

# (carbon)plan

MAY 18 2020

Sami Osman  
Senior Policy Manager  
Climate Action Reserve

Dear Mr. Osman,

Thank you for the opportunity to provide comments to the Climate Action Reserve (hereinafter “Reserve”) with respect to the draft Soil Enrichment Protocol [1] (hereinafter “Draft Protocol”).

We are a group of climate science and policy experts who are writing to share our perspective on important issues in the Draft Protocol. Drs. Freeman and Cullenward work together at CarbonPlan, a non-profit research organization focused on transparency and scientific integrity in carbon removal solutions. Dr. Freeman has worked extensively in open science, data sharing, and scientific transparency. Dr. Cullenward also teaches climate policy at Stanford Law School and has conducted research on carbon markets and carbon offsets for 15 years. Dr. Badgley is a forest ecologist with expertise in remote sensing. He also serves as a member of the Reserve’s expert Workgroup and participated in each step of the protocol development process to date. Dr. Jane Zelikova is the Chief Scientist at Carbon180 and research scientist at the University of Wyoming, with expertise in ecosystem science and climate change.

We have a number of technical concerns with the Draft Protocol, as detailed below. Before we address those matters, however, we want to highlight important issues related to conflicts of interest in the protocol development process.

The Reserve’s protocol drafting process was sponsored by Indigo Ag, which expects to sell credits under the protocol and contributed heavily to its development. As the Draft Protocol states, “[t]he process to develop this protocol was supported by a financial contribution, research and drafting support from Indigo Ag, Inc.” [2]

We appreciate that the Reserve has been transparent about its financial relationship with Indigo Ag, but a sponsored protocol development process raises concerns about the integrity of the proposed methods. That concern is particularly important because many of the critical methodological options in the Draft Protocol are not fully specified and are instead left open to the design and determination of Project Owners—presumably including the Reserve’s financial sponsor, Indigo Ag. Projects’ extensive discretion in developing their own calculation methods could involve confidential information that is not made available to the public. Re-

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[1] Climate Action Reserve, Soil Enrichment Protocol, Version 1.0 for Public Comment (Apr. 17, 2020) (the “Draft Protocol”), <https://www.climate-actionreserve.org/how/protocols/soil-enrichment/>.

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[2] Draft Protocol at i (Acknowledgments section).



lying on the Reserve to evaluate the integrity of methodological choices of its protocol's financial sponsor is neither ethically appropriate nor commercially sound, especially if any aspect of that review is conducted in private and cannot be independently replicated.

We are also interested to know whether or not the Reserve checked for conflicts among its expert working group members. [3] Although the Reserve explicitly acknowledged Indigo Ag's financial sponsorship of and direct involvement in developing the Draft Protocol, it did not specify whether any members of the Reserve's expert working group might also have financial conflicts of interest with Indigo Ag, including consulting engagements, research grants, or other forms of compensation. [4] We respectfully request that the Reserve disclose whether it asked expert working group members to report conflicts of interest, and if so, which members reported conflicts.

Our technical concerns are summarized here for convenience along with specific recommendations that we hope will improve the protocol:

## Additionality

The Draft Protocol does not establish a reliable additionality standard because it credits any change in land management practice without evaluating whether or not that change is financially feasible in the absence of carbon offset credits. This is a departure from the additionality standards required by governments' compliance carbon offset programs as well as the Reserve's own program manual and past practices with respect to private offset markets.

### RECOMMENDATION

In order to accurately inform prospective credit buyers, the Reserve should acknowledge that it is not evaluating the financial viability of credited projects and therefore is not testing for additionality.

## Model selection

Projects can select their own models to calculate the number of credits earned under the Draft Protocol, subject to a set of ambiguous quality control criteria. What constitutes a "peer-reviewed model" under these criteria would allow a model to quality based on an ad hoc or financially conflicted review process, rather than its well-established use and acceptance in the scientific literature. Perhaps more problematically, there is no requirement that projects disclose sufficient methods and data such that the number of credits generated by projects can be independently replicated. Because the Draft Protocol does not require verifiers to have the technical expertise to be able to replicated or evaluate model calculations, the model selection process appears to create a situation where no one—other than the modeling team paid by the project developer to calculate the credits earned under the protocol—

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[3] Draft Protocol at i (Acknowledgments section).

