RESPONSE TO PEER REVIEW COMMENTS

A modular methodology for *Restoration of Degraded Deltaic Wetlands of the Mississippi Delta* was developed by Dr. Sarah K. Mack of Tierra Resources LLC, with contributions from Dr. Robert R. Lane, Dr. John W. Day, and Tiffany M. Potter, and submitted to ACR for approval through the public consultation and scientific peer review process.

An early draft of the methodology was submitted to ACR on May 25, 2011. ACR conducted its standard internal methodology screening including review by Dr. Sandra Brown of Winrock. The authors submitted a revised methodology in modular format on October 21, 2011.

The methodology was posted for public comment from January 18 – February 15, 2012. Public comments and responses by the authors are documented elsewhere.

Following public consultation, the methodology was submitted to three anonymous peer reviewers, experts in the field of wetland science and GHG offset methodologies. Peer review comments and responses are given below.

GENERAL **2**

FRAMEWORK MODULE WR-MF **8**

BL-WR, ESTIMATION OF BASELINE CARBON STOCK CHANGES FROM WETLAND RESTORATION **37**

BL-WR-WL, ESTIMATION OF BASELINE CARBON STOCK CHANGES FROM WR INCLUDING PROJECTED WETLAND LOSS FOR THE BASELINE SCENARIO **39**

BL-WR-HM, ESTIMATION OF BASELINE CARBON STOCK CHANGES FROM WR WHERE THE PROJECT ACTIVITY INCLUDES HYDROLOGIC MANAGEMENT **40**

BL-WR-HM-WL, ESTIMATION OF BASELINE CARBON STOCK CHANGES FROM WR WHERE THE PROJECT ACTIVITY INCLUDES HYDROLOGIC MANAGEMENT AS WELL AS PROJECTED WETLAND LOSS FOR THE BASELINE SCENARIO **42**

PS-WR, ESTIMATION OF PROJECT SCENARIO CARBON STOCK CHANGES AND GREENHOUSE GAS EMISSIONS FROM WR **43**

PS-WR-HM, ESTIMATION OF PROJECT SCENARIO CARBON STOCK CHANGES AND GREENHOUSE GAS EMISSIONS FROM WR WITH HYDROLOGIC MANAGEMENT **45**

CP-TB, ESTIMATION OF CARBON STOCKS IN ABOVE- AND BELOWGROUND TREE BIOMASS **47**

CP-S, ESTIMATION OF CARBON STOCKS IN THE SOIL ORGANIC CARBON POOL **49**

E-E, ESTIMATION OF GREENHOUSE GAS EMISSIONS **54**

E-FFC, ESTIMATION OF EMISSIONS FROM FOSSIL FUEL COMBUSTION **56**

X-UNC, ESTIMATION OF UNCERTAINTY IN WR ACTIVITIES **56**

General

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
0.1	In general, this document does a good job of laying out the framework with definitions and reference to the ACR methodology per forestry requirements. This is very important, since many from the wetland community will find this conversion from forest to wetlands to be very confusing. My first workshop on this 'exchange in terminology' was very frustrating. I think this document has excellent cross referencing to help those new in this field. It will be very important that the community takes the time to review those documents and references in this Wetland Restoration methodology.	The authors appreciate your comment. This methodology required many years for the authors to develop and make the connections from forestry to wetlands and to apply standard carbon accounting practices to wetland management.	1. N/A 2. N/C 3. No further comment.	No further comment.	No further comment.
0.2	I am comfortable with the manner in which the authors frame the definitions but suggest more information be provided in an introduction that more thoroughly explains and provides the basis for the conversion from forestry (ACR) to wetlands. This will also allow more explanation and support of the modules which still lacks the detail needed for the non-forest types to understand. In some previous work I spent considerable time looking at conversion where I used HGM to categorize the world's wetlands subject to restoration and management for C seq.	Currently this methodology is written to comply with the ACR Standard and the ACR Forest Carbon Project Standard and therefore the restoration projects under this methodology are eligible under three broad categories of the ACR Forest Carbon Project Standard as detailed in the framework. We agree with the reviewer that this is confusing to try and "fit" wetlands into a "forestry carbon box". The ideal situation is for ACR to develop a Wetland Carbon Project Standard but this most likely will not be accomplished for several years, which therefore prevents wetlands from being introduced as an offset sector unless restoration projects comply with the three broad categories of the ACR Forest Carbon	1. OK I get it. It is unfortunate that you must fit wetlands into the forestry box, but eventually this will be fixed. Progress is slow isn't it? 2. N/C 3. Thank you for the thoughtful response. We all hope this issue will be dealt with quickly.	Further clarification was added to the WR-MF as to how the various types of eligible WR activities map to the ACR forest carbon project areas of AR, IFM, and REDD.	No further comment.

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		Project Standard. The authors spent a significant amount of time researching the various forestry categories and definitions to be able to define wetland restoration projects under the Forest Carbon Project Standard. The authors feel that the wetland restoration projects eligible under this methodology fit under the three broad categories for example ARR-planting mangroves that will ultimately fit the tree cover definition or other plantings that will increase carbon stocks as footnoted in the framework; IFM –improving management of degrading forested wetlands, for example a river diversion into a degrading cypress swamp even though these wetlands are not actually a managed forest in either case as footnoted in the framework; REDD – restoration activities that prevent the further degradation and loss of existing wetlands.			
0.3	I recommend using a decision tree up front to organize the entire procedure. For example, under BL-WR there is a requirement under Part 1 that the applicants must use the T-DEG tool before proceeding to demonstrate a declining or degraded baseline. That would be a good organizational guide. A 'Chilton's guide to wetlands restoration'. **Lead reviewer comments**: I do not agree with 0.3. As someone who has restored wetlands of all types worldwide, even in a comparatively "small"	This methodology follows the modular format that has been accepted by voluntary markets (e.g. VCS VM0007 and the ACR *REDD Methodology Modules*). The modular format provides a flexible framework in which Project Proponents (i.e. Project Developers) can develop projects. Project Proponents must justify their choice in utilizing the various modules as well as justify all decisions, project designs, actions and conclusions to a third-	1. The advantage and disadvantage of a decision tree is that you remove some of the subjectivity. But if there is not an easy and acceptable set of rules to begin with, then a tree will be of little value. Your argument that the practitioner must have the freedom to exercise	No further comment.	No further comment.

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
	ecoregion such as the Delta there is considerable diversity within the landscapes, ecosystems and habitats of both healthy and degraded wetland systems. There is no appropriate "cookbook" for wetland restoration. Better to lay things out as the authors attempt to do here and capture the diversity of wetland types and functions.	party verifier. The authors agree that a decision tree could be a good organizational guide although we also agree that it would be difficult to generalize to all projects and capture the diversity of wetland types and functions. Ultimately Project Proponents will need to have expertise in wetland restoration and understand how to appropriately apply the methodology.	their best judgment is reasonable. 2. N/C 3. We agree that the practitioner must be allowed to exercise their best judgment. This makes the competency and standards of the third party verifier all the more important.		
0.4	I would like to see more emphasis placed on the hydrological elements of the restoration and management process but I am pleased that the authors have laid the groundwork for doing this in their methodology. Understanding exactly the historic and existing hydro-patterns is the fundamental key to planning a successful WR project.	The authors agree with this statement and expect the Project Proponents will need to have significant wetland expertise to fully understand the historic and existing hydro-patterns in order to appropriately define the baseline and develop a successful project.	1. N/C 2. N/C 3. No further comment.	No further comment.	No further comment.
0.5	One significant issue I have is that with this methodology we are assuming the WR plan for the proposed project(s) is correct and will lead to successful attainment of the stated goals. There must be a rigorous procedure for vetting WR project proposals, no matter who the proponent is. After all, there is far more at stake here in this endeavor than carbon credits. WR projects very often fail for a variety of reasons and need to be reviewed early in the process by very experienced ecologists and	The authors agree with this statement however, this is perhaps outside of the scope of a wetland offset methodology that applies strictly to quantifying carbon and GHG impacts of a restoration project and monetizing these carbon and GHG impacts as carbon offsets. Project Proponents will need to have experienced ecologists and engineers who have actual experience designing, building and monitoring successful WR projects as part of	1. This was a good comment that, if I may paraphrase, is saying that the success of a wetland restoration should be judged in a more holistic manner. I am satisfied with the response. I think the argument could be made that if the wetland succeeds as a carbon sink then this is	The authors agree with the reviewers, but after reviewing other methodologies believe that this is outside of the scope of an offset methodology. The authors did try to address broad criteria in the applicability conditions to	No further comment.

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	engineers who have actual experience designing, building and monitoring successful WR projects. The last thing any of us want is for restoration in the Delta, with all that is at risk to ecosystems and livelihoods, to fail and suffer the same fate that "wetland mitigation" did back in the 80's and 90's.	their team to be successful. It is extremely doubtful that Project Proponents would take the large investment risk to not have qualified ecologists and engineers as part of their team as capital expenditures can be in the millions of dollars for these projects. Project activities must conform to all applicable policies and legislation relevant to wetland restoration. It is likely that many of these larger projects will be implemented in partnership with state and federal agencies. Furthermore, the wetland offset methodology does not limit adaptive management, but does require strict monitoring to capture carbon and GHG impacts resulting from management.	sufficient. This is like saying that carbon sequestration is in essence a canary. That could make for an interesting future study. 2. N/C 3. Agreed that this is outside the scope but perhaps you could address the comments/issues in your introduction of the methodology. A study that considers success criteria for wetland carbon sequestration would be interesting.	ensure a legitimate project. A paragraph was added to WR-MF to clarify that the methodology only applies to creating wetland offset credits and not wetland restoration more generally. The paragraph also includes a statement that wetland restoration requires the expertise of wetland ecologists, and other experts to be designed and implemented successfully. The authors are beginning a proof-of-concept project that will hopefully lead to some publications that will further address this comment.	
0.6	[A new section is recommended that] provides the requirements for selecting, planning, designing, implementing and monitoring successful WR projects. There are assumptions made that some readers will understand however I think there will be many interpretations and confusion if this is not properly addressed. WR is the framework here	There seems to be confusion between general wetland restoration and carbon sequestration projects, which are very different in scope. The framework module has been revised to further clarify that the methodology is for wetland restoration carbon offset projects. Furthermore, the definition of WR was refined	1. Good response, though this was not my comment. I am satisfied. 2. N/C 3. Good response. No further comment	No further comment.	No further comment.

