CLIMATE ACTION RESERVE

# Public Kick-Off Meeting: Soil Enrichment Project Protocol v2.0

October 25, 2023

# Housekeeping

All attendees are in listen-only mode

We will take questions at the end, as time permits

Please submit your questions Q&A chat box

We will follow up via email to answer any questions not addressed during the meeting

The slides and a recording of the presentation will be posted online

# AGENDA

- Climate Action Reserve
- Background on the Soil Enrichment Protocol
- Development process/timeline
  - **REMINDER: Statements of Interest for joining workgroup due November 1st, 2023**
- Overview of proposed updates for SEP V2.0
- Key considerations for protocol update
  - Modelling Guidance
  - Soil Sampling and Remote Technology
  - Cumulative Accounting
  - Permanence / Reversals by Practice Change
  - Modelling Baselines (Timeframes)
  - Conservation Programs & Payment Stacking
  - Other issues raised during the update
- Next steps
- Q&A

CLIMATE ACTION RESERVE

# Climate Action Reserve

- Mission: to develop, promote and support innovative, credible market-based climate change solutions that benefit economies, ecosystems and society
- Develop high-quality, stakeholder-driven, standardized carbon offset project protocols across North America, South America, and China
- Accredited Offset Project Registry: California cap-and-trade program, Washington Cap-and-Invest program, and CORSIA
- Serve compliance and voluntary carbon markets
- Reputation for integrity and experience in providing best-in-class registry services for offset markets
- Based in Los Angeles, CA; operate virtually


CLIMATE ACTION RESERVE

## CLIMATE ACTION RESERVE

**Nonprofit, founded 2001**

**Voluntary & Compliance**

>650 Projects

190M+ Credits Issued

**Agricultural protocols**

Livestock Manure (Waste)

Grassland Avoided Conservation

Rice Cultivation

Nitrogen Management

CLIMATE ACTION RESERVE

# SOIL ENRICHMENT PROTOCOL V1.1 - BACKGROUND

# 2.2 Project Definition

- "…the adoption of agricultural management practices that are intended to increase soil organic carbon (SOC) storage and/or decrease net emissions of $CO_2$, $CH_4$, and $N_2O$ from agricultural operations, as compared to the baseline"
  - Likely examples include:

| | |
|---|---|
| Fertilizer (organic or inorganic) application | Crop planting and harvesting (crop rotations, cover crops, etc) |
| Tillage and/or residue management | Grazing practices |
| Water management/Irrigation | The application of soil amendments (organic or inorganic); |

- Project area must be cropland or grassland, not cleared of native ecosystem w/in prior 10 years
- Project area may consist of multiple fields, of any size
  - Area within each field must be continuous
  - The same crop (or crop mix) must be grown throughout the field in a given reporting period
  - Roads, watercourses, physical structures, and histosols must be excluded
  - Tile drainage or surface drainage is allowed if it was in place in the baseline
  - Sensitive lands (i.e. HELs or wetlands) must meet specific requirements

# 2.3 Project Ownership Structures & Terminology

| | |
|---|---|
| **Landowner** | • The entity with title to the physical property that contains one or more fields within the project area. – NOT a required participant |
| **Field Manager** | • The entity with management control over agricultural management activities for one or more fields within the project area. – REQUIRED PARTICIPANT |
| **Project Developer** | • An entity that manages the monitoring, reporting, and verification, including interaction with the online registry. – REQUIRED PARTICIPANT, but may be one of the other parties listed here |
| **Project Owner** | • The entity with legal ownership of the GHG reduction rights for the entire project area. – REQUIRED PARTICIPANT |
| **Aggregator** | • A Project Owner whose project contains multiple Field Managers. – NOT a required participant (since projects don't have to have multiple Field Managers) |

# 3.0 Eligibility Rules

- **Location:** Non-federal lands in the US, US territories, and on US tribal lands
- **Start Date:** The first day of the cultivation cycle during which the project activity was implemented
  - Each field has its own start date
  - Submittal must be within 12 months of the start date
- **Crediting period:** 10 years, renewable up to 2 times
  - Crediting periods are assessed at the field level
  - Projects may keep enrolling new fields, so the project may receive credits for longer than 30 years (since crediting period is tied to each of the enrolled fields, which may enter at different times in the project life)
  - Crediting will cease if the practice becomes legally required or does not pass the performance standard test with later versions of the protocol

