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To EPA Region 9  
*Sent via email*

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**RE: Concerns Regarding Carbon TerraVault Holdings LLC (CTV) II Project Proposal**

Restore the Delta (RTD) is submitting comments on the Carbon TerraVault Holdings LLC (CTV) II application for a US EPA Class VI CO<sub>2</sub> injection well permit at Union Island in the Sacramento San-Joaquin Delta.

Based in the Sacramento-San Joaquin Delta since 2006, Restore the Delta works in the areas of public education, program and policy development, and outreach so that all Californians recognize the Sacramento-San Joaquin Bay Delta as part of California's natural heritage, deserving of restoration. Our vision is a thriving Delta ecosystem supporting local communities, agriculture, and wildlife, where diverse communities are empowered to actively participate in decision-making and benefit from natural resource management.

With over 75,000 followers, our programs span water quality monitoring, flood & land restoration, sustainable agriculture, youth engagement, and carbon & energy. Our Carbon and Energy Program evaluates emerging climate technology industries in the Delta region, with a focus on environmental & economic risks, public health implications, and community benefits. We collaborate with carbon removal and energy industries, government agencies, national labs, and community-based organizations to develop research and policy solutions grounded in environmental justice. Our goal is to support Delta community members to advocate for themselves for protective standards, transparency, and inclusion in economic development projects.

As EPA is well aware, the CTV II project is one of several geologic storage projects in the Sacramento-San Joaquin Delta region. Before we offer comments specific to the CTV II project, we'd like to provide background on the rich cultural history, diverse communities, ecosystems, waterways, and agricultural practices that must be considered to sufficiently characterize and address cumulative environmental and public health risks of the emerging geologic storage industry:

The Sacramento-San Joaquin Delta is the largest freshwater tidal estuary of its kind on the west coast of the Americas, providing important habitat for birds on the Pacific Flyway and for fish that live in or pass through the Delta. The region is a world-class recreational destination that attracts about 12 million visitors per year, and is home to more than 4 million people. Delta waterways are shared by recreational boaters and large ocean-going vessels en route to and from the Stockton and West Sacramento Ports. Within the Delta, there are over 1,100 miles of waterways with a complex system of levees that need regular maintenance and upgrades; five highways; three railroads; and hundreds of miles of natural gas and high-voltage transmission lines, oil and gas wells, and water supply infrastructure (forebays, pumps, and other water control structures).

Predicated on a water rights system that was designed to serve a cattle empire in the late 1800s, excessive Delta water exports have contributed significantly to watershed degradation, Harmful Algal Blooms (HABs) and increased vulnerability to flood, drought, and saltwater intrusion. For more than a decade, the

State Water Board has recognized that the Delta is in a state of [ecological crisis](#) and has promised to update outdated 1995 water quality standards to ensure healthy and thriving Delta waterways. Eight native fish species, including the Chinook Salmon, are now threatened or endangered due to water diversions from Central Valley rivers and the Delta, which has severely impacted Tribal subsistence fishing.

Today, the vast majority of the Delta has been [designated a disadvantaged community](#) by the California EPA. Three of the six Class VI permits propose CO<sub>2</sub> injection in census tracts [ranking in the 90th percentile or higher](#) for pollution burden.

While we acknowledge that the formal comment period for the CTV II permit application has not yet opened, we feel it is prudent to bring attention to several critical concerns in the current permit documentation provided by the applicant. Given that this project is next in line for public comments according to the EPA region 9 schedule, and that precedents set here are likely to affect other carbon storage projects, we are requesting that EPA consider these issues well ahead of the projected public comment period.

Our concerns, detailed in full below, include 1) failure to submit the source(s) of the CO<sub>2</sub> stream, 2) failure to disclose the well construction materials to be used, 3) an inadequate emergency response plan, 4) an inadequate corrective action plan and 5) lack of transparency on pore space ownership and rights to injection operations. We believe that these issues are of such significance that they warrant immediate consideration, even in advance of the official comment phase.

