

**Comments of the Independent Peer-Review Team for the Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region**

Submitted August 10, 2007

Initials: Reviewer:

HC Crowell, Hugh PWS  
 MD Dilley, Mark Allen, PWS  
 EE Ellingson, Eric P. PWS  
 RG Gitar, Richard D  
 JH Hmieleski, Joseph I. PWS, Leader  
 JK Krieg, Judy, PWS  
 FN Norman, Frank, PWS  
 JP Pagliara, Joe, PWS  
 SP Parker, Stephen PWS  
 DZ Zay, Daniel Lawrence  
 PRT Peer Review Team Consensus

**Responses developed by the US Army Engineer Research and Development Center (ERDC) and the Midwest Working Group are given in the column below. The Corps of Engineers thanks all volunteer reviewers for their helpful and insightful comments.**

Item #	Reviewer	Page	Paragraph	Sentence	Comment	Response
<b>Chapter 1</b>						
1-1	JP,SP	1	1	3	Recommend replacing "factor" with "parameter" to better match delineation manual (for example, see item 9, page 3 of manual) Environmental Laboratory. (1987). "Corps of Engineers Wetlands Delineation Manual," Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Miss.	Over the years, the Corps has received a number of comments that the word "parameter" is inappropriate in this context. A parameter is a statistical quantity, a constant, or a variable. For wetland delineation, we simply mean one component of a three-part test. The word "factor" was chosen but other words may work as well. This change will be made in the 1987 Manual as well, when it is revised after the Regional Supplements are all completed.
1-2	DZ, HC	2-3	2	2	Sentence covers too broad of idea. Recommend revising to add a sentence on historic conditions (pre-settlement) and current land usage (agriculture, urban, suburban).	The sentence is intended to be broad; details are given later under "Physical and Biological Characteristics of the Region." It is intended to capture the main features that distinguish this region from surrounding regions that have separate supplements. A similar statement appears in each supplement. The pre-settlement condition is already mentioned as consisting of "mixed prairie and hardwood natural vegetation" and current land use as "predominance of agricultural land uses." The presence of urban and suburban development is certainly true, but does not help to distinguish this region from its neighbors.
1-3	JH	5	1	2	The term "abundant rainfall" is somewhat misleading. Recommend replacing "abundant" with "adequate" or add "with periodic or prolonged wet periods or droughts" to better characterize our region's hydrology.	Abundance is relative. Certainly there are areas of greater rainfall to the south. We will describe the region as having "moderate to abundant" rainfall. Annual variability will be mentioned in the following paragraph.
1-4	JP	5	1	3	Recommend add a reference to elevations above sea level, mean sea level, or some other datum.	We will make the recommended change.
1-5	JH	5	2	add new 5	Move or copy last sentence of page 7's fourth paragraph to this paragraph to clarify hydrology cycles.	We will add the suggested information about wet and dry periods.
1-6	JH,DZ,HC	5	5	1	Recommend adding oak openings or oak savannas, especially for Ohio.	We will mention oak openings and savannas in the following paragraph.

1-7	DZ,HC	5	5	3	Recommend adding maples ( <i>Acer</i> spp.) to the important tree species as they are the dominant species in the eastern part of the region. (see related comment 8 below)	We will make the recommended change.
1-8	HC,RG, EE	5	6	2	Recommend making generic <i>Acer</i> ( <i>Acer</i> spp.) instead of specific maples.	We will make the recommended change.
1-9	JK	5	*	*	Possibly add map of pre-settlement vegetation, available for IL, WI, IA, OH, MO, MN, but it might be difficult to compile overall map due to different state's products.	This is beyond the scope of the supplement and is not needed to apply it effectively.
1-10	JP	5	*	*	The majority of the portion of the Midwest Region within Wisconsin is within the "Driftless Area". The Driftless area extends into Southeast MN, Northwest IL and Northeast IA. This area covers approximately 20,000 square miles, was bypassed by the Wisconsin Glacier, and has steep topography that is unique in the Midwest. Wetlands are found in the valleys along waterways. This area may warrant a brief description in the "Physical and Biological Characteristics of the Region" section based on size and unique characteristics when compared to the rest of the Midwest Region.	We will make the recommended addition.
1-11	PRT	6	2	1	The term "many" is too large. Recommend replacing "many" with "some" as almost all of our farmed wetlands have tiles (sometimes extensive tile networks) that influences wetland functions that makes them act more like uplands. Cessation of farming does not guarantee reversion to fully functioning wetland.	We will make the recommended change.
1-12	SP	6	2	1	Recommend replacing "without loss of" with "by modifying" since some wetland function is lost when wetland is used for farming.	See the previous response.
1-13	JP	6	2	4 and 5	The double paranthesis look odd. Recommend either change to use one set or different styles.	ERDC editors will determine the final format and punctuation.
1-14	HC	6	3	add 3	This section needs to reinforce that the species presented within the wetland types are generalities and species can range widely between wetland types. This would be a good place to place a sentence as it sets the tone for the upcoming descriptions. See related comment 25 below.	We will make the recommended change. This section was not intended to be an encyclopedic treatment of wetland conditions in the region. Rather, it is intended to provide some orientation and examples for people who may not have much experience in the region.
1-15	JK	6	5 and 6	*	Inconsistency concerning 2nd paragraph's description of seasonally flooded and third paragraph's description of "saturated soils". See comment 16 below for recommendation.	See next response.
1-16	PRT	6	5	1	"Ephemeral wetlands" is misleading, as the term typically applies to wetlands with ephemeral hydrology. Ephemeral wetlands can also be perceived as being only a wetland for a short period of time and that might cause problems in light of recent Supreme Court findings and USEPA guidance. Also, the species presented are typically found in mudflats on agricultural land, not our typical wetlands with periodic shallow flooding. We recommend deletion of this paragraph as it is somewhat confusing and not needed.	We will drop the "ephemeral wetlands" wording.

1-17	PRT	6	*	*	Most of our wetlands are disturbed or degraded either by human activity or invasive species, and should be emphasized here. We understand the intent of this opening chapter as to set the stage but a large percent of our wetlands in this region are degraded and that fact is not included. We recommend either a separate section to describe the effects, types of disturbance regimes and scale, of disturbance on these wetland types or a sentence added to the end of each wetland type description (e.g., riverine). HC notes how formerly forested wetlands were cleared and now maintained as prairie wetlands or vice-versa (EE).	The problems of wetland disturbance and invasive species are not unique to the Midwest region. The purpose of this section is to describe the naturally occurring wetland types in the region, and "degraded" is not a wetland type. However, the descriptions include many species that are also found in wetlands that are degraded to some extent. The section also mentions the major source of wetland disturbance in the region -- agricultural use. We will expand the introduction to this section to mention the effects of other human activities and invasive species.
1-18	DZ	7	2	1	Sentence 1 needs clarification on what is meant by "several" feet of water. Recommend a depth range.	This is intended as a general statement and does not require quantification.
1-19	DZ	7	6	1	Recommend adding Wabash River as it is a significant river in the region.	We will make the recommended change.
1-20	JH	8	1	2	Recommend clarification of "temporary" although DZ notes that this might be capturing PFO1A wetlands.	This is a general statement and does not require quantification. There is no intent to "capture" any particular wetland type. This statement does not affect how wetlands are identified or delineated under this supplement.
1-21	DZ, SP, JK, HC	8	1	1	Floodplain forests in well drained alluvial soils have a canopy species that are FACW, but shrub and herb layer are FACU or UPL, so only the lower flood channels or meander scrolls are actually wetlands. Floodplain forests do not always mean forested wetlands. Recommend replacing "forests" with "forested wetlands" for clarity.	We will make the recommended change.
1-22	HC, SP	8	1	3	Recommend adding Ohio buckeye ( <i>Aesculus glabra</i> ) to the tree species list as the species is common in floodplain forested wetlands. Purdue takes exception, but cant do much about it.	We will make the recommended change.
1-23	JK	8	4	3	See comment 17 above.	See previous response.
1-24	MD	9	1	6	Hop sedge is <i>C. lupulina</i> , but the species associated with the listed scientific name is a better fit in describing eastern forested wetlands. The common name of this plant is the brome-like sedge (not hop sedge as indicated). Recommend that "hop sedge" be changed to "brome-like sedge".	We will make the recommended change.
1-25	HC,DZ	9	1	6	HC does not know why this <i>Carex</i> was chosen as it is not typical of this type of system. DZ suggests adding <i>Lysimachia nummularia</i> . HC notes that understory and shrub layer is so diverse throughout the region that it might be better, from an ecological perspective, to be more general and recognize the large species range overlap.	HC's recommendation is not clear. We will add <i>Lysimachia</i> to the description. We agree with HC's statement, but the list of examples is still potentially useful if not taken as exhaustive.
1-26	JH	9	3	6	Sentence indicates species of disturbed fens, but these species are also present in other disturbed wetland types. See comment 17 above.	We agree.
1-27	JH, HC, EE	9	2	7	Flatwood wetland communities are not included and should be. We recommend adding wording on flatwood wetlands dominated by <i>Quercus bicolor</i> and <i>Fraxinus nigra</i> in northeast Illinois, but by <i>Q. bicolor</i> , <i>A. rubrum</i> , and <i>Q. palustris</i> in Ohio and Indiana. Flatwoods are not riverine systems typically.	We will make the recommended addition.
1-28	DZ	9	3	*	This section needs more detail to describe fen and seep types, and also bogs (HC, JK)	We will make the recommended addition.
<b>Chapter 2</b>						