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[4] One of us, Dr. Badgley, is a member of the expert working group and was not asked to report any conflicts with Indigo Ag; he has none.

would have the necessary information to verify these calculations.

## RECOMMENDATION

The Reserve should limit model selection only to models that are well-established and widely used in the peer-reviewed literature. Informal or ad hoc “appropriate peer review group” analysis should not be allowed, nor should any process where reviewers have financial conflicts of interest with projects. Projects should disclose sufficient information to allow independent researchers to replicate projects’ calculations in the case of all model calibrations, and to the extent feasible, all crediting calculations. To the extent crediting calculations depend on confidential data from participating land managers, those calculations should be independently replicated and verified by a financially disinterested third-party.

## Sampling and verification

Soil carbon varies widely both within and across project sites and over time. Despite a potential role for remote sensing in the future, reliable measurement and calibration currently requires in situ samples conducted from site visits. Nevertheless, the Draft Protocol does not specify random sampling methods to ensure accurate measurement of individual project sites, nor does it require independent measurement of soil carbon in the verification process. When it comes to large aggregators, the Draft Protocol proposes that fewer than 1% of large project aggregators’ sites be verified, without justifying that rate with respect to known data on soil quantification and sampling. Numerous loopholes would allow Project Owners to avoid all physical site visits in the verification process, with the Reserve able to replace verifier visits with information from third-party experts paid by the Project Owner, attestations from the Project Owner, or remote sensing techniques that are not yet established in the scientific literature.

## RECOMMENDATION

The Reserve should require projects to rigorously sample soils at baseline and 5 year intervals, ensuring that the sampling is adequate to encompass inherent within-site variation and randomized to ensure samples are representative of the site as a whole. The Reserve should also revise its verification process to require independent soil carbon measurement and increase the rate of sampling of individual project sites for large aggregators, or provide evidence for its choice of minimal sampling with respect to published soil analyses. Verification sampling must be done on-site and should not be replaced with self-reporting or remote sensing techniques that are not widely accepted in the scientific literature.

## Permanence

We have two concerns about the permanence of soil enhancements credited under the Draft Protocol. The first relates to the duration of commit-

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[5] Sanderman & Baldrock (2010) Accounting for soil carbon sequestration in national inventories: a soil scientist’s perspective, *Environmental Research Letters* 5(3): 034003, <http://doi.org/10.1088/1748-9326/5/3/034003>; Smith et al. (2019) How to measure, report and verify soil carbon change to realize the potential of soil carbon sequestration for atmospheric greenhouse gas removal, *Global Change Biology* 26(1): 219-241,

ments projects make under the Draft Protocol. Although the Draft Protocol offers 100-year guarantees on carbon permanence, it only requires physical soil carbon monitoring for 30 years. It also allows Project Operators to select any shorter time frame in a private contract; at the end of that contract period, the Reserve would establish that certain unspecified management practices will ensure ongoing carbon storage through year 100.

## RECOMMENDATION

In order to accurately inform prospective credit buyers, the Reserve should designate the permanence of any credits issued under the protocol as the lesser of (1) the period of time over which projects must physically monitor soil carbon and (2) any shorter time period the Project Owner elects in its Project Implementation Agreement.

Second, the Draft Protocol uses a buffer pool to insure projects against any reversals, but doesn't provide evidence to support its choice of buffer pool parameters. The buffer pool rules also include a series of loopholes that do not protect against the possibility that private Project Owners might default on their contracts within a 100-year period.

## RECOMMENDATION

The Reserve should justify the choice of parameters used to calculate the contribution of its buffer pool and eliminate loopholes that allow private parties to avoid contributing to the buffer pool to mitigate the risk that they might default on their long-term contracts.

These issues and our recommendations are addressed in more detail below.

# Additionality

The Draft Protocol does not adequately assess additionality, which is one of the most important and widely-discussed issues with carbon offsets. The additionality standard requires that projects' credited climate benefits occur in addition to business-as-usual expectations, i.e. that the credited reductions would not occur in the absence of a financial incentive from the credit.

