Review of Wetland Definition and Delineation Method, California
Denice H. Wardrop
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1. The proposed definition references three indicators normally present which reflect current scientific understanding of the formation and functioning of wetlands: a) wetland hydrology; b) hydric substrates; and c) hydrophytic vegetation. (ref. # 1, Section 2, pp. 14-16; Section 3.2, pp. 34-36.)

This statement is based upon sound scientific knowledge, methods, and practices.

Additional comments: The term 'references" is completely appropriate here, as it reflects current understanding but does not explicitly require all three to be present. The inclusion of the terms "formation and functioning" is also important, as it may allow previous wetlands to be categorically separate from current ones. However, while the terminology of "indicators" is consistent with the listed items, it misses the larger point that the NRC (Ref #6) tries to make by use of the term "criteria" used to describe the three conditions that reflect the current understanding of the formation and functioning of wetlands (page 62):

> *A criterion is a standard of judgment or principle for testing; it must relate directly to a definition (Figure 3.1). Wetlands are associated with specific conditions (variable states) for the master variable (water) and the two primary dependent variables (substrate, biota). These specific conditions are criteria in that they correspond to boundaries or thresholds that can be used to determine whether a particular ecosystem is a wetland.*

It would be more appropriate to refer to the three items listed in a) through c) as criteria.

2. Use of the phrase "saturated by groundwater or inundated by shallow surface water for a duration sufficient to cause anaerobic conditions within the upper substrate" is consistent with the scientific understanding of wetland characteristics. (ref. # 1, Section 2.1, p. 15; Section 3.2, pp. 34-36)

This statement is based upon sound scientific knowledge, methods, and practices.

Additional comments: Given the intent of the state-specific definition (i.e., broadening the definition to include non-vegetated wetlands), the following two terms become critical: "upper substrate" and "anaerobic". The definition of upper substrate is given as follows:

> ***Upper Substrate*** *is the portion of substrate that includes the major portion of the root zone for vegetation, and the zone within which relevant anaerobic chemical conditions develop in wetlands. The "major portion of root zone" is interpreted by the Corps to be the zone containing >50 percent of the living root mass of the dominant hydric plant species. The depth of the upper substrate that influences wetland indicators will vary, depending on vegetation, substrate texture, depths to*

impermeable layers, and substrate chemistry. The Corps 1987 manual identifies the "major portion of the root zone" as typically 30 centimeters (12 inches) deep; for the purposes of this definition, the upper substrate is typically the zone extending downward from the substrate surface to a depth of 50 centimeters (20 inches), as indicated in the Corps regional supplements for California. However, the Corps method requires that hydrology observations consider that saturation must occur within the majority of the dominant hydric plant species root zone, and in porous soils the upper substrate may extend to depths greater than 50 cm.

My concern would be that, for non-vegetated wetlands where the rooting zone is in question, the determination of upper substrate is ambiguous. I would amend the definition of upper substrate to indicate that, in the absence of vegetation, the upper substrate is defined as the zone extending downward from the substrate surface to a depth of 50 centimeters. The definition of the term in Ref #3, page 9, is much clearer:

The upper portion of substrate, which includes the root zone for vegetation and
the zone within which relevant anaerobic chemical conditions develop in wetlands, extends downward from the substrate surface to a depth of 50 centimeters (20 inches).

The issue with the use of the term "anaerobic" is not in the use of the term, but that the duration of anaerobic conditions is not addressed. I would argue that, in the case of a mottled soil, the soil condition has changed from aerobic to anaerobic over the course of a growing season; this could be interpreted as not meeting the "anaerobic" criteria. This temporal problem is also noted in ref#2, Section 3.1.1.1, page 22, noting that the USACOE and USEPA's definition is not adequate because it, "Does not adequately address temporal variability in wetland conditions resulting from the significant seasonal and inter-annual variability in climate typical of California". Given this ambiguity, I would suggest that the term "anaerobic" is given a temporal modifier in the definition (e.g., periodic).

It should be noted that, with each portion of the definition, some type of wetland is excluded, as noted in ref #1, Section 2.2, page 15: "Wetland hydrology does not always create anaerobic conditions".