2-1	HC, SP	*	*	*	Likes section's clarity of organization that is direct and concise; may need a sentence to refer back to Table 1 for clarity that this regional manual section on hydrophytic vegetation replaces Paragraph 35 in the 87 Manual.	This is clearly stated in Chapter 1. The issue will become moot when the 1987 Manual is revised and its wetland indicators are removed.
2-2	JH,HC	10	new 2	*	Recommend moving "Hydrophytic Vegetation" definition up earlier in this section, from Page 14 to here for clarity and emphasis.	We will make the recommended change.
2-3	HC	10	3	3	Recommends replacing the term "weedy" with "invasive" as weedy can be interpreted many ways. If this change is made, then make same change on Page 89, Section d.(2), and on Table 5-2.	Unfortunately, "invasive" is also open to interpretation, particularly whether the term can include native species. The "weeds" in Table 5-2 are not necessarily exotics.
2-4	DZ	10	3	2	Sentence is somewhat misleading as areas "reverting to native vegetation" are usually degraded and contain invasive species.	Nonetheless, the statement is true that some of these areas are the best examples of the native flora in a very altered region.
2-5	DZ	10	3	3	Recommends removing "major" because even smaller land use changes can cause effects on vegetation.	We will make the recommended change.
2-6	MD	10	4	3	Statement is true, but seems to describe problem areas - especially for emergent herbaceous vegetation. This statement can cause some confusion and may need to be reworded. SP recommends inserting "seasonal" after "these"	Correct. The sentence does refer to a problematic situation that is addressed in more detail in Chapter 5. The word "seasonal" is already used three times in the first three sentences of this paragraph. The intent is clear.
2-7	PRT	11	1	3	The second part of this sentence is potentially confusing. The use of the word "some" infers that at least a few wetlands have this "FACU-dominated" characteristic which the PRT rarely, if ever, sees in the field. FACU dominated wetlands may represent problem areas anyway. Recommend deleting the remaining clause after "FAC", and then delete the next two sentences. Note that the second paragraph includes these problem areas and correctly refers them to Chapter 5.	The problem of FACU-dominated wetlands does occur in the Midwest. This section simply foreshadows the more detailed treatment and procedure for dealing with such situations that are given in Chapter 5.
2-8	HC/SP	11	4	3	Recommends sentence clause (1), be removed as this can be too broad and leads to inappropriate vegetation characterization. Instead, recommends using a plot based approach for all delineations. As a compromise, clarify by inserting under (1) the following: "In simple systems or monocultures, visual estimates of dominance can be used." SP - notes that 50/20 Rule is very subjective and can be tough to quantify in complex systems without a plot-based approach.	We agree that plot-based sampling is preferable for the application of the 50/20 rule and hydrophytic vegetation indicators. However, the 1987 Manual, under the Routine approach for small areas, allows the use of plotless sampling for hydrophytic vegetation determinations in straightforward cases.
2-9	HC	11	5	*	Useful to put this information here. Point intercept methods works well in "skinny" corridor wetlands.	No response is needed.
2-10	HC	12	2	*	The last sentence of the paragraph indicates that the plot sizes are suggested, but not required. However, the plot size modifications from the 87 Manual makes it appear that the regional manual is specifying the size rather than recommending it. See related comment below. This paragraph may need a sentence pointing out any differences from the 87 Manual if they are being replaced.	The Corps Manual recommends plot sizes for the entire nation. This supplement recommends plot sizes that experience has shown are adequate for most situations in the Midwest. However, no particular plot size is mandatory. Plot sizes often must be adjusted to fit circumstances in the field.
2-11	FN	12	Figure 2-1	1	Recommends inserting "suggested" before "plot" to reinforce comment above and that plot sizes are suggested.	We will make the recommended change.
2-12	JH	13	2	1	Recommends inserting "basal angle gage" or other timber cruising method as an acceptable methodology for forested communities.	Basal-area estimates made with a prism or angle gauge are acceptable for selecting dominants from the tree layer, but the data cannot be used in a prevalence index. The supplement emphasizes the use of absolute cover estimates to make it possible to use the same data set in Indicators 1 and 2.

2-13	SP	13	3	3	Recommends inserting "and represent scientific or published literature methods" to specify that alternative methods should have a scientifically valid basis.	We will make the recommended change.
2-14	HC	13	3	5	Notes that this is a major shift from the 87 Manual and should be specified or noted here. The manual recommends basal area for trees.	We prefer not to dwell on the differences with the 1987 Manual. This added discussion might be of historical interest to experienced delineators, but the mixing of old and new rules would be confusing to new users. The procedures for sampling vegetation and applying the indicators are already clear, and the differences between the 1987 Manual and this supplement will disappear when the Manual is revised.
2-15	HC	13	4	*	Likes the section as it draws in the rigor of the comprehensive method and provides definitions.	No response is needed.
2-16	JH	14	1	all	This section could be moved with the "Growing Season" appendix that we discussed in Comment 4-5.	This issue is not concerned with the definition of the growing season. Rather it is a methodological problem with winter vegetation sampling. It is best left in this chapter.
2-17	JK, MD,HC	14	1	*	Section does represent what is currently accepted throughout the region, but not in all USACE districts (EE) - and there should be a note that check with your USACE district for appropriate use of non-growing season delineations (FN). MD recommends that a note be added that a non-growing season delineation may be acceptable if there sufficient identifiable plants present, the wetland system is straight forward, and lack of snow cover (i.e., a light dusting only).	This paragraph does not say that you can't make a wetland determination during the non-growing season. The intent of the paragraph is to provide flexibility when excessive snow and ice make it impractical to sample the vegetation. We will expand and clarify this section.
2-18	PRT	14,16	4	*	We strongly recommend keeping the (+) and (-) modifiers for vegetation's indicator status for the following reasons: (1) many FAC-plant species that are dominant on a given site in our region are often the deciding factor for the determination of wetland/non-wetland (for example <i>Poa pratensis</i> , <i>Populus deltoides</i> ). Modifier removal would cause a large and significant number of areas to be considered wetlands (including lawns, old fields and pasture areas), extending the scope of the Clean Water Act much more so than today, (2) our region cuts across 5 regions - USFWS Regions 1, 3, 4, 5 and 6 - and would remove those regional differences currently reflected in the modifiers (for example, <i>Poa pratensis</i> is FAC- in Region 3, but FACU in Regions 4 and 5, and FACU+ in Region 6), and (3) this modifier removal affects Indicator 1 more so than with Indicator 2 as the prevalence indicator already removes the modifiers, but includes all of the species, not just the dominant ones. Indicator 1 relies on the dominant species and these are fewer in number than the prevalence. See our recommendation 2- 21. HC notes that the revision may resolve 87 Manual internal conflict which is that the routine method excludes FAC-, but comprehensive does not.	Disregarding '+' and '-' modifiers has the potential to change some hydrophytic vegetation decisions. However, there are two main reasons for the change: (1) to be consistent with the prevalence index, which does not use the modifiers, and (2) because they imply a level of accuracy of wetland-indicator-status assignments that does not exist with available data. Use of '+' and '-' modifiers requires that plant species be divided into 11 categories of wetland indicator status (OBL, FACW+, FACW, FACW-, etc.). Data do not exist to make such fine distinctions for the vast majority of species. Furthermore, the assignment of '+' and '-' modifiers was commonly used by plant list panels to resolve differences of opinion among members; they were not based on data. Now that responsibility for the plant list has been transferred to the Corps, new procedures are being developed to resolve problematic ratings, including external peer review. Field testing of the supplement will help determine whether the simplification of wetland indicator categories will have any significant effect on wetland boundaries after new soil and hydrology indicators are also taken into consideration.
2-19	HC	15	1	5	The use of the "or" in this sentence is inconsistent with the hierarchy listed in the Procedure section (See last part of 1.c on page 16). Recommend replacing "or" with "and then by" to show stepwise nature. He also notes use of newer software than can do both steps simultaneously.	We will make the recommended change.
2-20	HC	16	1.c	*	Recommends adding "or 3" if this procedure is not a hierarchy.	No change is needed.