Section 3.4.1 the Draft Protocol determines that any project that changes its management practices relative to its recent historical baseline satisfies the additionality standard. Despite making a wide range of agricultural practices eligible for crediting, [6] the Draft Protocol does not analyze which practices constitute common practice or would be financially feasible in the absence of carbon credit incentives. As a result, it fails to appropriately screen for additionality concerns.

The absence of analysis on this issue runs counter to the Reserve's own

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[6] See *id.* at Appendix B, Table B-1, for a non-exclusive list of eligible activities.

existing policies. The Reserve Offset Program Manual (the “Manual”) sets out specific requirements for project eligibility under all Reserve protocols. Specifically, it requires a “performance standard test” to “ensure that projects are additional.” [7] As the Manual notes, projects can be “non-additional if they would have been implemented for other reasons, e.g. because they are attractive investments irrespective of carbon offset revenues.” [8] To ensure that projects satisfy the additionality requirement, the Reserve develops “[p]erformance standard tests ... through extensive analysis of standard practices and technology deployment.” [9]

Contrary to the Manual’s requirements and the Reserve’s past practices, the Draft Protocol does not apply a meaningful performance standard test. Instead, any change in management practices will be able to earn credits—whether or not these changes are “attractive investments irrespective of carbon offset revenues.” [10]

The Reserve justifies its decision by arguing that appropriate additionality criteria can’t be established when it comes to soil carbon:

“Given the incredible diversity of practice change scenarios, and the myriad variables involved in both farmer decision-making and the estimation of GHG impacts of management practice changes, it would be impossible to develop individual, quantitative performance thresholds based on specific practices.” [11]

In that case, the Draft Protocol should not claim to achieve the additionality standard and simply credit projects with the understanding that credits have not been screened for additionality.

The lack of meaningful performance standard test criteria also contrasts with the approach the Reserve and California Air Resources Board have taken in other challenging protocol contexts. For example, the Reserve’s Forest Project Protocol requires Improved Forest Management Projects to demonstrate the financial viability of their baseline land management practices and Avoided Conversion Projects to prepare a real estate appraisal from an IRS-qualified appraiser. [12] These inquiries are designed to increase confidence that the proposed project activity is a departure from business-as-usual conditions via financial analysis of proposed project activities.

Like the Reserve, the California Air Resources Board also employs a “standardized” approach to evaluating additionality in which project activities are made eligible only if they are not “common practice.” In the Board’s Mine Methane Capture offset protocol, the Board evaluated multiple categories of mines to determine which forms of methane capture were already common practice in those specific domains and therefore non-additional under its performance standard test.[13] Like the Reserve’s Forest Protocol Protocol, this compliance-grade offsets program illustrates how it is important to evaluate whether or not proposed project activities are likely to be financially viable in the absence of an offset credit.

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[7] Climate Action Reserve, Reserve Offset Program Manual (Nov. 12, 2019) at § 2.4, <https://www.climateactionreserve.org/how/program-program-manual/> <https://doi.org/10.1111/gcb.14815>.

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[8] Id. at § 2.4.1.2.

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[9] Id.; see also Barbara Haya et al., *Managing Uncertainty in Carbon Offsets: Insights from California’s Standardized Approach*, forthcoming in *Climate Policy (2020)*; also available at <https://law.stanford.edu/publications/managing-uncertainty-in-carbon-offsets-in-sights-from-californias-standardized-approach/>

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[10] Id.

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[11] Draft Protocol at Appendix A.

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[12] Climate Action Reserve, Forest Project Protocol, Version 5.0 (Oct. 16, 2019) at § 6.1 (improved forest management) and § 3.3.2.2 (avoided conversion), <http://www.climateactionreserve.org/how/protocols/forest/>

We appreciate that some land management practices are so uncommon and potentially risky for farmers or ranchers to adopt that they might automatically be considered additional under a reasonable analysis of what constitutes “common practice” today. On the other hand, relatively common changes—such as switching what crops are grown on a given field, or choosing among conventional crop rotation practices—are also eligible to earn credits under the Draft Protocol.