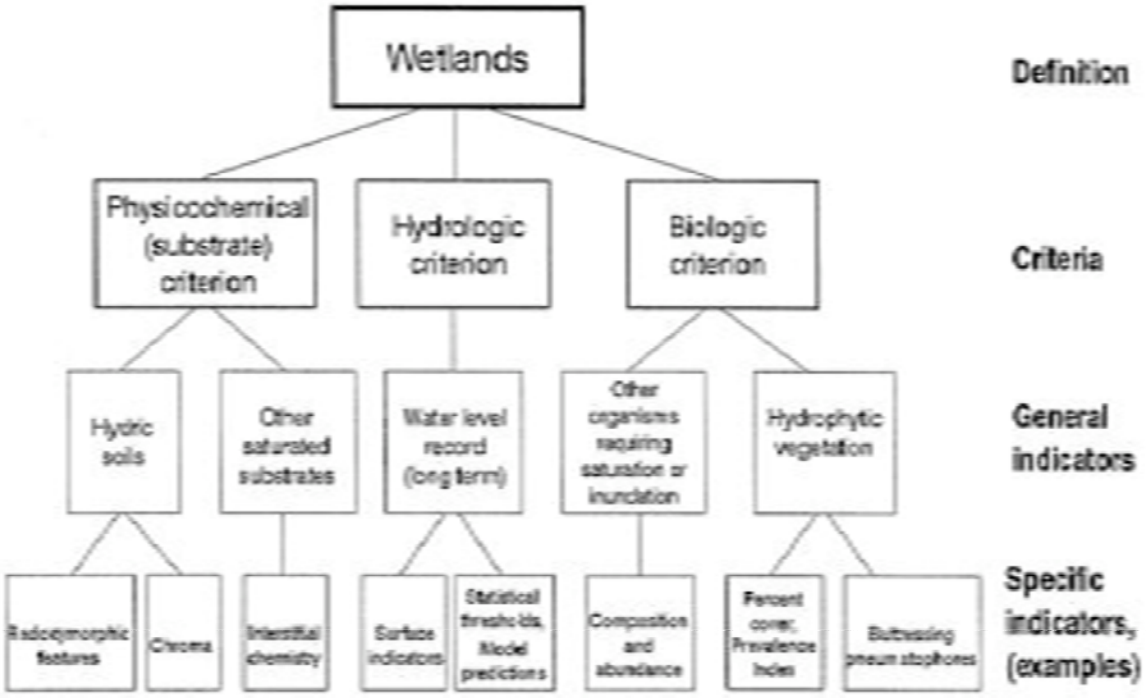
3. Use of the phrase "hydric substrate conditions indicative of such hydrology" is consistent with the scientific understanding of wetland characteristics. (ref. # 1, Section 2.2, pp. 15-16; Section 3.2 pp. 34-36; Section 4.3, pp. 43-44)

This statement is based upon sound scientific knowledge, methods, and practices.

Additional comments: Hydric **soil** conditions are the most common indicator of the physiochemical (substrate) criterion, according to the framework utilized by the NRC (Ref #6). However, the framework, included below, shows that the proposed definition is now limiting the range of wetlands that it can include, by dropping down to the indicator level of specification and including only the portion of wetlands that can satisfy the

physiochemical criterion by exhibiting hydric substrate conditions, which is further defined as:

Hydric Conditions *are conditions of upper substrate that form if water saturation in the upper substrate (including flooding, or ponding) lasts long enough to create anaerobic conditions*



Given the intent of the proposed wetland definition, the inclusion of the hydric criterion is confusing. Ref #3 states:

> *Some areas in California function as wetlands despite lacking abundant wetland vegetation. For example, non-vegetated playas, tidal flats, river bars, and ephemeral or intermittent washes provide a variety of wetland functions, including water filtration, groundwater recharge, and the support of wetland wildlife. None of these areas would necessarily be defined as wetlands according to the candidate definitions. The TAT concluded that the California wetland definition should clearly include these non-vegetated areas that mainly provide wetland functions.*

River bars and ephemeral or intermittent washes could be expected to NOT exhibit hydric substrate (i.e., anaerobic) conditions, and thus would be excluded from the systems covered by the definition. Without intimate knowledge of California systems, I cannot speculate on how many of these systems would be excluded by the hydric substrate indicator.

Finally, utilizing the definition of hydric conditions as, "conditions of upper substrate that form if water saturation in the upper substrate (including flooding, or ponding) lasts long enough to create anaerobic conditions', presents a circular argument when utilized in the definition. In order to illustrate, here's what happens when one inserts the definition of hydric conditions into the overall definition:

An area is wetland if, under normal circumstances, it
(1) is saturated by ground water or inundated by shallow surface water for a duration sufficient to cause anaerobic conditions within the upper substrate;
(2) exhibits conditions of upper substrate that form if water saturation in the upper substrate (including flooding, or ponding) lasts long enough to create anaerobic conditions indicative of such hydrology; and
(3) either lacks vegetation or the vegetation is dominated by hydrophytes.

