PURO.EARTH FACILITY AND OUTPUT AUDIT REPORT

Carbon Sequestration, Inc Hardin

Puro Standard General Rules Version v3.1 (Issued in Feb 2024)

Audit Start - End date: 23.9.2024 – 25.10.2024

Project Number: PRJN-701042

DNV Team: Dwight Chapman, Heidi Käkelä

Puro Standard: Terrestrial Storage of Biomass Edition 2023 v.1

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Attachments:

ATTACHMENT 1 Audit checklist - Terrestrial Storage of Biomass_v1_10072024 requirements and verification results

Introduction

This report summarises the results and conclusions from the performed facility and output audit. The audit is performed as a formal part of the Puro.earth certification process. The key objective is to determine the compliance of the operations with the Puro requirements.

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Production facility standing data

(PURO General rules Biochar methodology)

General information

Facility unique identity	Facility ID 959739
CO2 Removal Supplier registering the Production Facility	CSI Inc
Name	CSI Hardin
Location	Hardin, Texas, USA
Date on which the Production Facility became eligible to receive CORCs	October 25, 2024
Removal Method(s) for which the plant is eligible to receive CORCs	Terrestrial Storage of Biomass
Production Facility has benefited from public support	No
Removal Method specific information as may be specified in the relevant Removal Method specific Methodology	Terrestrial Storage of Biomass Edition 2023 V1

Base for calculations in Output report

CORC Issuance details

Parameter	Unit	Value	Min	Max	Remarks
Activity details					
Nb of storage units validated for CORC issuance this per	units	4	NA	NA	
Dry mass of biomass placed in storage units for CORC iss	dry metric tonne	3066	NA	NA	
Average amount of biomass per storage units, at facility	dry metric tonne	767	142.83	2139.09	
Average carbon content of biomass used, at facility	%, weight, dry basis	48.0%	45.00%	50.00%	

Short description of facility and any exclusions from verification scope observed

Facility is terrestrial pit filled with wood and soil, with monitoring equipment in the form of PVC tubes laid above the pit which are sampled during monitoring.

Statement of confidentiality

The contents of this report, including any notes and checklists completed during the audit will be treated in strictest confidence, and will not be disclosed to any third party without the

written consent of the customer, except as required by the appropriate accreditation authorities.

Disclaimer

An audit is based on verification of a sample of available information. Consequently, there is an element of uncertainty reflected in the audit findings. An absence of nonconformities does not mean that they do not exist in audited and/or other areas. Prior to awarding or renewing an assurance opinion this report is also subject to an independent DNV internal review which may affect the report content and conclusions.

Audit results

Detailed output removal verified

CORC Issuance details					
Parameter	**Unit**	**Value**	**Min**	**Max**	**Remarks**
Activity details					
Nb of storage units validated for CORC issuance this per	units	4	NA	NA	
Dry mass of biomass placed in storage units for CORC iss	dry metric tonne	3066	NA	NA	
Average amount of biomass per storage units, at facility	dry metric tonne	767	142.83	2139.09	
Average carbon content of biomass used, at facility	%, weight, dry basis	48.0%	45.00%	50.00%	
Life cycle greenhouse gas emissions, totals over reporting period					
E_stored	tonne CO_2-eq	5396.73	NA	NA	
E_re-emissions as CO_2	tonne CO_2-eq	320.57	NA	NA	
E_re-emissions as CH_4	tonne CO_2-eq	1565.91	NA	NA	
E_unit_construction	tonne CO_2-eq	18.24	NA	NA	
E_biomass	tonne CO_2-eq	57.63	NA	NA	
E_unit_sealing	tonne CO_2-eq	11.06	NA	NA	
E_site_establishment	tonne CO_2-eq	0.10	NA	NA	
E_site_closing	tonne CO_2-eq	0.47	NA	NA	
CORCs claimed	tonne CO_2-eq	3248.69	NA	NA	a, b

Positive indications

- Data collection and CORC calculations are systematic.
- File management is systematic.

Recommendations for improvement

- NA.

Audit findings

Detailed findings requiring corrective actions:

NA.

Conclusion

Conclusion	
The company is found compliant towards CORC requirement, and a certificate can be issued	Yes
The company is found NOT to be fully compliant towards CORC requirement and corrective actions are needed before a certificate can be issued	

Terrestrial Storage of Biomass Methodology	
Company Name:	CSI Inc
Audit Date:	25-Sept-24
Facility address:	4801 Woodway Dr, Ste 335W Houston 77056
Auditing Body:	DNV / S&A Carbon / American Forest Carbon
Auditor Name:	Dwight Chapman
Audit Participants:	Dwight Chapman,Chris Knop, Jim Ware, Clayton Sanders

