

CASPER CARBON STORAGE HUB

Developer / Lead: Casper Carbon Capture, LLC

Location: Natrona County, WY

Status Category: Under Review

Prepared By: Carbon Solutions

OVERVIEW

The Casper Carbon Storage Hub is a planned carbon dioxide sequestration project located southeast of Casper in Natrona County, Wyoming. Developed by Casper Carbon Capture, LLC in partnership with Spiritus Technologies, the project is designed to store CO₂ from a new direct air capture facility in deep saline formations beneath the Powder River Basin. With its location, geology, and Class VI permit under review by the Wyoming Department of Environmental Quality, the hub represents one of several emerging carbon management projects in the state. The initiative highlights how private investment and next-generation capture technology are beginning to shape Wyoming's role in large-scale carbon storage.

OBJECTIVES

- **Commercialize DAC-to-Storage Integration** – Permanently sequester CO₂ sourced from Spiritus' Orchard One DAC facility, supporting growth of the U.S. carbon removal market.
- **Advance Class VI Deployment** – Secure one of Wyoming's next wave of Class VI permits, expanding regulatory and technical expertise in saline storage projects.
- **Enable Regional Workforce Opportunities** – Provide construction and drilling employment while engaging Casper-area stakeholders through public notices and outreach.
- **Demonstrate Long-Term Containment** – Utilize multiple confining zones to protect underground sources of drinking water (USDWs) and validate monitoring technologies including geochemical sampling and potential 4D seismic.

TIMELINE/MILESTONES

- **July 2024:** Class VI permit application submitted (WDEQ UIC #2024-0052v1.0; Permit ID WYS-025-00487)
- **August 2024:** Application deemed complete by WDEQ
- **2024–2025:** Technical review underway; draft permit expected to move to public comment mid-2025
- **Mid-2020s (anticipated):** Initial CO₂ injection following final permit issuance and well completion

GEOLOGY & DESIGN

- **Target Formations:** Lower Sundance Formation, Gypsum Spring Formation, Crow Mountain Sandstone
- **Confining Zones:** Morrison Formation & Redwater Shale (**upper**); Alcova Limestone, Red Peak Shale, Goose Egg Formation (**lower**)
- **Injection Depth:** ~6,000 ft below ground surface
- **Zone Thickness:** ~226 ft
- **Wells:** One Class VI injection well proposed; monitoring wells anticipated in later phases
- **Storage Capacity:** 6 million metric tons over 15 years
- **Injection Rates:** Ramp from 50,000 t/yr to 750,000 t/yr (avg. ~400,000 t/yr)

KEY FACTS

- **Lease Area:** 72,000 acres (mixed private, state, and federal)
- **Land Status:** Notifications issued to landowners, BLM, and WY Office of State Lands & Investments
- **Funding:** Privately funded; Spiritus secured \$30M Series A financing (2025)
- **Community Engagement:** Notices published in Casper Star-Tribune; direct outreach to **adjacent property owners and regulators**
- **Risk & Safeguards:** Site avoids major faults; multiple confining units protect USDWs; robust monitoring planned
- **Partners:** Spiritus Technologies, PBC (CO₂ supply via DAC), Tetra Tech (technical support)

STRATEGIC IMPORTANCE

The Casper Carbon Storage Hub is directly linked to **Orchard One Direct Air Capture**, a facility under development by Spiritus Technologies. Orchard One is designed to capture CO₂ from ambient air, which will be delivered to the Casper Hub for permanent sequestration in deep saline formations. Spiritus has secured \$30 million in Series A financing to advance Orchard One, and the integration of this capture facility with Casper's Class VI storage application represents one of the first planned DAC-to-storage projects in Wyoming.