# 3.4 Additionality

- Performance Standard Test
  - Two-stage common practice assessment at the field level
    1. First step: application of a *negative list* of specific activities that are already deemed "common practice" – and therefore non-additional – by county
    2. Second step: projects may propose project-specific measures to demonstrate something on the *negative list* should actually be deemed additional
  - Growers must implement at least one ***new*** practice change
  - Growers can stack multiple eligible practices; are encouraged to do so to maximize carbon storage
- Legal Requirement Test
  - Practice can not be legally mandated
  - Attestation of Voluntary Implementation

# 3.5 Requirements for Permanence

- CRTs related to carbon that must be stored in the project area ("reversible emission reductions") are subject to permanence requirements
- Release of stored carbon less than 100 years following CRT issuance is considered a reversal
  - Avoidable Reversals: those due to human actions or reasonably avoidable natural events
  - Unavoidable Reversals: those due to uncontrollable natural forces
- Assess permanence at the **project level**
  - Risk and liability are placed on the project owner, rather than the grower
  - Decreases of SOC on individual fields will not affect permanence, so long as the project as a whole has had a stable or increasing SOC pool over the relevant time period
- Mechanisms to ensure permanence
  - Project Implementation Agreement (PIA)
  - Buffer Pool
  - Monitoring, Reporting & Verification (MRV)

