

Comments of the Independent Peer-Review Team for the Great Plains Regional Supplement to the 1987 Corps of Engineers Wetland Delineation Manual, and Responses by the Corps of Engineers and Great Plains Working Group

Comments and recommendations developed by the peer-review team are given in Columns B through F of Sheet 1 (see tabs below). Column A is a sequential item number. Responses shown in Column G were developed by the US Army Engineer Research and Development Center (ERDC) in cooperation with the Great Plains Working Group.

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

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Item #	Reviewer	Page	Paragraph	Sentence	Comment	Response
1	Trilety Wade	0			General comment - this supplement provides myriad ways in which an area, potentially a non-wetland area, could satisfy wetland parameters.	We strongly disagree. Nonwetland areas may sometimes exhibit indicators of one or even two of the essential wetland characteristics -- hydrophytic vegetation, hydric soil, and wetland hydrology. However, all three factors are required for an area to be identified as a wetland. The three-factor approach has been used successfully to identify wetlands in the Great Plains since the publication of the 1987 Manual. This supplement does not change the basic requirement for all three factors described in the 1987 Manual.
2	Barbi Hayes	0			Keep in mind many delineators have a one time look at a parcel of land.	The supplement was designed to identify wetlands accurately based on a single site visit. Only rarely would an investigator need to return for additional information.
3	Barbi Hayes	0			Science does not have to be a complex process. Keeping something simple can be a good thing.	This is not a technical comment, no response is needed.
4	Barbi Hayes	0			When analyzing data remember that the farther away you get from your raw data - the farther away you get from the truth.	This is not a technical comment, no response is needed.
5	Barbi Hayes	0			There is a fountain of good information in this supplement - but - other parts of it are far too reflective of the 1989 Manual. Procedurally, that is just wrong.	This is not a technical comment, no response is needed.
6	Gregory Johnson	0			The hydrophytic vegetation section makes mention of conducting delineations when snow and ice are present, but winter delineations are not addressed under hydric soils. Oftentimes the soils are frozen solid and it is not possible to excavate a soil pit. When it is absolutely necessary to do a delineation under these conditions we get the client and Corps to agree that wetland determinations will be made based primarily on the presence of hydrophytic vegetation supplemented by any evidence of hydrology visible on the surface.	Winter botany provides special challenges because plants may be absent or unidentifiable, making hydrophytic vegetation decisions impossible. We agree that frozen ground may hamper soil sampling as well. To meet their time constraints, Districts have the authority to make wetland decisions based on the best information that is available at the time.
7	Frank Norman	0			CHAPTERS 3 & 4 - Not any substantive comments as both chapters are well written and researched. Great to have all these hydrologic indicators included, spelled out, and photographed. Should make wetland delineations as simple as rocket science.	This is not a technical comment, no response is needed.
8	Stephen Parke	0			Overall: Very commendable clarification on use of the 1987 Manual in this region.	This is not a technical comment, no response is needed.
9	James Jones	1	1	3	"based on a three-factor approach <i>involving</i> indicators ..." replace involving with requiring. The whole premis of the Manual is meeting all three criteria; the 1989 manual was thrown out for trying to not require all three.	No change is needed. The 1987 Manual and this supplement are already clear on the proper application of the 3-factor approach, including certain highly disturbed or problematic wetland situations that may lack indicators of one or more factors (see Sections F and G of the 1987 Manual).
10	James Jones	1	2	3	Change "cannot be considered" to "are difficult to consider". I think the wording is too strong. An experienced delineator that understands the Manual can and does account for these differences in the field.	The statement in the supplement is true that a single manual cannot address regional differences in environmental and wetland conditions adequately. It does not say that experienced delineators have not considered these issues in applying the manual. No change is needed.
11	Barbi Hayes	1	2	5	The part about "the intent is ... not to change wetland boundaries" is confusing. If there is a difference in an indicator, for example, in the Great Plains region that replaces the Manual, could not a boundary be potentially changed?	It is true that any change in methods could result in a change in the wetland boundary on a particular site. However, we believe that the supplement will have no net effect on wetland boundaries in the region. We expect no change in overall jurisdictional reach.
12	Barbi Hayes	1	2	7 (last)	This sounds like a caveat for situations such as isolated wetlands. If so, it is an important statement and should not be buried at the end of a paragraph.	Our intent is to indicate that jurisdiction is a two-part test; determining if the area has the three wetland factors and then whether or not it is regulated by policy. This supplement does not address jurisdictional policy.

