsibility activities (assuming management fees due to the trustee have been paid). If the value of the trust falls below the cost estimate, the owner or operator will be required to deposit additional funds. Generally, the funds held in the trust can be released to the owner or operator when the owner or operator meets its financial obligations related to the GS activities or when the owner or operator submits an alternative financial responsibility demonstration that is approved by the Director. See Chapter 5 for "Conditions of Coverage and Specifications for Financial Responsibility Demonstrations."

Standby trust fund

A standby trust fund is not a stand-alone financial instrument that can be used by an owner or operator to demonstrate financial responsibility. A standby trust is different from a trust fund because the trust is unfunded (or in standby) until another financial instrument pays into it. When EPA acts as the Director, standby trust funds must be established when an owner or operator establishes a surety bond, letter of credit, or escrow account as part of a financial responsibility demonstration. EPA does not have express authority under SDWA to accept and use funds for financial assurance. Consequently, standby trust agreements cannot name EPA as a recipient of funds or a beneficiary. Therefore, EPA recommends that the standby trust agreements be written such that EPA, as the Director, has authority to notify the trustee of the need for payments from the fund to cover the costs of GS project activities covered under the agreement. However, when a state or tribe is the Director, financial responsibility instruments can name a state, tribal or local government as a recipient of funds or a beneficiary, if authorized by applicable law.

As a financial responsibility instrument, the standby trust allows the Director to request the use of funds guaranteed by other instruments. For example, when funds are collected from letters of credit and surety bonds, they are moved to the standby trust, where they can be withdrawn and allocated to an independent third party to cover the costs associated with financial responsibility activities. In the standby trust, "Schedule A" will specify the cost estimate for each permitted well or facility and "Schedule B" will define the initial property or money establishing the fund. See Chapter 5 for "Conditions of Coverage and Specifications for Financial Responsibility Demonstrations."

¹ Investment restrictions may include floors or caps on cash or the purchase of bonds or certain categories of stocks.

Surety bond

A surety bond is a guarantee by a surety or insurance company that includes specific obligations. There are two types of surety bonds: performance and financial guarantee. A performance bond guarantees the performance of the financial responsibility activities. For example, a performance bond might guarantee and finance the completion of the project or the plugging of the well. On the other hand, a financial guarantee bond ensures that the surety company will pay the amount of funds guaranteed by the bond. Both types of surety bonds require the establishment of a standby trust² to receive, on behalf of the Director, any money that the surety company is required to pay to an independent third party to cover the cost of financial responsibility activities.

In practice, if the owner or operator fails to meet its financial responsibility activities, the surety company will pay the amount of the surety bond into a standby trust, or perform the required activities. In turn, the trustee in charge of the standby trust will pay an independent third party to finalize the environmental obligations, at the discretion of the Director.

EPA recommends that surety bond agreements meet certain conditions. For example, the surety company should be tested and approved under the U.S. Department of the Treasury Circular 570. The surety's financial stability must be demonstrated to the Director by the owner or operator. Pursuant to 40 CFR 146.85 the bond should specify which well(s) it covers. If the owner or operator drills or acquires new wells, it should post a new bond or amend the existing demonstrations. Furthermore, the bond agreement should require that the bondholder provide the owner or operator and the Director with notice prior to cancelling the bond. EPA recommends that the agreement also include a provision that the surety company will pay the bond's face value if the owner or operator does not provide a substitute demonstration of financial responsibility to the Director in addition to paying the face value for the owner or operator's failure to perform.

Depending on the permit's scope, a surety bond can be secured for either a single well (i.e., single well bonding) or a multi-well facility (i.e., multiple well bonding). In the case of multiple wells, EPA recommends that the face value of the bond reflect the sum of the costs of all the wells. In the financial responsibility demonstration, the owner or operator might establish a surety bond to be used for the duration of the GS activities that it covers. The owner or operator should submit proof of the bond to the Director. Typically, the cost of the surety bond depends on the cost estimate for the activity (e.g., one well or multiple wells, varied GS phases) as well as the associated risk and the type of surety bond (performance or financial guarantee). The Director can require an increase or decrease in the required value of the surety bond, depending on changes in cost estimates. See Chapter 5 for "Conditions of Coverage and Specifications for Financial Responsibility Demonstrations."

² When a state or tribe is the Director the surety bond may name a state, tribal, or local government as a recipient of funds or a beneficiary, if authorized by applicable law. In this case a standby trust is not needed.

Letter of credit

A letter of credit guarantees that funds, up to a specified limit, will be available to a designated party under certain conditions. Generally, a letter of credit used as a GS financial responsibility instrument is issued by a bank or other financial institution to the owner or operator of a GS facility to cover the costs of the financial responsibility activities. The instrument is established for the life of the covered GS activity. If the owner or operator fails to fulfill financial responsibility activities backed by the letter of credit, the bank or financial institution must pay to meet the obligation. When an EPA Region is the Director, the instrument must use a standby trust³ to facilitate the transfer of funds to complete the activity.

EPA recommends that if an owner or operator chooses to use a letter of credit to demonstrate financial responsibility under 40 CFR 146.85, the letter of credit should be issued by a bank or other institution whose operations are regulated and examined by a federal or state agency. The issuing institution's financial stability must be demonstrated to the Director by the owner or operator. Additionally, EPA recommends that the letter of credit require the issuing institution to provide the owner or operator and the Director with notice if it does not plan to reissue the letter of credit. If the owner or operator fails to provide a substitute financial responsibility instrument the beneficiary can draw on the letter of credit. EPA recommends that the letter of credit include a provision for its automatic renewal; specifically, the agreement should specify that the letter of credit be cancelled only if the Director has consented in writing.

The overhead cost of a letter of credit depends on the cost estimate for an activity (e.g., one well or multiple wells, varied GS activities) and the associated risk. The Director can choose to increase or decrease the value of the letter of credit to reflect changes in cost estimates. See Chapter 5 for "Conditions of Coverage and Specifications for Financial Responsibility Demonstrations."

Independent third-party insurance

As a GS financial responsibility instrument, independent third-party insurance is a contract between the insurer (typically an insurance company) and the insured (the GS well owner or operator) written in the form of an insurance policy (either for certain activities or risk management for uncertain activities) to cover specified events for the duration of the covered activity. Independent third-party insurance demonstrations generally require that there is no ownership relation between the insurance company and the insured party. However, EPA considers mutual insurance companies, for the purpose of financial responsibility demonstrations, to be third-party providers. A mutual insurance company is formed and owned entirely by its policyholders, to cover specific events or risks. Pursuant to 40 CFR 146.85 the third-party insurer's financial stability must be demonstrated to the Director by the owner or operator.

³ When a state or tribe is the Director the letter of credit may name a state, tribal, or local government as a recipient of funds or a beneficiary, if authorized by applicable law. In this case a standby trust is not needed.

To make the financial demonstration, the owner or operator secures an insurance policy with a face value equal to the cost estimate for the GS activity and pays the premium annually or monthly. The owner or operator might be required by the Director to submit a certificate of insurance that identifies information about the policy including the name of the insured, the insurer, the facility covered, as well as a statement that says the insurer is providing financial assurance for the insured. EPA recommends that the policy state that it conforms in all respects with the requirements for the fulfillment of financial responsibility activities described in the rule. Generally, if a covered incident occurs, the insurance company directly pays the expenses related to the financial responsibility activities or reimburses the insured party for those expenses, at the discretion of the Director.

The cost of an insurance policy will vary depending on the insurance company's evaluation of the risks involved with the operations. The terms of the insurance policy can vary among, and even within, states. EPA cannot be the beneficiary of the insurance policy. See Chapter 5 for "Conditions of Coverage and Specifications for Financial Responsibility Demonstrations."

Captive Insurance

Captive insurance is not considered a stand-alone financial responsibility instrument. Captive insurance is where an insurance company is established in order to insure its own parent company or the clients of a parent company in a financial responsibility demonstration. Because this insurance arrangement is a form of self-insurance, EPA would require that the owner or operator pass the financial test described under self-insurance. Therefore, the owner or operator is effectively meeting financial responsibility requirements through self-insurance. Captive insurance can be used by the owner or operator but it would be outside the purview of the financial responsibility demonstration. See Chapter 5 for "Conditions of Coverage and Specifications for Financial Responsibility Demonstrations." Captive insurance can be considered a mechanism for firms utilizing self-insurance to secure against the financial risks of geologic sequestration.

Escrow account

An escrow account sets aside funds to be used for an explicit purpose and can be used to deliver funds from one party to another. An owner or operator can establish an escrow account in a financial responsibility demonstration to cover the cost estimate for financial responsibility activities. Although escrow accounts have not been used in the federal UIC program, they are functionally equivalent to a trust fund, and may be more accessible and have a lower overhead cost; however, they tend to yield lower interest as highly liquid instruments.

In a financial responsibility demonstration under 40 CFR 146.85, the owner or operator deposits the required amount of funds into the escrow account prior to the issuance of the permit or during the "pay-in-period." It is recommended that the escrow agreement describe the acceptable ways that the escrow agent can invest the fund, show proof that the account was established at the direction of the owner or operator's board of directors or principal owners, and identify the conditions under which the escrow agent will release funds to fulfill required GS activities. EPA recommends that the agreement also stipulate that the escrow agent submit statements with the value of the escrow account (at least annually) to the Director, invest the trust according to the guidance provided in the agreement and applicable legal principles, and accept additional

deposits or release funds with the concurrence of the Director. Pursuant to 40 CFR 146.85 the escrow agent's financial stability must be demonstrated to the Director by the owner or operator.

Once the required GS activities are complete, the funds held in escrow can be returned to the owner or operator. If the obligations are not met, the funds will be paid to a standby trust for an independent third party to fulfill the obligations, at the discretion of the Director.

Escrow accounts may yield some (minimal) interest over time. The accrued interest can be reinvested to cover increases in the cost of materials and labor for GS activities resulting from inflation. Otherwise, at the discretion of the Director, interest payments can be paid to the owner or operator if the account balance exceeds the cost estimate for financial responsibility activities. If the value of the account falls below the cost estimate, the owner or operator will be required to deposit additional funds. The funds held in escrow can be released to the owner or operator if the owner or operator completes required GS activities or submits an alternative financial responsibility demonstration that is approved by the Director. It is recommended that there be no restrictions placed on the time of withdrawal. See Chapter 5 for "Conditions of Coverage and Specifications for Financial Responsibility Demonstrations."

Self-insurance

Unlike independent third-party instruments, financial responsibility demonstrations with self-insurance involve only the owner or operator (and their parent company, in the case of a corporate guarantee). A two-step process for demonstrating financial responsibility with self-insurance is required. First, the owner or operator provides the pre-specified "financial coverage criteria" to qualify for the test. Then, the owner or operator passes one of two financial tests. At the Director's discretion, the owner or operator can be required to pass both the financial ratio and bond rating tests. See Chapter 5 for "Conditions of Coverage and Specifications for Financial Responsibility Demonstrations."

Financial coverage criteria

To qualify for the financial test, minimum financial coverage criteria must be met, pursuant to 40 CFR 146.85. The required thresholds for Net Working Capital (NWC) and Total Assets and the recommended threshold for Tangible Net Worth (TNW) are presented in the table below.

Table 2: Definitions of financial coverage criteria

Financial Indicators	Description	Requirement at 40 CFR 146.85(a)(6)(v)
Net Working Capital (NWC)	Measures short-term financial health. Defined as current assets minus current liabilities.	NWC must be at least six times the sum of the current cost estimates for all required GS activities.
Total Assets	Combined value of economic resources and all items of monetary value owned by a firm.	Assets in the United States must amount to at least 90 percent of total assets, <i>or</i> at least six times the sum of the current cost estimates for all required GS activities.
Tangible Net Worth (TNW)	Measures the value of a company that is liquefiable, i.e., total assets (not including intangible assets) minus liabilities.	Recommended Threshold
		Although the rule doesn't require a minimum TNW amount for GS projects, based on recent evaluation EPA recommends a TNW of at least \$100 million, <i>and</i> at least six times the sum of the current cost estimates for all required GS activities.

Based on the established criteria, the Director has the discretion to decide whether to allow an owner or operator to complete a financial demonstration using a corporate financial test. As discussed below, EPA suggests two types of corporate financial tests: bond rating and financial ratio. In principle, this process confirms that the company presents a low risk because it is profitable, not overly leveraged, and has sufficient liquidity.

EPA recommends that the materials for a financial test be submitted by a trusted authority (e.g., an independent auditor). The financial test should be accompanied by a letter from the owner or operator's CFO, a full auditor's opinion from an independent certified public accountant (CPA), and an independently audited financial statement. The auditor's opinion should state that the data submitted is of the most recent year and that the auditor followed Generally Accepted Accounting Principles (GAAP).

Tangible Net Worth (TNW) as a Coverage Criterion

TNW is an indicator of the owner or operator's size. Generally, larger well-capitalized firms tend to fail (i.e., enter bankruptcy) at a lower rate than smaller firms. In the case of self-insurance, when the owner or operator fails the financial responsibility demonstration fails because there is no third-party (for third-party financial responsibility demonstrations to fail both the owner or operator and the third-party need to fail). To minimize the risk of self-insurance failure, EPA recommends that TNW be at least \$100 million, and at least six times the sum of the current cost estimate for all secured financial responsibility activities. The recommendation of \$100 million is estimated to be the minimum TNW required to make self-insurance no more likely to fail than a demonstration utilizing a third-party and a high-risk owner or operator. This recommendation is based on an analysis of the failure rates of firms likely to participate in geologic sequestration (GS) and firms likely to act as third-parties.

Bond rating test

At the discretion of the Director, an owner or operator can submit the most recent investment grade rating of bonds used to raise capital for the initial demonstration of financial responsibility, as well as any information on downgrades of the bonds following the initial demonstration. Pursuant to 40 CFR 146.85 the rating submitted must be issued by one or both of the nationally recognized bond rating agencies: Standard & Poor's and Moody's. For an owner or operator to pass the financial test the bond's rating must be one of the four highest categories: AAA, AA, A, or BBB for Standard & Poor's; or Aaa, Aa, A, or Baa for Moody's. The owner or operator should also submit an annual report of its bond rating.

Financial ratio test

At the discretion of the Director, an owner or operator can submit financial information, including data on the company's assets, liabilities, cash return and depletion, worth, and profit to demonstrate financial responsibility. Pursuant to 40 CFR 146.85 for the financial ratio test, the financial indicators must be compared and ratios calculated, as presented in the table below.

Table 3: List of financial ratios and thresholds specified at 40 CFR 146.85(a)(6)(v)

Type of Ratio		
Debt-Equity	$\frac{\text{Total Liabilities}}{\text{Net Worth}}$	< 2.0
Assets-Liabilities	$\frac{\text{Current Assets}}{\text{Current Liabilities}}$	> 1.5
Cash Return on Liabilities	$\frac{(\text{Net Income} + \text{Depreciation} + \text{Depletion} + \text{Amortization})}{\text{Total Liabilities}}$	> 0.10
Liquidity	$\frac{(\text{Current Assets} - \text{Current Liabilities})}{\text{Total Assets}}$	> -0.10
Net Profit	Net Profit	> 0

The ratios must exceed the minimum thresholds presented in the table. For additional details, see Chapter 5 "Conditions of Coverage and Specifications for Financial Responsibility Demonstrations."

Corporate guarantee

In a corporate guarantee financial responsibility demonstration, the financial test is generally met by the owner's or operator's parent company. If necessary, a corporate subsidiary can submit its parent company's financial statement if the parent offers a corporate guarantee to pay for the subsidiary's financial responsibility activities. The Director can allow the corporate guarantee if it is issued by a parent corporation that owns at least 50 percent of the subsidiary's voting stock, and has been in business for at least 5 years. For the financial responsibility demonstration, EPA expects the parent company to provide a specific written guarantee made by a corporate officer authorized to legally bind the parent company that meets the self-insurance requirements. The written guarantee should explicitly state that the corporation will continue to honor the guarantee regardless of any ownership restructuring (e.g., sale of the owner or operator as an independent company). Beside the parent company, EPA recommends that any other company with a

substantial business interest in the owner or operator firm should not provide a corporate guarantee. EPA recommends that if a joint-ownership venture is formed among multiple firms or owners or operators, the financial responsibility demonstration and financial guarantee should be made by one party as the primary parent.

Appropriate Use of Captive Insurance

Although captive insurance is not considered a stand-alone financial responsibility instrument it may be effectively used by firms utilizing self-insurance to secure against the financial risks of geologic sequestration. Captive insurance is where an insurance company is established or utilized to insure against the risks emanating from the owner or operator. Compared to utilizing a third-party insurer, by utilizing a captive insurer the owner or operator may retain greater control over the details of the insurance policy at a lower cost. Captive insurers may reinsure their activities to balance insurance risk with credit risk.

4. Matching Financial Instruments to Meet the Specific Needs of a GS Project

This chapter describes the strengths and weaknesses of various financial instruments, including recommendations for using the instruments to demonstrate financial responsibility for various GS activities. The information provided in this chapter is informed by: the perspectives and recommendations of the EPA Office of Inspector General,⁴ the U.S. Government Accountability Office,⁵ and the Environmental Financial Advisory Board;⁶ comments to the proposed rule; public financial responsibility webcasts held in spring 2009;⁷ and publicly available literature, including peer-reviewed journal articles and government and non-government reports.

Minimizing costs

The costs that owners or operators will incur to obtain financial assurance will vary by instrument type. All independent third-party instruments should require the owner or operator to fully pay all upfront costs needed to secure the instrument (e.g., funding the trust, provide collateral, etc.). Independent third-party instruments might also require additional periodic payments or fees to maintain the instruments. These overhead costs, including legal, opportunity, and liability costs, are likely to vary by institution, by amount of coverage, and by the level of investment activity for instruments such as trust funds and escrow accounts. The total cost of trust funds and escrow accounts will also include the total cost estimate of the GS activity.⁸ Letters of credit can require cash or hard asset collateral in addition to the premium.

The overhead costs of securing and maintaining self-insurance will generally be less than the overhead costs of independent third-party instruments. Overhead costs for self-insurance include the expenses incurred for submitting documentation for financial tests or corporate guarantees and for demonstrating continued financial health over time. However, the voluntary use of risk management instruments (e.g., captive insurance) by self-insurers to manage the financial risk associated with financial responsibility activities can increase the cost of capital. Because the use of risk management instruments is not required for self-insurers, it is possible that some self-insurers will forgo the use of risk management instruments for part or all of costs estimated for financial responsibility activities.

⁴ EPA OIG. 2005. Continued EPA Leadership Will Support State Needs for Information and Guidance of RCRA Financial Assurance (<http://www.epa.gov/oig/reports/2005/20050926-2005-P-00026.pdf>).

⁵ U.S. GAO. 2005. Environmental Liabilities (<http://www.gao.gov/new.items/d05658.pdf>).

⁶ Report on Financial Assurance. EFAB. March 2010.

(<http://www.epa.gov/efinpage/publications/FinancialAssuranceUndergroundCarbonSequestrationMarch2010.pdf>).

⁷ EPA. 2009. Webcasts on Financial Responsibility Instruments for Geologic Sequestration (GS) Wells. EPA 815-D-09-001. (http://www.epa.gov/safewater/uic/pdfs/meetings_uic_summarywebinars_financial_responsibility.pdf).

⁸ Because the costs of the activity are directly paid for by trust funds and escrow accounts, or the owner or operator is reimbursed, estimated costs are paid (i.e., set aside) upfront. However, when demonstrations are made with surety bonds and letters of credit, the owner or operator pays the activity costs in addition to overhead costs, and the secured financial responsibility instrument is only used in the event that the owner or operator cannot complete the activity.

Maximizing instrument benefits

The appropriateness of various financial instruments depends on the characteristics of the instruments and the covered GS project activities. Some instruments are better suited for certain GS activities than others. Therefore, benefits of the instruments can be maximized by effectively matching them with specific GS project activities. In general, the GS activities requiring financial responsibility demonstrations can be characterized as either relatively well-defined in terms of when they will occur and how much they will cost, or uncertain in terms of when (and if) they will occur and how much they will cost. The following descriptions characterize GS activities in terms of certainty and sequencing.

- *Corrective action* on wells in the AoR, described at 40 CFR 146.84, presents some uncertainty in terms of when it will occur and how much it will cost. It is anticipated that corrective action will occur over a period of decades. For additional information on AoR, see the guidance document “Geologic Sequestration of Carbon Dioxide: Draft Underground Injection Control (UIC) Class VI Well Area of Review Evaluation and Corrective Action Guidance for Owners and Operators” (EPA 816-D-10-007).
- *Injection well plugging*, described at 40 CFR 146.92, is relatively well defined in terms of when it will occur and how much it will cost. It is anticipated that plugging a well will take place over a period of weeks, not years.
- *Post-injection site care and site closure*, described at 40 CFR 146.93, is relatively well defined in terms of when it will occur and how much it will cost. It is anticipated that post-injection site care period will occur over a period of decades and site closure will occur at the Director’s discretion.
- *Emergency and remedial response* activities, described at 40 CFR 146.94, are relatively uncertain in terms of when (and if) they will occur and how much they will cost. In addition, the period during which emergency and remedial response can occur is the longest.

The table below identifies the instruments EPA recommends for GS activities requiring financial responsibility demonstrations based on the potential for instrument success or failure, and resource implications for owners or operators and Directors.

Table 4: Instruments best suited for GS activities (relative ranking)

Corrective Action	Injection Well Plugging	Post-injection Site Care and Site Closure	Emergency and Remedial Response
<ol style="list-style-type: none"> 1. Trust Fund 2. Letter of Credit 3. Surety Bond 4. Escrow Account 5. Financial Test and Corporate Guarantee* 	<ol style="list-style-type: none"> 1. Trust Fund 2. Letter of Credit 3. Surety Bond 4. Insurance 5. Financial Test and Corporate Guarantee* 	<ol style="list-style-type: none"> 1. Trust Fund 2. Insurance 3. Financial Test and Corporate Guarantee* 	<ol style="list-style-type: none"> 1. Insurance 2. Letter of Credit** 3. Surety Bond** 4. Financial Test and Corporate Guarantee*

*Financial tests and corporate guarantees present the lowest direct costs to owners or operators, but the highest risk to the public.

**Letters of credit and surety bonds are likely most appropriate for emergency and remedial response during operation phases.

The relative strengths and weaknesses associated with each instrument are as follows.