Topic	Terrestrial Storage of Biomass Methodology for CO2 Removal Edition 2023 v 1	Requirement	Verification method i.e. compliance evidence, where applicable	Verification remarks i.e. auditors comments/site visit findings	Docs	Compliance Y/N or N/A
The auditor should check the CO2 Removal Supplier's alignment against the ICVCM CCP on an overall level, reflecting these against the findings from the audit checklist below.						
Alignment with Core Carbon Principles	2.2 - 6. Additionality (CCP 05)	The greenhouse gas (GHG) emission reductions or removals from the mitigation activity has been additional, i.e., they would not have occurred in the absence of the incentive created by carbon credit revenues. Note that there are multiple approaches for additionality that, depending on the type of mitigation activity, can provide strong assurances without the need for an investment analysis.	Desktop ReviewReviewed the Additionalities Qu	Clear that the money would not have been expended to bury the wood without the incentive of carbon funding.	Additionalities Questionnaire 7.31.2024.docx	Y
	2.2 - 7. Permanence (CCP 06)	The GHG emission reductions or removals from the mitigation activity has been permanent or, where there is a risk of reversal, there has been measures in place to address those risks and compensate for reversals.	Desktop ReviewReviewed Easement documents	Noted that the Easement Agreement was updated after puro.earth pointed out that the orginal documents did not ensure the Easement would capture responsibility to maintain TSB if land was sold. Onsite, Verifier interviewed team about the Funding Requirements Document (Funding Requirements 5.13.24.pdf) to ensure complete understanding of the long term financial responsibilities of CSI.	Reviewed: Contractual Framework.pdf updated Easement with CSI-MRV Trust as beneficiary 101 Year Easement Agreement for Carbon Removal 7.31.2024.pdf	Y
	2.2 - 8. Robust quantification of emission reductions and removals (CCP 07)	The GHG emission reductions or removals from the mitigation activity has been robustly quantified, based on conservative approaches, completeness and sound scientific methods.	Desktop ReviewSpreadsheet collections of data		Gas Monitoring System Data.xlsx CSI Gas Monitoring Protocol 3.26.2024.pdf Monitoring and Reporting Protocol.pdf Devices Requiring Calibration.pdf	Y
	2.2 - 9. No double counting (CCP 08)	The GHG emission reductions or removals from the mitigation activity has not been double counted, i.e., they shall only be counted once towards achieving mitigation targets or goals. Double counting covers double issuance, double claiming, and double use.	Desktop ReviewReviewed Statement of Non Dou	Also reviewed signed affidavits of associates (Hardin and Jefferson)	Statement of Non Double Counting.pdf Signed Affidavits	Y
	2.2 - 10. Contribution to net zero transition (CCP 10)	The mitigation activity shall avoid locking-in levels of GHG emissions, technologies or carbon-intensive practices that are incompatible with the objective of achieving net zero GHG emissions by mid-century.	Desktop ReviewReview of LCA document's description of the process shows adherence to net Zero GHG em		LCA CSI-Hardin-2023 8.3.2024.xlxs	Y