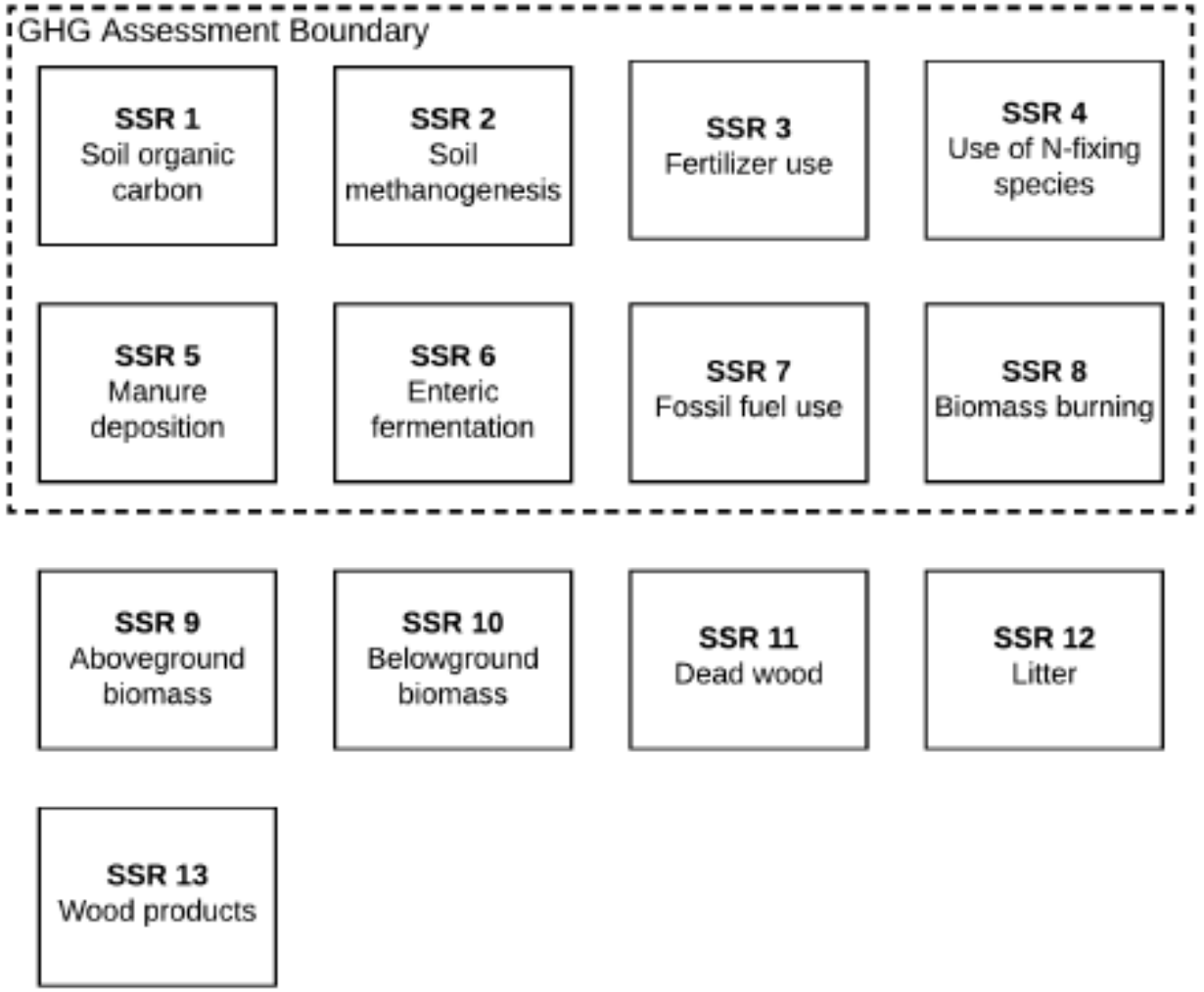
# 3.6 Regulatory Compliance

- Projects must be in compliance with applicable regulatory requirements
  - Water quality
  - Livestock management
  - Other

- Project Owner signs Attestation of Regulatory Compliance

# 4.0 GHG Assessment Boundary

- SSRs within the dotted line are included in the GHG assessment boundary
- All SSRs are applicable to both baseline and project emissions



# 5.0 Quantification

- ***Emission reductions*** - are quantified by comparing modeled & calculated project / BL emissions – as well as from calculating SOC changes based on actual field measurements
  - ***Reversible emission reductions***
    - Modelled / directly measured SOC changes
      - Buffer pool contributions
      - Quantifying reversals
      - Uncertainty deduction
  - ***Non-reversible emission reductions***
    - Modelled and calculated trace GHG emission reductions
      - Uncertainty deduction (applicable to the modeled ERs)

| GHG | Source | **Modeled** (external to protocol equations) | **Directly Measured** | **Calculated** |
|---|---|---|---|---|
| $CO_2$ | Soil organic carbon | **X** | **X** | |
| | Fossil fuel use | | | **X** |
| $CH_4$ | Methanogenesis | **X** | | |
| | Enteric fermentation | **X** | | **X** |
| | Manure deposition | **X** | | **X** |
| | Biomass burning | | | **X** |
| $N_2O$ | Nitrification/denitrification | **X** | | **X** |
| | Manure deposition | **X** | | **X** |
| | Biomass burning | | | **X** |

# Uncertainty Deduction

- To conservatively estimate a project's actual emissions reduction, the number of credits is computed not from the "point estimate" of average emissions reduction (i.e., the average given the observed sample) but instead from the 30th percentile of the distribution of the estimated average emissions reduction.
- This distribution captures what other point estimates would have been calculated had a different sample been collected (i.e., the "sampling distribution").
- Three sources of error contribute to the uncertainty, and each source must be estimated
  - 1) Sample error – resulting from measuring and modeling only a portion of the project
  - 2) Measurement errors – of inputs to the model
  - 3) Model prediction errors – estimated using validation datasets
- Appendix D provides detailed guidance on estimating emission reduction and associated uncertainty deduction

# Leakage

- If output of **cropping** or **grazing** *significantly* drops between baseline and project, then the project must account for leakage which is assessed at field level
  - **Scenario 1: Displacement of livestock outside of the project area**
    - The average Animal Grazing Days (AGD) for the historical baseline period shall represent the minimum bound for the value of AGD used when calculating the project scenario emissions
  - **Scenario 2: Sustained decline in harvested yield for crops grown in the project area**
    - For major crops in the U.S. that are supported by crop insurance programs, farmers report a long-term yield metric known as the Actual Production History (APH)
    - In order to assess the risk of market-shifting leakage within the project, the project developer shall report the average APH across all acres of each crop within each cultivation cycle.
    - If, for any given crop, in a given cultivation cycle, the difference between the project area APH and the regional average APH for the same crop, calculated as a "yield ratio," declines by more than 5 percentage points, as compared to the average yield ratio for that crop during the historical baseline period, those emissions from those fields are considered to have leaked