- *Trust Funds.* Trust funds are best suited for corrective action, injection well plugging, and post-injection site care and site closure demonstrations because these activities are relatively certain in terms of occurrence and cost. A fully funded independent third-party trust represents the lowest risk to the public of paying for these activities. Although the cost of the instrument is essentially the full cost of the activity, generally the owner or operator recovers this cost (in the form of reimbursement) following the completion of the activity. For activities of uncertain frequency and cost, such as emergency and remedial responses, the trust will likely not have the right amount of funds—too little is a partial failure of the instrument and too much represents an inefficient use of funds that unnecessarily raises GS costs.
- *Letters of Credit.* Letters of credit are best suited for corrective action and injection well plugging demonstrations because they generally perform equally well for certain and uncertain environmental activities, as long as the credit limits are not exceeded. The cost to the owner or operator is a function of the credit limit, the financial health of the owner or operator, and the risks faced by the owner or operator. For activities that continue over the long term (i.e., post-injection site care, site closure, and emergency and remedial responses), letters of credit might be unreliable because there are more opportunities for the independent third party to cancel the line of credit. Moreover, they have likely been used on a limited basis over longer time periods (i.e., greater than 20 years), making their long-term reliability uncertain. Therefore, letters of credit might not be effective for post-injection site care and site closure.
- *Surety Bonds.* Surety bonds are best suited for injection well plugging and are good for corrective action demonstrations because they generally perform equally well for certain and uncertain environmental activities—as long as the limits of the bond are not exceeded. Surety providers might not underwrite bonds over longer time periods where there is considerable uncertainty. Hence, surety bonds might not be available for activities that continue over the long term (i.e., post-injection site care and site closure, and emergency and remedial responses).

- *Insurance.* Insurance policies are best suited for uncertain events such as emergency and remedial response demonstrations. However, certain policies may also be useful for certain events. Insurance is the ideal instrument for diversifying environmental risk and handling the numerous possible scenarios associated with emergency and remedial responses.⁹ For well-defined activities such as well plugging, post-injection site care and site closure, insurance might be less attractive to insurers because there is no diversifiable environmental risk. For these certain activities, effective policies may take the form of an annuity or an assurance contract.
- *Escrow Account.* Escrow accounts are best suited for corrective action demonstrations because they generally have lower set-up costs than trust funds. Funds are kept in a highly liquid form (a simple interest-bearing account such as a savings or money market account at a bank), which limits risk and administrative costs, but causes escrow accounts to generate minimal interest. In the case of GS, where the relative time horizon is measured in decades, a trust fund's investment strategy is likely to outperform an escrow account in terms of accrued interest. As a result, an escrow account can generate greater costs associated with lost investment income, which suggests little benefit to using an escrow account instead of a trust fund. Therefore, escrow accounts are likely to be best utilized for the shortest term activities, such as phased corrective action, or for serving as a temporary account.
- *Financial Tests and Corporate Guarantees.* Financial tests and corporate guarantees are useful for all activities. Self-insurance is beneficial for owners or operators because it is likely to have the lowest overhead cost, but it represents the highest financial risk to the public. However, the Director may consider the added risk to the public worthwhile to facilitate the realization of broader anticipated public benefits from GS beyond those considered in the GS rule (i.e., climate change mitigation, economic development).

Pay-in period

A fully funded trust fund or escrow account minimizes the risk of instrument failure. While longer pay-in periods reduce the up-front financial burden for the owner or operator, longer pay-in periods also increase the risk that the instrument will fail if the owner or operator cannot meet its obligations. Under 40 CFR 146.85(f) the Director must approve the use and length of pay-in periods. EPA recommends that payments into a trust fund or escrow account be made over three years from the time of the initial permit or as determined by the Director. The Director can determine that a pay-in period is not desirable and that the trust fund or escrow account be fully funded at its inception.

At the Director's discretion, the permit might be revoked if the owner or operator does not meet the pay-in period schedule agreed upon.

⁹ Captive insurance, where the insurer is the parent or sibling firm of an owner or operator, inherits the risks of self-insurance because the insurance company is not owned by an independent third party.

5. Conditions of Coverage and Specifications for Financial Responsibility Demonstrations

This chapter describes the minimum conditions assuring that financial responsibility demonstrations will provide coverage for the complete duration of required GS activities. This chapter also provides specifications that owners or operators can consider when choosing a qualifying financial responsibility instrument. Both legal requirements and recommendations are provided in this chapter. EPA recommends that these conditions of coverage and specifications be discussed with the CFO of the owner or operator and with the various providers of financial instruments such as banks and surety companies, as appropriate. Sub-headings of letters and numbers are used to facilitate references within the chapter.

The owner or operator of each facility must establish financial assurance for each existing and new GS well under 40 CFR 146.85. When a state or tribe is the Director, if authorized by applicable law, the surety bond, letter of credit, or escrow account can name a state, tribal, or local government as a recipient of funds or a beneficiary and a standby trust is not needed.

Required Coverage Conditions for Instruments

Under 40 CFR 146.85(a) the Director must ensure that coverage satisfies rule requirements. The qualifying financial responsibility instrument(s) must comprise conditions of coverage under 40 CFR 146.85(a)(4)(i). Conditions include: cancellation provisions, renewal, continuation provisions, requirements for the provider to meet a minimum rating, minimum capitalization, and ability to pass the bond rating when applicable. The instruments must also specify when the provider becomes liable following a notice of cancellation if there is a failure to renew with a new qualifying financial instrument.

Cancellation coverage conditions are specified at 40 CFR 146.85(a)(4)(i)(A). To guarantee financial responsibility instrument coverage, an owner or operator must provide that their financial instrument may not cancel, terminate, or fail to renew except for failure to pay instrument overhead costs. If there is a failure to pay the financial instrument, the third party financial institution may elect to cancel, terminate, or fail to renew the instrument by sending notice by certified mail to the owner or operator and the Director. However, the cancellation must not be final until 120 days after receipt of cancellation notice. Within the 120 days, the owner or operator must provide an alternate financial responsibility demonstration within 60 days of notice of cancellation, and if an alternate financial responsibility demonstration is not acceptable (or possible), any funds from the instrument being cancelled should be released within 60 days of notification by the Director to complete required GS activities.

Renewal requirements to ensure coverage are specified at 40 CFR 146.85(a)(4)(i)(B). To guarantee financial responsibility instrument coverage, an owner or operator must renew all financial instruments, if an instrument expires, for the entire term of the GS project. The instrument may be automatically renewed as long as the owner or operator has the option of renewal at the face amount of the expiring instrument. Pursuant to 40 CFR 146.85 the automatic renewal of the instrument must, at a minimum, provide the holder with the option of renewal at the face amount of the expiring financial instrument.

Other continuation provisions under 40 CFR 146.85(a)(4)(i)(C) specify that the financial instrument(s) will remain in full force and effect so that required GS activities can be completed in the event that on or before the date of expiration the following circumstances arise:

- The Director deems the facility abandoned;
- The permit is terminated or revoked or a new permit is denied;
- Closure is ordered by the Director or a U.S. district court or other court of competent jurisdiction;
- The owner or operator is named as debtor in a voluntary or involuntary proceeding under Title 11 (Bankruptcy) of the U.S. Code; or
- The amount due is paid.

Under 40 CFR 146.85(b)(1) the owner or operator must maintain financial responsibility and resources until the Director receives and approves the completed post-injection site care and site closure plan, and approves site closure. Prior to the approval of site closure, the owner or operator may be released from a financial instrument, under 40 CFR 146.85(b)(2)(i), if the owner or operator has completed the phase of the GS project for which the financial instrument was required and has fulfilled all its financial obligations as determined by the Director, including obtaining financial responsibility for the next phase of the GS project, if required. As specified at 40 CFR 146.85(b)(2)(ii), the owner or operator can cancel the financial instrument if the Director has given prior written consent to substitute alternate financial assurance.

The remaining Sections A through F of this chapter provide required or recommended specifications for financial responsibility instruments available for owners or operators to choose from when establishing financial assurance.

A. Trust fund

Required Specifications

(1) Under 40 CFR 146.85(a)(6)(ii), the owner or operator must provide proof that the trustee either:

- (i) has passed financial strength requirements based on credit ratings, or
- (ii) has met a minimum rating, minimum capitalization, and ability to pass the bond rating when applicable.

(2) Under 40 CFR 146.85(f), the Director must approve the use and length of pay-in-periods for trust funds.

Recommended Specifications

(3) The owner or operator should submit an originally signed duplicate of the trust agreement to the Director. EPA recommends that the owner or operator of a Class VI GS well submit the originally signed duplicate of the trust agreement to the Director with the permit application. The trustee should be an entity that has the authority to act as a trustee and whose trust operations are regulated and examined by a federal or state agency.

(4) EPA recommends that the wording of the trust agreement conform to the wording provided in Appendix B, and the trust agreement should be accompanied by a formal certification of acknowledgment (for an example of a certification of acknowledgement, see Appendix B). Schedule A of the trust agreement must be updated within 60 days after a change in the amount of the current cost estimate covered by the agreement.

(5) EPA recommends that payments into the trust funds be made annually by the owner or operator over a three-year period or over a period determined by the Director; this period is hereafter referred to as the “pay-in period.” The payments into the trust fund could be made as follows:

(i) For a new well, EPA requires that the first payment be made before the initial injection of CO₂. A receipt from the trustee for this payment should be submitted by the owner or operator to the Director before the initial injection of CO₂. The first payment should be at least equal to the current cost estimate unless a pay-in period has been approved by the Director, in which case the cost estimate should be divided by the number of years in the pay-in period. Subsequent payments should be made no later than 30 days after each anniversary date of the first payment. For a three year pay-in period, payments should be made in three equal installments. For pay-in periods determined by the Director to be longer or shorter than three years, the amount of each subsequent payment should be determined by this formula:

$$NextPayment = \frac{CE - CV}{Y}$$

where CE is the current cost estimate, CV is the current value of the trust fund, and Y is the number of years remaining in the pay-in period.

(ii) If an owner or operator establishes a trust fund as specified in Section A: “Trust Fund” of this chapter, and the value of that trust fund is less than the current cost estimate when a permit is awarded for the injection well, the amount of the current cost estimate still to be paid into the trust fund should be paid in full, or over the pay-in period approved by the Director. Payments should continue to be made no later than 30 days after each anniversary date of the first payment. For a three year pay-in period, payments should be made in three equal installments. For pay-in periods determined by the Director to be longer or shorter than three years, the amount of each payment should be determined by this formula:

$$NextPayment = \frac{CE - CV}{Y}$$

where CE is the current cost estimate, CV is the current value of the trust fund, and Y is the number of years remaining in the pay-in period.

(6) The owner or operator can deposit the full amount of the current cost estimate at the time the fund is established or, if a pay-in period is approved by the Director, the owner or operator can accelerate payments into the trust fund. However, EPA recommends that the owner or operator maintain the value of the fund at no less than the value that the fund would have if annual payments were made as specified in paragraph (a)(5) of this section.

(7) EPA recommends that if the owner or operator establishes a trust fund after having used one or more alternate instruments specified in this chapter, the owner or operator's first payment should be at least equal to the amount that the fund would contain if the trust fund were established initially and annual payments had been made.

(8) EPA recommends that if an owner or operator substitutes other financial assurance as specified in this section for all or part of the trust fund, the owner or operator can submit a written request to the Director for release of the amount in excess of the current cost estimate covered by the trust fund.

(9) EPA recommends that after completing required GS activities, an owner or operator or any other person authorized to perform the activities can request reimbursement for expenditures by submitting itemized bills to the Director. Within 60 days after receiving bills for activities, the Director should determine whether the expenditures are in accordance with the plan or otherwise justified, and if so, the Director should instruct the trustee to make reimbursement in the amounts that the Director specifies in writing. If the Director determines that the cost of covered GS activities will be significantly greater than the value of the trust fund, the Director can withhold reimbursement of such amounts as the Director deems prudent until the Director determines (in accordance with Section J. "Release of the owner or operator from the requirements of 40 CFR 146.85") that the owner or operator is no longer required to maintain financial assurance for the GS activity(ies).

(10) The Director can agree to termination of the trust when the Director releases the owner or operator from the recommendations in this section in accordance with Section J. "Release of the owner or operator from the requirements of 40 CFR 146.85."

B. Surety bond guaranteeing payment into a trust fund

Required Specifications

(1) Under 40 CFR 146.85(a)(6)(ii), the owner or operator must provide proof that the surety either:

- (i) has passed financial strength requirements based on credit ratings, or
- (ii) has met a minimum rating, minimum capitalization, and ability to pass the bond rating when applicable.

(2) Under 40 CFR 146.85(a)(6)(iii), the owner or operator must establish a standby trust to enable EPA to be party to the financial responsibility agreement without EPA being the beneficiary of any funds.

(3) As specified at 40 CFR 146.85(a)(2), the penal sum of the bond must be an amount at least equal to the current cost estimate, except as provided in Section H. “Use of multiple financial instruments.”

Recommended Specifications

(4) The owner or operator should submit the surety bond to the Director with the application for a permit. EPA recommends that the bond be effective before the initial injection of CO₂. The issuing surety company should be among those listed as acceptable sureties on federal bonds in Circular 570 of the U.S. Department of the Treasury.

(5) EPA recommends that the wording of the surety bond conform to the wording provided in Appendix B.

(6) EPA recommends that under the terms of the bond, all payments should be deposited by the surety directly into the standby trust fund in accordance with instructions from the Director to fulfill corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response obligations. This standby trust fund could meet the requirements specified in Section A: “Trust Fund”, except that:

(i) An originally signed duplicate of the standby trust agreement should be submitted to the Director with the surety bond, and

(ii) Until the standby trust fund is funded pursuant to the requirements of this section, the following are not required:

(A) Payments into the trust fund as specified in Section A. “Trust Fund”;

(B) Updating of Schedule A of the trust agreement to show current cost estimates;

(C) Annual valuations as required by the trust agreement; and

(D) Notices of nonpayment as required by the trust agreement.

(7) EPA recommends that the bond guarantee that the owner or operator will fund the standby trust fund in an amount equal to the penal sum within 15 days after an order to begin is issued by the Director or a U.S. district court or other court of competent jurisdiction.

(8) EPA recommends that under the terms of the bond, the surety becomes liable on the bond obligation when the owner or operator fails to perform as guaranteed by the bond.

(9) EPA recommends that under the terms of the bond, the surety can cancel the bond by sending notice of cancellation by certified mail to the owner or operator and to the Director. EPA requires that cancellation not become final for 120 days beginning on the date of the receipt of the notice of cancellation by both owner or operator and the Director as evidenced by the returned receipts.

C. Surety bond guaranteeing performance of plugging and abandonment

Required Specifications

- (1) Under 40 CFR 146.85(a)(6)(ii), the owner or operator must provide proof that the surety either:
 - (i) has passed financial strength requirements based on credit ratings, or
 - (ii) has met a minimum rating, minimum capitalization, and ability to pass the bond rating when applicable.
- (2) Under 40 CFR 146.85(a)(6)(iii), the owner or operator must establish a standby trust to enable EPA to be party to the financial responsibility agreement without EPA being the beneficiary of any funds.
- (3) As specified at 40 CFR 146.85(a)(2), the penal sum of the bond must be in an amount at least equal to the current cost estimate.

Recommended Specifications

- (4) The owner or operator should submit the bond to the Director. Under 40 CFR 146.85(a), an owner or operator of a new facility must submit the bond to the Director with the permit application and the bond should be effective before injection of CO₂ is started. The surety company issuing the bond should be among those listed as acceptable sureties on federal bonds in Circular 570 of the U.S. Department of the Treasury.
- (5) EPA recommends that the wording of the surety bond conform to the wording specified in Appendix B of this guidance.
- (6) EPA recommends that under the terms of the bond, all payments will be deposited by the surety directly into the standby trust fund in accordance with instructions from the Director to fulfill corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response obligations. The standby trust should meet the requirements specified in Section A: “Trust Fund,” except that:
 - (i) An original signed duplicate of the standby trust agreement should be submitted to the Director with the surety bond, and
 - (ii) Unless the standby trust fund is funded pursuant to the requirements of this section, the following are not required:
 - (A) Payments into the trust fund as specified in Section A. “Trust Fund”;
 - (B) Updating of Schedule A of the trust agreement to show current cost estimates;
 - (C) Annual valuations as required by the trust agreement; and
 - (D) Notices of nonpayment as required by the trust agreement.
- (7) EPA recommends that the bond guarantees that the owner or operator will perform in accordance with the plan and other requirements of the permit for the injection well whenever required to do so.

(8) EPA recommends that under the terms of the bond, the surety will become liable on the bond obligation when the owner or operator fails to perform as guaranteed by the bond. Upon notification by the Director that the owner or operator has failed to perform as guaranteed by the bond, the surety will either:

- (i) perform corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response as guaranteed by the bond, or
- (ii) place funds in the amount guaranteed into the standby trust funds for the fulfillment of corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response obligations.

In circumstances where the Director is a state or a tribe, the Director can be party to the bond and receive funds from the surety without a standby trust, if authorized by applicable law.

(9) The Director can release the owner or operator from the recommendations in this section in accordance with Section J. “Release of the owner or operator from the requirements of 40 CFR 146.85”.

(10) The surety will not be liable for deficiencies in the performance of the owner or operator after the Director releases the owner or operator from the recommendations in this section in accordance with Section J. “Release of the owner or operator from the requirements of 40 CFR 146.85.”

D. Letter of credit

Required Specifications

(1) Under 40 CFR 146.85(a)(6)(ii), the owner or operator must provide proof that the issuing institution either:

- (i) has passed financial strength requirements based on credit ratings, or
- (ii) has met a minimum rating, minimum capitalization, and ability to pass the bond rating when applicable.

(2) Under 40 CFR 146.85(a)(6)(iii), the owner or operator must establish a standby trust to enable EPA to be party to the financial responsibility agreement without EPA being the beneficiary of any funds.

(3) As specified at 40 CFR 146.85(a)(2), the letter of credit must be issued in an amount at least equal to the current cost estimate, except as provided in Section H. “Use of multiple financial instruments.”

Recommended Specifications

(4) The owner or operator should submit the letter of credit to the Director. EPA recommends that an owner or operator of an injection well submit the letter of credit to the Director during submission of the permit application. The letter of credit must be effective before initial injection of CO₂. The issuing institution should be an entity which has the authority to issue letters of

credit and whose letter-of-credit operations are regulated and examined by a federal or state agency.

(5) EPA recommends that the wording of the letter of credit conform to the wording specified in Appendix B of this guidance.

(6) EPA recommends that under the terms of the letter of credit, all amounts paid pursuant to a draft by the Director should be deposited by the issuing institution directly into the standby trust fund in accordance with instructions from the Director to fulfill corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response obligations. This standby trust fund should meet the requirements of the trust fund specified in Section A. “Trust Fund,” except that:

- (i) An originally signed duplicate of the trust agreement should be submitted to the Director with the letter of credit; and
- (ii) Unless the standby trust fund is funded pursuant to the requirements of this section, the following are not required:
 - (A) Payments into the trust fund as specified in Section A. “Trust Fund”;
 - (B) Updating of Schedule A of the trust agreement to show current cost estimates;
 - (C) Annual valuations as required by the trust agreement; and
 - (D) Notices of nonpayment as required by the trust agreement.

(7) EPA recommends that the letter of credit be accompanied by a letter from the owner or operator referring to the letter of credit by number, issuing institution, and date, and provides the following information: the EPA Identification Number, name and address of the facility, and the amount of funds assured for the well by the letter of credit.

(8) EPA recommends that the letter of credit be irrevocable and issued for a period of at least 1 year. The letter of credit could provide that the expiration date will automatically be extended for a period of at least one year unless, at least 120 days before the current expiration date, the issuing institution notifies both the owner or operator and the Director by certified mail of a decision not to extend the expiration date. Under the terms of the letter of credit, the 120 days will begin on the date when both the owner or operator and the Director have received the notice, as evidenced by the return receipts.

(9) EPA recommends that upon notification by the Director that the owner or operator has failed to perform as guaranteed by the letter of credit, the issuing institution will place funds up to the guaranteed amount into the standby trust funds for the fulfillment of corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response obligations. In circumstances where the Director is a state or a tribe, the Director can draw on the letter of credit, if authorized by applicable law.

(10) EPA recommends that if the owner or operator does not establish alternate financial assurance as specified in this section, and obtain written approval of such alternate assurance from the Director within 60 days after receipt by both the owner or operator and the Director of a notice from the issuing institution that it has decided not to extend the letter of credit beyond the current expiration date, the Director should draw on the letter of credit. The Director might delay

the drawing if the issuing institution grants an extension of the term of the credit. During the last 30 days of any such extension the Director can instruct that the letter of credit fund the standby trust if the owner or operator has failed to provide alternate financial assurance as specified in this section and obtain written approval of such assurance from the Director.

(11) EPA recommends that the Director return the letter of credit to the issuing institution for termination when the Director releases the owner or operator from the recommendations in this section in accordance with Section J. “Release of the owner or operator from the requirements of 40 CFR 146.85.”

E. Insurance

Required Specifications

(1) Under 40 CFR 146.85(a)(6)(ii) the owner or operator must provide proof that the insurer either:

- (i) has passed financial strength requirements based on credit ratings, or
- (ii) has met a minimum rating, minimum capitalization, and ability to pass the bond rating when applicable.

(2) Under 40 CFR 146.85(a)(6)(iii) the owner or operator must establish a standby trust to enable EPA to be party to the financial responsibility agreement without EPA being the beneficiary of any funds.

(3) Under 40 CFR 146.85(a)(6)(vii) the owner or operator must demonstrate that the insurer issuing the policy is a third party.

(4) As specified at 40 CFR 146.85(a)(2), the insurance policy must be issued for a face amount at least equal to the current estimate, except as provided in Section H. “Use of multiple financial instruments.” The term “face amount” means the total amount the insurer is obligated to pay under the policy. Actual payments by the insurer will not change the face amount, although the insurer’s future liability will be lowered by the amount of the payments.

Recommended Specifications

(5) The owner or operator should submit a certificate of such insurance to the Director. EPA recommends that an owner or operator of a new injection well submit the certificate of insurance to the Director with the permit application for approval to operate under the permit. The insurance should be effective before injection starts. At a minimum, the insurer should be licensed to transact the business of insurance, or eligible to provide insurance as an excess or surplus lines insurer, in one or more states.

(6) EPA recommends the wording of the certificate of insurance conform to the wording specified in Appendix B.

(7) EPA recommends that the insurance policy guarantee that funds will be available whenever final covered GS activities occur. The policy should also guarantee that once covered GS activities begin, the issuer will be responsible for paying out funds, up to an amount equal to the face amount of the policy, upon the notification of the Director that the obligations have not been fulfilled, to such party or parties as the Director specifies.

(8) EPA recommends that after beginning covered GS activities, an owner or operator or any other person authorized to perform required GS activities can request reimbursement for expenditures by submitting itemized bills to the Director. Within 60 days after receiving bills for activities, the Director should determine whether the expenditures are in accordance with the plan or otherwise justified, and, if so, the Director should instruct the insurer to make reimbursement in such amounts as the Director specifies in writing. If the Director determines that the cost of covered GS activities will be significantly greater than the face amount of the policy, the Director can withhold reimbursement of such amounts as the Director deems prudent until the Director determines, in accordance with Section J. “Release of the owner or operator from the requirements of 40 CFR 146.85,” that the owner or operator is no longer required to maintain financial assurance for the injection well.