Topic	Terrestrial Storage of Biomass Methodology for CO2 Removal Edition 2023 v 1	Requirement	Verification method i.e. compliance evidence	Verification remarks i.e. auditors comments/site visit findings	Docs	Compliance Y/N or N/A	Value Insert numerical value or description (if applicable)	Units Insert unit (if applicable)
Section 4 - Eligibility requirements and verification								
General eligibility and sustainability	4.1.1	The site is capable of complying with the requirement of sustainably sourcing eligible biomass to be stored in a site which maintains conditions which inhibit biomass decomposition for at least 100 years.	Desktop Review	Onsite observations confirmed to be the same site in the photo documentation, and clearly appears solid and stable.	CSI Hardin 2023 MRV Load Spreadsheet - 7.29.2024.xlxs CSI-Hardin-2023 - Biomass types and origins list for TSB 7.30.2024.xlxs	Y		
	4.1.2	Eligible biomass consists of **lignocellulosic biomass (LCB)** with the following properties: - A **rigid physical structure** and a **high lignin content** - A **carbon to nitrogen (C:N) ratio higher than 80** Note: This iteration of the methodology the definiton of eligible biomass excludes biomass from non-tree sources such as algae, herbaceous plants and grasses.	Desktop Review	All biomass appears to be woody biomass from local harvesting activities, as documented in site building photos.	Biomass Types and Origins List 7.30.2024	Y		
	4.1.3	The CO2 Removal Supplier has provided proof of eligibility of the biomass i.e. a list of the individual species of biomass being stored or documentation demonstrating adherence to the requirements set out in 4.1.2	Desktop Review	This was confirmed in the worksheet: CSI-Hardin-2023 - Biomass types and origins list for TSB 7.30.2024.xlxs, and also by reviewing proof of the material acquisition	Biomass Types and Origins List 7.30.2024	Y		
	4.1.4	The CO2 Removal Supplier has provided a chemical analysis of the biomass to be stored: - C:N Ratio - Quantity and composition of the major structural components Analysis are performed for a statistically representation sample. Values from peer reviewed scientific literature can be utilised if available.	Desktop Review	Also reviewed General composition values are in: CSI x Geoclime - Geotechnical Analysis 2.24.23 (4).pdf GHG Re-Emission 5.6.2024.xlsx	Geotechnical Analysis 2.24.23; GHG Re-Emission 5.6.24	Y		
	4.1.5	The CO2 Removal Supplier demonstrates that the biomass is sourced sustainably in accordance with local regulations and other requirements detailed in this methodology (see rule 4.1.6) or the Puro Standard. Any land use right, environmental permits, as well as certification of operations, has been part of the proof.	Desktop Review	Additional Documents reviewed: LCA CSI-Hardin-2023 8.3.2024.xlxs 2022_06_03-100557 2022_06_03-100557 NOI approval.pdf Applicable Permits.pdf NOI Application 12.2021 12.2021.pdf List of Applicable Regulations.xlsx GEOCLIME GEOCLIME EIA-ERA-CSI Hardin County - 3.18.2024-CSI Hardin County - 3.18.2024.pdf	NOI Application 12.2021 GEOCLIME EIA-ERA-CSI Hardin County - 3.18.2024	Y		
	4.1.6 (a)	For the biomass to be considered sustainably sourced, for the carbon storage to be additional relative to the baseline and for economic leakage to be adequately addressed, Rules are categorised by biomass source (a-e) below. **Managed Forests -** biomass sourced from forest land that is managed for production of materials or energy. Biomass is eligible provided that: i) Forestry operations are certified ii) Local oversupply of biomass is demonstrated	Desktop Review	Onsite observations: Woody biomass displayed in photos of pit filling appeared to match local trees around the project area.	MRV 7.29. 2024; Biomass Types 7.30.24 Biomass Types	Y		
	4.1.6 (b)	**Unmanaged Forests -** forests which are not managed for the production of materials or energy. Biomass is eligible provided that: i) Authorisation for the collection of wood is granted by a local authority	N/A - Material is from Managed Forest	Timber is privately owned, see Sworn Statement and approved NOI - Recycling	Sworn Statements 2022_06_03-100557 NOI approval	Y		
	4.1.6 (c)	**Purpose grown on non forest land** biomass is eligible provided that: i) The land restoration activity is authorised by a local authority.	N/A - Material is from Managed Forest	N/A	N/A	Y		
	4.1.6 (d)	**Industrial or post consumer activities** biomass waste is eligible provided: i) Demonstrated that the biomass is not hazardous waste ii) The historical fate of the waste is known and eligible iii) Economic leakage is quantified	N/A - Material is from Managed Forest	See Sworn Statements	Sworn Statements	Y		
	4.1.6 (e)	**Land clearing in construction projects**, biomass is eligible provided: i) The construction project has a valid permit ii) The economically usable fractions are not used for storage	Desktop Review	Permits show valid construction permit.Clearing private land in Texas does not require any permits.	Applicable Permits.pdf	Y		
This information is provided as part of the audit package and its contents should correspond to the Audit Document Index file, filled in by the CO2 Removal Supplier and checked by Puro.								
Production Facility Audit	4.2.1	The storage site corresponds to the Production facility of CO2 Removal Certificate as per the Puro Standard General Rules (Definitions).	Field visit confirmation	Site is the same site in all the photos and documents	Baseline and Additionality Assessment.docx Additionality Questionnaire:	Y		
	4.2.3	The Production Facility Auditor collects and checks the standing data of the CO2 Removal Supplier and the Production facility. The standing data, in digital format, to be collected by the Auditor includes:	Field visit confirmation	Initial field visit found that the monitoring system was not allowing air to blow through the PVC pipes due to pipe collapsing over time. Worked with team to redo the piping and performed video call afterwards to assure functioning. Performed video call with RS and determined the system is working and correctly measuring the gas as shown in the Data Records. See also Gas Monitoring System Data and Analysis 10.1.2024.docx, which is a summary of the data verified during the video call. Also advised adding a control pipe away from the vaults but in the same disturbed soil for comparisons to vault readings	MRV 7.29.24; Data Records from GHG Monitoring Gas Monitoring Syste	Y		
		A certified trade registry extract or similar official document stating that the CO2 Removal Supplier's organization legitimately exists.	Desktop Review		Easement Agreement 3.26.24; Formation September 2019; Insurance Easement Formation Doc Insurance	Y		
		The CO2 Removal Supplier registering the Production facility in the Puro Registry.		In process/waiting for audit results		N/A		
		Location or locations of the terrestrial storage sites forming the Production facility.	Desktop Review		MRV 7.29.24, Stabilization Report 7.31.24; Records of Storage Operations MRVStabilization Records of Storage	Y		
		A statement detailing whether the Production facility has benefited from public financial support.	Desktop Review	N/A; no public financial support		Y		
		Date on which the Production facility becomes eligible to issue CORCs.	Desktop Review	In process/waiting for audit results		N/A		
	4.3.1	Each storage chamber have been uniquely identified and characterized, specifically engineered to inhibit the decomposition biomass in CO2, including measures to inhibit and monitor potential decomposition of biomass.	Desktop Review, site visit inspection of site for vaults 0-1,2,3	Yes, see Stabilization Report 7.31.2024. The design documents apprear to match the photos of the pits.	CSI Hardin 2023 Plat Vault 0 - 3 - 3.24.2024 Stabilization:	Y		
	4.3.2	The CO2 Removal Supplier follows a general storage chamber design defined as eligible according to the methodology. General storage chamber design are eligible under this methodology: - Purpose built storage chambers above ground that are typically ventilated or otherwise constructure to maintain a low humidity (water activity < 0.7) - Purpose built below ground storage chambers and covered storage pits which either maintain an anoxic environment OR a dry oxic environment as in above ground storage chambers. - Subterranean injection, a hydraulically opened aperture below ground formed by the injection process and not other pre-engineered. The storage occurs in an anoxic environment and does not require active maintained. The minimum injection depth is 3 meters	Desktop Review	Yes, see Stabilization Report 7.31.24; Gas Monitoring Protocol 3.26.24, and CSI Hardin Plat Vault 0-3 3.24.24	Stabilization: Gas Monitoring Protocol; Plat Vault:	Y		