The use of "hydric substrate" in the second portion of the wetland definition creates a set of constraints that hinges on the establishment of anaerobic conditions; please see the comments regarding the temporal issue that needs to be addressed. While this is scientifically defensible, and represents the vast majority of wetlands, it does not represent all. A potential revision would be to remove the modifier "hydric" from the second condition, which preserves the intent (substrate conditions must indicate the hydrology specified in the first condition).

4. Use of the phrase "anaerobic conditions within the upper substrate" is consistent with the scientific understanding of wetland characteristics. (ref. # 1, Section 2, pp. 15-16; Section 3.2, pp. 34-36; Section 4.2.1, pp. 41-42)

This statement is based upon sound scientific knowledge, methods, and practices.

Additional comments: See additional comments under items 2 and 3, above. If a temporal modifier were added, then anaerobic conditions within the upper substrate would certainly be expected to cover the vast majority of wetlands. Quite frankly, I can't bring forth an example of a wetland that does not exhibit anaerobic conditions in the upper substrate, although language in the NRC report indicates that these systems exist (ref #1, Section 2.2, page 15: "Wetland hydrology does not always create anaerobic conditions").

5. In California, wetland vegetation may not be present in areas where the physical, chemical and biological functions characteristic of wetlands are evident. Vegetation may be lacking in some years

(especially during prolonged dry periods), or may permanently lack vegetation such as tidal flats, playas, and non-vegetated shallow snowmelt pools. As reviewed above, normally wetlands are identified based on three indicators: (1) wetland hydrology, (2) hydric substrate and (3) hydrophytic plants. However, in the special case where vegetation is entirely absent, wetland identification may be based on the remaining two wetland indicators (i.e., wetland hydrology and hydric substrates) (ref. # 3, p. 4). (To clarify: this statement only addresses the condition where vegetation is absent and is not intended to imply that other combinations of two out of three indicators are equally applicable.) **(ref. # 1, Section 2.3, p. 16; Section 3.2, pp. 34-36; Section 4.4, pp. 45-46)**

This statement is based upon sound scientific knowledge, methods, and practices.

Additional comments: The references supporting this statement are clear, compelling, and well utilized. However, one specific example of language raises confusion when taken in context with the overall definition. In support of non-vegetated wetlands, the document states:

> *Some areas in California function as wetlands despite lacking abundant wetland vegetation. For example, non-vegetated playas, tidal flats, river bars, and ephemeral or intermittent washes provide a variety of wetland functions, including water filtration, groundwater recharge, and the support of wildlife. (ref. #3, p.4).*

Some of these same wetlands, most notably river bars, and ephemeral or intermittent washes, may also lack hydric soils, and are discussed as such in Ref #1, page 16:

> *Hydric soils are a common characteristic of wetlands; however, as noted above, some wetlands do not develop anaerobic conditions and wetlands also may have non-soil substrates (e.g., gravel beaches and rocky shores) so hydric soils, while indicative of wetlands, are not a universal wetland characteristic (Cowardin et al., 1979; NRC 1995).*

Thus, some wetlands in California that are non-vegetated may also not exhibit hydric soils.

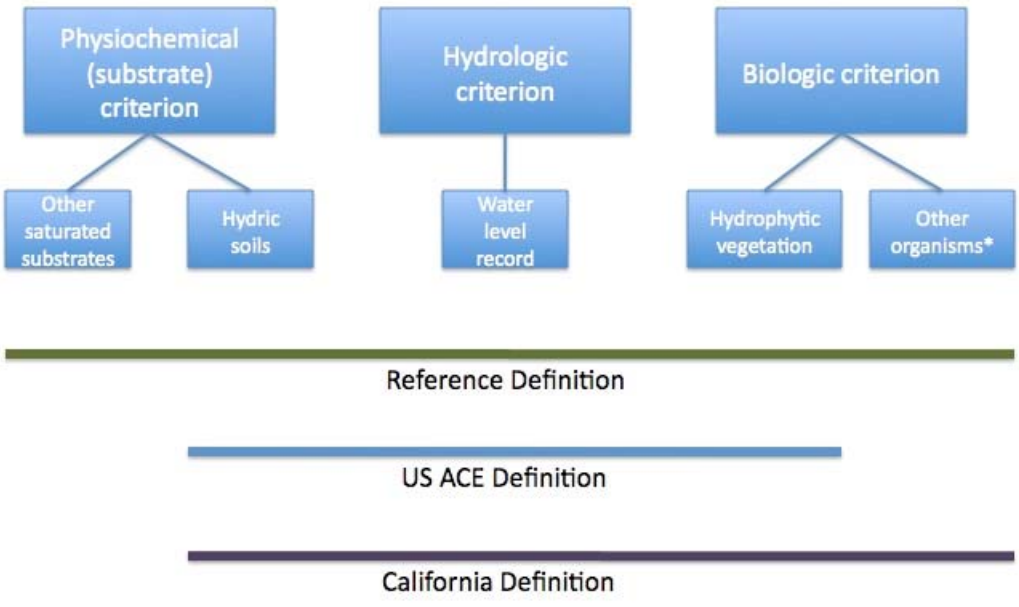
6. Definition of wetlands proposed for adoption:
An area is wetland if, under normal circumstances, it
(1) is saturated by ground water or inundated by shallow surface water for a duration sufficient to cause anaerobic conditions within the upper substrate;
(2) exhibits hydric substrate conditions indicative of such hydrology; and
(3) either lacks vegetation or the vegetation is dominated by hydrophytes. **(ref. # 1, Section 3.2, pp. 34-36)**