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13	Greg Larson	1	3	2	Concerning the relationship of the supplements to the 1987 Manual, I understand that the supplements trump the 1987 Manual. However, I recommend that unchanged parts of the 87 Manual be edited for consistency with the supplements. There are numerous examples of outdated language in the unchanged parts of the 1987 Manual that have been updated with the supplement. As an example, Section 54 (c) of the 87 Manual concerning soil surveys has been updated thru the supplement. I would favor the redundancy of having similar language in the supplement and the unchanged part of the 87 Manual, rather than have new language in the supplement and old language in the 1987 Manual.	We are evaluating the need to edit and republish the 1987 Corps Wetland Delineation Manual after all of the regional supplements are completed.
14	Barbi Hayes	2	2		"Applicable Region" section. The Great Plains Region consists of quite a large area, maybe too large for this supplement. Portions of the Black Hills are excluded. I question that this is the only area that should be excluded.	Use of this or any other supplement is dictated by whether the area to be evaluated is consistent with the description of the region. The working group believes that the supplement is applicable throughout the Great Plains Region. However, some indicators, as noted in the supplement, are applicable only to particular subregions.
15	Gregory Johnson	4			There are other relatively large areas of Ponderosa Pine such as the Pine Bluffs in southeast Wyoming that could be excluded	If the Pine Bluffs meet the concept of the Western Mountains, Valleys & Coast Regional Supplement, then it should be used in place of the Great Plains supplement. Application of a particular supplement is not based solely on map location.
16	Gregory Johnson	6	4	5	change "important" to "common"	We will make the recommended change.
17	Gregory Johnson	7	4	2	eliminate comma between "rushes" and (Juncus)	We will make the recommended change.
18	Gregory Johnson	8	3	8	change "important" to "common"	We will make the recommended change.
19	Barbi Hayes	10	3		This paragraph brings up some very good points.	This is not a technical comment, no response is needed.
20	James Jones	11	2	3	What is not say the areas that were at one time wetland that are now dominated by primarily FACU species is not an area that is converting to upland. In addition, the same argument can be made for uplands where predominately wetland species are present (i.e. phreatophytes).	True. But this statement is just reiterating the FACU percentages as given by Reed (1988). Also, because wetlands must have indicators of all three factors (hydrophytic vegetation, hydric soils, and wetland hydrology), a nonwetland area with a hydrophytic plant community would not be mistaken for a wetland.
21	Trilety Wade	11	2	3&4	If FACU species can dominate wetland areas, then it should be understood FACW species such as <i>Phalaris arundinacea</i> and <i>Alliaria petiolata</i> can invade and dominate upland areas and upland wooded areas.	True. But, again, it is a three-factor test. An upland area dominated by these species would not be mistaken for a wetland.
22	Barbi Hayes	11	2	all	I have huge problems with the content of this paragraph. If dominated by FACU species then probably not adapted to anaerobic conditions. Sounds like you are trying to broaden the scope of the vegetation parameter. And if you are going to say there is a probability that FACU could indicate a wetland then you also have to look at the flip side of that - being that several species categorized as FACW are just as often found in non wetland areas such as reed canary grass and garlic mustard (R5).	The reviewer is correct that FACW species, by definition, also occur in nonwetlands up to 33% of the time. However, these situations would not be mistaken for wetlands due to the additional requirement for indicators of hydric soils and wetland hydrology. In the same way, FACU species occur in wetlands up to 33% of the time. On rare occasions, they may dominate a wetland causing it to fail the basic hydrophytic vegetation test (dominance test). The effort here is to identify these problematic wetland situations based on the presence of hydric soils, wetland hydrology, and other evidence that the plant community is adapted to saturated soil conditions. If this evidence is lacking, then the area is not a wetland.
23	Gregory Johnson	11	2		it should be stated that wetland plants are limited to rooted emergents and do not include submerged aquatics	Because of seasonal shifts in the occurrence of surface water, this may not always be true. In any case, wetland delineation focuses on the upper boundary of the wetland. Distinctions between wetland emergents and submerged aquatics are not important to the determination.
24	Greg Larson	11	3		I favor a stronger reference to Chapter 5. Parts of this chapter are better understood in the context of Chapter 5.	Chapter 5 is adequately referenced.