Storage site design	4.3.3	The CO2 Removal Supplier shall consider the effect of the following general design principles: - Absence of light in the storage chambers - Absence of biomass disturbance over 100 years - Temperate, gas an moisture monitoring and control - Consistent moisture conditions - Limit external risk factors (see section 7) The exhaustive implementation of the above is not required as long as durable storage conditions are ensured (see 4.3.1, 4.3.2, e.4.3.4).	Desktop Review	Yes, see GHG Monitoring Protocol 3.26.24	Demonstration of Storage Site Design Inhibitng Decompostion (3)GHG M	Y		
	4.3.4	In storage systems where fire can occur (including but not limited to dry ventilated storage conditions), the CO2 Removal Supplier has implemented measures to limit the risk of fire and management of any occurrence with appropriate detection and suppression systems.	Desktop Review, and site investigation shows a very wet site and surrounding area.	Yes, see Fire Mitigation Plan	Fire Mitigation Plan	Y		
	4.3.5 (a)	In addition to 4.3.3, the CO2 Removal Supplier has considered the following storage design conditions: Where the water activity is above 0.71, sufficient moisture is present to affect biological decay the following factors are considered: - Physical separation of the store biomass utilising either 2 meters or more of fine grain compacted soil or polymer barrier with comparable low gas permeability where integrity is ensured for 100 years. - Very low oxygen levels - Hydraulic conductivity have been design and demonstrated to restrict ground water flow into and out of the chamber - Utilisation of microbial methane oxidation system to reduce emissions, i.e. a methane oxidation layer (e.g. soil) underlain by a gas distribution layer (e.g. gravel)	Desktop Review	Yes, see GHG Monitoring Protocol 3.26.24 and the Stabilization Report 7.31.24	GHG Monitoring Protocol:Stabilization:	Y		
	4.3.5 (b)	Where the water activity is below 0.71, that eliminate decomposition, the following factors are considered: - Physical integrity of the storage chamber - Drying biomass and maintaining dry conditions over time	Desktop Review	Yes, see above, plus MRV 7.29.24	MRV	Y		
Storage site monitoring	4.4.1	The CO2 Removal Supplier has prepared and documented a monitoring plan for the stored biomass. The monitoring plan must specify and detail the measures in place to ascertain that consistent storage conditions are being maintained through time. This includes but is not limited to detailing the experimental determination of the storage conditions.	Desktop Review, the field portion of the monitoring plan was observed onsite.	Yes, see the Gas Monitoring Protocol 3.26.24 and the Data Records from GHG Monitoing	GHG Monitoring Protocol: Data Records:	Y		
	4.4.2	The CO2 Removal Supplier has detailed and implemented a systematized approach for timely detection of compromised storage conditions. This includes an approach for detection and, where relevant, oxidation of any significant methane emissions to the atmosphere (see also rules 4.3.5 and 4.4.3).	Desktop Review	See above		Y		
	4.4.3	All storage sites have been be equipped to monitor and quantify the release of greenhouse gases. The CO2 Removal Supplier is able to experimentally measure the concentration of greenhouse gases released from the storage chambers to the atmosphere. - The instrument(s) utilized to monitor methane release are accurate and precise enough to reliably quantify CH4 concentrations of at least 2 ppmv Measurements are periodically performed in line with a monitoring plan (see 4.4.1)	Desktop Review, onsite inspection of system.	Initial field visit found that the monitoring system was not allowing air to blow through the PVC pipes due to pipe collapsing from stabilization bulldozer work. Worked with CSI team to redo the u-tubes and performed video call afterwards to assure proper functioning, which was restored. The u-tube sections were reduced by half to reduce soil stresses, and the amount of sections were doubled. Since then the vault has stabilized further, and proper flow in the u-tubes has been reestablished without issue, allowing for proper quarterly monitoring sessions. CSI will make efforts to prevent heavy machinery from going directly over the u-tube systems. The CH4 sensor has a resolution of 100 ppm and a range of 1-100% vol. The accuracy is 600 ppm in range 0-1% vol. CH4 and 6% reading in range 1-100%.The results of the monitoring graphs so changes in gas concentrations at the 2 ppm	Gas Monitoring Protocol 3.26.24 and the Data Records from GHG Monitoing	Y		
	4.4.4	Storage chambers designed to maintain dry conditions and must monitor relative humidity and temperature, remove excess moisture and detect and suppress fire in line with 4.3.4.	Desktop Review, onsite inspection of system.	yes, please view the Design Document 7.31.24	Design Document	Y		
	4.4.5	Storage chambers created by subterranean injection (see rule 4.3.2) are equipped to enable the monitoring of GHGs by a soil vapor probe or a vapor accumulation pipe in communication with injected biomass. Alternatively, monitoring of surface emissions through flux measurements using a static chamber, or a methane survey can be utilized. Monitoring must continue at least until conditions in the chamber have stabilized as demonstrated by methane levels equivalent to background soil. Measurements are periodically performed in line with a monitoring plan (see 4.4.1)	Desktop Review, onsite inspection of system.	Yes, please view the Gas Monitoring Protocol 3.26.24; Data Records from GHG Monitoing; and the Design Document 7.31.24	GHG Monitoring Protocol: Data Records: Design Document:	Y		
Property management and liabilities	4.5.1	The CO2 Removal Supplier has presented either the property title and proof of ownership, or the right or authorisation to use the land as a storage site, such as a lease or other agreement.	Desktop Review	Yes, see the Easement Agreement	Easement:	Y		
	4.5.2	The CO2 Removal Supplier has presented proof of the right or authorisation to harvest or collect the biomass stored according to this methodology. In instances where the biomass is sourced from a third-party, the CO2 Removal Supplier shall present proof of purchase or a recorded change of ownership if no payment is made.	Desktop Review	Yes, see the Puro-CSI Agreement , which is unavailalbe to verifier, but sworn affidavits are shown from supplier	Sworn Statements:	N/A		
	4.5.3	The CO2 Removal Supplier has presented relevant legal documentation such as an easement which ensures the associated land use for 100 years and guard against risk of a potential new owner not maintaining such conditions. N.B this does not apply to storage techniques based on subterranean injection depths in excess of 3 meters	Desktop Review	Yes, please view the Easement Agreement	Easement:	Y		