2-21	PRT	20-21	*	*	We recommend removing this indicator from Chapter 2, but place it in Chapter 5 under "Problematic Hydrophytic Vegetation" it is often a indication of a problem area situation. This indicator is usually applied to plants that are FACU or UPL and don't meet Indicator 1 or 2. So these are really uncommon and problem situations. A possible solution would be to modify Procedure to insert "See Section on Page 86" after Step 2.b.	We agree that this indicator will not be used very often. However, its placement here is consistent with the Corps Manual and with other supplements that use the indicator. Keeping the indicator here will avoid confusion when delineators work in more than one region.
2-22	PRT	20	*	*	Supplement needs to include a better description of morphological adaptations - including pictures that show the adapation and the degree of adaptation. For example, a photo can show a side-by-side view of one tree with buttressed trunk, and one without (like a root crown that can fool some delineators).	Morphological adaptations are described in greater detail in Appendix C of the Corps Manual, often with a picture. However, we do not have sufficient pictures to illustrate the comparisons suggested. Questions of degree must be decided by the investigator, but the indicator should not be used unless the adaptations are clearly present on most individuals of the species in question.
<b>Chapter 3</b>						
3-1	JP, FN,	*	*	*	Overall likes format, pictures, and general approach	No response is needed.
3-2	PRT	22	2	5	The introduction indicates the Chapter 3's field indicators are a subset of the NTCHS Field Indicators of Hydric Soils and Chapter 3's field indicators will be updated/revised when the NTCHS revises their Field Indicators. This may be a problem since the subset of field indicators is slightly different from the NTCHS indicators (as we note later in Comments 3-16 and 3-19). We recommend clarifying how the NTCHS revisions will be reflected in the Regional Supplement. For example, will this Regional Supplement be outdated for Chapter 3?	The Technical Description of each indicator is identical to the most recent version of the NTCHS Field Indicators. However, the User Notes are not an official part of the indicator and have been tailored for the Midwest region.
3-3	SP, EE	*	*	*	Notes that using soil indicators is more defensible for determining hydric soil. They note that the increased documentation may require less experienced delineators may need to go to a soils course, but this is a good thing. EE notes that characterizaing soils is probably the most difficult for inexperienced delineators.	No response is needed.
3-4	EE	22	4	2	This sentence is somewhat misleading and indicates a soil lacking any indicator, including those for problem soils, may still be considered hydric. HC likes next sentence and reference to Chapter 5. Recommends deleting sentence as it is confusing and the idea of problem soils is better addressed in the following sentence.	The sentence simply emphasizes that not all hydric soils will exhibit indicators. However, we will reword and reorganize this section.
3-5	HC	22	5	Title	Recommend deleting "Concepts" and replacing with "Formation Processes" as it better characterizes the section's contents.	The word "concepts" helps identify this information as background material and not part of the indicators themselves. It is designated similarly in all supplements.
3-6	SP	24	3	*	The "Cautions" section should contain a section from 87 Manual Paragraph 37 about the difference between a wetland soil and a hydric soil. Recommend carrying over that wording verbatim: "A hydric soil may be either drained or undrained, and a drained hydric soil may not continue to support ydrophytic vegetation. Therefore, not all areas having hydric soils will qualify as wetlands. Only when a hydric soil supports hydrophytic vegetation and the area has indicators of wetland hydrology may the soil be referred to as a "wetland" soil. (Page 21, 87 Manual).	We will add some of the suggested information without repeating the 1987 Manual.

3-7	HC	25	1	2	It is true that stream downcutting can cause relict conditions, but more likely - and even more common - is agricultural drainage (tiles and ditches) and land use changes. We recommend adding "agricultural drainage and land use changes" after "downcutting" and replacing "is" with "are".	We will add ditches and subsurface drains to the examples in the first paragraph of this section, which talks about protection and drainage. It is mainly a semantic issue, but active and reversible drainage practices, such as the use of ditches and subsurface drains, does not result in "relict" features. Instead, the NTCHS reserves this term for situations where the change in hydrology is due to geologic activities, such as stream downcutting, and is, for all practical purposes, permanent. Areas that are ditched or tiled are artificially drained but the soils are still hydric if they were hydric in their undisturbed state and their features are not relict.
3-8	JK, HC	25	2	1	Sentence should be removed because it is not a "common temptation" to overlook other information when making an informed delineation call. Also, a quick reading of the section appears to indicate the process includes "excavating a small hole" when excavation procedures have not been discussed yet in the chapter. Recommend removing sentence and making the second sentence be the lead in sentence.	We will make the recommended change.
3-9	SP	25	2	2	Recommend rewording sentence since a site cannot "interact" with the soil.	In this context, the wording seems appropriate.
3-10	PRT	26	5	*	The supplement does not include the various methodologies and tools to characterize the soil and should include a new sentence or section. For example, the use of 1-inch probes versus bucket augers versus sharp shooters and the like. This would be an excellent section to indicate when other tools such as augers can be used (e.g., soils probes are useful for quick reconnaissance but should not be used for soil profile data. If this section is added, we recommend stating that "method of excavation should be appropriate to the soil type."	Although we agree with your statement about soil probes, we prefer to remain flexible on the subject of excavation methods. As you say, different methods are appropriate for different purposes and site conditions.
3-11	EE	26	7	6	Likes this inclusion as it clarifies what is sometimes misunderstood.	No response is needed.
3-12	JP	32	*	*	Notes that this hydric soil indicator is also a primary hydrology indicator (C1) meaning that the presence of hydrogen sulfide can satisfy two indicators alone. Recommends making the C1 indicator secondary.	As explained in the User Notes to Wetland Hydrology Indicator C1, hydrogen sulfide odor serves as an indicator of both hydric soils and wetland hydrology because it strongly satisfies both basic definitions. It verifies that the soil is "anaerobic in the upper part", is currently saturated, and has been saturated for an extended period. The strength of the indicator leads to its Primary designation. The indicator is only found in the wettest situations. The PRT's comment does not appear to have a technical basis. Is the PRT arguing that the indicator is not reliable?
3-13	JP	34	*	*	Would be better to include a photograph.	We have no good photograph. Muck layers generally overlie dark mineral layers, and it is difficult to differentiate them in a photo.
3-14	PRT	43	*	*	This section is unclear about whether this indicator captures the intent of "Organic Streaking in Sandy Soils" checkbox in the current 87 Manual data form. The User Notes does include wording that this indicator includes "streaking", and sentence 4 includes "organic matter" in the description, but this could be made more apparent.	As it says in the first sentence of the User Notes, this indicator DOES include organic streaking in sands as described in the 1987 Manual.
3-15	JH	43	3	1	Recommends adding "not caused by bioturbation" to clarify that streaking by worms etc. is not included in this indicator.	We will make the recommended change.

