RESPONSE TO PUBLIC COMMENTS

June 2016

A methodology for **Wetland Implementation and Rice Cultivation in the Sacramento-San Joaquin Delta, San Francisco Estuary and the Coast of California – Methodology for Quantifying Greenhouse Gas Emissions Reductions** was developed by the Sacramento-San Joaquin Delta Conservancy, HydroFocus, Tierra Resources, the University of California (UC) Berkeley and the Nature Conservancy, with support from the Sacramento Municipal Utility District, Metropolitan Water District and the California Department of Water Resources. The methodology builds upon ACR's approved methodology, **Restoration of Degraded Deltaic Wetlands of the Mississippi Delta** by integrating California data and region-specific restoration techniques. The methodology was submitted to ACR for approval through the public consultation and scientific peer review process.

The methodology was formally submitted to ACR on June 10, 2015. ACR conducted its standard internal methodology screening and the authors submitted a revised draft on November 30, 2015. The methodology was then posted for public comment from January 12 – February 12, 2016. ACR does not require all public comments be incorporated, but does require that a response to each public comment be documented. Public comments and responses by the authors are given below.

This document is organized by modules of the methodology. Page numbers as referenced by the public in the following table refer to the document versions as posted for public comment. Final document versions and versions as provided to the scientific review panel are also available on ACR's website under Process Documentation.

GENERAL COMMENT

Comment	Commenter	Response
I briefly looked through the documents available on the American Carbon Registry website for the CA wetlands methodology. In all of the introductions the documents state: The objective of this methodology is to describe quantification procedures for the reduction of greenhouse gas (GHG) emissions through conversion of land to wetlands and rice cultivation in the Sacramento-San Joaquin Delta, San Francisco Estuary and in coastal areas of California. However, I did not see any specifics in any of the documents on the methodology for coastal wetlands, only specifics for the SF Bay and Delta. Has the methodology been developed for coastal non-tidal wetlands? These would include wetlands that are currently in agricultural production, but may be restored to wetlands in the future.	Central Coast Wetlands Group Moss Landing Marine Labs	Although the text of the Preface and Background in the Framework Module states that the methodology is applicable to Coastal California, we identified several places that may be the source of confusion. These include Table 1 in the Framework Module, the Geographic Applicability discussion and Applicability in the Framework Module, the Leakage section in the Framework Module and Practice Based Performance Standards and the Baseline and Project modules. We have revised the methodology to remove the ambiguity and added specific language that expands the geographic applicability to include Coastal California.
It would be nice to understand how this framework/methodology fits in with CA GHG markets, and/or other verification standards efforts.	USGS	This methodology is written for the voluntary carbon market. The American Carbon Registry is one of several registries in the volunteer market. These registries have sought to establish high-quality standards for quantifying

| | | and verifying GHG emission reductions from carbon offset projects; issuing carbon credits generated from such projects (called Emission Reduction Tons, or ERTs); and tracking the transfer of these credits in a transparent, publicly accessible registry system. The core of the registries is a publicly accessible web-based system where owners and developers of carbon offset projects can register project information along with verification reports demonstrating GHG emission reductions. Organizations develop projects that generate GHG reductions/removals register with registries like ACR and establish accounts for ERTs. ERTs are issued for actual GHG reductions/removals achieved by a project, as determined in approved verification reports. The California GHG market mandated by AB32 and overseen by the Air Resources Board is a compliance market in which entities may offset their excess GHG emissions by purchasing ERTs from projects with an approved ARB methodology. ACR is one of the approved registries that can work with ARB to provide methodologies being used in the voluntary market for adoption in the compliance market. Also, voluntary offset projects that have been issued offset credits by approved voluntary registries for GHG reductions or removal enhancements that occurred between January 1, 2005 and December 31, 2014 may be eligible to be issued ARB offset credits. These projects are referred to as early action offset projects. Early action offset projects must meet specific requirements in the Cap-and-Trade Regulation. In order for the early action offset credits to be eligible to become ARB offset credits, they must undergo regulatory verification which includes |

