

Attachment H: Injection Well Plugging Plan

SYD Denova 1

Carbon America

[40 CFR 146.92(b)]

Revision	Date	Notes	Written By	Approved By
A	11/22/2023	Issued for Approval		R. Keeling

Contents

1. Facility Information	1
2. Denova 1 Plugging and Abandonment Objective	1
3. Planned Tests or Measures to Determine Bottomhole Reservoir Pressure	1
4. Planned External Mechanical Integrity Tests	2
5. Information on Plugs	2
6. Narrative Description of Plugging Procedures	3
6.1 Notifications, Permits, and Inspections.....	3
6.2 Plugging Procedures	3
7. Plugging Report.....	3

Figures

H-1 [REDACTED] Proposed P&A Design

Tables

H-1 Planned Mechanical Integrity Tests
H-2 Plugging Details

1. Facility Information

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

2. [REDACTED] Plugging and Abandonment Objective

Upon the cessation of injection operations, the [REDACTED] will undergo a comprehensive plugging and abandonment (P&A) process, designed to align with the stringent requirements of 40 CFR 146.92. This regulatory framework is critical for ensuring the long-term integrity and safety of decommissioned wells.

The P&A design for [REDACTED], as shown in Figure H-1, will be developed with a focus on utilizing materials and engineering techniques that are specifically tailored to prevent fluid movement within the wellbore and surrounding formations. This is crucial for safeguarding against any potential contamination or migration of fluids into underground sources of drinking water (USDWs).

Additionally, given the well's history of carbon dioxide (CO₂) injection, the P&A design will incorporate materials that are highly resistant to CO₂ exposure and corrosion. The selection of such materials is imperative to maintain the integrity of the well structure over an extended period, effectively mitigating the risks associated with the corrosive properties of CO₂.

In line with the procedural requirements set forth by 40 CFR 146.92, all plugging plans and designs for [REDACTED] will be thoroughly documented and submitted for review and approval by the Underground Injection Control (UIC) Program Director prior to the commencement of P&A operations. This submission will include detailed descriptions of the proposed P&A methodologies, materials, and the technical rationale behind each design choice.

Through this rigorous planning and approval process, the [REDACTED] P&A operations will be executed with the utmost regard for environmental safety, regulatory compliance, and the long-term protection of USDWs, demonstrating a commitment to responsible stewardship in the realm of carbon capture and storage.

3. Planned Tests or Measures to Determine Bottomhole Reservoir Pressure

Prior to P&A operations at [REDACTED]

[REDACTED] This step is crucial for ensuring

stability and integrity before proceeding with P&A operations.

4. Planned External Mechanical Integrity Tests

██████████ will conduct at least one of the tests listed in Table H-1 to verify external mechanical integrity prior to plugging the injection well as required by 40 CFR 146.92(a).

A mechanical integrity test (MIT) log will be conducted throughout the entire depth of the injection well. The survey data obtained will be analyzed for anomalies that suggest a loss of mechanical integrity, in accordance with the definition provided in 40 CFR 146.89(a). If any anomalies are identified, the plugging procedure will be adjusted accordingly.

Table H-1. Planned Mechanical Integrity Tests

Test Description	Location
██████████	██████████
██████████	██████████

5. Information on Plugs

██████████ will use the materials and methods noted in Table H-2 to plug the ██████████. The volume and depth of the plugs were determined based on the geology and downhole conditions during the drilling of the ██████████. The cement(s) formulated for plugging across the injection zone will be compatible with the CO₂ stream. The cement formulation and required certification documents will be submitted to the agency with the final well plugging plan. The wet density will be reported, and duplicate samples of the cement used for each plug will be retained.

Table H-2. Plugging Details

Plug Information	Plug #1	Plug #2	Plug #3	Plug #4	Plug #5
██████████	████	████	████	████	████
██████████	████	████	████	████	████
██████████	████	████	████	████	████
██████████	████	████	████	████	████
██████████	████	████	████	████	████
██████████	████	████	████	████	████
██████████	████	████	████	████	████
██████████	██████████	██████████	██████████	██████████	██████████
██████████	████	████	████	████	████

6. Narrative Description of Plugging Procedures

6.1 Notifications, Permits, and Inspections

In compliance with 40 CFR 146.92(c), Denova will notify the U.S. Environmental Protection Agency (EPA) at least 60 days before plugging the well and provide an updated Injection Well Plugging Plan, if applicable.

6.2 Plugging Procedures

Term	Percentage
GMOs	30%
Organic	95%
Natural	90%
Artificial	85%
Organic	75%
Natural	70%
Artificial	65%
Organic	50%
Natural	45%
Artificial	40%

7. Plugging Report

In compliance with the requirements of 40 CFR 146.92(d), [REDACTED] will prepare and submit a Plugging Report to the UIC Program Director within 60 days after plugging the well. Denova will retain the Plugging Report for 10 years following site closure.

Figures