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25	James Jones	11	4	NA	I like the professional ability to be flexible and find a "balance" depending on the project scale and feasibility.	The 1987 Manual and this supplement provide for flexibility to adapt sampling procedures to the site. Plots sizes and other suggestions are given as examples and are optional.
26	Gregory Johnson	11	5	8	Does the 5% total plant cover rule also apply to monitoring created wetlands? Although not common (there are usually performance standards for mitigation sites) I have been involved in a few projects where the ACOE directed me to map any areas that meet all 3 criteria as successful wetland creation on mitigation sites. It seems perhaps a higher standard should be in place for mitigation sites.	Monitoring of mitigation success is potentially very different from wetland delineation and should not necessarily use the same criteria or thresholds. It is not the role of this supplement to provide wetland performance standards, which are at the District's discretion.
27	Barbi Hayes	11	5	last	Vegetated if 5 percent + total cover. This seems like an arbitrary number. Total cover ranges from complete cover to no cover. Even low cover has some category. And cover by the same plant will vary by season.	We agree with all of these statements. However, the working group's goal was to provide some consistency between different delineators and districts in the way wetland determinations are made within the region. Wet areas with less than 5% plant cover are not ignored, they are delineated using slightly different methods (see Chapter 5).
28	James Jones	11	5	NA	Anything but the graduated single plot method, based on my field experience, would greatly extend field time and should only be considered in problem (i.e. after-the-fact delineations) or sensitive projects. If another method is to be used, then they need to be standardized and not allowed to be "adaptable" or "adjustable" because this opens the door for biasness.	The working group considered similar issues when making its recommendations. We agree that the graduated-plot approach is often the most efficient way to gather repeatable data sets. However, this approach is not necessarily applicable in all situations and investigators need the flexibility to adapt to site conditions.
29	James Jones	12	3	NA	Randomness should always be used with the nested plot method to reduce bias.	We will add the recommendation that quadrats should be randomly distributed within the larger plot.
30	James Jones	14	1	Section	I like the boundaries placed on strata, which leaves no doubt to the investigator what to evaluate.	No response is necessary.
31	Gregory Johnson	15	1	4	I have a problem calling any plant with 5% cover a dominant just because it is in a separate stratum. A shrub with only 5% cover should not be treated any differently than a grass or forb that has only 5% cover. More emphasis should be put on herbaceous layer than trees or shrubs because the herbaceous layer is the best indicator of hydrology close to the soil surface.	We understand the reviewer's concern. However, there is no one approach that seems to fit all plant communities perfectly, and allowing individuals the flexibility to alter the rules for each site would result in arbitrary and inconsistent decisions. The working group recommended this approach as the best compromise.
32	Barbi Hayes	15	1		I like separating short shrubs and herbaceous plants.	No response is necessary.
33	Barbi Hayes	15	1		Stratum defined as percent cover - if has even one species in stratum - that stratum should be considered.	It is considered, but only if that species has at least 5% cover. The supplement's approach prevents sparse strata (<5% cover) from being treated equally to those with, say, 20% or greater cover. Again, the working group felt that the 5% threshold was an appropriate compromise that would increase the consistency of wetland decisions.
34	Gregory Johnson	15	2		The 1987 manual was written for conducting delineations during the growing season. By having a paragraph on how to conduct delineations when there is snow and ice contradicts this premise. There should be a strongly worded statement that delineations should be conducted during the growing season if at all possible and that delineations during winter are strongly discouraged as a preface to this section.	Wetland delineations are performed at all times of year as necessary to meet the Districts' time constraints on permit decisions. There is nothing in the 1987 Manual that restricts delineations to the growing season, and most wetland indicators could be evaluated at any time of year. This section acknowledges the difficulties involved in some winter delineations and gives alternative approaches, if needed.
35	James Jones	15	Last		Seems like the plant lists should now be modified to more closely match the regions used for each regional supplement.	We agree. That is the plan in the near future.

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36	Greg Larson	15			Snow and Ice: A statement should be added that directs delineators to the Corps District for specific guidance on the conduct of delineations done outside the growing season.	This is a District decision, and likely would vary from District to District given the great climatic differences from north to south in the region.