(9) EPA recommends that the owner or operator maintain the policy in full force and effect until the Director consents to termination of the policy by the owner or operator as specified in paragraph (E)(12) of this section. Upon payment of the premium the owner or operator should submit a confirmation of payment to the Director on an agreed upon schedule. Failure to pay the premium, without substitution of acceptable alternate financial assurance as specified in this section, will warrant such remedy as the Director deems necessary. Such violation will be deemed to begin upon receipt by the Director of a notice of future cancellation, termination, or failure to renew due to nonpayment of the premium, rather than upon the date of expiration.

(10) EPA recommends that each policy contain provisions allowing assignment to a successor owner or operator. Such assignment can be conditional upon consent of the insurer, provided such consent is not unreasonably refused. Alternatively, if the third-party insurance provider does not allow the assignment of policies to a successor owner or operator, the policy will likely be cancelled and the successor should substitute it with a new insurance policy. The original owner or operator is responsible until the new owner or operator has demonstrated financial responsibility.

(11) EPA recommends, if there is a failure to pay the premium, that the insurer can elect to cancel, terminate, or fail to renew the policy by sending notice by certified mail to the owner or operator and the Director.

(12) EPA recommends that the Director give written consent to the owner or operator that the Director can terminate the insurance policy when the Director releases the owner or operator from the recommendations in this section in accordance with Section J. “Release of the owner or operator from the requirements of 40 CFR 146.85.”

F. Escrow account

Required Specifications

- (1) Under 40 CFR 146.85(a)(6)(iv), the owner or operator must ensure that the escrow account segregates funds from other accounts and uses. Funds must be sufficient to cover estimated costs for GS financial responsibility activities.
- (2) Under 40 CFR 146.85(f), the Director must approve the use and length of pay-in-periods for trust funds or escrow accounts.

Recommended Specifications

- (3) The owner or operator should submit an originally signed duplicate of the escrow agreement to the Director. EPA recommends that an owner or operator of a Class VI GS well submit the originally signed duplicate of the escrow agreement to the Director with the permit application. The escrow agent should be an entity which has the authority to act as an escrow agent and whose trust operations are regulated and examined by a federal or state agency.
- (4) EPA recommends that the wording of the escrow agreement conform to the wording specified in Appendix B, and that the escrow agreement be accompanied by a formal certification of acknowledgment. The required escrow amount must be updated within 60 days after a change in the amount of the current cost estimate covered by the agreement.
- (5) EPA recommends that payments into the escrow account be made over a three-year period or over a period determined by the Director; this period is hereafter referred to as the “pay-in period.” The payments into the escrow account should be made as follows:
 - (i) For a new well, the first payment is expected to be made before the initial injection of CO₂. A receipt from the escrow agent for this payment should be submitted by the owner or operator to the Director before this initial injection of CO₂. The first payment should be at least equal to the current cost estimate, divided by the number of years in the pay-in period. Subsequent payments should be made no later than 30 days after each anniversary date of the first payment. The amount of each subsequent payment should be determined by this formula:

$$NextPayment = \frac{CE - CV}{Y}$$

where CE is the current cost estimate, CV is the current value of the escrow account, and Y is the number of years remaining in the pay-in period.

- (ii) If an owner or operator establishes an escrow account and the value of that escrow account is less than the current cost estimate when a permit is awarded for the injection well, the amount of the current cost estimate still to be paid into the escrow account should be paid in over the pay-in period as defined in paragraph (F)(3) of this section. Payments should continue to be made no later than 30 days after each anniversary date of the first payment made pursuant to this chapter. The amount of each payment should be determined by this formula:

$$NextPayment = \frac{CE - CV}{Y}$$

where CE is the current cost estimate, CV is the current value of the escrow account, and Y is the number of years remaining in the pay-in period.

(6) EPA recommends that the owner or operator be authorized to accelerate payments into the escrow account or the owner or operator can deposit the full amount of the current cost estimate at the time the fund is established. However, the owner or operator should maintain the value of the fund at no less than the value that the fund would have if annual payments were made as specified in paragraph (F)(3) of this section.

(7) EPA recommends that if the owner or operator establishes an escrow account after having used one or more alternate instruments specified in this chapter, the owner or operator's first payment should be at least equal to the amount that the fund would contain if the escrow account were established initially and annual payments made according to specifications of this paragraph.

(8) EPA recommends that if an owner or operator substitutes other financial assurance as specified in this section for all or part of the escrow account, the owner or operator can submit a written request to the Director for release of the amount in excess of the current cost estimate covered by the escrow account.

(9) After beginning required GS activities, the owner or operator or any other person authorized to perform the activity can request reimbursement for expenditures by submitting itemized bills to the Director. EPA recommends that within 60 days after receiving bills for activities, the Director determine whether the expenditures are in accordance with the plan or otherwise justified, and if so, the Director should instruct the escrow agent to make reimbursement in such amounts as the Director specifies in writing. If the Director determines that the cost of covered GS activities will be significantly greater than the value of the escrow account, the Director can withhold reimbursement of such amounts as the Director deems prudent until the Director determines, in accordance with Section J. "Release of the owner or operator from the requirements of 40 CFR 146.85," that the owner or operator is no longer required to maintain financial assurance for the GS activity(ies).

(10) EPA recommends that the Director agree to the termination of the escrow account when the Director releases the owner or operator from the recommendations in this section in accordance with Section J. "Release of the owner or operator from the requirements of 40 CFR 146.85."

G. Financial test and corporate guarantee

Required Specifications

(1) As specified at 40 CFR 146.85(a)(6)(v), an owner or operator can demonstrate financial responsibility by passing the financial test as specified in this paragraph. To qualify for this test the owner or operator must have:

- (i) Tangible net worth for an amount approved by the Director; and

- (ii) Net working capital and tangible net worth each at least six times the sum of the current cost estimate for all financial responsibility activities; and
- (iii) Assets in the United States amounting to at least 90 percent of his total assets or at least six times the sum of the current cost estimate.

To pass a financial test, the owner or operator could meet the criteria of either paragraph (G)(1)(iv) or (G)(1)(v) of this section. At the Director's discretion, the owner or operator might be required to pass the criteria of both paragraphs.

(iv) The owner or operator must have the following five ratios: A ratio of total liabilities to net worth less than 2.0; a ratio of the sum of net income plus depreciation, depletion, and amortization to total liabilities greater than 0.1; a ratio of current assets to current liabilities greater than 1.5; a ratio of current assets net current liabilities to total assets greater than -0.10; and net profit greater than 0.

(v) The owner or operator must have a current rating for its most recent bond issuance of AAA, AA, A or BBB as issued by Standard & Poor's or Aaa, Aa, A, or Baa as issued by Moody's.

(2) The owner or operator must submit a report of its bond rating and financial information annually.

(3) As specified at 40 CFR 146.85(a)(6)(vi), when an owner or operator cannot meet financial test criteria, the owner or operator may arrange a corporate guarantee by demonstrating that its corporate parent meets the financial test requirements on its behalf. The parent must also guarantee to fulfill the obligations for the owner or operator.

Recommended Specifications

(4) EPA recommends that the owner or operator have tangible net worth of at least \$100 million.

(5) EPA recommends that the owner or operator submit the following items to the Director in order to demonstrate compliance with the financial test:

- (i) A letter signed by the CFO of the owner or operator and worded as specified in Appendix B; and
- (ii) A copy of the independent certified public accountant's report on examination of the owner's or operator's financial statements for the latest completed fiscal year; and
- (iii) A special report from the owner's or operator's independent certified public accountant to the owner or operator stating that:
 - (A) The certified public accountant has compared the data which the letter from the chief financial officer specifies as having been derived from the independently audited, year-end financial statements for the latest fiscal year with the amounts in such financial statements; and
 - (B) The certified public accountant followed Generally Accepted Accounting Principles (GAAP).

(6) EPA recommends that an owner or operator of a new injection well submit the items specified in paragraph (G)(5) of this section to the Director within 90 days after the close of each

preceding fiscal year. This information should consist of all three items specified in paragraph (G)(4) of this section.

(7) EPA recommends that after the initial submission of items specified in paragraph (G)(5) of this section, if there are significant changes in the owner or operator's financial condition, updated information should be sent to the Director within 90 days after it becomes available. This information should consist of all three items specified in paragraph (G)(5) of this section.

(8) EPA recommends that if the owner or operator cannot meet the financial test, the owner or operator should send notice to the Director of intent to establish alternate financial assurance as specified in this section. Similar to the cancellation of third-party instruments, the notice should be sent by certified mail within 10 days after the end of the fiscal year for which the year-end financial data show that the owner or operator no longer meets the requirements, or within 10 days after becoming aware of no longer meeting the requirements. The owner or operator should provide the alternate financial assurance within 60 days after the end of such fiscal year, or 60 days after becoming aware of no longer meeting requirements.

(9) The Director can, based on a reasonable belief that the owner or operator may no longer meet the financial test, require reports of financial condition at any time from the owner or operator in addition to those specified in paragraph (G)(5) of this section. EPA recommends that if the Director finds, on the basis of such reports or other information, that the owner or operator no longer meets the financial test, the owner or operator should provide alternate financial assurance as specified in this section within 30 days after notification of such a finding.

(10) The Director can disallow use of this test based on the findings of the independent certified public accountant in his report on examination of the owner's or operator's financial statements [see paragraph (G)(5)(ii) of this section]. An adverse opinion or disclaimer of opinion will be cause for disallowance. EPA recommends that the Director evaluate other qualifications on an individual basis. The owner or operator should provide alternate financial assurance as specified in this section within 30 days after notification of the disallowance.

(11) Generally, EPA requires that for an owner or operator utilizing a corporate guarantee, the guarantor must meet the requirements for owners or operators in paragraphs (G)(1) through (G)(3), and should meet the recommendations at (G)(4) through (G)(10) of this section and should comply with the terms of the corporate guarantee. The wording of the corporate guarantee should be identical to the wording specified in Appendix B. The corporate guarantee and all other items specified in paragraph (G)(5) of this section should be submitted to the Director every year. EPA recommends that the terms of the corporate guarantee provide that:

(i) If the owner or operator fails to perform required GS activities covered by the corporate guarantee in accordance with the plan and other permit requirements, the guarantor will perform required GS activities or establish a trust fund as specified in Section A: "Trust Fund" in the name of the owner or operator.

(ii) The corporate guarantee will remain in force unless the guarantor sends notice of cancellation by certified mail to the owner or operator and the Director, as evidenced by the return receipts. Cancellation should not occur, however, during the 120 days beginning on

the date of receipt of the notice of cancellation by both the owner or operator and the Director, as evidenced by the return receipts.

(iii) If the owner or operator fails to provide alternate financial assurance as specified in this section and obtain the written approval of such alternate assurance from the Director within 90 days after receipt by both the owner or operator and the Director of a notice of cancellation of the corporate guarantee from the guarantor, the guarantor will provide such alternative financial assurance in the name of the owner or operator.

H. Use of multiple financial instruments

EPA recommends that, at the Director's discretion, an owner or operator can satisfy the recommendations in this section by establishing more than one financial instrument per injection well. As described at 40 CFR 146.85(a)(6)(i), in the event that the owner or operator combines more than one instrument for a specific GS phase (e.g., well plugging), such combination must be limited to instruments that are not based on financial strength or performance (i.e., self insurance or performance bond). Therefore, qualifying instruments specified in the preamble of the rule are trust funds, surety bonds guaranteeing payment into a trust fund, letters of credit, insurance, and escrow accounts. EPA recommends that the instruments be as specified in sections (A), (B), (D), (E) and (F), of this section, except that it is the combination of instruments, rather than the single instrument, which should provide financial assurance for an amount at least equal to the adjusted cost. Because they guarantee performance instead of payment, self-insurance and performance surety bonds cannot be combined with other instruments for the purposes of the financial responsibility demonstration. If an owner or operator uses a trust fund in combination with a surety bond or letter of credit, the Director might use that trust fund as the standby trust fund for the other instruments. However, in this case, the trust would have to specify that money can be passed through to complete the activity covered by the surety bond or letter of credit. A single standby trust can be established for two or more instruments. The Director can invoke any or all of the instruments to provide for the completion of required GS activities. In this case, it is the combination of instruments, rather than the single instrument, which must provide financial responsibility for an amount at least equal to the current cost estimate.

An owner or operator can also satisfy the recommendations in this section by establishing more than one financial instrument per injection well by specifying the GS activity(ies) covered by the instrument.

I. Use of a financial instrument for multiple facilities

Generally, an owner or operator can use a specified financial responsibility instrument for more than one injection well. EPA recommends that evidence of financial responsibility submitted to the Director include a list showing, for each injection well, the EPA Identification Number, name, address, and the amount of funds assured by the instrument. If the injection wells covered by the instrument are in more than one state or EPA Region, EPA recommends that identical evidence of financial responsibility be submitted to and maintained with the Directors of all such states or Regions. The amount of funds available through the instrument should be no less than the sum of funds that would be available if a separate instrument had been established and

maintained for each injection well. In directing funds available through the instrument for any of the injection wells covered by the instrument, the Director should direct only the amount of funds designated for that injection well, and if the designated funds are insufficient, the Director can request that the owner or operator increase the amount of financial assurance.

J. Release of the owner or operator from the requirements of 40 CFR 146.85

Having maintained financial responsibility for the for the entire life of the GS projects as specified under 40 CFR 146.85(b)(1), within 60 days after receiving certifications from the owner or operator and an independent registered professional engineer that everything has been accomplished in accordance with the post injection site care and site closure plan, EPA recommends that the Director notify the owner or operator that they are no longer required to maintain financial assurance for the injection well, unless the Director determines that the GS activities have not been completed in accordance with applicable regulations.

6. Submission Requirements

This chapter describes methods of submission that owners and operators can use at the time of the initial financial responsibility demonstration, when the owner or operator, under 40 CFR 146.85, must submit (1) a cost estimate and (2) documented proof of an independent third-party instrument or of self-insurance.

Cost estimate

To demonstrate financial responsibility, the owner or operator must, under 40 CFR 146.85, submit a cost estimate satisfactory to the Director at the time of permit application. The cost estimate determines the submission requirements for the financial responsibility instrument(s). The cost estimate represents the total approved likely liability for GS activities. The cost estimate for required GS activities is based on the actual costs of contracting an independent third party to conduct the activities and all related costs. Instructions on how to determine total plugging liability are in Appendix C: Methodology for Estimating Costs for Financial Responsibility Determinations for Class VI Injection Wells.¹⁰

The rule requires (at 40 CFR 146.85(a)(2)) that the qualifying financial responsibility instrument(s) be sufficient to cover the cost of:

- Corrective action (that meets the requirements of 40 CFR 146.84);
- Injection well plugging (that meets the requirements of 40 CFR 146.92);
- Post-injection site care and site closure (that meets the requirements of 40 CFR 146.93); and
- Emergency and remedial response (that meets the requirements of 40 CFR 146.94).

The rule also requires (at 40 CFR 146.85(a)(3)) that the financial responsibility instrument(s) be sufficient to address endangerment of USDWs; thus, the cost estimate must include costs associated with remediation activities.

Specifically, at 40 CFR 146.85(c)(1) the rule requires that the cost estimate must be based on the cost of hiring an independent third party who is neither a parent nor a subsidiary of the owner or operator to perform the required activities. The Director can use discretion as to whether the cost estimation is required to come from an independent third party or can be estimated by the owner or operator.

Documented proof of an independent third-party instrument or self-insurance

The rule requires (at 40 CFR 146.85(a)(1)) that the owner or operator demonstrate and maintain financial responsibility. The qualifying instruments for this demonstration include, but are not

¹⁰ Sources used in the development of the cost estimation methodology include government reports, peer-reviewed literature, industry reports, and the best professional judgment of EPA and expert reviewers.

limited to, those introduced in Chapter 3 “Introduction to Qualifying Financial Responsibility Instruments.”

The rule requires (at 40 CFR 146.85(a)(4)) that the qualifying financial responsibility instrument(s) comprise protective conditions of coverage. See Chapter 5 “Conditions of Coverage and Specifications for Financial Responsibility Demonstrations” for additional details on conditions of coverage for financial responsibility instruments.

Under 40 CFR 146.85(a), the choice of instrument(s) must be submitted to the Director for review. This submission can be made electronically using the forms in Appendix B “Recommended Financial Responsibility Instrument Language for Class VI GS Wells (Forms/Templates).” Original hard copies of finalized agreements must be delivered to the Director with the permit application.

Submissions using independent third-party instrument

For submissions using trust funds, standby trusts, surety bonds, letters of credit, insurance, escrow accounts or other instruments satisfactory to the Director, EPA recommends that a signed original copy of the agreement be delivered to the Director. For insurance, EPA recommends that, in addition to the certificate of insurance, the insurance policy be submitted to the Director.

Under 40 CFR 146.85(a)(6)(ii) EPA requires that the owner or operator submit proof of the third party’s financial strength. EPA recommends that the owner or operator submit the third party’s credit rating or, at the Director’s discretion, submit the third party’s credit rating plus its most recent bond rating and calculated financial ratios. EPA recommends that owners or operators demonstrate that third-party providers have a credit rating in the top four categories from either Standard & Poor’s or Moody’s (i.e., AAA, AA, A, or BBB for Standard & Poor’s and Aaa, Aa, A, or Baa for Moody’s) or from any Nationally Recognized Statistical Rating Organization (NRSRO) as long as the owner or operator can demonstrate the equivalency of this rating with the recommended ratings. If required by the Director, EPA recommends that the third party meet the minimum capitalization criteria for all ratios presented in Table 3 (see Chapter 3 “Introduction to Qualifying Financial Responsibility Instruments”) and a bond rating in the top four categories from either Standard & Poor’s or Moody’s (i.e., AAA, AA, A, or BBB for Standard & Poor’s and Aaa, Aa, A, or Baa for Moody’s) or an equivalent rating from another NRSRO.

Submissions using self-insurance

EPA recommends that, for submissions using self-insurance, the owner or operator’s CFO send the Director a letter that shows the owner or operator, or the company offering the corporate guarantee, passes the financial test.

EPA recommends that the owner or operator should ensure that the information in the CFO’s letter is accurate. This can be done by providing a full auditor’s opinion from an independent certified public accounting firm that attests to the accuracy of the financial data used in the letter.

Additional information that might be submitted includes:

- A copy of the 10-K report, which is submitted annually to the SEC, and
- A Federal Energy Regulatory Commission (FERC) Form 2 report.

SEC 10-K reports and FERC Form 2 reports are based on full-scale audits. Consequently, EPA considers them equivalent to an auditor's opinion. EPA recommends that submitted statements should be equivalent to these example statements.

Although there are many types of auditors' analyses of financial data, the Director will accept only an auditor's full opinion as confirmation of the accuracy of financial information showing that a company passes this test and specifying any qualifications that the Director can use to determine the adequacy of the audit.

7. Director's Review

This chapter describes factors that EPA recommends as considerations for the Director when determining the completeness and adequacy of an owner's or operator's financial responsibility demonstration.

The Director has the authority under 40 CFR 146.85 to approve the use of financial responsibility instruments that address the costs and risks (e.g., endangerment of USDWs) associated with the GS activities. The Director also has the discretion to reject financial instruments determined to be insufficient if they are:

- Not a qualifying instrument;
- Not sufficient to cover the required costs (e.g. properly plugging and monitoring wells);
- Not sufficient to address endangerment of USDWs; and
- Not sufficiently meeting the required conditions of coverage that facilitate enforceability and prevent gaps in coverage through site closure.

This chapter also describes the minimum federal requirements for GS wells and focuses on stages in the process where the Director needs to make a decision or grant an approval or where Director's discretion is authorized.

Determining the completeness and accuracy of the demonstration

The Director is charged with assessing and confirming the completeness and accuracy of the owner's or operator's financial responsibility demonstration. For details on what constitutes a complete demonstration, see Chapter 6 "Submission Requirements." Since financial conditions for independent third-party firms and GS owners or operators are highly variable, it is important that the Director determine the completeness and accuracy of the demonstration annually, as required by the rule at 40 CFR 146.85(a)(5)(i). When determining whether the demonstration is complete and accurate, it is recommended that the Director evaluate the financial instrument agreement; the language of the agreement should conform to the example forms provided in Appendix B of this guidance. If the Director identifies differences between the examples provided, the rule at 40 CFR 146.85, and the owner's or operator's submission, it is recommended that the Director ensure that the owner or operator sufficiently explain the reasons for those differences.

Note on Insurance Policies

When an owner or operator uses insurance to demonstrate financial responsibility, the Director should review the entire insurance policy, not just the Certificate of Insurance (included in Appendix B). The policy should contain a general statement that it conforms in all respects with the requirements for financial responsibility specified at 40 CFR 146.85.

Financial stability of the independent third party

The Director's review must include an evaluation of the financial and operational stability of the independent third-party provider to minimize the risk on instrument failure. As specified at 40 CFR 146.85(a)(6)(ii), when using a third-party to demonstrate financial responsibility, the owner or operator must provide proof that the third-party provider either (1) has passed financial strength requirements based on credit ratings, or (2) has met a minimum rating, capitalization, and bond ratings when applicable.

In all cases, third-party providers must meet the credit rating requirement at 40 CFR 146.85(a)(6)(ii). In many cases, this will be sufficient evidence of third-party financial strength for the Director. However, if the Director has concerns about the third-party provider or its credit rating, the Director can use discretion to request additional information to satisfy part (2) of 40 CFR 146.85(a)(6)(ii). EPA interprets the minimum rating in part (2) to mean the minimum credit rating.

In the review of third-party financial strength EPA recommends that the Director use the following financial metrics:

- *Credit rating evaluation.* EPA recommends that owners or operators demonstrate that third-party providers have a credit rating in the top four categories from either Standard & Poor's or Moody's (i.e., AAA, AA, A, or BBB for Standard & Poor's and Aaa, Aa, A, or Baa for Moody's), consistent with the bond requirement for self-insurance. However, EPA acknowledges that greater flexibility can be used for third-party credit ratings. Therefore, at the Director's discretion, the owner or operator may alternately submit a comparable rating from any NRSRO as long as the owner or operator can demonstrate the equivalency of this rating with the recommended ratings. Credit ratings for financial service providers are reviewed regularly by a credit rating agency and are typically available to the public. The Director should be aware that the rationale for the rating might not be readily or publicly available.
- *Minimum capitalization evaluation.* EPA recommends that the owner or operator solicit calculations of the Debt-Equity, Assets-Liabilities, Cash Return on Liabilities, Liquidity, and Net Profit financial ratios presented in Table 3 (see Chapter 3 "Introduction to Qualifying Financial Responsibility Instruments") from the third-party and submit the calculated thresholds to the Director for review. The calculated thresholds should exceed the thresholds presented in Table 3 to demonstrate minimum capitalization.

