

Comments of the Independent Peer-Review Team for the Arid West Regional Supplement to the 1987 Corps of Engineers Wetlands Delineation Manual, and Responses by the Corps of Engineers and Arid West Working Group

Comments and recommendations developed by the peer-review team are given in Columns B through F of each spreadsheet page. Column A is a sequence number that can be used to refer to a specific comment. Responses developed by the US Army Engineer Research and Development Center (ERDC) and the Arid West Working Group are given in Column G.

The Corps of Engineers wishes to thank all reviewers for their helpful and well-reasoned

#	Initials	Ch	Pg	Par	Comment	Response
I-1	TJS	0	Pre	1	"Independent peer reviews were performed in accordance with OMB guidelines." OMB guidelines were not available to the Peer Review Team, so we do not know if this is true or not.	The peer review committee was assembled according to the OMB guidelines and the DoD supplemental regulations. The OMB guidelines do not identify procedures or standards for the final peer review report; that is left to the discretion of the committee.
I-2	CJN	0	Pre	2	"Members of the Regional Working Group and contributors to this document..." {included NONE of the principles who worked on the 1987 Manual (e.g. Dana Sanders, W. Blake Parker, or C.J. Newling) who all are still very active in professional wetland delineation work which would have clarified original intent of the 1987 Manual and provided accurate, first-hand information for the transition to the Regional Supplement. "Further, the Working Group and contributors" included NO private sector wetland scientists much less ones that were actively doing wetland delineations. This cannot help but give the impression that interpretations were biased to the "government" point of view and that the government was not interested in private sector input until a document was so well established that it was resistant to substantive alteration by ideas or experience "not invented here".}	This is not a technical comment. Private sector wetland experts were given the opportunity to contribute to this document by serving on the independent peer-review team and providing individual comments during the public comment period. The Corps recognizes that considerable wetland expertise exists in the private community and appreciates the input it has received, which has resulted in a number of revisions to the document. These are addressed in the following comments and responses.
I-3	MLS	0	Pref		Recommend better representation of well trained plant ecologists; for some reason, the soils sections have been really well updated over time with the Manual, but the Vegetation Section is weak. I have made extensive comments, and can continue to contribute if given the go ahead. There are a few people with plant ecology background in the review team, but the section reads like tweaking the old Corps Manual, which was never very good in the plant ecology department. The 1991 Manual was far better in this manner.	All recommendations will be considered. However, the wetland delineation manual was never intended to be a comprehensive treatise on plant ecology or sampling. Its goal is to present simple procedures for identifying hydrophytic vegetation in the context of a wetland determination. The Corps is considering establishing a national scientific committee for wetland vegetation. In the future, many of the ecological, sampling, and other issues related to vegetation may be examined by a multi-agency and academic group of botanists and ecologists. Their recommendations can be incorporated into subsequent versions of this supplement.
I-4	CJN	1	1	2	"Regional differences in climate, geology, soils, hydrology, plant and animal communities, and other factors are important to the identification and functioning of wetlands". {Delineation for jurisdictional purposes is independent of "functioning" of wetlands. The purpose of a delineation is simply to let the regulators (Corps) know if a location is a wetland and thus how potentially jurisdictional not how important it may or may not be due to its functions. Function is evaluated during the permitting process after the agency determines whether or not it even has any technical foundation to assert regulatory authority.}	The statement in the draft supplement is a true statement; no response is needed.
I-5	CJN	1	1	2	"The differences cannot be considered adequately in a single national manual." {This statement is an assertion, not a fact. I happen to disagree with it.}	This is not a technical comment. No response is needed.
I-6	CJN	1	1	2	"Most of the indicators are applicable throughout the region (including in the 'wetter climates?'), although some are restricted to particular subregions."	The supplement is intended for use throughout the Arid West region as described in Chapter 1 and generally outlined in Figure 1-1, including some embedded areas that receive more rainfall than average across the region (e.g., coastal areas, some mountains). The Western Mountains, Valleys and Coast Regional Supplement (currently under development) will be applicable in some embedded mountain ranges within the arid region where vegetation, soils, and other environmental conditions reflect the higher rainfall and reduced evapotranspiration. We will clarify the text and add a table that can be used to determine which regional supplement (Arid West or Western Mountains, Valleys and Coast) should be used in a particular location.
I-7	RRM	1	1	3	Line 4. Suggest that the intent of the manual be highlighted in some way, such as using a text box.	This suggestion is not consistent with the format of this document, and the statement is already clear.
I-8	NMED	1	1	4	Lines 7 through 12: Many waters of the US are unvegetated, and thus excluded from wetlands?	Unvegetated areas are excluded from the definition of wetlands, but may be considered other waters of the U.S. and possibly subject to Clean Water Act regulation.
I-9	NMED	1	1	4+	Regional Supplement, Supplement and supplement used indiscriminately, please standardize though out text	This document will be edited for internal consistency.
I-10	RRM	1	2	Last	Suggest that a sentence be added indicating that the use of the supplement outside of the designated Arid West Region require approval from the local Corps regulatory office prior to performing wetland delineations using the supplement. If this is a real possibility, then it may be useful to clearly indicate specific parameters and/or additional Bailey (1995) ecoregions where the Arid West Supplement may potentially be useful.	As stated above, we will clarify the locations and environmental conditions appropriate for application of the supplement by providing a table contrasting the environments appropriate to the Arid West and Western Mountains, Valleys and Coast supplements. As they do now, Districts will have final authority over the use and interpretation of the Manual and these supplements in their areas of responsibility.
I-11	NMED	1	3	Fig1-1	Add Regional before Supplement. Clarify what portion of the Arid West is relevant to the use for this Regional Supplement, or is it actually applicable to the whole Arid West Region?	As stated above, we will make the recommended changes.

#	Initials	Ch	Pg	Par	Comment	Response
I-12	RRM	1	3	Fig 1-1	It is unclear to me what the black line represents that extends diagonally from Texas, through Albuquerque, northwest to the Seattle area. This needs to be labeled.	We don't understand this comment. There is no diagonal black line on the figure.
I-13	NMED	1	3	Map	Needs legend (LRR C etc need to be in legend), map unusable in black and white, cannot see boundaries	The map will be in color in the published document. The three Land Resource Regions (B, C, and D) are clearly labeled.
I-14	NMED	1	3	Map	Why are the Jemez Mts not included?	The map is based on the boundaries of the LRRs according to the cited USDA reference. Whether or not the Arid West supplement is applicable to the Jemez Mountains would depend on their environmental characteristics (e.g., rainfall, plant communities, etc.). See comments above.
I-15	NMED	1	4	1	Last sentence: grasses, shrubs <i>add: and woodlands</i>	We will clarify the applicable communities and the relationship between this supplement and the Western Mountains, Valleys and Coast supplement currently under development.
I-16	NMED	1	4	2	First Sentence: add and from typical wetland features described in the corps Manual	The point of this section is internal variations within the region, not a comparison with the national manual.
I-17	NMED	1	4	2	Last sentence: add of the Arid West	We will make the recommended change.
I-18	NMED	1	4	3	Describe typical types of wetlands that will be found in the hot desert	Typical wetland types in the Arid West are described in the section starting on page 5. There are no major differences in wetland types between the hot desert and cold desert.
I-19	MLS	1	4	3	Somewhat Contradictory or confusing - sentence four says hot desert receives most of its winter precipitation in form of rain, then sentence 8 says significant rainfall in winter and summer. It would be good to have these two sentences more in alignment. Also, the winter rains are when the annuals respond, the summer rains fall on a parched earth and there is not the vegetative response - this is relevant for wetland delineation, which is more diagnostic in winter/spring.	Both statements are true but we will clarify the wording.
I-20	MLS	1	4	3	Average annual temperature cannot be from 50 to 75 degrees F, need to check this data I'm sure it's much hotter here in the desert	These numbers are correct as presented by Bailey (1995). However, average annual temperatures do not account for diurnal or seasonal variability. We have added Death Valley's record high temperature for an example.
I-21	NMED	1	4	4	Describe typical types of wetlands found in the cold desert	Typical wetland types in the Arid West are described in the section starting on page 5.
I-22	RRM	1	5	1	Lines 9 and 11. Suggest that this information should be cited - is it from Bailey (1995)?	Bailey (1995) is the primary reference. The citation has been moved for clarity.
I-23	GAR	1	5	3	Suggest eliminating all introduction after second complete paragraph on page 5; discussion on Types and Distribution of Wetlands and Irrigated Wetlands would be eliminated because it is very difficult to succinctly discuss this topic two pages.	This section is not intended to be a comprehensive reference. It is intended to present a brief introduction to wetland types in the region for the benefit of those with limited experience in the area.
I-24	MLS	1	5	3	Mediterranean California has different structure in description of plant communities - in this section they list community types, in the others they list dominant plant species. I think the community types is a much better way to go, and could help develop this for Interior deserts and cold deserts. Steve Caicco, USFWS and ex botanist/ ecologist for the Idaho Heritage Program and on the committee, would be a good resource as well.	Mediterranean California has greater variability of environments and plant community types than the other subregions, hence the somewhat different treatment. However, these paragraphs are not intended to be comprehensive reviews of plant and community ecology. The current treatment is adequate for wetland delineation purposes. Also at issue here is the lack of a standardized classification of vegetation among botanists. Without a standardized set of plant community names, those used in one area may not match those in other parts of the region. It is not the intent of this document to resolve classification issues.
I-25	MLS	1	6	1	The point should be made that in the Arid West, 97-99% of fish and wildlife species critically depend on the habitat provided by 2-4.6% of the land surface (critical nature of wetlands in arid west landscape)	True statement, but not relevant to the task of delineating wetlands.
I-26	RRM	1	6	1	Lines 2- 7. What is the relevancy of including a short discussion of wetland losses? Pointing the finger at agriculture could be a 'hot button' and does not add anything to the supplement. Suggest it be deleted.	Conversion of wetlands to agricultural use is a fact and does not imply blame. Furthermore, wetland delineators in the region need to be aware of such conversions because they can result in relict wetland indicators in some areas.
I-27	MLS	1	6	2	Add Salton Sea in southeast California with Malheur and Klamath marshes	We will make the recommended change.
I-28	NMED	1	6	2	Sentence 2 change to Non-wetland riparian habitats are often interspersed with temporarily or seasonally flooded wetlands.	We will make the recommended change.
I-29	RRM	1	6	2	Line 11, sentence beginning "Large examples . . ." This is awkward. Suggest be reworded to read, "The Malheur and Klamath marshes are examples of large emergent wetland complexes in the high desert of Oregon and the Lahontan Valley wetlands of northern Nevada.	We will revise the wording.

#	Initials	Ch	Pg	Par	Comment	Response
I-30	TJS	1	6	1, 2	These paragraphs (especially the 2nd one) imply that riparian corridors, desert playas, salt lakes, salt flats, and inland salt marshes are wetlands. This contradicts page 1, 4th paragraph, last 2 sentences that say these are not wetlands, but are other waters and are outside the scope of this Supplement.	The words "non-wetland" and "wetlands and shallow aquatic habitats" are used in these paragraphs to describe these systems, indicating that both wetlands and non wetlands are present. The supplement does not imply that all such areas meet the definition of wetlands. Furthermore, many of these types can be a combination of wetlands and other waters of the US. The differences, and procedures for delineating such areas, are discussed later in the supplement (see Chapter 5).
I-31	MLS	1	6	3	Add riparian areas associated with ephemeral, intermittent and perennial streams and rivers	We will make the recommended change.
I-32	GAR	1	6	4	Note that in central Arizona, prehistoric Hohokam had constructed extensive irrigation systems, many of which are incorporated into current irrigation systems well before 1492. Again, the point here is not to split hairs. There is simply too much information on irrigated wetlands to be adequately addressed in 6 paragraphs.	Agreed, but some knowledge of irrigation practices and their effects on western landscapes is essential to wetland delineators in the Arid West. This introduction was not intended to be comprehensive. The working group has recommended shortening this section.
I-33	MLS	1	6	4	Sentence 3. Refer to the variability and diversity of vernal pool systems, cite recent work by Michael Barbour, Carol Witham, et al	Again, this introduction is intended for general background and is not intended to be a comprehensive scientific treatment, bibliography, or literature review on wetland types in the Arid West. The additional information is not relevant to the task of wetland delineation.
I-34	TJS	1	6	4	Keep the first paragraph paragraph of the Irrigated Wetlands section. Delete the rest or have an NRCS or other engineer with current irrigation experience write this section.	We don't understand this comment. We believe that the information is current. However, the working group has recommended a shortened version of this section.
I-35	NMED	1	6	5	Change "large areas" to "some areas" as large seems a pretty large reach.	Cumulatively, the area affected by irrigation is very large.
I-36	RRM	1	6	6	Second to last sentence beginning, "A single irrigation . . ." Suggest adding in, "For example, . . ." at the beginning of the sentence.	We will revise the section.
I-37	NMED	1	7	2	Remove: Sprinkler irrigation is more expensive... sentence irrelevant.	We will revise the section.
I-38	RRM	1	7	2	Line 12, sentence beginning, "Sprinkler irrigation is more expensive . . ." Suggest reword to read, "Sprinkler irrigation is more efficient than flood irrigation, but is more expensive due to the costs of the system itself and the energy costs of generators and electric motors used to pump water from wells."	We will revise the section.
I-39	NMED	1	7	3	First Sentence: remove "branches of PVC" since other types of tubing can be used.	We will revise the section.
I-40	RRM	1	7	3	For consistency, reference the high cost of drip irrigation systems in this paragraph.	We will revise the section.
I-41	MLS	1	7	4	I really like the emphasis that the indicators are used to identify all wetlands, whether natural or created by humans/ irrigation, and it is up to the Corps District to determine whether they are jurisdiction or not. This sentence or concept should be the introduction and conclusion of this section, as this is such a hot topic. Here in the Imperial Valley, the Imperial Irrigation District is being sued for lining its huge irrigation canals for water use efficiency, and imagine this is a topic that will be politically contentious throughout the region (more so in the future).	No response is needed.
I-42	RRM	1	7	4	Line 26. Sentence beginning, "For example, seep wetlands may develop . . ." add the following language, " 'the formation of' redoximorphic features and 'the establishment of' hydrophytic vegetation in irrigated pastures; . . . raising their water tables and expanding their margin." Delete 'farther up slope' at the end of the sentence.	We will reword the sentence.
I-43	DJB	1	1 to 7	1 to 5	Types and Distribution of Wetlands. This section attempts to provide a description of wetland types throughout the arid west. These descriptions are not very comprehensive or detailed. A more detailed description of specific wetland types of the arid west would provide more insight to the delineator. The supplement could provide specific description (including all wetland parameters). In addition, the supplement does not reference a classification system or wetland type description method. A reference to an Arid west classification system would be beneficial.	As stated previously, this section was not intended to be a comprehensive treatment or literature review.
I-44	RRM	1	4 to 5		The descriptions of each of the Land Resource Regions (LRR) should be consistent in their general content. For example, if a brief description of soils is given for one, it should be included for all regions and sub-regions.	The descriptions are as consistent as the cited reference materials would allow. They tend to focus on features useful in differentiating the subregions, but they are not comprehensive.

#	Initials	Ch	Pg	Par	Comment	Response
I-45	RRM	1	5 to 7		Under the sub-header "Type and Distribution of Wetlands" I would suggest the incorporation of hydrogeomorphic (HGM) terminology where descriptors of wetland types are provided. This manual supplement, and the other ones coming out for other parts of the U.S. represent a great opportunity to better link wetland delineations with HGM wetland classes and their functions. I realize that this manual is about wetland delineations, but adding in HGM terminology to help describe wetlands would be useful in the bigger scheme of things. For example, seeps and wet meadows could be considered slope wetlands, tidal marshes considered as tidal fringe wetlands, etc.	The supplement does use HGM terminology where appropriate (e.g., in referring to slope, flat, depression, riverine, and fringe wetlands). However, sometimes colloquial names (e.g., seeps) are more descriptive.
I-46	DJB	1	6 to 7	1 to 6	Irrigated Wetlands This section attempts to explain the process of irrigation but does not clearly explain how irrigation practices produce wetlands. In some areas of the arid west, irrigated wetlands may be quite difficult to differentiate between natural wetlands. How does irrigation/farming practices of the arid west influence or create wetlands. The supplement should provide more detailed or region specific characteristics of irrigated wetland situations.	The section is clear that irrigation can produce wetland hydrology where it did not exist previously, and increase the wetness of existing wetlands. Changes in hydrology have well-known consequences for soil and vegetation characteristics. We do not understand what else is needed in a brief introduction. The intent is to warn users that the effects of irrigation must be considered in many wetland delineations in the Arid West.
II-1	GAR	2	8	1	The most basic question in a wetland determination should be addressed in the first paragraph. The investigator should establish that the site in question is in fact connected to a water of the US via an interstate water body. Without meeting this fundamental condition, there is no regulatory significance of a wetland determination.	We disagree. Jurisdiction is a two step process – first, whether an area demonstrates the necessary three factors and, second, whether or not the wetland is regulated under Section 404 of the Clean Water Act. As stated in Chapter 1, this manual is used to identify wetlands generally, without regard to their regulatory status, which must be determined separately.
II-2	MLS	2	8	1	Add: In the arid West, where riparian and lowland areas are often dominated by phreatophyte and halophytic species, the native herbaceous understory is often more diagnostic than woody over story species.	We agree. This issue is now addressed in Chapter 5.
II-3	TJS	2	8	2	Would tillage (on farmed wetlands) be a type of disturbance covered here? If so, it should be listed because of the acreage of these wetlands in the region.	Yes. We will make the recommended change.
II-4	NSK	2	8	3	halophytes as a misleading indicator - this seems to really make way for declaring that most of our saline wetlands are not really wetlands - the soils are often absent indicators because of the salt and the hydrology is difficult prove because consultants will argue that soil cracks, salt surfaces etc can be caused by other things. Perhaps we need some discussion in this chapter about hydro halophytes versus xeri halophytes. More help with this problem anyway.	Saline wetlands can be difficult to identify and delineate for a number of reasons. This section is intended to invoke caution and not to imply that saline areas cannot be wetlands. Procedures given in Chapter 5 are intended to help identify saline wetlands.
II-5	NMED	2	8	4	Remove last sentence because almost all wetland types in arid west can show this type of response to long-term drought.	True, but the affected wetland types "are not limited to" the examples given.
II-6	MLS	2	8	4	Why is there a lack of citations and references to dominant plant ecology texts, particularly Mueller-Dombois and other papers on the riparian and wetland areas in the west? Recommend use of more references than Reid and Frostick 1997	Reid and Frostick (1997) was cited for a specific statement about variability of rainfall in arid areas. There are many other references on arid-land ecosystems and plant communities. These are beyond the needs and scope of this supplement.
II-7	MLS	2	8	4	Last sentence, add riparian areas associated with streams and rivers	We will revise the paragraph.
II-8	MLS	2	8	4	Sentence 3 - Both seasonal and annual climatic fluctuations affect the presence and abundance of plant species; arid vegetation is highly responsive to rainfall patterns, and this will become increasingly apparent with climate change.	We will revise the paragraph.
II-9	MLS	2	8	4	Sentence 4 - Shifts in herbaceous vegetation, particularly geophytes and annuals, is much more dramatic than woody shrubs and trees.	We will revise the paragraph.
II-10	MLS	2	8	4	Sentence 6 - Herbaceous communities = delete	We will revise the paragraph.
II-11	MLS	2	8	4	Sentence 7 - The whole landscape is regulated by seasonal hydrology, both upland and wetland. There needs to be a reframing of this sentence and a referral to the problem area section or knowledge of regional seasonal changes - critical in arid west.	We will revise the paragraph.
II-12	GAR	2	9	1	Item #1 for determining growing season is based on observing seasonal phenology across a spectrum of environments including "the wetland or surrounding areas" Can this be stated more simply?	The National Advisory Team and the Arid West Working Group have revised the wording of these definitions.
II-13	GAR	2	9	1	Item #2 for determining growing season; Is it realistic to assume that in some cases one may encounter 20 inches of substrate. In the last dozen or so determinations I have been involved with I can only recollect one where I would have been able to measure soil temperature at a depth of 20 inches.	The National Advisory Team and Arid West Working Group have adopted a 12-inch depth for soil temperature measurements to make the depth more consistent with other wetland indicators and concepts. This should also reduce the difficulty of digging deeper holes in some soils.

