

ATTACHMENT J: STIMULATION PLAN
40 CFR 146.82(a)(9)
CTV VI

Document Version History

Version	Revision Date	File Name	Description of Change
1	10/29/2025	Att J – CTV VI Stimulation Plan_v1	Response to EPA comments received August 21, 2025

Facility Information

Facility Name: CTV VI

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Location: CTV VI, Fresno County, CA
36.82, -120.53

1. Introduction

Stimulation to enhance the injectivity potential of the injection zone may be necessary. Stimulation may involve, but is not limited to, flowing fluids into or out of the well, increasing or connecting pore spaces in the injection formation, or other activities that are intended to allow the injectate to move more readily into the injection formation. Advance notice of all proposed stimulation activities must be provided to the Underground Injection Control (UIC) Program Director, as detailed below, prior to conducting the stimulation. CTV must describe any fluids to be used for stimulation activities and CTV must demonstrate that the stimulation will not interfere with containment. CTV must submit proposed procedures for all stimulation activities to the Director in writing at least 30 days in advance, per 40 CFR 146.91(d)(2). Within the 30-day notice period, EPA may deny the stimulation, approve the stimulation as proposed, or approve the stimulation with conditions. CTV must carry out the stimulation procedures, including any conditions, as approved or set forth by EPA.

Stimulation is not anticipated based on the current condition and demonstrated injection performance during Class II injection. However, it is prudent to recognize that injection impairment can occur for various reasons. It is reasonable to expect that future stimulation treatments could occur over the project life. Because the damage mechanism and extent of damage are not currently known, the stimulation design and specific procedure cannot be anticipated. CTV provides the following information to comply with EPA guidance templates with the expectation that unique and specific stimulation designs and procedures will be similar in intent and process to what is described generally below. If stimulation is deemed necessary, CTV will notify EPA within 30 days and submit a proposed stimulation procedure in accordance with 40 CFR 146.91(d)(2). Furthermore, CTV will describe the purpose and objectives of stimulation, the types and volumes of fluids to be used, the additive types and concentrations, and description of any

diversion agents or methods necessary to achieve desired placement. CTV will demonstrate that the proposed treatment does not endanger USDW.

No hydraulic fracturing stimulation treatments are anticipated, and CTV will limit stimulation treatment pressures to the project pressure limits described in the Summary of Operating Conditions, specifically the bottom-hole pressure limitation, as 90% of the injection zone fracture pressure. This will ensure that no new fractures are initiated or propagated.

2. Stimulation Fluids

CTV will use industry-accepted fluid systems including acid blends for matrix stimulation, aqueous solutions for dissolution of salts, and/or non-aqueous surfactants for damage mechanisms as organic deposition, impairment of relative permeability of the reservoir to CO₂, etc. Acid systems may include but not be limited to mixtures of acetic, hydrochloric, hydrofluoric, and/or organic acids. These blends have been historically proven to remove near-wellbore damage due to calcite deposition, drilling muds, completion fluids, and migrating clays in sandstones while minimizing negative impacts to permeability. Surfactant packages are standard and proprietary chemical products routinely used in oilfield and other subsurface applications. CTV may use energized stimulation fluids to protect sequestration zone permeability or to aid in recovery of the stimulation load if needed. CTV will describe the proposed stimulation fluids and request EPA approval when the procedure is provided, in accordance with 40 CFR 146.91(d)(2).

3. Additives

CTV may use combinations of the following additives to aid matrix stimulation while mitigating corrosion of tubulars and damage to the sequestration zone, including but not limited to corrosion inhibitors, clay stabilizers, biocides, demulsifiers, chelating agents, mutual solvents, iron sequestrants, oxygen scavengers, retarders, buffers, and/or surfactants. Chemical additives proposed for the stimulations will be tested and confirmed to be compatible with tubulars, the injection and confining zones, and reservoir fluids prior to use. CTV will describe the proposed additives and request EPA approval when the procedure is provided, in accordance with 40 CFR 146.91(d)(2).

4. Diverters

CTV may elect to use rubber coated nylon (RCN), biodegradable diversion balls, naphthalene or benzoic acid flakes, etc. to effectively distribute stimulation fluids across all intended perforations. Other diversion methods such as foamed fluids may be required, particularly in depleted reservoirs. The need for diverters will depend on the specific stimulation design for a given well, anticipated pump rates, the length of the perforated interval, perforation density, and the selected technique for conveying acid to the formation (e.g., pumping through jointed tubing or pumping through coiled tubing). CTV will describe the proposed diversion methods and request EPA approval when the procedure is provided, in accordance with 40 CFR 146.91(d)(2).

5. Stimulation Procedures

CTV will design custom stimulation treatments based on the suspected cause of formation damage. The fluid systems and deployment methods may vary depending on the nature of the issue. A general matrix acidizing procedure using coiled tubing is described below. A well-specific procedure will be submitted for approval prior to actual stimulation.

1. Obtain samples (when possible) of the materials that may be impacting injectivity and test the materials with acids and additives to optimize the effectiveness of stimulation.
2. Test the selected acid blends for compatibility with well materials, reservoir rock, and fluids.
3. Design the stimulation program.
4. Provide the recommended work procedure and stimulation program to the UIC Program Director in writing at least 30-days prior to the planned date for start of the work (40 CFR 146.91(d)(2)).
5. Obtain the approval of the UIC Program Director.
6. Shut-in the injection well slowly to allow pressures to stabilize at the well, and for other wells and facilities to absorb rate and pressure changes.
7. Prep the location for rig up of subsurface equipment.
8. Move in and rig up crane and coiled tubing unit.
9. Run into the well (through tubing) with coiled tubing and wash nozzle while circulating with a compatible pre-acidizing fluid.
10. When the wash nozzle arrives at the top perforation, stop circulating and begin pumping acid stages while reciprocating up and down across the perforation interval.
 - a. Acid blend 12% HCl/3% HF, plus appropriate additives, is an industry standard acid blend and a concentration that CTV would consider for matrix acidizing.
 - b. Volume of pumped acid (combined stimulation fluids and additives) at each borehole will be limited to 3' of penetration into the injection zone pore space.
 - i. Total estimated volume for each well is approximately 7,000 gallons.
11. Flush acid into the perforations and attempt to recover fluids, if required in the program.
 - a. 5% NH₄Cl, plus appropriate additives, is an industry standard fluid that CTV would consider for displacing and flushing the acid.
12. Pull out coiled tubing out of the well.
13. Rig down and move equipment off location.
14. Return the well to injection.

CTV will ensure that no new fractures develop during stimulation by limiting pump pressures to a maximum of 80% of the sequestration zone fracture gradient, measured or calculated during Pre-Operational Testing (**Attachment I**).