This statement is based upon sound scientific knowledge, methods, and practices, given the condition that it is a regulatory definition (see comments).

Additional comments: The review is focused by the following text:

> *This proposed definition was developed based on the current scientific understanding of the formation and functioning of wetlands found in California, and is consistent with standard scientific research (ref. #6., p. 60-63).*

The documentation of the definition certainly presents a comprehensive view of the state of the science in the formation and functioning of wetlands, but the definition, per se, cannot even be assessed in that regard if the intent of the definition is not clearly stated. A definition of wetlands can be driven and/or framed by any of the following perspectives: ecological (a reference definition such as NRC's which first establishes the conditions/variable states of wetlands); functionally (would need to begin by defining a list of wetland functions and them utilizing the necessary ecosystem conditions/variable states for those functions as a basis for the definition); and regulatory. Based on Ref #1, the California definition is one intended for regulatory purposes (albeit across a range of agencies and actions), and does not meet the requirements of a reference definition such as the NRC's (a reference definition is defined, according to Merriam-Webster, as "used or usable for reference; *especially*: constituting a standard for measuring or constructing"). A suitable regulatory definition is defined by the purposes that it must serve, and so this is a programmatic question and not a scientific one. Scientifically, the definition certainly covers a vast majority of the potential wetlands in California, but does not cover all potential wetlands (as indicated throughout the document and noted in comments to some of the above statements). The use of the term hydric, taken along with its definition, and the unspecified temporal nature of anaerobic, brings into question the subset of all wetlands that the definition covers, as indicated on the following diagram:



Please note that there is some confusion over how much of the category of saturated substrates that the California definition would cover, since the definition requires that they be "anaerobic" for an unspecified amount of time. The programmatic question is, therefore, whether regulation over this subset is what is intended.

It should be noted that this definition does not have a spatial or geographic modifier attached to it. While this avoids the issues attendant with the FWS definition (where wetlands must occupy a transitional space between uplands and aquatic systems), the spatial issue is more nuanced and may be problematic when extended to delineation. There can be situations where small patches of "wetland", sometimes of various types, are present with upland patches in a mosaic, and this mosaic possesses wetland functions in a different way, by virtue of its complexity, than the sum of its parts. For example, the mid-Atlantic region of the U.S. often contains wetland systems, along headwater streams, that have riverine, slope, depressional, and non-wetland elements/subsystems at small spatial scales that collectively result in a system called a headwater complex (the complex can occur at spatial scales as small as 0.5 acres). The different elements occur proximate to one another, making delineation between specific elements arbitrary. In addition, one must ask if each were assessed separately as to whether is meets the jurisdictional criteria for a wetland, would the combined answer be the same as if the whole mosaic were assessed? For example, denitrification and other biogeochemical processes may require a patchy distribution of moisture, ph, organic inputs, and microbial communities to operate at a maximum potential. In these instances, a functionally based definition would suggest that the wetland-upland mosaic, in its entirety, meets the definition; the regulatory definition above would only identify each small wetland patch. In these instances, a short narrative establishing some threshold of wetland area within upland could be used, e.g., jurisdictional wetland must constitute 50% or greater of the total area being delineated as a mosaic wetland.

Lastly, the definition is clearly intended to serve across a number of programs, both regulatory and non-regulatory, and so the compatibility of the definition with other wetland programs, such as inventory, classification, condition and/or functional assessment, and mitigation/creation/restoration is critical. For example, does the definition cover all of the wetland classes that are of interest across all programs? The river bars referenced above are a good example. If the wetland definition does not clearly include them as wetland, are they left vulnerable because they are not included as an aquatic resource under any ecosystem definition?