		an assessment of conflict of interest and review to confirm the validity of the initial verification. Upon satisfying the requirements, and successfully completing the regulatory verification process, applicants may request the issuance of ARB offset credits. After the request has been made, ARB will conduct a full review of all project documents. If the review shows conformance with the Regulation, ARB offset credits will be issued. More detailed information about the process for recognizing early action, including project eligibility, can be found in the Cap-and-Trade Regulation.
Use of Biogeochemical Models – The use of biogeochemical models for baseline and project estimates seems reasonable and appropriate. However, there is inconsistent information and/or lack of clarity regarding the use of biogeochemical models, which seems to be caused in part by the absence of appropriate cross-references between modules:The description of "Step 4. Baseline emissions and carbon stock changes" in the baseline module for both seasonal wetlands and open water baselines suggest that biogeochemical models can be used, as specified in the Model Module and Framework Module. However, the scope of the Model Module is limited to only PEPRMT and SUBCALC, with the applicability of those models appearing to be limited to only those projects occurring in the Delta. The Model Module does not specify what can be used in areas not meeting the criteria for the use of PEPRMT and SUBCALC. There should be language referring back to the general	The Nature Conservancy	Agreed. We have modified the Baseline, Framework and Methods modules to clarify the use of biogeochemical models.

requirements for the use of biogeochemical models listed on p. 24 of the Framework Module.		
The sections in each of the Baseline Modules and Project Modules addressing how to estimate baseline or project emissions should mention whether PEPRMT and SUBCALC could be used, or whether another biogeochemical model could be used, subject to the requirements stipulated on p.24 of the Framework Module.o "Step 4. Project GHG Emissions" for managed non-tidal wetlands on p. 6 of Project Modules provides language that addresses this, at least in part, when it says "Biogeochemical models documented in the peer-reviewed literature that are calibrated and validated for the project area and demonstrably similar project conditions can be used for estimating GHG emissions." Adding a reference pointing to the model requirements list on p. 24 of the Framework Module (and any additional language that might be inserted into the Model Module, as suggested above) would be helpful.o Including language such as this for other Project and Baseline Modules for which PEPRMT and SUBCALC are not applicable would provide better clarity.	The Nature Conservancy	Agreed. We modified the Baseline and Project modules to address this comment.
Environmental Safeguards – We commend the inclusion of a number of environmental safeguards in the methodology, such as prohibiting activities that are not directly related to GHG emissions but would lead to environmental degradation, such as the planting of non-native species and activities that affect fish populations in Delta channels.	The Nature Conservancy	Comment noted.

Permanence – Although permanence of reversible emissions reductions is addressed via the risk assessment, California's wetlands—especially those in the Delta region on which a conservation easement is not placed—seem particularly at risk of conversion back to agricultural use at the end of the crediting period since there may not be any further financial incentive to maintain the land as wetlands.	The Nature Conservancy	Comment noted. This appears to be an issue that cannot be resolved within this methodology.

FRAMEWORK MODULE

Comment	Commenter	Response
p. 10 Framework Module Do South Bay managed ponds fall under this scenario of BL-OW and PS-MW??	USGS	For South Bay managed ponds which are tidal, project activities would fall under the tidal wetlands (PS-TW) module. Open water would be the appropriate baseline scenario (BL-OW)
This is all confusing -- why not instead relate the modules to the land uses identified in Table 1 -- there are only a handful or so.	USGS	Figure 2 relates the baseline and project modules. A column has been added to Table 1 to facilitate understanding the correspondence of baseline and project scenarios.
p. 14, Figure 2 It is not clear why the arrows are going from Project Activity to Baseline Activity -- that does not seem allowed based on the project and baseline descriptions scenarios outlined in E. Seems that arrow should only go from Baseline Activity to Project Activity to be an eligible scenario.	USGS	Figure 2 contains arrows that point both directions and is designed to show the connection between the project activities and baseline activities The figure has been changed to hopefully add clarity.
p.17 Table 3, row 1 So for saltmarsh restoration projects, could we use estimates of above and below ground biomass from Callaway in SF Bay instead of having to measure this at every marsh?	USGS	The methodology allows for use of peer-reviewed literature values. It will be important to provide project documentation that justifies the use based on similar hydrologic conditions and vegetation and adhere to the principle of conservatism.
What level of marsh development? by acreage?	USGS	Estimates will be made by reporting period and therefore for the level of marsh development which characterizes the reporting period. Estimates are also made for the total project or strata within the project area.