	4.5.4	The CO2 Removal Supplier is liable for any greenhouse gas emissions from the stored biomass during the lifetime of the project or at least for 100 years in total from the point when CORCs are issued (see 6.2.7).	Desktop Review	Yes, please view Easement and Insurance	Easement: Insurance	Y		
	4.5.5	The CO2 Removal Supplier has demonstrated the creation of a binding contractual framework securing the storage site against any unexpected re-emissions, and enabling storage chamber maintenance to comply with applicable regulatory requirements and standard-based carbon confinement for at least 100 years. e.g. a trust fund, insurance policy or contract between the CO2 removal supplier and the buyer of CORCs.	Desktop Review		Funding Requirements for Implementation of Mainteceand Management ofthe Burial Chambers 5.13.24	Y		
	4.5.6	The CO2 Removal Supplier has provided a detailed written estimate, in current prices, of the funding required for the purposes detailed in rule 4.5.5. The estimate is based upon the nature of the contractual framework employed.	Desktop Review		Funding Requirements for Implementation of Mainteceand Management ofthe Burial Chambers 5.13.24	Y		
Additionality	4.6.1	The CO2 Removal supplier is able to demonstrate additionality, meaning that the GHG emission reduction of removal from the mitigation activity has been additional.	Desktop Review	Please see the Additionality Questionnaire 7.30.24	Additionality Questionnaire:	Y		
	4.6.2	The CO2 Removal supplier demonstrates the project is not require by existing law regulation or other binding obligations.	Desktop Review	Yes, see Applicable Permits	Applicable Permits	Y		
	4.6.3	The CO2 Removal supplier has provided full project financials and counterfactual analysis based on baselines that shall be project specific conservative and periodically updated	Desktop Review		Adidtionality Questionnaire 7.30.2024, and CSI Master Financials	Y		
Prevention of double counting	4.7.1	The CO2 Removal Supplier has ensured removal from the TSB has not been double counted of double claimed. The CORC must solely be registered in Puro.earth's removal registry. The upstream and downstream commercial relationships between the supply-chain partners shall prevent double-counting and double-claiming of the carbon removal.	Desktop Review	Yes, see the Statement of Non-Double Counting	Statement of Non-Double Counting	Y		
	4.7.2	The CO2 Removal Supplier has evidenced with documents that the biomass suppliers are prevented from making claims to include the carbon net-negativity, carbon removal, carbon drawdown or carbon sequestration performed by the CO2 Removal Supplier.	Desktop Review	Yes, see the Easement Agreement , also view the Affidavits/Sworn Statements	Easement Agreement , also view the Affidavits/Sworn Statements	Y		
	4.7.3	The CO2 Removal Supplier has evidenced with documents that the land-owners or land-users receiving the biomass material beneath their soil are prevented from making claims to include the carbon net-negativi+C21ty, carbon removal, carbon drawdown or carbon sequestration performed by the removal supplier.	Desktop Review	Yes, view the Affidavits/Sworn Statements	Affidavits/Sworn Statements	Y		
	4.7.4	The resulting carbon removal has not been used in marketing of any products arising as a part of the supply-chain (e.g. forestry products). Note that supply-chain partners can claim their affiliation to the removal activity, in coordination with the CO2 Removal Supplier. A signed commitment from counter-parties that they will not make unpermitted claims may be required depending upon the individual circumstances.	Desktop Review	N/A, CSI's products have not used in any marketing , also implied by the Statement of Non-Double Counting		Y		
Environmental safeguards	4.8.1	The CO2 Removal Supplier is responsible for following any existing regulation in general and especially environmental regulation in the jurisdiction where the harvesting and storage of biomass takes place.	Desktop Review	Yes, CSI follows the applicable permits	Applicable Permits:	Y		
	4.8.2, 4.8.4	The CO2 Removal Supplier must assess the environmental risks associated with the project in order to demonstrate the activities related to the storage of biomass pose no significant threat to the surrounding natural environment. Documentation is required which demonstrates the analysis and management of environmental impacts, such as: - Environmental impact assessment (EIA) - Environmental risk assessment (ERA) - Environmental permits An assessment of environmental impacts, e.g., EIA or ERA has been completed before biomass has been harvested or sourced, and before significant ground works have been undertaken for the storage site.	Desktop Review	Please view the Geoclime GEOCLIME EIA-ERA-CSI Hardin County - 3.18.2024-CSI 3.18.24; Geotechnical Analysis; Applicable Permits	GEOCLIME EIA-ERA-CSI Hardin County - 3.18.2024 Geotechnical Analysis Applicable Permits	Y		
	4.8.3	The CO2 Removal Supplier assumes and can demonstrate responsibility for assessing and implementing measures to effectively manage environmental risks in accordance with rule 4.8.3.	Desktop Review	See the Geoclime GEOCLIME EIA-ERA-CSI Hardin County - 3.18.2024-CSI 3.18.24	GEOCLIME EIA-ERA-CSI Hardin County - 3.18.2024:	Y		
	4.8.5	The assessment of environmental impacts shall focus on the prevention of environmental risks and must consider all relevant risks in relation to: - Sourcing of biomass - Transport or harvesting of biomass - The activity of creating the storage chambers - Site selection for storage - Storage chamber design - Long-term monitoring of consistent chamber conditions	Desktop Review	See GEOCLIME EIA-ERA-CSI Hardin County - 3.18.2024	GEOCLIME EIA-ERA-CSI Hardin County - 3.18.2024	Y		
	4.8.6, 4.8.7, 4.8.8	The assessment of environmental impacts has been conservative and precautionary, it has been reviewed by an independent third-party, and it has been submitted to Puro.earth for internal screening along with the supporting evidence	Desktop Review	See GEOCLIME EIA-ERA-CSI Hardin County - 3.18.2024	GEOCLIME EIA-ERA-CSI Hardin County - 3.18.2024	Y		
	4.8.9	The CO2 Removal Supplier has made information regarding environmental risks demonstrably available to all involved stakeholders	Desktop Review	See GEOCLIME EIA-ERA-CSI Hardin County - 3.18.2024	GEOCLIME EIA-ERA-CSI Hardin County - 3.18.2024	Y		
uards	4.9.1	The CO2 Removal Supplier is able to demonstrate the impact on communities from the terrestrial storage activity. Documented information on the effects of local communities, indigenous people, land tenure, local employment, food production, user safety, cultural and religious sites, inter alia has been provided	Desktop Review	View Community Benefits, DEI	Community Benefits, DEI	Y		