7. Some procedural clarifications in the Corps delineation methods are proposed to be used when conducting wetland delineations based on the proposed State Water Board definition. Implementing these adjustments would effectively implement delineation methods applicable to the proposed State Water Board definition. (ref. # 1, Section 4.1, pp. 38-41)

This statement is based upon sound scientific knowledge, methods, and practices.

Table 1 in TAT Memorandum No. 4 is an excellent summary, analysis, and presentation of the issues associated with marrying various existing delineation methods with an expanded wetland definition. Given that there are some modifications that are necessary, I would like to see some timetable established for implementation of the specific recommendations in Section 3.3 of the Memorandum. Two recommendations are critical: the specific recommendation regarding indicators of substrate saturation or inundation and the development of anaerobic conditions in differing substrates (Section 3.3.1, page 7) is of special note, given the importance of the anaerobic conditions in the proposed definition. However, the most critical recommendation is that in Section 3.3.3, page 8, which refers to field indicators of hydric soils. Immediate analysis of whether these field indicators adequately assess non-soil substrates is necessary. Additionally, the spatial extent question, as described under item 6, above, is unaddressed by the delineation methods presented. Of special note is the comprehensive nature of memorandum No. 4, as evidenced by the forethought of assessing the issues associated with the unavailability of some vegetation indicators (page 9).

8. Delineating a wetland requires evaluating whether the area meets the criteria of the wetland definition. This includes determining whether the presence or absence of wetland conditions are due to "normal circumstances," or "altered circumstances," or "new normal circumstances" or to being a "problem area." (ref. # 1, Section 4.5-4.8, pp. 47-53)

This statement is based upon sound scientific knowledge, methods, and practices.

Additional comments: The definition of each category, as presented in the Ref #5, meets the criteria of being based upon sound scientific knowledge, methods, and practices.

9. The proposed delineation methods include a provision that delineations be made during the wet season, but if done during the dry season, that boundaries of wetlands be considered provisional or temporary until verified by wet-season data if possible and if conditions permit. (ref. # 1, Section 4.9.2, pp. 55-56)

This statement is based upon sound scientific knowledge, methods, and practices.

Additional comments: Given the inherent variability in conditions across a large area (spatially), and both inter and intra-annual variability (temporally), this is sound practice.

10. Describing the wetland area's water source and landscape setting as part of the delineation process provides information useful for analyzing the wetland's beneficial uses and the potential sources of stress from surrounding areas. (ref. # 1, Section 4.9.4, p. 57)

The statement needs to be more fully descriptive of intent, clearer, better substantiated, and referenced to the appropriate literature.

Additional comments: Memorandum No. 3 (Ref 4) provides the following definition of aquatic support area:

> *Aquatic support areas exhibit some but not all the characteristics of wetlands. An aquatic support area either meets the hydrology criterion for identification as wetland, but not the substrate criterion (regardless of vegetation); or it meets the substrate criterion, but not the hydrology criterion (regardless of vegetation); or it meets neither the hydrology criterion nor the substrate criterion, but meet the vegetation criterion. In addition to being consistent with one or more of these three conditions, aquatic support areas are hydrologically connected wetland areas or deepwater area. They occur either upslope or downslope from the wetland areas or deepwater areas to which they are connected, and are integral parts of same landscape moisture gradients. The hydrological connections might be above ground or below ground (i.e., might be due to runoff, interflow, return flow, and/or high groundwater). The hydrological connections may be visually evident in the field, or they may be readily inferred from topography.*

This definition utilizes a combination of jurisdictional criteria to define an aquatic support area; item 10 infers a functional basis, which is without adequate substantiation. What is necessary is a logic framework similar to that presented for riparian areas in Memorandum No. 3, page 16, as shown below:

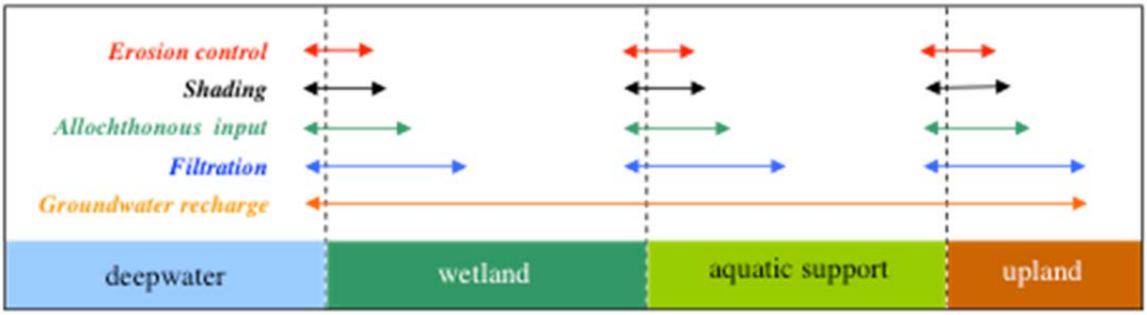


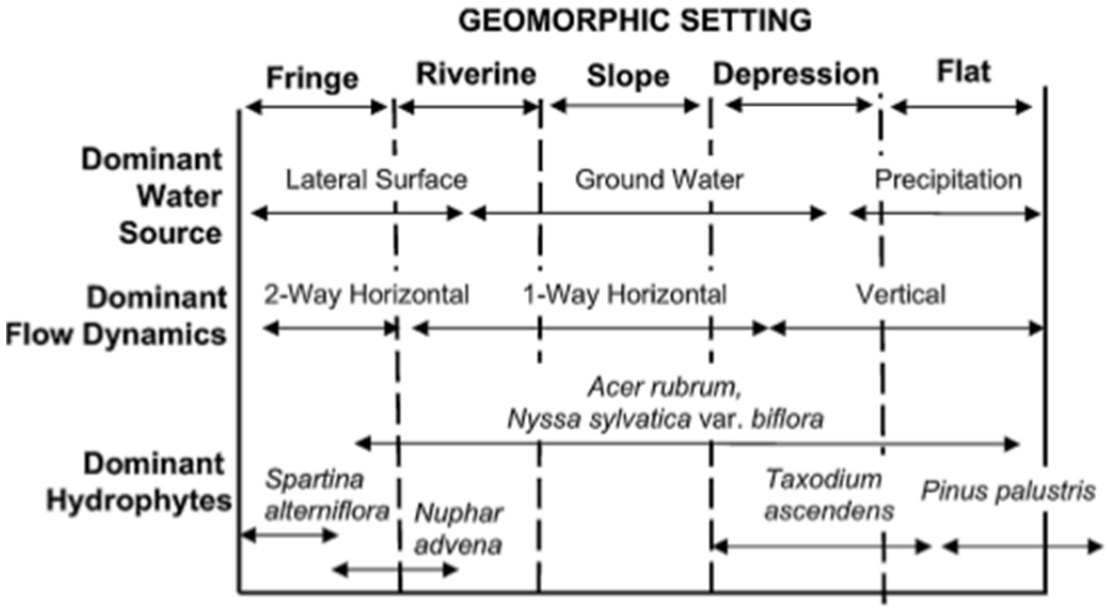
Figure 8: Schematic diagram of riparian extent (colored arrows) for a variety of riparian functions, illustrating three key riparian concepts: (1) some amount of riparian area is associated with each element of every landscape moisture gradient (i.e., deepwater areas, wetlands, aquatic support areas); (2) the extent of any riparian area (i.e., the length of an arrow representing riparian extent along a moisture gradient) varies with riparian function; and (3) riparian functions, and hence riparian areas, can extend into uplands. For any function, riparian extent can depend on many factors not represented in this diagram, including topography, climate, land use, and plant community structure. Not all riparian functions are represented in this diagram.

It should be noted that what is recommended is the intent of Figure 8, and not its specific execution and representation, since aspects are extremely confusing. However, some justification of the aquatic support area on a function-by-function basis is necessary.

Secondly, buffer and landscape attributes are utilized throughout existing condition assessment methods (CRAM) and classification schemes; some resolution of the definition and identification of aquatic support area, buffer, landscape setting, and landscape attribute area is necessary to ensure a consistent utilization of concepts throughout the wetland program. For example, CRAM includes metrics related to buffer

and landscape attributes, and these metrics are considered to be 'state' indicators. If you are including buffer and landscape attribute metrics as part of a wetland condition assessment (i.e., state indicators), the connection between attribute, function, and condition must be carefully assessed. If they are being utilized as a pressure indicator (buffer characteristics have been shown to be valuable diagnostics in explaining disparities between wetland condition and landscape attributes (Wardrop et al., 2007)), the connection must also be established. Additionally, condition assessment methods such as CRAM identify an assessment area, which may or may not be equivalent to the jurisdictional wetland. The main issue with item 10 is thus the designation of a spatially explicit area that has not been carefully characterized in terms of its connection to function or condition of the wetland.