37	Barbi Hayes	17	1		Sounds like you are trying to bring back the two-parameter version of the 1989 proposed manual such that if there are hydric soils and indicators of wetland hydrology - then the vegetation must be hydrophytic - and if the typical vegetation test fails - then you will continue to "test" and "test" until you get the result of positive for vegetation. I am uncomfortable with trying to resurrect those debates and/or that manual with this supplement. I do not believe that is the purpose of this supplement. We should be applying the "KISS" method - keep it simple ...	The 1987 Manual lists six indicators of hydrophytic vegetation. The regional supplement expands only slightly on this list by adding the prevalence index, and actually drops or makes more stringent some of the remaining indicators from the 1987 Manual. The sequential procedure on page 17 of the supplement is not intended to cast a wider net to capture more communities as hydrophytic than was done in the 1987 Manual. Rather, the procedure is intended to <u>reduce the delineator's effort in the field</u> by requiring only one vegetation test (the dominance test) in the majority of determinations. The investigator would evaluate the other two, more complicated indicators (prevalence index and morphological adaptations) only if indicators of hydric soils and wetland hydrology were present. If the procedure were not made sequential, then the delineator would need to evaluate all three hydrophytic vegetation indicators on every site. This sequential procedure does not reduce to a two-factor wetland test. Indicators of all three factors are needed to make the wetland determination, except in certain Atypical Situations or Problem Areas as de
38	James Jones	17	1		At first, I thought applying multiple vegetation analyses because plants failed the dominance test was just looking for ways to make an area wetland, but not I understand this is strictly when hydrology and soils are present are no doubt present. If for some reason an area fails the vegetation dominance test and your professional "gut" tells you this is a wetland due to the soils and hydrology then I agree that the veg should be more closely analyzed with additional methods. Professional judgement should be the primary drive however and not just because the plants failed the dominance test.	We agree. See the previous response.
39	Greg Larson	17	2		The new procedure prescribed for vegetation does not fit the process flowcharts given in the methods part of the unchanged 1987 Manual. This relates to my previous comment. Although the supplement trumps the unchanged 87 Manual, I can foresee confusion among delineators who must refer to both documents. Suggestion: edit the 87 Manual, or make a cross-reference to the supplement via footnote.	We agree that, in the future, the 1987 Manual should be edited in light of the new supplements. For now, except as noted in Table 1, the supplement will simply augment the Manual.
40	James Jones	17	Dominance Test		Unless any method can be done RAPIDLY in just a few minutes, then use it, otherwise the time required for other methods, in most cases, is just not justifiable economically (budgets) or practically (field time).	There is a general concern that the data be collected in a reasonable amount of time, in a repeatable fashion, and with some level of accuracy. The working group's selection of indicators and sampling guidance is built on this concept.
41	Barbi Hayes	17			Procedure. If it fails the dominance test - then it fails the hydrophytic vegetation parameter. No need to go on unless it is a designated problem area. It is possible to meet only two parameters and not three, particularly if the two parameters are met by using secondary indicators. The question is - Is it a wetland or is it not a wetland. The question should not be - how do we make it a wetland.	See also response #37. Just like with soils and hydrology, there is more than one indicator of hydrophytic vegetation. A single vegetation test is not appropriate in all situations just as F3 is not appropriate for all soils. Besides reducing the investigator's effort, this sequence of vegetation tests is meant to guide the user to the problematic vegetation section in Chapter 5, if needed.
42	Greg Larson	17			Procedure: I like this chronology.	No response is necessary.
43	Stephen Parke	17			Procedure (section) - Like the clarity in procedure here	No response is necessary.

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44	Greg Larson	18			Procedure for Selecting Dominant Species by the 50/20 Rule: Absolute versus relative cover should be defined. A footnote should suffice.	We will consider defining both terms in the glossary.
45	James Jones	19	2	User Notes	I realize that species not recorded on the regional plant list are usually upland, but there are some plants that are obvious wetland species that are not on the list either (i.e. <i>Cyperus entrerianus</i>). Should they be considered upland?	These species can be handled under the problematic section (Chapter 5) by verifying 14 days of observed hydrology. We have limited the method to FACU species but those observations combined with best professional judgement could deal with the issue. In general, problems with indicator status should be presented to the appropriate plant list review panel; they are beyond the scope of the regional supplement.