- *Bond rating evaluation.* EPA recommends that when bond ratings are available,¹¹ owners or operators demonstrate that third-party providers have a bond rating in the top four categories from either Standard & Poor's or Moody's, consistent with the requirement for self-insurance, or an equivalent rating from another NRSRO as proven by the owner or operator.

The Director may also consider financial evaluations conducted by a state or federal regulator. For example, the U.S. Department of the Treasury's Department Circular No. 570 can be useful for evaluating the strength of surety bond providers. The Treasury Department reviews the sureties and publishes the list of approved companies annually. Alternatively, an independent third party's standing can be inferred by the number (and frequency) of enforcement actions taken by a financial regulator.

Additional considerations for understanding/approving the demonstration

The purpose of the Director's review of the financial responsibility demonstration is to evaluate and determine the suitability of the specific financial responsibility instrument. Some additional considerations for understanding and approving demonstrations include:

- *Review and oversight time and risk.* The review of financial responsibility demonstration will take time, regardless of which instrument is used by the owner or operator. The Director might want to consider the long-term regulatory risk and oversight role the selected instrument(s) imply, as shown in Table 5. If available, the owner or operator can submit any independent third-party evaluations of risk to the Director, especially if insurance is used.

Table 5: Regulatory risk and oversight and enforcement needed

Financial Instrument	Relative Financial Risk to the Government*	Oversight and Enforcement Effort Needed*
Trust Fund	Low	Medium Low
Letter of Credit	Low	Low
Surety Bond	Medium Low	Medium Low
Insurance	Medium	Medium
Financial Test and Corporate Guarantee	High	High
Escrow Account	Low	Medium Low

* Except for information on escrow accounts, relative rankings are based on U.S. Government Accountability Office. 2005. Environmental Liabilities (<http://www.gao.gov/new.items/d05658.pdf>) and EPA Office of Inspector General. 2005. Continued EPA Leadership Will Support State Needs for Information and Guidance of RCRA Financial Assurance (<http://www.epa.gov/oig/reports/2005/20050926-2005-P-00026.pdf>).

¹¹ EPA recognizes that third party providers may not issue bonds. However, when they are available they are preferred to the third party's credit rating. EPA understands that a credit rating represents a rating agency's opinion as to the relative creditworthiness of a company. The rating predicts the probability that a company will make promised payments on its obligations, based on a credit analysis that takes into account various objective (e.g., the company's historical default rate) and subjective (e.g., quality of management) factors. A company's "long term rating" represents a rating agency's opinion of the company's general ability to repay its senior unsecured debt obligations. When a company issues a more senior (e.g., senior secured) or junior (e.g., subordinated) class of bonds, the "bond rating" on this particular class of bonds would be the result of notching up or down, as applicable, from its long term (e.g., senior unsecured) rating and therefore provide a more up to date view of the third party's credit.

- *Pay-in period risk.* Under 40 CFR 146.85 the Director must approve the use and length of pay-in periods. Generally, it is recommended that the pay-in period for a trust fund or escrow account be economically feasible for the owner or operator while maintaining the lowest possible risk. Keeping this in mind, the Director should encourage the shortest pay-in period possible. EPA recommends that payments into a trust fund or escrow account should be made over a three-year period or over a period determined by the Director. In some cases, the Director will find that a pay-in period is not appropriate and require that the trust fund or escrow account be fully funded up front. When determining the length of the pay-in period, the Director may consider, among other things, the risk that the owner or operator may incur financial difficulty prior to fully funding the trust. Factors that the Director may consider include the owner or operator's recent financial stability, profitability, and non-geologic sequestration business operations that can impact geologic sequestration activities.
- *Risk from self-insurance.* Self-insurance poses the highest risk to the public, and it is recommended that the Director thoroughly examine proposals that use a financial test or corporate guarantee for self-insurance. If an owner or operator selects self-insurance, EPA recommends that the Director's review evaluate whether the higher risk of instrument failure inherent with self-insurance is in the public interest. After an extensive review of the financial standing of an owner or operator, the Director might wish to consider other factors, including the owner's or operator's history of fulfilling financial responsibility activities to determine whether self-insurance is appropriate as a financial responsibility instrument. The Director's discretion over the level of acceptable financial risk can require a high level of financial expertise. The Director might choose to evaluate the stability of the owner or operator and accept demonstrations only when the risk to the public of owner or operator failure is sufficiently low. EPA recommends that the Director not accept self-insurance as a financial responsibility instrument for post-injection site care and closure because it generally cannot ensure that resources will be available over the long term.
- *Notification of adverse financial conditions.* Under 40 CFR 146.85(d), the Director must ensure that the timeframe for notification of adverse financial conditions (e.g., bankruptcy or the suspension or revocation of a trustee) specified in the financial instrument meets the rule's requirements. Specifically, the rule requires that the owner or operator:
 - In the event of bankruptcy, notify the Director within 10 days after commencement of the proceeding (40 CFR 146.85(d)(1)).
 - In cases where a guarantor of a corporate guarantee is named as debtor, make the notification under the terms of the corporate guarantee (40 CFR 146.85(d)(2)).
 - Establish other financial assurance or liability coverage within 60 days after such an event (40 CFR 146.85(d)(3)).

Upon being notified of any adverse financial conditions or change in bond rating, EPA expects the Director to initiate discussions with the owner or operator to resolve the problem or other type of discourse (e.g., by conducting another financial demonstration).

Requesting additional information from the owner or operator

As described in Chapter 6 “Submission Requirements,” the owner or operator is required to provide a detailed written estimate, in current value terms, of the cost of performing corrective action on wells in the AoR, plugging the injection well(s), conducting post-injection site care and site closure, and undertaking emergency and remedial response (40 CFR 146.85(c)). Under 40 CFR 146.85(c)(1), the costs must be estimated separately for each activity. See Appendix C for more about the methodology to estimate costs.

Instances in which the Director might request additional information from the owner or operator include, but are not limited to, the following:

- When, during the annual evaluation of the qualifying financial responsibility instrument, the Director determines that the original demonstration is no longer adequate to cover the cost of corrective action, injection well plugging, post-injection site care and site closure, or emergency and remedial response,
- Clarification or proof is needed to ensure that the cost estimate reflects third party costs,
- The owner or operator declares bankruptcy,
- A revised cost estimate is greater than the face amount of a financial instrument currently in use, or
- A revised cost estimate decreases the expected costs, and the owner or operator wishes to withdraw funds or decrease the coverage in its policy.

EPA recommends that additional information be requested when the Director determines that an owner or operator has not provided sufficient information in its financial responsibility demonstration to meet the requirements of the rule (40 CFR 146.85(a)(5)).

Exercising the Director’s discretion

All aspects of the financial responsibility demonstration required under 40 CFR 146.85 are subject to the Director’s discretion. The Director can find that the financial responsibility demonstration is unsatisfactory for any reason, as long as that reason is not arbitrary or capricious. EPA expects the Director to exercise discretion in particular to negotiate a satisfactory financial responsibility demonstration or to deny a demonstration with regard to the pay-in periods or the financial tests.

Evaluating the demonstration's success

The Director's goal in reviewing a financial responsibility demonstration is to ensure adequacy of the instrument on protecting USDWs by minimizing the potential risk of instrument failure and the potential costs to the public. A successful financial responsibility demonstration will likely establish instruments that are aimed to protect USDWs and that guarantee the owner or operator will pay if coverage is needed for financial responsibility activities and ensure that no costs for GS projects will be passed on to the public.

8. Ongoing Responsibilities

This chapter describes the ongoing submission and review requirements under the GS rule at 40 CFR 146.85 that GS owners or operators and Directors are required to follow.

Subsequent to the initial financial responsibility demonstration, the Director can request the owner or operator to (1) submit revisions to the cost estimate, and (2) document the use of an independent third-party instrument or self-insurance. The financial instrument(s) used to fulfill a financial demonstration might require adjustments based on any updates to the cost estimate, including regular updates resulting from inflation.

Under 40 CFR 146.85(b) the owner or operator must submit information to be released from financial responsibility requirements. Only the Director can release or retire the owner or operator from their financial responsibility obligations. For third-party instruments, if the owner or operator fails to complete the required activities and the Director subsequently calls on the instrument to cover the environmental liability, the instrument will be retired after the activity has been completed. In the case of owner or operator failure when self-insurance has been used, the Director does not have the option to draw upon a third-party instrument, resulting in instrument failure.

Owner or operator responsibilities

As specified at 40 CFR 146.85(c), following the initial demonstration, owners or operators are required to revisit their original cost estimate and revise their financial responsibility demonstration to reflect the most up-to-date information for their financial instrument(s) or self-insurance demonstration. Under 40 CFR 146.85(c), cost estimates must be updated:

- On an annual basis for inflation, within 60 days of the anniversary of the financial instrument's establishment, and
- Following any amendments to the area of review and corrective action plan, the injection well plugging plan, the post-injection site care and site closure plan, or the emergency and remedial response plan.

Under 40 CFR 146.85(c) the Director must approve the revised cost estimate subsequent to each revision. If the cost estimate decreases in value, the Director must approve any decreases in the value of the financial responsibility instrument(s). If the cost estimate increases in value, the owner or operator must appropriately increase the face value of the instrument(s).

Pursuant to 40 CFR 146.85(b), the owner or operator must maintain financial responsibility and resources until the Director receives and approves the completed post-injection site care and site closure plan, and approves site closure. To be released from a financial instrument, the owner or operator must have completed all required GS activities and must have fulfilled all its financial obligations as determined by the Director. Otherwise, the owner or operator is required to submit a replacement financial instrument and receive written approval from the Director that accepts the new financial instrument and releases the owner or operator from the previous financial

instrument. The rule requires that owners or operators obtain financial instruments with agreements that do not allow the financial institution to cancel, terminate or fail to renew the instrument—unless the owner or operator fails to pay for the financial instrument.

The rule also requires, at 40 CFR 146.85(d), that the owner or operator notify the Director in the event of financial distress that would prevent it from fulfilling its financial responsibility activities and no later than 10 days after filing for bankruptcy. This requirement helps mitigate instrument failure in the event of operator bankruptcy or well abandonment and helps avoid a gap in coverage. This timeframe is consistent with the current U.S. Bankruptcy Code. Additionally, EPA requires that the owner or operator provide notification to the Director of the cancellation or change of a qualifying instrument.

Table 6 provides a general timeline for owner or operator actions. EPA recommends that the owner or operator contact their permitting Director for further information or clarification.

Table 6: Timeline for Owner or Operator Actions

Event	10 Days	30 Days	60 Days	70 Days	90 Days	120 Days
Cancellation of Instrument	Owner or operator must provide alternative instrument within 60 days .			If alternate demonstration is not acceptable or possible, Director must draw on funds from the instrument being cancelled within 60 days .		
Change in Cost Estimate: <ul style="list-style-type: none"> - Annual Review - Amendments to AoR and corrective action plan, injection well plugging plan, post-injection site care and closure plan, and emergency and remedial response plan 	<p>Owner or operator must annually provide an adjustment for inflation to the Director within 60 days prior to the anniversary date of the establishment of the instrument.</p> <p>The owner or operator must provide an adjustment within 60 days of any amendments to the AoR and corrective action plan, injection well plugging plan, post-injection site care and closure plan, and emergency and remedial response plan.</p>			<p>If the current cost estimate increases to an amount greater than the face amount of the financial instrument in use, the owner or operator must submit evidence, within 60 days, that:</p> <ul style="list-style-type: none"> - The face amount of the instrument was increased to at least equal to the current cost estimate, or - Another instrument was obtained to cover the cost of the increase. 		
Bankruptcy of Owner or Operator	<p>Owner or operator must notify the Director within 10 days of a voluntary or involuntary proceeding (for the owner or operator or third-party provider) under Title 11 (Bankruptcy), U.S. Code.</p> <p>If the third-party provider files for bankruptcy, the owner or operator must establish other financial assurance or liability coverage within 60 days.</p>					

Director responsibilities

The Director’s goal is to ensure adequacy of the instrument on protecting USDWs and to reduce or eliminate risks to the public that financial responsibility activities will not be completed and to reduce or eliminate the burden associated with recovering expenses from owners, operators or independent third-party institutions in order to complete these financial responsibility activities.

Pursuant to 40 CFR 146.85, the Director must perform the initial review of a GS project's financial responsibility demonstration and additional reviews on an ongoing basis. Under 40 CFR 146.85(a)(5), the Director must review the annual updates to each project's financial responsibility demonstration, as well as the updated cost estimates; any delay in receiving these updates to the instruments and cost estimates should serve as a warning to the Director of potential financial distress. Under 40 CFR 146.85(c)(3), the Director also must approve any withdrawal of funds dedicated to financial responsibility and any decrease in the face value of financial responsibility instruments to ensure that the owner or operator has enough funds remaining to cover the costs of its required activities.

During the annual reevaluations, it is recommended that the Director carefully review each agreement that the owner or operator enters into with an independent third-party financial assurance provider. For instance, the Director can decide to look for the contractual conditions that need to be met in order for funds to be paid to complete financial responsibility activities. The Director also might decide to look for any exclusions or coverage limitations in the instrument contract that could decrease the costs for the independent third-party financial institution and the owner or operator, but that would be insufficient to meet environmental assurance needs. When reviewing the instrument contract text regarding cancellation of the instrument, EPA recommends that the Director confirm that cancellation is prohibited unless the owner or operator fails to meet conditions that the Director finds acceptable.

The Director can also look for clauses that specify the timeframe required for payout on covered events. From the Director's perspective, it is important to know if the owner or operator will be allowed to submit claims after the policy is cancelled for events that occurred while the policy was in force. Some contracts might even allow the coverage to continue for a period of time after cancellation. Table 7 summarizes the final rule's submission requirements, at 40 CFR 145.86, for GS owners or operators and the review requirements for Directors.

Independent third party responsibilities

The rule requires, at 40 CFR 146.85(d)(3), that if an independent third-party provider declares bankruptcy or is no longer able to act as a trustee, the owner or operator must establish other means of financial assurance or liability coverage within 60 days.

The rule also states that independent third-party providers cannot cancel coverage unless the owner or operator fails to meet certain conditions. Under 40 CFR 146.85(a)(4)(i), if an owner or operator has failed to pay for the instrument, the financial institution can cancel or terminate the policy and must send notice via certified mail to both the Director and the owner or operator.

Table 7: Submission requirements at 40 CFR 146.85 for owners or operators and review requirements for Directors

Timeframe/Condition	Owner/Operator Submission Requirements	Director Review Requirements
Annually (a)(5)(i)	Submit updated financial responsibility demonstration	Evaluate the financial responsibility demonstration to confirm that the instrument(s) used remain adequate
Annually (c)	Submit an updated detailed written estimate of the cost of performing corrective action on wells in the AoR, plugging the injection well(s), post injection site care and site closure, and emergency and remedial response	Review submission to approve any decrease or increase to initial cost estimate
60 days prior to anniversary of establishment of financial instrument (c)(2)	Adjust cost estimate for inflation	
Within 60 days of any amendments to required project plans ¹² (c)(2)	Submit written updates of adjustments to cost estimate	
During the active life of the project, and 60 days after Director has approved a request to modify required project plans (c)(3)	If change in plans increases cost, revise cost estimate; Revised cost estimate must be adjusted for inflation as specified at §146.85(c)(1)	Any withdrawal of funds must be approved by the Director
	If change in plans decreases the cost, revise cost estimate; Revised cost estimate must be adjusted for inflation as specified at §146.85(c)(1)	Approve any decrease in value of the financial assurance instrument
Within 60 days after the current cost estimate increases to an amount greater than the face amount of a financial instrument currently in use (c)(4)	Increase face amount of coverage up to an amount at least equal to the current cost estimate and submit evidence of such increase to the Director, or obtain other financial responsibility instruments to cover the increase	Review updates to the cost estimate and accompanying evidence
Whenever the current cost estimate decreases (c)(4)	Reduce face amount of financial assurance instrument to amount of the current cost estimate, which depends upon receiving written approval from the Director	Provide written approval before face amount of instrument may be reduced in response to decreasing estimated costs
In the event of adverse financial conditions such as bankruptcy; In the event of bankruptcy, within 10 days of commencement of Title 11 (Bankruptcy), U.S. Code (d)	Notify Director by certified mail that adverse financial conditions may affect ability to carry out injection well plugging and post injection site care and site closure	
Within 60 days of Director notification that original demonstration is no longer adequate for required project phases ¹³ (e)	The owner or operator must provide adjustment of the cost estimate to the Director	Review submission to approve update to the initial cost estimate

¹² Required plans include area of review, plugging the injection well(s), post-injection site care and site closure, and emergency and remedial response plans.

¹³ Financial responsibility demonstration is required for the following project phases: corrective action (as required by 40 CFR 146.84), injection well plugging (as required by 40 CFR 146.92) and post-injection site care and site closure (as required by 40 CFR 146.93), and, emergency and remedial response (as required by 40 CFR 146.94)

Appendices

Appendix A: Regulatory Language for Financial Responsibility for Class VI GS Wells

Appendix B: Recommended Financial Responsibility Instrument Language for Class VI GS Wells (Forms/Templates)

Appendix C: Methodology for Estimating Costs for Financial Responsibility Determinations for Class VI GS Wells

Appendix D: Plugging and Abandonment Checklist for Financial Responsibility Cost Determination

§146.85 Financial responsibility.

(a) The owner or operator must demonstrate and maintain financial responsibility as determined by the Director that meets the following conditions:

(1) The financial responsibility instrument(s) used must be from the following list of qualifying instruments:

- (i) Trust Funds
- (ii) Surety Bonds
- (iii) Letter of Credit
- (iv) Insurance
- (v) Self Insurance (i.e., Financial Test and Corporate Guarantee)
- (vi) Escrow Account
- (vii) Any other instrument(s) satisfactory to the Director

(2) The qualifying instrument(s) must be sufficient to cover the cost of:

- (i) Corrective action (that meets the requirements of §146.84);
- (ii) Injection well plugging (that meets the requirements of §146.92);
- (iii) Post injection site care and site closure (that meets the requirements of §146.93); and
- (iv) Emergency and remedial response (that meets the requirements of §146.94).

(3) The financial responsibility instrument(s) must be sufficient to address endangerment of underground sources of drinking water.

(4) The qualifying financial responsibility instrument(s) must comprise protective conditions of coverage.

(i) Protective conditions of coverage must include at a minimum cancellation, renewal, and continuation provisions, specifications on when the provider becomes liable following a notice of cancellation if there is a failure to renew with a new qualifying financial instrument, and requirements for the provider to meet a minimum rating, minimum capitalization, and ability to pass the bond rating when applicable.

(A) Cancellation – for purposes of this part, an owner or operator must provide that their financial mechanism may not cancel, terminate or fail to renew except for failure to pay such financial instrument. If there is a failure to pay the financial instrument, the financial institution may elect to cancel, terminate, or fail to renew the instrument by sending notice by certified mail to the owner or operator and the Director. The cancellation must not be final for 120 days after receipt of cancellation notice. The owner or operator must provide an alternate financial responsibility demonstration within 60 days of notice of cancellation, and if an alternate financial responsibility demonstration is not acceptable (or possible), any funds from the instrument being cancelled must be released within 60 days of notification by the Director.

(B) Renewal – for purposes of this part, owners or operators must renew all financial instruments, if an instrument expires, for the entire term of the geologic sequestration project. The instrument may be automatically renewed as long as the owner or operator has the option of renewal at the face amount of the expiring instrument. The automatic renewal of the instrument must, at a minimum, provide

the holder with the option of renewal at the face amount of the expiring financial instrument.

(C) Cancellation, termination, or failure to renew may not occur and the financial instrument will remain in full force and effect in the event that on or before the date of expiration: the Director deems the facility abandoned; or the permit is terminated or revoked or a new permit is denied; or closure is ordered by the Director or a U.S. district court or other court of competent jurisdiction; or the owner or operator is named as debtor in a voluntary or involuntary proceeding under Title 11 (Bankruptcy), U.S. Code; or the amount due is paid.

(5) The qualifying financial responsibility instrument(s) must be approved by the Director.

(i) The Director shall consider and approve the financial responsibility demonstration for all the phases of the geologic sequestration project prior to issue a Class VI permit (§146.82).

(ii) The owner or operator must provide any updated information related to their financial responsibility instrument(s) on an annual basis and if there are any changes, the Director must evaluate, within a reasonable time, the financial responsibility demonstration to confirm that the instrument(s) used remain adequate for use. The owner or operator must maintain financial responsibility requirements regardless of the status of the Director's review of the financial responsibility demonstration.

(iii) The Director may disapprove the use of a financial instrument if he determines that it is not sufficient to meet the requirements of this section.

(6) The owner or operator may demonstrate financial responsibility by using one or multiple qualifying financial instruments for specific phases of the geologic sequestration project.

(i) In the event that the owner or operator combines more than one instrument for a specific geologic sequestration phase (e.g., well plugging), such combination must be limited to instruments that are not based on financial strength or performance (i.e., self insurance or performance bond), for example trust funds, surety bonds guaranteeing payment into a trust fund, letters of credit, escrow account, and insurance. In this case, it is the combination of mechanisms, rather than the single mechanism, which must provide financial responsibility for an amount at least equal to the current cost estimate.

(ii) When using a third-party instrument to demonstrate financial responsibility, the owner or operator must provide a proof that the third-party providers either have passed financial strength requirements based on credit ratings; or has met a minimum rating, minimum capitalization, and ability to pass the bond rating when applicable.

(iii) An owner or operator using certain types of third party instruments must establish a standby trust to enable EPA to be party to the financial responsibility agreement without EPA being the beneficiary of any funds. The standby trust fund must be used along with other financial responsibility instruments (e.g., surety bonds, letters of credit, or escrow accounts) to provide a location to place funds if needed.

(iv) An owner or operator may deposit money to an escrow account to cover financial responsibility requirements; this account must segregate funds sufficient to cover estimated costs for Class VI (geologic sequestration) financial responsibility from other accounts and uses.

(v) An owner or operator or its guarantor may use self insurance to demonstrate financial responsibility for geologic sequestration projects. In order to satisfy this requirement the owner or operator must meet a Tangible Net Worth of an amount approved by the Director, have a Net working capital and tangible net worth each at least six times the sum of the current well plugging, post injection site care and site closure cost, have assets located in the United States amounting to at least 90 percent of total assets or at least six times the sum of the current well plugging, post injection site care and site closure cost, and must submit a report of its bond rating and financial information annually. In addition the owner or operator must either: have a bond rating test of AAA, AA, A, or BBB as issued by Standard & Poor's or Aaa, Aa, A, or Baa as issued by Moody's; or meet all of the following five financial ratio thresholds: a ratio of total liabilities to net worth less than 2.0; a ratio of current assets to current liabilities greater than 1.5; a ratio of the sum of net income plus depreciation, depletion, and amortization to total liabilities greater than 0.1; a ratio of current assets minus current liabilities to total assets greater than -0.1; and a net profit (revenues minus expenses) greater than 0.

