Regen Registry Internal Review: *Soil Organic Carbon Estimation Methodology*

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Summary of Internal Review Process

The intent of the Regen Registry Internal Review is to ensure methodologies submitted to the Regen Registry meet the integrity expected by our community and ensure the document is sufficient to warrant review by Expert Peer Reviewers. The task of an Internal Reviewer is to provide critical feedback to help facilitate an understanding of how to improve the protocol/methodology to best serve Earth Stewards while maintaining scientific and community integrity.

The Regen Network Science Team has reviewed the *Soil Organic Carbon Estimation Methodology 1.2.4*. Our feedback has been provided in two ways:

1) Direct Comments: To provide targeted constructive feedback to specific sections of your protocol/methodology, our team commented directly in the document on what we found confusing, needed more definition, or was out of scope.

2) Overall Reflections: To provide more generalized feedback, our team provided the additional reflections in this document. Reflections are categorized by reviewers, a final combined summary of comments, feedback and suggestions is found in the Combined Summary section.

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Internal Review:

Reviewer 1 - Gisel Booman:

General Comments:

The methodology update from v1.2.2 to v1.2.4 represents a substantive technical maturation of the Ecometric framework rather than a conceptual redesign. The revisions substantially improve statistical robustness, uncertainty conservatism, and transparency while remaining firmly anchored within established Regen Registry precedent—particularly CarbonPlus v1.0.

Key strengths include:

- A significantly strengthened uncertainty framework through the formalization of Monte Carlo stability testing (MAPE90) and adoption of a unified conservative uncertainty metric (MAPEfinal).
- Clear alignment of baseline logic, leakage treatment, and GHG emissions deductions with already approved CarbonPlus rules.
- Expanded and clarified sampling, stratification, and laboratory method options that increase methodological flexibility without increasing crediting risk.

Overall, the methodology demonstrates strong scientific integrity, appropriate conservatism, and clear auditability.

Comments by Sections:

Sampling & Stratification
The introduction of area-based and zonal stratification is well justified and supported by strong precedent. Zonal stratification, while classified as a major technical change, improves ecological representativeness and aligns with existing Registry-approved approaches. Distributed and clustered composite sampling options are appropriate and clearly described.

Laboratory Analysis
The inclusion of Walkley-Black as a secondary method is reasonable and conservative, with appropriate restrictions and documentation requirements. The further restriction of LOI and the requirement for method consistency across monitoring rounds strengthen comparability and QA/QC.

ANN & Remote Sensing Workflow
The expanded ANN workflow improves transparency and reproducibility. The Monte Carlo MAPE90 stability test is the most novel component but is conceptually aligned with existing uncertainty propagation practices used in CarbonPlus and other Registry-approved methodologies. While the methodology introduces additional flexibility in ANN training and uncertainty estimation, all parameterization choices remain bounded by explicit reporting requirements and are subject to independent verification and Regen Registry oversight.

Uncertainty & Deductions
Removal of the Gold Standard-style uncertainty table and replacement with a direct uncertainty-based deduction formula represents a clear improvement in internal consistency and conservatism. Retention of the 20% uncertainty cap preserves Registry safeguards.

Baseline & Crediting Logic
The revised baseline definition (initial or historical maximum SOC) is strongly supported by CarbonPlus precedent and meaningfully reduces over-crediting risk. The interaction between historic maximum SOC baselines and allowable retroactive adoption dates is conservative by design and does not introduce additional crediting risk relative to prior Registry-approved SOC frameworks.

Reporting & Verification
Expanded reporting requirements materially improve transparency, traceability, and verifier confidence without introducing unreasonable burden.

Final Decision: - Pass

Reviewer 2 - Rebecca Harman

General Comments:

From a Registry 2.0 governance and compliance perspective, Ecometric v1.2.4 is **aligned** with required principles and does not introduce new categories of crediting logic, eligibility criteria, or governance-level constructs.

Although several updates are classified as "major technical changes," all credit-impacting elements have **clear and documented precedent** within CarbonPlus. The methodology therefore qualifies as a **precedent-aligned technical major revision**, not a conceptual major revision.

The documentation package—including the methodology update summary, scientific RND assessment, and communication package—provides a coherent and well-supported justification for accelerated approval pathways.

Comments by Sections:

Registry 2.0 Compliance
All core Registry 2.0 requirements are met, including transparent quantification logic, conservative uncertainty treatment, robust baselines, leakage prevention, GHG accounting, and verification transparency.

Developer & Stakeholder Impact
Additional requirements introduced in v1.2.4 are consistent with existing Registry expectations and do not impose novel or unexpected burdens on developers relative to comparable methodologies.

Governance & Consultation
Based on precedent mapping and absence of conceptual novelty, a full public consultation is not required under Registry 2.0 rules. A short consultation or targeted expert review is appropriate for transparency purposes.

Final Decision: - Pass

Combined Summary/Feedback/Suggestions

General Comments:

The Ecometric Methodology v1.2.4 represents a **meaningful improvement in scientific rigor, conservatism, and transparency** while maintaining full alignment with Regen Registry governance principles and CarbonPlus precedent.

Key conclusions from the combined internal review are as follows:

- **Scientific Integrity:**
  The methodology demonstrates robust, evidence-based quantification, conservative uncertainty handling, and clearly justified sampling and modeling choices.
- **Registry 2.0 Compliance:**
  All required Registry 2.0 functions are met or exceeded. No new governance-level rules, eligibility shifts, or crediting categories are introduced.
- **Precedent Alignment:**
  All major and moderate changes have strong or very strong precedent within CarbonPlus or established Registry practice.
- **Consultation Requirements:**
  A full public consultation is **not mandatory**. A shortened consultation (7–14 days) or targeted expert review is recommended to maintain transparency proportional to the scope of change.

Overall Recommendation:

The methodology is **sufficiently mature, conservative, and well-documented** to proceed with registration of projects using it.