Social safeg	4.9.2	The CO2 Removal Supplier has provided documented evidence on how they informed and acquired consent from local communities and other affected stakeholders. The documented information shall detail the procedures for continue dialogue with the local community over the entire operational period of the storage site. Policies and procedures in place to address potential grievances has been provided.	Desktop Review	Please view the Stakeholder Map	Stakeholder Map	Y		
	4.9.3	The CO2 Removal Supplier has performed in accordance with local regulation and is able to present measures taken for occupational health and safety hazards management and mitigation during its operations	Desktop Review	Please view Evidence of Safe Working Environment	Evidence of Safe Working Environment	Y		
Section 5 - Assessment of life cycle greenhouse gas emissions								
Lifecycle Analysis / Activity Boundary for Net Negativity	5.1.1	GHG emissions have been assessed and reported following the LCA calculation principles of ISO 14040/44, and follow the scope defined in sections 5 and 6 of the Terrestrial Storage of Biomass methodology	Desktop Review	Yes, see the Independent LCA 7.31.24	Independent LCA 7.31.24	Y		
	5.1.2	The LCA includes a report explaining and justifying the data and modelling choices made, as well as supporting calculation files, which will be used for calculation of CORCs	Desktop Review	Yes, view both the LCA 8.2.24 (Excel) and the Independent LCA 7.31.24(PDF)	LCA 8.2.24 (Excel) and the Independent LCA 7.31.24(PDF)	Y		
	5.1.3, 5.1.4, 5.2.3	The LCA quantifies the climate change impact of the activity, using 100-year global warming potentials (GWP100). This is presented in a disaggregated way showing the contributions of each life cycle stage: - Establishment of storage site - Construction of storage units - Operation of storage units - Site closure and post-closure monitoring and emission control As well as the contribution of major greenhouse gases in CO2e for: - CO2-fossil - CH4 - N2O - Other greenhouse gases	Desktop Review	See above LCA's	See above LCA's	Y		
	5.1.5	If waste, recycled or secondary resources are used as input to the activity (e.g. recycled steel or plastic) environmental burdens from the supply transformation and handling of secondary resource should be included within the LCA	Desktop Review	N/A, biomass is cleaned before burial		Y		
	5.1.6	In the event that by-products are generated during the activity and that these byproducts have a useful use outside of the process boundaries, then an allocation of the relevant life cycle stages between the co-products may be applied. Determination of an appropriate allocation rule shall follow principles from ISO 14040/44.	Desktop Review	N/A, biomass is cleaned before burial		Y		
Specific LCA requirements	5.2.1	The functional unit is "the sourcing and storage of 1 dry metric tonne of biomass in a specific terrestrial storage site", the results of the LCA are being expressed per dry metric tonne of biomass put in terrestrial storage.	Desktop Review		Independent LCA 7.31.24	Y		
	5.2.2, 5.2.3	The full scope of emissions is included for each stage in the activity boundaries including: - Establishment of storage site - Construction of storage units - Operation of storage units - Site closure and post-closure monitoring and emission control Infrastructure requirements, material and energy consumption, as well as treatment of waste materials are included.	Desktop Review		LCA 8.2.24	Y		
	5.2.4	The spatial boundaries of the LCA are defined, including the location of the storage site and the areas from which biomass is sourced	Desktop Review		CSI Hardin 2023 Plat Vault 0-3 3.24.24	Y		
	5.2.5	The time boundaries of the LCA are defined. This includes the timing of the establishment of the storage site, the expected lifetime of the storage site, and the extent of decommissioning, rehabilitation and subsequent monitoring phase of the site.	Desktop Review		Data Management Plan	Y		
	5.2.6	Emissions from Direct Land Use change (dLUC) are considered and included in the LCA as part of the emissions associated with the establishment of the storage site. This is assessed relative to the land area remaining it its historical state i.e. prior to use as a terrestrial storage site of biomass. This should include any loss of aboveground or below ground biogenic carbon stocks, and any greenhouse emissions arising during land conversion	Desktop Review		GEOCLIME EIA-ERA-CSI Hardin County - 3.18.2024: Geotechnical Analysis:	Y		
	5.2.7	Indirect increases in emissions or decreases in carbon stocks related to changes in the historical fate of the biomass or the land on which biomass is produced are considered and included in the LCA, as part of the emissions related to sourcing of the biomass. (Fugitive Leakage)	Desktop Review		Affidavits/Sworn Statements	Y		
Section 6 - Calculation methodology for the quantification of CO2 Removal Certificates (CORCs)								
Robust quantification of carbon removal and net-negativity	6.2.1	The length of the reporting period can be decided by the CO2 Removal Supplier, but shall not exceed one (1) year.	Desktop Review	The reporting period does not exceed one year	CORC Report Summary - CSI-Hardin-2023 - 3448.699 CORC - 8.3.2024	Y		
	6.2.2	The CO2 Removal Supplier are capable of metering, quantifying, and keeping records of the parameters needed to quantify the CO2 removal. This includes, but is not limited to, the quantity and composition of the biomass used, the direct use of energy and fuels, and other greenhouse gas emissions from the process.	Desktop Review	Yes, see MRV 7.29.24; GHG Monitoring Protocols	MRV 7.29.24; GHG Monitoring Protocols	Y		
	6.2.3, 6.2.8	The CO2 Removal Supplier follows robust, demonstrable and documentable measurement practices and protocols for the data needed for the calculation of the quantity of CORCs resulting from biomass storage. The CO2 Removal Supplier has ensured that any instrumentation used for data collection is in place and adequately calibrated at all times. The data records are kept in a reliable data system	Desktop Review	See above, plus Data Management Plan; Data Records from Storage Condition Monitoring; Calibration Certification	Data Management Plan Data Records from Storage Condition Monitoring; Calibration Certification Data Records Certification	Y		