(vi) An owner or operator who is not able to meet corporate financial test criteria may arrange a corporate guarantee by demonstrating that its corporate parent meets the financial test requirements on its behalf. The parent's demonstration that it meets the financial test requirement is insufficient if it has not also guaranteed to fulfill the obligations for the owner or operator.

(vii) An owner or operator may obtain an insurance policy to cover the estimated costs of geologic sequestration activities requiring financial responsibility. This insurance policy must be obtained from a third party provider.

(b) The requirement to maintain adequate financial responsibility and resources is directly enforceable regardless of whether the requirement is a condition of the permit.

(1) The owner or operator must maintain financial responsibility and resources until:

(i) The Director receives and approves the completed post-injection site care and site closure plan; and

(ii) The Director approves site closure.

(2) The owner or operator may be released from a financial instrument in the following circumstances:

(i) The owner or operator has completed the phase of the geologic sequestration project for which the financial instrument was required and has fulfilled all its financial obligations as determined by the Director, including obtaining financial responsibility for the next phase of the GS project, if required; or

(ii) The owner or operator has submitted a replacement financial instrument and received written approval from the Director accepting the new financial instrument and releasing the owner or operator from the previous financial instrument.

(c) The owner or operator must have a detailed written estimate, in current dollars, of the cost of performing corrective action on wells in the area of review, plugging the injection well(s), post-injection site care and site closure, and emergency and remedial response.

(1) The cost estimate must be performed for each phase separately and must be based on the costs to the regulatory agency of hiring a third party to perform the required activities. A third party is a party who is not within the corporate structure of the owner or operator.

(2) During the active life of the geologic sequestration project, the owner or operator must adjust the cost estimate for inflation within 60 days prior to the anniversary date of the establishment of the financial instrument(s) used to comply with paragraph (a) of this section and provide this adjustment to the Director. The owner or operator must also provide to the Director written updates of adjustments to the cost estimate within 60 days of any amendments to the area of review and corrective action plan (§146.84), the injection well plugging plan (§146.92), the post-injection site care and site closure plan (§146.93), and the emergency and remedial response plan (§146.94).

(3) The Director must approve any decrease or increase to the initial cost estimate. During the active life of the geologic sequestration project, the owner or operator must revise the cost estimate no later than 60 days after the Director has approved the request to modify the area of review and corrective action plan (§146.84), the injection well plugging plan (§146.92), the post-injection site care and site closure plan (§146.93), and the emergency and response plan (§146.94), if the change in the plan increases the cost. If the change to the plans decreases the cost, any withdrawal of funds must be approved by the Director. Any decrease to the value of the financial assurance instrument must first be approved by the Director. The revised cost estimate must be adjusted for inflation as specified at paragraph (c)(2) of this section.

(4) Whenever the current cost estimate increases to an amount greater than the face amount of a financial instrument currently in use, the owner or operator, within 60 days after the increase, must either cause the face amount to be increased to an amount at least equal to the current cost estimate and submit evidence of such increase to the Director, or obtain other financial responsibility instruments to cover the increase. Whenever the current cost estimate decreases, the face amount of the financial assurance instrument may be reduced to the amount of the current cost estimate only after the owner or operator has received written approval from the Director.

(d) The owner or operator must notify the Director by certified mail of adverse financial conditions such as bankruptcy that may affect the ability to carry out injection well plugging and post-injection site care and site closure.

(1) In the event that the owner or operator or the third party provider of a financial responsibility instrument is going through a bankruptcy, the owner or operator must notify the Director by certified mail of the commencement of a voluntary or involuntary proceeding under Title 11 (Bankruptcy), U.S. Code, naming the owner or operator as debtor, within 10 days after commencement of the proceeding.

(2) A guarantor of a corporate guarantee must make such a notification to the Director if he/she is named as debtor, as required under the terms of the corporate guarantee.

(3) An owner or operator who fulfills the requirements of paragraph (a) of this section by obtaining a trust fund, surety bond, letter of credit, escrow account, or insurance policy will be deemed to be without the required financial assurance in the event of bankruptcy of the trustee or issuing institution, or a suspension or revocation of the authority of the trustee institution to act as trustee of the institution issuing the trust fund, surety bond, letter of credit, escrow account, or insurance policy. The owner or operator must establish other financial assurance within 60 days after such an event.

(e) The owner or operator must provide an adjustment of the cost estimate to the Director within 60 days of notification by the Director, if the Director determines during the annual evaluation of the qualifying financial responsibility instrument(s) that the most recent demonstration is no

longer adequate to cover the cost of corrective action (as required by §146.84), injection well plugging (as required by §146.92), post-injection site care and site closure (as required by §146.93), and emergency and remedial response (as required by §146.94).

(f) The Director must approve the use and length of pay-in-periods for trust funds or escrow accounts.

Appendix B: Recommended Financial Responsibility Instrument Language for Class VI GS Wells (Forms/Templates)

DISCLAIMER

EPA does not have express authority in the Safe Drinking Water Act to accept and use funds for financial assurance due to the requirement under the Miscellaneous Receipt Act to deposit funds EPA receives for the use of the Government into the U.S. Treasury. Consequently, trust agreements, surety bonds, letters of credit, insurance policies and other financial responsibility instruments cannot name EPA as a recipient of funds or beneficiary. Therefore, EPA recommends that the standby trust agreements be written such that EPA, as the Director, has authority to notify the trustee of the need for payments from the fund to cover the costs of GS project activities covered under the agreement. Financial responsibility instruments may name a state, or tribal government as a recipient of funds or beneficiary if authorized by applicable law.

Under 40 CFR 146.85, EPA has proposed a general requirement for financial responsibility for Geologic Sequestration (GS). Historically, instruments utilized to demonstrate financial responsibility for Underground Injection Control (UIC) program injection wells include irrevocable trust fund, surety bond, performance bond, letter of credit, insurance, financial test, and corporate guarantee. The template language for these instruments is adapted from language from 40 CFR 144.70 (Class I hazardous waste well requirements).

Because there is no instrument language precedent for escrow accounts under the Underground Injection Control (UIC) program, the following financial responsibility instrument language for escrow accounts was based on existing environmental liability escrow account agreements used by states. However, the proposed language uniquely establishes a standby trust to disburse funds needed to fulfill financial responsibility activities. This is consistent with requirements for a surety bond and a standby letter of credit in direct implementation programs. As an alternative to establishing a standby trust, provisions could be added to allow EPA to direct the use of funds directly from the escrow account to fulfill financial responsibility activities.

Definition:

Director. The person responsible for permitting, implementation, and compliance of the UIC program. For UIC programs administered by EPA, the Director is the EPA Regional Administrator or his/her delegatee; for UIC programs in Primacy States, the Director is the person responsible for permitting, implementation, and compliance of the State, Territorial, or Tribal UIC program.

Contents:

- I. Trust Agreement or Standby Trust
- II. Financial Guarantee Surety Bond
- III. Performance Surety Bond
- IV. Irrevocable Standby Letter of Credit
- V. Certificate of Insurance
- VI. Letter from CFO
- VII. Corporate Guarantee
- VIII. Escrow Account

I. Trust Agreement

A trust agreement for a trust fund, as specified in this chapter, may be worded as follows, except that instructions in brackets are to be replaced with the relevant information and the brackets deleted. EPA recommends that a *standby trust agreement* contain similar language except that an originally signed duplicate of the trust agreement should be submitted to the Director with the surety bond or letter of credit, and the fund should be fully funded upon the disbursement of the surety bond or letter of credit.

Trust Agreement

TRUST AGREEMENT, the “Agreement,” entered into as of [date] by and between [name of the owner or operator], a [name of State] [insert “corporation,” “partnership,” “association,” or “proprietorship”], the “Grantor,” and [name of corporate trustee], [insert “incorporated in the State of ___” or “a national bank”], the “Trustee.”

Whereas, the United States Environmental Protection Agency, “EPA,” an agency of the United States Government, or the state of [name of state] has established certain regulations applicable to the Grantor, requiring that an owner or operator of an injection well shall provide assurance that funds will be available when needed for [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response] of the injection well,

Whereas, the Grantor has elected to establish a trust to provide all or part of such financial assurance for the facility(ies) identified herein,

Whereas, the Grantor, acting through its duly authorized officers, has selected the Trustee to be the trustee under this agreement, and the Trustee is willing to act as trustee,

Now, therefore, the Grantor and the Trustee agree as follows:

Section 1. Definitions as used in this Agreement:

(A) The term “Grantor” means the owner or operator who enters into this Agreement and any successors or assigns of the Grantor.

(B) The term “Trustee” means the Trustee who enters into this Agreement and any successor Trustee.

(C) Facility or activity means any “underground injection well” or any other facility or activity that is subject to regulation under the Underground Injection Control Program.

(D) Beneficiary (if any) means an entity other than EPA that has authority to direct the Trustee to make payments of Trust proceeds to contractors or other entities for corrective

action, plugging, post injection site care and site closure, and/or emergency and remedial response work.

Section 2. Identification of Facilities and Cost Estimates. This Agreement pertains to the facilities and cost estimates identified on attached Schedule A [on Schedule A, for each facility list the EPA Identification Number, name, address, and the current [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response] cost estimate, or portions thereof, for which financial assurance is demonstrated by this Agreement].

Example Schedule A				
Facility	Cost Estimate			
	Corrective action	Injection well plugging	Post injection site care and site closure	Emergency and remedial response
EPA Identification Number, name, address				

Section 3. Establishment of Fund. The Grantor and the Trustee hereby establish a trust fund, the “Fund,” for the benefit of the state of [name of state]. The Grantor and the Trustee acknowledge that the purpose of the Fund is to fulfill the Grantor’s [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response] obligations described at 40 CFR 146.84, 146.92, 146.93, and/or 146.94, respectively. All expenditures from the Fund shall be to fulfill the legal obligations of the Grantor under such regulations, and not any obligation of EPA. The Grantor and the Trustee intend that no independent third party have access to the Fund except as herein provided. The Fund is established initially as consisting of the property, which is acceptable to the Trustee, described in Schedule B attached hereto. Such property and any other property subsequently transferred to the Trustee is referred to as the Fund, together with all earnings and profits thereon, less any payments or distributions made by the Trustee pursuant to this Agreement. The Fund shall be held by the Trustee, IN TRUST, as hereinafter provided. The Trustee shall not be responsible nor shall it undertake any responsibility for the amount or adequacy of, nor any duty to collect from the Grantor, any payments necessary to discharge any responsibilities of the Grantor established by EPA regulations or the state of [name of state].

Example Schedule B	
Facility	Funding Value for Activities
EPA Identification Number, name, address	

Section 4. Payment for [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response]. The Trustee shall make payments from the Fund as the Director shall direct, in writing, to provide for the payment of the costs of [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response] of the injection wells covered by this Agreement. The Trustee shall use the Fund to reimburse the Grantor or other persons selected by the [Trustee, Grantor or Beneficiary] to perform work when the Director advises in writing that the work will be or was necessary for the fulfillment of the Grantor's [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response] obligations described at 40 CFR 146.84, 146.92, 146.93, and/or 146.94, respectively. The Director may advise the Trustee that amounts in the Fund are no longer necessary to fulfill the Grantor's obligations under 40 CFR 146.85 and that the Trustee may refund the remaining funds to the Grantor. Upon refund, such funds shall no longer constitute part of the Fund as defined herein.

Section 5. Payments Comprising the Fund. Payments made to the Trustee for the Fund shall consist of cash or securities acceptable to the Trustee.

Section 6. Trustee Management. The Trustee shall invest and reinvest the principal and income of the Fund and keep the Fund invested as a single fund, without distinction between principal and income, in accordance with general investment policies and guidelines which the Grantor may communicate in writing to the Trustee from time to time, subject, however, to the provisions of this Section. In investing, reinvesting, exchanging, selling, and managing the Fund, the Trustee shall discharge his duties with respect to the trust fund solely in the interest of the beneficiary and with the care, skill, prudence, and diligence under the circumstances then prevailing which persons of prudence, acting in a like capacity and familiar with such matters, would use in the conduct of an enterprise of a like character and with like aims; *except that:*

(A) Securities or other obligations of the Grantor, or any other owner or operator of the facilities, or any of their affiliates as defined in the Investment Company Act of 1940, as amended, 15 U.S.C. 80a-2.(a), shall not be acquired or held, unless they are securities or other obligations of the Federal or a State government;

(B) The Trustee is authorized to invest the Fund in time or demand deposits of the Trustee, to the extent insured by an agency of the Federal or State government; and

(C) The Trustee is authorized to hold cash awaiting investment or distribution un-invested for a reasonable time and without liability for the payment of interest thereon.

Section 7. Commingling and Investment. The Trustee is expressly authorized in its discretion:

(A) To transfer from time to time any or all of the assets of the Fund to any common, commingled, or collective trust fund created by the Trustee in which the Fund is eligible to

participate, subject to all of the provisions thereof, to be commingled with the assets of other trusts participating therein; and

(B) To purchase shares in any investment company, except as specified in writing by the owner or operator, registered under the Investment Company Act of 1940, 15 U.S.C. 80a-1 *et seq.*, including one which may be created, managed, underwritten, or to which investment advice is rendered or the shares of which are sold by the Trustee. The Trustee may vote shares in its discretion.

Section 8. Express Powers of Trustee. Without in any way limiting the powers and discretions conferred upon the Trustee by the other provisions of this Agreement or by law, the Trustee is expressly authorized and empowered:

(A) To sell, exchange, convey, transfer, or otherwise dispose of any property held by it, by public or private sale. No person dealing with the Trustee shall be bound to see to the application of the purchase money or to inquire into the validity or expediency of any such sale or other disposition;

(B) To make, execute, acknowledge, and deliver any and all documents of transfer and conveyance and any and all other instruments that may be necessary or appropriate to carry out the powers herein granted;

(C) To register any securities held in the Fund in its own name or in the name of a nominee and to hold any security in bearer form or in book entry, or to combine certificates representing such securities with certificates of the same issue held by the Trustee in other fiduciary capacities, or to deposit or arrange for the deposit of such securities in a qualified central depository even though, when so deposited, such securities may be merged and held in bulk in the name of the nominee of such depository with other securities deposited therein by another person, or to deposit or arrange for the deposit of any securities issued by the United States Government, or any agency or instrumentality thereof, with a Federal Reserve bank, but the books and records of the Trustee shall at all times show that all such securities are part of the Fund;

(D) To deposit any cash in the Fund in interest-bearing accounts maintained or savings certificates issued by the Trustee, in its separate corporate capacity, or in any other banking institution affiliated with the Trustee, to the extent insured by an agency of the Federal or State government; and

(E) To compromise or otherwise adjust all claims in favor of or against the Fund.

Section 9. Taxes and Expenses. All taxes of any kind that may be assessed or levied against or in respect of the Fund and all brokerage commissions incurred by the Fund shall be paid from the Fund. All other expenses incurred by the Trustee in connection with the administration of this Trust, including fees for legal services rendered to the Trustee, the compensation of the Trustee to the extent not paid directly by the Grantor, and all other proper charges and disbursements of the Trustee shall be paid from the Fund.

Section 10. Annual Valuation. The Trustee shall annually, at least 30 days prior to the anniversary date of establishment of the Fund, furnish to the Grantor and to the appropriate Director a statement confirming the value of the Trust. Any securities in the Fund shall be valued at market value as of no more than 60 days prior to the anniversary date of establishment of the Fund. The failure of the Grantor to object in writing to the Trustee within 90 days after the statement has been furnished to the Grantor and the Director shall constitute a conclusively binding assent by the Grantor, barring the Grantor from asserting any claim or liability against the Trustee with respect to matters disclosed in the statement.

Section 11. Advice of Counsel. The Trustee may from time to time consult with counsel, who may be counsel to the Grantor, with respect to any question arising as to the construction of this Agreement of any action to be taken hereunder. The Trustee shall be fully protected, to the extent permitted by law, in acting upon the advice of counsel.

Section 12. Trustee Compensation. The Trustee shall be entitled to reasonable compensation for its services as agreed upon in writing from time to time with the Grantor.

Section 13. Successor Trustee. The Trustee may resign or the Grantor may replace the Trustee, but such resignation or replacement shall not be effective until the Grantor has appointed a successor trustee and this successor accepts the appointment. The successor trustee shall have the same powers and duties as those conferred upon the Trustee hereunder. Upon the successor trustee's acceptance of the appointment, the Trustee shall assign, transfer, and pay over to the successor trustee the funds and properties then constituting the Fund. If for any reason the Grantor cannot or does not act in the event of the resignation of the Trustee, the Trustee may apply to a court of competent jurisdiction for the appointment of a successor trustee or for instructions. The successor trustee shall specify the date on which it assumes administration of the trust in a writing sent to the Grantor, the Director, and the present Trustee by certified mail 10 days before such change becomes effective. Any expenses incurred by the Trustee as a result of any of the acts contemplated by this Section shall be paid as provided in Section 9.

Section 14. Instructions to the Trustee. All orders, requests, and instructions by the Grantor to the Trustee shall be in writing, signed by such persons as are designated in the attached Exhibit A or such other designees as the Grantor may designate by amendment to Exhibit A. The Trustee shall be fully protected in acting without inquiry in accordance with the Grantor's orders, requests, and instructions. All orders, requests, and instructions by the Director to the Trustee shall be in writing, signed by the Director, and the Trustee may rely on these instructions with to the extent permissible by law. The Trustee shall have the right to assume, in the absence of written notice to the contrary, that no event constituting a change or a termination of the authority of any person to act on behalf of the Grantor or EPA or the state of [name of state] hereunder has occurred. The Trustee shall have no duty to act in the absence of such orders, requests, and instructions from the Grantor and/or EPA or the state of [name of state], except as provided for herein.

Section 15. Notice of Nonpayment. The Trustee shall notify the Grantor and the appropriate Director, by certified mail within 10 days following the expiration of the 30-day period after

the anniversary of the establishment of the Trust, if no payment is received from the Grantor during that period. After the pay-in period is completed, the Trustee shall not be required to send a notice of nonpayment.

Section 16. Amendment of Agreement. This Agreement may be amended by an instrument in writing executed by the Grantor, the Trustee, with the concurrence of the Director, or by the Trustee and the appropriate Director if the Grantor ceases to exist. Provided, however, that EPA may not be named as a beneficiary of the Trust, receive funds from the Trust, or direct that Trust funds be paid to a particular entity selected by EPA.

Section 17. Cancellation, Irrevocability and Termination. Subject to the right of the parties to amend this Agreement as provided in Section 16, this Trust shall be irrevocable and shall continue until terminated at the written agreement of the Grantor, the Trustee, with the concurrence of the Director, or by the Trustee and the Director if the Grantor ceases to exist. Upon termination of the Trust, all remaining trust property, less final trust administration expenses, shall be delivered to the Grantor.

Section 18. Immunity and Indemnification. The Trustee shall not incur personal liability of any nature in connection with any act or omission, made in good faith, in the administration of this Trust, or in carrying out any directions by the Grantor issued in accordance with this Agreement. The Trustee shall be indemnified and saved harmless by the Grantor or from the Trust Fund, or both, from and against any personal liability to which the Trustee may be subjected by reason of any act or conduct in its official capacity, including all expenses reasonably incurred in its defense in the event the Grantor fails to provide such defense. EPA does not indemnify either the Grantor or the Trustee due to the restrictions imposed by the Anti-Deficiency Act, 31 U.S.C. 1341. Rather, any claims against EPA are subject to the Federal Tort Claims Act, 28 U.S.C. 2671, 2680.

Section 19. Choice of Law. This Agreement shall be administered, construed, and enforced according to the laws of the State of [name of state] with regard to claims by the Grantor, Trustee or Beneficiary (if any). Claims involving EPA are subject to Federal law.

Section 20. Interpretation. As used in this Agreement, words in the singular include the plural and words in the plural include the singular. The descriptive headings for each Section of this Agreement shall not affect the interpretation or the legal efficacy of this Agreement.

In Witness Whereof the parties have caused this Agreement to be executed by their respective officers duly authorized and their corporate seals to be hereunto affixed and attested as of the date first above written.

[Signature of Grantor]

[Title]

[Seal]¹⁴

Attest: [Signature of attester]

¹⁴ A corporate seal is only recommended if the company has a corporate seal.

[Title]

[Signature of trustee]

[Name of trustee]

[Title]

[Seal]¹⁵

Attest: [Signature of attester]

[Title]

The following is an example of the certification of acknowledgment which must accompany the trust agreement for a trust fund. State requirements may differ on the proper content of this acknowledgment.

State of _____

County of _____

On this [date], before me personally came [owner or operator] to me known, who, being by me duly sworn, did depose and say that she/he resides at [address], that she/he is [title] of [corporation], the corporation described in and which executed the above instrument; that she/he knows the seal of said corporation; that the seal affixed to such instrument is such corporate seal; that it was so affixed by order to the Board of Directors of said corporation, and that she/he signed her/his name thereto by like order.

[Signature of Notary Public]

¹⁵ A corporate seal is only recommended if the company has a corporate seal.

II. Financial Guarantee Surety Bond

A surety bond guaranteeing payment into a trust fund, as specified in this chapter, may be worded as follows, except that instructions in brackets are to be replaced with the relevant information and the brackets deleted:

Financial Guarantee Bond

Dated bond executed: _____

Effective date: _____

Principal: [legal name and business address of owner or operator] _____

Type of organization: [insert "individual," "joint venture," "partnership," or "corporation"]

State of incorporation: _____

Surety(ies): [name(s) and business address(es)] _____

EPA Identification Number, name, address, and [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response] amount(s) for each facility guaranteed by this bond [indicate [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response] amounts separately]: _____

Total penal sum of bond: \$ _____

Surety's bond number: _____

Know All Persons By These Presents, That we, the Principal and Surety(ies) hereto are firmly bound to the state of [name of state] or another party other than EPA, in the above penal sum for the payment of which we bind ourselves, our heirs, executors, administrators, successors, and assigns jointly and severally; provided that, where the Surety(ies) are corporations acting as co-sureties, we, the Sureties, bind ourselves in such sum jointly and severally only for the purpose of allowing a joint action or actions against any or all of us, and for all other purposes each Surety binds itself, jointly and severally with the Principal, for the payment of such sum only as is set forth opposite the name of such Surety, but if no limit of liability is indicated, the limit of liability shall be the full amount of the penal sum.