3-16	JP	43	3	new 4	Recommends inserting: "The matrix may not have the material with 3 and/or 4 chroma" that is included in the NTCHS description of this indicator (see page 15 of the Field Indicators).	As stated previously, the User Notes are not an official part of the indicator and are open to modification at the regional level. Here the working group was trying to clarify the User Note by eliminating some redundant wording and adding a clear statement that there are no specific color requirements for these soils.
3-17	PRT	43	Figure 3-11	*	Recommend inserting a better picture depicting this indicator, especially showing the streaking referenced in the User Notes.	This indicator is often subtle and is difficult to see in a photograph. This is the best illustration we have available. It shows areas stripped of organic matter producing a splotchy or streaked pattern.
3-18	JP	44	*	*	Recommends adding a photograph depicting indicator.	Loamy mucky materials can't be distinguished by sight. Therefore, we have no appropriate photo.
3-19	JP	49	3	1	The current NTCHS F8 includes "or plane landscapes" and it is not included here. Also, the Supplement does not include the current F8 User Note description that it applies to: "vernal pools, playa lakes, rainwater basins, "Grady" ponds". Recommend that the Supplement include either the verbatim wording from the Field Indicators or specify what is different from the existing F8 indicator and why. Note that when the Field Indicators gets revised, the Supplement's user notes, if specifically meant to be different, will be lost per Comment 3-2 above.	The User Notes are not an official part of the NTCHS indicator. Therefore, User Notes can and should be adapted to the region covered by the supplement. The User Notes given in the supplement will not be "lost" when the NTCHS revises its indicators; only the Technical Description will change. The User Notes for this indicator were modified by dropping examples of local wetland terms and conditions that do not occur in the region and would be confusing to Midwestern users.
3-20	PRT	50	Indicator A16	*	Developed for a very defined landform and area that doesn't apply to the majority of our area. Recommend removal of this indicator, or indicate that it only applies to those prairie community around the great lakes.	The supplement follows the NTCHS, which lists this indicator for testing throughout LRR M. It is not restricted to "prairie" areas near the Great Lakes. Rather, it can occur throughout the region. This NTCHS indicator has an unfortunate name, because it appears to be more widely applicable than just in "coast prairie" areas.
<b>Chapter 4</b>						
4-1	EE	52	1	4	While the sentence is technically correct, the emphasis here appears to downplay the importance of hydrology indicators as one of the three required parameters. This sentence also assumes that hydrology is not altered at a regional scale (like lowering of regional water tables).	It is a correct conclusion that hydrology indicators do not play the same role as indicators of hydric soil and hydrophytic vegetation in wetland identification. For the most part, hydrology indicators provide support for the other two factors but are not as strongly indicative of wetlands because they often provide little or no information about the long-term wetness of a site. Most hydrology indicators only indicate whether the site has been inundated or saturated recently (see response 4-34). The sentence does not assume anything about regional changes in water tables; hydrology indicators focus on the current condition.
4-2	MD	52	2	6	Recommend adding wording that a lack of hydrology indicator should be used with caution as indicating hydrology is not present.	We think this point is made clearly in sentence 7.
4-3	RG	52	3	1	Recommend replacing "abundant rainfall" with terminology discussed in Comment 1-3.	We will make the recommended change.
4-4	EE	52	3	5	Recommend adding "during the growing season" after "conditions" to indicate changes that can be seen during a growing season.	The statement is intended to be more general. Weather conditions occurring well before the growing season can affect the availability of water during the early part of the growing season.
4-5	PRT	53-54	*	*	"Growing Season" section seems to be out of place here in discussion of hydrology. Recommend moving to an Appendix, or possibly to page 14 where discussion of non-growing season is placed. Growing season is being revised here and it has major implications to wetland delineation accuracy. By moving to a separate Appendix or section, it would be easier for delineators to find and follow, and would result in better clarity. See also our comments in 4-6, 4-7, and 4-8.	The growing season concept is relevant mainly to the interpretation of hydrologic information, both indicators and actual hydrologic data sets. Therefore, the discussion is placed in the Hydrology chapter. This section is listed in the Table of Contents and should not be difficult for users to find. Its location is consistent across all regional supplements.

4-6	EE	54	1	1	Recommend removing "surrounding areas" after "or" as a way to negate expanding growing season unnecessarily due to areas that might experience earlier growth, like crocuses and daffodils in landscaped yards. In this example, the spring ephemerals respond to very quick duration of warmer winter weather but returns to normal conditions with snow and ice. Expansion of the growing season may lead to inaccurate delineations.	The growing season concept is usually applied to regions or landscapes and not to individual points on the ground. It generally pertains to all parts of a landscape that have roughly the same climate (e.g., same amount of solar radiation, same air temperatures, rainfall, etc.). Therefore, it should not be confined to the wetland only. If wetlands are identified properly by indicators of all three factors, there is little if any chance of "inaccurate delineations". Growing season information may be needed to interpret only a handful of indicators (e.g., hydrology indicators A1, A2, and A3), and would not affect the majority of wetland determinations.
4-7	MD	54	1	1	Recommend insertion of "native" or "indigenous" after "evergreen" to reinforce Comment 4-6.	We believe that restricting green-up observations to "native" species is unnecessary and would be confusing to delineators. First, non-native species dominate many ecosystems today. For example, as mentioned in Chapter 2, more than 50% of the flora of the Chicago area is non-native. Second, non-native species must live under the same prevailing environmental conditions as natives and respond in similar ways. Third, restricting the observations to native species would require lists of native and non-native species in each region, and additional effort on the part of wetland delineators to determine whether species are native or non-native. Finally, the growing season wording in the supplement was developed by the National Advisory Team and is used consistently across all supplements. However, the National Technical Committee for Hydrophytic Vegetation plans to review the growing season concept as applied to wetland delineation in the near future. Further changes in the procedures for assessing vegetation green-up should await their recommendations.
4-8	FN	54	2	*	Likes concept of Item 1, but would like to add best professional judgement to also address concerns raised in Comment 4-6.	We do not understand the recommendation. The intent of this section is to increase the accuracy and consistency of growing season determinations. Professional judgment is always important in wetland delineation, but should not substitute for observational evidence, when present.
4-8A	EE	54	5	4	For Group B, recommends adding "...and similar features that indicate the presence of flooding, but not time (season) or duration." to the end of sentence.	This point is made adequately in the opening paragraph of this chapter. Similar cautions for individual indicators are given in User Notes. Also see responses 4-23 and 4-34.
4-8B	EE	54	5	5	For Group C, Recommends replacing "recently" with "during the growing season". This applies to primary indicators C1, C3, C4, C6 and C7.	The statement would not necessarily be true of all indicators in the group, although it is true for most of them. The point that the seasonal timing of saturation is not necessarily known is made in the first paragraph of this chapter. If caution is needed in applying an indicator, it is explained in the User Notes.
4-8C	EE	54	5	6	For Group D, recommends replacing "soil" with hydrogeomorphic or geologic as Group D makes no reference to soil.	We will change the wording.

4-9A	SP	55	1	2	I would recommend a clarifying statement at the end of this paragraph that gives some guidance on the rationale for the designation of primary versus secondary indicators. My sense, based on the indicators is that primary indicators occur more often than not in or in the vicinity of wetlands and secondary indicators occur sometimes in wetlands, but frequently in non-wetland settings. Just a thought that may help qualify what a checked box on the data sheet means. I also think that an overall cautionary note should be put up front (this is covered pretty well for each indicator) that reminds the reader that it is not unusual to encounter field conditions where one to several primary and/or secondary hydrology indicators are present but duration of hydrology is not sufficient for wetland conditions. Hydrology determinations must be tempered by professional judgement and experience in the wetland system.	We will add some additional explanation of the Primary and Secondary categories. The difference lies in how reliably the indicator reflects a recent EPISODE of inundation or saturation. For various reasons, many hydrology indicators can be found outside of wetlands, but the three-factor approach ensures that these areas would not be mistaken for wetlands. The point that most hydrology indicators do not reflect the duration of wetness is made in the first paragraph of the chapter.
4-9	PRT	55	2	*	Does this new grouping constitute a hierarchy in terms of if an indicator is satisfied in A, no further hydrology data need be presented? Recommend a clarification sentence on whether this is a hierarchy. JK, FN would not like it to be a hierarchy as a more complete hydrology picture can be made if more data included. EE recommends pointing out that groups are ranked in reliability of evidence of wetland hydrology. EE recommends carrying over the footnote on page 31 of the '87 Manual that states: "Indicators are listed in order of decreasing reliability. Although all are valid indicators, some are stronger indicators than others. When a decision is based on an indicator appearing in the lower portion of the list, re-evaluate the parameter to ensure that the proper decision was reached."	No. No hierarchy is stated or implied, except for the primary/secondary classification, which did not exist when the 1987 Manual was written. A delineator should record all indicators that are observed. This passage in the 1987 Manual will be deleted when the Manual is revised.
4-10	MD,FN	56	Table 4-1	*	The table may be confusing as some indicators are being revised from secondary to primary, or are newly added from the '87 Manual. Recommend providing a footnote or asterisk indicating changes or revisions from the '87 Manual.	This information would be of historical interest to experienced delineators, but would be confusing to new users who don't need the information. It is more appropriate as part of "training" materials for those who have used older methods. When the Corps Manual is revised, it will not contain any indicators and, thus, there will be no apparent discrepancies.
4-11	PRT	56	Table 4-1	*	Table may have to be revised per comments: 4-12, and 4-45.	See those responses.
4-12	EE	57	3	3-5	Non-growing season determinations of hydrology could be misapplied and result in inaccurate delineations, and since it is a primary indicator, this could be a significant problem. He recommends placing this indicator as a secondary indicator if not in the growing season. He recommends this sentence, and this concept, be deleted from this and other indicators if it can not be changed to secondary. Same concern for Sentence 5 "water ice".	The working group believes that there is no danger of misapplication if users follow the guidance given in the User Notes. Furthermore, the 3-factor approach, including indicators of hydric soils and hydrophytic vegetation, ensures that areas flooded only during the non-growing season will not be mistaken for wetlands. The approach given in the supplement is no different from current use under the 1987 Manual. Apparently, most PRT members were satisfied with the current wording.
4-13	EE	57	3	3	FN is ok with the wording as is, but wants an additional emphasis on the caution when not in the growing season.	The cautions are already clear.
4-14	JK	57	3	4	Recommends revising sentence to replace "may" with "will" to address concerns raised in comment 4-12.	We prefer to leave this decision to the delineator's professional judgment based on all the evidence he/she has collected. Furthermore, a return visit to the site may not be possible. See response 4-12.