Thirdly, the designation of water source and landscape setting certainly points to the potential establishment of a classification scheme that is hydrogeomorphical, such as current Hydrogeomorphic Classification and Functional Assessment (commonly referred to as HGM). These two pieces of information (landscape setting and water source) provide the primary axes of an HGM classification scheme, such as the one developed for the Mid-Atlantic and pictorially represented below (taken from Brooks et al., 2011):



If this were the ultimate intent of the information, it would present a seamless integration of the various elements necessary for a comprehensive management program. However, the only mention of classification in Ref #4 is in Table 1, Classification of different areas of a hypothetical landscape moisture gradient based on wetland indicators. I would find the HGM approach vastly more useful than classification across the "landscape moisture gradient" in Table 1, because it can then be cross-walked with NWI (a number of such efforts have been documented in the literature for both the development of HGM classification schemes and their cross-walking with NWI).

11. Since the three wetland indicators (wetland hydrology, hydric substrates and hydrophytic plants) vary geographically due to such factors as climate, geology and topography, consideration should be given to developing statewide ecological regions and providing supplemental delineation guidance for these regions. (ref. # 1, Section 4.10.1, pp. 58-59)

This statement is based upon sound scientific knowledge, methods, and practices.

Additional comments: Supplemental delineation guidance for regions is critical, but I would additionally advise that a statewide HGM-type classification scheme also be developed, and cross-walked with National Wetland Inventory classes and subclasses. Development of a classification scheme is critical to condition assessment; Fennessy et al., 2004 states: "The goal of classification is to reduce variability within a class and enable more sensitivity in detecting differences between least- impacted and impaired wetlands." If delineation criteria are expected to vary geographically, then so, too, will landscape setting and water source, leading to potentially different HGM types across ecoregions.

12. The wetland delineation procedure should include two delineations: the inner wetland boundary and an adjacent outer "aquatic support area" boundary that defines an area related to the wetland area since it shares the same moisture continuum (see Figure 1 below). Additionally locating the outer "aquatic support area" boundary would provide information on where the wetland boundary might shift during the wet season if the wetland is delineated during the dry season. It also would indicate the area that should be protected through the policy to assure that the beneficial uses of the wetland area are adequately protected. (ref. # 1, Section 4.9.5, pp. 57-58)

The majority of the statement is judged to be based upon sound scientific knowledge, methods, and practices; the phrase "It also would indicate the area that should be protected through the policy to assure that the beneficial uses of the wetland area are adequately protected" is excluded from this determination and requires clarification and substantiation.

Additional comments: Given item 9, the delineation of the aquatic support area should prove helpful, and will provide a conservative guide for potential expansion/flex of the wetland boundary. However, the support of the connection between the aquatic support area and beneficial uses is inadequately supported (see comments under item 10), which is evident in Figure 1 from Ref #4 (inserted for reference below). The figure illustrates a conceptual model of functions and services, in which landscape moisture gradients affect wetland form and structure, but not in isolation from climate, watershed geology and hydrology, and land use, and that wetland form and structure determine functions, services, and beneficial uses. Thus, the implied singular direct link between an area designated as an aquatic support area (a subjective place along the landscape moisture

gradient) and protection of function/use does not exist. Ref #4 states:

> *Aquatic support areas are ecologically significant. They can provide some of the same kinds of beneficial uses or ecosystem services as wetlands (Castelle et al. 1992). Those adjoining wetlands or deepwater areas help buffer them from upland stressors (Castelle et al. 1994), increase local biological diversity by providing habitat for ecotypes (Leppig and White 2006), and provide refuge for wetland and terrestrial wildlife during floods, fires, and other disturbances (e.g., Chapman et al. 1996, Sedell et al. 1990, Semlitsch and Bodie 2003). Aquatic support areas provide the geographic linkages or corridors between other aquatic areas and uplands. Many species of wetland plants and animals encounter the limits of their tolerance to environmental factors, such as moisture and temperature, in aquatic support areas. Their ability to survive environmental change can depend on their evolutionary adaptation to conditions at these marginal areas of their habitats (Mayr 1970, Gaston 2003). Aquatic support areas comprise a critically important part of the kinds of environmental gradients highlighted by landscape-scale wildlife conservation theory and plans (e.g., Poiani et al. 2000, Moritz 2002, Huber et al. 2010).*

This above language gives a great deal of support to the value of an aquatic support area in its own right, and hints at the function of the aquatic support area as a buffer, which it can certainly serve as. However, my fear is that statements such as "The aquatic support area… would indicate the area that should be protected through the policy to assure that the beneficial uses of the wetland area are adequately protected" would lead to the belief that protection of the aquatic support area is ALL that is needed. There may also be instances in which a larger buffer than that provided by the aquatic support area is necessary for adequate protection of beneficial uses.