Whereas said Principal is required, under the Underground Injection Control Regulations (UIC), to have a permit or comply with requirements to operate under rule in order to own or operate each injection well identified above, and

Whereas said Principal is required to provide financial assurance for [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response] as a condition of the permit or provisions to operate under rule, and

Whereas said Principal shall establish a standby trust fund as is required when a surety bond is used to provide such financial assurance;

Now, therefore, the conditions of the obligation are such that if the Principal shall faithfully, before the beginning of [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response] of each injection well identified above, fund the standby trust fund in the amount(s) identified above for the injection well,

Or if the Principal shall fund the standby trust fund in such amount(s) within 15 days after an order to begin [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response] is issued by the Director or a U.S. district court or other court of competent jurisdiction,

Or, if the Principal shall provide alternate financial assurance, as applicable, and obtain the Director's written approval of such assurance, within 90 days after the date of notice of cancellation is received by both the Principal and the Director from the Surety(ies), then this obligation shall be null and void, otherwise it is to remain in full force and effect.

The Surety(ies) shall become liable on this bond obligation only when the Principal has failed to fulfill the conditions described above. Upon notification by the Director that the Principal has failed to perform as guaranteed by this bond, the Surety(ies) shall place funds in the amount guaranteed for the injection well(s) into the standby trust funds for the fulfillment of [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response] obligations described at 40 CFR 146.84, 146.92, 146.93, and/or 146.94, respectively.

The liability of the Surety(ies) shall not be discharged by any payment or succession of payments hereunder, unless and until such payment or payments shall amount in the aggregate to the penal sum of the bond, but in no event shall the obligation of the Surety(ies) hereunder exceed the amount of said penal sum.

The Surety(ies) may cancel the bond only for failure to pay and by sending notice of cancellation by certified mail to the Principal and to the Director for the area in which the injection well(s) is (are) located. EPA requires that cancellation not become final for 120 days beginning on the date of receipt of the notice of cancellation by both the Principal and the Director, as evidenced by the return receipts.

The Principal may terminate this bond by sending written notice to the Surety(ies), provided, however, that no such notice shall become effective until the Surety(ies) receive(s) written authorization for termination of the bond by the Director for the area in which the bonded facility(ies) is (are) located.

[The following paragraph is an optional rider that may be included.]

Principal and Surety(ies) hereby agree to adjust the penal sum of the bond yearly so that it guarantees a new [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response] amount, provided that the penal sum does not increase by more than 20 percent in any one year, and no decrease in the penal sum takes place unless the Director determines in writing that the reduced amount is adequate to fulfill the Principal's obligations under 40 CFR 146.84, 146.92, 146.93, and/or 146.94, respectively.

In Witness Whereof, the Principal and Surety(ies) have executed this Financial Guarantee Bond and have affixed their seals on the date set forth above.

The persons whose signatures appear below hereby certify that they are authorized to execute this surety bond on behalf of the Principal and Surety(ies).

Principal

[Signature(s)]

[Name(s)]

[Title(s)]

[Corporate seal]¹⁶

Corporate Surety(ies)

[Name and address]

State of incorporation:

Liability limit: \$

[Signature(s)]

[Name(s) and title(s)]

[Corporate seal]¹⁶

[For every co-surety, provide signature(s), corporate seal, and other information in the same manner as for Surety above.]

Bond premium: \$

¹⁶ A corporate seal is only recommended if the company has a corporate seal.

III. Performance Surety Bond

A surety bond guaranteeing performance of [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response], as specified in this chapter, may be worded as follows, except that the instructions in brackets are to be replaced with the relevant information and the brackets deleted:

Performance Bond

Date bond executed: _____

Effective date: _____

Principal: [legal name and business address of owner or operator]_____

Type of organization: [insert "individual," "joint venture," "partnership," or "corporation"]

State of incorporation: _____

Surety(ies): [name(s) and business address(es)]_____

EPA Identification Number, name, address, and [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response] amounts(s) for each injection well guaranteed by this bond [indicate [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response] amounts for each well]:__

Total penal sum of bond: \$_____

Surety's bond number: _____

Know All Persons By These Presents, That We, the Principal and Surety(ies) hereto are firmly bound to the state of [insert name of state or another party other than EPA], in the above penal sum for the payment of which we bind ourselves, our heirs, executors, administrators, successors, and assigns jointly and severally; provided that, where the Surety(ies) are corporations acting as co-sureties, we, the Sureties, bind ourselves in such sum "jointly and severally" only for the purpose of allowing a joint action or actions against any or all of us, and for all other purposes each Surety binds itself, jointly and severally with the Principal, for the payment of such sum only as is set forth opposite the name of such Surety, but if no limit of liability is indicated, the limit of liability shall be the full amount of the penal sum.

Whereas said Principal is required, under the Underground Injection Control Regulations, as amended, to have a permit or comply with provisions to operate under rule for each injection well identified above, and

Whereas said Principal is required to provide financial assurance for [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response] as a condition of the permit or approval to operate under rule, and

Whereas said Principal shall establish a standby trust fund as is required when a surety bond is used to provide such financial assurance;

Now, Therefore, the conditions of this obligation are such that if the Principal shall faithfully perform [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response], whenever required to do so, of each injection well for which this bond guarantees [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response], in accordance with the [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response] plan and other requirements of the permit or provisions for operating under rule and other requirements of the permit or provisions for operating under rule as may be amended, pursuant to all applicable laws, statutes, rules and regulations, as such laws, statutes, rules, and regulations may be amended,

Or, if the Principal shall provide alternate financial assurance and obtain the Director's written approval of such assurance, within 90 days after the date of notice of cancellation is received by both the Principal and the Director from the Surety(ies), then this obligation shall be null and void, otherwise it is to remain in full force and effect.

The Surety(ies) shall become liable on this bond obligation only when the Principal has failed to fulfill the conditions described above.

Upon notification by the Director that the Principal has been found in violation of the [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response] requirements of 40 CFR part 146, for an injection well which this bond guarantees performances of [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response], the Surety(ies) shall either perform [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response] in accordance with the [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response] plan and other permit requirements or provisions for operating under rule and other requirements or place the amount for [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response] into a standby trust fund for the fulfillment of [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response] obligations described at 40 CFR 146.84, 146.92, 146.93, and/or 146.94, respectively.

Upon notification by the Director that the Principal has failed to provide alternate financial assurance and obtain written approval of such assurance from the Director during the 90 days following receipt by both the Principal and the Director of a notice of cancellation of the bond, the Surety(ies) shall place funds in the amount guaranteed for the injection well(s) into the standby trust fund.

The surety(ies) hereby waive(s) notification of amendments to [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response] plans, permits, applicable laws, statutes, rules, and regulations and agrees that no such amendment shall in any way alleviate its (their) obligation on this bond.

The liability of the Surety(ies) shall not be discharged by any payment or succession of payments hereunder, unless and until such payment or payments shall amount in the aggregate to the penal sum of the bond, but in no event shall the obligation of the Surety(ies) hereunder exceed the amount of said penal sum.

The Surety(ies) may cancel the bond only for failure to pay and by sending notice by certified mail to the owner or operator and to the Director of the area in which the injection well(s) is (are) located. EPA requires that cancellation not become final for 120 days beginning on the date of receipt of the notice of cancellation by both the Principal and the Director, as evidenced by the return receipts.

The principal may terminate this bond by sending written notice to the Surety(ies), provided, however, that no such notice shall become effective until the Surety(ies) receive(s) written authorization for termination of the bond by the Director of the area in which the bonded injection well(s) is (are) located.

[The following paragraph is an optional rider that may be included but is not required.]

Principal and Surety(ies) hereby agree to adjust the penal sum of the bond yearly so that it guarantees a new [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response] amount, provided that the penal sum does not increase by more than 20 percent in any one year, unless the Director determines in writing that the reduced amount is adequate to fulfill the Principal's obligations under 40 CFR 146.84, 146.92, 146.93, and/or 146.94, respectively.

In Witness Whereof, The Principal and Surety(ies) have executed this Performance Bond and have affixed their seals on the date set forth above.

The persons whose signatures appear below hereby certify that they are authorized to execute this surety bond on behalf of the Principal and Surety(ies).

Principal

[Signature(s)] [Name(s)] [Title(s)] [Corporate seal]¹⁷

¹⁷ A corporate seal is only recommended if the company has a corporate seal.

Corporate Surety(ies)

[Name and address]

State of incorporation:

Liability limit: \$

[Signature(s)] [Name(s) and title(s)] [Corporate seal]¹⁸

[For every co-surety, provide signature(s), corporate seal, and other information in the same manner as for Surety above.]

Bond premium: \$

¹⁸ A corporate seal is only recommended if the company has a corporate seal.

IV. Irrevocable Standby Letter of Credit

A letter of credit, as specified in this chapter, may be worded as follows, except that instructions in brackets are to be replaced with the relevant information and the brackets deleted:

Irrevocable Standby Letter of Credit

[State or someone other than EPA]

Dear Sir or Madam:

We hereby establish our Irrevocable Standby Letter of Credit No. _____ in your favor, at the request and for the account of [owner's or operator's name and address] up to the aggregate amount of [in words] U.S. dollars \$_____, available upon [insert State or someone other than EPA] presentation of

- (1) Your sight draft, bearing reference to this letter of credit No. _____, and
- (2) Your signed statement reading as follows: "I certify that the amount of the draft is payable pursuant to satisfy [name of owner or operator]'s obligations set forth in regulations issued under authority of the Safe Drinking Water Act."

This letter of credit is effective as of [date] and shall expire on [date at least 1 year later], but such expiration date shall be automatically extended for a period of [at least 1 year] on [date] and on each successive expiration date, unless, at least 120 days before the current expiration date, we notify both you and [owner's or operator's name] by certified mail that we have decided not to extend this letter of credit beyond the current expiration date. In the event you are so notified, any unused portion of the credit shall be available upon presentation of your sight draft for 120 days after the date of receipt by both you and [owner's or operator's name], as shown on the signed return receipts.

Whenever this letter of credit is drawn on under and in compliance with the terms of this credit, we shall duly honor such draft upon presentation to us, and we shall deposit the amount of the draft directly into the standby trust fund of [owner's or operator's name] in accordance with your instructions for the fulfillment of [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response] obligations described at 40 CFR 146.84, 146.92, 146.93, and/or 146.94, respectively.

[Signature(s) and title(s) of official(s) of issuing institution]
[Date]

This credit is subject to [insert "the most recent edition of the Uniform Customs and Practice for Documentary Credits, published and copyrighted by the International Chamber of Commerce," or "the Uniform Commercial Code"].

V. *Certificate of Insurance*

A certificate of insurance, as specified in this chapter, may be worded as follows, except that instructions in brackets are to be replaced with the relevant information and the brackets deleted:

Certificate of Insurance for [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response]

Name and Address of Insured (herein called the “insured”): _____

Name and Address of Insurer (herein called the “insurer”): _____

Injection Wells covered: [list for each well: The EPA Identification Number, name, address, and the amount of insurance for [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response] (these amounts for all injection wells covered must total the face amount shown below).] _____

Face Amount: _____
Policy Number: _____
Effective Date: _____

The insurer hereby certifies that it has issued to the Insured the policy of insurance identified above to provide financial assurance for [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response] for the injection wells identified above. The Insurer further warrants that such policy conforms in all respects with the requirements for the fulfillment of [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response] obligations described at 40 CFR 146.84, 146.92, 146.93, and/or 146.94, respectively, as applicable and as such regulations were constituted on the date shown immediately below. It is agreed that any provision of the policy inconsistent with such regulations is hereby amended to eliminate such inconsistency.

The insurer may cancel the policy only for failure to pay the premium and by sending notice of cancellation by certified mail to the owner or operator and to the Director for the area in which the injection well(s) is (are) located. EPA requires that cancellation not become final for 120 days beginning on the date of receipt of the notice of cancellation by the Director, as evidenced by the return receipts.

Whenever requested by the Director, the Insurer agrees to furnish to the Director a duplicate original of the policy listed above, including all endorsements thereon.

[Authorized signature of Insurer]

[Name of person signing]
[Title of person signing]

[Signature of witness or notary:]
[Date]

VI. Letter from CFO

A letter from the chief financial officer, as specified in this chapter, may be worded as follows, except that instructions in brackets are to be replaced with the relevant information and the brackets deleted:

Letter From Chief Financial Officer

[Address to the Director for which financial responsibility is to be demonstrated.]

I am the chief financial officer of [name and address of firm.] This letter is in support of this firm's use of the financial test to demonstrate financial assurance.

[Fill out the following four paragraphs regarding injection wells and associated cost estimates. If your firm has no injection wells that belong in a particular paragraph, write "None" in the space indicated. For each injection well, include its EPA Identification Number, name, address, and current [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response] cost estimate.]

1. This firm is the owner or operator of the following injection wells for which financial assurance for [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response] is demonstrated through the financial test. The current [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response] cost estimate covered by the test is shown for each injection well (i.e., all obligations secured by the owner or operator using by financial test):
2. This firm guarantees, through the corporate guarantee, the [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response] of the following injection wells owned or operated by subsidiaries of this firm. The current cost estimate for [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response] so guaranteed is shown for each injection well:
3. In States where EPA is not administering the financial requirements, this firm, as owner or operator or guarantor, is demonstrating financial assurance for the [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response] of the following injection wells through the use of a test equivalent or substantially equivalent to the financial test. The current [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response] cost estimate covered by such a test is shown for each injection well:
4. This firm is the owner or operator of the following injection wells for which financial assurance for [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response] is not demonstrated either to EPA or a state through the financial test or any other financial assurance instrument. The current [corrective action,

plugging, post injection site care and site closure, and/or emergency and remedial response] cost estimate not covered by such financial assurance is shown for each injection well:

This firm [insert “is required” or “is not required”] to file a Form 10K with the Securities and Exchange Commission (SEC) for the latest fiscal year.

The fiscal year of this firm ends on [month, day]. The figures for the following items marked with an asterisk are derived from this firm's independently audited, year-end financial statements for the latest completed fiscal year, ended [date].

[Fill in Alternative I if using the financial ratios test. Fill in Alternative II if using the bond rating test.]

Alternative I: Financial Ratios Test

1. (a) Current [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response] cost (i.e., all obligations secured by the owner or operator using by financial test)	\$_____	
(b) Sum of the company's financial responsibilities currently met using the financial test or corporate guarantee, including CERCLA and RCRA		
(c) Total of lines a and b		
2. Total liabilities		
3. Tangible net worth		
4. Net worth		
5. Current assets		
6. Current liabilities		
7. Net working capital [line 5 minus line 6]		
8. The sum of net income plus depreciation, depletion and amortization		
9. Total assets		
10. Total assets in U.S.		
	Yes	No
11. Is line 3 at least \$100 million?		
12. Is line 3 at least 6 times line 1(c)?		
13. Is line 7 at least 6 times line 1(c)?		
14. Are at least 90% of firm's assets located in the U.S.? If not, complete line 15.		

15. Is line 10 at least 6 times line 1(c)?		
16. Is line 2 divided by line 4 less than 2.0?		
17. Is line 8 divided by line 2 greater than 0.1?		
18. Is line 5 divided by line 6 greater than 1.5?		
19. Is line 5 minus line 6 divided by line 9 greater than -0.1?		
20. Is net profit greater than 0?		

Alternative II: Bond Rating Test

1. (a) Current [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response] cost	\$_____	
(b) Sum of the company's financial responsibilities currently met using the financial test or corporate guarantee, including CERCLA and RCRA		
(c) Total of lines a and b		
2. Current bond rating of most recent issuance of this firm and name of rating service		
3. Date of issuance of bond		
4. Date of maturity of bond		
5. Tangible net worth		
6. Total assets in U.S. (required only if less than 90% of firm's assets are located in U.S.)		
	Yes	No
7. Is line 5 at least \$100 million?		
8. Is line 5 at least 6 times line 1(c)?		
9. Are at least 90% of the firm's assets located in the U.S.? If not, complete line 10		
10. Is line 6 at least 6 times line 1(c)?		

I hereby certify that the wording of this letter is identical to the wording specified in the Underground Injection Control VI Program Financial Responsibility Guidance as such regulations were constituted on the date shown immediately below.

[Signature]

[Name]

[Title]

[Date]

VII. Corporate Guarantee

A corporate guarantee as specified in this chapter may be worded as follows except that instructions in brackets are to be replaced with the relevant information and the bracketed material deleted:

Guarantee for [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response]

Guarantee made this ___ day of ___, 20___, by [name of guaranteeing entity], a business corporation organized under the laws of the State of _____, herein referred to as guarantor, to the United States Environmental Protection Agency (EPA) or state of [name of state], obligee, on behalf of our subsidiary [owner or operator] of [business address].

Recitals

1. Guarantor meets or exceeds the financial test criteria and agrees to comply with the reporting requirements for guarantors.
2. [Owner or operator] owns or operates the following Class I hazardous waste injection well covered by this guarantee: [List for each facility: EPA Identification Number, name, and address. Indicate for each whether guarantee is for closure, post-closure care, or both.]
3. “[corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response] plan” as used below refers to the plans maintained as required by 40 CFR part 146 for the [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response] of injection wells as identified above.
4. For value received from [owner or operator], guarantor guarantees to EPA or the state of [name of state] that in the event that [owner or operator] fails to perform [“[corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response]”] of the above facility(ies) in accordance with the [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response] plan and other requirements when required to do so, the guarantor may do so or fund a trust fund in the name of [owner or operator] in the amount of the adjusted [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response] cost estimates prepared.
5. Guarantor agrees that, if at the end of any fiscal year before termination of this guarantee, the guarantor fails to meet the financial test criteria, guarantor may send within 90 days, by certified mail, notice to the Director for the area in which the facility(ies) is (are) located and to [owner or operator] that he intends to provide alternate financial assurance in the name of [owner or operator]. Within 30 days after sending such notice, the guarantor may establish such financial assurance if [owner or operator] has not done so.

6. The guarantor agrees to notify the Director, by certified mail, of a voluntary or involuntary case under Title 11, U.S. Code, naming guarantor as debtor, within 10 days after its commencement.

7. Guarantor agrees that within 30 days after being notified by the Director of a determination that guarantor no longer meets the financial test criteria or that he is disallowed from continuing as a guarantor of [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response], he may establish alternate financial assurance, in the name of [owner or operator] if [owner or operator] has not done so.

8. Guarantor agrees to remain bound under this guarantee notwithstanding any or all of the following: amendment or modification of the [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response] plan, the extension or reduction of the time of performance of [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response] or any other modification or alteration of an obligation of [owner or operator].

9. Guarantor agrees to remain bound under this guarantee for so long as [owner or operator] must comply with the applicable financial assurance requirements of 40 CFR part 164.85 for the above-listed facilities, except that guarantor may cancel this guarantee by sending notice by certified mail, to the Director for the area in which the facility(ies) is (are) located and to [owner or operator], such cancellation should become effective no earlier than 120 days after actual receipt of such notice by both EPA or the state of [name of state] and [owner or operator] as evidenced by the return receipts.

10. Guarantor agrees that if [owner or operator] fails to provide alternate financial assurance and obtain written approval of such assurance from the Director within 90 days after a notice of cancellation by the guarantor is received by both the Director and [owner or operator], guarantor may provide alternate financial assurance in the name of [owner or operator].

11. Guarantor expressly waives notice of acceptance of this guarantee by the EPA or the state of [name of state] or by [owner or operator]. Guarantor also expressly waives notice of amendments or modifications of the [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response] plan.

Effective date: _____

[Name of guarantor]
[Authorized signature for guarantor]
[Type name of person signing]
[Title of person signing]

[Signature of witness or notary]

VIII. Escrow Account

An escrow agreement, as specified in this chapter, may be worded as follows, except that instructions in brackets are to be replaced with the relevant information and the brackets deleted:

Escrow Agreement

This Escrow Agreement is entered into by and between: The “Grantor,” [Name of owner or operator] a [name of State] [insert “corporation,” “partnership,” “association,” or “proprietorship”]; the “Agency,” [Director (EPA or name of state agency)]; and the “Escrow Agent,” [name of Escrow Agent].

The Grantor, Agency, and the Escrow Agent are hereinafter collectively referred to as the “Parties.”

Recitals

Whereas, on [insert date] the Agency issued to the Grantor an individual [Class VI Well Permit];

Whereas, the Permit authorizes the Grantor to operate a Class VI Well located at [insert city, state] and to operate an injection well in accordance with the terms and conditions set forth therein;

Whereas, the Agency has established certain regulations applicable to the Grantor, requiring that an owner or operator of an injection well shall provide assurance that funds will be available when needed for [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response of the injection well];

Whereas, this Escrow Agreement is the Agency approved form of a financial assurance instrument that provides for [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response of the injection well], as required by the Permit. This Escrow Agreement defines the terms and conditions under which the account will be held and disbursed;

Whereas, the “Required Escrow Amount” to be placed in the Escrow Account is [can insert statement on the amount to be held in the Escrow Account];

Whereas, the Escrow Agent agrees to accept, hold, and disburse the Escrow Account funds and the earnings thereon in accordance with the terms of this Escrow Agreement; and

Whereas said Agency shall establish a standby trust fund as is required when an Escrow Account is used to provide such financial assurance.

Now, therefore, in consideration of the recitals above, the covenants and agreements set forth herein, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Parties agree as follows:

Escrow Account

1. The Grantor shall deliver to the Escrow Agent the Required Escrow Amount of \$[insert dollars] at least [insert number (#)] calendar days prior to [insert date].
2. Within [insert number (#)] business days of receipt of the Required Escrow Amount or additional funds pursuant to Paragraph 3 below, the Escrow Agent shall place the

Required Escrow Amount in an interest bearing account (the “Escrow Account”) at the “Depository Bank”, [insert name of institution bank] located at [insert city, state]. All funds delivered by the Grantor to the Escrow Agent shall be deposited and held by the Escrow Agent in the Escrow Account.

3. Within [insert number (#)] calendar days of any disbursement from the Escrow Account, the Grantor shall deliver additional funds to the Escrow Agent so that the amount available in the Escrow Account shall be no less than the Required Escrow Amount, provided that at no time may the Escrow Account incur a negative balance.
4. The Depository Bank shall be entitled to charge the Escrow Account for services related to the maintenance of the Escrow Account at a rate not exceeding the Depository Bank’s standard charges to other customers for similar services.
5. The Escrow Account shall be opened with the signature of the Escrow Agent indicating that checks drawn against the Escrow Account shall be signed by the Escrow Agent and by no other persons. Disbursements shall be made from the Escrow Account only in accordance with the terms of this Agreement.
6. The Escrow Agent shall maintain a record of all deposits, income, disbursements, and other transactions concerning the Escrow Account. [More details can be inserted here].
7. The Escrow Agent shall keep in its possession all book(s) and records relating to the Escrow Account until such time as they are delivered to a successor Escrow Agent pursuant to [insert paragraph] or to the Grantor and the Agency pursuant to [insert paragraph] below.