46	Barbi Hayes	19	table 2.2		Show species in ranking order.	We will make the recommended change.
47	Barbi Hayes	19	table 2.2		Should not have minimum cover requirement to be considered separate stratum (see also p. 15). Woody Vine species is the dominant of that stratum - has the highest cover value - if single species then that single species would be dominant and it should be considered.	The working group does not agree. Not using the 5% cut off allows single species such as vines to be considered dominant with only 1-4 percent cover. The working group has discussed the abuse that could occur when the vegetation decision is close to 50/50 and either a wetland or upland vine is present at low percent cover. The working group concluded that species with such low cover values should not be equally weighted against more dominant species.
48	Triletty Wade	19	Table 2-2	Table 2-2	It appears Region 6 was used to assign indicators to the designated species. However, <i>Panicum virgatum</i> was assigned an indicator of FACW when it is actually assigned an indicator of FAC in Region 5 and Region 6. Switchgrass is only assigned an indicator of FACW in Region 9 - the Northwest. Therefore, the species was assigned an indicator outside the Great Plains. This error would cause a change in the outcome of both the dominance and prevalence calculations.	We will revise the example and cite the FWS region the ratings are based upon.
49	Barbi Hayes	19			"...must be of species that have been correctly identified..." Would not the person think he/she has identified the species correctly?	Good point but sometimes it is necessary to state the obvious. Errors of mis-identification often occur in wetland delineation. The phrase was added to make the point that an effort should be made to correctly identify as many species as possible.
50	Greg Larson	19			Table 2-2: The percentages of Absolute Percent Cover should be reordered in decreasing absolute percent cover.	We will make the recommended change.
51	Barbi Hayes	20	1		States the prevalence index is useful in communities with only one or two dominants. Then why not use the dominant test?	The point here is that decisions based on only one or two dominants (when other species are present) can sometimes lead to erroneous hydrophytic vegetation determinations because too few plants are being considered. A more wholistic approach (e.g., by the prevalence index) might give a more accurate result.
52	Gregory Johnson	20	4	3	There should be a statement inserted here that if the investigator believes a plant species not on the wetland plant list may be hydrophytic then a description of its habitat from a local plant field guide or key should be consulted. I am aware of a few species in WY that are not on the wetland plant list but have habitat descriptions such as "moist areas".	Those types of issues are dealt with in the problematic section in Chapter 5. We provide techniques to consider FACU species as hydrophytes by observing 14 days of inundation/saturation or with the use of supportive technical literature. We will consider adding wording extending this approach to plants with no indicator. However, revisions to the plant list should be dealt with by regional plant list panels rather than in the supplement.
53	Gregory Johnson	20	4	5	There is a commonly-encountered species in Wyoming (inland saltgrass) that was not assigned an indicator status in Region 4 and has more than one national indicator status. If this procedure was followed, then this species could not be used to assess hydrophytic vegetation even if it comprised 95% of all plant cover.	This is similar to comment #52 and should be handled in the same fashion.

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54	Trilety Wade	20	4	#2	It seems the data will be skewed if only some of the species, rather than all of the species, are included in the prevalence calculation. There should be no time when a specie(s) is not included because the result will not accurately reflect the existing conditions.	We agree that the PI will be more accurate if all species are identified and used in the calculation. However, the reality is that some species might not be identifiable at that time of year, or might not have an assigned indicator status. Thus the supplement requires that at least 80% of the cover be identified.
55	Barbi Hayes	20			Not all species would have to be used in this index. How is that a fair representation?	See the previous response.
56	James Jones	21	3	4	If we are going to take this approach we need to also take the position that in a site with FACW plants that lacks clear signs of hydrology the FACW plants are functioning as FACU.	This section of the supplement addresses morphological adaptations which, if present, are clear evidence that the plant has had to deal with saturation in the root zone. However, because most adaptations to wet environments are not outwardly visible, the opposite is not true -- a FACW plant without observable adaptations cannot be identified as a non-hydrophyte. Besides, it is already inherent in the three-factor approach that areas with no evidence of wetland hydrology will not be identified as wetlands.
57	Trilety Wade	21	Table 2-3	Table 2-3	The statement above pertains to this Table as well. The product of the FACW species would only be 100 rather than 180 and the product of the FAC species would be 255 rather than 135. The prevalence index is actually 2.93 rather than 2.69. Although it would still satisfy the less than 3 threshold, it is still an incorrect calculation.	We will revise the example and cite the FWS region the ratings are based upon.