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
	although the focus is crediting. I believe the WR process is critical to properly applying the methodologies for crediting and how well this methodology deals with successful WR will dictate the extent that the scientific community accepts and supports this proposal. Consider other factors such as drainage in addition to clearing. The only silvicuture practice I can think of that might be appropriate here would be very selective logging of a restored forested wetland, but that would occur for several decades after project initiation (planting) and again would most likely be a rare occurrence unless the restoration site contains mature trees and the goal is hydrological restoration. Perhaps a thorough explanation of the process would lead to at least a clearer definition and less confusion. Remember most wetland restoration practitioners, managers and regulators equate BL with the "current existing conditions" of the subject area. In order to estimate the changes in carbon stocks of carbon pools we need to have an accurate understanding of the ecological history of the ecosystem. I don't mean to be redundant, but again I think a lack of understanding of the appropriate restoration process is creating many of these questions. The authors have, in my opinion done a good job overall on the carbon issues but it's the failure to address the WR requirements that is problematic. The good news is I believe that can be	from "wetland restoration" to "wetland restoration and management activities that are implemented to increase carbon sequestration and/or prevent/reduce GHG emissions." Further clarification was added to the Applicability conditions. Please see response on section 1.7 for further discussion. The methodology already states "*Drainage of wetland soils is not allowed, and not more than 10% of the project area may be disturbed as result of project planting."* Harvesting of wood products is not allowed with this methodology because the definition of sustainable forestry was too ambiguous to apply to a carbon project at this time and could sacrifice the legitimacy of a project. Performing a thorough ecological history is outside of the scope of a carbon methodology. However, a detailed baseline is required. In a sense, we are looking at the ecological history of the ecosystem that is directly related to carbon sequestration by using C accumulation rates derived from Cs cores in the baseline, which portray historical C sequestration from present to about 1965. The C accumulation rates reflect the general health and productivity historically of the site as it relates to carbon. The ecological history of any			

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	fixed without changing the approach taken by the authors with these modules. The modules will require some modification but in the end, the support provided by a well-developed section in the beginning that outlines the requirements for successful WR will provide a solid foundation for this work.	site is enormously complicated and much of the history has little or nothing to do with C sequestration (e.g., fish species composition changes in the past). Carbon sequestration projects as detailed in this methodology have a project crediting period of 40 years, which is similar to how far Cs cores look into the past. The authors feel after reviewing numerous offset methodologies that an outline of the requirements for successful WR is outside the scope of this carbon offset methodology, which is meant to provide the framework for monetizing carbon and ensuring that carbon offset projects developed in wetlands will be legitimate. However, the authors have made revisions to the framework to further clarify the differences between more general wetland restoration and wetland restoration offset activities as stated above.			

Framework module WR-MF

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
1.1	I would suggest that Table 1 be reviewed and edited for clarity. I think another set of headers is needed; or at least headers above the first two columns included. It is confusing terminology between modules and tools related to the two types of projects: with and without hydrologic management. I almost think that 'not applicable' should be used under the WR with HM column. I had to go back several times to definitions to see how the structure of Table 1 was to be interpreted. It is not very clear.	This methodology follows the modular format that has been accepted by voluntary markets. However, the authors agree with this reviewer and have added headers above the first two columns and revised the table to include N/A where appropriate as well as provided further clarification for the existing headers. The authors apologize that this is not in track changes as the methodology was already modified before receiving notice to record all edits in track changes.	1. I made a comment about supporting the use of AG:BG ratios in a Table 1, but now I can't find it, which speaks to my point about the difficulty navigating through this document. In lieu of a decision tree, would you be willing to provide a table of contents with a list of all the tables? Really every one of these modules has one or more tables but they are not numbered. However, if inclusion of a table of contents violates a protocol, so be it. 2. N/C 3. Thank you. No further comment.	Apologies, when we first began our revisions we did not know we were supposed to make all of our changes in track changes. This comment refers to the current Table 1 that is not marked in track changes but the revisions were made. Your comment in regards to AG:BG ratios is contained in Table 2. The Tables were also renumbered during the revisions process. We apologize for the confusion. The authors followed the format of an accepted modular methodology. The difficulty with numbering the tables is	No further comment.

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				that depending on the project not all of the modules/tables would be used which could lead to further confusion. The authors will be writing a guidance document on how to apply the methodology in the near future and presenting the paper at the RAE conference.	
1.2	The terminology for Wetland Restoration with and without Wetland Loss is very confusing. The framework tries to explain this. Here is my own interpretation that if correct, may be helpful to implement. All carbon stocks have to account to two components: change in carbon per unit area and the total area change of wetlands. Thus, Wetland Restoration (WR) is the change in carbon stock per unit area and the change in total area is zero. The WR-WL is the change in carbon stock per unit area and a reduction of total area. So an equation of (total carbon per unit area) + (carbon/area * change in area) would define these two definitions. When the change in area is zero, then there is no change other than change per unit area. Anyway, this needs to be clearer in the document. It is just intuitively	The authors appreciate this suggestion. A slightly different version of this equation is included in the baseline modules that include wetland loss. However, the authors have revised the framework and wetland loss baseline modules to further clarify the two baseline options based upon the reviewer suggestion.	1.Good response 2. N/C 3. Thank you. No further response.	No further comment.	No further comment.

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
	confusing – and some mathematical qualification would help.				
1.3	I am sure this comment will arise later, but I have problem with the concept of 'steady state degradation'. It is conceptually inaccurate. The concept of steady state degradation while possible is highly unlikely. There will be situations, particularly in the headwaters of watersheds that have been subjected to drainage modifications, where the aerial extent (acreage) of the restored wetland will be larger than the BL acreage.	The authors have revised the framework and wetland loss baseline modules to further clarify the two baseline options based upon the suggestions in comment 1.3. See for example the clarified Applicability Conditions on page 7 of WR-MF. The authors agree with this reviewer's comment. However, the offset project boundary must be defined in the GHG Project Plan prior to project implementation and must remain the same throughout the lifetime of the project independent of whether the restored wetland may be larger than the carbon offset project boundary that is defined at the start of the project. Project Proponents may define the project boundary based on the baseline scenario or the project scenario. (The project boundary may include open water areas in the baseline scenario). Refer to Step 1a. in WR-MF "Project Geographic Boundary".	1. I agree with the comment and the response. 2. N/C 3. Good response. No further comment.	No further comment.	No further comment.
1.4	I am sure this comment will arise later, but I have problem with the concept of 'belowground carbon biomass' that is distinguished from 'soil carbon'. It is a methodological issue – how do you distinguish	We have revised the module where 'belowground carbon biomass', which is derived from a root:shoot ratio based on aboveground carbon biomass, is optional, to be	1.Good response 2. This still needs some modification by dropping the word 'production'. I think this	We agree with the reviewers, the word 'production' has been removed. This comment is in reference to	No further comment.

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
	without double counting?	used only if 'soil carbon' is not measured.	is only biomass; not biomass production. 'This is the belowground biomass of trees, calculated as a ratio of aboveground biomass, and can only be included if SOC is not measured' 3. We agree that the word "production" is somewhat misleading. Please consider dropping this term and providing an explanation as suggested.	root:shoot ratios, which are indeed measures of biomass (i.e., standing stock) and not production (i.e., rate of growth).	
1.5	There needs to be better clarification of stratification and use of strata to numerically define carbon stocks.	Stratification is a standard procedure in offset methodologies in order to increase the accuracy and precision of carbon stock estimates and to account for variation in a wetland (e.g., differentiating a freshwater wetland from a saltwater wetland, differentiating areas that will receive river diversion inputs from areas that will not be influenced by a diversion etc.). Information about stratification is readily available to PPs at the ACR website as well as elsewhere.	1. My comment was really aimed at defining what is meant by stratification. It's a statistical concept and I was concerned that it may be misunderstood. If you think not then ok. 2. I understand the clarification available to users on how to define 'stratification'. But I am suggesting that some guidance (such as parenthetical examples) for	The authors went through the baseline modules and added the following comment to the stratification section "a standard statistical procedure to decrease overall variability of carbon stock estimates by grouping data taken from environments with similar characteristics (e.g., vegetation type; age class; hydrology; elevation)."	No further comment.

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			the following terms may help with operational definitions of how to incorporate stratification for 'wetlands' a. Management regime b. Vegetation type and species c. Age class d. Trend in land loss conversion e. Water quality (e.g. salinity, nutrient inputs, distance from source, etc.) f. Hydrology g. Elevation and subsidence rates h. Site index and anticipated growth rates j. Areas prone towards wetland loss 3. Please adopt the reviewers' comments by making a simple statement of reference to eliminate any potential misunderstanding.	The project modules already contained explanatory language on stratification.	
1.6	You will see a note from me below that challenges whether the Chenier Plain is part of the boundary of Mississippi Delta in this registry. If so, then the cattle	The Chenier Plain is part of the larger Mississippi Delta Complex. The authors have revised the framework to exclude activities that	1. N/C 2. N/C	No further comment.	No further comment.

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
	grazing comments as to not contributing to carbon pools are not accurate. And how do you treat 'grazing' overall? How about the effects of Nutria? I assume this will show up in the before project baseline.	will displace cattle grazing. The methodology previously stated in Table 4 that this methodology is not applicable if livestock activities take place on degraded wetlands. The authors revised the language in the methodology under Step 1. d. Leakage and Project Activity Emission Sources. The carbon stock monitoring will account for nutria impacts in the baseline and the project. The risk by damage from wildlife is further addressed in the Permanence and Buffer Contributions section of the framework.	3. Good response. No further comment.		
1.7	In the "Applicability Conditions" section I believe there is an inherent problem with a planting only project qualifying as wetland restoration because carbon stocks may be increased. We already have significant issues with mangrove planting projects claiming to be WR. If a wetland is not in the process of succession, where colonization of tree/ shrub/ groundcover species is not being observed, planting more vegetation will probably not "restore" the wetland. You may grow more trees, but if the problem(s) with the wetland are not corrected your new planted "wetland" and its "crop" is not likely to be sustainable. There also needs to be some explanation of how REDD qualifications may occur as well as how they	There seems to be confusion between general wetland restoration and carbon sequestration projects, which are very different in scope. General wetland restoration has implications that are much broader than the scope of this methodology, and is the cause for many of the concerns given in the comments below. The framework module has been revised to further clarify that the methodology is for wetland restoration offset projects. Furthermore, the definition of WR was refined from "wetland restoration" to "wetland restoration and management activities that are implemented to increase carbon sequestration and/or prevent/reduce GHG emissions." We agree	1. I am satisfied by the response. 2. N/C 3. Thank you. Good response. No further comment.	No further comment.	No further comment.