The lack of differentiation between eligible crediting practices is particularly concerning given the role that large project aggregators, like Indigo Ag, are likely to play under this protocol. If an aggregator can earn credits for any change in land management practices at participating project sites, then it could selectively work with clients to aggregate activities those clients are already planning to pursue or would find financially feasible without a climate credit. Thus, the lack of robust additionality criteria invites project aggregators to seek out every changed agricultural practice that can be expected to generate carbon benefits, providing a financial incentive to target non-additional project activities.

As a means of encouraging the adoption of climate-friendly practices, a well-designed protocol that lacks additionality safeguards might well be appealing outside of the context of carbon offsets. Without a rigorous test for additionality, a well-designed protocol could still be used to measure expected soil carbon changes, for example. But if the protocol is intended to account for carbon offsetting practices, properly addressing additionality is a central concern.

## RECOMMENDATION

In order to accurately inform prospective credit buyers, the Reserve should acknowledge that it is not evaluating the financial viability of credited projects and therefore is not testing for additionality. Clarity here is important because the Reserve’s decision not to evaluate the private financial feasibility of credited projects is a departure from legal standards in compliance offset programs, as well as the Reserve’s own protocol development Manual. Without analyzing the private financial feasibility of all eligible project activities, the Draft Protocol does not establish a finding of additionality and therefore no credits issued under it should be sold or represented as carbon offsets that reflect additional carbon benefits.

## Model selection

Rather than specify how to calculate the number of credits issued to a project, the Draft Protocol allows projects to choose their own models and approaches. We appreciate that the field of soil carbon science and quantification is complex and rapidly evolving, which might counsel in favor of methodological flexibility. Even then, however, the approach the Reserve has selected needs to be more specific in its transparency and data sharing requirements in order to ensure that protocol crediting calculations are reproducible.

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[13] California Air Resources Board, Compliance Offset Protocol Mine Methane Capture Projects (Apr. 25, 2014) at § 3.4.2, <https://ww3.arb.ca.gov/cc/capandtrade/protocols/mmcprotocol.htm>; see also Haya et al. (2020).

The Draft Protocol proposes to use private soil sampling at project sites to parameterize a model-based calculation of projects' counterfactual baseline and actual outcomes for soil carbon. Physical soil samples are taken at the start of the project and at least every five years thereafter, but credits are awarded on an annual basis based on the difference between modeled counterfactual baseline and project scenarios for soil carbon. [14] Thus, the number of credits issued under the protocol depends on the rigor of project sampling, the choice of modeling frameworks, and the application of those models to project sites.

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[14] Draft Protocol at § 5 (sampling frequency and modeled project scenario); id. at § 5.1 (modeled baseline scenario).

Although model selection is central to the Draft Protocol's calculations, the choice of models and approaches is left entirely up to project developers. Section 6.5 of the Draft Protocol allows for projects to choose a model if it meets five criteria. We discuss each in turn:

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[15] Draft Protocol at § 6.5.

1 / The first standard requires that the model be available to the public. This is an important minimum requirement and we appreciate that the Reserve has included it.

2 / The second standard requires that the model be peer-reviewed "by a recognized, competent organization, or an appropriate peer review group." [15] An accompanying footnote indicates that "[t]his may mean that peer-reviewed journal articles have employed the relevant model." [16] We agree that peer review is an essential component of scientific integrity in this instance, but are concerned that the definition here is so broad as to not require anything at all. Referencing a model in a publication should not be a sufficient basis for qualifying a model. Similarly, allowing informal or ad hoc approval from a group of experts creates the possibility for experts paid by a project developer to review models, instead of testing those models validity in the scientific community through publication, expert review, and ongoing debate. This standard should focus instead on whether a candidate model has an established track record of and broad acceptance in the peer-reviewed scientific literature.

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[16] Draft Protocol at § 6.5.

3 / The third standard requires that the model be "able to support repeating the project model simulations." [17] The ability to independently replicate model calculations is essential, but this standard does not actually require it. Instead, all this standard requires is that the model be capable of repeating model simulations. The Protocol should require as a minimum that all model calibration parameters and assumptions are made public so that an independent third party can use the same model with the same data and inputs and replicate the model calibration. To the extent feasible, full transparency should be provided on the information needed to replicate crediting calculations. If those calculations require the use of confidential information, however, then they should be independently replicated and verified by financially disinterested third-parties operating under confidentiality agreements.