	6.2.4	The CO2 Removal Supplier has provided a life cycle assessment (LCA) quantifying the greenhouse gas emissions related to the terrestrial storage activity, as per the scope and system boundaries defined in section 5, and following the general LCA guidelines described in ISO 14040/44	Desktop Review	Yes, see LCA 8.2.24		Y		
	6.2.5	The CO2 Removal Supplier has calculated the amount of sequestered carbon in the form of CO2 Removal Certificates (CORCs) for each reporting period, as per the requirements detailed in section 6	Desktop Review		CORC Report Summary- CSI Hardin-2023 3448.699	Y		
	6.2.6	In cases where the water activity in the storage chamber exceeds 0.71, the CO2 Removal Supplier has provided an analysis outlining the CORCS calculation according to 6.2.5 but utilising the 20-year global warming potential of methane.	Desktop Review	See CORC Report plus GHG Monitoring Protocol; Stabilization Report	CORC Report GHG Monitoring Protocol Stabilization Report Stabilization	Y		
	6.2.7	The CO2 Removal Supplier has an information system in place to keep records of the construction of storage chambers, the filling of storage chambers, and sealing of the storage chambers, with eligible biomass. These records must include time stamped events, quantitative information, as well as photographic records.	Desktop Review	MRV; Data Records from GHG Monitoring; Data Mangement Plan	MRV Data Management Plan Data Records	Y		
Overall equation	6.3	CORCs are calculated as below: **CORCs = E_{stored} (6.4) - $E_{supply\ chain}$ (6.6) - $E_{re\text{-}emission}$ (6.5)**	Desktop Review		CORC Report	Y		
Determining carbon stored (E_{stored})	6.4.1	E_{stored}, describing the gross amount of CO2 sequestered by the biomass over a 100 year time horizon, is calculated as below: **E_{stored} = M x DM x C_{org} x 44/12**, where **M = total mass based on the wet weight (tonnes)** **DM = dry matter content (% of the M)** **C_{org} = organic carbon content (% of the DM)** **44/12 = the mass conversion factor from elemental carbon to a corresponding amount of CO2.**	Desktop Review		LCA 8.2.24; MRV	Y		
	6.4.2	The mass of biomass (M) is determined via direct on-site measurements with reliable and calibrated weight measurement equipment, refer to 6.2.3	Desktop Review		Calibration Certificate.pdf	Y		
	6.4.3	The dry matter content (DM) of the biomass is determined via direct on-site measurements with representative samples and with reliable and calibrated weight measurement equipment, refer to 6.2.3	Desktop Review	Actual samples from every load are tested for moisture content	Calibration Certificate.pdf	Y		
	6.4.4	The value for the organic carbon content (C_{org}) of the biomass has been set to be 48 %.	Desktop Review	Yes, see MRV spreadsheet	MRV	Y		
	6.4.4 (alt)	The CO2 Removal Supplier may utilize an experimentally determined value for C_{org} provided that its value has been determined from a statistically representative sample of the stored biomass, and the analysis performed in a suitably accredited laboratory.	Desktop Review	see LCA for detail	LCA	Y		
Re-emissions ($E_{re\text{-}emission}$)	6.5.1	$E_{re\text{-}emission}$, describing the amount of greenhouse gases re-emitted during storage, if any, is calculated as below: **$E_{re\text{-}emission}$ = E_{CO2} + E_{CH4}**	Desktop Review	Yes; see LCA	LCA 8.2.24	Y		
	6.5.2	The equivalent amount of re-emitted carbon from the stored biomass is calculated as: **E_{CO2} = M x DM x C_{org} x 44/12 x (F_{CO2} x DOC_f + F_{CH4} x DOC_f x O_x)**	Desktop Review	Yes; see LCA	LCA 8.2.24	Y		
	6.5.2, 6.5.5, 6.5.6	**F_{CO2} = the fraction of re-emitted carbon lost as CO2 (default value 50%)** **DOC_f = the 100 year re-emission factor (see 6.5.4 and 6.5.7)** **F_{CH4} = the fraction of re-emitted carbon lost as methane (default value is set to 50%)** **O_x = the oxidation factor (see 6.5.9 - 6.5.11)** **FCO2 + FCH4 = 100%**	Desktop Review	Yes; see LCA	LCA 8.2.24	Y		
	6.5.3	The equivalent amount of re-emitted methane from the stored biomass is calculated as: **E_{CH4} = M x DM x C_{org} x 16/12 x F_{CH4} x DOC_f + $GWP_{CH4\ x\ 100}$ x (1 - O_x)**	Desktop Review	Yes; see LCA	LCA 8.2.24	Y		
	6.5.3	**16/12 = mass conversion factor from elemental carbon to a corresponding amount of methane.** **$GWP_{CH4,\ 100}$ = 27,9 is the 100 year global warming potential of methane.**	Desktop Review	Yes; see LCA	LCA 8.2.24	Y		
	6.5.4	The default value for the 100-year re-emission factor DOC_f has been set to 8.8 % (see also rule 6.5.7)	Desktop Review	Yes; see LCA	LCA 8.2.24	Y		
	6.5.7	In cases where a storage chamber is designed to maintain dry conditions (water activity below 0.71) that eliminate decomposition, if applicable, the CO2 Removal Supplier has presented evidence (includes data sourced directly from the storage chambers over a period of atleast 12 months) for a project specific re-emission factor DOC_f to be adopted instead of the default value of 8.8 % defined in 6.5.4. The proposed value for the re-emission factor DOCf needs to be based on applicable peer-reviewed scientific research, as well as field trials and/or laboratory testing. The proposal also needs to be reviewed and approved by Puro.earth	Desktop Review-wet conditions noted onsite.	N / A - wet conditions; 8.8% used		Y		
	6.5.8	In cases where a storage chamber is designed to maintain aerobic and dry conditions, the CO2 Removal Supplier has presented evidence (includes data from GHG emissions monitoring inline with rule 4.3.4, sourced directly from the storage chambers over a period of atleast 12 months) for a project specific value for FCH4 instead of the default 50%. The proposed value for FCH4 needs to be based on applicable peer-reviewed scientific research, as well as field trials and/or laboratory testing. The proposal also needs to be reviewed and approved by Puro.earth	Desktop Review	N/A - no ventilation; system in anaerobic		Y		
	6.5.9	The default value for the methane oxidation factor Ox has been set to be 0 %.	Desktop Review	CSI Hardin-2023 provides for an oxidation rate at 35%, although the actual oxidation rate may be higher. Please view Evidence Supporting Project Specific CH4 Oxidation FactorGHG Re-Emiss		Y		