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p.18 Table 4, row 3 So if I am understanding this correctly, for salt marsh habitat restoration projects we can us a model that is calibrated/validated to determine baseline conditions of CO_2 and a fossil fuel combustion estimate to determine baseline.	USGS	A calibrated/validated model can be used to estimate baseline emissions CO_2, CH_4 and N_2O. Also fossil fuel combustion estimates can be used.
For the restoration project, it appears only fossil fuel combustion, depending on baseline estimates?	USGS	For the restoration, tidal wetlands project, a model could also be used as well as fossil fuel combustion estimates. Assuming that there are no methane emissions as demonstrated by guidelines in the project module, the only net emissions would be due to fossil fuel combustion.
Also, in the framework document, the conversion of open water (e.g. SBSP managed ponds) to tidal wetland was given the acronym "BL-OW to PS_TW", which is different from the initials of this module. So it is unclear if this is the module the SBSP would use or not.	USGS	We changed the title to be consistent with the Framework Module, BL-OW.
In reviewing the Framework Module and the Demonstration of Additionality section, I have the following observations: The ACR Standard v 4.0 allows a performance based approach to demonstrating additionality, and the draft CA wetlands methodology adopts a "practice-based" performance threshold. The draft methodology develops practice-based information for several types of activities covered by	Save America's Estuaries	This is indeed an important point. The level of penetration in the remaining area of former tidal wetlands has been documented as low. For example, Callaway et al. documented the relatively small number and area of restoration projects that have been implemented in Suisun Bay and San Francisco Bay. In the historic wetland area of 76,781 ha (circa 1800), 96 projects for mitigation and non-mitigation totaling 4,069 ha have been implemented. Figure 1 in Callaway et al. shows the relatively low level of penetration in

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the methodology, including "Tidal Wetlands in San Francisco Estuary". This section cites data that tidal wetlands currently make up 16% of the historic area of tidal wetlands in SF Estuary. But it does not attempt to determine the penetration level or adoption rate of tidal wetland restoration as required by the ACR standard (see text from Chapter Four below). The question of additionality is not about how many acres of tidal wetlands there are, as it makes no sense to claim that tidal wetlands are 'common practice' or not. It is primarily a question of whether restoration of tidal wetlands is common practice or not, based on the level of penetration or rate of adoption. I see no data about the rate or level of restoration in San Francisco estuary tidal wetlands, and believe that the authors should address this by determining the level or rate of restoration in order to make the claim that it is not common practice. It is important to get this right – projects that use this methodology will be high profile and subject to intense scrutiny. Additionality is a key principle that allows voluntary and compliance markets to have the desired impact on net GHGs. I would be glad to discuss this further with you/the authors if that would be helpful.

Text from Chapter Four, ACR Standard, page 26 (http://americancarbonregistry.org/carbon- | | San Francisco Estuary. It also evident in data on restoration projects from the Wetland Tracker (http://www.californiawetlands.net/tracker/). This information has been incorporated into the Framework Module. |

Comment	Commenter	Response
accounting/standards-methodologies/american-carbon-registry-standard/acr-standard-v40-january-2015.pdf) "Practice-based: developed by evaluating the adoption rates or penetration levels of a particular practice within a relevant industry, sector or sub-sector. If these levels are sufficiently low that it is determined the project activity is not common practice, then the project activity is considered additional. Specific thresholds may vary by industry, sector, geography and practice, and are specified in the relevant methodology."		
The Nature Conservancy strongly supports the development of a methodology by the American Carbon Registry (ACR) to estimate greenhouse gas emissions reductions that can be achieved through the restoration of wetlands in California. Although we support the overall approach taken by ACR, we believe there are a number of areas where the methodology could be improved to provide greater clarity for project proponents and verifiers. We suggest addressing the following topics and related provisions within the methodology: Baseline – The general approach to the applicability of identified, eligible baseline conditions and the method of accounting for baseline emissions seems reasonable, though there are several specific areas where the methodology could be improved to provide	The Nature Conservancy	We recognize that baseline conditions for the Open Water and Seasonal Wetlands in San Francisco Bay and Suisun Marsh are uncertain. We have not estimated these baseline emissions. The project proponent would be responsible for these estimates prior to project initiation in a manner consistent with the methodology (using models and/or data collection methods specified) and that meets the verifiers' standards.