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[17] Draft Protocol at § 6.5.

4 / The fourth standard requires that models "incorporate one or more input variables that are monitored ex post." This standard makes sense as

a minimum requirement, but does not establish much on its own—we hope that participating projects are monitoring at least one variable used in the model that calculates the number of credits they earn.

5 / The fifth and final standard is that models must be validated according to guidance provided in a separate Reserve Model Guidance document.

[18] The validation process can be done by non-verifier third parties, in which case “the verifier is simply required to confirm approval from the Reserve, confirm the qualification of the third-party, and confirm the requisite validation steps have been followed, but the verifier does not independently need to run the model themselves to confirm results appear reasonable.” [19] As a result, there would be no independent verification of the model’s calibration other than through those paid by the project developer to use it to calculate protocol credits. The verification team would even be excused from having any in-house capacity to evaluate the use and selection of models. [20] Thus, unless there is adequate public disclosure under the third standard that would enable independent researchers to actually replicate model calculations, there would be no oversight whatsoever of the core modeling calculations that determine the number credits issued under the protocol.

During the expert workgroup review, one of us (Dr. Badgley) expressed his view that the protocol needs to ensure sufficient data disclosure to enable independent replication of model calibration calculations. He received no reply from the Reserve on this issue and we do not see anything in the Draft Protocol that requires sufficient disclosure to resolve his concerns.

## RECOMMENDATION

The Reserve should require projects to rigorously sample soils at baseline and 5 year intervals, ensuring that the sampling is adequate to encompass inherent within-site variation and randomized to ensure samples are representative of the site as a whole. The Reserve should also limit model selection only to models that are well-established and widely used in the peer-reviewed literature. Informal or ad hoc “appropriate peer review group” analysis should not be allowed, nor should any process where reviewers have financial conflicts of interest with projects. Projects should disclose sufficient information to allow independent researchers to replicate projects’ calculations in the case of all model calibrations, and to the extent feasible, all crediting calculations. To the extent crediting calculations depend on confidential data from participating land managers, those calculations should be independently replicated and verified by a financially disinterested third-party.

## Sampling and verification

Soil carbon storage is challenging to measure because it varies widely, both within individual project sites and across multiple locations. Accordingly, the Draft Protocol requires Project Owners to sample soil carbon at every project site least once every five years. [21]

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[18] Climate Action Reserve, Model Calibration, Validation, and Verification Guidance for Soil Enrichment Projects, Draft for Public Comment (Apr. 17, 2020) (hereinafter “Model Guidance”), <https://www.climateactionreserve.org/how/protocols/soil-enrichment/>

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[19] Model Guidance at § 6.

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[20] Draft Protocol at § 8.3.1.

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[21] Draft Protocol at § 5.



Soil sampling itself is a complex issue, but the Draft Protocol provides only minimal standards and references a document that is not yet available for public review. [22] Specifying sampling practices in detail is critical because soil characteristics can vary within a few meters—reflecting variation across soil types, land use histories, and soil drainage capacities, all with critical consequences for soil carbon enrichment. Yet the Draft Protocol lacks clear guidance about how sampling locations should be selected to ensure randomization in order to adequately encompass the inherent variation in site characteristics.

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[22] Draft Protocol at § 6.4 (referencing a forthcoming but currently unavailable “Soil

The lack of guidance on how individual projects should measure their soil carbon is concerning because the Draft Protocol does not require any independent measurements of soil carbon conditions by project verifiers. [23] The lack of any independent verification means that the sampling process will be controlled exclusively by Project Owners, who are subject to ambiguous quality control standards and no independent review.

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[23] Draft Protocol at § 8.3.2. Enrichment Project Development Handbook”).

Project verification cycles—which lack independent soil measurements—will occur only once every five years or so [24] and will be highly limited in scope for large project aggregators. There are also multiple loopholes by which Project Owners can hire financially interested third parties to replace accredited verifiers and/or rely on unspecified remote sensing methods instead of physical site visits—all at the ultimate discretion of the Reserve, which has a financial conflict of interest with one of the protocol’s expected users, Indigo Ag.