**1. The project's failure to specify the source(s) of the CO<sub>2</sub> Stream, as explicitly required under UIC regulations, represents an incomplete analysis of potential safety and environmental risks.**

The US EPA's Under Injection Control (UIC) Program regulations specify that the owner or operator of a proposed Class VI well "shall submit" proposed operating data for the site, including "*the source(s) of the carbon dioxide stream*" and "*an analysis of the chemical and physical characteristics of the [CO<sub>2</sub>] stream,*" (40 C.F.R. § 146.82(a)(7)). Despite the clear requirement for applicants to specify CO<sub>2</sub> sources and provide detailed stream analyses, CTV II has only offered theoretical compositions for generic potential sources. This lack of specificity not only falls short of regulatory requirements, but also makes it impossible to properly assess the project's safety and environmental risks, particularly given the sensitive estuarine ecosystem in the project area. Without concrete information on the actual CO<sub>2</sub> sources and stream compositions, there are outstanding questions about how stream variability might affect operations, what impurities may be present, how these factors could influence a leakage event, and what environmental risks such an event could present. CTV II should address these deficiencies by identifying specific CO<sub>2</sub> sources, providing actual stream analyses, and thoroughly evaluating the potential impacts of various stream compositions on project safety and environmental protection.

**2. The project has failed to characterize well construction materials, a cause for concern in light of recent news of leakage from a corroded CO<sub>2</sub> monitoring well in Illinois.**

Given that the components of the CO<sub>2</sub> stream are not explicitly stated, the project also fails to provide adequate information about the materials that will be used for well construction. The project narrative (marked Att A- ctv ii project Narrative V5) states that "the proposed well materials will be confirmed based on actual CO<sub>2</sub> composition such that material strength is sufficient to withstand all loads encountered throughout the life of the well with an acceptable safety factor incorporated into the design."

We believe that materials used for well construction, including cement and those used for the casing string, should be explicitly stated as well as casing string design specifications to ensure that the materials are adequate and corrosion resistant. Omitting such crucial information from the application is especially concerning given that the CO<sub>2</sub> leakage from the Archer Daniel Midland Carbon Capture and Sequestration site in Decatur, Illinois is [attributed to corrosion of well materials](#).

**3. The project provides an inadequate emergency response plan in light of recent ADM leakage.**

Restore the Delta has reviewed the Emergency and Remedial Response Plan (ERRP) for the CTV II project and finds a critical omission in its failure to address corrosion-related risks. While the plan appears to meet basic Class VI requirements, it lacks specific protocols for monitoring, detecting, reporting, and addressing corrosion in wells and related infrastructure. This is particularly concerning given the corrosive potential of CO<sub>2</sub> when combined with water to form carbonic acid. The recent incident at ADM's carbon capture and storage project in Decatur, Illinois, where ADM failed to promptly report corrosion and leakage in a [monitoring well for months](#), highlights critical gaps in oversight and transparency. Given the state's reliance on the Delta as a water resource, and the potential for environmental injustice, we urge the EPA to require the CTV II project to significantly strengthen its Emergency and Remedial Response Plan by making the following improvements:

- A) First, we have identified a significant gap in the ERRP concerning corrosion management. The current ERRP does not specifically address corrosion-related risks which is particularly concerning given that 40 C.F.R. 146.90 explicitly requires this. The recent leak by ADM in Illinois due to corrosion further highlights the importance of corrosion management. We request specific protocols for monitoring, detecting, reporting, and addressing corrosion in wells and related infrastructure.
- B) We believe that the ERRP would benefit from several key enhancements. While the current ERRP mentions notifying authorities in case of an emergency, it lacks detailed procedures. We request clear timelines and procedures for notifying local officials, the public, and relevant state agencies about any issues that could potentially threaten people, waterways, wildlife, or infrastructure. Additionally, the current ERRP includes some protocols for shutting down injection in certain scenarios. We request explicit guidelines for ceasing CCS operations if any integrity issues are detected in existing wells. Lastly, the current ERRP mentions some monitoring but lacks comprehensive long-term plans. We request comprehensive plans for long-term monitoring of potential impacts on local aquifers and drinking water sources.
- C) Though not explicitly required by the EPA, we strongly encourage the operator to conduct place-based climate risk assessments to injection operations and commit to stricter accountability measures for inspecting and reporting conditions of monitoring and injection wells. Particularly, we are concerned about flood risks which the current ERRP does not address. We request thorough characterization of flood risks to injection operations, mitigation plans, and emergency response plans in the event of flooding impacts on injection operations. Subject to sea level rise from the Bay, more rapidly melting snowpack from the Sierra Nevada, antiquated levee infrastructure, and a lack of dedicated floodplains, the Sacramento-San Joaquin Delta is under extreme flood risk. According to the [Delta Adapts Vulnerability Assessment report](#), severe flooding events are projected to become more frequent and intense in the Sacramento-San Joaquin Delta, an already fragile system of sinking islands which are in many cases situated 20 feet lower than adjacent waterways. We also request independent well inspections with transparent reporting: The current ERRP does not mention independent inspections or public