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	shouldn't be used.	with the reviewer that simply planting trees is not necessarily wetland restoration, but it is a viable carbon sequestration activity that is sustainable if propagule dispersion is a limiting factor to a region due to, for example, hydrological restrictions or excessive flooding in the case of cypress. Furthermore, increased mangrove establishment may prevent further wetland loss in areas where wetlands are quickly eroding. In regard to the sustainability of a project, Project Proponents will be at huge financial risk if their projects are not successful and will need to have ecological and engineering expertise in designing these projects to reduce this risk. The goal is to expand this methodology to include other modules that fully address the fate and transport of carbon during wetland loss. We are currently seeking funding to address this research gap but designed the methodology to be easily revised to incorporate prevented loss. Currently the methodology accounts for lost wetland sequestration capacity by incorporating baseline modules that include projected wetland loss in the baseline scenario. Again, the methodology has been revised including			

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		the definition of WR in order for management actions that prevent wetland loss to be eligible in the methodology although these actions may be different in scope from more general wetland restoration. The applicability conditions were also revised in order to state that no deleterious impacts can occur due to these activities including causing decreased net sequestration outside of the project boundary. Please see response on section 0.6 for further discussion.			
1.8	There needs to be a definition of "wetland restoration" in the beginning of the text. When this distinction is made and the point is made that we are not talking about wetland enhancement or creation in this methodology, the activities described in the methodology will become clearer and future project proponents will know that their project must meet this definition to be considered. This will also help make the distinction between WR and Forestry.	Please refer to previous comment. The goal of this methodology is not to provide distinctions between WR and Forestry. Wetland enhancement and creation are allowed in this methodology as long as WR activities comply with all regulations and policies and comply with the ACR Standard and the ACR Forest Carbon Project Standard. Justification will need to be provided that the WR activity is eligible under at least one of the three broad categories of the ACR Forest Carbon Project Standard as detailed in the WR-MF applicability conditions. The authors find this valuable input however the methodology was developed in a modular format to give Project Proponents flexibility to	1. This issue of WR vs sequestration seems to be persistent. I am satisfied with the responses. I agree that fundamentally this is not about WR per se. 2. N/C 3. Good response. My apologies for belaboring this point. Glad to see that the authors acknowledge this issue. No further comment.	No further comment.	No further comment.

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
		account for the diversity of wetland types and functions during WR activities to be more inclusive than exclusive. Project Proponents must justify their choice in utilizing the various modules as well as justify all decisions, project designs, actions, and results to a third-party verifier. Methodology development and certification is an expensive endeavor that is difficult to secure funding. The authors felt that it was wise to make the methodology broad and flexible to serve as an overarching framework for project development that details applicability conditions and monitoring requirements and allows actions and decisions to be justified in the GHG Project Plan to the market and third party verifiers. It would be much more costly and limiting to take a more exclusive approach that would require costly methodology revisions for actions that may require minor alterations, adaptive management, or perhaps actions that will be developed in the future that can be easily justified in the GHG Project Plan that must be certified by third party verifiers and the market before implementation of a project can begin. Perhaps, some of the oversight recommendations would be better applied to the expertise requirements of third-party			

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		verifiers or an oversight process at the market level. Ultimately Project Proponents will need to have expertise in wetland restoration/management and understand how to appropriately apply the methodology. Project Proponents will need to justify the choice of modules and why they are applicable to the proposed project activity in the GHG Project Plan. This will require WR activities to comply with the ACR Standard and the ACR Forest Carbon Project Standard and justification will need to be provided that the WR activity is eligible under at least one of the three broad categories of the ACR Forest Carbon Project Standard as detailed in the framework.			
1.9	In the Delta, as elsewhere, the WR project under review needs to be designed, evaluated and monitored in a watershed context. Assuring that the desired quantity of freshwater will be available to a WR project may, as is often the case, require some type of modification "upstream" in the watershed and may or may not require some modification in the landscape to improve storage capacity and/or attenuate flows. We are still dealing with a landscape full of human interventions (USCOE and others) that must be incorporated and often	As stated in comment 0.6 and 1.7 the framework has been revised to better describe the types of C sequestration projects that this methodology would be applied to. The development of a restoration plan for a region is beyond the scope of a carbon offset methodology. In most cases this methodology will be applied to relatively small areas of wetlands located in a much larger hydrologic basin with upstream inputs managed by state or federal government environmental entities	1. Ditto my previous comment, though this reviewer is correct. This is a complex problem, but WR and carbon sequestration really go hand in hand. I don't see a conflict between them. 2. N/C 3. Thank you. No further comment.	No further comment.	No further comment.

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	modified for WR purposes.	(refer to Louisiana's 2012 Coastal Master Plan).			
1.10	The activity types should include areas that historically met the definition of a wetland, that do not now due to human interventions, and through successful WR can be restored to a functional wetland. Restoration of converted farmland is a good example. Functional hydric soils and hydrophytic vegetation will be restored when the appropriate hydrology is employed and managed.	The authors agree with the reviewer although it is important in the methodology that wetlands meet the forest definition to comply with the ACR Standard and the ACR Forest Carbon Project Standard including the three broad activity categories of the ACR Forest Carbon Project Standard. The authors acknowledge that this can be confusing if one is not familiar that this methodology falls under the ACR Forest Carbon Project Standard until an ACR Wetland Carbon Project Standard is developed. Lastly, this methodology is not applicable if agricultural or pastoral activities will be displaced to other locations as detailed in Table 4 - Leakage and Project Activity Emission Sources. Furthermore, this section was revised to state that activities cannot displace cattle grazing as this would cause leakage from the carbon project.	1. Accepted 2. N/C 3. Good response and an accounting of the effects on carbon sequestration. No further comment.	No further comment.	No further comment.
1.11	WR often requires controlled burning to assist in the control of exotic/problematic plant species once hydrology is restored. This important tool in WR should not be precluded. The burning is no longer necessary after the vegetation problems are successfully addressed.	Currently we have no controlled burning as part of the applicability conditions but we are open to input. There is very little literature on the impacts of controlled burning although one of our SET markers was previously burned in a very hot fire and resulted in the top 1-2 cm of the **soil horizon** being burned. The impacts of	1. I suspect that the use of fire as a management tool would generate a great deal of discussion. I agree that use of fire in the context of carbon sequestration would require an accounting of the effects	After further investigation we have decided to include controlled burning since changes in carbon stock of non-tree vegetation is conservatively assumed to	Thanks to the authors for their recognition on this point. Controlled burning is often an important and

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
		controlled burning would need to be accounted for on some level and currently we are unaware of an established emission factor to account for the burning of wetlands. We have discussed that it would be the burning of ephemeral growth that is already conservatively not accounted for because it would be measured in the SOC pool (if measured) or excluded entirely if a root shoot ratio is used. Our options are: 1) include controlled burning under the assumption that the changes in the carbon stock of aboveground biomass of non-tree vegetation are conservatively assumed to be zero for all strata and therefore the burning of this biomass would result in emissions equivalent to the carbon that is already not being accounted for (We are not sure if this is scientifically sound if SOC is monitored) 2) include controlled burning similar to option 1 but require that only the root:shoot ratio be used in these cases to exclude non-woody vegetation that is eventually quantified in the SOC pool or 3) leave the methodology as it is and require that Project Proponents not perform controlled burns. The buffer pool does incorporate the risk of	on carbon sequestration. 2. N/C 3. Good response. Please consider option (2).	be zero for all strata and therefore the burning of this biomass would result in emissions equivalent to the carbon that is already not being accounted for, however SOC pool must be monitored to account for any impacts.	preferred wetland restoration and management tool. I believe option 2 is a reasonable approach and could be implemented without difficulty.

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
		unintentional burns.			
1.12	This brings up another issue with the assumptions made here about WR and the actual process involved. It takes decades to successfully restore a freshwater forested wetland like those found in the Delta. Tree seedlings or direct seeding normally would occur following the correction of exotic plant and hydrology issues in a typical forested WR project. During the first 5 to 10 years following tree planting we often must undertake what I refer to as "interim water management practices" to insure the survival and growth of these trees. If the water levels and hydroperiod exceed the requirements of these species (and they are often very different) stunted growth and unacceptable levels of mortality will result. This management activity is necessary and should not be factored as a penalty in the methodology, simply incorporate it in the methodology through monitoring. It will take years to reach the tree dimensions referenced in your literature cited by Pat and others. In the meantime there are still wetland functions being provided again, including C sequestration albeit at levels below what will exist after two decades of tree growth and maturation of the hydric soil properties. I think that most projects managed in this fashion will still meet the stated requirement that they must demonstrate an increase in net wetland C	The methodology does not limit adaptive management (or 'interim water management practices'), but requires strict monitoring to capture carbon and GHG impacts resulting from such management, which should not be viewed as a 'penalty' as it is absolutely necessary for proper carbon accounting. The methodology takes in account full-grown trees in the project area, as well as newly planted seedlings, so the reviewer's comment in regard to our allometric equations (cited by Pat and others) is somewhat misdirected. In regards to WR please refer to comments 0.6 and 1.7.	1. Complex question, acceptable response. 2. N/C 3. Thank you for the clarification, although I don't believe the comment was "misdirected". No further comments.	No further comment.	No further comment.