4-15	JH	58	3	2	Recommends clarification that "infiltration" is from soil pit's sides, not from surface water running into hole, like from rainfall or shallow inundation.	The word "infiltrate" already implies that water is seeping out of the soil into the hole and not pouring into the hole from surface sources. If water is on the surface, indicator A1 should already be checked.
4-16	EE,JH, JK	58	3	5-7	Similar concern with Comment 4-12 for a high water table during the non-growing season. Recommends setting as secondary indicator for non growing season (supported by JH, JK), or deletion, or clarifying that supporting documentation be provided when using Best Professional Judgement.	The same response as in 4-12 applies to this indicator. Apparently, most PRT members were satisfied with the current wording. We do not understand the suggestion for "supporting documentation". Direct observation of a shallow water table is one of the strongest pieces of evidence a delineator has for the presence of wetland hydrology. However, even then, the site is not a wetland unless soil and vegetation indicators agree. There is already a caution about observations made during the non-growing season. Also see responses 4-23 and 4-34.
4-17	JP	58	*	*	Recommends revising dataform to add "within the upper 12 inches" to better match the general description here.	The short names for wetland hydrology indicators are designed to fit cleanly on an already crowded data form. As in this case, these short names do not provide all the information required to interpret or apply these indicators. This is similar to the system used by NTCHS for hydric soil indicators. The name is consistent across all supplements that use an indicator.
4-18	PRT	59	2	2	Requiring a high water table below the saturation layer is problematic in our region. Many of our wetlands are saturated as the "tail end" of a perched surface water event and will not have a high water table. Majority of our wetlands are not groundwater driven. Recommend either removing the requirement, or adding "or during non-groundwater driven wetlands" to the end of the sentence, and replacing "must" with "may".	This indicator specifically targets saturation due to a capillary fringe. Thus, evidence of a water table (which produced the fringe) is needed. The indicator waives the requirement for a water table if there is a restrictive layer that is at or near the surface such that a true water table could not form. The situation you describe with water remaining after a flooding event would satisfy this indicator if that water was held at the surface by a shallow restrictive layer. However, the working group does not wish to drop the requirement for a water table in the general case because of the high probability of people mistaking "moist" soil or a rainfall-induced wetting front for a saturated capillary fringe. If the indicator does not fit, then other indicators should be used.
4-19	EE	59	3	*	Notes that the non-growing season cautions are missing, and he supports that absence.	No response is needed.
4-20	JH,DZ	60	3	3	Questions the term "caution". Does caution mean to have a bias toward positive or negative indicator of hydrology?	We don't think "caution" implies bias either way. However, in the identified sentence, caution might dictate that the delineator ignore a water mark that was known to be caused by an extreme or infrequent high-water event.
4-21	JK, EE	60	1	1	Recommends that this indicator could also be changed to a secondary indicator.	Apparently most PRT members were satisfied with the working group's conclusion that this indicator should be primary in this region. This is no change from current use under the 1987 Manual.
4-22	MD	60	2	1	Recommends revision of sentence to indicate water marks should be viewed as a level plain and should be easily seen from one feature (rock, bridge abutment) to another.	We will add the recommended wording.

4-23	EE, DZ	60	3	*	Caution should be revised to reflect that water marks indicate presence of flooding, but not time (season) or duration. For example, water marks can be caused by results of ice dams or floods in winter time that may not be inundated during growing season. Recommend considering revising this indicator to secondary category.	This is a good point and one that applies to a number of wetland hydrology indicators. To avoid repeating it in each User Note, the issue is discussed in the very first paragraph of the hydrology chapter where it says that "Wetland hydrology indicators confirm that an episode of inundation or soil saturation occurred recently, but may provide little additional information about the timing, duration, or frequency of such events..." Furthermore, the User Notes to this indicator suggest caution if water marks were caused by "flooding that occurred outside the growing season." Thus, a delineator can choose to ignore a water mark that is KNOWN to be due to flooding outside the growing season. Usually this information is not available. Other hydrology indicators may be present that can help to resolve any questions about a particular site. In any case, the 3-factor approach, involving indicators of hydric soil and hydrophytic vegetation as well as wetland hydrology, already ensures that areas that are only wet during the non-growing season will not be mistaken for wetlands.
4-24	PRT	61	3	*	Caution should be revised to reflect that sediment deposits indicate presence of flooding, but not time (season) or duration. For example, sediment on trees or fenceposts can be caused by results of ice dams or floods in winter that may not be inundated during growing season. Sediment deposits on growing plants (e.g., corn fronds) does indicate season. Recommend revising this indicator to secondary category unless information provided that shows flooding occurred in growing season. Also, if one has this indicator, usually a wrack or debris line exists.	See responses 4-23 and 4-34. Like the previous indicator, sediment deposits have been used as a primary indicator for 20 years under the 1987 Manual without serious problems. In most cases, a delineator does not know when the sediment was deposited. However, the 3-factor approach, involving indicators of hydric soil and hydrophytic vegetation as well as wetland hydrology, already ensures that areas that are only wet during the non-growing season will not be mistaken for wetlands.
4-25	PRT	62	3	*	Caution should be revised to reflect that drift deposits indicate presence of flooding, but not time (season) or duration. For example, drift deposits can be caused by results of ice dams or floods in winter that may not be inundated during growing season. Drift deposits on growing plants (e.g., corn fronds) does indicate season. Recommend revising this indicator to secondary category unless information provided that shows flooding occurred in growing season. Also, if one has this indicator, usually a wrack or debris line exists.	See responses 4-23, 4-24, and 4-34.
4-25a	SP	64	*	*	I question the merit of having this as a primary indicators. I have seen this in wetter settings but they are typically well drained. Back to the comment above, I think that this indicator occurs as often in non wetlands.	This is one indicator that incorporates both presence and duration of wetness. Saturated soil conditions must have been present long enough for iron to be reduced and released into standing water. Therefore, the working group concluded that it should be primary.
4-26	PRT	65	3	*	Caution should be revised to reflect that inundated aerial photos indicate presence of flooding, but not duration. Recommend revising this indicator to secondary category unless information provided that shows inundation occurred during the growing season and for sufficient duration (e.g., aerial photos during the growing season taken over time - weeks, or months - that show inundation in the same location.	See responses 4-23 and 4-34. The working group concluded that this indicator should have the same primary designation as the direct observation of surface water during a site visit. The user notes already recommend that users should examine multiple photographs, if available, and consider the normality of rainfall preceeding the photo date. Again, the 3-factor approach, involving indicators of hydric soil and hydrophytic vegetation as well as wetland hydrology, already ensures that areas that are only wet during the non-growing season will not be mistaken for wetlands.