#	Initials	Ch	Pg	Par	Comment	Response
II-14	GAR	2	9	1	SUGGESTED ADDITION Item#3 for determining growing season using the local soil survey from NRCS which frequently provides an estimate of the "growing season"	Many existing soil surveys are old and often present data for only one or two weather stations per county. More recent and updated analyses of growing season dates are provided in WETS tables from the NRCS National Water and Climate Center. This is the preferred source of growing season data and is used in the U.S. Army Corps of Engineers (2005) publication.
II-15	NMED	2	9	1	Sentence 4: However, in the arid west, this approach is often misleading because of differences.....	We will make the recommended change.
II-16	NMED	2	9	1	Reducing soil conditions occur when soil microbial populations are biologically active.	We will reword the sentence.
II-17	CJN	2	9	1	"...on potential wetland sites. {Insert: <i>The actual definition of the growing season in the 1987 Manual (Environmental Laboratory 1987) is that continuous period of time when the soil temperature at 19.7 inches (0.5 m) below the surface is above "biological zero" or 41° F (5° C).</i> } For convenience nationwide, the U.S. Army Corps of Engineers (2005 {Insert: <i>Studt 1991, Williams 1992</i> }) recommends..."	The growing season definition given in the glossary of the 1987 Manual will be replaced with the definition and procedure given in this supplement. We will add a table to Chapter 1 clarifying which portions of the 1987 Manual are replaced by the supplement. The supplement will rescind and replace existing guidance on growing season dates.
II-18	TJS	2	9	2	The definition of growing season under the paragraph that starts with "1." is too vague and variable. It gives a wide range of times to measure the beginning but nothing on the end of the growing season. How would 20% of total cover be measured? Aerial, basal, other? And, do you measure the starting point of growing season at emergence, green up budding, leafing out, or flowering? I recommend removing this paragraph or re-writing it to make the beginning and ending points more precise.	We agree. The National Advisory Team and the Arid West Working Group have developed alternative wording for the plant-based definition of the start of the growing season. The end of the growing season will be that given in WETS tables. For evaluating hydrologic monitoring data, the beginning of the growing season is the more critical date, and the working group's preferred method involves direct observation of plant activity on site.
II-19	NMED	2	9	2	Question: how will this be reported on data forms? How much data is needed?	Growing season information is not needed at all for most wetland delineations unless there is hydrologic monitoring data to analyze. In those cases, visual observations can be recorded on data forms or in a field notebook.
II-20	CJN	2	9	2	"...are emerging (e.g. spring ephemerals), greening up, breaking bud , leafing out, or flowering {Insert: showing green parts}. {Breaking bud and flowering, per se, do not prove growth as they can occur based on the <i>previous</i> growing season's stored energy. Display of green parts demonstrates photosynthesis which indicates that growth for the current season has begun.} {Add: <i>Evergreen plants are not considered in this evaluation.</i> }"	As stated above, the National Advisory Team and Arid West Working Group have revised this paragraph. The new definition excludes evergreen plants.
II-21	NMED	2	9	3	Why not use 30 cm which is equal to the rooting zone in many wetlands?	The depth for soil temperature measurements has been changed to 12 inches (30 cm).
II-22	CJN	2	9	3	"...measured at 20 {Insert: 19.7} inches (50 cm) depth is >41° F (5° C) {Insert: <i>and stays at or above that temperature.</i> }"	As stated above, the depth for soil temperature measurements has been changed to 12 inches (30 cm). We will make the recommended change regarding the need for soil temperature to stay at or above 41 degrees F.
II-23	RRM	2	9	1 to 3	General comment regarding the sub-section on 'Growing Season'. Obviously the growing season is important to plants, but in wetland delineations, the growing season is most frequently used to calculate the minimum number of days of soil saturation/inundation required (i.e., minimum of 5 to 12.5% of the growing season. For this reason, I suggest that this discussion be moved to Chapter 4 on Wetland Hydrology Indicators. If this is not done, then at a minimum this discussion of growing season should be referenced in Chapter 4.	We agree. We will make the recommended change and move the Growing Season discussion to Chapter 4.
II-24	RRM	2	9	1 to 3	Growing Season - Need to specify if the end of the growing season is still what is indicated in the WETS tables. If not then how is it determined? Also by use of a soil thermometer?	Again, the end of the growing season shall be determined by air temperature in WETS tables.
II-25	RRM	2	9	1 to 3	Growing Season - I am not sure I agree with the use of greening up as the start date of the growing season. Please provide documentation/rationale for the use of this as a start date. I seem to recall that though several species of willows produce leaves in the early spring, that it can take about 6 weeks before the willow is actually gaining energy from them. Until then it survives on reserves from the year before.	Just as with other growing season definitions, there is no literature demonstrating that this approach works nationally. However, the long-standing "common sense" approach to determining the growing season is when the vegetation is actively producing new tissues. Soil saturation during this period is likely to have negative consequences for species that cannot tolerate anaerobic conditions in the root zone.

#	Initials	Ch	Pg	Par	Comment	Response
					Suggested re-write of definition: Growing season beginning and end dates can be determined by measuring the soil temperature at 12 inches below the soil surface, at the depth above which 90% of the root mass occurs, or just above bedrock, whichever is shallower. For the purpose of wetland delineations, the beginning of the growing season begins when the soil temperature can be shown to sustain 41 degrees F for more than 12 hours in a day. The end of the growing season can be determined by demonstrating that the soil temperature drops below 41 degrees F for more than 12 hours in a day. The rationale for this revised approach to determining growing season length is that in wetland delineations we are specifically focused on soil saturation/inundation in the upper 12 inches of the soil profile. Respiration by microbes, other soil fauna, and roots plays an important role in the creation of anaerobic conditions in this portion of the soil profile, therefore the soil temperature in the upper 12 inches of the soil profile is the most important temperature to monitor in wetlands.	We agree. The National Advisory Team and Arid West Working Group have adopted a 12-inch depth for soil temperature measurements to make the depth more consistent with other wetland indicators and concepts.
II-26	RRM	2	9	1 to 3		
II-27	RRM	2	9	1 to 3	Growing Season - Specify which of the two options takes precedence over the other. I would assume that the use of a soil thermometer would take precedence.	The working group's preferred approach is direct observation of plant activity, but both on-site approaches are given equal standing.
					By removing the + & - from the FAC category, you will be adding several new plants to the wet side of things. In a few cases, this will change the decision on prevalence of hydrophytic vegetation. For example, in Region 8 in Colorado, Glycyrrhiza lepidota and Rosa woodsii are commonly encountered FAC- plants that currently do not count as hydrophytes. These plants are often one of the dominant species, so, where the vegetation calculation in the past came out at 50% or below, it would now come out >50% hydrophytic, changing that part of the decision.	Disregarding '+' and '-' modifiers has the potential to change some hydrophytic vegetation decisions. (However, note that the standard Prevalence Index method already disregards these modifiers.) The main problem with '+' and '-' modifiers is that they imply a level of accuracy of wetland-indicator-status assignments that does not exist with available data. Field testing will determine whether the simplification of wetland indicator categories will have any significant effect on wetland boundaries after soil and hydrology indicators are also taken into consideration. During initial field testing of the supplement, only 1 out of 24 test sites across the Arid West showed a change in the delineated wetland boundary due to dropping '+' and '-' modifiers. Further testing of the supplement is planned during the interim implementation period.
II-28	TJS	2	10	3		
II-29	GAR	2	10	3	Please provide an internet citation for the latest plant lists approved by HQ for each Region indicated on Figure 2-1 (page 11).	A link to the latest plant list will be posted on the Corps Headquarters Regulatory web page.
					GENERAL COMMENT There are many examples, but taxa with confused taxonomy (e.g. Prosopis) are very plastic in response to environmental stimuli and may introduce more confusion that clarity in making a wetland determination. Non-natives (e.g., Polypogon monspeliensis) should be used with caution in making wetland calls.	Agree, but there needs to be a standardized method to subdivide the wetland plant list into certain groups (e.g., non-natives) and then test the indicator statuses for reliability. If not, then we are just adding more professional judgement without supporting data, which does not clarify a complex issue.
II-30	GAR	2	10	3		
II-31	NMED	2	10	3	Latest plant list approved by USACE is then referenced to Fig. 2-1 which is a USF&WS list. Is the USF&WS the approved USACE list?	The Corps currently uses the USFWS 1988 plant list except in plant list Region 9, which uses the 1988 list plus the 1993 supplement. All new and approved plant lists will be incorporated when available.
					"Plus (+) and minus (-) modifiers are not used {Insert: with one exception. Plant species rated FAC- count as non-hydrophytic vegetation in applying Indicator 1: Dominance Test (see p. 15)}." {In producing the National List of Plants that Occur in Wetlands (Reed 1988), most species were rated FAC- with the express agreement of review team majorities that the presence of one of these species as a dominant would NOT be the factor that tipped analysis of a plant community to hydrophytic. Why is the suggested exception important? There are some extensive acreages of habitat, for instance, in Oregon and Washington, that are dominated by Festuca arundinacea, rated FAC- in Region 9, that those who worked on the National List of Plants never considered wetland plant communities. However, these communities become hydrophytic by fiat if the exception is not maintained. Had there been the slightest inkling that these species might be used to shift a plant community determination from non-hydrophytic to hydrophytic, there never would have been agreement to rate them as FAC-.	The FAC indicator status has a definition (i.e., 34-66% frequency of occurrence in wetlands). In most cases, it is not possible with available data to categorize a species' distribution across a vast region to any finer level of accuracy. Adding '+' and '-' modifiers to FACW, FAC, and FACU implies far more accuracy than is necessary or possible. Furthermore, the assignment of '+' and '-' modifiers was commonly used by plant list panels to resolve differences of opinion among members; they do not generally reflect actual data. The example of <i>Festuca arundinacea</i> is problematic because it is a non-native, invasive species with at least 200 known cultivars and genetic types that have been planted and escaped across large areas. Problems due to escaped cultivars are addressed in Chapter 5. In any case, field testing will help determine whether the simplification of wetland indicator categories will have any significant effect on wetland boundaries after soil and hydrology indicators are also taken into consideration.
II-32						

#	Initials	Ch	Pg	Par	Comment	Response
II-33	CJN	2	10	3	Instead, strong argument would have been made to rate them FACU+ or even FACU. Allowing this one seemingly minor change to the current 1987 Manual approach as suggested in the Draft Supplement, not only is a de facto change to the intent agreed upon in producing the National List of Plants that Occur in Wetlands, but it also will result in changing large acreages in Oregon and Washington from not being regulated to regulated wetlands. I was told by Working Group members in a public forum at the 2005 Annual Meeting of the Society of Wetland Scientists that it was not the intent of the Corps for the proposed Regional Supplements to change current jurisdictional wetland boundaries. Left unchecked, the provision as stated in the Draft will do so. It also further weakens the effectiveness of ever using the plant community to verify that a site was a nonwetland.}	Only a complete three-factor test can determine whether wetland boundaries will change appreciably. The intent of the supplement is to maintain the current jurisdictional reach of the 1987 Manual.
II-34	CJN	2	10	3	"...should use the latest plant lists approved by Headquarters, U.S. Army Corps of Engineers..." (This is a good idea. However, how does one (e.g. a regulated member of the public or a wetland scientist for that matter) find out for sure what is the latest "approved" list?)	A link to the latest plant list will be posted on the Corps Headquarters Regulatory web page.
II-35	RRM	2	10	3	Does the USFWS agree with dropping + and - modifiers? If they do, then a more substantial discussion/rationale is warranted that describes the basis for this decision.	USFWS representatives served on the working group and help oversee the process from the national level.
II-36	DJB	2	10	3	Elimination of (+)/(-) wetland indicator status modifiers does not provide a greater clarification for the purpose of the supplement. The use of the modifiers provides greater regional accuracy and may alter specific regional species indicator status.	Again, we disagree that '+' and '-' modifiers provide any more accuracy to the plant list. See comments above.
II-37	DJB	2	10	3	A reference, statement or citation should be provided as to the latest plant list that is approved by Headquarters USACOE as of the date of the supplement.	A link to the latest plant list will be posted on the Corps Headquarters Regulatory web page.
II-38	MLS	2	10	3	This section is poorly organized. Paragraphs should be laid out by: 1) Calibrate to site, walk around, identify vegetation and soils; 2) select homogeneous units or plant communities within the larger site context; and 3) determine boundaries for sampling before initiating sampling. Otherwise there is excessive detail without laying out the overall process for selection of vegetation homogeneous units (plant associations, plant communities). I recommend citing existing floras for each state, in CA Keeler Wolff, The Jepson Desert Manual (Baldwin et al), etc I can help with this given more time	General procedures for making wetland delineations are presented in Part IV of the 1987 Manual, which is not being revised at this time. The working group will consider adding a list of relevant floras and field guides.
II-39	MLS	2	10	3	I agree that the FAC (+) and (-) are ecologically meaningless, particularly since the plant lists have not been updated since 1988. People try to use these as if they have meaning; they add precision but reduce accuracy.	We agree (see comments above).
II-40	TJS	2	10	4	The species-area curve seems to be overkill for routine determinations. Is this just a suggestion for when it's unclear if the delineator has adequately described the vegetation?	The section on vegetation sampling is intended as guidance and is not mandatory. However, the working group has agreed to remove the species-area curve discussion and generally simplify this section.
II-41	CJN	2	10	4	"Completely random sampling of the vegetation is not required except for Comprehensive determinations..." {This statement is false. Even in the Comprehensive approach (Environmental Laboratory 1987), the recommended approach is not "completely" random, it is stratified random.}	We agree.
II-42	CJN	2	10	4	{Considering the discussion of nested plots in the latter half of this paragraph seem irrelevant to the concept of a Routine Approach (Environmental Laboratory 1987) to sampling. After reading the Draft Regional Supplement up to this point, I am beginning to question whether or not the currently used Routine Approach is even considered acceptable.}	The Routine approach described in the 1987 Manual is acceptable and is not being revised. The use of nested plots in some circumstances has been taught in Regulatory IV classes for years and is optional.
II-43	NSK	2	10	4	I do not see the need to drop the + - could you not use 2.5 for example.	See comments and responses above. This still implies a level of accuracy in wetland indicator status ratings that does not exist given current data.
II-44	NSK	2	10	4	approved palnt lists - could we reference a web site ?	A link to the latest plant list will be posted on the Corps Headquarters Regulatory web page.
II-45	DJB	2	10	4	Developing a species area curve in the field during delineation could become cumbersome. The number of plots should adequately document the each community type and is based on field conditions/wetland complexity and the delineator's professional judgment. Justification of professional judgment could be supported after fieldwork through the use of a species area curve.	The section on vegetation sampling is intended as guidance and is not mandatory. However, the working group has agreed to remove the species-area curve discussion and generally simplify this section.

#	Initials	Ch	Pg	Par	Comment	Response
II-46	MLS	2	10	4	1) Selection of homogeneous plant communities/ associations should come before plot and sample sizes. 2) Need to reference standard plant ecology texts, regionally relevant would be best - can help with this. 3) Riparian and arid wetland/ upland vegetation complexes are often convoluted and non-circular. Most vegetation is patch or heterogeneous. Therefore, some description of this complexity is in order. Also, I prefer line intercept to circular plots for woody vegetation and find it to be more rapid, more accurate, and more representative of the more linear and complex vegetation patterns often encountered in an arid landscape.	The section on vegetation sampling is intended as guidance and is not mandatory. Furthermore, it is not intended to replace the guidance given in Part IV of the 1987 Manual. The Regional Supplement is not intended to be a comprehensive treatment of plant sampling techniques but, rather, to provide minimum guidance required to make a reliable hydrophytic vegetation determination.
II-47	NMED	2	11	map	Make regional boundaries more visible in black and white	The map will be in color in the published document.
II-48	CJN	2	12	1	"...nest {Insert: 0.25} square-meter plots..." {Field experience has shown that multiple 0.25 square meter plots oriented as shown are easier to use than larger ones. Since they will be measured against a species-area curve standard, sampling will continue until the curve flattens out regardless. The investigator can always use a bigger quadrat size if he/she wants. However, if you start off saying that 1 meter-square quadrats are specified and they turn out to be overkill, many users will be reticent to go against what's codified in the Regional Supplement just because it says so—despite the fact that it is ridiculous in their circumstance.	Again, this section is guidance and is not mandatory. However, we will simplify this entire section.
II-49	MLS	2	12		Don't feel Figure 2-2 is useful. Too simplistic. Recommend modification in the context of overall site evaluation prior to initiating sampling protocol	Hydrophytic-vegetation determinations need to be quick and simple. This supplement is not intended to be a general reference to plant sampling.
II-50	MLS	2	12		Figure 2-3 - there are lots of good descriptions of species-area curves in standard plant ecology texts. Recommend including and citing in text that goes with this figure. The reference to species area curve, page 10 last sentence of last paragraph, doesn't explain this concept at all. In addition, it needs to be clarified how the species area curve concept corresponds to the 50:20 rule for selection of dominance.	See previous responses. We will drop the discussion of species-area curves.
II-51	CJN	2	13	1	"2. Saplings and shrubs—45 {Insert: 30} ft radius" {Practical experience shows that using the same sampling radius for the saplings and shrubs as for the trees seem more accurate and simplifies the task of orienting data collection.}	Plant sampling guidance is not mandatory and may be modified to fit the site and the preferences of the observer.
II-52	MLS	2	13	1	The appropriate size and shape for a sample plot depends on the pattern and distribution of vegetation on the site; the type of vegetation occurring within each larger homogeneous unit to be sampled; and the complexity, size and patch dynamics of the area being sampled.	We agree.
II-53	MLS	2	13	2	Leave out woody vines - this is not relevant and potentially confusing, skewing data toward non wetland determination when in fact vines are not ecologically diagnostic of wetland/ upland conditions	We don't understand this comment. The working group has decided to retain the guidance on woody vines.
II-54	CJN	2	13	2	{Begin this paragraph with this sentence: <i>Plant sampling for wetland delineation purposes assumes that recorded data for a sampling location is for plants entirely within the same community that were also sampled on the same soil type within the same hydrologic zone.</i> } "The sample plot should not be allowed to extend beyond..."	We will revise this section.
II-55	CJN	2	13	2	"In such cases, plot sizes and shapes should be adjusted to fit within the vegetation patcher {Insert: , hydrologic zone and soil type}."	We will revise this section.
II-56	CJN	2	13	2	"...an elongated rectangular plot or belt transect is recommended." {Insert: In addition to narrow corridors, this necessity frequently is encountered on slopes.}	We will revise this section.
II-57	CJN	2	13	2	"...for the tree stratum or the 45-ft radius plot (797 square feet) for the sapling/shrub stratum. Thus the {Insert: the tree and the} sapling/shrub stratum could be sampled using a 10x74 {Insert: 283}-ft plot..."	We will revise this section.
II-58	RRM	2	13	2	I agree with Charlie that sampling for shrubs should be a 30 ft. radius, the same as for trees.	Plant sampling guidance is intended to be flexible. We will revise this section.
II-59	TJS	2	13	3	The point-intercept method is only mentioned in one sentence-almost as if it is an afterthought, however this method is described in great detail in the 1987 Manual for routine, large area determinations as well as in comprehensive determinations. Does this mean more emphasis will be placed on using plots now?	The 1987 Manual uses a plot-based approach and does not mention point-intercept sampling.
II-60	NMED	2	13	3	The point-line intercept method is mentioned almost as an afterthought without an explanation of linear distance, number of samples, spacing etc.	Point-intercept sampling is an alternative to plot-based approaches that is useful in some situations. We will expand the discussion of the method in an Appendix.
II-61	CJN	2	13	3	"...with nested 4 {Insert: 0.25}-meter-square quadrants randomly located..."	Again, plot sizes are intended to be flexible.