58	Barbi Hayes	21			Morphological adaptations. How many different procedures are you going to apply to try and eke out a positive for vegetation. A field delineator should not be reassigning an indicator status to a species. "Indicator 3" is allowing a FACU to be reassigned as FAC. If that is the case, can a FACW be reassigned to a FAC or a FAC to a FACU? You say a FACU could be functioning as a hydrophyte. Can not a FACW (ie, reed etc) function as a FACU? And then the delineator is to go back and reapply the earlier tests using the new indicator status. Again, sounds like you are trying to broaden the scope of the vegetation parameter. You are tip-toeing a fine line with policy.	See Response #37. Morphological adaptations are used as a hydrophytic vegetation indicator in the 1987 Manual. The supplement actually removes some of the subjectivity from that indicator, making it clear that the entire community must still be considered, not just those species exhibiting the adaptations. It is true that FACW plants, by definition, often grow in nonwetlands. However, the three-factor test ensures that these areas would not be mistaken for wetlands.
59	Trilety Wade	22	2	#3	If at first you don't succeed in the dominance and prevalence test. . .then try the morphological adaptations. With the broadened soils and hydrology, this would satisfy the vegetation.	See responses #37 and 58. Furthermore, we disagree that hydric soil indicators were "broadened" by adopting the NTCHS hydric soil indicators. These indicators are more restrictive and less subject to misinterpretation than those in the 1987 Manual.
60	Stephen Parke	22			End of page - would be helpful to include a list of morphological adaptations here that are acceptable and/or different from 1987 Manual	We provide a list of acceptable ones in the user notes.
61	Gregory Johnson	24	3		I'm not sure all the information on texturing soil material belongs this early in this chapter under concepts. I think it would fit better under the section on hydric soil indicators	This information is relevant to many of the indicators. Therefore, it is presented early in the chapter.

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62	Greg Larson	25			Cautions: I urge caution concerning any discussion of the morphology of "relict" versus contemporary and recent features. Granted, contemporary and recent redox features have boundaries that are generally more diffuse than features (in say) a long-drained hydric soil. However, we have found that this distinction is not consistently observed in the field by delineators. I would favor striking the sentence beginning with "Typically,...". Striking this sentence does nothing to detract from the other text in this paragraph, and the (good) guidance provided on pages 95 and 96 in Section 5. Section 5 correctly--in my view--suggests a landscape approach to resolving confusing soil morphology.	We will make the recommended change.
63	Frank Norman	26	1	1	I have found it difficult to differentiate contemporary from relict hydric soil features at times.	See previous comment and response.
64	Greg Larson	26	1		Another common temptation is to dig first. I would amend the second sentence to say: Before any decision to <u>sample soils</u> can be made, however, the overall site and how it interacts with the soil should be understood and documented. There is a good reason why soils are listed behind vegetation on the data form.	We will add "sample soils" to the second sentence as suggested.
65	Frank Norman	27	3	5	In Kansas, it is rare to have to dig to a depth of 40 inches or so.	No response is necessary.
66	Trilety Wade	27	3		Digging to a depth of 40-inches seems excessive because of thick dark horizons. Wetland soils in this area generally are homogenous and consistently adhere to the F6 criteria, or will exhibit redoximorphic features in the upper 12-inches of the soil. Wetlands are not prairies, and digging deeper than 2-feet seems over zealous.	No response is necessary.
67	Trilety Wade	29	1	1&2	All soils within, on the boundary, and outside the wetland should be sampled. If nothing else, the interior soils will provide a biological benchmark for future investigations and/or permitting activities.	Sampling "all soils" is impractical and unnecessary. The supplement does not prevent examination of soils as necessary to determine the boundary; it does suggest where the delineator might want to focus effort. No change is necessary.
68	Barbi Hayes	29	1		Why wouldn't you have hydric indicators in the wet interior of a wetland? This paragraph confusing.	Most wetlands have indicators throughout, but there are exceptions where current indicators fail in very wet areas. See NTCHS <i>Field Indicators of Hydric Soils in the U.S. v6.0</i> (2006) page 2 under "Cautions".
69	Frank Norman	53	Vertic Section	1	In our conference call, it was noted by a local soils expert that reduced Vertic soils are rare in KS. The use of the dye would make for a long delineation (see b.).	True. This indicator could only be used in problem areas in this portion of the region. Don't use the indicator if it is not needed. No change to the document is required.
