

In December 2024, CTV provided responses to EPA’s August 2024 technical evaluation comments on financial responsibility information in the CTV-II Class VI permit application. EPA’s evaluation of the responses is provided in **red text** below.

#	Section	Comment/Question for CTV	Report Section Updated	Response
1	Attachment H Financial Responsibility	Please explain why CTV assumes so few events for O&M of the injection zone monitoring wells and why there would be no O&M costs for the USDW monitoring well.	N/A	<p>Upon review of EPA’s own cost estimates and supporting documents, the EPA expectation for annual O&M is derived from annual operating costs for oil and gas production wells (For example, the EPA Cost Tool is based on the EPA 2008 Report “Geologic CO₂ Sequestration Technology and Cost Analysis TECHNICAL SUPPORT DOCUMENT”, which states [Table 3] that annual monitoring well O&M is based on the “EIA Oil and Gas Lease Equipment and Operating Cost estimates” [2006 version]. Costs listed in the 2008 report compare well to the EIA 2006 study ‘annual operation costs for 1-well gas lease’).</p> <p>Annual O&M is not necessary for monitoring wells. CTV has included O&M for the injection zone, USDW and above confining zone wells at specified interval based on professional experience. No changes to the cost estimate have been made based on this comment.</p> <p>EPA evaluation of CTV’s response: Electricity cost is a significant part of the EPA estimate on well O&M. Please itemize the O&M costs for the injection zone, USDW and above confining zone wells CTV included and justify why these costs are representative and sufficient based on industrial well O&M standards.</p>
2	Attachment H Financial Responsibility	Depending on the effectiveness of the proposed pulsed neutron logging for indirect monitoring of CO2 plume development, EPA may require seismic surveys as additional monitoring of the CO2 plume. Please account for the cost of performing seismic surveys in the PISC estimate.	N/A	<p>Seismic surveys would not be an effective indirect plume monitoring tool in a depleted gas reservoir including the CTV II injection zone. The EPA Class VI Testing and Monitoring Guidance states (p.80) “Seismic methods also: perform poorly for detecting carbon dioxide in depleted gas reservoirs and do not work well for imaging through shallow, dry natural gas reservoirs.” Due to the low reservoir pressure the fluid in the matrix is already in a compressible state. Fluid modeling shows that as CO₂ is injected into the reservoir the bulk modulus (incompressibility) increases along with pressure increases. Coincidentally with that the density of the fluid in the matrix is increased. The increase in density and increase in bulk modulus effects serve to cancel each other out resulting in changes in P-impedance that are lower than a reasonable noise threshold for a repeat seismic survey. Put simply, the CO₂ plume will not be seen or captured by seismic surveys and because of this CTV is relying on well based plume monitoring in depleted reservoirs.</p> <p>EPA evaluation of CTV’s response: The response is acceptable at this point in the permit application review.</p>
3	Attachment H Financial Responsibility	Changes to various Cost Tool inputs (e.g., the dimensions of the injection or monitoring wells, the size of the AoR based on final modeling, the total volume of CO2 to be injected, and corrective action needs at the time the permit is issued) may affect financial responsibility needs.	N/A	<p>Comment noted, no response required.</p> <p>EPA evaluation of CTV’s response: EPA agrees.</p>