#	Initials	Ch	Pg	Par	Comment	Response
II-62	RRM	2	13	3	Line 16, sentence beginning, "This may happen if vegetation patches . . ." Suggest that it be clarified that this can also happen when putting in successive sample points to determine a wetland/upland boundary. For example, the wetland plant community exists on one side of the line, and the upland plant community exists on the opposite side of the line, even though the sample points may only be 5 feet (or less) apart.	We agree.
II-63	MLS	2	13	3	I could rewrite this so it makes more sense on how to assess site conditions and configuring sampling strategy - it's confusing as written, and keeps preferentially pointing reader toward circular quadrant shapes, which is probably not useful other than fairly homogeneous larger wetland areas.	Circular plots are suggested in the 1987 Manual. Other plot sizes and shapes are permitted.
II-64	MLS	2	13	4	I prefer line intercept to 30 ft radius plots. I do think this is a vestigial sampling methodology from the original Corps/ EPA Manuals, based primarily on wetlands from other regions in the US	We agree that line-intercept sampling is a valid alternative to plot sampling for some applications. The 1987 Manual uses plot-based samples in part to ensure that vegetation observations are made in the immediate vicinity of the soil pit. We will put additional information on point-intercept sampling in an Appendix.
II-65	DJB	2	13 - 14	1	Definition Of Strata-This section defines standards for vegetation strata. The supplement does not clearly define how each strata should be evaluated/document for coverage or dominances. The 1987 manual discuss measurement of trees to be dbh or basal area, shrubs-stem height midpoint of height and herbs-cover class. The supplement may want to provide clarification or reference the specific measurement type to be employed in determining vegetation coverage or dominance in different strata.	The supplement recommends percent cover for all strata, allowing the investigator to use both the 50/20 rule and prevalence index, as needed.
II-66	GAR	2	14	1	Under 'Snow and Ice'Item 2; This is an untenable position for a regulator and the regulated community. From a practical perspective, "Later, when site and climatic conditions..." will never arrive. The regulator is asked to make a decision with less than adequate information and the regulated community is asked to accept decisions which could possibly be more restrictive if there is a tendency for a regulator to be more conservative in the absence of adequate information. For specific protocol surveys of certain endangered species, for example migratory passerines, the regulated community is required to conduct surveys during specific times of the year. Here it seems that we are setting up a no-win situation.	Regulators will make decisions within their time constraints. At times, these decisions may be based on less than complete information.
II-67	NMED	2	14	1	Sapling shrub stratum consists of plants stems measured at Breast height? Low-growing shrubs may be too short or multi-stemmed.	They are still in the sapling/shrub stratum.
II-68	CJN	2	14	1	"4. Woody Vines – Consists of all woody vines regardless of height." {Even if they are entirely sprawling on the ground?}	Yes.
II-69	MLS	2	14	1	Agree that short woody shrubs should be separated from herbaceous layer, and often there are only two layers - short shrubs and herbs. Sometimes it makes sense to lump all the woody vegetation into one strata sampling, as there is not any species differentiation among the strata layers.	Lumping strata can sometimes result in too few dominants for a reliable hydrophytic vegetation decision by the dominance test.
II-70	MLS	2	14	2	Snow and Ice - this is sort of weird. I would add a section on drought and sampling site during dry season/ summer season, as that is going to occur for a much longer period of the year and be more problematic.	These issues are addressed in Chapter 5.
II-71	MLS	2	15	2	Procedure 1. Need to reiterate that for the dominance test to be diagnostic, the sampler must be on site during the time of year when there is enough rainfall/ hydrology to detect herbaceous vegetation.	This is not always true.
II-72	CJN	2	14	2	"Later when the site and climatic conditions are favorable, and on-site visit must be made to verify the off-site determinations." {Then what good are they? For clarification insert: <i>If their results differ, on-site delineations always supersede off-site delineations.</i> }	Sometimes a regulator must make a preliminary decision in the absence of complete information. The reviewer's statement is not always true.

#	Initials	Ch	Pg	Par	Comment	Response
II-73	DJB	2	14	2	In reference to Snow and Ice. This is not a clear explanation. If the delineation cannot be postponed (recommendation #2), an offsite determination should be done? Many onsite conditions can also assist in a preliminary determination even while under snow (i.e., obvious upland areas, existing remnant vegetation, topography). All attempts per standard delineation methodology should still be conducted and a Preliminary Determination made. The Sacramento District provides regulatory guidance for wetland delineations under snow cover. A version of this guidance could be provided in this section for further clarification.	The supplement does not preclude using all available information sources as well as specific guidance provided by districts.
II-74	CJN	2	15	1 to 3	{The entire process in steps 1 through 3 under Procedure seem biased toward finding hydrophytic plant community AND determining that a location is a wetland, i.e. there seems to be no way by use of vegetation alone to conclusively determine that a location is NOT a wetland. No matter what you find, there seems to be some why to twist it back around to being interpreted as hydrophytic vegetation.}	This is not correct. The dominance test is the same as that currently used under the 1987 Manual. Most non-wetland plant communities will fail this test. The 1987 Manual also currently allows the use of morphological adaptations as hydrophytic vegetation indicators, but the supplement makes this test more stringent. Requirements for the prevalence index are very restrictive. Few non-wetland plant communities will have a PI ≤ 3 . Thus, the supplement does not increase the probability that a plant community will be determined to be hydrophytic. Furthermore, the overall jurisdictional effect depends on hydric soil and wetland hydrology indicators, and these have often been more narrowly defined to avoid errors.
II-75	MLS	2	15	3	Procedure 3. I'm a little concerned about the morphological adaptations test, as quite often plants exhibit rhizomes and if there is a shallow soil they will exhibit shallow rooting. Actually, oxygenated rhizospheres is more diagnostic than all of these, and is not listed.	Plants that normally produce rhizomes do not qualify as shallow rooted. Oxidized rhizospheres are used in this supplement as wetland hydrology indicators.
II-76	CJN	2	15	4	"More than 50% of the dominant plant species across all strata are OBL, FACW, or FAC. {Insert: <i>In applying this indicator, FAC-rated species are not counted as hydrophytic. In accordance with Corps guidance, if more than 50% of the dominant species are FAC, use indicator 2: Prevalence Index (Studdt 1991).</i> }	This document will rescind and replace previous guidance memos.
II-77	GAR	2	15	Gen	GENERAL COMMENT Indicator 1, Indicator 2 and Indicator 3 discussions should be moved in front of the section identified as Procedure.	We prefer the current organization.
II-78	CJN	2	16	1	"...in rapid wetland determinations." {Define.} {Up until this point, I've been wonder if this Regional Supplement even allows "rapid wetland determinations" using visual sampling?}	The supplement uses visual sampling. However, it also encourages increased documentation of wetland determinations.
II-79	NMED	2	16	4	This paragraph is confusing, and depending on the season, sedges, willows or other some other wetlands species may not be identifiable at the species level nor do they need to be.	All dominants must be identified to species.
II-80	MLS	2	16		I recommend that all species on site be listed, particularly if native, as they can provide a lot of ecological information. Limiting the data sheets to only those species meeting the 50/20 rule limits the information gathered, particularly if a good botanist is collecting the data and a good botanist/ plant ecologist/ wetland ecologist is reviewing the data from the Corps or EPA side.	The data sheet asks for all species on the plot. It is not limited to dominants.
II-81	CJN	2	17	1	{Prevalence Index should supersede dominance test. In 18 year of application, the "FAC-neutral test" has consistently proven a more reliable predictor of the presence of both hydric soil and wetland hydrology than the "Dominance Test". The Prevalence Index is an ever so slightly more sophisticated version of the FAC-neutral Test.}	The Working Group has decided not to use the prevalence index as the primary indicator of hydrophytic vegetation. Instead, the easier-to-apply dominance test will continue to be the primary indicator.
					"The prevalence index is <3.0 . {Insert: <i>However, when the prevalence index = 3.0, continuous duration of inundation or saturation to the soil surface > 12.5% of the growing season is required before determining a location is a wetland (Studdt 1991).</i> }	The wetland hydrology standard used in the supplement is based on recommendations by the National Academy of Sciences. In each region, previous guidance on this issue will be rescinded and replaced by each published supplement. This lengthy comment shows that the reviewer's suggested procedure is far more complicated than it needs to be. For simplicity, indicators should be either present or absent and not require extensive supplementary analysis.

#

#	Initials	Ch	Pg	Par	Comment	Response
					hydrology is 5% of the growing season is spurred on by "user notes" that were added to the "online version" of the 1987 Manual and curiously didn't refer to the published guidance and then only explained half of the story. The original 1987 Manual (sans "user notes") says that inundation or saturation to the soil surface >12.5% of the growing season satisfies the wetland hydrology parameter. It goes on to say that in some cases duration of hydrology can be less than 12.5% down to as little a 5%. The subsequent guidance (Studt 1991) clarified that if the duration of hydrology used was below 12.5% (down to as little a 5%, then the plant community had to be stronger than facultative for the site to be considered a jurisdictional wetland in the final analysis. The way this currently done is usually by applying the "FAC-neutral test". All facultative plant are considered neutral (they're not telling us anything definitive). Then the number of dominants that are FACW or OBL are compared against the number of FACU or UPL species. If the FACW or OBL dominants outnumber the	See previous response.
II-82	CJN	2	17	1	FACU or UPL, the FAC-neutral test is passed and durations between 12.5 and 5% of the growing season are considered adequate. If there is a tie using the dominant species, all non-dominant species can be added to the consideration. However, the robustness of such a result would be highly suspect in the context of a jurisdictional determination. What doesn't make sense to me is how the full explanation of this guidance was omitted from the "online version of the 1987 Corps Manual?	See previous response.
II-83	CJN	2	17	2	"...including UPL for dry-site species not recoded on the list of wetland plants." {Good! This is the correct way to interpret Reed (1988).}	No response is needed.
					"...but the vegetation initially fails the dominance test." {Again, it sounds like the attitude and approach is biased, reaching for any length to find a way to call the plant community hydrophytic so the location can be ultimately declared a wetland rather than being objective and letting the chips fall where they may. If we're so zealous to find a way to call a site a wetland, why even bother with the plant parameter at all. We don't seem willing to accept the verdict that the site's not a wetland if the plant parameter fails. Why not just throw it out altogether and only use soils and hydrology? And while were at it, hydrology is always such a pain why don't we just throw that out too? What the heck, soils are hard to learn and tricky on top of that.	See previous responses. The supplement does not increase the probability that a plant community will be determined to be hydrophytic. Field testing and interim use of the supplement will determine whether there is any effect on wetland boundaries. The intent of the supplement is to keep jurisdictional reach at the current level while updating and regionalizing wetland indicators.
II-84	CJN	2	17	3	Let's just throw them out too, hold hands, admit that everything's a jurisdictional wetland because there are water molecules in, under, or over it and in vapor form they have to eventually move over state lines or international boundaries because the wind blows...} {OK, it's late and I realize I'm getting carried away. It would just seem more objective if there were some certain ways to verify sites as nonwetlands based on the failing the vegetation parameter alone but it does sound very possible the way this is written.}	This is not a technical comment.
II-85	GAR	2	17	Gen	GENERAL COMMENT Table 2-1; Although, I understand this is an example, should be concerned with an absence of any OBL species when making a determination? This goes back to the so-called "...latest plant lists approved by HQ for each Region..."Should the determination of a community as hydrophytic require the presence of some or any obligate wetland species?	Under the 1987 Manual, OBL species are not required for a plant community to be hydrophytic. Many naturally occurring wetlands would not pass this test.
II-86	MLS	2	17	All	Prevalence Index. I just want to remind you that this system is only as accurate as the person sampling the vegetation is at estimating absolute percent cover for each species. Because there is an elaborate formula, it still boils down to accurate estimation of cover. For anyone who has taught/ trained people in plant cover estimates, this is the critical hurdle. When teaching estimation of cover, usually the sampler uses clip and weigh to calibrate their own eye to estimate cover. This looks pretty fancy, but once again its only as good as the persons ability to identify species and estimate cover. This should be stated up front, with recommendations on how to calibrate using clip and weigh methods if the person needs to.	We agree that accurate cover estimates are important. However, clip-and-weigh methods are beyond the needs of this supplement.
II-87	TJS	2	18	1	Under item 2, the last sentence says to not use a species in prevalence index calculations if it has more than one national indicator status. In Region 8, this appears to be >50% of the plants on the list. It doesn't seem like this will provide anything meaningful when half or more of the plants cannot be counted.	This guidance is only for plant species that are NI on the local list.
II-88	CJN	2	18	1	"...of species that have been correctly identified and have been assigned indicator status {Insert: including UPL for species not on the list (because they were rated UPL in all regions in which they occur)}."	UPL is the "assigned" status for any species not on the list. We will make the recommended change.

#	Initials	Ch	Pg	Par	Comment	Response
II-89	CJN	2	18	3	"For species {Insert: <i>listed NI (reviewed but given)</i> with no regional indicator (NI), apply..."	We will revise the wording.
II-90	CJN	2	18	5	"{Insert: <i>If calculated correctly,</i> } [t]he prevalence index should (Insert: <i>must</i>) range between 1 and 5."	The original wording is clear.
II-91	CJN	2	19	2	"Common morphological adaptation in the Arid West include <u>but are not limited to...</u> " ("But are not limited to...", in other words anything else we want to make up? This wording is unacceptable in a document that purports to provide region specific guidance. Either be specific or drop this nebulous verbiage.)	Wetland delineators must be given the flexibility to consider other factors not mentioned in the Manual or the supplement in their wetland decisions. However, any deviations from written guidance should be documented thoroughly.
II-92	CJN	2	19	2	"...and aerenchyma tissue..." {Recognized and verified how?}	Aerenchyma (spongy tissue with large air spaces) is easily seen in a cross section of the stem. However, the working group has decided to drop this adaptation from the list of examples.
II-93	CJN	2	19	2	"...are additional evidence..." {Does this mean it is a mandatory diagnostic if it contravenes Indicator 1 or Indicator 2? If so, this is unacceptable.}	No. This comment does not alter any previous indicators. We will reword the section.
II-94	RRM	2	19	Indicator 3	I previously provided a general comment requesting more guidance on the use of noxious weeds and annual species as wetland indicators. It is important to note that that morphological adaptations can work both ways. Two great examples of this are wiregrass (<i>Juncus balticus</i>) and coyote willow (<i>Salix exigua</i>). These species are typically considered OBL or FACW, but due to their rhizomatous nature can, and in my experience frequently do, exist in non-wetland areas. I suggest deleting this indicator, it appears to be somewhat subjective, clear guidance is not provided in the supplement, and the level of expertise (i.e., PhD botanist) needed to use this indicator is beyond most of the people actually doing wetland delineations. If this indicator is retained, then more documentation is needed along with specific examples with photographs.	Plant morphological adaptations are described in the 1987 Manual and several photographs are given there (Appendix C). It does not require a PhD to evaluate these adaptations in the field.
II-95	MLS	2	19		Recommend prioritizing with aerenchymous tissue and oxygenated rhizospheres. Also, look and see what is germinating in the next generation. If you have a flock of willow/cottonwood recruiting, conditions are right at least that year for wetland vegetation. If more upland vegetation is recruiting, the site is exhibiting a drying trend.	These comments do not seem relevant to the "morphological adaptations" indicator. The cottonwood germination issue is dealt with in Chapter 5.
II-96	CJN	2	20	1	"Confirm that the morphological feature...is not also common on the same species in the surrounding uplands." {This is excellent guidance.}	We agree.
II-97	NMED	2	20	2	It would be useful to know what UPL or FACU plants are likely to develop these features when in a wetland situation.	We prefer not to list examples that may be misinterpreted as a comprehensive list.
II-98	GAR	2	17 - 20	Gen	GENERAL COMMENT The use of any one of three indicators to determine if a community is hydrophytic, looks a lot like what one might do when looking for a hearing before the bench under the best possible conditions. This begs the question, can we arrive at a conclusion that a particular community is not hydrophytic?	Yes. See comment II-74. We do not believe that the supplement will increase the probability of finding the plant community to be hydrophytic. In addition, the three-factor approach involving indicators of hydric soils and wetland hydrology will prevent nonwetland communities from being identified as wetlands.
II-99	GAR	2	17 - 20	Gen	GENERAL COMMENT; Text states that "community is hydrophytic" (pg 17) and that "vegetation is hydrophytic" (pg 20) communities"	We don't understand the comment.
II-100	NMED	2	General	Gen	Identification down to species level is going to be tough for staff not well versed in plant taxonomy. This may pose some difficulty when delineations need to be performed within very narrow time constraints.	The need to identify plants accurately has not changed.
II-101	RRM	2	General	General	Noxious weeds are so invasive that they can invade even undisturbed sites, and for some of them, their adaptability to differing hydrologic regimes can be remarkable. For this reason I would like to see some guidance given on the reliability of annual and noxious weed species as indicators of wetland or non-wetland areas. This could be accomplished in the dominance and prevalence calculations by giving more weight (i.e., reliability as an indicator) to native perennials found at the site. I suggest this because I have encountered wetlands dominated by Canada thistle (<i>Cirsium arvense</i>) that would not technically meet the hydrophytic veg criteria because of their indicator status of FACU in much of the arid west. Another option is to direct wetland delineators to Chapter 5 on Difficult Wetland Areas in this type of situation. I have not read Chapter 5 yet, so I don't know if it covers this type of situation.	See Chapter 5. Furthermore, the use of Indicator 2 (prevalence index) may help to overcome the presence of an invasive dominant by considering the non-dominant species that are present.

#

II-102

Initials	Ch	Pg	Par	Comment	Response
MLS	2	Gen	Gen	Four issues with the section: 1) Poorly organized; 2) the understory is generally more diagnostic, particularly native herbaceous layers; 3) vines should be eliminated a strata layer - the only vines I know of are California grape, poison oak, Clematis and potentially dodder - none of these are diagnostic in the riparian areas, and other strata should be utilized; 4) Morphology/ Physiology - I have found oxygenated rhizospheres to be highly diagnostic, particularly in an arid landscape.	These comments were addressed previously.