					SP - I think that this indicator should require at least 2 or more years of aeriels with at least one taken in the non growing season if it is to be a primary indicators. As stated, allowing for only one year of photography with no seasonal requirement, it should be a secondary indicator.	See previous response.
4-27	MD	65	*	*	Recommend adding an aerial photograph showing inundation as an example.	We do not have a Midwestern photo illustrating this indicator.
4-28	DZ,EE	66	*	*	Good inclusion as an indicator as lack of vegetation does show inundation occurs long enough to kill herbs. Should clarify caution to warn about canopy closure, or leaf litter, that prohibits growth anyway.	It seems unlikely that canopy closure and litter would affect ground-level vegetation only in the depressions and not in surrounding areas, too. Limiting the indicator to "concave land surfaces" should prevent this problem.
4-29	MD	67	2	1	Recommends adding a note that many times the leaves become "matted" due to wetness and decomposition.	We will make the recommended change.
4-30	JH	67	*	*	Notes that this indicator is biased toward forested wetlands/communities. Recommend addition of some inclusion of a similar indicator for prairie wetlands - for example, matted or waterlogged senescent forbs. Our region has many more wet prairies than forested wetlands, especially in recovering agricultural fields.	We will revise the wording to include herbaceous communities. However, it is unclear whether this reviewer is recommending development of a separate indicator for "matted leaves".
4-31	DZ	68	*	*	Recommends removing indicator as shells can originate in relict wetlands, or by accumulations by animals.	Both of these concerns are mentioned as cautions in the User Notes for delineators to consider on a particular site. However, the presence of aquatic animals that require water for their existence is still very strong evidence of recent, long-duration inundation. Hence the primary designation.
	SP	68	*	*	I think that this is a good secondary indicator. You could satisfy this indicator on a regular basis in non-wetland setting.	We agree that the indicator can be found occasionally in non-wetlands. However, it is much more likely to be found in wetlands. There are adequate cautions about interpreting the indicator.
4-32	EE, JP	68	*	*	Recommends moving to secondary indicator because of concerns raised in 4-32.	See previous responses.
4-33	DZ	69	*	*	DZ recommends moving up list of indicators (higher ranking) as indicator shows both season and duration of inundation.	The indicator is already primary, which indicates greater reliability. The order of listing is not relevant.
4-34	JH,DZ,EE	69	1	1	Recommend revising indicator name by removing "True" and replacing with "Shallow Water" as the word true is unclear.	Depth of water is not relevant here. The word "true" is meant to highlight the fact that these are AQUATIC plants and not WETLAND plants, according to the Corps Manual. Many wetland emergents live in "shallow water".

4-34	EE	71	*	*	Shows presence of inundation, but not season or duration. This type of indicator makes the case for watermarks, sediment deposits, and aerial photographs being secondary indicators. DZ, FN recommend adding a general comment to Page 55 to state that if an indicator doesn't show season or duration, it should be a secondary indicator.	This is an important issue. It bears on the role of wetland hydrology indicators in the 3-factor approach and has been mentioned and discussed in every regional working group including the Midwest. The 1987 Manual and this supplement rely primarily on indicators of hydric soils and hydrophytic vegetation for evidence that the seasonal TIMING, DURATION, and FREQUENCY of inundation or saturation have been sufficient over a number of years to produce a wetland. This approach was endorsed by the National Academy of Sciences (NRC 1995). The role of wetland hydrology indicators is to provide evidence that water is still getting to the site, giving one confidence that hydrology has not changed appreciably since the plant community and soil characteristics were established. Thus, the 1987 Manual listed only 6 wetland hydrology indicators (observation of inundation, saturation, water marks, drift lines, sediment deposits, and drainage patterns) all of which provide evidence of ongoing wetness but none of which address timing, duration, or frequency of wetness. The Midwest supplement follows this approach. Hy given primary or secondary ratings based mainly on how reliably they indicate a recent EPISODE of wetness and not necessarily its timing, duration, or frequency. Therefore, the 3 factors are designed to work together to identify wetlands. They do not have the same roles or reflect the same things. Therefore, it is not appropriate to limit the "primary" category only to wetland hydrology indicators that provide evidence of timing, duration, and frequency. Only long-term hydrologic monitoring can provide that level of information.
4-34a	SP	73	*	*	General comment: In the Kansas-Missouri area of the region, it is not unusual to find well-drained Mollisols dominated by Phalaris arundinacea with abundant iron staining around roots. It appears to be an affect of leaky roots/oxidation against a low chroma backdrop.	For some reason, those soils are going anaerobic at some time of year or the oxidized rhizospheres would not form.
4-35	JH	75	2	1	Recommend adding a depth of plow layer as a qualifier. For example 6 to 8 inches to clarify the unbroken depth range.	We concur and will make the recommended change.
4-36	EE	75	3	*	Recommend adding a concern over relict soils and how to discern from active and ongoing plowing.	Relict features are not an issue here, as these will also be broken up in cultivation. The easiest way to determine the last cultivation date is to ask the land owner. We will make the addition.
4-37a	SP	75	*	*	Seems to be something that would be picked up as a hydric soil indicator. With this type of soils, one should find other indicators on the surface that would meet the wetland hydrology criteria.	Soils that meet this hydrology indicator do not necessarily meet a hydric soil indicator, and are not necessarily wetlands. Other indicators "on the surface" would not be present in a saturated system.
4-37	MD	76	*	*	Recommends that a photograph be added to show this profile.; EE has seen this in an agricultural field, so it is valid. SP makes same comment as comment above.	We do not have an appropriate photograph. Often, thin muck surfaces are underlain by a dark mineral layer. The lack of contrast makes a poor photo.

4-38	PRT	77	*	*	This indicator is problematic since it relies very heavily on Best Professional Judgement and that could be misused. DZ finds that this indicator and A3 are nearly identical and problematic. EE suggests to include a note to document any nearby artificial drainage (e.g., tiles). JH sees a problem with determination of being in a "dry season" or "drier than a normal year" when one may not know that until the month or year is complete. Recommend requiring delineator to provide documentation to support this conclusion. See related Comment 4-45.	(1) The indicator does not rely on best professional judgment. A water table is either present or not. (2) This indicator and A3 are similar, but A3 is stronger (primary) evidence and may be absent even when C2 is present. (3) We don't understand the comment about artificial drainage. Presence of the indicator in a drained field is unlikely and might indicate that the drainage system is not working. (4) Precipitation PRIOR to the site visit is relevant, but not precipitation falling AFTER the visit. One would not have to wait to evaluate whether antecedent precipitation was low. (5) We will clarify that documentation of dry conditions is needed.
4-39	PRT	78	*	*	This indicator is problematic because crayfish burrows or chimneys often occur in upland areas near a wetland and do not necessarily indicate wetland hydrology. The last sentence of the Cautions and User Notes indicates burrows can extend to 10 feet or more in depth, way beyond 12 inches required for wetland hydrology. JP and EE note that C2 and C8 indicators could be combined to meet the wetland hydrology parameter and still not exhibit a water table or saturation 12 inches or less. This will likely lead to inaccurate delineations and potential for inclusion of non-wetland areas. MD suggest having a "Tertiary" indicator because of it's lack of reliability, or just consider it a "Red Flag" to show that hydrology may be present and needs closer inspection. Recommend removing indicator or placing in Other as recommended in Comment 4-45.	Crayfish generally dig their burrows in wetlands and around wetland boundaries. Therefore, it is true that some burrows occur outside of wetlands. Crayfish typically initiate burrow construction when surface soils are saturated, but may be forced to dig deeper as water tables drop seasonally. Thus, evidence of deep burrows and deep water tables during the dry season is not relevant and does not affect the value of the indicator. The indicator does not increase the chance of "inaccurate delineations". The three-factor approach, involving indicators of hydric soil and hydrophytic vegetation as well as wetland hydrology, already ensures that non-wetland areas that may contain crayfish burrows will not be identified as wetlands. The use of "tertiary" indicators and "red flags" would unnecessarily complicate wetland-delineation procedures, which already require training and experience to carry out reliably. The concerns expressed in this comment are already addressed in the standard three-factor approach to wetland identification presented in the 1987 Manual. The Regional Supplement does not change this basic approach.
4-40	PRT	79	*	*	Recommend revising the General Description by adding "photographed during the growing season" after "satellite images" to prohibit non-growing season aerial being used for indicator of hydrology. See comment 4-26 for similar problems discussion. Also note that a large part of our region has very dark surface soils and the last sentence of the Cautions indicates that dark soils may be inconclusive. RG recommends requiring color photographs. If this is changed, then remove Paragraph 3, Sentence 4 as it pertains to non-growing season aeriels. See related Comment 4-45.	We prefer to let the delineator decide to what extent the photo represents conditions usually found during the growing season, as indicated in the user note. He/she has the best understanding of the site and should be allowed some flexibility. There are adequate cautions provided with this indicator and it has been given a secondary rating. Furthermore, photo signatures "must 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 many years by NRCS to help identify wetlands on agricultural lands. Color photos may enhance contrast, but are not necessarily required. If signatures are absent or undetectible, then the indicator is absent.
4-41	JP	79	3	9	Recommend revising sentence by adding: "such as erosion or deposition" after "saturation" for clarity.	We do not agree that "erosion or deposition" are likely causes of signatures that could be mistaken for saturation on aerial photos. These would not necessarily produce areas of darker materials in contrast to the rest of the field. However, even false signatures would not result in erroneous wetland determinations, because indicators of hydric soils and hydrophytic vegetation must be present, too.