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[24] Draft Protocol at § 7.2 (defining a “reporting period” as being up to a year or more); id. at § 7.3 (defining “verification period” as up to five reporting periods).

Section 8.4.1 of the Draft Protocol establishes the minimum number of project sites that must be verified at one half of the square root of the total number of project sites. This means that while individual projects must be visited every year, an aggregator with 10,000 fields should expect only 50 site visits every verification cycle (about every five years or more). The Reserve provides no justification for this formula, nor how its formula establishes confidence in the credited soil carbon benefits awarded to large project aggregators—particularly when there is no independent measurement of soil carbon to begin with.

NUMBER OF FIELDS	MINIMUM SITE VISITS
1	1
10	2
100	5
1,000	16
10,000	50

Instead of these minimal site visit requirements, project verifiers can also petition the Reserve not to make a physical site visit “if sufficient proxy data exists such that a verifier considers [a physical site visit] unnecessary.” [25] The Reserve indicates that acceptable reasons for skipping a

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[25] Draft Protocol at § 8.4.1.

physical site visit could include when the Project Owner has paid any third party with “agronomic expertise” to conduct some kind of replacement analysis; when the Project Owner has provided a signed statement attesting relevant matters that is confirmed by an unspecified third party; or even when a Project Owner has relied on the remote sensing of soil carbon in place of a physical site visit. [26] (We emphasize again that there are not yet any air- or space-based remote sensing practices that are accepted in the scientific literature as a reliable means of measuring site-specific soil carbon content in the absence of physical sampling.)

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[26] Draft Protocol at § 8.4.1.

Thus, it is possible that none of the physical site visits discussed above would ever take place. Although the Reserve suggests that its approval of alternative verification processes is not guaranteed, the presence of a financial conflict of interest between the Reserve and Indigo Ag raises questions about the independence of future Reserve determinations that skip independent verification based on physical site visits.

However many physical site visits actually occur, none of them will require independent soil carbon measurements to verify those made by the Project Owner. Without a more robust role to play, project verifiers may face pressure to accommodate exemptions to physical site visits under the Draft Protocol. Presumably a Project Owner will want to hire a project verifier that is more willing to identify mutually acceptable site visits and/or verification exemptions that do not involve physical site visits by verifiers. In turn, this would put the project verification community in a difficult and unfair position: a verifier might feel pressure to signal a willingness to cooperate with a Project Owner on verification exceptions, or risk not doing business with large project aggregators.

## RECOMMENDATION

The Reserve should require projects to rigorously sample soils at baseline and 5 year intervals, ensuring that the sampling is adequate to encompass inherent within-site variation and randomized to ensure samples are representative of the site as a whole. The Reserve should also revise its verification process to require independent soil carbon measurement and increase the rate of sampling of individual project sites for large aggregators, or provide evidence for its choice of minimal sampling with respect to published soil analyses. Verification sampling must be done on-site and should not be replaced with self-reporting or remote sensing techniques that are not widely accepted in the scientific literature.

# Permanence

Our comments on permanence-related matters address three topics in the Draft Protocol: (1) the period over which projects must physically monitor soil carbon, (2) the terms and duration of the Project Implementation Agreement, and (3) the determination of the number of credits to be diverted to the protocol’s buffer pool to protect against project carbon reversals.

We are concerned that the Draft Protocol contains multiple loopholes that would allow projects to purport to establish soil carbon benefits over 100 years while contractually agreeing to shorter time periods. This results in a significant risk of reversal and appears to undermine the claim that the protocol ensures that soil carbon will be stored for 100 years.

## Soil carbon monitoring

There is a disconnect between the promised permanence of soil carbon credits and the time period over which participating projects agree to physically monitor soil carbon conditions. Section 3.5.4 states that once a project reaches the end of its crediting period—which is defined as 30 years in Section 3.3—then project conditions can be monitored remotely for the remainder of the 100-year term over which the Draft Protocol purports to guarantee soil carbon benefits.