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
	sequestration above the baseline condition for the entire crediting period however, the rate of crediting will start lower and increase through time in a successful WR project. Again, I suggest you front-end the process of successful WR which makes these points simpler and easier to understand.				
1.13	Project Geographic boundary. Again there is the project boundary and the watershed boundary. You cannot undertake successful WR by looking only within the project boundary. Thus both boundaries require delineation and details on the respective baseline and WR water budgets. If LIDAR is available, use it. All other sources will require some degree of horizontal and vertical calibration. All veg mapping to establish the diversity of "pool" areas should be ground-truthed. Stakeholders in the project watershed must be addressed to insure long-term sustainability of the WR project.	The authors agree that successful WR cannot be undertaken by focusing only within the project boundary, but as explained above, it is beyond the scope of this methodology to guide larger external WR activities. Most likely the large hydrologic management activities will be implemented through state or federal government agencies that include focus on the watershed boundary. Monetization of the carbon from a WR project strictly focuses on the offset project boundary and the GHG impacts of a project within that boundary unless emissions result outside of the project boundary or leakage occurs (this methodology does not allow leakage). The applicability conditions were revised in the framework to state that project activities cannot diminish the GHG function of habitat outside of the project area. The offset project boundary must be defined in the GHG Project Plan prior to project implementation and must remain the same throughout the lifetime of the project	"The applicability conditions were revised in the framework to state that project activities cannot diminish the GHG function of habitat outside of the project area." This is the critical part and is a very good addition. 2. N/C 3. Thank you for revising the applicability provisions. No further comment.	No further comment.	No further comment.

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
		independent of the watershed boundary. Basically the Project Geographic Boundary is the boundary of the area that is being monetized for wetland offsets. Project Proponents may define the project boundary based on the baseline scenario or the project scenario. (The project boundary may include open water areas). Refer to Step 1a. in WR-MF "Project Geographic Boundary". We do not see the need to mandate the use of LIDAR. Language has been added to the methodology that if aerial or satellite imagery is used by the PPs to determine, for example, vegetation patterns, that it needs to be ground-truthed. The watershed for the Miss delta is 40% of the continental US, thus making the inclusion of all stakeholders highly impractical. We understand that the reviewer is most likely referring to the sub-watershed, but even this is beyond the scope of this methodology. Refer to comment 0.6 and 1.7.			
1.14	Temporal Boundaries. If non-forested wetlands (marshes) are to be considered in this project a 40 year crediting period is not necessary; five to ten years should be ample for projects in the Delta.	The authors agree with the reviewer's statement, however, the crediting period must be generally established for all potential wetland restoration/management projects and comply with the ACR Forest Carbon Project	1. OK 2. N/C 3. Thank you. No further	No further comment.	No further comment.

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
	This may be the appropriate place to insert text on the long-term influences climate change will have on WR and management projects. A changing climate will require project adaptations. Wetlands that don't adapt to climate change may suffer reductions in functional capacity. Please add a section on climate change and WR adaptations to climate change to insure long-term sustainability of the WR and the associated crediting.	Standard. Furthermore, some of the baseline modules account for projected wetland loss. Baseline revisions at 40-year intervals (similar to AR requirements) will ensure baseline validity because baseline wetland loss and climate change can be more accurately predicted using longer intervals that reveal long-term land change trends.	comment.		
1.15	Please do not associate WR success with "a persistent conversion to open water." I don't think this is the authors' intention so hopefully, no explanation is required.	The authors' intent is to associate WR success with the prevention of wetlands converting to open water. Ideally the authors will secure funding for fate and transport of carbon during wetland loss and expand the methodology to fully address the prevented loss of wetlands.	1. "Project Proponents may choose to select modules to account for projected wetland loss in baseline scenarios, which qualify broadly under the REDD category when project activities may prevent project lands from further degradation, including falling below a forest threshold or converting into open water." This is clear to me. 2. N/C 3. Thank you. No further comments.	No further comment.	No further comment.
1.16	Again the assumption made is not valid that there is a lack of WR technical expertise and are poorly	The authors agree with the reviewer and have added the words "by landowners" to the	1. OK	No further comment.	No further comment.

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
	managed to justify the premise of there is a continued loss of wetlands unless specific cases can be cited and even then there will be exceptions.	following excerpt from WR-MF: "Generally, baseline wetland management results in the continued loss of wetlands. Wetlands are unique from forestry and silviculture in that baseline wetlands are not actively managed *by landowners* due to high costs and lack of technical expertise for wetland restoration. Therefore, baseline management is not subject to change and will not need to be incorporated into the baseline." Again, this is where the authors are trying to 'fit' wetlands into the forestry 'box' but are needing to clarify the differences between wetlands and managed forests. The above excerpt is used to justify that landowners are not able to restore wetlands on their own and therefore it is a fair assumption when predicting the baseline that the wetland would continue to degrade without restoration activities. The authors believe that this is generally true in the Mississippi Delta. Project entities must demonstrate that the wetland restoration project is not common practice per the Practice-based Performance Standard and the restoration project must not be required to mitigate onsite or offsite impacts to wetlands under Section 404 of the	2. N/C 3. Thank you for the modifications and good explanation. No further comment.		

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
		Clean Water Act.			
1.17	My experience is that WR is different than AR and baseline revisions of WR projects will be necessary at more frequent intervals (such as time 0, 5 years, 15 years, 25 years and 40 years).	The crediting period must be generally established for all potential wetland restoration projects and comply with the ACR Forest Carbon Project Standard. The authors established the 40 year crediting period to comply with AR requirements (to apply towards marshes). Furthermore, some of the baseline modules account for projected wetland loss. Baseline revisions at 40-year intervals similar to AR requirements will ensure baseline validity because baseline wetland loss and climate change can be more accurately predicted using longer intervals that reveal long-term land change trends. Verification on the other hand must happen every time carbon offsets are to be transacted during the 40 year crediting period. Lastly, developing wetland offsets is most likely going to be more expensive than other forms of terrestrial offsets due to the more extensive monitoring requirements and the permanence risks. Having a longer crediting period will not sacrifice the validity of the restoration project but it will help to keep costs more reasonable. The authors want there to be a business case for investment into wetlands restoration. (A certified methodology won't stimulate investment if the carbon	1. I agree with the response. 2. N/C 3. Good response. No further comment.	No further comment.	No further comment.

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
		monetization costs are cost-prohibitive to Project Proponents/developers).			
1.18	What are the typical, potential WR project types existing in the Mississippi Delta ecoregion? This information would be very useful in reviewing this methodology from a WR perspective, prior to applying any of the proposed methodologies for crediting. This information may be readily available, I haven't had a chance to check the literature, but it could be prepared quickly from existing information… from a WR perspective of course. I realize the intended application of these methodologies. However, they all must be geared to address successful WR under the conditions that currently exist on the landscapes of the Delta.	Please refer to comment 0.6 and 1.7. Currently no wetland offset projects exist due to the lack of a certified wetland offset methodology, therefore there is nothing to be found in the literature. The methodology framework details: WR projects applicable under the Methodology Framework are divided into two broad activity types: WR activities that are exclusive to assisted natural regeneration, seeding, or tree planting; and WR activities that include a hydrologic management component. Examples of eligible hydrologic management project activities include: *a.* Diversion of river water (e.g., Mississippi River or other) into wetlands; *b.* Introduction of nonpoint source runoff (e.g., agricultural, stormwater) into wetlands; *c.* Discharge of treated municipal effluent into wetlands (e.g., wetland assimilation). *d.* Outfall management to maximize sheet flow and minimize impounded or stagnant conditions. The methodology was developed in a modular	1. This is an acceptable response 2. N/C 3. Good response. No further comment other than to again stress the importance of the third party verifier.	No further comment.	No further comment.

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
		format to give Project Proponents flexibility to account for the diversity of wetland types and functions during WR activities to be more inclusive than exclusive. Project Proponents must justify their choice in utilizing the various modules as well as justify all decisions, project designs, actions, and results to a third-party verifier. The authors felt that it was wise to make the methodology broad and flexible to serve as an overarching framework for project development that details applicability conditions and monitoring requirements to promote successful restoration in the Delta including adaptive management. All actions and decisions must be justified in the GHG Project Plan to the registry and third party verifiers. It would be much more costly and limiting to take a more exclusive approach that would require costly methodology revisions for actions that may require minor alterations, adaptive management, or perhaps actions that will be developed in the future that can be easily justified in the GHG Project Plan that must be certified by third party verifiers and the registry before implementation of a project can begin. Perhaps, some of the reviewer's oversight recommendations would be better applied to the expertise requirements of third-			

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
		party verifiers. Ultimately Project Proponents will need to have expertise in wetland restoration and understand how to appropriately apply the methodology. Project Proponents will need to justify the choice of modules and why they are applicable to the proposed project activity in the GHG Project Plan. This will require restoration activities to comply with the ACR Standard and the ACR Forest Carbon Project Standard and justification will need to be provided that the restoration activity is eligible under at least one of the three broad categories of the ACR Forest Carbon Project Standard as detailed in the framework.			
1.19	Wetland restoration is unique, but eligible under three broad categories of the ACR Forest Carbon Project Standard: 1) Afforestation/Reforestation; 2) Improved Forest Management; and 3) Reduced Emissions from Deforestation and Degradation. Many scenarios of wetland restoration will qualify under the AR category where a baseline wetland does not meet the "forest" definition but project planting activities target the eventual establishment of a forest. Does this imply that restoration of salt or freshwater marsh does not qualify? If the intent is to allow for restoration of marsh habitat, then this	The authors completely agree with the reviewer and believe that many of the comments pertain to the fact that the ACR Forest Carbon Project Standard was not initially designed to apply to wetlands. The authors feel that writing a methodology under the Forest Carbon Project Standard was the fastest route to market for wetland offsets but hope that the ACR will pursue development of WR Standards. An example of a salt marsh management for carbon sequestration would be to plant	1. Good response 2. N/C 3. Good response. Hopefully the ACR will now pursue development of WR standards. No further comment.	Further clarification was added to the WR-MF as to how the various types of eligible WR activities map to the ACR forest carbon project areas of AR, IFM, and REDD.	No further comment.