4-42	JH	80	2	1	How does this indicator relate to the C2 indicator as this "Dry Season Water Table"? For example, can well data be used to show the C2 indicator is being met? Recommend adding a sentence clarifying this possible connection or extend the study beyond the season low water table or water deficit period.	C2 involves "visual observation" of water in the hole during a site visit and is not based on recorded hydrologic data. Furthermore, indicator D9 specifically focuses on the upper 12 inches of the soil and not the 12-24-inch zone. The indicators are clearly worded and there is no connection between them.
4-43	EE	81	*	*	This indicator could be problematic as the midwest contains many topographic depressions that are effectively drained by tiles and ditches. Recommends to add to the Caution that drain tiles or other artificial drainage should be investigated before indicator is affirmatively assessed. See related Comment 4-45.	We agree and will make the recommended change.
	SP	81	*	*	Geomorphic position: This indicator is too vague. Other stronger indicators will be present in wetlands in appropriate geomorphic settings. This seems more like an Other Data observation.	The indicator warrants secondary status (with the caveat mentioned in the previous comment). Having other indicators present simply strengthens the determination. One should record all indicators seen.
4-44	JK	*	*	*	Recommends adding a new secondary indicator, possibly under D or as specified in comment 4-45 below. The new indicator would be "Stressed or Flooded Crops". This indicator is needed for a few important reasons: (1) the NRCS is no longer doing Certified Determinations on agricultural land and an indicator to cover agricultural fields would be very useful in the midwest, and (2) water stressed or flooded crops show positive hydrology for both growing season and duration. The Cautions and User Notes should indicate that caution should be exerted to prevent draught-stressed conditions from causing a false positive for this indicator. Also, many times this indicator is also associated with other secondary indicators - such as drift deposits.	The working group will consider whether to add the suggested indicator.
4-45	PRT	*	*	*	A number of the indicators are noted as being problematic and can cause inaccurate wetland delineations. As a way to increase wetland hydrology indicator reliability, we strongly recommend creating a separate indicator category and name it "Other". The term "Other" already appears on the data form in the hydrology section and the items we recommend moving to this category are the ones based heavily on Best Professional Judgment. We recommend the following indicators be moved to Other: C2 Dry Season Wtbl, C8 Crayfish burrows, C9 Saturation on Aerials, D2 Geomorphic Position, and the newly created indicator in Comment 4-44 above for Stressed or Flooded Crops. FN, EE recommend that D5 FAC Neutral Test be also placed in this other category as it is commonly misused. These need not be listed on the dataform, but should be listed in the General Description section for Other. Note that these "Others" would not be considered primary or secondary, but can be used in problem areas or documentation for Best Professional Judgment.	Rather than creating another category for indicators perceived to be unreliable (e.g., "Other"), they should be dropped entirely. However, we do not agree that these indicators are "problematic" or unreliable when used as intended -- as part of a three-factor approach involving indicators of hydric soil and hydrophytic vegetation as well as wetland hydrology. Most of the indicators mentioned are already assigned a "secondary" rating. That means they must be supported by at least one other hydrology indicator. And the area is only determined to be a wetland if soil and vegetation indicators agree. This is the system established under the 1987 Manual that has been used successfully for many years. Also see responses 4-23 and 4-34.
4-46	FN, EE	82	*	*	Indicator has the potential for being misused as it relies on wetland vegetation to affirm wetland hydrology and is not strictly independent. Recommend keeping indicator, but placing in "Other" as indicated in Comment 4-45.	The FAC-neutral test has been used as a secondary indicator of wetland hydrology since 1992. Most members of the working group felt that it was useful in that role. The supplement does not change the way the test is used or interpreted. See the previous response concerning our disagreement with the idea of "other" indicators.

4-47	EE	new	*	*	Recommends adding a new indicator under Category D for "Morphological Adaptations" as these are more useful and reliable indicators of wetland hydrology. These adaptations show inundation takes place during the growing season and indicates duration. Recommend this new indicator be under a "Secondary" category and include: buttressed or multiple trunks, shallow roots, shallow tap roots, adventitious roots, and hypertrophied lenticels. Caution and User Notes should indicate to exert care when dealing with relict communities.	Every working group has discussed whether to use morphological adaptations as indicators of hydrophytic vegetation or wetland hydrology. The Midwest group has followed the 1987 Manual and previous working groups by using morphological adaptations as part of the hydrophytic vegetation decision (indicator 3). We agree with the logic that morphological adaptations are responses to wetness, but it would not be proper to use the same test for hydrophytic vegetation and wetland hydrology.
<b>Chapter 5</b>						
5-1	FN,EE	83	1	5	Recommends replacing "permanently" with "periodically" to remove conflicting statement with Problem Area definition contained in Paragraph 1, sentence 4.	We will revise the wording of these sentences to eliminate the apparent contradiction.
5-2	JP	83	1	5	Recommends inserting "field" before "indicators" to specify the type of indicators that may be lacking.	This supplement uses the shortened term "indicators" throughout.
5-3	JH, JP	83	3	2	Recommend inserting "may be considered 'Atypical'" to reinforce that agricultural practices can trigger the atypical methodology as opposed to the 'Problem' area issues.	We will make the recommended change.
5-4	MD, JP	83	3	5	Recommend adding "(e.g., soils)" after "indicators" to specify that relict soil indicators are often what is seen in relict conditions	We will make the recommended change.
5-5	FN	84	1.b.	*	Recommends inserting "conditions (source, elevation, landscape position)" to specify that the reference site should have the same conditions as the subject site. Same comment for 5-12.	We will make the recommended change.
5-6	JH, HC	85	a.	*	Recommends inserting "known to be" before "produced" as a way to clarify that one needs to know when the alteration occurred to be able to discount any indicators.	We will make the recommended change.
5-7	EE	86	*	*	Finds inclusion of the "zone of influence" to be helpful.	No response is needed.
5-8	PRT	87-92	*	*	Recommends moving "3. General Approaches to Problematic Hydrophytic Vegetation" to be the second item under Problematic Hydrophytic Vegetation section and move "2. Specific Problematic Vegetation Situations" to item 3. This will reduce confusion by going from general to specific.	This organization is used in all supplements and should be consistent so that delineators who work in more than one region can find the information they need easily.
5-9	FN	87	1	*	Modify section to reflect changes recommended in Comment 5-8 above.	See previous response.
5-10	FN	87	2.a	*	Recommends that section includes examples of annual species that become established after the wetland dries out.	Annuals that become established in these situations are highly variable depending on the geographic location, wetland type, potential sources of propagules in the local area, etc. We cannot provide a simple list of examples.
5-11	FN, RG	87	2.a.(1)(a)	*	Notes the sometimes impractical issue of revisiting a site due to time or budget constraints.	We agree with the comment. That's why it says "if possible." However, sometimes the wetland decision cannot be made reliably in a single site visit.
5-12	FN	87	2.a.(1)(d)	*	Recommends same insertion be made after "hydrology" as indicated in Comment 5-5	We will make the recommended change.
5-13	JH,SP	88	2.b.	*	This section lacks a step-wise procedure like the other sections. Recommend to either refer back to the general procedures or add a new procedure.	We will revise this section to clarify the intended guidance. However, the guidance is straightforward and does not require numbered subsections.
5-14	FN, EE	89	Table 5-1	*	FN does not like table as many other species should be included; EE recommends adding Carex grayii as an "Increaser" as this sedge is often seen after many years of grazing. FN also recommends adding a reference to S.R. Weaver.	The species listed in this table are intended as examples and the sources of the information are given in the footnote. Users can check these sources for additional examples. We would rather not extend this list beyond those species for which we have data.