Comment	Commenter	Response
greater clarity and confidence in estimated emissions: For Baseline Conditions descriptions on pp. 4-6 of Framework Module, it appears as though baseline emissions have been measured and modeled sufficiently for only the Delta, only minimally for the SF Estuary, and not at all for Open Water in the SF Bay. As such, how is there confidence in the baseline conditions that are modeled for project sites in the Estuary and Bay, particularly the latter? Is it simply relying on the model meeting the verifiers' determination that the conditions for the use of models, as stated on p. 24 of the Framework Module, have been met by the model employed?		
Conversely, the Framework Module could be improved by specifically referencing PEPRMT and SUBCALC as approved models that can be used to estimate emissions for [X, Y and Z] baseline and project condition types, whereas biogeochemical models used to estimate emissions for [A, B and C] baseline and project condition types must meet the requirements specified on p. 24 of the Framework Module.	The Nature Conservancy	Agreed. We modified the Framework module accordingly.
Leakage – The general approach to addressing leakage seems appropriate. However, there are several issues with how it is incorporated within the methodology: - The reasoning and analysis behind why there is no leakage deduction for projects using an	The Nature Conservancy	Agreed. We added language that requires review of the leakage analysis by ACR at 10 years after approval of the methodology.

Comment	Commenter	Response
agricultural baseline if <35,000 acres of crops or <10,000 acres of pasture are involved seems fine. However, p. 19 of the Framework Module states that additional leakage analysis is required if the cumulative acreage (of projects or all lands in geographically eligible areas?) exceeds these amounts. The language is confusing and does not indicate clearly if this is a task that ACR will undertake at that time or if the project proponent will be required to conduct that analysis. If the former, perhaps it could be reviewed along the same 10-year time frame as the review for the performance standards (pp. 21-22 of the Framework Module).		
There is no mention of leakage from non-agricultural baselines. Does this mean there is an assumption that no leakage occurs from projects applying a non-ag baseline? If so, this should be stated.	The Nature Conservancy	We assumed that there would be no leakage for non-agricultural baselines and stated this assumption in the framework module.
Among the list of "Parameters Originating in Other Modules" (p. 27 of Framework Module), there is a reference to an "LK" parameter as originating in "Leakage analysis," but it is unclear to what this is referring	The Nature Conservancy	The LK parameter denotes the leakage deduction as shown in equation 1 in the Framework Module and is defined as the cumulative total of the carbon stock changes and greenhouse gas emissions. This is stated on page 29.
Other – Several other areas not falling under the categories addressed above could be modified to improve the clarity of the methodology:

The language around geographically eligible areas could be clearer. The current language in some parts | The Nature Conservancy | Agreed. We have modified the geographical applicability language to be consistent throughout the methodology. |

Comment	Commenter	Response
of the protocol (e.g., p.7 and p. 12 of Framework Module) suggests projects could take place on any tidal wetlands in California. But most other areas specify that it is limited to the Bay/Delta region. Perhaps this could be spatially delineated, both in the form of a map included in the protocol and with a GIS layer that would be provided online.		
The Project Conditions section on pp. 6-7 of Framework Module discusses some mix of CO_2, CH_4 and N_2O in each of the project condition types, yet all three are not addressed for each type. While those familiar with GHG fluxes in wetlands may inherently understand why one gas is mentioned for one and not for another, it might be helpful to include at least a sentence addressing a gas not otherwise-mentioned to state that, for example, its flux is not significant and not accounted for by the methodology.	The Nature Conservancy	We added language to clarify the gases that are emitted for the different project and baseline scenarios.
References to "BUFF" parameter (p. 27 of Framework Module) as being used in Equation 1 and originating in the Project Modules is incorrect. BUFF appears in Equation 3 and originates in the Risk Tool	The Nature Conservancy	Corrected. Thank you.