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
	statement in the WR-MF certainly seems to contradict that. **Lead reviewer comments:** WR may be eligible under the ACR FC Project Standards, they were not intended for WR and it is most appropriate to develop standards for all WR both forested and non-forested, tidal and freshwater. What works for one of these categories will typically work for the others when applicable.	mangroves (to increase carbon stocks), especially if the reason for the absence of mangroves in the region is due to propagule limitation (see 1.7). Also refer to framework applicability conditions as follows: *In cases where project proponents choose revegetation as a project activity when the wetland will never reach a forest threshold of 10% tree cover in the project scenario, as in the case of herbaceous wetlands, the project activity is allowed under the AR category as long as carbon stocks increase beyond the baseline case.*			
1.20	*This methodology is only applicable for forested and nonforested wetlands in the Mississippi Delta ranging from fresh to saline conditions. Wetlands are defined as having one or more of the following three attributes: (1) at least periodically, the land supports predominantly hydrophytes; (2) the substrate is predominantly undrained hydric soil; and/or (3) the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season of each year*[1]. This definition of wetlands is broader than what is implied by the previous statement.	The authors tried to define wetlands as broadly as possible and then limit the WR activities through the applicability criteria and monitoring requirements to ensure both successful WR activities and scientifically defensible wetland carbon offsets. Broadening the applicability conditions to include wetlands previously converted to agriculture could promote "leakage". This does not mean that the methodology cannot be expanded in the future, but the authors felt that the current methodology was as broad as	1. OK 2. N/C 3. I understand the authors concerns, but we will just have to agree to disagree on this one. Either approach probably works, not a significant issue for now.	No further comment.	No further comment.

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
	Lead reviewer comments: A broader definition that includes wetlands that are now functional due to human intervention (agricultural; converted areas that were logged, cleared and drained) which may be good candidates for WR.	could be developed at this point in time to promote successful wetland restoration offset activities and scientifically defensible credits. The authors do have goals of expanding the methodology once science gaps and proof-of-concepts are addressed.			
1.21	Per the ACR Forest Carbon Project Standard, Project Proponents shall document that project lands were not cleared of trees during the 10 years preceding the project Start Date in order to implement a WR project. This exclusion does not apply in the case of natural disturbances. What is the logic of this? A project site that has been recently and actively managed for forest production would not be permitted?	This is a requirement of the ACR Forest Carbon Project Standard. The authors believe that this requirement is to prevent landowners from clear-cutting their property to start an offset project. This applies more to forestry than to wetlands but one would still not want landowners to clear-cut with the intent of starting an offset project.	1. Ok I get it. 2. N/C 3. Thank you. No further comment.	No further comment.	No further comment.
1.22	The baseline is defined as existing or historical changes in carbon stocks of the carbon pools within the project boundary where the land would remain degraded in the absence of the project activity. It would be helpful to reference here where (what module) the protocol can be found for determining the baseline. Steady state degraded baseline scenario and Projected wetland loss included in the baseline scenario. Ditto, where are these defined?	The authors feel that it is more appropriate to explain the various baseline modules in Step 0 with the decision tree that provides steps to choose the appropriate baseline (about a page and a half after the applicability conditions). However, the authors did revise the definitions of baseline in the applicability conditions and provided further clarity on the various baseline options.	1. N/C 2. N/C 3. Thank you. No further comment.	No further comment.	No further comment.
1.23	Not more than 10% of the project area may be disturbed as result of project planting. What constitutes disturbance? Why 10%? Why not 100%,	The authors believe that this is a requirement of the ACR Forest Carbon Standard because it prevents potential oxidation of carbon in	1. N/C 2. N/C	No further comment.	No further comment.

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
	if the net result is a successful project?	organic soils that is difficult to quantify.	3. OK, no further comment.		
1.24	*The project activity does not lead to a shift of pre-project activities outside the project boundary above the de minimis threshold (e.g., the land under the proposed project activity can continue to provide at least the same amount of goods and services as in the absence of the project activity*). This starts with a statement about activities outside the project boundary, but the e.g. refers to 'the land under the proposed project'. Which is it, inside or outside? Moreover, it seems that there should be a requirement that the project does not diminish the GHG sequestration function of habitat outside the project area.	This statement refers to "leakage" in that activities will not be displaced to other areas that will continue to emit GHG's. The authors propose that wetland restoration is unique from for example agriculture where if you were to "conserve" a pasture it doesn't mean that you won't move your cattle to the adjacent pasture that would result in the same emissions. In the case of a restored wetland the authors state that for example wildlife, hunting, and other ecosystem services will not be negatively impacted causing a displacement that would impact emissions. The authors agree with your last statement and have revised the methodology applicability conditions to include your statement.	1. OK 2. N/C 3. Thank you for the revisions and good response. No further comment.	No further comment.	No further comment.
1.25	*Harvesting of wood products and controlled burning are not allowed*. What about extraction of fossil fuel? *Pools or sources may always be excluded if conservative.* If conservative what? I suggest: Pools or sources may always be excluded if exclusion will tend to underestimate net GHG emission reductions/removal enhancements.	This is a very valid point (extraction of fossil fuels) that is a bit tricky since the largest landowners are oil and gas companies. Project Proponents would need to exclude these areas from the project geographical boundary. Landowners are not allowed to disturb their property if it damages the carbon offset project. The Permanence and Buffer Contributions do consider intentional reversals, such as landowners choosing to discontinue	1. Yes 2. N/C 3. Good response. No further comment.	No further comment.	No further comment.

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
		project activities before the project minimum term has ended. The methodology framework states the following in the framework under C. Pools and Sources: *Exclusion of carbon pools and emission sources is allowed subject to considerations of conservativeness and significance testing. Pools or sources may always be excluded if conservative, i.e. exclusion will tend to underestimate net GHG emission reductions/removal enhancements.*			
1.26	Table 1: You expect to quantify belowground biomass using an AGB:BGB ratio? I am just asking for clarification. I think use of a ratio is defensible, but should be justified with literature estimates. **Lead reviewer comments:** I agree with this comment based on my experience with mangroves. What efforts will be made to develop this information if it is not readily available in the literature?	The methodology has been modified so that the Root-shoot ratio (AGB:BGB) may be used only if soil carbon is not measured to prevent double counting. Additional direction has been given in the parameter tables of the CP-TB module for R_j (the root-shoot ratio for tree species or group of species *j*) as to how to develop R_j if it is not readily available in the literature.	1. OK 2. N/C 3. Thank you. No further comment.	No further comment.	No further comment.
1.27	[ACR note: there are two Table 1's in WR-MF. The first is on page 4. The 2nd Table 1, on page 10, and Tables 2 and 3 should be re-numbered.]	The framework has been revised.	1. OK 2. N/C 3. Thank you. No further comment.	No further comment.	No further comment.
1.28	*An assessment of the causes and consequences of*	The module has been revised to make this	1. OK	No further comment.	No further

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
	wetland loss and management options for protection and restoration, based on national and regional information from various government agencies (federal, state, local), academic and research institutions as well as environmental NGO associations, demonstrate that the percentage of land building (including natural land building and wetland restoration activities) is approximately 15% or less of the amount of persistent wetland loss that is occurring in Louisiana. I cannot understand this. If I simplify it: An assessment of the causes and consequences of wetland loss and management options for protection and restoration demonstrate that the percentage of land building (including natural land building and wetland restoration activities) is approximately 15% or less of the amount of persistent wetland loss that is occurring in Louisiana. What exactly must be <=15% of the wetland loss in Louisiana. Total wetland loss? Rate? Area? Rate per unit area? Something is missing here.	point more understandable (e.g., the amount of area is now stated). The source of the data was previously footnoted.	2. N/C 3. Thank you. No further comment.		comment.
1.29	The results show that the percentage of land building ranged from 2-12% of persistent land loss substantiating the argument that wetland restoration and avoided loss are not common practice or "business-as-usual" and wetland restoration under this methodology thus passes the	The authors used the coast wide values provided by USGS since the methodology focuses on the entire Mississippi Delta. As the reviewer emphasizes there is obviously more land building in the Atchafalaya Basin and land loss in other basins. The data is used to	1. OK 2. N/C 3. Now I understand. No further comment.	No further comment.	No further comment.

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
	performance standard test. Is the 15% rule globally applicable throughout the Mississippi River delta including an area of active delta expansion such as the Atchafalaya?	substantiate that existing coastal restoration programs and natural land building are not addressing the problem of wetland loss in the Mississippi Delta and therefore all WR activities should be considered eligible (additional) even if the funding comes from state or federal programs (as this will help the State of LA expand their coastal restoration program to restore more wetlands).			
1.30	Equation1: can you give the units? Delta C is obviously a total integrated amount of carbon or CO_2, while LK must be a fraction. Should there be a reference here to the methodology used to compute LK?	It is standard carbon offset methodology format to provide the units below the equation. For example the units for equation one are detailed directly the below the equation as: $C_{ACR,t}$ Total net greenhouse gas emission reductions at time t; t CO_2-e. Projects that impact leakage are not eligible under this methodology. The methodology framework states the following: LK = Cumulative total of the carbon stock changes and greenhouse gas emissions due to leakage up to time *t;* t CO_2-e; LK must equal zero for this methodology to be used.	1. OK 2. N/C 3. Thank you. No further comment.	No further comment.	No further comment.
1.31	Equation2: I think there is a problem with units. BUF cannot be a percentage as used in the equation. It has to be a fraction.	The ACR buffer pool, which is established by the American Carbon Registry, uses a percentage. Therefore, the standard format in offset methodology is to use the following notation: *Percentage of project ERTs*	1. I cannot locate this equation now. What I was referring to, recalling from memory, is that you used a constant in an equation that	The reviewer is correct. The framework has been revised to define a fraction of the project	No further comment.