5-15	PRT	89	2.d	*	Recommend replacing all the instances of "Managed" to "Manipulated" both in the heading title and the body of d.(1-5). The term "managed" is typically used to indicate a manipulation to meet a goal. This narrower definition should be expanded to cover all vegetative manipulation since some alterations are done with no goal in mind.	We will consider the recommendation. However, this wording has been used consistently in previous supplements.
5-16	SP,JH	89	2.d.(2)(3)	*	Recommend deleting or moving these sub-sections to the "Agricultural" section of Chapter 5 since they reference agricultural activities and not a specific problematic vegetation situation by itself.	The "Agricultural Lands" section was intended to be an overview of problems and approaches. The details of many of these approaches are given later in the chapter. We agree that this information could be presented in either place, but it seems appropriate here.
5-17	EE	90	2.d.(5)	*	This ending item (and 2.e.(3)) could be a problem as it could be misused and include more areas as wetlands than what is being included now. One should be able to determine status from Steps 1-4.	We agree that this option is a last resort. However, this simply repeats general guidance given in the 1987 Manual for Atypical Situations, when the disturbed factor cannot be determined (e.g., Paragraph 73, Step 3, toward the end).
5-18	EE	91	Table 5-2	Title	Recommends adding "or pioneer" to indicate those species that are first to become established.	We will make the recommended change.
5-19	JH, FN	91	1	2	Recommend moving second sentence to a new subsection "f" under 2, and name that section "FACU-Dominated". (Note that we recommended in Comment 5-8 to move section 3 to 2).	Various problematic vegetation situations can be resolved using one or more of the three approaches given under this General Approaches heading, not just FACU-dominated communities. Particularly in the Midwest, we don't think there is a need to emphasize FACU-dominated wetlands. See also response 5-8.
5-20	JH	91	1	*	Recommends adding to the list <i>Rhamnus carthatica</i> as this species is a great example of a FACU species that can become dominant in wetlands, especially in the northeastern Illinois area of the region.	We will make the recommended change.
5-21	JP	92	3	6	Notes that assuming hydric soil development on recently formed wetlands should only apply to those areas intentionally constructed to be wetlands (e.g., mitigation) and not to recent unintentional impoundments. HC notes that this section appears to be trying to make the delineator "predict" the expected trajectory of hydric soil development. HC cautions about the typical setting whereby Udorthent soils become compacted and vegetation and hydrology are present, and no hydric soil development will occur.	Wetlands are formed both unintentionally and intentionally by human activities, although these wetlands may or may not be jurisdictional depending on current national and district policy. The concept of Normal Circumstances described in the 1987 Manual and more recent guidance letters includes any permanent change to the landscape that was done under permit or did not require a permit (e.g., highway construction that may inadvertently impound water). The delineator must use other information (e.g., hydrology) to determine whether these soils are hydric, just as in other "problematic" soil situations. Whether these wetlands are jurisdictional is beyond the scope of the supplement.
5-22	SP	93	1	*	Our experience is that Corps districts interpret the "Recently Developed Wetlands" differently across districts. Recommend a clarifying sentence that points delineator to check with their local district for guidance.	One goal of this section in the supplement is to increase the consistency of wetland identifications across districts in the region, because all will follow the same procedure.
5-23	JP	93	2	*	Seems somewhat redundant to soil indicator F8 (for example 2" thick within the top 6") so this item could be removed. Is this covered by F8?	Indicator F8 is designed for these situations. If F8 were present, the soil would not be problematic and Chapter 5 would not be needed. However, many seasonally ponded depressions will lack any indicators, including F8. Therefore, the item is not redundant.
5-24	FN,HC	93	3	*	The midwest region may not contain oak openings as these are typically found in far NW Ohio - like near the Toledo area. FN questions if "wind erosion" is found in this region since most of these wetlands are heavily vegetated. Recommend that this section only apply to those types.	Oak openings occur in the transition between Land Resource Regions L and M, and probably will be mentioned in both regional supplements to avoid confusion. We do not understand the recommendation that this section "apply only to those types."

5-25	JP	93	5	2	Sentence is confusing since it says that this procedure should be used ONLY where indicators of hydrophytic vegetation and wetland hydrology are present, but then qualifies it to say these indicators could also be disturbed or problematic. Recommend eliminating from "unless" to the end of sentence and refer reader to go to another section if one other indicator is missing.	We will clarify the wording.
5-26	PRT	93	4	*	Section is somewhat confusing as it refers to relict conditions (those hydric conditions no longer present) and those that are contemporary (occurring right now). Recommend adding "And Contemporary" to help clarify.	Unclear - Is the recommendation to modify the section heading? The headings in this chapter focus on different problematic wetland situations. "Contemporary" soil features are not a problem. We don't believe this change would improve clarity.
5-27	FN	93	6	1	Recommends removing "or more" and replacing it with "at least" as it is redundant and one indicator is all that is needed.	The meaning is already clear.
5-28	FN	94	4.a.ii,l	*	Refer back to Chapter 3 comments on A16 and F12 indicators.	See previous responses.
5-29	JP	94	4.b.iv	*	Note comment on "Seasonally Ponded Soils" and F8 indicator addressed in Comment 5-23 above.	See response 5-23.
5-30	SP	95	1	2	Recommend adding "likely" before hydric to reflect wording in second paragraph, 2nd sentence. The same idea is also reiterated in 3rd paragraph, 4th sentence.	The wording of this sentence reflects the conclusion that the delineator should make at this point in the Procedure that started on page 93, if the soil reacts positively to AADP. After following all the previous steps, the conclusion should be that the soil is hydric. The remaining 2 paragraphs in this section describe the use of AADP more generally, and are borrowed from Hydric Soils Technical Note 8.
5-31	PRT	97	3.a,b,c	*	These sections are problematic and could significantly increase the number of areas considered wetlands that are not. The wetlands that may be dry at the time of the visit should have either primary or secondary hydrology indicators. The indicator list became broader with this supplement and should cover this situation. We highly and strongly recommend that these sections only be used when positively confirmed with items included in 3.d, e, f, g. As a matter of order, 3.a-c could be grouped together under "Climatic anomalies", and group 3.d-g as "Hydrology Confirmers".	On the contrary, ERDC and the working group believe that these sections will significantly reduce errors due to the misidentification of wetlands during dry periods. Of course, most wetlands exhibit wetland hydrology indicators even during dry periods, and identifying them is not a problem. It is also true that the expanded list of wetland hydrology indicators should reduce this problem. However, experience has shown that some wetlands can be overlooked when new or inexperienced delineators give inadequate thought to the reasons that hydrology indicators may be missing from wetlands, particularly during dry periods. Areas that have hydrophytic vegetation, hydric soils, and appropriate landscape positions are almost always wetlands, unless their hydrology has changed recently (National Research Council 1995). At the least, these sections of the supplement will alert delineators to the problem of erroneous wetland determinations during dry periods. If there is any question about the wetland status of the site, another visit should be made during the normal wet portion of the growing season, or other methods should be used to confirm that the hydrology has changed.
5-32	MD	99	item 2	*	Recommend elaborating by using local soil survey to estimate percolation rates and address whether all of the numerous inflows and outflows that dictate a site's hydrology (e.g., evapotranspiration).	We will make the recommended change.
5-33	HC	100	item 1	*	Likes clarification.	No response is needed.

5-34	MD	100	4	*	Would like more guidance on those sites that have long and narrow wetlands, also delineations along linear corridors. SP recommends new wording to be added that indicates: "Use the method that gives the best representative % of wetlands.	It is not clear what situation MD is concerned about. "Long and narrow wetlands" that are repeated throughout an area (e.g., ridge-and-swale systems with parallel ridges) should be sampled according to the procedure described here. An individual wetland that is long and narrow (e.g., along a stream) would not constitute a mosaic and should be sampled according to standard methods described in the 1987 Manual. SP's comment is also unclear. If the actual percentage of wetlands is unknown before sampling, how would a delineator know what method gives the "best" or most representative result?
<b>Appendix</b>						
Ap.C-1	MD	*	Data Form	Veg/Tree	Recommend remove "s" from "sizes" as only one size will be used.	We will make the recommended change.
Ap.C-2	MD	*	Data Form	Veg.	Recommend adding "Plot Size" after the open "(" to help indicate what is supposed to go into the box	We will make the recommended change.
Ap.C-3	JK	*	Data Form	Soil	Footnote 3 is unclear - One should be able to check the box if any of these "Problem Soil" indicators is present, regardless of whether vegetation and hydrology are present. Recommend Footnote 3 be reworded to indicate that the positive indicator for hydric soil is only when the site has positive wetland hydrology and vegetation indicators.	Under the procedure in the supplement, the indicators would not be applicable and you would not use the check boxes unless (1) the soil is problematic and (2) indicators of hydrophytic vegetation and wetland hydrology are present. Any deviation from this could be explained in Remarks.
Ap.C-4	PRT	*	Data Form	Soil	Recommend adding "Drainage Class" after Soil Map Unit Name	Drainage classes are an agricultural concept and are not defined consistently from place to place. Generally they are an interpretation based on soil morphology and, thus, tend to overlap with hydric soil indicators. It is not necessary to know the drainage class to use hydric soil indicators.
Ap.C-5	JH	*	Data Form	Soil	Recommend adding soil texture symbols (for example, Si for silt) and delineator can circle it.	There are at least 12 such abbreviations for soil texture classes and not enough room on the form without going to three pages. We suggest that delineators write the appropriate abbreviation (e.g., SiL) in the blank if they wish. To use the indicators, only two texture classes (S or F) are needed.
Ap.C-6	EE	*	Data Form	Hydro.	May need to change primary/secondary indicators as recommended in Chapter 4 comments.	We concur.