Disbursements

8. The Escrow Agent shall make disbursements of the Escrow Account funds including any accrued interest only as follows:
 - a. [Number (#) business days] following receipt of written direction from the Agency stating that funds held in the Escrow Account are required to pay for [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response of the injection well], the Escrow Agent shall disburse such funds to the standby trust fund in the amount(s) identified, in accordance with the Agency’s written direction for the fulfillment of [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response] obligations described at 40 CFR 146.84, 146.92, 146.93, and/or 146.94, respectively. Or, if an order is issued to begin [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response] by a U.S. district court or other court of competent jurisdiction, the Escrow Agent shall disburse such funds to the standby trust fund within [Number (#) of business days].
 - b. The Agency’s written direction shall include invoice(s) evidencing the expenditure made or to be made by the Grantor. The Grantor shall send a copy of the written direction including the invoice(s) to the attention of the Agency as set forth in [paragraph number] below.

- c. The Escrow Agent shall disburse all funds in the Escrow Account to the Grantor within [number (#)] business days of receipt of a joint written direction from the Agency and the Grantor that the Escrow Account funds are no longer required to fund the [corrective action, plugging, post injection site care and site closure, and/or emergency and remedial response of the injection well], as required by the Permit.

Duties and Liabilities of Escrow Agent

9. The Escrow Agent shall have no liability or obligation with respect to the Escrow Account funds except for the Escrow Agent's willful misconduct, bad faith, or gross negligence. The Escrow Agent shall be under no duty to: (a) pass upon the adequacy of any documents; (b) determine whether any of the Parties are complying with the terms and provisions of the Escrow Agreement; or (c) determine the identity or authority of any person purporting to be a signatory authorized by the Grantor or the Agency.

Escrow Agent's Fee

10. The Escrow Agent shall be entitled to compensation from the Grantor for its services under this Escrow Agreement in accordance with the attached fee schedule.

Investment Risk

11. In no event shall the Escrow agent have any liability as a result of any loss occasioned by the financial difficulty or failure of any institution, including the Depository Bank, or for failure of any banking institutions, including the Depository bank, to follow the instructions of the Escrow Agent.

Notices

12. All notices, certifications, authorizations, request, or other communications permitted or required shall be delivered as follows:
 - a. To the Grantor: [insert address]
 - b. To the Agency: [insert address]
 - c. To the Escrow Agent: [insert address]
13. The Escrow Agent shall annually, at least 30 days prior to the anniversary date of establishment of the account, furnish to the Grantor and to the appropriate Agency a statement confirming the value of the account. Any securities in the account shall be valued at market value as of no more than 60 days prior to the anniversary date of establishment of the account. The failure of the Grantor to object in writing to the Escrow Agent within 90 days after the statement has been furnished to the Grantor and the Agency shall constitute a conclusively binding assent by the Grantor, barring the Grantor from asserting any claim or liability against the Escrow Agent with respect to matters disclosed in the statement.

Resignation, Removal, and Successor Escrow Agent

14. If, at any time, the Escrow Agent shall resign, be removed, be dissolved, or otherwise become incapable of acting, or the position of the Escrow Agent shall become vacant for any reason, the Parties shall promptly appoint a successor Escrow Agent.
15. The Escrow Agency may not cancel or terminate the Escrow Account unless there is a failure to pay service fees. The Escrow Agent should send notice of cancellation by certified mail to the owner or operator and the Agency.
16. All interest income accrued on funds in the Escrow Account shall become part of the Escrow Account and shall remain in the Escrow Account. The Grantor shall be solely responsible for the payment of all federal and state taxes on accrued Escrow Account interest.

Miscellaneous

17. This Escrow Agreement constitutes the entire agreement between the Parties relating to the holding, investment, and disbursement of the Escrow Account funds.
18. The Escrow Agreement shall be binding upon, and shall inure to the benefit of the Parties hereto and their successors and assigns.

This Escrow Agreement shall be governed by and be construed and interpreted in accordance with the laws of [name of state] with regard to the Grantor without giving effect to the conflict of laws principles thereof. Any claims relating to EPA will be resolved under Federal law including, but not limited to the Federal Tort Claims Act 28 U.S.C. 2671, 2680.

19. This Escrow Agreement may be executed in any number of counterparts each which shall constitute an original and all counterparts shall constitute one Agreement.
20. This Escrow Agreement may not be assigned, amended, altered, or modified except by written instrument duly executed by all of the Parties.
21. This Escrow Agreement shall terminate, and the Escrow Agent shall be relieved of all liability to the Grantor after: (a) all funds in the Escrow Account have been properly disbursed in accordance with the terms and conditions of this agreement; (b) the Escrow Agent has provided a final accounting of all transactions hereunder to the Parties; and (c) a copy of all books and records relating to the Escrow Account has been delivered to the Grantor, and, if requested, to the Agency. EPA does not indemnify either the Grantor or the Escrow Agent due to the restrictions imposed by the Anti-Deficiency Act, 31 U.S.C. 1341.
22. This Agreement shall take effect on the latest date of execution by the Grantor, Agency, or Escrow Agent.
23. [Can add additional terms here]

In witness whereof, the Parties have caused this Escrow Agreement to be duly executed as set forth below.

[Signature of Grantor]

[Title]

[Seal]

[Signature of Agency]

[Name of Agency]

[Title]

[Seal]

[Signature of Escrow Agent]

[Title]

[Seal]

DISCLAIMER

This is guidance only. It provides examples of cost considerations or activities that may need to be performed to satisfy the requirements of the GS regulation. It may not include all necessary costs.

I. Introduction

On July 25, 2008, EPA published proposed “Federal Requirements Under the Underground Injection Control (UIC) Program for Carbon Dioxide (CO₂) Geologic Sequestration (GS) Wells” (73 FR 43492).¹⁹ The rule proposes a new Class VI well with specific requirements for the underground injection of CO₂ for the purpose of GS, including minimum technical criteria for: geologic site characterization; area of review (AoR) and corrective action; GS well construction and operation; mechanical integrity testing (MIT) and monitoring; and well plugging, post-injection site care, and site closure.

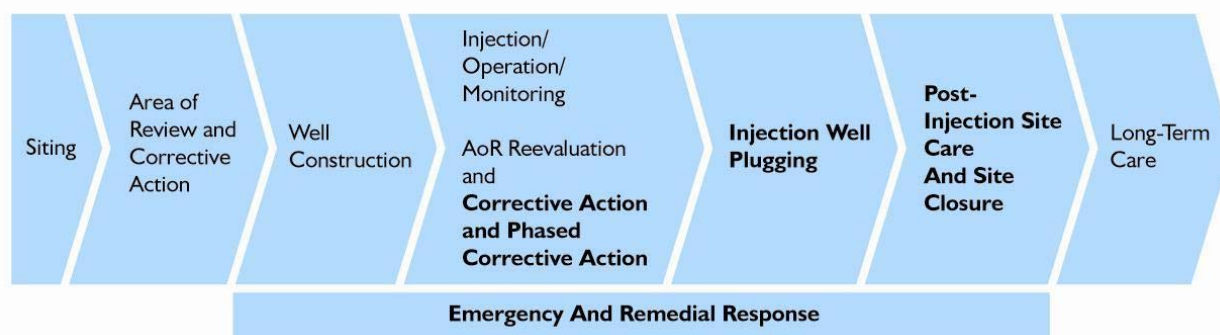
The proposed rule also contains specific provisions for owners or operators of GS wells to demonstrate and maintain financial responsibility for corrective action on wells in the AoR, injection well plugging, post-injection site care and site closure, and emergency and remedial response. Operators would also be required to adjust the financial responsibility cost estimates as needed, e.g., to account for any amendments to the required plans for the above activities or if the Director determines that the original demonstration is no longer adequate. Appendix A presents the proposed regulatory language for financial responsibility at 40 CFR Part 146.85.

Figure 1 presents the overall phases of GS project activities; the required GS activities for which financial responsibility must be demonstrated are shown in bold.

To demonstrate financial responsibility, GS well owners or operators need to accurately estimate costs, particularly for the GS-unique requirements, such as post-injection site care and closure and emergency and remedial response, where less experience with estimating and evaluating these costs exists. In some cases, states may be able to provide technical assistance in estimating costs by providing resources or direct assistance. In all cases the Director must be able to evaluate these cost estimates. Finally, independent third-party insurers or providers of financial instruments need to know the process of cost estimation for GS wells since accurate cost estimation is the underpinning of demonstrating financial responsibility.

¹⁹ The requirements are published under the Safe Drinking Water Act (SDWA), therefore, failure to perform or sequester CO₂ is not a part of this regulation.

Figure 1: GS Project Activities



**Please note that the timeframes in this exhibit are not to scale. Financial responsibility demonstrations will coincide with permitting (or revisions made after permitting), therefore Area of Review and Corrective Action prior to permitting (i.e., prior to well construction) are not activities for which financial responsibility must be demonstrated.*

This guidance provides methods and considerations for estimating the costs of GS activities for which there are financial responsibility requirements. The intended audience is GS well owners or operators, EPA and state regulators, and the general public. For information on financial responsibility instruments in the UIC Program and for GS, see “Underground Injection Control (UIC) Class VI Program: Financial Responsibility Guidance.”

The sections that follow address the following topics:

- Guidelines for estimating costs to support financial responsibility demonstrations for Class VI wells.
- Suggestions for estimating the total project costs for activities that require financial responsibility over the life of a GS project.

This guidance provides a framework and considerations for owners or operators to assist with the cost estimation process. In each section, tables break out a number of relevant activities and cost estimates. Additionally, each section includes a number of considerations for cost estimation. However, this guidance is not intended to be a complete or all inclusive template for estimating costs. Costs for activities not listed in this guidance may be relevant, and uncertainty and variability should be considered. Many of the tables have a field for “other” costs not described in this guidance. Notably, the cost of securing financial responsibility instruments for GS activities is not described in this guidance. Full responsibility for complete and accurate cost estimations rests with the owner or operator alone.

II. Estimating Costs to Support GS Financial Responsibility Demonstrations

This section suggests a process for estimating costs for the following activities:

1. Performing corrective action on wells in the AoR
2. Plugging the injection well(s)
3. Post-injection site care
4. Site closure
5. Emergency and remedial response

These activities follow the siting of a GS project and occur during and following CO₂ injection activities. Each GS project will have different characteristics for each of these activities and will require unique management decisions by the owner or operator or the Director. Corrective action activities are conducted according to the owner or operator's approved AoR and corrective action plan that details the immediate, as well as phased-in, actions to ensure that all wells in the AoR receive needed corrective action. During project operation, injection and monitoring, as well as during plugging and post-injection site care and closure a number of activities are required as either one-time or recurring events as should be described in respective planning documents. Additionally, during these phases costs for emergency response may be incurred to address movement of formation of fluids that may endanger underground sources of drinking water (USDWs). The process of estimating costs for each of these activities is described in this section.

Sources of information to support cost estimations include environmental, geological, and engineering firms, which typically perform these types of activities on contractual basis. It is recommended that operators or permitting authorities consult third parties, such as certified contractors or engineers with established credentials or with whom they have worked before. Also, see the "Final Cost Analysis for the Federal Requirements Under the Underground Injection Control Program for Carbon Dioxide Geologic Sequestration Wells (Final GS Rule)" (EPA 816-R-10-013) which contains costs estimated by EPA as part of the GS rulemaking.

1. Performing corrective action on wells in the AoR

Summary of Requirements

GS well operators must identify all artificial penetrations (including active and abandoned wells and mines) in the AoR, determine which wells may potentially endanger USDWs, and apply corrective action to those wells in a manner that prevents movement of CO₂ or other fluids.

At the Director's discretion, owners or operators of GS wells may be able to phase-in corrective action and focus initially on those wells in the portion of the AoR that would be intersected by the CO₂ plume or pressure front over the early years of the injection operation. The operator would address the remaining wells after injection has commenced according to the requirements of §146.84 and as described in the approved AoR and corrective action plan. GS well operators must provide financial assurance that resources are available to address wells for which corrective action is deferred. This phased approach is only applicable to Class VI wells.

Throughout the life of the project, owners and operators will be required to periodically reevaluate the AoR according to §146.84. Owners or operators would need to address any additional deficient wells identified if the AoR were determined to be larger (or differently shaped) as a result of the reevaluation.

To estimate corrective action costs, owners or operators may need to identify the costs of following activities:

- Obtaining data inputs for the AoR model (e.g., monitoring and operating data gathered during the course of injection);
- Updating the AoR modeling based on operational and monitoring data;
- Identifying and evaluating wells in the AoR that were not evaluated in the pre-operational AoR study; or
- Addressing newly-identified deficient wells and wells identified in the original study for which corrective action was deferred.

Estimating Costs

AoR Modeling

While the GS regulation contains no specific requirement to demonstrate financial responsibility for AoR reevaluations, it will be necessary to update the AoR models to ensure that all wells that need corrective action are identified. The cost of this element derives from paying an expert (or team of experts) to set up, run, and interpret a site-specific simulation model. This could also be a re-run of the modeling conducted in the original AoR. In either case, the model should incorporate monitoring and operating data collected during injection operations. Some operators may choose to retain contractor support for this activity. In this case, the cost would be based on the estimate provided by the contractor.

Table 1: Estimating AoR Modeling Costs

Activity	Cost Estimate
Obtaining/compiling data inputs for model (e.g., monitoring and operating data)	
Incorporate monitoring results into computational AoR models	
	Sum of Above = Total Cost Estimate

Identifying and Evaluating Additional Wells that Require Corrective Action

Locating wells in the AoR may involve a range of activities, from database searches to ground surveys to sophisticated remote sensing techniques, such as airborne or geophysical surveys.

If reliable state or local databases exist, an updated data search may suffice, but if well logs or a physical inspection of known wells is not conclusive (e.g., in areas where land uses rapidly change), ground or airborne surveys may be needed. An airborne magnetic survey is carried out using a helicopter which flies over the area to detect well casings. Magnetic surveys can also be carried out from ground vehicles, but airborne surveys can cover large survey areas much more efficiently.

If additional wells in the AoR are identified, additional follow-up, research of well records, or physical inspection of the wells can be used to obtain additional data on the condition of these wells. The total cost of this activity is the sum of the following (see Table 2):

- The labor hours needed to perform a database search.
- The cost of performing ground or airborne surveys (a function of the size of the AoR).
- The labor hours required to evaluate the condition of the wells.

Table 2: Estimating the Cost of Evaluating Wells in the AoR

Activity	Cost Estimate
Conduct database search	
Perform ground or airborne survey	
Evaluate wells	
Other	
	Sum of Above = Total Cost Estimate

Addressing Deficient Wells in the AoR

A deficient well is one that may potentially serve as a conduit for the movement of CO₂ or fluids into USDWs. Available corrective action techniques to address deficient wells in the AoR include plugging of the wells in the AoR or remedial cementing. The total cost of this activity is dependent on the action taken, the number of wells in the AoR that must be addressed (if plugging or remedial cementing is used), and the extent of any additional testing performed. Cost estimates must account for wells to be identified as part of phased corrective action and any wells identified as part of AoR reevaluations. See Table 3.

- Plugging deficient wells involves cleaning out the well (i.e., the removal of existing plugs and casing strings) and re-plugging the wells using cement that is compatible with CO₂.
- In remedial cementing, operators squeeze CO₂-compatible cement into channels or voids between the casing and the borehole to prevent upward migration along the un-cemented casing.

Table 3: Estimating the Cost to Address Deficient Wells in the AoR

Activity	A	B	Cost Estimate
Plug deficient wells	Cost to clean out well and re-plug well	Number of wells	Total = A*B
Perform remedial cementing	Cost to cement well	Number of wells	Total = A*B
Other testing necessary to determine well integrity	Sampling and analysis cost per well	No. of monitoring wells	Total = A*B
			Sum of Above = Total Cost Estimate

Total Costs: AoR Reevaluation and Corrective Action

The total cost estimate for reevaluating the AoR and performing all necessary corrective action is the sum of the above activities, as illustrated in Table 4 below:

Table 4: Total Cost of AoR Reevaluation and Corrective Action

Activity	Cost Estimate
Cost to update AoR modeling (from Table 1)	
Cost to identify and evaluate additional wells in the AoR (from Table 2)	
Cost to address deficient wells in the AoR (from Table 3)	
	Sum of Above = Total Cost Estimate

Considerations for Cost Estimation

The following should be considered in estimating and evaluating costs for updating the AoR model and applying additional corrective action:

- The sophistication of the original AoR calculation model (i.e., how easily its parameters can be updated to incorporate new data and how well the code is constructed to accommodate changes in the parameters).
- The type of geophysical or other method used to locate wells in the AoR.
- The anticipated size and shape of the CO₂ plume and pressure front. This will affect the amount of monitoring data that would need to be incorporated into model updates or the complexity/extent of additional well surveys.
- The type of target formation, which may affect the number of wells in the AoR. For GS projects in saline reservoirs, there may be few, if any, existing wellbores. However, old abandoned oil and gas fields may have a significant number of wells.

- Geologic conditions, which may affect the modeling sophistication needed to adequately incorporate operational data and evaluate the plume.
- The pace of development or land use changes in the region, which may increase the chance that additional wells, including other GS wells, have been drilled (or abandoned) between AoR evaluations. In smaller AoRs with fairly slow or stable development, database searches may be adequate; otherwise field studies may be necessary.
- The availability (and completeness) of state and local databases of drinking water wells and oil and gas exploration wells.
- The condition of the cement and overall well maintenance at the wells, which may impact the cost of applying corrective action.
- Access to the wells, e.g., if they are on private property.
- Composition of the CO₂ stream, which can affect the requirements for the cement used to plug the well.

2. Plugging the Injection Well(s)

Summary of Requirements

When injection operations are complete, owners or operators must plug injection wells to ensure that the wells do not become conduits for the movement of CO₂, or other fluids thus preventing any endangerment of USDWs. This requirement is similar to the financial responsibility requirements for Class I and II wells. Owners or operators have the flexibility of choosing from suitable materials and available tests specific to the CO₂ GS operations for meeting the requirements for well plugging.

The cost associated with plugging each injection well upon completion of injection operations through the well includes:

- Flushing the well with a buffer fluid;
- Performing appropriate tests to measure bottomhole reservoir pressure and a final external mechanical integrity test (MIT) to evaluate the integrity of the existing casing and cement that will remain in the ground after the well is plugged; and
- Emplacing plugs made of any material (e.g., cement) compatible with the fluids with which they may come into contact over all or part of the well, with special care taken to seal drinking water zones.

Cost estimates for well plugging should address all activities described in the owner or operator's approved injection well plugging plan. For additional information, see Appendix D, which presents a Plugging and Abandonment checklist developed by the National UIC Technical Workgroup.

Estimating Costs

Flushing the Well and Performing Pressure Testing and MIT

The costs of well flushing – removing fluids remaining in the long string casing that could react with the well components over time – typically include a “base cost.” This base cost may include the cost of bringing equipment on site, incurred by the engineering firm performing the flushing. The total cost of plugging then can be estimated by adding the cost of flushing per foot/meter multiplied by the average depth of each well and number of wells to the base cost, as seen in Table 5. The cost of flushing operation normally depends on the materials used and the diameter of the well. The total cost for flushing the well would be the combination of these costs, as shown in Table 5.

The purpose of testing bottom-hole reservoir pressure is to determine the appropriate density of plugging fluids to achieve static equilibrium prior to plug placement.

An external MIT is required to ensure that the long string casing and cement that are left in the ground after plugging and site closure will maintain integrity over time. A variety of testing options are available for demonstrating mechanical integrity, including:

- A tracer survey such as oxygen-activation logging. An oxygen activation log is executed by using high energy neutrons to convert oxygen into nitrogen-16, a gamma-ray emitter with a very short half life. The nitrogen-16 is generated in the wellbore. As the nitrogen-16 moves away from the source, nearby detectors will register changes in gamma radiation. By tracing the gamma rays emitted by the nitrogen-16 as it drifts, this method can detect the direction and velocity of fluid movement.
- A temperature log that records the temperature down the length of the well. By comparing the log with the anticipated temperature profile (e.g., the geothermal gradient), any temperature anomalies, which may indicate leaks, can be located.
- A noise log that uses a microphone and amplifier to detect noise created due to disturbances or turbulence that may indicate leaks. The log is most often created with measurements made at various points in the well, though it may also be performed as a continuous survey.

In addition to the methods specified above, the Director may request any additional or alternative test to evaluate mechanical integrity, or allow the use of another test with the written approval of the Administrator.

Reservoir pressure testing and MIT costs typically include a “base cost,” e.g., to retain a contractor or to bring equipment on site, plus a cost per foot/meter multiplied by the depth of the well. The total cost for the testing would be the sum of these costs, as shown in Table 5.

Table 5: Estimating the Cost of Flushing Injection Wells and Performing the MIT

Activity	A	B	C	D	Cost Estimate
	Base cost	Cost per foot/meter	Average Well depth	Number of wells	Total =A+(B*C*D)
Flush injection wells					
Measure bottomhole reservoir pressure					
Perform MITs (e.g., tracer survey, temperature log, noise log)					
					Sum of Above = Total Cost Estimate

Emplacing Plugs

A variety of methods are available to plug injection wells, including the balance method, the cement retainer method, and the two-plug method. While most aspects of plugging GS wells are similar to the procedures used for other classes of injection wells, the process for Class VI wells may require the owner or operator to use more plugs or to use CO₂-compatible cement. The cost of plugging the injection well includes a “base cost” for the services of the contractor, which includes the cost of preparing the site, and transporting equipment (e.g., drilling rigs or pump trucks) to the site. In addition, plugging costs include the cost of each plug multiplied by the number of plugs per well (e.g., one plug within the injection formation and one plug from the surface to bottom of the lowermost USDW) summed over the number of wells, as shown in Table 6.

Table 6: Estimating the Cost to Plug Injection Wells

Activity	A	B	C	D	Cost Estimate
	Base cost	Cost per plug	Average number of plugs	Number of wells	Total = A+(B*C*D)
Plug injection wells					
					Sum of Above = Total Cost Estimate

Total Costs: Injection Well Plugging

The total cost estimate for plugging injection wells is the sum of the above cost estimates, as illustrated in Table 7.

Table 7: Total Cost to Plug Injection Well

Activity	Cost Estimate
Cost to flush well and perform reservoir pressure test and MIT (from Table 5)	
Cost to plug well (from Table 6)	
	Sum of Above = Total Cost Estimate

Considerations for Cost Estimation

The following should be considered in estimating and evaluating costs for plugging injection wells:

- Well depth, which affects the cost of MITs as well as the number of plugs or the amount of cement needed.
- Composition of the captured CO₂, which may affect what types of cement are appropriate.
- The presence of multiple subsurface layers with USDWs, which may affect the number of plugs and the amount and types of cement required.
- Types of subsurface formations, which may affect both the ease of plugging and the types of cement needed.