disclosure of results. Lastly, we request regular, independent inspections of all wells, with results made publicly available.

**4. The project's corrective action plan needs to be expanded to sufficiently characterize and develop a remediation plan for CO<sub>2</sub> leakage pathways.**

We have significant concerns about the corrective action plan for CTV II. The corrective action plan is a document whose main purpose is to address potential issues with existing wells or other artificial penetrations within the area of review that could compromise the containment of the injected CO<sub>2</sub>.

The plan identifies only four wells (Brooks 10-1-RD1, Pool B-1 RD1, Bomberger 1, and Mobil Parcel X 1) as requiring corrective action prior to CO<sub>2</sub> injection. Given the age of the field (discovered in 1972) and the number of wells penetrating the injection zone (29 total), this seems like a surprisingly small number of wells in need of remediation. We have concerns that there's a risk that older wells, even if not explicitly identified as deficient in public records, could have degraded cement or casing that could provide potential leakage pathways. The plan does not include a comprehensive evaluation of the integrity of all wells penetrating the injection zone, especially the older wells.

Additionally, while the plan mentions abandoning some wells as part of "normal operating procedures", it's not clear if these abandonments are being conducted to a standard appropriate for long-term CO<sub>2</sub> storage even if they appear intact now. The plan's focus on current well conditions without explicit consideration of potential long-term degradation is worrying.

Given these gaps, we urge the EPA to require CTV to conduct a more thorough evaluation of all wells, establish specific abandonment standards for CO<sub>2</sub> storage projects, and develop clear criteria for assessing and remediating older wells. The environmental integrity of the Delta and the safety of its communities depend on a more comprehensive and cautious approach to corrective action for this project.

**5. The project has provided no evidence of pore space agreements that outline the right to injection operations, demonstrating a potential waste of EPA staff time and public resources.**

We are generally concerned that CTV is seeking Class VI permits without having demonstrated that they have secured the necessary pore space rights from surface estate owners whose properties overlie the area of review. Our request is for the EPA to require project applicants to consult surface rights owners and secure mineral rights as a prerequisite to permit approval authorizing any physical alterations to property (e.g. monitoring well construction, etc.). This request is informed by recent events, in particular [the lawsuit](#) against Archer Daniels Midlands in Decatur, Illinois, where landowners allege pressure plumes from CO<sub>2</sub> injection migrated onto their properties without proper consent.

While pore space rights aren't directly under EPA jurisdiction, the lack of clear documentation of lease agreements granting project applicants rights to inject CO<sub>2</sub> raises questions about proper consultation with community members and land owners. This could also potentially lead to a waste of EPA time and public resources in evaluating a project that may not have the legal right to proceed. We urge the EPA to require project applicants to provide evidence of secured pore space rights before proceeding with the permit evaluation process.

**Conclusion**

We urge the EPA to carefully consider the concerns raised regarding the Carbon TerraVault Holdings LLC (CTV) II Project. Given the Sacramento-San Joaquin Delta's ecosystem, communities and critical importance as a water resource, it is important that these issues are thoroughly addressed before any permits are granted. We call for greater transparency and stronger safeguards to protect the Delta. The EPA has a crucial role to play in ensuring that carbon capture projects do not compromise environmental integrity or community integrity or community well-being. We look forward to seeing these concerns addressed in detail and remain committed to advocating for the protection and the restoration of the Sacramento-San Joaquin Delta.

Sincerely,



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