# Monitoring / Reporting / Verification (MRV)

- Monitoring Plan
- Agricultural Management Data Collection
- Monitoring Ongoing Eligibility and Permanence
- Monitoring Grazing
- Monitoring Project Emission Sources
- Soil Sampling & Testing Guidance
- Modeling Guidance
- Monitoring Parameters

- Project Documentation
- Defining the Reporting Period
- Reporting Period and Verification Cycle
- Reporting for Aggregated Projects
- Record Keeping
- Reporting and Verification of Permanence

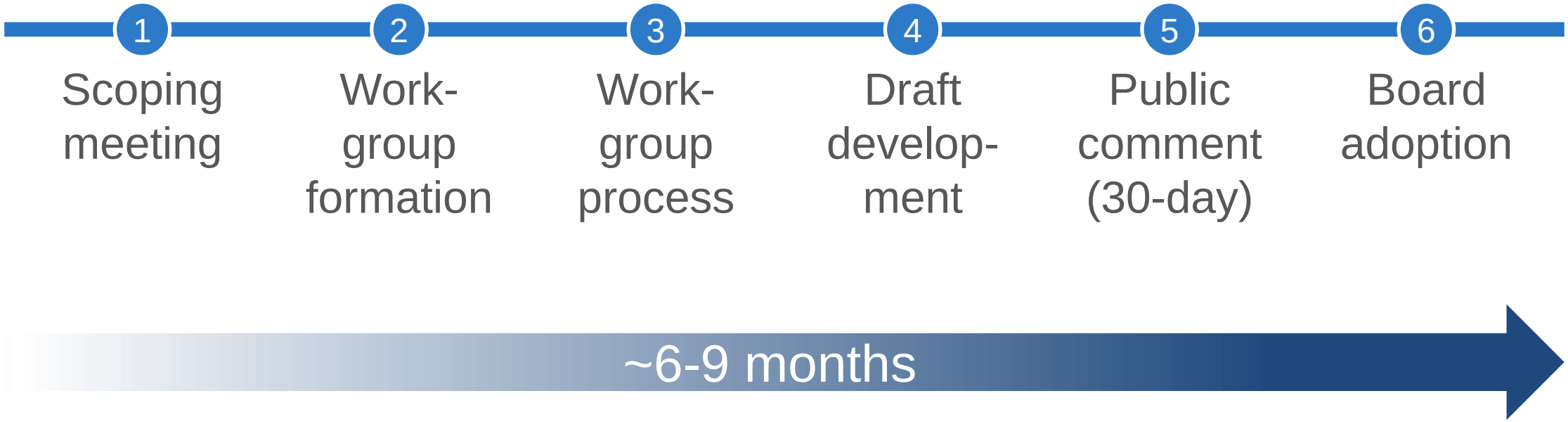
- Standard of Verification
- Monitoring Plan
- Core Verification Activities
- Verification of Projects
- Soil Enrichment Verification Items

CLIMATE ACTION RESERVE

# PROTOCOL UPDATE PROCESS & TIMELINE

# Protocol Development Timeline

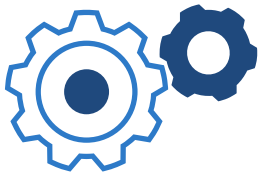
## Internal research and scoping



# Workgroup Formation

- Stakeholder participation & feedback is critical to protocol development
- The Reserve assembles an intensive multi-stakeholder workgroup to advise protocol development and produce rigorous, well-vetted, and credible protocols
  - Individuals not selected for WG encouraged to participate as stakeholders
- Strive for balanced representation from industry, project developers, farmers, environmental NGOs, verification bodies, independent consultants, academia, and government bodies
- Interested stakeholders invited to submit Statement of Interest (SOI) forms
  - **Deadline for submitting SOI is November 1st, 2023**
- Requires commitment to ~3-6 workgroup meetings plus additional protocol reviews, familiarity with the practices, technologies, and/or activities for which the protocol is being developed and solid understanding of project-based GHG accounting