#	Initials	Ch	Pg	Par	Type	Comment	Response
						<p>Introduction <i>{There are key points about wetland hydrology that were omitted in this introduction.</i></p> <p><i>Wetland Hydrology is defined by frequency of occurrence (should be \geq 50% of years of record), duration during the growing season (continuously for $>12.5\%$, $\geq 5-12.5\%$ of the growing season if the soils are hydric AND the plant community passes the Facultative-neutral test as per current Corps guidance (Studd 1991).</i></p> <p><i>Indicators should be listed in order of reliability (as they were in the 1987 Manual). Further, it should be explained that when observations or data for an indicator higher on the list contradicts observations lower on the list, the higher or more reliable indicator prevails.</i></p> <p><i>For example, a location may have watermarks or silt deposits. However, repeated direct observations indicate that while the site does get inundated it does so at a frequency of less than once every two years or for only short durations like 24 hours. In such a case, the watermarks or silt deposits would have to be recorded, but since better data indicated that events that produced them do not meet minimum standards for wetland hydrology, these watermarks or silt deposits would have to be disregarded.</i></p>	<p>The supplement will clarify and replace previous guidance.</p> <p>Similar cautions are given in the descriptions of the indicators and accompanying User Notes. They were also considered when indicators were assigned Primary or Secondary ratings.</p>
IV-1	CJN	4	49	1	p		
IV-2	CJN	4	49	1	p	"...or provide other evidence..." <i>{Like what?}</i>	Examples include indicators in Group D.
IV-3	RRM	4	49	1	c	Last sentence add on to the end, "...during the growing season."	We will make the recommended change.
IV-4	djb	4	49	2	c	The import component of wetland hydrology is that the hydrology indicators are present during the growing season. This paragraph should provide more clarification as to the "Arid West growing season" or refer to Chapter 2.	The section on Growing Season will be moved from Chapter 2 to Chapter 4 given its relevance to wetland hydrology measurements.
IV-5	CJN	4	49	2	p	"...during drier-than-normal years. {Insert: <i>Some areas that are not wetlands inundate at certain times especially in wetter-than normal years.</i> } The Arid West is..."	The same concept is described later in the same paragraph.
IV-6	CJN	4	49	2	p	"...An understanding of normal..." (Define "normal".)	Chapter 5 provides extensive guidance on determining whether environmental conditions have been normal.
IV-7	RRM	4	49		c	General comment on introduction: More emphasis needs to be made on hydrology occurring during the growing season;	We will revise the wording of the first paragraph and move the Growing Season section from Chapter 2 to Chapter 4.
IV-8	RRM	4	49		c	General comment on introduction: Is the minimum duration needed for wetland hydrology (i.e., 5-12% of the growing season just assumed)?, if not add it in here or reference the 1987 manual.	The minimum duration standard for wetland hydrology on highly disturbed or problematic sites will be 14 consecutive days during the growing season, as given in USACE (2005) and recommended by the National Academy of Sciences. However, we expect most wetland determinations to be based on indicators and not on direct hydrologic monitoring.
IV-9	RRM	4	49		c	General comment on introduction: I wonder if any one else has questioned the validity of the 5-12% of the growing season requirement for wetland hydrology in the arid west. For example, near Glandale, NV the growing season is 365 days a year, making the minimum soil saturation requirement for wetland hydrology about 18 days. Granted there are not many wetlands there, but is this even reasonable for this area? In the 1987 manual it refers to Clark and Benforado (1981) and Theriot (inpress [1993]) both of which concern bottomland hardwood forests in the southeastern U.S. Is this research applicable to the arid west? Maybe, but probably not. A substantial change that would set this supplement apart from the 1987 manual and other regional supplements would be to change the minimum number of consecutive days of continuous soil saturation/inundation required for the wetland hydrology criteria to be met. This could be accomplished in a number of ways, such as reducing the total number of consecutive days required (i.e., percent of the growing season), and maybe requiring the soil saturation to occur during the germination phase of the majority of the wetland plants found	This supplement and USACE (2005) will replace the wetland hydrology guidance given in the 1987 Manual.

#	Initials	Ch	Pg	Par	Type	Comment	Response
IV-10	RRM	4	49		c	General comment on introduction: With regards to fluvial systems, should reference the document on OHWM indicators entitled, "Review of Ordinary High Water Mark Indicators for Delineating Arid Strea in the Southwestern United States" (Lichvar and Wakeley 2004). Though I was disappointed that it did not give more definitive guidance (dam it!), it does contain a good review of the hydrology, fluvial geomorphology, and vegetation zones found in the washes of the southwest.	OHW indicators are a separate issue beyond the scope of this supplement and could be confusing to wetland delineators if presented here.
IV-11	CJN	4	50	1	p	{There should be an explanation of the order of reliability of the indicators and supercedence of lower order indicators with observation of contradictory but more reliable indicators.}	The relative reliability of indicators is addressed by their "primary" or "secondary" status. Within groups, indicators should be treated equally.
IV-12	CJN	4	50	2	p	{Revise as follows.} "Within each group, indicators are divided into three categories-- <i>primary, secondary, and tertiary.</i> "	We are not proposing to add "tertiary" indicators to this document.
IV-13	CJN	4	50	2	p	{Revise as follows.} "In the absence of a primary indicator, two or more secondary indicators or three or more tertiary indicators from any group are required to conclude that wetland hydrology is present."	We are not proposing to add "tertiary" indicators to this document.
IV-14	djb	4	50	n	c	All other chapters (i.e. 2-vegetation & 3-soils) provide a specific sampling procedure. A sampling or analysis protocol may be usefull in this chapter also.	Most wetland hydrology indicators are easily observed and do not require a sampling protocol. Indicators related to soils or vegetation are assessed adequately by following soil or vegetation sampling protocols given in previous chapters.
IV-15	djb	4	51	1	c	Table 4-1 provides a clear and concise summary of hydrology indicators	No response is necessary.
IV-16	CJN	4	51	1	p	{Table 4-1 should be revised to include "Tertiary" indicators and a significant number of these listed "indicators" should be down-rated to Secondary or Tertiary status.}	We disagree with this general statement, and will respond to comments on specific indicators later in these comments.
IV-17	CJN	4	51	1	p	{There should be a "Table 4-2" that lists all hydrology indicators in descending order of reliability.}	The relative reliability of indicators is addressed by their "primary" or "secondary" status. Within groups, indicators should be treated equally.
IV-18	CJN	4	51	1	p	{Why are the indicators (even within groups) ordered the way they are? Is this intended to imply order of reliability? If so, say so.}	The order is not intended to reflect reliability except that, within groups, primary indicators are listed before secondary indicators.
IV-19	CJN	4	52	2	p	"...extend into the growing season {Insert: <i>for sufficient duration in most years.</i> }"	We will make the recommended change.
IV-20	CJN	4	52	2	p	"...wetland systems. {Insert: <i>Note that some non-wetlands flood frequently but for brief durations (1987 Manual--Part II).</i> }"	We will make the recommended change.
IV-21	CJN	4	52	2	p	{Note that although the blue water is visible in Figure 4-1 on screen or in a color hard copy, it is totally invisible in black and white hard copy prints.}	The figures will be printed in color.
IV-22	tjs	4	52	3		"Even under normal rainfall conditions, wetlands may have surface water present only one year in two (i.e., $\geq 50\%$ probability)" It was a lot clearer in the 1987 manual that we needed to see water at least 1 year out of 2, but this seems a lot less definite. This statement is found in several other places in this chapter and it needs to be clarified in all places.	We will revise the wording.
IV-23	CJN	4	53	1	p	"...the water table <12 inches (30 cm) below the surface {Insert: and within the major portion of the observed root zone. }"	The 12-inch standard is based on the 1987 Manual and recommendations by the National Academy of Sciences. Asking users to identify the "major portion of the root zone" is not needed and only causes unnecessary confusion.
IV-24	CJN	4	53	1	p	"...This indicator includes perched water tables {Delete: and discharge water tables (e.g. in seeps where water may enter the hole from the surface soil layers). }" {This is irrelevant because the water table in such cases will still be visible and interpreted as such. Retaining this wording will almost certainly lead to confusion with surface water running into the pit after a rainstorm.}	The statement provides added clarification. The User Notes and chapter introduction already caution people to consider the effects of recent rainfall.
IV-25	CJN	4	53	2	e	"Sufficient time must be allowed for water to {Delete: drain } {Insert: <i>infiltrate</i> } into a newly dug hole..."	We will make the recommended change.
IV-26	CJN	4	53	2	p	"...at the water table." {Define "water table". Use the complete version of the definition: <i>The height to which water rises in an unlined borehole when it has equalized with air pressure. The water bearing layer (i.e. "aquifer") is at least 6 inches thick and persists in the soil for more than a few weeks.</i> }	"Water table" is defined in the 1987 Manual. This will not change.
IV-27	CJN	4	53	2	p	{Delete: "In some cases, the water table can be determined by examining the wall of the soil pit and identifying the upper lever at which water is seeping into the pit." } {This entire sentence should be deleted because this approach is highly undependable and frequently is mistaken for ephemeral saturation (or seepage between soil cracks but NOT ped saturation) due to rainfall events that are NOT water tables.}	This guidance avoids the need to wait hours or days for water to seep into the hole in a fine-textured soil. There are already sufficient cautions in this chapter about considering the effects of recent rainfall. Furthermore, the three-factor approach, involving indicators of hydric soil and hydrophytic vegetation as well as wetland hydrology, will ensure that nonwetland areas with temporary saturation are not identified as wetlands.

#	Initials	Ch	Pg	Par	Type	Comment	Response
IV-28	CJN	4	53	2	p	"...extend into the growing season {Insert: for sufficient duration in most years}."	We will make the recommended change.
IV-29	CJN	4	53	2	p	"...capable of perching water near the surface. {Insert: <i>The user should be certain that water observed is a water table and not the ephemeral result of a recent rainfall event.</i> }"	Again, this statement is not needed (see comment IV-27).
IV-30	tjs	4	53	3		"Even under normal rainfall conditions, wetlands may ... It was a lot clearer in the 1987 manual that we needed to see water at least 1 year out of 2, but this seems a lot less definite. This statement is found in several other places in this chapter and it needs to be clarified in all places.	We will revise the wording.
IV-31	CJN	4	54	1	p	"Visual observation of saturated {Delete: or near-F52saturated } conditions ..."	We agree and will make the recommended change.
IV-32	CJN	4	54	1	p	"...<12 inches (30 cm) below the soil surface {Insert: and within the major portion of the observed root zone }..."	The 12-inch standard is based on the 1987 Manual and recommendations by the National Academy of Sciences. Asking users to identify the "major portion of the root zone" is not needed and only causes unnecessary confusion.
IV-33	CJN	4	54	1	p	"...as indicated by {Delete: (1) } glistening of water {Delete: on } {Insert: <i>over the entirety of</i> } soil ped faces and broken interior surfaces..."	The original statement is clear and is further described in the User Notes.
IV-34	CJN	4	54	1	p	{Delete: ...or (2) release of pore water when the soil sample is gently shaken or squeezed. } { <i>The old "shake test" is bogus. It illustrates "liquifaction" NOT saturation. Likewise, the old "squeeze test" is bogus. Organic soils will yield water when squeezed even when they are not nearly 100 percent saturated. Clay soils won't yield water when squeezed even if they are saturated. The only nearly valid field indicator for "saturation" is a freshly broken (but not shaken or squeezed) ped surface entirely (not partially) covered with a glistening moisture film.</i> }	We agree that this test is not definitive, although it is frequently used. We will make the recommended change.
IV-35	CJN	4	54	2	p	"This indicator reflects saturated {Delete: or near-saturated } conditions..."	We will make the recommended change.
IV-36	CJN	4	54	2	p	{Delete the entire last three sentences of this paragraph: " Gentle shaking is ... with high organic content. " {The shake and squeeze tests are totally unreliable.}}	We agree that this test is not definitive, although it is frequently used. We will make the recommended change.
IV-37	CJN	4	54	2	p	{Any reference to "near-saturated" conditions should be totally omitted because there is so much misinterpretation and abuse of the saturated soils indicator, an indicator that was never clearly explained in the 1987 Manual. Reference to "near-saturated" conditions would in effect sanction the abuse and stimulate even more of it.}	We will make the recommended change.
IV-38	CJN	4	54	3	p	"Figure 4-3. Water glistens {Delete: on } {Insert: <i>over the entirety of</i> } the surface of a saturated soil sample."	The original is clear.
IV-39	CJN	4	55	1	p	{Why are the indicator alpha-numeric designators not in sequence?}	Indicators are being numbered as they are used in different supplements. Thus, a particular indicator will be given the same designation nationwide. Eventually they may be compiled into a national reference.
IV-40	CJN	4	55	1	p	{ Change Category for Primary to Secondary.}	The working group and National Advisory Team believe that the appropriate category is Primary. Surface cracks are unambiguous indicators of recent ponding or flooding, even though they also occur in temporarily ponded areas in nonwetlands. The Cautions and User Notes describe this adequately. See additional comments below.
IV-41	CJN	4	55	2	p	{"...on the soil surface. {Add: <i>Surface soil cracks are at best a secondary indicator because they can also form on soil surfaces that have experienced only very brief inundation. Furthermore, soils with high shrink-swell clay content (like vertisols and soils that are vertic intergrades) tend to crack when dry even in uplands.</i> }"	Shallow surface cracks are a reliable indicator of recent ponding or flooding, but do not indicate seasonal timing, duration, or frequency. Vegetation and soils provide the evidence to determine whether the timing, duration, and frequency of wet conditions are sufficient to create wetlands. Therefore, the three-factor approach, involving indicators of hydric soil and hydrophytic vegetation as well as wetland hydrology, already ensures that areas subject to brief or infrequent flooding or ponding will not be identified as wetlands. Deep cracks in Vertic soils are not included in this indicator.
IV-42	RRM	4	55		c	As written this indicator is ridiculous. Mud cracks occurs in uplands as frequently as they do in wetlands. If this is retained then it needs to be better described, as in occurring in a topographic depression, having an inlet and either no outlet or a restricted outlet, etc.	See the previous response.
IV-43	CJN	4	56	1	p	{Change Category from Primary to <i>Primary or Secondary</i> .}	The working group believes that this indicator should have the same status as the direct observation of surface water on a site.

#	Initials	Ch	Pg	Par	Type	Comment	Response
						{Change General Description to read: <i>Aerial photographs or satellite images from multiple years show the site to be inundated. If only one aerial photograph exists showing the site to be inundated under the conditions described below, it can only be used as a secondary indicator.</i> }	One image is adequate if the cautions described in the User Notes concerning normal conditions are considered. Again, the three-factor approach already ensures that areas subject to brief or infrequent flooding or ponding will not be identified as wetlands.
IV-44	CJN	4	56	1	p		
IV-45	CJN	4	56	2	p	"...extend into the growing season (Insert: for sufficient duration in most years)."	We will make the recommended change.
						"...is recommended. (Add: <i>Antecedant condtions must be documented to assure inundation lasted for adequate duration during the growing season.</i>)"	The suggested change is unnecessary with the existing cautions. Furthermore, the three-factor approach already ensures that areas subject to brief or infrequent flooding or ponding will not be identified as wetlands.
IV-46	CJN	4	56	2	p		
IV-47	nsk	4	56	3	c	what is the procedure for aerial photos? - I do no know what this is	See the cited reference.
IV-48	tjs	4	56	3		Be more specific about where to find the NRCS procedure and provide a link to it.	The reference and a web link are given in the References.
						"Even under normal rainfall conditions, wetlands may have surface water present only one year in two (i.e., $\geq 50\%$ probability)" It was a lot clearer in the 1987 manual that we needed to see water at least 1 year out of 2, but this seems a lot less definite. This statement is found in several other places in this chapter and it needs to be clarified in all places.	We will revise the wording.
IV-49	tjs	4	56	3			
IV-50	RRM	4	56		c	Need to define the term 'recent'. Within the last five years? The last ten years?	This should be left to the discretion of the delineator. No fixed time period can be given.
IV-51	CJN	4	57	1	p	{Change Category from Primary to Secondary.}	The working group and National Advisory Team disagree. In an arid climate, water-stained leaves are a strong indicator of wetland hydrology.
IV-52	CJN	4	57	1	p	"...have turned {Delete: dark } grayish or blackish in color due to {Insert: <i>anaerobic decomposition as a result of</i> } inundation for long periods."	We will delete "dark". Water-stained leaves are a reliable indicator of inundation but the mechanism of their formation is not fully understood.
						"They should contrast strongly with fallen leaves {Insert: <i>of the same species that fell at approximately the same time that are usually brown due to decomposing under aerobic conditions</i> } in nearby upland landscape positions."	The original statement is clear.
IV-53	CJN	4	57	2	p		
IV-54	CJN	4	57	2	p	"... upland landscape positions. (Add: <i>Note that wet leaves are NOT water stained leaves.</i>)"	The suggested change is not necessary. The diagnostic characteristics of water-stained leaves are clear.
						{What are the minimum durations necessary for "biotic crusts" to form? Can the form in the non-growing season? If so, this indicator should be down-graded to the status of a Secondary indicator.}	We do not agree. Experience and cited literature have shown that certain crusts are reliable indicators of long-duration inundation. Furthermore, the three-factor approach already ensures that areas subject to infrequent flooding or ponding, or inundation outside the growing season, will not be identified as wetlands.
IV-55	CJN	4	58	1	p		
IV-56	CJN	4	58	2	p	"Biotic crusts (also known as cryptobiotic or cryptogamic crusts...{Cite source references.})"	The essential references for the indicator are cited.
IV-57	CJN	4	58	2	p	"...often have a darker {Define using Munsell designations if possible.} surface..."	This is a comparison of the surface layer versus underlying material. Reference to Munsell colors is not needed.
IV-58	CJN	4	58	2	p	"...rough-surfaced or pedicellate crusts ... and asphalt-like crusts..." {Recognized how? Verified how? Explain precisely or omit.}	These terms are useful non-technical descriptions of the pictured non-wetland crusts. Those who live and work in arid areas are familiar with these crusts.
IV-59	CJN	4	58	2	p	"These crusts may or may not occur in saturated areas, but they are negative indicators of standing water." {Confusing! Are these hydrology indicators or not?!}	They are NOT wetland hydrology indicators. See the Figures for more explanation. We will clarify the wording.
						on drying saline depressions and flats we find a crust that is bacteria - I would describe it as somewhere between figure 4-8 and figure 4-11. It only occurs following inundation in relatively undisturbed sites	We do not understand the recommendation.
IV-60	nsk	4	58	3	c		
IV-61	RRM	4	58		c	Probably need to require the identification of aquatic species in the crust for this to be a definitive criteria.	We disagree. The origin of the crusts is clear without determining the taxonomy of the species producing them.
IV-62	CJN	4	59	2	p	Figure 4-7. {How do you know for sure that this algae?}	See the Brostoff (2002) reference. In the field, it is not necessary to identify the organism involved.
IV-63	CJN	4	60	2	p	Figure 4-10. ..."This type of crust is not an indicator of wetland hydrology." {Why not?}	As stated in the text, these particular crusts develop in uplands and are destroyed by inundation.
IV-64	CJN	4	60	3	p	Figure 4-11. ..."This type of crust is not an indicator of wetland hydrology." {Why not?}	As stated in the text, these particular crusts develop in uplands and are destroyed by inundation.
						although they are not an aquatic invertebrate, carabid beetles move into areas of saline depressions and flats as the water recedes, leaving their castings on the damp soil surface	The indicator specifies aquatic invertebrates.
IV-65	nsk	4	61	2	c		
							Landscape position and other site conditions should alert the delineator to the possibility of relict invertebrate remains. No detailed procedure is needed because the three-factor approach already ensures that these areas will not be identified as wetlands.
IV-66	CJN	4	61	2	p	"Use caution..." {What specifically are we expected to do? Spell it out.}	