70	Greg Larson	53			Indicator F18: Reduced Vertic User Notes: F4 and F5 (second sentence) should be stricken and replaced with Indicators A11 and A12 as they were replaced by Field Indicators A11 and A12, respectively.	We will make the recommended change.
71	Greg Larson	55			Hydric Soils Lists: If these data are used, the soil must be confirmed in the field. To that end, cautionary language should be added that requires the investigator to not infer information solely from the soil survey. It may be necessary to sample 40 inches (100 cm) or more to verify the soil component. The third and fourth sentence, paragraph 2, page 85, is also appropriate for page 55 at the end of the first paragraph under Hydric Soils Lists.	The point here is that soil survey data should not be used to determine whether the soil is hydric, whether the soil series is confirmed or not. This is the intent and purpose of the indicators. No change to the document is necessary.

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72	Trilety Wade	56	1	4	Vegetation does not "provide the strongest evidence that wetland hydrology is present" if the vegetation is a square peg forced to fit into a round hole. This statement defies the fact that three separate tests are done for vegetation, two of which are done if the soils and hydrology have been satisfied. Therefore, the latter part of the document should not then state that if vegetation and soils are present, so should be hydrology.	This sentence merely states the conclusion of the National Academy of Sciences (NRC 1995, p. 92, fifth sentence, and elsewhere). Furthermore, the statement in the supplement says "vegetation and soils," not vegetation alone.
73	Trilety Wade	56	1	5	Morphological adaptations could be indicators of relict hydrophytic vegetation - multi-stemmed trunks do not occur overnight.	The reviewer's comment is true. That is why morphological adaptations are not used as wetland hydrology indicators.
74	Trilety Wade	56	3	2	When it is stated in this sentence that indicators of hydrophytic vegetation are evident and hydrology is not, then is it assumed that said vegetation was determined via the dominance test rather than the prevalence test. If hydrology is absent, then the prevalence test is not warranted. However, if a delineator/regulator determines the vegetation is hydrophytic based on the prevalence test or morphological adaptations and hydrology is absent - then it appears not to be wetland and further investigation really isn't necessary.	We do not understand the comment.
75	Stephen Parke	57	1	3	obtain this publication - Steve	No response is necessary.
76	Gregory Johnson	57	1	4	change Finally, On to Finally, on	We will make the recommended change.
77	Frank Norman	57	1	4	Typo: the letter 'O' is capitalized in the word 'On' that is not beginning the sentence: "Finally, On highly..."	We will make the recommended change.
78	Barbi Hayes	57	1	3 full	use lower cap "o" for "On"	We will make the recommended change.
79	Gregory Johnson	57	2		I think each chapter should start with indicators. The discussion on growing season could be moved to after the indicator discussion.	For delineators who work in more than one region, it is important to maintain consistency in the format of regional supplements. This supplement follows the format developed for previous regions.
80	Barbi Hayes	57	4		applicable to long term research not to the "one shot" observation of many delineators	The method for on-site determination of the growing season is intended to be used in a single site visit. However, the information is not needed for most routine delineations.
81	Stephen Parke	57	5		Section 1 - Reads as if delineators have permission to vary growing season annually based on site conditions as well as to calculate growing season against long term WETS data; Might want to clarify if this is the case or if one or the other is acceptable.	The default method involves median growing season dates given in WETS tables. The alternative on-site approach does indeed result in different growing season dates each year. The latter approach is "preferred" (see paragraph 3) but isn't needed in most routine delineations.
82	Greg Larson	57			Growing season; The definition of growing season on 113 does not adequately describe the more detailed procedure on page 57. This could be fixed by adding more language to the definition or simply providing a cross reference to the section on growing season.	The glossary entry on "Growing Season" refers the reader to Chapter 4, where the concept is discussed in detail.
83	Gregory Johnson	60	2	1	The first sentence implies that wetland determinations can be made based on presence of surface water alone. It should be stated that the other two indicators have to be present even if there is surface water for a wetland determination to be made. The need for all 3 indicators to be present in most cases should be emphasized more throughout the manual.	There is no such implication. All of these indicators are used as part of a three-factor approach. This is clear in both the 1987 Manual and this supplement.
84	Barbi Hayes	61			in some areas the water table is highest during December and January	The comment is true, but we don't understand the reviewer's point. If these are not wetlands, they will fail a three-factor test.