# Workgroup Process and Expectations



## Process

- Reserve staff identify and solicit feedback on specific protocol criteria
- Reserve staff schedule and hold meetings (~3-6)
- Reserve staff produce draft protocol update for review
- Reserve staff revise protocol based on feedback

## Expectations

- Review, comment on and provide recommendations on specific protocol criteria
- Participate in meetings via Zoom
- Provide written comments on draft protocol
- Potentially participate in sub-committees

CLIMATE ACTION RESERVE

# OVERVIEW OF PROPOSED UPDATES – SEP V2.0

# Introduction to SEP V2.0 Update

- The Reserve is committed to periodically revising protocols in light of public comments, on-the-ground experience, and technological, scientific, and regulatory developments.

1. Projects to date under V1.1 of the protocol have gained on-the-ground experience that has been reviewed and included in our list of proposed updates
2. Technological and scientific advancements in this sector have also motivated a number of the proposed updates
3. Use of a biogeochemical model and its validation is a unique aspect of this protocol, which requires ongoing evolution and updates to ensure relevance and applicability

- The list of proposed edits is not inclusive – we welcome stakeholders and the workgroup members to raise additional edits or additions throughout this process

# 2.0 Project Definition

- 2.2.1 Defining the Project Activities
  - The application of soil amendments (organic or *inorganic*) / Biochar
  - Other nitrogen management practices (timing, placement, etc)
  - Grazing practices (review with idea some projects may only implement grazing)
  - Other crop types & practices (rice, orchards, etc.)
  - Fossil fuel context (should be linked to practice change & modifications to equation)
  - Deep tillage eligibility – soil sampling requirements
- 2.2.2 Defining the Project Area
  - Field vs. Project
- 2.2.3.2 Transferring Fields Between Projects
  - Ability to have individual fields ‘come and go’ from the project

# 3.1 Location

- Only projects located on non-federal lands in the United States, U.S. territories, and on U.S. tribal lands are eligible to register with the Reserve. See Section 2.2.3 for guidance on what constituted eligible project areas.

- SEP V2.0: Expand to include Canada? Need to include Canadian stakeholder in the development of the technical workgroup

- Potential to review protocol with workgroup/sub-committee to determine protocol sections that vary by region or jurisdiction for future expansion

# 3.4 Additionality

- Performance Standard Test
  - Negative List
    - SEP Additionality Tool (and Nitrogen Management Protocol Eligibility Tool)
    - Input county level data from USDA – other data sources?
  - Defining the Baseline Scenario
    - Cultivation cycles vary in timelines, even within the same crop rotation
    - Pasture or fallow fields – how to exclude/account for within the baseline
- Legal Requirement Test
  - Payment Stacking –review payments for similar practice changes to provide guidance
  - The Reserve maintains the right to determine if payment stacking has occurred and whether it would impact project eligibility.
  - Timing of payment relative to SEP project

# 3.5 Requirements for Permanence

- Monitoring and verification of reversals
  - Need more guidance as to what constitutes a reversal at the field/practice level
    - Practice change (e.g., tillage)
    - Timelines (i.e., how long practice change was implemented, how long was the practice 'reversed')
    - Dependent on other practices implemented
    - Dependent on location
    - Model capabilities
    - Other questions?

*Reminder: Decreases of SOC on individual fields will not affect permanence, so long as the project as a whole has had a stable or increasing SOC pool over the relevant time period*

# 5.0 Quantification

- 5.1 Modelling the Baseline
  - Cultivation cycles timelines vary, even within the same crop rotation
  - Pasture or fallow fields – how to exclude/account for within the baseline
- 5.3 Reversible Emission Reductions
  - The leakage deduction should be moved from Equation 5.3 to Equation 5.2, so that the calculations for reversible credits mirrors that for non-reversible in Equation 5.6
- 5.4.1/5.4.2 Methane and Nitrous Oxide Emissions
  - Decision tree for modelled vs. calculated – allow for more granularity (e.g.,direct vs. indirect $N_2O$ emissions)
  - Equation 5.21 – Review parameters and guidance for determining wet vs. dry conditions
  - Review quantification for SOC from grazing – potential to include calculation vs. model (with model and measurement true ups)