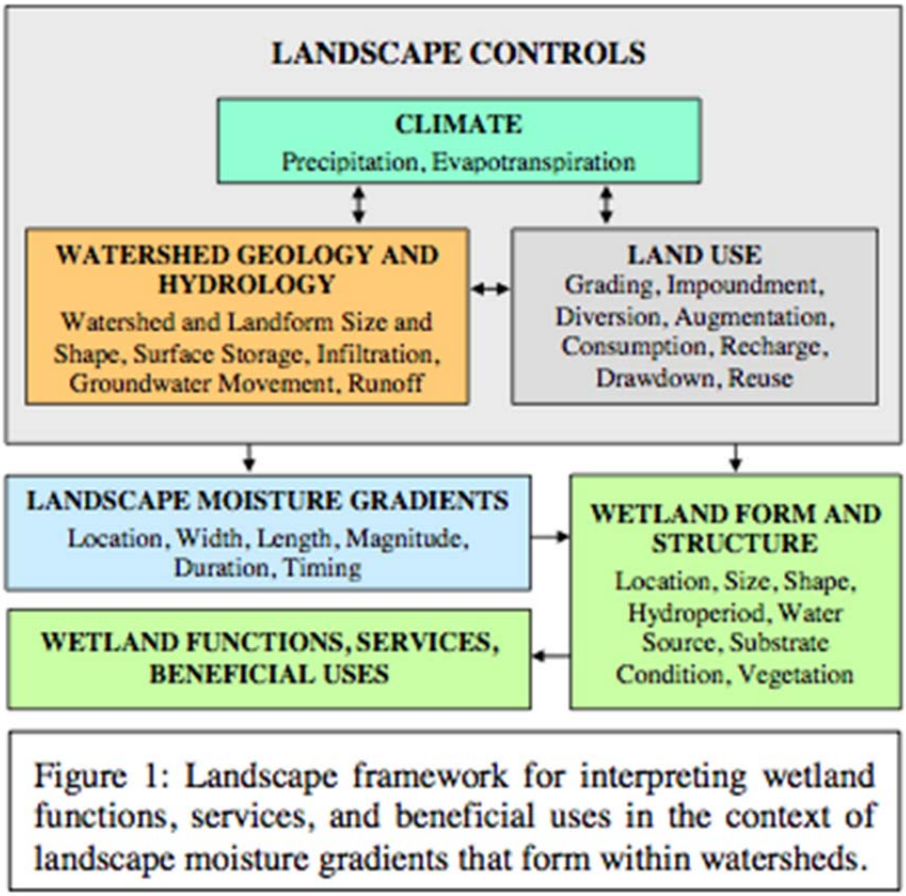


Figure 1: Landscape framework for interpreting wetland functions, services, and beneficial uses in the context of landscape moisture gradients that form within watersheds.

Finally, the relationship of the aquatic support area to any areas assessed in the condition assessment portions of the overall wetlands program in the state should be carefully reviewed. For example, many condition assessments utilize buffer characteristics and the presence of stressors in a buffer as metrics and diagnostics. Compatibility between the concept of buffer in these instances and aquatic support area should be a critical factor for a consistent programmatic approach.

General Review

Overall, the materials provided in support of the wetland definition and delineation are comprehensive, clear, and well-written, and utilize a diverse, relevant, and well-selected body of scientific literature to provide a sound and defensible basis for both the definition and additional delineation methods. The review illuminated the following major points:

1. Wetland definition; my comments revolve around the somewhat circular logic regarding the inclusion of anaerobic in the definition of hydric substrate, and the need to provide some modifier of the term “anaerobic condition” to allow environments that may fluctuate between aerobic and anaerobic conditions to be clearly covered by the definition.
2. Wetland delineation; my comments focused not on the technical basis of the methods proposed, but on their compatibility with other emerging portions of a wetland policy, explicitly classification and condition assessment. A functionally

based classification method would seem to be eventually necessary. As for condition assessment, this document could be much more tightly reconciled with the adoption of CRAM (an extremely well-founded method), as well as US EPA, 2006 guidance on elements of a state monitoring and assessment program. I suspect that these portions of the state wetland program have been necessarily proceeding through the process at different times, but an explicit "nod" between documents would be helpful

All in all, congratulations on a job well done, and thank you for the opportunity to review.

References

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