But soil carbon cannot yet be measured remotely. It is true that remote sensing (i.e., from air- or space-borne sensors) can help detect some land management practices or disasters, and complement ground observations, but it cannot detect all land disturbances and it specifically cannot on its own reliably measure soil carbon content. Thus, the only established mechanism to measure soil carbon—physical sampling at the project site—will not be required after 30 years under the Draft Protocol.

### RECOMMENDATION

The Reserve should specify the permanence of credits issued under the protocol at no more than the time horizon over which participating projects must measure soil carbon via physical samples. In the Draft Protocol, that time horizon is 30 years, not 100. Pending future validation, calibration, and vetting, remote-sensing based methods could be employed in the future, but are not ready for use today.

## Project Implementation Agreement

While the Draft Protocol purports to achieve a 100-year term over which Project Owners agree to maintain soil carbon enrichment, Section 3.5.3 of the Draft Protocol allows Project Owners to select a shorter term in the Project Implementation Agreement. Because the Draft Protocol designates these Agreements as private contracts, however, it is not clear whether there would be public notice if a Project Owner decides not to elect a 100-year time horizon.

Choosing a shorter time horizon is problematic because the Project Operator would no longer be operating under a contract length that matches the 100-year permanence standard the Reserve advertises for its credits. If the Reserve agrees that that some unspecified “alternative mechanism for ensuring permanence” is acceptable, then the Project Owner will be relieved of the contractual obligation to protect soil carbon benefits

over the 100-year time period the Reserve represents to buyers. Thus, via standards codified in a confidential contract between a Project Owner and the Reserve, a Project Owner could claim to offer climate benefits that are assured over 100-years without making an enforceable promise.

Making exceptions to Protocol requirements via confidential contracts is worrisome in general and particularly concerning in light of Indigo Ag's financial sponsorship of the Draft Protocol. What notice would credit buyers and the public have if the financial sponsor of this Draft Protocol demands a term of less than 100 years in its confidential Project Implementation Agreement? Would the Reserve then rigorously evaluate a proposed "alternative mechanism" to relieve Indigo Ag of its contractual obligation to promise soil carbon benefits for less than 100 years?

Although the Draft Protocol does not include any description of, or limits to, acceptable "alternative mechanisms," the Reserve's presentation includes two example approaches that it might consider in the future. [27] Neither of these options provides a basis for rigorously evaluating soil carbon permanence, however, and both raise questions about the credibility of any process to grant case-by-case exceptions to the Draft Protocol's standard permanence requirements.

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[27] Climate Action Reserve, Soil Enrichment Protocol Public Comment Meeting (Apr. 29, 2020) at slide 19.

The first example would involve the Project Owner agreeing to monitor participating project lands for five years after the end of a crediting period—which Section 3.3 of the Draft Protocol defines as 30 years—to ensure that at least 95% of credited project activities are maintained. Monitoring land use practices is helpful, but ultimately insufficient to determine what the impact of those practices is on total soil carbon storage. More problematically, this proposal would allow a Project Owner to stop monitoring land use practices after 35 years, even though the Draft Protocol promises carbon benefits that last for 100.

The second example would involve the Project Owner developing a system to use remote sensing to monitor projects for reversals. While it might be feasible to use air- or space-borne remote sensing to determine if there are large-scale changes to land management practices that are associated with carbon enrichment reversals, soil carbon cannot be reliability estimated via remote methods at this time—it requires samples collected in situ. Thus, a remote sensing application cannot substitute for a general requirement to maintain enriched soil carbon, only potentially as a tool for detecting some—but not all—relevant land management practice changes.

## RECOMMENDATION

It would be misleading if either the Reserve or the Project Operator were to represent that a project's expected soil carbon permanence is longer than what the Project Operator commits to physically sample and report in its contract. Accordingly, we recommend that the Reserve disclose any instances where Project Implementation Agreements select a time frame that is shorter than 100 years. The Reserve should also designate a project's permanence time horizon to match any shorter period specified in its

Project Implementation Agreement and grant no exceptions to this contract-based time period.

## Buffer Pool

To address the risk that a project’s carbon storage is lost due to accident or contractual default, the Reserve designates a specified fraction of project credits to a buffer pool. Once capitalized by these set-asides, the buffer pool functions as a kind of insurance policy against reversal risks. Like any insurance policy, however, the adequacy of the buffer pool depends on whether the right number of credits are set aside. That calculation is not justified in the Draft Protocol, which also includes a number of loopholes that undermine the default parameters.