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
		contributed to the ACR buffer pool, if applicable; %. *Per the Forest Carbon Project Standard, BUF is determined using an ACR-approved risk assessment tool. If the Project Proponent elects to make the buffer contribution in non-project ERTs, or elects to mitigate the assessed reversal risk using an alternate risk mitigation mechanism approved by ACR, BUF shall be set to zero.* It should be noted that percentages and fractions can be equivalent, so the reviewers comment that 'It has to be a fraction' is technically incorrect.	has to be a fraction, but you defined it as a percentage. E.g. hypothetically in C = f x B where B and C are in units of g C/m2 and f is a percentage. f in this case is really a unitless fraction. I accept that this is a trivial point. 2. N/C 3. No further comment.	instead of a percentage.	
1.32	I would modify the **Applicability** as follows: The module is applicable for estimating baseline carbon stock changes and GHG emissions related to wetland restoration through assisted natural regeneration, seeding, or tree planting. The following conditions must be met to apply this module. <u>This applies to projects where the total area of wetlands in the boundary is not expected to change during the period. Thus all carbon changes are due to stocks per unit area.</u>	The framework was revised to further clarify the baselines that include and exclude wetland loss.	1. OK 2. N/C 3. Thank you for the revision. NO further comment.	No further comment.	No further comment.
1.33	"Project boundary" needs some clarification. Is this the land of a landowner that is submitting the	The carbon offset project boundary is the defined project boundary that is being	1. Makes sense to me.	No further comment.	No further

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
	request for credit that is downstream of a 'restoration project'; or all the landowners have to be included in a 'project boundary' of a restoration project. Here is my problem. Lets say a 200,000 cfs diversion restoration project is built. What is the 'project boundary' for carbon credits? The outfall will have large downstream effects – will each landowner apply for carbon credits; or will the state apply on behalf of the landowners? Project boundary needs to be defined between that of the 'restoration project' and the 'carbon offset project'. This is scale issue – how will downstream carbon offsets be linked to upstream restoration projects. **Lead reviewer comments**: The example given by reviewer #2 makes my case for planning, reviewing and managing the WR projects in a watershed context defining the boundaries of the WR and Carbon Offset projects, with stakeholder participation.	monetized for carbon credits and may or may not include the entire restoration project. It is up to the Project Proponents to work with landowners and government entities for stakeholder participation and buy-in as the offset must demonstrate clear offset title and ownership. Please refer to the comments above for further discussion of the project boundary.	2. N/C 3. Good explanation. No further comment.		comment.

BL-WR, Estimation of baseline carbon stock changes from wetland restoration

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
2.1	*Changes in the carbon stock of aboveground and belowground biomass of non-tree vegetation may be conservatively assumed to be zero for all strata in the baseline scenario* This does not exclude the inclusion of AB and BG biomass correct? That would be appropriate when the baseline is zero live standing biomass.	'Belowground' has been removed from the sentence. It now reads: '*Changes in the carbon stock of aboveground biomass of non-tree vegetation may be conservatively assumed to be zero for all strata in the baseline scenario'*	1. OK 2. N/C 3. Thank you. No further comment.	No further comment.	No further comment.
2.2	**Part 3. Baseline stratification** When estimating baseline carbon stocks, several strata can be assessed, including but not limited to: a. Management regime b. Vegetation type and species c. Age class d. Trend in land loss conversion e. Water quality (e.g. salinity, nutrient inputs, distance from source, etc.) f. Hydrology g. Elevation and subsidence rates h. Site index and anticipated growth rates This section is not very clear – will these be defined somewhere? What is 'anticipated growth rates? Hydrology? This concept of stratification needs some more clarification.	Please refer to response 1.5. Project Proponents may define their strata by any conditions they choose. The authors did revise the baseline modules that account for projected wetland loss to include areas prone towards wetland loss.	1. OK 2. N/C 3. Thank you. No further comment.	No further comment.	No further comment.
2.3	Under the applicability conditions of this methodology:	Please refer to response 2.1. 'Belowground' has been removed from the sentence.	1. OK 2. N/C	No further comment.	No further comment.

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
	• Changes in the carbon stock of aboveground and belowground biomass of non-tree vegetation may be conservatively assumed to be zero for all strata in the baseline scenario; What? How can this be assumed? A wetland under sea level rise adds carbon each year to soil – elevation is carbon driven. So explain this assumption.		3. Thank you. No further comment.		
2.4	The following statement is confusing. Now the concept of 'stratum' is introduced, and I missed this interpretation. Again, see my comment above. I think this could be more clearly stated in 'carbon stocks' by using per unit area and total area formulas. *"This module requires knowledge of the rate (area of wetland loss per year) at which the project area wetlands would be lost to give an area per stratum (i) per year (t) through the project period.'*	Please refer to previous responses pertaining to strata and the equations relating to wetland loss.	1. OK 2. N/C 3. Thank you. No further comment.	No further comment.	No further comment.
2.5	There is concept above that project areas can be subdivided into types to calculate carbon credits. Should the same be true for calculating carbon loss from land loss? Should the land loss also have classification types? **Lead reviewer comments**: Agreed, the same should be true for calculating carbon loss from land (wetland) loss and the land loss should also have classification types. This should be established in the ecological history description of activities that created the baseline conditions.	The baseline modules that include projected wetland loss have been revised to include wetland loss in the stratification criteria.	1. OK 2. N/C 3. Thank you. No further comment.	No further comment.	No further comment.

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
2.6	OK. Page 7 has equations that may account for my comments. Again, strata is not clear to me. I may have missed it somewhere. I would work backwards from these equations on how you set up these definitions of WR-WL to help guide the logic. **Lead reviewer comments**: Typically different habitat types have the potential of requiring specific hydropatterns (hydroperiod, depth of inundation, flood timing, etc.). Is this the intent of "strata"? If so, it requires explanation of how it is derived and applied.	This methodology follows a modular format that has been accepted by the voluntary markets. Please refer to previous responses regarding stratification (section 1.5). The intent of stratification is to group (i.e., block) areas of similar C sequestration together to reduce overall project variability.	1. OK 2. I still think some clarification, even as simple as the statement in this response, would help with definitions up front in this registry. It is not how stratification or strata are justified; it is application to 'wetlands' that we are all suggesting that this registry be applied. I still think more guidance on operational definitions would be helpful. 3. Please consider our earlier suggestion to include some of this guidance on operational definitions early on in this registry. Thank you.	Please refer to the previous comment in section 1.5. The authors did revise the framework module definitions to include stratification.	No further comment.

BL-WR-WL, Estimation of baseline carbon stock changes from WR including projected wetland loss for the baseline scenario

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
3.1	*Cumulative total of the carbon stock changes of living tree biomass for the baseline scenario up to time t; t CO_2-e*: Not to include marsh herbs and grasses? Same comments about variable Ht and Ho as in the BL-WR-HM-WL module.	Yes, herbs and grasses are not included. The eventual long-term deposit of this carbon will be is counted in the soil carbon component.	1. OK 2. N/C 3. Thank you. No further comment.	No further comment.	No further comment.
3.2	'*Under the applicability conditions of this methodology: Changes in the carbon stock of aboveground and belowground biomass of non-tree vegetation may be conservatively assumed to be zero for all strata in the baseline scenario'* Again, I have problems with the first assumption. This shows up in all the modules. Again, how do you account for changes in soil elevation in wetlands that remain in a project area – they must be accumulating carbon.	Refer to response 2.1 'Belowground' has been removed from the sentence.	1. OK 2. N/C 3. Thank you. No further comment.	No further comment.	No further comment.

BL-WR-HM, Estimation of baseline carbon stock changes from WR where the project activity includes hydrologic management

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
4.1	*Stratifications should be used for nonhomogeneous sites.* Probably better stated that a stratified sampling design should be used… and stratified design should be defined somewhere. Shouldn't there be guidance	Please refer to previous responses regarding stratification (sections 1.5 & 2.6). Stratification is otherwise known as 'blocking' in statistics, which there is a plethora of information in the	1. OK 2. Again, we are not commenting on the definition	Please refer to comment 1.5 and 2.6 as to the revisions that were made.	No further comment.

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
	on the implementation of a proper stratified design?	scientific literature.	of 'blocking'; the comments are asking the authors to provide 'operational definitions' for several of the ways 'blocking' can be defined. 3. Thank you. Please consider providing operational definitions for the various ways blocking can be defined.		
4.2	I see the concept of Project Proponent is used here in HM. This may address my issue above. Again, this needs better clarification in the WR-MF module.	The authors do not understand what this comment pertains to.	1. Neither do I. 2. N/C 3. Thank you. No further comment.	No further comment.	No further comment.
4.4	The stratified sampling design (aka Releve Method with an objective determination of sampling locations) should be established in the WR project planning and design. This monitoring would be done at pre-project (BL) and post-project events. More unnecessary confusion here.	Though the Releve Method of sampling is very good for monitoring vegetative changes, it has a limited application to this methodology. The reviewer appears to be confused by the word 'stratified' and cites the Releve method as a way of reconciling this confusion, as it has a 'stratified' sampling design as a characteristic. Please refer to responses 1.5, 2.6 & 4.1 for further clarification.	1. Ok. But it seems that several reviewers are suggesting some clarification about references to stratification. We know what it is. My concern was that I could be misinterpreted, depending on the audience. 2. N/C 3. Clarification is needed. Thank you.	Please refer to comment 1.5 and 2.6 as to the revisions that were made.	No further comment.

BL-WR-HM-WL, Estimation of baseline carbon stock changes from WR where the project activity includes hydrologic management as well as projected wetland loss for the baseline scenario

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
5.1	I am not getting the logic of equation 2. It is defined as the cumulative total change in soil carbon that would occur in the absence of the project. It seems to me that this quantity should increase with time (t). But it is actually diminished with time according to the ratio Ht/Ho, where Ht=Ho-ht. And there is inconsistency in units.	This equation accounts for a decrease in the wetland project area over time. The module has been revised to further clarify this.	1. OK 2. N/C 3. Thank you. No further comment.	No further comment.	No further comment.
5.2	On page 8, h is defined verbally as a percentage, but it is used on page 7 eq 4 and elsewhere as a fraction. In the table on page 9 are you concerned that h and h sub t have different definitions?	The percentage and fraction can be used interchangeably but most offset methodologies prefer to notate percentages. See response 1.31 for additional discussion.	1. Ok, and my response to your response. 2. N/C 3. Thank you. No further comment.	No further comment.	No further comment.
5.3	There is the potential here to describe how hydrological restoration or simple intervention to improve ecological conditions would work and the calculations are made for estimating baseline carbon stock changes and GHG emissions. If this was my project I would use an integrated hydro model like MikeShe (DHI) and run a natural systems model or NSM (historic conditions), an ECM (existing conditions model) and multiple future conditions models (10, 20 and 40 years out from WR time zero). The data collected in your Delta WR projects, pre and post implementation, would be used for model calibration. Your future conditions model(s) would not only account for wetland restoration but also continued	We agree with the reviewer, the use of hydrodynamic models such as those listed would be the most integrated and comprehensive way of carrying out adaptive management and ecological restoration of an area. However, the use of these models is beyond the ability of most PPs, and to mandate such modeling would severely impede the use of this methodology beyond those involved with state or federal governments or universities.	1. I agree with the response. 2. N/C 3. Good response. Perhaps this approach can be investigated in the future to assess potential carbon sequestration opportunities at the large landscape level. No further comment.	No further comment.	No further comment.