#	Initials	Ch	Pg	Par	Type	Comment	Response
IV-67	CJN	4	62	1	p	{Change Category from Primary to Secondary.}	We will make the recommended change.
IV-68	CJN	4	62	2	p	"...near the surface (Figure 4-13)." { <i>Are the authors certain that all crayfish species behave the same way? I don't believe there is any published research on crayfish burrows relative to duration of inundation or surface of saturation. If there is, it should be cited here. Anecdotal, my associates have measured depth of crayfish burrows exceeding 12 feet vertically and did NOT locate the water table within that depth. Because there is no way to prove that saturation is to the surface for more than a brief period, crayfish burrows should be no more than a secondary indicator.</i> }	Many crayfish initiate burrow construction when surface soils are saturated, but may be forced to dig deeper as water tables drop seasonally. Evidence of deep burrows and deep water tables during the dry season are not relevant. Furthermore, the three-factor approach already ensures that areas subject to brief or infrequent flooding or ponding will not be identified as wetlands. However, we were incorrect in classifying these burrows as inundation indicators. We will move the indicator to Group C and change the category to Secondary.
IV-69	CJN	4	63	2	p	"...maximum extent of recent inundation." {Define: recent.}	No fixed time period can be given.
IV-70	CJN	4	63	2	p	"Use caution..." {Meaning do exactly what? Realize that the water mark may not be a valid hydrology indicator at this location?}	Correct. These "cautions" are for informational purposes only and do not require any additional procedures. The three-factor approach already ensures that areas subject to brief or infrequent flooding or ponding will not be identified as wetlands.
IV-71	CJN	4	64	1	p	"...after inundation {Delete: and } {Insert: <i>followed by</i> } dewatering."	The original wording seems clear.
IV-72	CJN	4	64	2	p	"Use caution..." {Meaning do exactly what? Realize that the water mark may not be a valid hydrology indicator at this location?}	These "cautions" are for informational purposes only and do not require any additional procedures. The three-factor approach already ensures that areas subject to brief or infrequent flooding or ponding will not be identified as wetlands.
IV-73	CJN	4	64	2	p	"...use caution..." {Meaning do exactly what? Realize that the water mark may not be a valid hydrology indicator at this locations?}	See previous response.
IV-74	CJN	4	65	2	p	"Use caution..." {Meaning do exactly what? Realize that the water mark may not be a valid hydrology indicator at this location?}	See previous response.
IV-75	CJN	4	65	2	p	"...use caution..." {Meaning do exactly what? Realize that the water mark may not be a valid hydrology indicator at this locations?}	See previous response.
IV-76	CJN	4	65	3	p	Figure 4-15. <i>This is too whimpy to be a valid indicator such as a drift deposit of leaves in a seasonally ponded wetland. {Seriously, if this is best you can do for a photograph to illustrate "drift deposits", you might as well drop the indicator. This photograph is useless.}</i>	We will use a different photo.
IV-77	RRM	4	65		c	I do not understand why this would be a secondary indicator for riverine systems, and not a secondary indicator for tidal fringe, lacustrine, and depression systems too.	It is the flashy nature of desert streams that led the working group to propose the "secondary" status for riverine situations. Thus, drift lines along desert streams often reflect very infrequent or brief flooding.
IV-78	CJN	4	66	1	p	{Delete: Drainage patterns . <i>As described, this indicator is indistinguishable from "draining patterns in uplands". It is also indistinguishable from windblown flattening of crops as a result of storms.</i> Substitute: Drainage patterns in wetlands . Category: <i>Primary</i> . Add: <i>This indicator requires two component. First, a depression, swale, or other topographic feature that will capture or channel surface water copuled, second, with a soil type that will retain water once it gets there.</i> }	This indicator is the same as that used in the 1987 Manual although it is given Secondary status in the supplement. Similar drainage patterns may sometimes occur in uplands. However, the three-factor approach already ensures that such areas will not be identified as wetlands. The added words are not needed.
IV-79	CJN	4	66	3	p	Figure 4-16. { <i>This is not a good indicator because it cab happen as a result fo a strong but very short duration event, even on uplands.</i> }	See the previous response.
IV-80	RRM	4	66		c	Clarify that this is rimirly applicable to fluvial systems and that the drainage patterns are due to the wetland's primary source of hydrology (i.e., the stream), and not drainage of upland areas during rainfall events.	See the previous response. No further clarification is needed.
IV-81	CJN	4	67	1	p	{Delete: Hydrogen sulfide odor . <i>This is already an indicator of hydric soil. Unfortunately, it can be produced in non-hydric soil (e.g. on golf course greens). If soils are releasing hydrogen sulfide and the site really is a wetland, there should be plenty of other indicators.</i> }	It is true that other wetland hydrology indicators are likely to be present in a wetland that is currently producing hydrogen sulfide (e.g., high water table). However, this indicator provides additional information that the current soil saturation has existed over a long period of time and that it occurred during the growing season. We will add some clarifying wording.

#	Initials	Ch	Pg	Par	Type	Comment	Response
IV-82	CJN	4	68	1	p	{Change Category from Primary to Secondary. "Oxidized rhizospheres along living roots" should be treated as a Secondary indicators of hydrology because they can form very rapidly under the right conditions and they can form in some situations from other than anaerobic soils conditions yielding a "false positive" in less than the minimum standard for wetland hydrology (e.g. Dr. Bill Patrick's research showing release of ferrous iron under warm, high nutrient, anaerobic conditons in in as little as 4 days, thus establishing the precursor for formation of oxidized rhizospheres.)	We agree that, under ideal conditions of warm temperatures, abundant organic matter, and soil saturation, oxidized rhizospheres can sometimes develop in just a few days. However, this only adds strength to their value as indicators of recent soil saturation during the growing season. Furthermore, the three-factor approach, involving indicators of hydric soil and hydrophytic vegetation as well as wetland hydrology, already ensures that areas saturated only briefly or infrequently will not be identified as wetlands.
IV-83	RRM	4	68		c	Suggest that a percentage of oxidized root channels be used, such as the 2% of the soil matrix requirement used in several of the hydric soil indicators.	We agree that oxidized rhizospheres should be "common" (at least 2% of volume). We will make the recommended change.
IV-84	CJ N	4	69	1	p	{ "Presence of reduced iron" should be separated into two different indicators. They are as follow. C4-A--Observation of a reduced matrix (Vepraskis 1999). <i>This indicator is pretty much as described in the draft text.</i> C4-B--Positive alpha, alpha-dipyridil test. Category: Secondary. General Description: <i>Positive reaction to alpha-alpha dipirydil in more than 50 percent of the upper 12 inches (30 cm) of the soil profile including ped interiors. Caution, intermittant spots of positive reaction, such as only along ped faces, and amounting to less than 50 percent of the profile does not satisfy this indicator. This is only a secondary indicator because because ferrous iron can be released after only a relatively short duration, of saturation, high nutrient soil AND because of the penchant for false positives using alpha-alpha dipirydil. Note that alpha-alpha dipirydil does not react when wetlands are dry.}</i>	We see no reason to divide the draft indicator into two indicators. Both observations reflect the presence of ferrous iron.
IV-85	CJN	4	70	1	p	{Regarging " Recent iron reduction in plowed soils " change Category from Primary to Secondary. <i>This should be a secondary indicator because it cannot confirm the long term frequency of inundation or saturation.</i> }	It is not the function of wetland hydrology indicators to confirm the frequency of saturated conditions. The three-factor approach, involving indicators of hydric soil and hydrophytic vegetation, already ensures that areas saturated only infrequently will not be identified as wetlands.
IV-86	CJN	4	71	1	p	{Delete Muck surface. <i>Eliminate "Muck suface" as a hydrology indicator. I can buy it as an inicator of hydric soil, but I contend that there are no data (beyond, perhaps, anecdotal observations) to support the statement, "muck that is dry for extended periods will oxidize and disappear". I have seen thick muck deposits that have been effectively drained (i.e. no longer have wetland hydrology) for years and while they certainly are oxidizing, the have NOT "disappear[ed]". I contend that if there is enough hydrology to support development and maintenance a muck surface there should be plenty of other hydrology indicators present so as not to have to contrive this observation as an indicator.</i> }	We agree and will revise the indicator to include only "thin" muck surfaces, as thick surfaces may persist long after effective drainage.
IV-87	CJN	4	71	2	p	"In an arid climate..." {Define "arid climate".}	See Chapter 1.
IV-88	CJN	4	72	1	p	{Delete: Saturation visible on aerial imagery. Change Category from Primary to, at best, Tertiary (and this is only valid with ground truthed verification).	We agree and will make the indicator Secondary. Ground truthing is already required (see comments below).
IV-89	CJN	4	72	2	p	"...or, field verified, {Insert: <i>undrained</i> } hydric soils..."	The sentence is already clear with "evidence of a seasonal high water table."
IV-90	CJN	4	72	2	p	{ <i>Eliminate this indicator because without ground truthing on the site to prove the "darker signatures" are, in fact, saturated, I can see every novice delineator devining "saturation" ever time he/she sees a dark spot on an aerial photograph. This is especially true in areas with mollisols or drained histosols. This "indicator" is a disaster waiting to happen and I object to it's inclusion.</i> }	This indicator is not presented as a stand-alone off-site procedure for identifying wetlands. "Ground truthing" is required for verification of hydric soil and hydrophytic vegetation (standard practice in the three-factor approach) and to confirm that photo signatures "correspond to mapped or field-verified hydric soils, depressions or drainage patterns, differential crop management, or other evidence of a seasonal high water table." Wetness signatures on aerial photos have been used successfully for years by NRCS to help identify wetlands on agricultural lands.
IV-91	CJN	4	72	2	p	"...both are primary indicators. {No, aerial imagery shouldn't even be considered more than a tertiary indicator and only if it has been ground truthed to prove that the dark signatures were, in fact saturated and not something else.}	We agree and will make the indicator Secondary. See the previous responses.

#	Initials	Ch	Pg	Par	Type	Comment	Response
IV-92	CJN	4	72	2	p	{No citizen should be should be regulated based on assumed "saturation" supposedly visible on an aerial photograph, ESPECIALLY one from the non-growing season.}	The reviewer is mistaken in his assumption that this indicator alone would ever be used to make a wetland determination. See the previous responses.
IV-93	tjs	4	72	3		Be more specific about where to find the NRCS procedure and provide a link to it.	The document and a web link are given in the References.
IV-94	tjs	4	72	3		"Even under normal rainfall conditions, wetlands may have surface water present only one year in two (i.e., ≥50% probability)" It was a lot clearer in the 1987 manual that we needed to see water at least 1 year out of 2, but this seems a lot less definite. This statement is found in several other places in this chapter and it needs to be clarified in all places.	We will revise the wording.
IV-95	RRM	4	72		c	Need to define the term 'recent'. Within the last five years? The last ten years?	We prefer to leave this to the discretion of the delineator. No fixed time period can be given.
IV-96	CJN	4	73	1	p	"...drier-than-normal year {Insert: <i>in a soil field verified as a hydric soil. Note, if hydric soil indicators are not evident within 12 inches of the surface, there is no reason to believe the water table will reach within 12 of the surface.</i> }	The suggested addition is unnecessary. The three-factor approach already requires the presence of a hydric soil.
IV-97	nsk	4	73	2	c	water tables below 24 inches - this sounds like hedging your bets - maybe this should read - if it is a very dry season or drought period and the water table is below 24 in. see Chapter 5. This should also be used when in the first few years following a prolonged drought.	The statement is true that water tables in wetlands often drop below 24 inches during the dry season. However, the indicator does not count water tables below 24 inches.
IV-98	CJN	4	73	2	p	"In some cases, the water table can be determined by examining the wall of the soil pit and identifying the upper level at which the water is seeping into the soil pit." {NO! Wait for the water table to establish itself as a standing water surface in the pit, or don't use the indicator.}	This guidance avoids the need for the delineator to wait hours or days for water to seep into the hole in a fine-textured soil. Observation of the seepage level indicates the ultimate depth of standing water in the hole.
IV-99	CJN	4	73	2	p	"...and drought periods." {Note that this indicator should not be used in locations where the water table is being actively managed (e.g. for agricultural, range, or pasture uses, etc.)}	Areas that are actively managed present a challenge to wetland delineators for many reasons and require special consideration. However, we don't agree that a blanket prohibition on the use of this indicator in managed areas is warranted.
IV-100	tjs	4	73	3		"A water table between 12-24 inches during the dry season, or during an unusually dry year, indicates a normal wet-season water table within 12 inches." I'm not sure this is a true statement in all cases, especially in instances where water is controlled/manipulated with dams, diversions, etc.	See the previous response.
IV-101	CJN	4	74	2	p	{Note: It is possible for salt deposits to develop in areas that never reach 100 percent saturation but bring salt bearing water to the surface via capill+F69ary draw. In such a way in arid region's, given time, a soil that never has more than 1 percent saturation can develop a salt crust. Further, the salt deposit will eventually eliminate all plants except halophytes like <i>Salicornia</i> sp. that don't necessarily require wetland to survive and can still compete in hyper-saline environments.}	We agree with the reviewer's main point that certain kinds of surface salt deposits may be formed by wicking from a deep water table. We propose to drop this indicator and substitute a new indicator "Salt Crust" consisting of a hard or brittle surface salt crust formed by evaporation of saline surface water. The indicator will not include "fluffy" salt inflorescences formed by wicking of groundwater.
IV-102	CJN	4	75	2	p	{It seems that someone is still bound and determined to get "hoof prints" into the Manual.} {Caution: "Hoof prints" (i.e. much casts) can last for years after having been made after a single, short-term duration inundation event sufficient to wet the surface.}	We agree that this indicator is not definitive. The working group has decided to drop the indicator.
IV-103	CJN	4	76	2	p	"...soil layer {Insert: (e.g. duripan or clay deposit) or bedrock..."	Examples are given in the following sentence.
IV-104	CJN	4	76	2	p	"Potential aquitards include fragipans, cemented layers, dense glacial till, lacustrine deposits, and clay layers {each of these are recognized and verified how?}	Potential aquitards are recognized in the field by sudden changes in the density, hardness, or cementation of soil layers as the soil pit is being dug. A soil scientist should be consulted if verification is needed.
IV-105	CJN	4	77	2	p	"...nondominant species should be considered {but in this case, the indicator is so weak that it must be considered tertiary}."	The FAC-neutral test has been used as a secondary indicator of wetland hydrology since 1992. This is no change from current practice.
IV-106	CJN	4	77	2	p	Change Category to Secondary or Tertiary .	We do not recognize tertiary indicators.
IV-107	tjs	4	77	3		If the + & - are removed in the veg chapter, you would not need the - & + here in the parenthesis	The '+' and '-' modifiers still appear on the published plant list.

#	Initials	Ch	Pg	Par	Type	Comment	Response
III-1	CJN	3	21	1	e	"...result in {insert} <i>distinctive</i> characteristics {delete: morphologies} that persist..."	We will make the recommended change.
III-2	CJN	3	21	1	p	"...for more than a {delete: few days} {insert} <i>week during the growing season</i> ."	We did not intend to state a particular duration threshold here.
III-3	CJN	3	21	1	p	"...causes the depletion of oxygen." {Insert} <i>Microbial activity requires warm temperatures and an energy source (i.e. food such as dead plant material often referred to as "organic matter") for the microbes.</i>	The statement is correct as worded in the draft supplement.
III-4	djb	3	21	1		paragraph should cite NRCS-taken verbatim	True. We will cite USDA-NRCS (2006).
III-5	CJN	3	21	2	p	"A change to an indicator by the NTCHS represents a change to this subset of indicators for the Arid West." {So does this make it <i>official</i> that every time NTCHS makes a change the indicators were supposed to use likewise change? Is so, say so explicitly and explain where and how users are supposed to find out and know what's current.}	Yes. A link to the current NRCS/NTCHS hydric soil list will be given on the Corps Headquarters Regulatory web page.
III-6	CJN	3	21	3	p	"Although an indicator may be noted as most relevant in a specific subregion, it may also be applicable in adjacent subregions." {Well, is it applicable or isn't it?! Be specific. Don't leave this hanging.}	If not specifically listed in the adjacent region, the indicator is only applicable in the transition zone between regions, as described in Chapter 1. We will revise the wording.
III-7	CJN	3	21	5	e	"The presence of hydrogen sulfide gas ({insert} <i>detected by rotten egg odor</i>) {insert} <i>in the root zone</i> is a strong indicator..."	The nebulous "root zone" concept is being replaced in this supplement specifically by the upper 12 inches of the soil profile. The indicator is described later in the chapter. No revisions are needed here.
III-8	CJN	3	21	5	e	"...in only the wettest sites {insert} <i>in soils that</i> contain {delete: -ing} sulfur {insert} <i>sulfur bearing compounds</i> ."	We will revise the wording.
III-9	CJN	3	21	5	p	"...whose parent materials contain low amount of Fe or Mn"... <i>such as _____?! {Insert:} Likewise, even if these element are present, indicators related to Fe and Mn tend not to form in high pH soils.</i>	The comment is premature. High pH situations are described in Chapter 5. No changes are needed here.
III-10	CJN	3	22	1	e	"The result is the development of thick organic surfaces, <i>like peat or muck</i> , on the soil or dark organic-rich surface mineral layers."	We will revise the wording (e.g., peat, mucky peat, or muck).
III-11	CJN	3	22	2	p	"Ferric iron is insoluble but ferrous iron <i>is soluble at most pH ranges and</i> easily enters the {delete: soil} solution <i>within the interstitial spaces surrounding soil particles</i> ."	The statement is correct as worded in the draft supplement. No changes are needed.
III-12	CJN	3	22	2	p	"...reddish-gray colors" (What colors are these?! Use Munsell codes for specific examples.)	Specific colors in Munsell notation are given in the indicators. This was intended only as a general statement.
III-13	CJN	3	22	3	e	"In non-saturated or non-inundated soils, sulfate is not reduced and there is no <i>rotten egg odor</i> ."	We will revise the wording.
III-14	CJN	3	22	3	p	"Sulfur is the last of the elements to be reduced..." {This sounds incorrect. The classic soil oxidation-reduction sequence always shows organic compounds being reduced at lower Eh levels <i>after</i> sulfur bearing compounds.}	It is the last element that has relevance to hydric soil indicators. We will revise the wording.
III-15	CJN	3	22	4	p	"As soil that is artificially drained or protected...one or more indicators." {As stated, this paragraph is meaningless. Say instead: <i>If the soil has any of the listed Field Indicators, it is considered hydric. Note, however, that many hydric soils have been effectively drained or protected from flooding (e.g. by levees). While these soils originally developed under wetland conditions, their locations currently may be found to be nonwetlands if their hydrology has been reduced below minimum standards. Soils in these now nonwetland locations are sometimes referred to as "relict" soils. Relict soils are not uncommon.</i> }	The simpler statement in the draft supplement is correct as written but we will clarify the wording.
III-16	ts	3	22	5	c	I don't agree with the statement that contemporary and recent hydric soil features have diffuse boundaries and that relict features have abrupt boundaries. This is not always true. Suggest removing this sentence.	We disagree.
III-17	CJN	3	22	5	p	"Typically, contemporary and recent hydric soil features have diffuse boundaries; relict hydric soil features have abrupt boundaries." {Define "diffuse" versus "abrupt". In the field, how does one confirm that a boundary is either "diffuse" or "abrupt"?"}	We cannot give definitions that would be applicable in all cases. As the text says, a soil scientist may be needed to help determine whether particular features are relict.
III-18	gar	3	22	5		Last Sentence; It seems that this manual deserves the effort to 'tease out' the conditions that help identify hydric soils. Otherwise, one could just as easily consult with an experienced soil or wetland scientist and not bother dealing with the manual. Obviously, a bit more effort is necessary here.	We do not understand the comment. Hydric soil indicators were designed for non-soil-scientists to make reliable hydric soil determinations.
III-19	gar	3	22	5		The authors repeatedly cite two or three references in the subsequent sections on hydric soil indicators. These should be cited once early in the text, say page 22, and the reader should be advised to consult these for definitions. Examples include the 199 Soil Taxonomy reference and Field Indicators....	We do not agree. References should be cited where they are needed.
III-20	djb		22	5		paragraph should cite NRCS-taken verbatim	True. We will cite USDA-NRCS (2006).