BASELINE MODULES

Comment	Commenter	Response
p. 15, Baseline Module, Applicability for BL OW This is confusing -- the title refers to rice, but a tidal wetland would not cultivate rice.	USGS	The title "Wetland Restoration and Rice Methodological Module" is in the title for all modules, which is consistent with the title of the methodology "Wetland Implementation and Rice Cultivation in the Sacramento-San Joaquin Delta, San Francisco Estuary and the Coast of California – Methodology for Quantifying Greenhouse Gas Emissions Reductions ".
p. 17, Baseline Module, Stratification so for open water areas like the SBSP ponds, when you say "soil" you really mean sediment?	USGS	Correct. The sentence has been changed to include sediment .
It seems like the baseline conditions descriptions beg two questions: 1) What does it mean that less is understood about the baseline emissions for the Estuary and Bay, and 2) How does that impact confidence in baseline emissions estimates for projects reporting from those locations?	The Nature Conservancy	The lower level of quantification is likely not very significant for the open water baseline because, in contrast to the Sacramento-San Joaquin Delta where stopping baseline emissions is a large part of the net GHG benefit, baseline emissions for open water in the Estuary and Bay are likely not large compared to the carbon sequestration in tidal wetlands under the project scenario for saline conditions. However, baseline emissions for seasonal wetlands may be significant. Therefore the lack of measurements for baseline conditions and therefore lack of confidence in emissions estimates should be considered in the development of projects that would use this baseline.

Comment	Commenter	Response
In Baseline Modules, only the agricultural baseline is indicated as being "fixed for the life of the project" (p. 6 in BL-AG Module). No such indication is given in the seasonal wetlands (BL-SW) and open water (BL OW W) baseline modules. Does this suggest that the baseline based on seasonal wetlands and open water are not fixed for the life of the project?	The Nature Conservancy	The baselines are fixed for all baseline scenarios. Text has been added for the seasonal wetlands and open water baselines to reflect this.
Page 17 of the Open Water Baseline Module (BL OW W) indicates that "The baseline scenario consists of the emissions immediately prior to tidal wetland construction." How is "immediately" defined here? It seems this could be interpreted to mean a variety of different time periods leading up to the project start date.	The Nature Conservancy	We interpreted immediately as the years prior to tidal wetland construction. We have revised this sentence to reflect this interpretation.

PROJECT MODULES

Comment	Commenter	Response
p. 10 Project Module, Tidal Wetlands Stratification Is there a salinity level above which this is not a consideration? e.g. above 18 ppt/salinity units?	USGS	Our current understanding is that sulfate reduction needs to be considered regardless of salinity level based on guidance in the project module.
p. 12 Project Module, Tidal Wetlands, Monitoring Project Implementation Can monitoring habitat types occur using remote techniques, such as satellite imagery or Unmaned Aerial Systems (UASs)? The SBSP has 15,000 acres with some areas having very limited access, especially as levees are breached. We have developed techniques to remotely track vegetation using satellite imagery (Brian Fulfrost work), and we are exploring the use of UASs to track changes in habitat as well. The idea being if we can document the type of habitat on an annual basis, then use pre-defined estimates of carbon sequestration for those habitat types. This way, it minimizes the amount of annual field work we would have to do, which means costs.	USGS	The methodology allows the use of these techniques to quantify wetland productivity.
p. 14 Project Module, Tidal Wetlands, Project Carbon Stock Changes See my comment above re: using remote imagery/UASs to track habitat/vegetation changes	USGS	The methodology allows for this approach to estimate carbon stock changes with appropriate and verifiable documentation of the validity and uncertainty in the methodology.

Comment	Commenter	Response
that we can then apply previous relationships to that habitat/vegetation type to changes in carbon stock		
Reporting – The general approach and requirements for project reporting seem reasonable and appropriate, including the minimum reporting frequency of every 5 years. However, it is unclear how the deduction for allochthonous soil organic carbon is integrated into the net emissions reductions and GHG removals for tidal wetlands (p. 15 of PS-TW). Presumably the results from Eq. 11 (p. 15) would be subtracted from Eq. 10 (p. 14), but there should be an integrated equation specified or Eq. 10 should be modified accordingly to provide clarity. Furthermore, the methodology does not provide guidance for how to determine if allochthonous soil organic carbon would accumulate on the project site.	The Nature Conservancy	Additional language and an equation have been added to address this comment.

METHODS MODULES

Comment	Commenter	Response
The terms LUE-DAMM and PEPRMT seem to be used interchangeably (e.g., p. 30 of Model – W/R Module) though the term LUE-DAMM is never introduced as being equated to PEPRMT.	The Nature Conservancy	The LUE-DAMM and PEPRMT are one in the same. This has been clarified in the Model module.