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
	losses and the impacts of climate change if properly developed. The NSM will clearly provide a hierarchy of WR needs and depending on the functionality of your modules, will provide priorities for WR and where investments of WR energies will have the greatest impacts. This process is a significant part of a watershed analysis and the model does most of the boundary determination for you.				

PS-WR, Estimation of project scenario carbon stock changes and greenhouse gas emissions from WR

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
6.1	*Page 4: It is recognized that above- and belowground biomass of non-tree vegetation, dead wood and litter contribute to the SOC pool in wetlands. They are conservatively assumed to be zero for all strata in the project scenario and are quantified in the SOC pool to prevent double counting.* Could this be stated more clearly as: They can be assumed conservatively to be zero for all strata in the project scenario. Alternatively, they can be quantified, but must be included in the SOC pool to prevent double counting.	Refer to response 2.1, as 'belowground' has been removed from the sentence. One reason non-tree vegetation, dead wood and litter are conservatively assumed to be zero is because it is assumed that implementation of wetland restoration/management will only increase these pools, and second, that these components will eventually be incorporated into and counted as part of the soil organic carbon pool.	1. OK 2. N/C 3. Thank you. No further response.	No further comment.	No further comment.

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
6.2	OK. Project stratification is explained pretty well here. I think this needs to be included in some of the material up front in the modules; and not just in the tool sections.	Please refer to responses 1.5, 2.6, 4.1 & 4.4 for discussion regarding stratification.	1. N/C 2. N/C 3. No further comment.	No further comment.	No further comment.
6.3	*'The 90% statistical confidence interval (CI) of sampling can be no more than +/- 10% of the mean estimated amount of the combined carbon stock across all strata*[2]*. If the Project Proponents cannot meet the targeted +/- 10% of the mean at 90% confidence, then the reportable amount shall be the lower bound of the 90% confidence interval.'* I think this needs to be clarified. I am not sure if carbon pools in wetlands can fit this same criteria as for forests. My experience, especially for belowground carbon, is that this will be a challenge. Is this backed up with same 'practice' in wetland science as forest science. Is there not an 'ecosystem specific' rule here? **Lead reviewer comments**: I believe the reviewers comments here are justified and also have doubts that carbon pools in wetlands actually fit the same criteria as for forests. Collecting reference wetland/forest data should clarify. See my earlier comments on this point.	Refer to comment 6.4, as it seems the reviewer retracts this comment. We have nevertheless responded: We agree with the reviewer that it will be a challenge to attain 90% statistical CI, especially for soil organic carbon. The tree biomass module (CP-TB) applies essentially the same criteria and methods as upland forestry methodologies, while the soil organic carbon module (CP-S) introduces new techniques specifically designed for wetlands. The use of reference areas is integral to our methodology.	1. Agreed 2. This could be a deal breaker. 3. This issue will not be resolved here. The problems need to be described (admitted) to avoid criticism and encourage the development of a wetland methodology by ACR.	The 90% CI rule is not a yes/no rule for project eligibility. It just means if you cannot reach a 90% confidence interval of +/- 10% of the mean, you have to take a deduction in the final credits. So if it is prohibitively costly to reach that target for some carbon pools in wetlands, PPs will just have to accept a bigger deduction. If they can install more sampling plots to narrow the 90% confidence interval, that of course costs more but may enable them to avoid a deduction, so may be financially worthwhile.	No further comment.

[2] For calculating pooled CI of carbon pools across strata, see equations in Barry D. Shiver, *Sampling Techniques for Forest Resource Inventory (John Wiley & Sons, Inc, 1996)*

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
6.4	Thank you for the following insertion of a rule for this registry – you can ignore my comment above. *"It is recognized that above- and belowground biomass of non-tree vegetation, dead wood and litter contribute to the SOC pool in wetlands. They are conservatively assumed to be zero for all strata in the project scenario and are quantified in the SOC pool to prevent double counting".*	No comment necessary.	1. Agreed 2. N/C 3. No further comment.	No further comment.	No further comment.
6.5	So, would it not be clearer to up front use TB-AG to denote that only the aboveground carbon stock is to be assessed. It gets confusing to establish this AG and BG standard up front – and then to discount it using SOC. Now I am confused when I see 'C-tree'. Is this just aboveground carbon or total carbon with both above and belowground. Again, I would advocate that up front in the beginning that you say Tree is only AG since BG is included in SOC. Then it is clear throughout the other modules.	We assume the reviewer is referring to module (CP-TB). Please refer to the response 1.4. The methodology has been revised so that C-tree 'belowground carbon biomass' will only be used if 'soil carbon' is not measured.	1. OK 2. I could not find the CP-TB revised document in what was transmitted to reviewers. I would still just be careful as to use of C-tree as to inclusion of soil carbon. 3. Thank you. No further comment.	According to our records, the CP-TB module was submitted, however, our apologies if this was not the case due to an oversight on our part. The module has been included in this most recent submission.	No further comment.

PS-WR-HM, Estimation of project scenario carbon stock changes and greenhouse gas emissions from WR with hydrologic management

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
7.1	*Page 4: It is recognized that above- and belowground biomass of non-tree vegetation, dead wood and litter*	Refer to response 2.1, as 'belowground' has been removed from the sentence, as well as	1. OK	No further comment.	No further

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
	contribute to the SOC pool in wetlands. They are conservatively assumed to be zero for all strata in the project scenario and are quantified in the SOC pool to prevent double counting. See comment 6.1.	the response 6.1 for further discussion.	2. N/C 3. No further comment.		comment.
7.2	*'If project activities include moving sediments, fossil fuel combustion emissions must be monitored during project activities. Monitoring methods can be found in module E-FFC. Fossil fuel combustion emission sources due to moving of sediments shall be quantified using module E-FFC if determined to be significant using module T-SIG. Ex-ante an estimate shall be made of fuel consumption based on projected fuel usage.'* Ok, this statement has been bothering me throughout the document. I worry that some HM is only moving water and this will not be covered. Why not use 'water and sediment' in this section and not just 'sediment'?	The authors are trying to differentiate from hydrologic management which may impact emissions of a wetland and thus require monitoring of GHG's in the wetland from fossil fuel combustion emission sources due to project activities such as dredges and sediment pipelines, which use large amounts of fossil fuel that must be quantified as a project emission source differently from field monitoring. The modules were revised changing the word "monitored" to "quantified" in the first sentence. Let us know if this provides better clarity.	1. OK 2. What about also a modification here: *'If project activities include energy subsidies to move sediments'* 3. Please consider adopting the proposed modification - "If proposed activities include energy subsidies to move sediments".	The authors feel that using the word "energy subsidies" may add confusion as to whether large amounts of electricity were used. This methodology follows the format and terminology used in other certified methodologies that require quantification and accounting of "fossil fuel combustion".	No further comment.
7.3	I am still bothered by the concept of wetland restoration that does not require hydrologic management. In support of the reviewers statements I would expect that some of the larger WR projects will require the installation of water control structures and construction of earthen levees and berms to restore and manage project hydrology. Some re-contouring of elevations may also be necessary in some projects. All of these activities should be monitored as suggested.	Some WR activities can indeed proceed without hydrologic management, for example, cypress seedling planting in areas without regeneration due to flooding patterns. However, the emphasis of this methodology is to quantify carbon sequestered by a given WR activity regardless of whether hydrologic management is needed. In the case of WR activities that include hydrologic management any increases in GHG's must be accounted for	1. OK 2. N/C 3. Thank you. No further comment.	No further comment.	No further comment.

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
		through monitoring. See responses 0.6,1.7, 1.9 & 1.13 for further discussion.			

CP-TB, Estimation of carbon stocks in above- and belowground tree biomass

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
8.1	Table 1: are all of these used to compute aboveground biomass only? Please indicate in table caption.	Yes, all of the equations are used to calculate AGB. The table caption has been revised to better explain this.	1. OK 2. N/C 3. Thank you. No further comment.	No further comment.	No further comment.
8.2	*'This module is applicable to wetland forests located in the in the Mississippi Delta.'* Been meaning to ask this question as well – does this include the Chenier Plain of the MR delta. I would hope this is both geographic areas – as many deltas have chenier plains as part of the geology.	Please refer to previous response 1.6.	1. OK 2. N/C 3. Thank you. No further comment.	No further comment.	No further comment.
8.3	I understand the allometric equations that are available for expressing above ground tree biomass however, my experience tells me that for a project of this magnitude and for the refine HGM types involved, you should consider conducting monitoring that will provide site specific data. The time-lag involved in	We are not sure what the reviewer is referring to, as our methods do provide site specific data. We agree that there will be a time lag for wetland functions as the canopy develops, but are unsure what the reviewer is asking in this regard. DBH measurements are a time-	1. OK 2. One option is to include tree height. 3. Please include a height measure to the assessment.	Tree height is already included in the 'DATA AND PARAMETERS MONITORED' section at the end of the module, under '$F_j(X,Y)$' for	No further comment.

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
	providing many wetland functions, in addition to C sequestration, will change significantly from project time zero through canopy development. I also would not put all of the emphasis on DBH measurements, which I'm sure is not the intention.	tested method for measuring long-term changes in tree-growth, so again, we are unsure what the reviewer is implying by 'I also would not put all of the emphasis on DBH measurements'.		allometric equations: 'Equations must have been derived using a wide range of measured variables (e.g., DBH, Height, etc.) based on datasets that comprise at least 30 trees.'	
8.4	OK, I may have missed it, but on pages 3-5 it looks like the root/shoot ratio is being used to calculate total tree carbon. But I thought that belowground biomass was going to be included in SOC. So again, I get confused with these various modules and tools as to whether you are going to limit double accounting of this carbon or not? Is there some place you will use BG of trees and others you will not? I may not be paying close enough attention; but this seems to confuse me throughout this material.	Please refer to the response 1.4. The methodology has been revised so that C-tree 'belowground carbon biomass' will only be used if 'soil carbon' is not measured.	1. OK 2. N/C 3. Thank you. No further comment.	No further comment.	No further comment.
8.5	I just want to caution about not including tree height in allometric calculations. Since you are all in same latitude – not a big deal.	We included tree height as an option for PPs in developing their own allometric equations, especially for small trees.	1. OK 2. N/C 3. Thank you. No further comment.	No further comment.	No further comment.
8.6	Section is well researched and informative. Just clear up the root/shoot ratio component.	Thank you, please refer to previous comments.	1. OK 2. N/C 3. Thank you. No further	No further comment.	No further comment.