#	Initials	Ch	Pg	Par	Type	Comment	Response
						"obtain the assistance of an experienced soil or wetland scientist"--should inexperienced wetland scientist be qualified to conduct wetland delineations much less determining hydric soils? Does this document need to state minimum qualifications for delineators?	This is not a technical comment. No response is necessary.
III-21	djb		22	5			
III-22	gar	3	23	1		This speaks to seeing the "gestalt" of the site before rushing off to identify hydric soils. Perhaps it could be moved up earlier in the text and reiterated here.	The guidance focuses particularly on the hydric soil determination, but we agree that it is relevant to the entire wetland determination.
III-23	djb		23	1		"common temptations" recommend removal of sentence which makes such general assumptions	This is not a technical comment. No response is necessary.
III-24	ts	3	23	2	c	If hydrology is removed, do you still have a hydric soil? The 3rd sentence this is true, but I'm not so sure. Need a soil scientist's opinion on this.	Yes. A hydric soil is still hydric even if it no longer has wetland hydrology.
III-25	CJN	3	23	2	p	"If no hydric soil indicators are present, use the additional site information to determine if he soil is indeed non-hydric or if it represents a 'problem' hydric soil." (This, again, sounds like bias, i.e. "if you can't find hydric soil indicators, find whatever else you can to end up with a hydric soil anyway." Somewhere in the soils section, it should be stated that the primary standard should be that the soil does or does not meet the definition of hydric soils stated in the first sentence of Chapter 3 (p. 21, paragraph 1).	We agree. This is stated on page 21, paragraph 2.
III-26	gar	3	23	2		Third sentence would seem to indicate that hydric soils may be defined by one of six factors, including vegetation. I'm uncomfortable with the reasoning here. We are using vegetation to identify hydric soils and are using hydric soils to delineate wetlands, in part defined by vegetation. This is not the first time i've noticed this tendency in the manual, but it is certainly one of the best examples of weak reasoning.	This is not correct. The items listed on page 23 are not hydric soil indicators. They are landscape factors that may help the delineator to understand why hydric soils develop in certain places in the environment, and may help prevent erroneous hydric soil determinations. We will clarify the wording.
III-27	gar	3	23	2		The third sentence could also be construed as stating that if any ONE of the listed soil indicators is present, then the soil is hydric.	See previous response.
III-28	djb		23	2		Why is it necessary to re-document all of these site features (hydro,slope-shape, landform, soil materials, vegetation)? These features should be documented as part of the overall delineation procedure.	We agree that they should be, but often they are not.
III-29	CJN	3	23	3	p	"Is standing water observed on the site or is the water table observed near the surface in the soil pit?"	This change is unnecessary. These are not intended to be indicators, and the next sentence already addresses the water table.
III-30	CJN	3	23	3	p	"...Is there indirect evidence of ponding or flooding" for long duration (continuously for 7 to 30 days) or more during the growing season of most years if so, the soil is probably probably hydric.	Not needed. This is not intended to be a statement or criterion of wetland hydrology.
III-31	CJN	3	23	4	p	"Slope..." {If so, then what?}	See previous responses. This is not a procedure, it is simply a list of things any delineator should consider.
III-32	CJN	3	23	5	p	"Slope shape..." {If so, then what?}	See previous responses.
III-33	CJN	3	23	6	p	"Landform..." {If so, then what?}	See previous responses.
III-34	CJN	3	23	7	p	"Soil materials..." {If so, then what?}	See previous responses.
III-35	CJN	3	23	8	p	"Vegetation..." {If so, then what?}	See previous responses.
III-36	gar	3	24	1		Third sentence indicates that any pit must be at least 20 inches. Again, reiterating an earlier comment, there are many circumstances in the Southwest where it may not be physically possible to dig a 20-inch deep soil pit. I daresay this may be the rule rather than the exception.	The delineator must adapt to site conditions. However, we recommend digging to 20 inches whenever possible. We will revise the wording.
III-37	gar	3	24	1		Fifth sentence; earlier you indicated that only one indicator was necessary. Perhaps it would have been prudent to encourage the manual user to verify the presence or absence of multiple indicators. This can only add support for the investigator's conclusions.	We agree that investigators should record all the indicators they see.
III-38	CJN	3	24	2	e	"...need to be greater than 20 inches (50 cm) in mineral soils..."	This change is not needed.
III-39	CJN	3	24	2	p	"At some sites, with certain mollisols for instance, it is necessary..."	This is clear from the previous sentence. We also wish to avoid too much soils jargon.
III-40	CJN	3	24	4	e	"...to moist Munsell colors (Gretag/Macbeth 2000)."	We will make the recommended change.
III-41	ts	3	24	6	c	I wonder about the less than 6 inches thick part for layers with chroma greater than 2. Again, I'd like a soil scientist's opinion on whether or not this is always true.	This is verbatim from the NRCS/NTCHS field indicators.
III-42	djb		24	1,2,3,4,5,6		paragraph should cite NRCS-taken verbatim	We will make the recommended change.
III-43	CJN	3	25	3	e	"...of Field Indicators of Hydric Soils in the United States (USDA NRCS 2005)..."	We will make the recommended change.
III-44	gar	3	26	1		Second sentence following semicolon. Here is another example where the author's reasoning seems to suggest that we can assume aquic conditions if we have hydrophytic vegetation and wetland hydrology. We have just verified a forgone conclusion. So what?	The guidance ensures that the histic epipedon meets saturation requirements without the need for direct hydrologic monitoring or repeat visits by regulators.

#	Initials	Ch	Pg	Par	Type	Comment	Response
III-45	nsk	3	26	2	e	can we not have a picture on each of these soil indicators?	We would welcome pictures of regional examples of these indicators, along with appropriate caption information. However, lacking regional examples, we will consider borrowing photos from the NTCHS Field Indicators.
III-46	CJN	3	26	3	e	"...of Field Indicators of Hydric Soils in the United States (USDA NRCS 2005)..."	We will make the recommended change.
III-47	CJN	3	27	3	e	"...of Field Indicators of Hydric Soils in the United States (USDA NRCS 2005)..."	We will make the recommended change.
III-48	gar	3	28	1		First and Fourth Sentences. Hydrogen sulfide is an ephemeral product in many wetland soils of the Southwest, depending on the seasonal nature of saturation or inundation.	We don't understand the reviewer's recommendation.
III-49	CJN	3	28	3	p	"...permanently saturated or unsaturated." {Insert:} <i>Note that although various odors can be detected in some soils, only the rotten egg odor satisfies this indicator.</i>	The need for a rotten egg odor is clear.
III-50	gar	3	29	1		User Notes "Use of this indicator may require assistance from a trained soil scientist with local experience." To reiterate, this manual deserves the effort to 'tease out' toe conditions that help identify hydric soils. Also a GENERAL COMMENT.- Is is just me or do these descriptions CRY OUT for photographs. Far to few of these indicator accounts are supported by suitable photographs.	Photos of regional examples are welcome.
III-51	gar	3	30	1		TECHNICAL DESCRIPTION; - not clear what "value" should be "3 or less"; is there text missing from this section?	This is NTCHS's exact wording.
III-52	gar	3	30	2		APPLICABLE SUBREGIONS, second sentence. Again, here is apparently circular reasoning on the part of the author. This indicator is applicable if we have hydrophytic vegetation and wetland hydrology.	This is not circular reasoning. It is a requirement for supplemental information before the indicator can be used to determine whether the soil is hydric in LRR C. See Chapter 5. We will clarify the wording here.
III-53	CJN	3	30	3	e	"...of Field Indicators of Hydric Soils in the United States (USDA NRCS 2005)..."	We will make the recommended change.
III-54	CJN	3	30	3	p	"...has a greasy feel" (i.e. it feels like room temperature butter when rubbed) and, after being rubbed ten times between the thumb and forefinger, will yield no obvious plant fragments.	We will add a field procedure for identifying organic-rich soil materials to the Concepts section of this chapter.
III-55	gar	3	30	3		USER NOTES First Sentence. "...surface; however, it may occur at any depth within 6 inches (15 cm)." Should this text read it may occur at any depth within 6 inches OF THE SOIL SURFACE	Yes. This is clear in the Technical Description.
III-56	gar	3	31	1		TECHNICAL DESCRIPTION under a and b, do we need to know why there may be an option or just that it exists?	This is part of the NRCS/NTCHS indicator, although we will consider adding an explanation in the User Notes.
III-57	nsk	3	31	2	p	define fragmental soil material here	We will add the definition to the glossary and cite it here.
III-58	CJN	3	31	3	e	{Does "Table 1" actually refer to Table 3-1?}	Yes. We will make the change.
III-59	CJN	3	31	3	e	"...of Field Indicators of Hydric Soils in the United States (USDA NRCS 2005)..."	We will make the recommended change.
III-60	gar	3	31	3		USER NOTES Table 1 - do you mean Table 3-1. Also, you reference Table 3-1 before Figure 3-2, however in the subsequent pages the figure appears before the table	The document will be reviewed for format by an ERDC editor.
III-61	CJN	3	31	4	p	"...as soft masses or pore linings are present." {Insert:} <i>Few (<2%) distinct or prominent redox concentrations and faint redox concentrations of any abundance are fail to satisfy this indicator.</i>	This is already clear.
III-62	CJN	3	32	1	p	"...require 2 percent or more <i>distinct or prominent</i> redox concentrations..."	We will make the recommended change. This is also already clear in the definition of a depleted matrix (see glossary).
III-63	nsk	3	34	3	p	define glauconitic	We will make the recommended change or provide a link to a glossary of soils terms.
III-64	gar	3	34	3		USER NOTES; Reference to Figure 3-2. Do you mean to refer to Figure 3-4?	Figure 3-2 is correct.
III-65	CJN	3	35	1	e	{Reword to say:} <i>Immediately below the dark surface, this soil has a depleted matrix that is approximately 15 inches thick.</i>	We will make the recommended change.
III-66	ts	3	35		e	The caption is confusing. Is the surface layer or the depleted layer 15" thick?	See previous response.
III-67	CJN	3	37	1	p	{Insert:} Sandy Soils <i>Sandy soils refers to those soils that have USDA textures of loamy fine sand or coarser (USDA NRCS 2005).</i>	We will make the recommended change.
III-68	CJN	3	37	3	e	S1. Sandy Mucky Material	
III-69	CJN	3	39	3	e	"...of Field Indicators of Hydric Soils in the United States (USDA NRCS 2005)..."	We will make the recommended change.
III-70	CJN	3	40	3	p	"This indicator includes the indicator previous names streaking (Environmental Laboratory, 1987). {Note that in the 1987 Manual, subsurface staining or streaking in sandy soils more commonly referred to staining and streaking by organic material.}	This portion of the 1987 Manual is being replaced by the supplement. Therefore, further explanation of the old guidance is not needed.

#	Initials	Ch	Pg	Par	Type	Comment	Response
						{Insert: Loamy and Clayey Soils <i>Loamy and clayey soils refers to those soils with USDA textures of loamy very fine sand and finer (USDA NRCS 2005).</i>	We will make the recommended change.
III-71	CJN	3	41	1	p	F2. Loamy Gleyed Matrix	
III-72	nsk	3	41	2	p	define mucky modified mineral texture here	We will add a field procedure for identifying organic-rich soil materials to the Concepts section of this chapter.
III-73	CJN	3	41	3	e	"...of Field Indicators of Hydric Soils in the United States (USDA NRCS 2005)..."	We will make the recommended change.
III-74	ts	3	41	3	e	Should this indicator should be eliminated as it takes lab testing to confirm?	The NTCHS currently recognizes this indicator. Therefore, it will be retained in the supplement for use in unusual situations.
						"Loamy mucky soil material is difficult to distinguish in the field without laboratory testing." {So why are we using it without the lab tests required? How many field practitioners are just going to <i>know</i> , despite the caution, that <i>they</i> can actually discern loamy mucky material by their fine tuned sense of touch? All they have to do is merely handle the soils and this positive indicator of hydric soils is instantly satisfied.}	See previous response.
III-75	CJN	3	41	3	p	relict - add something about the sharp boundaries of relict redox features etc	Relict features are described on page 22.
III-76	nsk	3	43	2	p	"The low chroma matrix must be caused by wetness and not a relict or parent material feature." {And how exactly do we discern this in the field? At least the authors are acknowledging that there are some gray soils that are NOT hydric.}	See previous comment.
III-77	CJN	3	43	3	p	"Dry colors, if used, <i>also</i> need to have..."	We will make the recommended change.
III-78	CJN	3	44	3	e	"...where E and/or calcic horizons, <i>those that</i> contain <i>high concentrations of</i> calcium carbonate, may be present."	We will revise the wording.
III-79	CJN	3	45	3	e	"...that occur as Fe+3 pore linings or masses..."	We will revise the wording.
III-80	CJN	3	45	3	e	{What about vernal pools on soils with depleted matrix layers <2 inches thick? What about vernal pools on soils with matrix chromas >2 that pond, nonetheless, for long or very long duration? ["Long duration" is a continuous period of at least 7 up to 30 day; "very long duration" is a continuous period of more than 30 days.] With the 1987 Manual, observation of soils with long (or very long) duration ponding in most years satisfied Hydric Soil Criteria #3 and could be considered as having an aquic moisture regime and thus hydric. I have worked on vernal pools that pond for 1 to 4 months annually, have FACW to OBL dominated plant communities but have reddish, chroma 4 soils and few or no redox features. (The parent material is of volcanic mudflow origin, and probably a type of non-reactive, "red parent material".) Because their long duration ponding each year satisfies Hydric Soil Criteria #3, I have always called them hydric.}	These soils are still considered to be hydric if they are ponded for long periods during the growing season in most years (see Chapter 5). The supplement requires >14 consecutive days of ponding, to be consistent with wetland hydrology standards.
III-81	CJN	3	47	3	p	NRCS recently unveiled web soil survey at http://websoilsurvey.nrcs.usda.gov . A link to this should be included.	We will make the recommended change.
III-82	ts	3	48	1	e	"...the smallest soils areas delineated, or "map units", are about 5 acres in size."	We will make the recommended change.
III-83	CJN	3	48	1	p	"Map units do not contain only one soil type, or <i>major component</i> , but may have several <i>minor components</i> , or inclusions, of soil with similar properties and also soils that are quite dissimilar."	We will revise the wording.
III-84	CJN	3	48	1	p	"Those soils that are hydric are noted in the <i>Hydric Soils List</i> published <u>as part of</u> the survey report." {What are the authors talking about here? The County hydric soils list is usually published independent of the Soil Survey.}	We will revise the wording.
III-85	CJN	3	48	1	p	"Remember, however, that <i>the</i> soil surveys..."	Refers only to "detailed" surveys.
III-86	CJN	3	48	2	e	after going through these chapters it seems to me that it would be better to have the problem wetlands at the end of each section - i.e. problem hydrophytic vegetation at the end of chapter two.	This format was developed by the National Advisory Team and will be the same for all supplements. It is consistent with the organization of the 1987 Manual.
III-87	nsk	3	48	3	p	"Observe and Document the Site" subheading is repeated on both pages are these two separate subjects under Procedures or the same?	The second is "Observe and Document the Soil".
III-88	djb		23-24	1			This is not a technical comment. The organization of this document is the result of many factors.
III-89	djb	3		general		Much of this chapter is copied directly out of the NRCS-Field Indicators of Hydric Soils in the US (2003). Several of the paragraphs have been switched around into different sections. Since this chapter mimics the NRCS - recommend following the NRCS document format more accurately which provides a more clear and concise discussion.	
III-90	djb	3		general		picture examples of soil characteristics would be useful for all indicators (similar to Figure 3-1) where appropriate	We welcome regional examples of the indicators.

#	Initials	Ch	Pg	Par	Type	Comment	Response
III-91	djb	3		general		It would be useful to the user if the relevant definitions were provided for terms instead of referring to the glossary of Field Indicators of Hydric Soils in the United States.	Frequently used definitions will be put in the glossary, which also will provide links to more extensive glossaries for less frequently used terms.
III-92	CJN	3			p	{The USDA NRCS (2005) "Field Indicators of Hydric Soils", from which the soil indicators in this Draft Supplement were drawn, basically says that if you find any of these indicators in a soil of the specified region, you can feel assured that this soil is, in fact, hydric. The same publication, however, states that its indicators will not identify all hydric soils. I would feel more confident if the field indicators from the 1987 Manual were retained as back-up for identifying hydric soils that "slip through the cracks"--although I don't think we'll run into that many.}	The intent of the supplement is to avoid having two or more lists of hydric soil indicators, which is the case today. Procedures in Chapter 5 are designed to help identify hydric soils that may lack indicators.

#	Initials	Ch	Pg	Par	Comment	Response
V-1	gar	5	78	0	The chapter title could be "Problematic" Wetland Situations as opposed to "Difficult"	We wanted to avoid confusion with the "Problem Area" section of the 1987 Manual. Chapter 5 of the supplement is broader in scope. It addresses regional Problem Areas, important Atypical Situations, and other procedural issues.
V-2	CJN	5	78	1	"...due to disturbance by recent human activities or natural events." {Define "recent". Add: <i>In the 1987 Manual, "recent" was intended to mean since the date that the Corps of Engineers had regulatory authority on the landscape position (i.e. property) in question. Note that wetlands effectively drained (i.e. having their frequency or duration of inundation or saturation reduced below the minimum standards to satisfy wetland hydrology) are NOT atypical situations. An example of such a place would be a former wetland that was ditched and tiled before July 1975 and used for farming. "Normal circumstances for such a site would be with the ditches and tile drains in place.</i> }	We disagree with this suggested addition to the supplement. The intent of the 1987 Manual has not changed and does not require explanation here.
V-3	gar	5	78	1	Are "Atypical Situations" as defined here the same definition as in the "Corps Manual" Presumably this is the case and it was verified by the author, although one could not determine that from lthe current text given the absence of citations	The 1987 Manual defines Atypical Situations as "areas in which one or more parameters (vegetation, soil, and/or hydrology) have been sufficiently altered by recent human activities or natural events to preclude the presence of wetland indicators of the parameter." This has not changed with the supplement.
V-4	gar	5	78	1	The organization of the chapter is not appropriate. While I understand why the author chose to organize it in this manner, problematic situations are also difficult to write about. I believe a "synthesis" approach would be more useful.	The format of this document is consistent with the 1987 Manual. We do not understand what the reviewer means by a synthesis approach.
V-5	CJN	5	78	2	"...ecology of wetlands in the region." {Add: <i>Note that if subsequent detailed observation of a site shows that the person's experience and knowledge were not borne out, the delineation should be revised (i.e. corrected) based on more accurate, hard data.</i> <p><i>There is a basic assumption in this section that all of these so-called "difficult" wetlands are, in fact, places that if a trained observer could watch them for 365 days each year, they would without question satisfy at least the minimum requirements for all three parameters in most years. That is, in more than half the years of observation, they would satisfy the definition of a hydric soil, would have a hydrophytic plant community, and would be inundated or saturated to the surface continuously for at least 5% of the growing season (unless the plant community failed to meet the facultative neutral test in which case the site would be inundated or saturated to the surface for continuously for at least 12.5% of the growing season.)</i></p>	The suggested addition is unnecessary. As it says on page 78, wetland delineations should always be "based on the best information available to the field inspector." Nothing in the supplement implies that a wetland determination could not be changed in light of new information.
V-6	gar	5	78	2	"field inspector" = hydrologist+biologist+soil scientist+ conjurer	This is not a technical comment; no response is necessary.
V-7	CJN	5	78	3	"...ephemeral water sources..." {Define: ephemeral.}	"Short-lived; transitory" - Webster's New World Dictionary. No further definition is needed.
V-8	CJN	5	78	4	"...and other sources." {Like what? The regulator's vivid imagination? Define "other sources" specifically.}	We can't predict what sources of information will be meaningful to a particular wetland determination, now or in the future.
V-9	MLS	5	78	4	Problematic Hydrophytic Vegetation - like the phrasing of this paragraph, believe it's well stated.	No response is necessary.
V-10	tjs	5	79	1	"If indicators of either hydric soil or wetland hydrology are absent, the area is likely nonwetland" - This statement isn't always true, especially in cases where we're investigating a violation. Hydrology and vegetation are often both removed at the same time (land leveling, woody vegetation removal, etc.) and indicators destroyed in the process.	We will clarify the wording.
V-11	CJN	5	79	1	"...follow the suggested steps." {This sounds like another gambit to eliminate vegetation as a parameter. This is, in essence, saying that if you've got hydric soil and indicators of wetland hydrology, it just HAS to be a wetland so we'll finagle some way to make such a decision "official". I don't buy it.}	The reviewer's premise is wrong. Hydrophytic vegetation remains one of the three factors for identification of wetlands, in accordance with the 1987 Manual.
V-12	CJN	5	79	3	"...remote sensed data..." {Like what, specifically? Regulatory telepathy?}	This is not a technical comment; no response is necessary.
V-13	MLS	5	79	3	Under Seasonal Shift in Plant Community (i), it talks about "springtime aerial photograph". I recommend changing to "early growing season" as the growing season starts and even finishes in winter here in the low desert and some of the Great Basin areas.	We will make the recommended change.