The Draft Protocol identifies two risks in Section 5.3.1: a default risk of unavoidable reversals—such as from natural disasters—and the risk of a project’s financial failure. For each risk, the Draft Protocol assigns one of two values according to the following formula and calculates the size of the buffer pool as follows (see Equation 5.4):

$$\text{Buffer pool size (tCO}_2\text{e)} = \text{Risk of reversal (\%)} \times \text{Reversible emissions (tCO}_2\text{e)}$$

$$\text{Risk of reversal (\%)} = 1 - [(1 - \text{Risk}_{\text{default}}) \times (1 - \text{Risk}_{\text{FF}})]$$

Where  $\text{Risk}_{\text{default}}$  is the unavoidable reversal risk and  $\text{Risk}_{\text{FF}}$  is the risk of financial failure.

For unavoidable reversal risk ( $\text{Risk}_{\text{default}}$ ), projects are assigned a value of 5% if the project is geographically dispersed and 7.5% if it is not. On the financial failure risk, projects are assigned a value of 5% if the Project Owner is a public entity or if the Project Owner is a private entity with a qualifying financial mechanism, and 7.5% if the Project Owner is a private entity without a financial mechanism.

Critically, the Draft Protocol provides no justification for any of these parameters. The size of the buffer pool is determined by the project’s overall risk of reversal, which is calculated as follows:

PROJECT OWNER TYPE	DISPERED LOCATION	RISK <sub>default</sub>	FINANCIAL MECHANISM?	RISK <sub>FF</sub>	RISK OF REVERSAL
Private	Yes	5%	Yes	0%	5%
Public	Yes	5%	N/A	0%	5%
Private	No	7.5%	Yes	0%	7.5%
Public	No	7.5%	N/A	0%	7.5%
Private	Yes	5%	No	10%	14.5%
Private	No	7.5%	No	10%	16.8%

There is also a problem with how financial failure can be mitigated. The definition of an acceptable “financial mechanism” that enables a private project to fully mitigate its risk of financial failure from 10% to 0% is not supported by any evidence nor any articulable standards.

The Draft Protocol defines qualified financial mechanisms as to include “insurance or surety bonds” as well as “a contractual agreement identifying a successor entity in the event of the Project Owner’s demise (including bankruptcy).” No details are provided on the amount or nature of insurance or surety bond coverage required. Furthermore, a contractual agreement identifying a successor entity in case bankruptcy is, by definition, dischargeable in bankruptcy; and nothing in the Draft Protocol prevents a Project Owner from making this contractual liability shift to a wholly-owned subsidiary or any other closely related entity, which would have the identical risk of failure as the Project Owner itself. As a result, this provision inappropriately allows a Project Owner to avoid any buffer pool contribution related to the risk of its financial failure by making an unenforceable promise to shift liability to a third party in case it goes under.

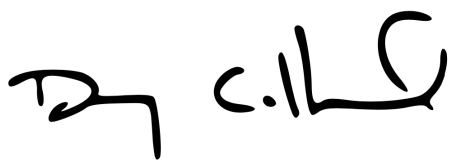
As the discussion above indicates, the Draft Protocol would allow an aggregating Project Operator to avoid making most of its buffer pool contributions. By securing a de minimis insurance policy or surety bond, or by designating a successor entity to absorb liability in an unenforceable contract, the Project Owner would be able to avoid accounting for its risk of financial failure. As a result, such a Project Operator would only have to contribute 5% of its calculated credits to the buffer pool, instead of the 14.5% that would normally be assessed.

## RECOMMENDATION

The Reserve should identify specific evidence supporting its choice of factors for unavoidable reversal risks and financial failure risks. The Reserve should also provide a complete description of the insurance or surety bond standards it requires to designate a project as having zero risk of financial failure. It should exclude all “contractual agreements identifying a successor entity” that could be discharged in a bankruptcy process or that are made with closely-held corporate entities, such as a wholly owned subsidiary or parent corporation.

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Thank you for the opportunity to provide comments on the Draft Protocol.



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