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
			comment.		

CP-S, Estimation of carbon stocks in the soil organic carbon pool

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
9.1	*Any core with more than 5% compaction (compaction distance/total core length x 100) ….* This is going to be a difficult standard by most ordinary coring methods. An alternative method would be the ice finger, which avoids compaction altogether. This can be used to measure Cs distribution and % OM.	Language has been added to the module so that compaction can be measured and accounted for, rather than avoided.	1. OK 2. N/C 3. Thank you. No further comment.	No further comment.	No further comment.
9.2	Feldspar marker horizons are unstable in many marshes. In sandy soils they probably migrate through the sand. In bioturbated soils they are advected.	This is simply not true, feldspar markers are stable in wetland soils. The authors have over 30 years experience working with feldspar and have never had problems with bioturbation or migration. This has been added to the module's parameter tables: *Soda feldspar should be chosen that does not float on water, but rather sinks and consolidates*.	1. It is true. In marshes with sandy soils, the feldspar will actually migrate through the pore space and will eventually disappear. In marshes with significant bioturbation, the feldspar will be disbursed. Maybe LA marshes don't fall into these categories and I accept that.	No further comment.	No further comment.

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
			2. N/C 3. Good response. No further comment.		
9.3	I disagree with the calculation of baseline stock carbon change. If this is based on the carbon pool above the Cs peak, as suggested, then it will include living and labile carbon. In equilibrium that pool does not change with time, and labile carbon does not sequester. It is oxidized. I may be misunderstanding the way this metric is being used. As a way of establishing an inventory of soil carbon or carbon density in a defined volume of soil, the method described here is entirely appropriate. If the intent is to measure an annual rate of carbon sequestration, then I have a problem with it. The refractory carbon pool generally is below the root zone. In keeping with the general approach of quantifying changes in the inventory of carbon, it seems to be that you would want to measure the density of carbon in the top sediments (e.g. 0-50 cm for grasses or 0-100 for trees maybe) at time zero and periodically into the future. You should get credit for any increase in the inventory of total carbon (C density x volume) plus the carbon accreted in excess of the baseline, which would be the concentration at a depth below the root zone x the vertical accretion rate as determined by an SET device or marker horizon. The Cs horizon will give the historic vertical accretion, but not the current or	At the end of this comment the reviewer writes '*The Cs horizon will give the historic vertical accretion, but not the current or future accretion*.' We are using the Cs horizon to measure the historic vertical accretion. The reviewer seems confused as to when Cs cores are used (to provide historic accretion estimates) vs. when feldspar markers are used (to provide post-project accretion estimates).	1. See my comment below 2. N/C 3. No further comment.	No further comment.	No further comment.

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
	future accretion.				
9.4	The table of methods would be improved with some additions. For soil carbon, you should specify the depth over which the measurements are made. It would be useful to break the core into 5 cm depth fractions and measure the %SOM in each. Why aggregate? Wouldn't the variability be useful when estimating the project's uncertainty?	We are confused as to which table the reviewer is referring to. In regard to soil coring depth, this would be to the Cs layer for the baseline and the feldspar layer for the project scenario. The PPs are welcome to section their cores, perhaps to address uncertainty, but we don't believe this should be mandated.	1. Firstly, the response speaks to my point about the difficulty of navigation through this document. I would have to read 12 different documents to find this. My point was that carbon profiles in sediment change with depth. Each depth interval contains varying degrees of labile carbon and refractory carbon. The labile carbon fraction is a constant, the refractory fraction increases with time. These should not be treated the same way in the accounting. Let's say you measure a sediment accretion rate using Cs, you can't multiply that rate by the inventory of live and labile carbon to obtain C sequestration, because the labile carbon is a constant, except of course in the case of a forest that grows biomass over many years. Now if this	The focus of this comment appears to be on the calculation of background C sequestration using Cs as a marker. The reviewer is correct that the method includes labile carbon in its calculation, however, the inclusion of this carbon fraction is conservative. That is, the inclusion of the labile carbon fraction only increases the background C seq rate, which is subtracted from the with-project C seq rate to determine the C seq that is additional, and therefore creditable. Of course we would prefer to only include the refractory C fraction and not the labile fraction, however, there is no	I agree with the response about belowground carbon. Yes, the baseline should include the labile carbon. Response accepted.

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
			is a restoration and you have generated a stock of labile carbon that was not there previously, then that does count, but it is a constant, again, except in the case of a growing forest. Maybe my comment is misdirected. Clearly, you can measure changes in the total inventory of SOM at time 0 and time N, N+1… N+n, and the differences give you C sequestration. No question. 2. N/C 3. The reviewer makes a good point. Can the authors please respond and offer us a solution?	practical way of separating these two fractions for measurement.	
9.5	You may want to include a Cesium inventory analysis to check the validity of the estimates. There are some good papers on how to verify Cs estimates as QA/QC. Is there a certain standard on the Cs analysis to determine elevation rates – how sharp the peak or some other metric?	We assume that the reviewer is referring to the amount of Cs through the length of the core, which would be attained using the standard methods provided in the citations, as would accretion rates (referred to as elevation rates by the reviewer). Greater detail has been given in the methodology to clarify these issues for the reader.	1. OK 2. N/C 3. 3. Thank you. No further comment.	No further comment.	No further comment.

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
9.6	You have some good references in the tables; but did not seem clear as to what metric you want for soils: total carbon, organic carbon, organic matter. I think you need to have clear statement.	The metric is total carbon, which is stated in the text under the heading 'Cesium^{137} dating'.	1. OK 2. Will you allow the conversion of 'ash-free dry weight' to total carbon? Are you requiring high temperature assay of total carbon? And I assume you also include inorganic carbon as part of total carbon? 3. Please respond to the reviewer's comment.	In the 'DATA AND PARAMETERS MONITORED' section at the end of the module, under CF it states: 'For soil carbon fraction determination, an aggregate sample (e.g., from each core section) is collected, thoroughly dried, ground, and mixed. The prepared sample is analyzed for percent organic carbon using either dry combustion using a controlled-temperature furnace (e.g. LECO CHN-2000, LECO RC-412 multi-carbon analyzer, or equivalent), dichromate oxidation with heating, or Walkley-Black method.' This method accounts for only organic carbon and not inorganic carbon. The carbon fraction is then used to	No further comment.

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
				calculate the rate of change in the soil carbon stock using equation 2.	

E-E, Estimation of greenhouse gas emissions

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
10.1	Do the methods need to specify how CH_4 and N_2O are measured? E.g. what instrument? What precautions need to be made with gas samples? In addition to the static chamber method, there are now eddy flux measurements being made of these fluxes that integrate of much larger areas and these are preferable to static chamber methods, but I would not disqualify static chamber measurements.	The instrument used to measure CH_4 and N_2O has been added to the module. There have been several experiments using sensors in towers that can measure GHGs on a landscape scale (i.e., eddy flux measurements), but that technology does not seem developed enough to be used as part of this methodology.	1. I have to disagree with the comment that eddy flux towers are not suitable. The size of footprint can be varied by changing the height of the tower. True, there are issues with homogeneity. Eddy flux works best when the landscape is homogeneous, but I suspect that with WR/ carbon sequestration projects of sufficient size to generate a reasonable ROE, that will not be a problem. 2. Much improved.	In the 'DATA AND PARAMETERS MONITORED' section at the end of the module, under *f GHG* it states: 'Sample collected using the static chamber sampling method **or equivalent method or determined based on an acceptable proxy, data from peer-reviewed literature, approved local or national parameters.**' We believe that this	No further comment.

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
			3. Why not give the option of using this technology and let the third party verifier decide?	language allows for the use of novel methods, such as eddy flux towers.	
10.2	This section is well thought out. But I will provide a warning. With my experience, the numbers for these fluxes will be all over the place if there is not better control for temperature anomalies in the chamber. I would suggest that you provide some standard technique here as you did for SOC. There are some technique books (one for ecosystem analysis recently published) that should be cited to include these complicating factors. This is a very difficult measure to get verifiable results – and you need to establish some standards.	Instruction has been added to the methodology to insulate the chambers (e.g., with foam) to minimize temperature anomalies, and to record chamber temperature during deployment to document any such problems with temperature if they occur. The construction of boardwalks to sites is also being advised, but not mandated. The intention of most WR projects that have a C seq component will be to decrease or minimize GHG emissions. The techniques given in the methodology are scientifically defensible with a relatively long history of use, and can be relied upon to indicate increasing or decreasing trends of GHG emissions through time or as compared to a reference area, allowing adaptive management and reassessment to occur.	1. Good comment and response. 2. N/C 3. Good response. No further comment.	No further comment.	No further comment.
10.3	Any particular reason that flux towers are not included in this design?	See response 10.1	1. N/C 2. N/C 3. No further comment.	No further comment.	No further comment.

E-FFC, Estimation of emissions from fossil fuel combustion

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
11.1	See comment 7.2 above about including the movement of 'water and sediment'.	Please refer to response 7.2.	1. N/C 2. N/C 3. No further comment.	No further comment.	No further comment.

X-UNC, Estimation of uncertainty in WR activities

	1st review	Response	2nd review 1. First Reviewer 2. Second Reviewer 3. Lead Reviewer	Response	Final review
12.1	The equation checks out	Thank you for checking.	1. N/C 2. N/C 3. No further comment.	No further comment.	No further comment.
12.2	Please refer to comment 7.3	Please refer to response 7.3.	1. N/C 2. N/C 3. No further comment.	No further comment.	No further comment.