3. Post-Injection Site Care

Summary of Requirements

GS well operators must follow a Director-approved post-injection site care and site closure plan which includes (1) assessing the pressure differential between pre-injection and predicted post-injection pressures in the injection zone; (2) determining the predicted position of the plume and associated pressure front at the time the site is closed; (3) developing a description of post-injection monitoring location(s), methods, and proposed frequency of monitoring; and (4) maintaining a schedule for submitting post-injection site care and monitoring results to the Director. The plan will be site-specific, but it is assumed that operators would perform the following activities in a frequency approved by the Director: geochemical monitoring in and above the injection zone and the USDW; monitoring for pressure changes in the first formation overlying the confining zone; and/or tracking of the CO₂ plume using geophysical methods to confirm that it is limited to intended zones. The operator must conduct post-injection site care for a default period of 50 years, unless they can demonstrate that the plume and pressure front no

longer pose a risk of endangerment to USDWs and an alternative timeframe has been approved by the Director. (If such a demonstration cannot be made after 50 years or after the approved alternative timeframe, the Director may require additional site care.) This requirement is unique to GS wells.

Costs associated with post-injection site care include the cost of monitoring/plume tracking identified in the Director-approved post-injection site care and site closure plan. It is assumed that the monitoring would include:

- Geochemical sampling and analysis of ground water samples, and pressure monitoring in monitoring wells in the first formation overlying the confining zone; and
- Determining the extent of the CO₂ plume using indirect geophysical methods.

Estimating Costs

Geochemical and Pressure Monitoring

Ground water sampling costs are a function of the parameters to be analyzed (e.g., CO₂, salinity, pH, or metals) and the number of monitoring wells. The worksheet in Table 8 below illustrates how to estimate the cost of a round of sampling and analysis which will be repeated in a Director-approved frequency during the post-injection site care period.

Each sampling activity may include a “base cost” which might be due to general activities such as retaining a contractor and/or equipment (e.g., sampling equipment), site visit, labor, etc. Thus, the total cost of each geochemical monitoring activity would include this base cost plus the cost associated with actual sample collection (e.g., using wireline formation testers and U-Tubes), and analyses of the parameters in the Director-approved plan per well multiplied by the number of monitoring wells subjected to geochemical monitoring (Table 8). Geochemical analyses can be conducted on-site through automated monitoring using down-hole sensors or off-site through a certified laboratory; off-site analyses may require additional packing, storing, and shipping costs. The parameters analyzed would be site-specific and detailed in the Director-approved post-injection site care and site closure plan, which may include relatively “typical” parameters such as aqueous and pure phase CO₂, TDS, pH, etc., and heavy metals, organic contaminants, and dissolved minerals (e.g., if site-specific data indicate a potential for mineralization or mobilization of these parameters). The composition of injected CO₂, native fluids, and subsurface rock matrix would also be considered for determining the parameters to be analyzed. The cost of pressure monitoring could be

Examples of Sampling and Analysis Activities

- Collect samples
- Pack/store/ship samples

Examples of Parameters

- TDS
- Salinity
- pH
- Methane
- Ethane, N₂
- Metals (Na, K, Ca)
- Stable isotopes (C, O)
- Organic constituents
- Dissolved minerals
- Aqueous and pure phase CO₂
- Pressure
- Other parameters

estimated in a similar fashion, since it may be conducted through the use of various pressure sensors (e.g. piezo-electric, transducers, strain gauges, diaphragms, etc.) located down-hole.

For more detailed information on monitoring and testing that is appropriate for GS sites see “Geologic Sequestration of Carbon Dioxide: Draft Underground Injection Control (UIC) Class VI Well Testing and Monitoring Guidance for Owners and Operators” (EPA 816-D-10-009).

Table 8: Estimating Geochemical Sampling and Pressure Monitoring Costs

Activity	A	B	C	Cost Estimate
	Base Cost	Average Cost per well	Number of monitoring wells	Total = A+(B*C)
Monitoring parameters (e.g. pH, gases, metals, etc.)				
				Sum of Above = Total Cost Estimate

Post-Injection Geophysical Surveys

Various subsurface monitoring techniques that are available to track the extent of a CO₂ plume include both seismic and electrical methods. Although their applicability might be limited and site-specific, they would create an additional cost during the post-injection site care period if applied and will therefore be discussed in this section.

Seismic survey data can be used to evaluate CO₂ plume movement by evaluating changes in fluid properties due to displacement of brine by the CO₂. There are two major subsurface seismic methods for monitoring: vertical seismic profiling and cross-well seismic methods.

- Vertical seismic profiling (VSP) is a technique in which surface sources are arrayed around a well that is in close proximity to a CO₂ plume, along with sensors deployed down-hole. The advantage of VSP is that it offers high quality resolution in the vicinity of the test well. It can also be used to detect upward migration of CO₂.
- In cross-well seismic methods, seismic sources suspended on a cable are lowered into one well, and the receivers are lowered into an adjacent well. Both wells must penetrate to the base of the storage reservoir under investigation. This method results in a two-dimensional vertical slice of the subsurface with high resolution at the reservoir level.

Some of the other geophysical methods that may be used in a GS site are electromagnetic surveys (EM), electrical resistance tomography (ERT), and microgravity surveys.

The base cost for geophysical methods is typically a function of costs associated with retaining a contractor, choice of recording equipment, choice of source (e.g., seismic source), labor, etc., and would be a constant cost for geophysical monitoring activity. However, the rest of the cost would vary according to the extent of the area being surveyed (e.g., number of detectors used/area). Thus, as can be seen in Table 9, the total cost of geophysical activity would be the sum of the separate costs for each method used, calculated based on the area surveyed.

- | |
|--|
| <p>Examples of Plume Monitoring Activities and Geophysical Methods</p> <ul style="list-style-type: none"> • Seismic surveys • Electromagnetic surveys (EM) • Electrical Resistance Tomography (ERT) • Microgravity surveys • Other methods |
|--|

Table 9: Estimating Geophysical Monitoring Costs

Activity	A	B	C	Cost Estimate
	Base Cost	Cost/square mile or km	Survey area (in square miles or km)	Total = A+(B*C)
Geophysical survey (e.g., seismic survey, electromagnetic survey, etc.)				
				Sum of Above = Total Cost Estimate

Total Costs: Post-Injection Site Care

It is likely that ground water sampling and analysis, pressure monitoring, and plume tracking would be conducted at different frequencies during the post-injection site care phase of a GS project and will be site-specific. See Section III for additional information on estimating the total cost over the life of the post-injection site care.

Considerations for Cost Estimation

The following should be considered in estimating and evaluating costs for post-injection site care:

- The size and shape of the AoR, which would affect the number of monitoring wells or the extent of geophysical surveys.
- The site characteristics, depth and proximity of USDWs and the depth and thickness of the confining zone(s), which may affect the amount of monitoring expected, particularly the need for monitoring wells to ensure that drinking water supplies are unaffected by the GS project.
- The composition of the CO₂ and subsurface aqueous and solid geochemistry and mineralogy, which would impact ground water monitoring needs.

- Baseline geochemistry at the site, which would impact the potential for certain metals or minerals to be mobilized.
- Whether tracers are used, and must therefore be monitored.

4. Site Closure

Summary of Requirements

Before the Director can authorize closure of the GS site, the owner or operator must perform and submit a non-endangerment demonstration that the site no longer poses a risk of endangerment to USDWs. At this point, the Director would determine whether further monitoring is necessary or authorize closure of the site. This pre-closure demonstration of non-endangerment is unique for GS wells.

After site closure is authorized by the Director, the owner or operator will plug all monitoring wells in a manner that will prevent endangerment of USDWs and as described in the Director-approved post-injection site care and site closure plan.

Costs associated with closing a GS project include costs of the following activities:

- Performing a non-endangerment demonstration; and
- Plugging monitoring wells.

Estimating Costs

Perform Non-Endangerment Demonstration

The non-endangerment demonstration will likely be an analysis of the entire site (including reviews of geochemical and pressure monitoring and geophysical or other site-specific data), and a report by a professional geologist or engineer that no additional monitoring is needed to ensure that the GS project does not pose an endangerment to USDWs. Sources of estimates of the cost of this demonstration are independent third-party professional engineers, geologists, or geological or engineering firms.

Table 10: Estimating the Cost to Demonstrate Non-Endangerment

Activity	Cost Estimate
Prepare non-endangerment demonstration report	
	Sum of Above = Total Cost Estimate

Plug Monitoring Wells

Because monitoring wells are used for post-injection site monitoring, they are not plugged after the completion of injection. Once long-term site care monitoring is complete and the Director has authorized site closure, the owner or operator must plug the monitoring wells in a manner which will prevent the movement of injection or formation fluids that could endanger USDWs. Estimating the cost to plug a monitoring well is a function of the number of plugs and the number of monitoring wells, which would include any additional wells drilled for the purpose of post-injection monitoring, as shown in Table 11.

Table 11: Estimating the Cost to Plug Monitoring Wells

Activity	A	B	C	Cost Estimate
	Cost per plug	Number of plugs per monitoring well	Number of monitoring wells	Total = A*B*C
Plug monitoring wells				
				Sum of Above = Total Cost Estimate

Total Costs: Site Closure

The estimated total cost of site closure is the sum of the activities in Tables 10 and 11, as illustrated in Table 12 below.

Table 12: Total Cost of Site Closure

Activity	Cost Estimate
Cost to prepare non-endangerment demonstration (from Table 10)	
Cost to plug monitoring wells (from Table 11)	
	Sum of Above = Total Cost Estimate

Considerations for Cost Estimation

The following should be considered in estimating and evaluating costs for GS site closure:

- The anticipated size and shape of the CO₂ plume. This will affect the amount of data collected during the post-injection monitoring phase that would need to be evaluated in preparing the non-endangerment demonstration.
- The composition of the CO₂ stream and subsurface geochemistry and mineralogy, which would impact ground water monitoring requirements and therefore the amount of data to be evaluated for the non-endangerment demonstration. The composition of the CO₂ can also affect appropriate plugs and cements for plugging monitoring wells.
- Geologic conditions that may affect the sophistication of the analysis needed for the non-endangerment demonstration.

- Monitoring well depth, which would affect the number of plugs and the types and amount of cement needed.
- The presence of multiple subsurface layers with USDWs, which would impact the number of plugs and types of cement required.
- The types of subsurface formations, which may impact the ease of plugging and the types of cement needed.

5. Emergency and Remedial Response

Summary of Requirements

The Class VI UIC permit will contain a Director-approved emergency and remedial response plan that describes actions to be taken to address movement of injection or formation fluids or other events that may endanger USDWs. If evidence shows potential endangerment of USDWs (per §146.94), the owner or operator must cease injection and notify the Director, investigate and identify the CO₂ release, and then implement the emergency and remedial response plan.

Owners or operators must provide financial assurance that resources are available to implement the emergency and remedial response plan, i.e., to perform any necessary remediation to address contamination that results from CO₂ leaks or fluid movement. The requirement to provide financial assurance for emergency and remedial response is unique for Class VI wells.

Estimating Costs

Estimating financial responsibility needs for emergency and remedial response is complicated by uncertainties as to whether such events will occur and the nature of the events (and therefore the cost of responding). While the probability will be low that emergency and remedial response will be necessary at a GS site, it is important that the potential for such events is not underestimated and that adequate resources are available to address such contingencies. Estimating these costs will require an assessment of the risk involved. The owner or operator’s in-house risk manager will be a reliable source of information needed to identify the appropriate size of an insurance policy, bond, or other financial responsibility instrument. Also, environmental and engineering firms, which typically perform “emergency response” type activities on a contractual basis, may be able to provide base cost estimates.

Examples of Events Which May Necessitate Emergency and Remedial Response

- Injection well malfunction
- Ground water contamination
- Monitoring well failure

Each GS site will be unique; therefore the risks and events that may require a remedial response and the actions that a GS project operator would take to address potential endangerment of USDWs (that meets the requirements of §146.94) will be unique to each site. Examples of emergency and remedial responses may include those listed in Table 13.

Table 13: Emergency and Remedial Response Actions

Activity	Cost Estimate
Response actions to address unplanned event	
	Sum of Above = Total Cost Estimate

Considerations for Cost Estimation

The following should be considered in estimating and evaluating costs related to emergency and remedial response:

- The size of the site, including the volume of CO₂ injected.
- The number of injection wells and their age (for converted wells), which may affect the likelihood of a well failure.
- The risks of occurrence of the known scenarios which could require emergency or remedial response actions.
- The composition of the CO₂ and subsurface geochemistry and mineralogy, which would impact the potential for ground water contamination.
- The presence of communities, drinking water systems, residences, or buildings near the injection site or within the AoR.
- Proximity to USDWs or other drinking water sources.

III. Lifetime Costs for a GS project

The purpose of financial responsibility is to ensure that there will be sufficient funds to fully cover specified costs. Because GS projects occur over long time frames (i.e., decades), it is important to recognize that costs projected over extended periods are inexact. Uncertainty may exist for future prices. Price changes may be due to inflation, relative price changes, or changes in technology. For this reason, 40 CFR146.85(c) requires an annual reevaluation of costs to account for changes in cost over time.

Variation in the number of times activities may occur is another source of uncertainty. Between the selection of a site and its ultimate closure, some activities may occur just once, while others may occur hundreds of times. For example, some activities, such as injection well plugging, will happen once in the project’s lifespan, while monitoring will occur periodically and corrective action or remedial responses may occur infrequently or never at all.

The owner or operator should consider all likely scenarios when estimating the costs that would need to be covered by their financial responsibility instrument.

While it is difficult to make exact predictions of when these “milestone” activities will occur, an owner or operator is likely to have information available at the time of the permit application (e.g., reservoir data and the anticipated rates/volumes of CO₂ to be injected) to support reasonable estimates. In addition, all of the activities for which financial responsibility must be provided will be described in the various plans the owner or operator must develop at the time of their permit application and concurrently with the financial responsibility determination. Table 14 presents the frequency at which GS activities might occur and some data sources an owner or operator might consider in estimating the timing of each event.

Table 14: GS Project Scheduling

Activities whose costs should be covered by the Owner or Operator’s Financial Responsibility Instrument	Frequency	Sources of Information
Performing corrective action	Periodically throughout the operational phase or as needed.	<ul style="list-style-type: none"> • AoR and corrective action plan • Anticipated CO₂ volumes and reservoir data • AoR delineation model
Plugging the injection well(s)	One time for each injection well at a GS project	<ul style="list-style-type: none"> • Anticipated CO₂ volumes • Reservoir data
Post-injection site care	Periodically throughout the post-injection phase; varies by site and type of monitoring activity	<ul style="list-style-type: none"> • Post-injection site care and site closure plan
Site closure	One time	<ul style="list-style-type: none"> • Post-injection site care and site closure plan
Emergency and remedial response	As needed	<ul style="list-style-type: none"> • Emergency and remedial response plan

GS project operators should pursue a conservative approach to cost estimation, taking into account contingency factors. Ultimately, the appropriate level of financial responsibility required for a site will be approved by the Director based on their evaluation of site-specific information and may be much higher than the amount necessary to cover the best-case scenario, even though the best-case scenario may be the most likely scenario to occur.

To the extent possible, owners or operators are encouraged to estimate the uncertainty associated with the variability of the data in quantitative or qualitative terms. Descriptions of uncertainty may include assumptions and methods used to estimate costs and the use sensitivity analysis to identify where the improvement in state of knowledge could be made to reduce this uncertainty. To the extent technological advancements can improve knowledge in these identified areas the uncertainty in the cost estimate may be reduced. Financial responsibility cost estimates may be based on risk assessments where best professional judgment is used to select inputs to baseline risk and risk reduction models. Risk modeling efforts may be performed by the owner or operator, or an independent third-party in cases where an independent third-party provides a financial responsibility instrument.

Additional sources for cost estimation information include:

- The U.S. Department of Energy’s Energy Information Administration, which publishes an Annual Energy Outlook.
- The U.S. Bureau of Labor Statistics which publishes annual occupational employment statistics (including wage data), the Producer Price Index, and the Consumer Price Index.
- Industry publications, such as the *Oil and Gas Journal*, which publishes indices of construction costs.
- Financial institutions through which financial responsibility instruments are acquired.
- Commercially-available “cost estimation” software products.

Estimating Total GS Project Costs

Exhibit 3 illustrates how scheduling information can be used to estimate the total costs to support financial responsibility demonstrations for GS projects. The scheduling of anticipated activities can be estimated as described under “Scheduling GS Project Milestones” earlier in this section. The cost estimates for each activity in the schedule would be based on the tables in Section II.

Exhibit 3: Estimating Total GS Costs

	One Time Activities	Periodic or Recurring Activities		Uncertain Activities
Siting				
▼				
Area of Review and Corrective Action	Model AoR <i>Table 1</i>	Evaluate Wells <i>Table 2</i> Address Deficient Wells <i>Table 3</i>		
▼				
Well Construction				
▼				
Injection/ Operation/ Monitoring AoR Reevaluation and Corrective Action		Reevaluate AoR <i>Table 1</i> Evaluate Wells <i>Table 2</i> Address Deficient Wells <i>Table 3</i>	▶ ◀	Emergency and Remedial Response Implement Response Actions as Needed <i>Table 13</i>
▼				
Injection Well Plugging	Flush Injection Wells and perform testing/MIT <i>Table 5</i> Plug Injection Well <i>Table 6</i>		▶ ◀	
▼				
Post-injection Site Care		Perform Geochemical Sampling and Pressure Monitoring <i>Table 8</i> Conduct Geophysical Monitoring <i>Table 9</i>	▶ ◀	
▼				
Site Closure	Perform Non-Endangerment Demonstration <i>Table 10</i> Plug Monitoring Wells <i>Table 11</i>		▶ ◀	
▼				
Long-term Care				

Appendix D: Plugging and Abandonment Checklist for Financial Responsibility Cost Determination

Available online at: <http://www.epa.gov/r5water/uic/ntwg/p-checklist.pdf>

**P&A CHECKLIST
For Financial Responsibility Cost Determination**

Facility Name:

EPA Well ID:

Well Location:

Well Class:

Type of Well:

List USDWs:

Formation Name	Formation Top	Formation Bottom

Is well construction information current? Y/N

Current Well Construction Information
(**Attach a well bore diagram**):

Well Construction Information	Hole Size	Casing Size	Depth Set	Sacks of Cement
Surface				
Intermediate				
Long String (Production)				
Liner				
Tubing				
Other (additional casing string)				

Describe the weight and grade of the material casing strings and tubing are constructed:

Surface:

Intermediate:

Long String:

Additional string(s):

Tubing:

List all perforation(s) past and present:

Perforations	Depth to Top of Perf	Dept to Bottom of Perf	Active or Plugged	Formation
1				
2				
3				
4				
5				
6				

If the perforation has been plugged, list the date and describe the procedure, including cement used, cement tops, etc.:

Total Well Depth: _____

Packer Type: _____

Packer Depth: _____

Additional packer information:

Perforations: 1) _____

4) _____

2) _____

5) _____

3) _____

6) _____

Plug Locations Required for Proper P&A:

Plug Identifier*	Plug Top	Plug Bottom	Resource Being Protected (USDW, gas, coal, etc.)

*Plug Identifier: Examples, 7" casing shoe 2700'-2600', surface, perforations 2100'-1900

Have any intervals/sections of the wellbore been plugged previously? If so, give the location of the plugs, the circumstances that required the plug and how the plug was set.

**Plugging and Abandonment
Normal Costs**

1. **Rig Costs**

Travel: _____ miles @ \$ _____ = _____

Labor: _____ hrs @ _____ = _____
(Super & Crew)

Equipment Costs _____ hrs @ \$ _____ = _____
(Rig cost, drilling package, etc.)

Miscellaneous Site Costs (Tubing work string rental,
water storage, flow tanks, mud pit, etc.)
_____ hrs. @ \$ _____ = _____

Well Head Cutting = _____

Cement Tagging \$ _____ per# _____ = _____

Pulling Casing/Tubing
_____ hrs. @ \$ _____ = _____

2. **Cement Costs**

Pump Truck & Operator (Including Set Up)
_____ hrs. @ \$ _____ = _____

Tank Truck & Operator
_____ hrs @ \$ _____ = _____

Cement
_____ sacks @ _____ /sk = _____

Type Cement _____
_____ sacks @ _____ /sk = _____

Type Cement _____

Cement Retainer(s) \$ _____ each = _____

List Retainers:
Cement Additives (high temperature/pressure) = _____

Balance Plug inc. fluids and testing
\$ _____ per plug x _____ count = _____

List Plugs:

Surface Plug inc. fluids and testing
\$ _____ = _____

3. **Wireline Service**

Transportation _____ hrs. @ \$ _____ = _____

Labor: _____ hrs @ _____ = _____

Service Charges = _____

Perf/Squeeze _____ shots @ \$ _____/shot = _____

Cut Casing _____ event(s) @ \$ _____ = _____

Cement Retainer(s) \$ _____ each = _____

List Retainers:

TOC Log = _____

Depth charge for gage rings, junk basket
_____ ft @ \$ _____ = _____

Specialized tools for fluid sampling = _____

4. **Site Preparations & Costs**

General Site Engineering & Plan Development = _____

Owner/Operator Site Supervisor = _____

Backhoe & Operator
_____ hrs @ \$ _____ = _____

Dozer & Operator
_____ hrs @ \$ _____ = _____

Road Construction and Improvement Costs = _____

Pit Liner = _____

5. **Transportation & Miscellaneous**

Special Land Use Costs (Zoning & Permits) = _____

Winch truck w/driver (wages & mileage)
_____ hrs @ \$ _____ = _____

Water truck w/ driver (wages & mileage)
_____ hrs @ \$ _____ = _____

Vacuum Truck w/ driver (wages & mileage)
_____ hrs @ \$ _____ = _____

2 axle rig-up truck driver& crew wages & mileage)
_____ hrs @ \$ _____ = _____

1 axle truck w/ driver (wages & mileage)
_____ hrs @ \$ _____ = _____

Hot oiler (equip, labor & mileage)
_____ hrs @ \$ _____ = _____

Welder (equip, labor & mileage)
_____ hrs @ \$ _____ = _____

Packer Fluid per specs.
\$ _____ per _____ bbl = _____

Hydraulic Jacks _____ hrs @ \$ _____ = _____

Bridge Plug = _____

Waste Disposal Costs = _____

Tool Rental (Ex: Casing Ripper, Collar Buster, etc.)

List:

a.

b.

c.

= _____

6. **Land Reclamation**
(State Delegated Programs)

Please provide comments and language

7. **Remediation Costs** (mostly shallow wells)

Sample Analysis (fluid or soil) = _____

Soil Removal = _____

Site Assessment Study Costs = _____

System Removal Costs = _____

Disposal System Modification Costs = _____

Installation of Monitoring Well Costs = _____

Wells

Type

Depth

Construction

Subtotal _____

TOTAL _____

Contingency ____% = _____

Inflation Costs = _____

(% Cost x yrs since plan developed)

TOTAL AMOUNT
Rounded to \$100.00 = _____