# 6.0 Project Monitoring

- 6.1 Agricultural Management Data Collection
  - Missing data is a reality for SEP projects – need guidance for how to handle missing data
    - Both in the project (e.g., different sample points) but also for baseline (ie.g., ownership)
  - Improve QA/QC guidance
- 6.2 Monitoring Ongoing Eligibility and Permanence
  - Again, more guidance as to what constitutes a reversal at the field/practice level
- 6.3 Monitoring Grazing
  - Possibly need to change monitoring requirements if SOC quantification for grazing is expanded
- Develop Monitoring Report Template

# 6.5 Soil Sampling and Testing Guidance

- Need to review and update soil sampling techniques with technological and scientific advancements
- Spectroscopy, other techniques?
- Need to re-visit and review guidance for soil sampling remeasurement requirements
- Ties to missing data and developing guidance for how to account for missing samples and what is acceptable under the protocol
- Soil depths – specifically for deep tillage

# 6.6 Modelling Guidance

- Generally, need to update and expand process for Model Validation and Calibration
- Template for third-party validators to communicate model-specific findings to Reserve and verification bodies
- Changes in field boundaries – need to update protocol to explain how model should be adjusted in these situations
- Guidance for baseline timelines
- Potential for sub-committee
- Other items

# 7.0 Reporting Parameters

- 7.1 Project Documentation
  - Update “List of Enrolled Fields” to include verifiable “List of Project Fields”
    - Updated over time with changes in field ID and/or status with permanence
  - Potential to tie projects to spatial files
- 7.3/7.4 Reporting Period and Verification / Reporting for Aggregated Projects
  - Update and use above field lists to track deferrals and individual field schedules
- 7.6 Reporting and Verification of Permanence
  - Again, more guidance as to what constitutes a reversal at the field/practice level
- 7.6.2. Use of Remote Methods for Detecting Reversals
  - Need to review with workgroup given technological and scientific advancements

# 8.0 Verification Guidance

- 8.3.1 Verifying Proper Use of Models
  - Need to update model guidance and supporting materials to better transfer model specific information from model validation/calibration to verification
- 8.3.2 Verification of Soil Samples
  - Update as need with any updates to soil sampling monitoring in Section 6.0
- 8.4.1 Verification Site Visit Requirements
  - Review and update requirements with virtual site visits in mind

# Cumulative Accounting

- Protocol requires soil sampling at start of project and every 5 years after – to “true-up” model predictions
- Relying on soil sampling > model predictions with a ‘true-up’
- Additionally, the protocol allows for calculation of some emissions that could be modelled in the future
- What happens if the model predictions are different than the ‘true-up’ with the soil sample or if the model predictions are different than the previous values from calculations?
- Should the project re-quantify SOC based on the soil sampling?
- Yes! Therefore, numbers should be ‘corrected’ across space and time
- This could be resolved – is cumulative accounting the solution?
- The Reserve will lean on technical agricultural GHG accounting experts to discuss and determine if cumulative accounting is appropriate and achievable for SEP

CLIMATE ACTION RESERVE

# NEXT STEPS

# Proposed protocol update process & timeline

| Milestone | Date |
|---|---|
| Public scoping meeting | October 25th |
| **Statements of Interest for workgroup due** | **November 1st** |
| Formation of workgroup | November |
| Staff conducts internal research and drafts protocol | November |
| First workgroup meeting | November |
| Second workgroup meeting | December/January |
| Third workgroup meeting | February |
| Forth workgroup meeting (as needed…) | March |
| Forth workgroup meeting (as needed…) | April |
| Public comment period | April – May |
| Protocol presented to Reserve Board for approval | *Expected Summer 2024* |

# Next steps

- ***For interested stakeholders:***
  - **submit a Statement of Interest to become a workgroup (Nov 1st)**
  - Complete Local Stakeholder Form and email interest to sign up for updates as an observer
  - email us feedback anytime
- ***For Reserve:***
  - Form workgroup
  - Start drafting redline protocol
  - First Workgroup meeting – expected mid/late November 2023

# Key contacts

- ***Climate Action Reserve:***
  - Email: Policy@climateactionreserve.org
  - Protocol development lead:
    - McKenzie Smith, Associate Director, Climate Action Reserve
    - Email: msmith@climateactionreserve.org