	6.5.10	For a below-ground storage chamber without a ventilation system, the CO2 supplier may utilise oxidation rates provided by the US EPA GHG reporting programme where the corresponding conditions are met (see table 3 of the Puro.earth TSB methodology, p. 44). In some cases, the requirements of table 3 necessitate the determination of the methane flux. In such a case, the CO2 Removal Supplier must present evidence of its quantitative empirical determination using on-site measurements, such as flux chambers.	Desktop Review	Implemented - see updated LCA; 8,80% decomposition rate used	LCA 8.2.24	Y		
	6.5.11	For a below-ground storage chamber without a ventilation system, a project specific value for the oxidation factor may be utilized providing scientific evidence has been reviewed and approved by Puro.earth.	Desktop Review	N/A - no ventilation; system in anaerobic		Y		
Supply-chain emissions over a reporting period ($E_{supply\ chain}$)	6.6.1	**$E_{supply\ chain}$** = Describes the life cycle greenhouse gas emissions arising from the entire supply chain of the biomass storage activity, as defined by the LCA process boundaries (see section 5)	Desktop Review	Shown in updated LCA	LCA 8.2.24	Y		
	6.6.2	For each reporting period, the CO2 Removal Supplier must update the calculated supply-chain emissions with activity data which has been measured and recorded according to the requirements of the methodology, refer to 6.2.3.	Desktop Review	Reporting period beginning upon issuance of CORCs, see Gas Monitoring Protocol	Gas Monitoring Protocol	Y		