#	Initials	Ch	Pg	Par	Comment	Response
V-14	MLS	5	79	3	I would add another v. category. Evaluate reproductive strategies of dominant plants on site to determine if hydrophytic vegetation is persisting or colonizing the site. Categories ii and iii are good. Don't really understand iv. Not sure what they are getting at, unless they are referring to the presence of oxygenated rhizospheres on living roots, which would be a great addition.	It is not clear how one would perform the evaluation suggested by the reviewer.
V-15	CJN	5	79	4	"...of other evidence that the plant community..." {Like what, specifically?}	We can't predict what evidence might be relevant to a particular site. The statement allows the investigator some flexibility to deal with unusual situations.
V-16	djb	5	79	4	(sec 1 ii) "examine the site for identifiable plant remains" How much identifiable plant remains constitutes a hydrophytic community? This section does not provide guidance on making a hydrophytic community determination based on these approaches.	The guidance is intended to be flexible.
V-17	nsk	5	79	6	3B GIVE PAGE # - HARD TO FIND - P. 86?	We will make the recommended change.
V-18	CJN	5	79	6	Section 2. a. 1. iv. "If the vegetation on the site...and known wetland hydrology...to be hydrophytic (see step 3b in this procedure)." (This entire section needs more explanation. As stated, it appears to be a non-sequitor. I thought 2a in this section required that we already were supposed to have established that wetland hydrology was present on the site before we used this provision.)	To use the overall procedure, <u>indicators</u> of wetland hydrology must be present. To establish a reference site, stronger evidence of an appropriate hydrologic regime is needed (see item 3b for details).
V-19	djb	5	79	6	(sec 1 iv.) the use of a reference site for hydrophytic vegetation determination is not conclusive. If hydrophytic vegetation is present in a reference site but not in the "problem area", how can we just assume hydrophytic vegetation?	You can't. Item 1(iv) requires that the problematic site and the verified wetland reference site have substantially the same vegetation.
V-20	tjs	5	79	6	under "iv" it refers to step 3b of this procedure. There is no 3b in the Specific Problematic Vegetation Situation procedure. They may be referring to step b of the General Approaches procedure found on page 86.	Correct. The "Procedure" starts on page 78. Subsection 2 starts on page 79 and subsection 3 starts on page 85.
V-21	CJN	5	79	7	"...drought indices..." {Define and explain "drought indices".}	As stated in this sentence, more information is provided later in the chapter. See page 93.
V-22	gar	5	79	2a	line four discusses playa edges; while I realize that there is benefit from the manual for non-regulated wetlands (vis a vis S 404), it should be noted again that playa edges, for example, are not subject to regulation under S 404 of the CWA.	Playa edges are often vegetated and would be considered wetlands if they met all three factors. Whether or not they are regulated is a separate decision beyond the scope of the supplement.
V-23	gar	5	79	2a	playas are not a WUS	Yes, playas are, by definition, waters of the U.S. However, their regulatory status depends on other factors.
V-24	gar	5	79	2a	4th sentence "To the extent ...in a normal rainfall year at a site without altered hydrology.	Altered hydrology is dealt with in a separate section.
V-25	gar	5	79	2a1iii	"If possible"; give an inch and they'll take a mile. IF you qualify this it will not happen that the field investigator will return to the site "during the normal wet..." If you are serious about this it should not be qualified.	This is not a technical comment.
V-26	gar	5	79	2a2i	This text presents a cogent argument as to why a "synthesis" approach should be undertaken in this chapter.	We do not understand the comment.
V-27	CJN	5	80	1	"...on the site in normal {Insert: (not wetter than normal)} years..."	The addition is not necessary.
V-28	RRM	5	80	2	In the paragraph on <i>Sparse and Patchy Vegetation</i> - I am happy to see that a definition is given for what is considered vegetated or unvegetated.	No response is needed.
V-29	CJN	5	80	2	"...and known wetland hydrology..." {I thought that the second to last sentence in 2a of this section said we already were supposed to have established wetland hydrology in order to use this section?!}	To use the overall procedure, <u>indicators</u> of wetland hydrology must be present. To establish a reference site, stronger evidence of an appropriate hydrologic regime is needed (see item 3b for details).
V-30	tjs	5	80	2	Where did the 5% minimum for areal cover come from? A reference would be good.	This was the judgment of the working group. It was given in the supplement to promote consistency across the Arid West region.
V-31	CJN	5	80	3	"Approved OHW indicators are available from the appropriate District regulatory office." {What are the authors' talking about? Official Corps of Engineers District lists of Ordinary High Water indicators? I don't believe such lists exist.}	Ask the appropriate District office. For example, LA District has a District publication on their web site for OHW determinations.
V-32	djb	5	80	3	Instead of referring to OHW indicators-recommend providing more detail on OHW. This is obviously an important component of this section and should be explained in detail.	Districts in the Arid West have developed their own guidance on OHW determinations. Furthermore, there is an ongoing study whose purpose is to refine OHW indicators throughout the region.
V-33	MLS	5	80	3	Really like the clarification of these sparsely vegetated areas and the illustration is good - well done	No response is necessary
V-34	gar	5	80	b	strike "within and replace with "in"; strike "intermountain basins" as the statement is generally a true one, not just in intermountain basins	We will revise the wording.
V-35	gar	5	80	b	playas are not a WUS	Yes, playas are, by definition, waters of the U.S., but other factors affect their regulatory status.

#	Initials	Ch	Pg	Par	Comment	Response
V-36	gar	5	80	b	"appropriate District regulatory office" should be amended to identify with names and addresses those of interest to readers of this manual	We will provide a link to the Regulatory homepage that lists the Corps district offices.
V-37	nsk	5	81	1	as part of the discussion of problem veg could we have some discussion of salt tolerant wetland plants -perhaps in this playa section	Halophytes are discussed briefly in Chapter 2. The working group considered developing specific guidance for dealing with halophytes but could not devise a practical approach.
V-38	gar	5	81	1	Line one - Playas are not WUS; altho I realize one might be interested in them for other than regulatory reasons, you could not reach this conclusion based on the txt.	Yes, playas are, by definition, waters of the U.S., but other factors affect their regulatory status.
V-39	CJN	5	81	3	"...or hydrology are problematic." {Define: "problematic."}	"Hard to solve or deal with" - Webster's New World Dictionary. No further definition is needed.
V-40	CJN	5	81	5	"...with vegetated wetlands and other waters {Insert: <i>and their surfaces are equal to or lower in elevation than those of the vegetated wetlands or waters of the U.S.</i> }"	We do not agree with the suggested revision.
V-41	CJN	5	81	6	"...and (c) interspersed areas {Insert: <i>of equal or lower elevation</i> } that are unvegetated..."	We do not agree with the suggested revision.
					"...in recently deposited materials ((Delete: i.e. Insert: <i>e.g. recently deposited</i>) Entisols) even when indicators..."	We will revise the wording.
V-42	CJN	5	82	1	{Not all Entisols are hydric. Not all hydric Entisols lack classic indicators like redoximorphic features.}	
V-43	gar	5	82	2	What is the rationale for evaluating the site as a potential nonwetland WUS using OHW indicators?	This is standard regulatory practice when wetlands are absent.
V-44	MLS	5	82	2	Riparian Areas 1 & 2 good	No response is necessary
V-45	RRM	5	82	4	In the paragraph on <i>Areas Affected By Grazing</i> - After the second sentence add in the following sentences, "Trampling (especially large herbivores) can also cause soil compaction which can decrease soil infiltration and permeability rates. Both of these factors can cause a shift in species composition and influence the hydrophytic vegetation determination." Delete the following sentence, "This shift in species composition due to grazing can influence the hydrophytic vegetation determination."	We will make the recommended change.
V-46	CJN	5	82	4	"d. <i>Areas Affected by Grazing</i> ..." {Isn't what's intended here " <i>Areas Effected</i> by Grazing"?} {There needs to be some discussion of "normal circumstances" for these areas. Isn't heavy grazing in some areas, especially if it's gone on continuously for decades, relatively permanent and actually the "normal circumstances" for these areas?	The grammar is correct. An agricultural crop is not the normal circumstance no matter how long it has been in place. Similarly, other agricultural practices that are re-applied continually, such as grazing and irrigation, are not the normal circumstance. Wetland delineators must determine whether wetlands would be present in the absence of the continual disturbance.
V-47	djb	5	82	4	(d) " <i>Areas affected by grazing</i> "-what about areas affected by mowing?-harvested wetland hayfields are very common in my experience and are often quite difficult to delineate. Recommendation on procedures could be useful.	We will add "mowing" to the list of situations considered under item 2e.
V-48	CJN	5	83	1	"1. {Insert: <i>Assuming the same soil type and the same hydrologic zone,</i> } [e]xamine the vegetation on a nearby..."	Unnecessary repetition. The sentence already says "having similar soils and hydrologic conditions."
V-49	CJN	5	83	1	{Insert: <i>If the reference area is in the same soil type and in the same hydrologic zone as the site in question,</i> } [a]ssume that the same plant community..."	We will revise the wording.
V-50	gar	5	83	1	do we need to caution "field investigators" regarding trespassing or entering areas w/o the owner/manager's permission?	This is not a technical comment; no response is necessary.
V-51	gar	5	83	2	are public interviews a reliable data source?	We do not wish to exclude any potentially useful source of information.
					{Procedures 2. and 3. should be deleted. Since the amount of grazing is not specified, I am certain some regulators will find <i>any</i> amount of grazing, even one hour by one cow, as adequate to employ the proposed procedures. With grazing present, even heavy grazing, whatever plant species are present must still have wetness tolerance equal to or greater than the amount of wetness (i.e. frequency and duration of inundation or saturation) they are exposed to on the site. Use them. Are pasture cut for hay counted as grazed areas? If so, how frequent must the cutting be to validly invoke the proposed "grazed area" procedures? From years of field experience, I think this whole issue of areas effected by grazing is over-hyped and the proposed cure will do more harm than good.}	We disagree with this comment. This basic approach is similar to that given in the 1987 Manual for Atypical Situations and is not a change from current practice. Furthermore, "limited grazing does not necessarily affect the outcome of a hydrophytic vegetation decision" (page 82) so there would be no need to invoke this special procedure in most cases. The wetland delineator must use his/her discretion whether to use this procedure.
V-52	CJN	5	83	2 & 3		
V-53	NSK	5	83	5	table - <i>distichlis</i> - I have seen this increase when grazing is removed	The working group has decided to remove this table.

#	Initials	Ch	Pg	Par	Comment	Response
					{ <i>Phalaris arundinacea</i> is a decreaser?! I thought nothing stopped that stuff.	The working group has decided to remove this table.
V-54	CJN	5	83	Table 5-1	What nomenclature is being used for the plant names in Table 5-1? <i>Sitanion</i> does not appear in the National List of Plants that Occur in Wetlands (Reed 1988). Likewise, is <i>Distichilis stricta</i> the same as <i>Distichilis spicata</i> ?	
V-55	MLS	5	83	Table 5-1	Decreasers are strange. <i>Phalaris arundinacea</i> can be increaser, <i>Salix</i> is rhizomatous so can be grazed back and come back pretty well. The Increasers are all valid. Recommend using other examples of decreasers.	The working group has decided to remove this table.
V-56	CJN	5	84	2	"3. If the unmanaged vegetation condition cannot be determined, make the wetland determination based on indicators of hydric soil and wetland hydrology." {This procedure should be deleted. Whatever plant species are present, they have to be capable of tolerating whatever frequency and duration of saturation or inundation they encounter on the site. They should be used in determining whether or not the plant community is hydrophytic.}	The guidance is the same as that given in the 1987 Manual for Atypical Situations and is no change from current practice. This procedure is not intended for wetland determinations in most grazed areas, only in those where the effects "are so great that the hydrophytic vegetation determination would be unreliable or misleading."
V-57	CJN	5	84	3	"...would be unreliable or misleading." {What is the test of unreliability or being misleading? How would I know for sure that I've got one of these? Can I just make up my mind that my site in question "feels" like one of these?}	A mis-match between indicators of hydric soil, wetland hydrology, and hydrophytic vegetation would be one potential clue to the need to consider the effects of grazing. This does not necessarily mean that the area is a wetland, only that additional information may be needed.
V-58	MLS	5	84	3	Areas Affected by Natural Disturbance - I would delete this section completely. It's based on an antiquated ecological interpretation of hydrosere succession and doesn't seem valid to me. Fluvial systems are naturally disturbed by floods and they reset the stage. The more important factor might be to state that if there is a significant time gap between the delineation and the Corps verification, site conditions may change.	We will revise this section. The intended issue was not successional changes but the total lack of vegetation following certain catastrophic disturbances.
V-59	CJN	5	84	4	"...on the disturbed site {Delete: } in the absence of disturbance."	We will make the recommended change.
V-60	CJN	5	84	7	"...browning or yellowing {Delete: } when growing under wet conditions."	We will make the recommended change.
V-61	CJN	5	84	8	{Reword as follows: "...can be measured or photographed and include this information in the field report."	We will make the recommended change.
V-62	gar	5	84	f1, f2, f3	we have the same process for each of sections d, e and f.; couldn't these sections be usefully synthesized and boiled down.	We chose this organization for clarity even though some material is repeated.
V-63	gar	5	84	g1	"size, vigor or other stress-related characteristics of the affected species between the..." does the author define what is to be measured and evaluated, or can I pick whatever might strike my fancy? If yes, I may choose to utilize "vigor" or "size"	We cannot predict what characteristics would be relevant on a particular site.
V-64	CJN	5	85	2	"3. Consider the area to be a wetland." {How do we know already that the area in question is a wetland?! This does not follow from Step 2. Step 3 is ill-explained and makes no sense as written. It should be deleted.}	We will revise the wording.
V-65	CJN	5	85	3	"h. Early season germination of upland plants." {What I have seen occasionally is late season germination of UPL plants in vernal pools after the annual period of maximum hydrology has passed and all the OBL and FACW dominant plants (also annuals) have completed their growth for the year and dried up. However, it is usually evident that their dead remains are present and represent the wet season dominants on the site.}	The working group has decided to delete this section. Similar situations are already addressed by the "vigor/stress" procedure.
V-66	CJN	5	85	3	"...UPL plants in wetland areas prior to the onset of seasonal hydrology..." {If there are UPL plants that survive whatever seasonal hydrology there is on a site, that hydrology is NOT sufficient to be considered "wetland hydrology"! Are these UPL plants mischaracterized on the National List of Plants that Occur in Wetlands (Reed 1988)?}	See the previous response.
V-67	djb	5	85	3	"-FACU & UPL plant species out-compete wetland species and persist in wetland communities during the normal wet season.-Is this just grasping at making a hydrophytic vegetation determination in any situation. If upland plants are dominating an area that has hydrology and soils why would it be considered a wetland under the 87 guidelines?-3parameters not 2.	See the previous response.
V-68	gar	5	85	3a	last sentence: not sure if "normality" is the word you are looking for here; beyond that, why is the current year a consideration when one may be dealing with long-lived perennial plant species?	An evaluation of the current year's rainfall is needed to avoid mistakenly concluding that the community is hydrophytic based on wetter than normal conditions.
V-69	tjs	5	85	3,4,5,6	This section seems to be trying to make it possible to find hydrophytic vegetation on sites even when they don't have it-thus calling a site a wetland when it may or may not be so. Similar to some comments we had in the Vegetation chapter.	See comment V-65.
V-70	CJN	5	85	4	"...evidence of stress..." {Like what specifically?}	See the previous response.

#	Initials	Ch	Pg	Par	Comment	Response
V-71	CJN	5	85	4	"...evidence of stress during the wet portion of the growing season (see item {Delete: 3g; Insert: g3} above)." {Note that g3 above is not workable and should be rejected; so should this procedure.}	See the previous response.
V-72	MLS	5	85	4	Early season germination - 1, 2 and 3 - Good	No response is needed.
V-73	CJN	5	85	5	"...show evidence of stress or suppression..." {What evidence? What is the standard to prove "stress or suppression"? Define "stress". Define "suppression". There is no way h2 will not be abused if left as written. It should be deleted.}	See comment V-65.
V-74	RRM	5	85	7	In the paragraph on <i>General Approaches to Problematic Hydrophytic Vegetation</i> - Make specific reference to invasive species such as Canada thistle (<i>Cirsium arvense</i>).	Many species could be given as examples but they are not needed. We do not want to appear to limit the use of these procedures only to particular species. Furthermore, use of the PI as a hydrophytic vegetation indicator may reduce these problem situations.
V-75	CJN	5	85	7	"3. General Approaches to Problematic Hydrophytic Vegetation..." {Again, it sounds like bias saying that we just won't give up on an area that fails the hydrophytic vegetation parameter. If there are hydric soils and we see a hydrology indicator, it just <i>HAS to be a wetland</i> .}	No. Areas that lack hydrophytic vegetation indicators are nearly always uplands. But there are some well-known wetland situations that lack hydrophytic vegetation, at least at certain times. This chapter addresses these specific situations. It does not expand jurisdictional reach beyond current practice under the 1987 Manual. It simply clarifies and improves consistency of procedures already being used.
V-76	MLS	5	85	7	Direct hydrologic observations - good	No response is needed.
V-77	nsk	5	85	8	also p. 87 2,3,4 - where did this 14 days come from?	The 14-day threshold is based on National Academy of Sciences recommendations (NRC 1995) and USACE (2005).
V-78	CJN	5	85	8	"...or soil saturation {Insert: <i>to the surface</i> } during the growing season."	Not needed. The saturation requirement is quantified more precisely in the same paragraph in terms of the water table within 12 inches of the surface.
V-79	CJN	5	85	8	"...a water table {Delete: ≤ 12 ; Insert: < 12 } inches of the surface {Insert: <i>and within the majority of the observed root zone continuously</i> } for {Delete: ≥ 14 consecutive days during the growing season; Insert: <i>12.5% of the growing season</i> ." {If the plant community already cannot pass as hydrophytic by standard evaluation (i.e. more than 50% of the dominants are FAC, FACW or OBL), there's no way the 5% standard for growing season should apply.}	This supplement replaces previous guidance and includes hydrologic standards recommended by the National Academy of Sciences and USACE (2005).
V-80	tjs	5	85	8	The statement "Hydrophytic veg is considered to be present, and the site is a wetland, if there is surface water present and/or a water table is ≤ 12 inches of the surface ..." needs to be in agreement with the discussion of other waters, OHW, and patchy vegetation on page 80-81.	There is no conflict between these sections.
V-81	gar	5	85	g & h	see coment on pg 84 f1, f2, f3; synthesis would be helpful, particularly since we are not able to discuss all cases.	This format was chosen for clarity.
V-82	CJN	5	86	1	"...are substantially the same..." {Define "substantially; what is the standard?}	We cannot give a precise threshold for sameness. The wetland delineator, with the approval of the appropriate District Regulatory office, must use his/her discretion and experience.
V-83	CJN	5	86	1	"b. <i>Reference sites</i> ." {Wouldn't it be easier, or at least more direct, to provide hard field data and appeal to the FWS NWI to revise the indicator status of the offending plant species now rated UPL that dominate these so-called wetlands?}	These situations are not all caused by inaccurate wetland indicator status designations.
V-84	CJN	5	86	2	"...including reliable internet sources..." {Define " <i>reliable internet sources</i> "; give examples.}	We will revise the wording.
V-85	CJN	5	86	2	"Preferable this literature should discuss the species' natural distribution along the moisture gradient, its capabilities and adaptations for life in wetlands, wetland types in which it is typically found, or other wetland species with which it is commonly associated." {Wait a minute! After all these years, this is what the government should have been doing and upgrading the National List of Plants that Occur in Wetlands. Are the authors of this Supplement saying this has not been accomplished by the government so now we can essentially throw away the National List based on "reliable internet sources". Or does this mean that government regulators can throw away the National List as they choose if they can find a "reliable internet source"? I don't buy any of this.}	The 1987 Manual already allows delineators to use recent technical literature as an indicator of hydrophytic vegetation. This has not changed with the development of the supplement.

#	Initials	Ch	Pg	Par	Comment	Response
V-86	gar	5	86	c	"reliable internet sources" is a real can of worms. At the end of the day, use of technical literature should be limited to refereed papers only.	We will revise the wording on internet sources. Relevant non-refereed sources might include previous wetland delineations, environmental impact statements, gray literature, etc.
V-87	CJN	5	87	1	"...and Very Strongly Alkaline (USDA Natural Resources Conservation Service 2002). {Insert: Does the soil meet the definition of hydric soil despite lack of obvious redoximorphic features?}	This comment is applicable to all five of the problem soil situations described here, and is already mentioned in the first sentence of this section on page 86.
V-88	CJN	5	87	2	"2. Volcanic Ash." {Presence of volcanic ash should be verified by a fluoride extraction field or lab test.}	Testing for volcanic ash in the field is not practical and is unnecessary. If the delineator is unsure, a soil scientist can be consulted.
V-89	CJN	5	87	2	"...to be hydric (e.g. landscape position, vegetation, evidence of hydrology, etc.). {Insert: Does the soil meet the definition of hydric soil despite lack of obvious redoximorphic features?}	Again, this point is made in the introductory paragraph to the section.
V-90	tjs	5	87	2,3,4	It is confusing to me when the definition of hydric soil criteria (# 3 & 4) state that hydric soils frequently have long or very long duration ponding or flooding (see Field Indicators ver 5.0 glossary definition of hydric soil criteria), then in this paragraph we have somewhat contradictory information being given with hydric soils being > or = to 14 days. The National Soil Survey Handbook, 618.45 defines long duration as 7 to < 30 days and very long as 30 days or more. See http://soils.usda.gov/technical/handbook/contents/part618p3.html#45 & http://soils.usda.gov/technical/handbook/contents/part618p2.html#26 . Maybe a soil scientist should be consulted to be sure this is correct. I didn't take the time to find out how saturation is defined	The supplement will replace previous guidance. The 14-day duration is part of the wetland hydrology standard recommended by the National Academy of Sciences and USACE (2005). The 14-day standard is used here for consistency and to avoid having different hydrologic thresholds for different wetland factors.
V-91	CJN	5	87	3	"...for {Delete: ≥14; Insert: >18.25} consecutive days..."	The supplement will replace previous guidance. See previous response concerning consistency.
V-92	gar	5	87	3,4,5	my synthesis genes are screaming again; we are applying the 14 day rule in each of these three circumstances. Can't we consolidate here?	This format was chosen for clarity.
V-93	CJN	5	87	4	"...for {Delete: >14; Insert: >18.25} consecutive days..."	The supplement will replace previous guidance.
V-94	RRM	5	87	5	Delete the sentence, "Wetland soils drained during historic times are still considered hydric but they may no longer support wetlands." These soils may retain hydric soil indicators, but are no longer saturated in the upper part long enough for anaerobiosis to occur and so do not perform the same biogeochemical reactions associated with anaerobic (hydric) soils.	Nonetheless, they still meet the definition of hydric soils because they were "formed under" wetland conditions. They are not necessarily wetlands.
V-95	CJN	5	87	5	"...for {Delete: >14; Insert: >18.25} consecutive days..."	The supplement will replace previous guidance.
V-96	CJN	5	88	1	"There are also areas where...hydric soil features." {This paragraph needs some specific examples. As written, it sounds like voodoo.}	The paragraph discusses the specific example of irrigation-induced hydric soil features. No changes are needed.
V-97	CJN	5	88	1	"...an experienced soil scientist..." {Define "experienced soil scientist". Does this mean that no one else can use the approach discussed in this paragraph? Does this mean that unless we have "an experienced soil scientist", no wetland determination can be challenge-proof?}	We will drop the word "experienced."
V-98	djb	5	88	1	Chapter 1 had a great deal of discussion related to irrigation influenced wetlands. In my experience throughout the arid west -irrigation influenced wetlands are significant problem areas. This paragraph only provides a brief discussion. Recommend providing more detail/explanation/procedure regarding irrigation influenced wetlands.	The working group considered this issue and decided that individual Districts should be consulted when there is a need to distinguish between natural and irrigation-induced wetland conditions.
V-99	MLS	5	88	1	I think the first step is whether it is a wetland and the second step is whether it is jurisdictional, and these two separate steps must be acknowledged right up front in this section. I don't really believe that a "experienced soil scientist" can distinguish between "natural" and irrigation hydric soil features if the irrigation has been in place for a significant time frame. Ecologically and functionally there is not difference.	The sequence stated by the reviewer is correct and the point is well taken. However, the supplement only says that a soil scientist may be able to help "in some cases." No changes are needed.
V-100	CJN	5	88	2	"...indicators designated for testing in the Arid West by the National Technical Committee for Hydric Soils (USDA Natural Resources Conservation Service 2005)." {If, after testing, the NTCHS drops any of these indicators, are they invalid for this Manual? What if the NTCHS adds new indicators? Are we bound to use, unreviewed by the public, whatever NTCHS decides?}	The supplements will utilize the most recent NTCHS Field Indicators of Hydric Soils and approved National Plant List. Regional working groups can add specific indicators for "problem" hydric soil situations beyond the "test positive" indicators approved by NTCHS, but none have been proposed for the Arid West region.
V-101	CJN	5	89	3	{Revise as follows: "2. Verify that at least one primary, two secondary, or three tertiary indicators of wetland hydrology are present."}	We do not recognize tertiary indicators. No changes will be made.
V-102	MLS	5	89-91		Isn't this redundant? Isn't this information included both in the soils section and in currently used hydric soil guidance?	This supplement will replace previous guidance.

#	Initials	Ch	Pg	Par	Comment	Response
V-103	RRM	5	90	3	In the following sentence add in 'be', 'The colors should BE observed closely ...'	We will make the recommended change.
V-104	CJN	5	90	3	"a. Soils that have been...when exposed to air within 30 minutes." {Is this the equivalent of Vepraskis' (1992) "Reduced Matrix"? If so, say so.}	We will make the recommended change.
V-105	CJN	5	90	4	"...Do not allow the sample to begin drying..." (How, exactly, is this accomplished? Doesn't the soil sample "being drying" as soon as it's excavated? Can we, or are we supposed to, keep wetting it? If so, does that interfere with the ongoing chemical processes possible invalidating the conclusion? If the soil surface does begin drying, are the results invalidated?)	We will revise the wording.
V-106	CJN	5	91	4	"...for {Delete: >14; Insert: >18.25} consecutive days..."	The supplement will replace previous guidance.
V-107	gar	5	92	3a	second paragraph last sentence; I'll bet a nickel or a tall fosters that a site will never be revisited during "the normal wet season..."; if it is not required, it will not happen.	This is not a technical comment; no response is necessary.
V-108	tjs	5	92	4 (3a)	I assume the acronyms DIFF, DST, and DEF refer to values in the model being referenced earlier in the paragraph, but these should be spelled out if possible as they leave me wondering.	We will revise the wording.
V-109	tjs	5	92	5 (3a)	Add "during the dry season" to the sentence: "In some situations, hydrology indicators may be absent."	We will make the recommended change.
V-110	CJN	5	92	5	"The Web-Based Water-Budget Interactive Modeling Program (WebWIMP)..." {Who wants to base the fundamental assumptions and, thus, the ultimate accuracy and reliability of their work on something called "WebWIMP"?	This is not a technical comment; no response is necessary.
V-111	CJN	5	92	6	"...and no evidence of hydrologic manipulation.." {Define "manipulation".}	Many examples of hydrologic manipulation are given in the 1987 Manual and this supplement, including ditching, leveeing, draining, damming, diverting water for irrigation, etc. We will add examples.
V-112	CJN	5	92	6	"...If necessary, the wetland determination can be confirmed by re-visiting the site..." {What, specifically, would make revisiting a site "necessary"?	This is not a technical comment. Delineators must use their judgment whether additional site visits would significantly increase their understanding of a site.
V-113	CJN	5	92	6	"...and checking again for wetland hydrology indicators. {Insert: <i>Absence of indicators during the wet season of a normal or wetter than normal rainfall year confirms that the site is NOT as wetland.</i> }"	The suggested addition is not necessarily true because it does not address the 50% frequency standard. However, we will clarify the wording.
V-114	gar	5	92		define DIFF, DEF and DST; sloppy authorship	We will revise the wording.
V-115	gar	5	92, 93		"hydrologic manipulation" should be defined; while may be difficult to be all-inclusive, it would be helpful to attempt a definition...are subsurface drains or irrigation channels qualified as "hydrologic manipulation"?	Yes. We will add examples.
V-116	CJN	5	93	1	"...or other conditions differ between the site and the nearest weather station. {Insert: <i>The closest WETS station may not be the station most representative of the site in question (e.g. rain shadow or localized warming due to urbanization).</i> }"	We will make the recommended change.
V-117	CJN	5	93	2	"...and checked again for hydrology indicators. {Insert: <i>Conclusions drawn during site visits during the wet season of normal rainfall years take precedence.</i> }"	We disagree with this comment. We prefer to let the delineator use his/her judgment based on all the evidence.
V-118	CJN	5	93	3	"...Human impacts to the water budget, such as irrigation, are not considered." {So what does this mean to our evaluation and conclusions?}	Although the statement is true, it is not relevant to the delineator's task. We will delete the sentence.
V-119	CJN	5	93	3	"c. <i>Drought years.</i> " {This section is essentially saying that a 2-parameter approach is OK. I don't accept this except <i>maybe</i> under the most rigorous of preconditions. Using 2 parameters is the easy way out. Humans (including delineators, regulatory or private sector) will generally take the easy way out--a path that is not dependable if the factual condition and truth about a site is important.}	The 1987 Manual allows the delineator wide latitude in Problem Area situations to determine whether wetland parameters "are normally present during part of the growing season." The supplement requires four pieces of evidence to conclude that wetland hydrology is present during a drought: (1) hydric soil indicators, (2) hydrophytic vegetation, (3) appropriate landscape position, and (4) quantifiable evidence of the drought. It is not an "easy way out."
V-120	CJN	5	93	4	"...Some wetlands in the Arid West, particularly those located in or near mountain ranges, depend upon the melting winter snowpack as a major water source..." {Which ones? How do we know? How can this section be written to prevent its use (thus abuse) for every wetland even those miles away from snow?}	The delineator must use his/her "basic knowledge of the ecology of the particular community type(s) and environmental conditions associated with the community type" (1987 Manual, paragraph 79c.). We cannot give a rule that would make sense in all situations.
V-121	CJN	5	94	2	"...wetlands that depend on snowmelt as an important water source may not flood..." {Which ones? How do we know? How can this section be written to prevent its use (thus abuse) for every wetland even those miles away from snow?}	See previous response.

#	Initials	Ch	Pg	Par	Comment	Response
V-122	CJN	5	94	2	"In years when winter snowpack..." {Again, this section is essentially saying that a 2-parameter approach is OK. I don't accept this except maybe under the most rigorous of preconditions. Using 2 parameters is the easy way out. Humans (including delineators, regulatory or private sector) will generally take the easy way out--a path that is not dependable if the factual condition and truth about a site is important.}	The following "preconditions" are required before concluding that wetland hydrology is present in these situations: (1) presence of hydric soil indicators, (2) presence of hydrophytic vegetation, (3) site is located in an appropriate landscape position, and (4) there is quantifiable evidence that winter snowpack was below normal.
V-123	CJN	5	94	2	"...checked again for wetland hydrology indicators. {Insert: <i>Conclusions drawn from wet season observations during normal snowpack years take precedence.</i> }"	We disagree with this comment. We prefer to let the delineator use his/her judgment based on all the evidence.
V-124	CJN	5	94	3	"...described in item 3a..." {Does this mean <i>item a3</i> ?}	3a is correct ("Direct Hydrologic Observations").
V-125	CJN	5	94	4	"An experienced hydrologist..." {Define "experienced hydrologist".}	We will drop the word "experienced."
V-126	CJN	5	95	2	"...This standard calls for {Delete: ≥ 14 } consecutive days of flooding, ponding, or water table {Delete: ≤ 12 ; Insert: < 12 } inches (30 cm) below the soil surface {Insert: <i>and within the majority of the observed root zone</i> } during {Insert: $>5\%$ of} the growing season {Insert: <i>(>12.5% of the growing season if the plant community at this location fails the facultative neutral test)}</i> at a minimum frequency of 5 years in 10 ($\geq 50\%$ probability)."	The supplement replaces previous guidance.
V-127	gar	5	95	g	My limited experience is that installation of various devices to monitor water-tables is precluded by physical constraints (rock, caliche layers etc.) I grant you that many of these monitoring strategies are well developed and easily implemented in agricultural settings, but their application in the arid west is a process beset by many challenges.	The point is valid but the shallow recommended depth of monitoring wells for regulatory purposes (15 inches) and the need to place them entirely above any restrictive layers help to reduce this problem.
V-128	CJN			General review	{In numerous locations throughout the Draft Supplement there are indicators that count for more than one parameter. Likewise, there are several locations where positive indicators of only two parameters are suggested as acceptable to call a given location a wetland. I don't accept this approach except maybe under the most rigorous of preconditions--which I do not think were adequately explained at any point in this draft. Taking the easy way out and allowing only two indicators as adequate to label an area a wetland will almost certainly result in increased numbers of false positive indications of wetland causing trouble both for the regulatory program and the effected landowner.}	In all cases, rigorous preconditions <u>are</u> required before concluding that a problematic site is a wetland. Generally this includes evidence from the other two factors, an appropriate landscape position (e.g., depression, toe slope, etc.), and strong evidence for the existence of the problem situation (e.g., long-term precipitation records, drought indices, etc.). In problem situations, wetland delineators must use the best available information to make a decision.
V-129	CJN			General review	{This supplement is not ready for public use. A huge mistake was made F8excluding many of the highly respected private sector delineators in the development of the draft (not to mention the original folks who wrote the 1987 Manual and are still very active in doing wetland delineations). Waiting for "peer review" is too late for a significant revision of a major document and method with huge ramifications to the regulated public that needs to "buy in" to this document if it's going to gain acceptance by the professionals who will have to use it as a daily part of their work. There is a HUGE difference between doing a complete wetland delineation from start to finish including flagging in the field, data collection, mapping, and report preparation and doing what the vast majority of regulators are doing at the present time--spot checking the delineation work of others and critiquing it. For the actual delineator, this is a stressful process in which every flag he or she ties or stake he or she places requires a series of data based decisions, knowing they will be critiqued by suspicious, maybe even cynical regulators. For the regulators, there's no pressure. The regulator can nit-pick the hard work of the delineator. The regulator doesn't even have to be right because there's no accountability for what they do and no repercussions. If the private sector delineator doesn't like what the regulator is saying or disagrees, there is no effective recourse--the agency, even with an appeal process, gets the last word. Like it or lump it you private sector biostitutes. Honestly, how frequently does a regulator actually do a complete wetland delineation from start to finish any more? That is why it was so critical to include the private sector people who actually do most of the delineating in the development process of this Supplement if you wanted their acceptance of the results. Peer review is essential but not enough for a document with the ramifications this one has on the regulated public.	This is not a technical comment. Overall, these comments and responses indicate that the peer review, which was dominated by private-sector wetland experts, was a very useful source of information and opinions that resulted in many improvements to the draft regional supplement.
V-130	gar	5	85	h2	There is little or no scientific back-up for much of what is in the Draft Supplement. In the years since the 1987 Manual was published, it would seem that the government could have produced more than anecdotal observations and published it under the guise of science.} how is evidence of stress or suppression quantified?	See comment V-65. This section will be dropped.

#	Initials	Ch	Pg	Par	Comment	Response
V-131	RRM	5			General comment on Chapter 5: Chapter 5 addresses the majority of the issues that occur in the Arid West and which make delineations in this area different from the rest of the country. For this reason I suggest that Chapter 5 be made as a stand alone document and become the regional supplement. In my opinion, elements found in the other chapters would not make a substantive difference to the way delineations are currently performed in the arid west.	The format of the supplement generally follows that of the 1987 Manual and will be used for all supplements.
V-132	RRM	5			General comment on Chapter 5: In the past I have made several comments on growing season. In this chapter soil saturation/inundation for 14 days in the upper 12 inches of the soil profile is referenced repeatedly. I do not necessarily disagree with this, but would like to know how this duration was determined. It seems to me that this may be a case where one size does NOT fit all situations. Within the arid west growing season length changes substantially based on elevation and other factors. I am concerned that without defining a defensible region specific method for determining how long a potential wetland area must remain inundated or saturated in the upper 12 inches for wetland hydrology criteria to be met that delineations could be challenged in court. As I and other peer reviewers indicated in the hydrophytic vegetation chapter, I do not believe that the use of green-up or budding out is sufficient to define the growing season because it is highly variable based on site factors, genetic variation, etc. and may not be indicative that the plant is actually photosynthesizing or that transpiration is occurring.	The wetland hydrology standard used in this supplement is based on recommendations by the National Academy of Sciences (NRC 1995) and should withstand court challenge, at least on its technical merits. The working group's preference was to base growing season dates on actual on-site observations of biological activity, particularly in vascular plants. The working group and the National Advisory Team have drafted new wording describing acceptable evidence of plant activity.
V-133	djb	5			In general the use of reference sites for assuming plant communities is not conclusive for a determination. How can you assume that the same plant community would exist on the disturbed site in the absence of the disturbance?	The use of reference sites in wetland determinations, particularly in disturbed (agricultural) areas, has a long history of successful use by NRCS.
V-134	gar	5			general the problematic wetlands are those where we have two indicators but lack a third (soil, veg or hydrol) and then substitute various somewhat SUBJECTIVE measures, like plant stress, size, snowpack etc. etc. Here again, a synthesis may be most useful.	We used this format for clarity, although it may have resulted in some repetition.
V-135	gar	5			general - could a difficult wetland have only one indicator (eg. Hydrol) but lack the veg and soils? I don't believe so but I'm wondering.	If a wetland determination were necessary in such a case, the delineator should consider long-term water-table monitoring (USACE 2005).
V-136	MLS				Overall Comment: When delineating wetlands in general and the Arid West Indicators specifically, I recommend invoking the Precautionary Principle , particularly in light of multiple adverse decisions related to environmental legislation and the scientific process under the present Bush Administration. In particular, climate change at the regional and local levels tend to be moving conditions toward drier conditions. The value of wetlands for biodiversity and ecological function cannot be overestimated. Once again, I repeat, I strongly recommend using the Precautionary Principle and erring on the side of the resource when delineating wetlands.	No response is necessary.