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85	Greg Larson	62			Saturation: In LRR F, especially the eastern edge, many wetland delineations occur in organic soils. The appearance of "glistening" water as a field indicator of saturation should be limited to mineral soils. A field test of saturation for organic soils is difficult to suggest due to problems calibrating "squeeze" with water content. Hopefully, the supplements for more eastern and northern LRRs will give attention to this matter.	The reviewer's point is a good one; saturation is difficult to evaluate in organic soils. However, we prefer to leave the decision to the delineator, who has the best understanding of all the conditions on a site.
86	Stephen Parke	65			Concern about characterizing this as a primary indicator as duration of hydrology in these areas - flashy - may or may not be sufficient to assume that hydrology is present for long enough	This issue was discussed by the working group in light of the Arid West Supplement's classification of this indicator as Secondary for exactly this reason. However, the Great Plains working group felt that the indicator was reliable as a stand-alone indicator when used as part of a three-factor wetland test.
87	Frank Norman	67	Iron Deposits	1&2	I have seen iron deposits oozing from soils in creeks and wet areas in remediation sites, and wouldn't necessarily want to claim these areas as having iron deposits that are indicative of a primary hydrology. The water may be, so this comment could be moot.	The discharge of reduced iron shows that the soil is saturated with water that is anaerobic and chemically reduced. This certainly meets the definition of wetland hydrology.
88	Trilety Wade	68	3		Aerial imagery should be included in recorded data but should not be listed as a primary indicator of hydrology. Aerial imagery provides an annual snapshot and is not always verifiable. This should not be weighted as a primary indicator when there are others which are more valid. Aerial imagery should be included in recorded data though.	This indicator is given the same status (Primary) as the direct on-site observation of surface water. In both cases, the delineator would have to consider whether the condition was normal or represented an extreme event. This caution is given in the User Notes along with a referral to Chapter 5 for procedures to evaluate the normality of precipitation.
89	Stephen Parke	68			Questionable as a primary indicator of hydrology if not substantiated by research normal weather patterns. Sometimes aerial interpretation can be misleading. Might restate the General Description as One or more recent aerial photography or satellite images show the site to be inundated <i>in a normal year</i> .	See Response # 88.
90	Trilety Wade	69	3		It is curious water stained leaves has been elevated in rank from secondary to primary.	No response is necessary.
91	Greg Larson	69			Water-stained leaves: More emphasis should be given to the landscape feature applicable to this indicator. It may appropriate to limit this indicator to depressions and riparian habitats? In LRR F, we have had delineators attempt to use this indicator on upland flats. Used in this setting, it may not warrant status as a primary indicator.	Like many hydrology indicators, water-stained leaves may sometimes be found in nonwetlands. However, the three-factor approach -- involving indicators of hydric soil, hydrophytic vegetation, and wetland hydrology -- ensures that these areas will not be mistaken for wetlands.
92	Stephen Parke	69			USAEWES.Jan 93. "Literature Review on the Use of Water-Stained Leaves in the Delineation of Wetlands: Wetlands Research Program Technical Notes HY-DE-6.1, Wetlands Research and Technology Center, Vicksburg, MS. states Until more research on the subject (of water stained leaves) yei8lds other pertinent results, it is suggested that water-stained leaves continue to be considered in the delineation process as a secondary hydrologic indicator. I am not aware of additional research and would agree with that there are concerns with duration of hydrology during the growing season. Would suggest maintaining this indicator as a secondary indicator unless new research indicates otherwise.	This comment is well founded. Although there has been little additional "research", another 13 years of regular field application have convinced most delineators of the value of water-stained leaves as an indicator of wetland hydrology, when used as part of a three-factor approach. However, regions differ whether the indicator should be Primary or Secondary. In the relatively dry climate of the Great Plains, the working group felt that water-stained leaves were a reliable Primary indicator.
93	Gregory Johnson	73			Why is sparsely vegetated concave surface a secondary indicator? I think it should work as a primary indicator.	In the relatively dry climate of the Great Plains, sparsely vegetated surfaces sometimes form as a result of salt accumulation in the soil, independent of wetness at the surface. Thus, the working group gave the indicator a Secondary status.

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94	Stephen Parke	73			Concern that this is not clearly defined and can be misapplied. May want to consider some measure of drainage basin or other source of hydrology that fuels the depressional area in the definition of this indicator.	The indicator is already restricted to concave landscape positions. It should not require an analysis of run-off potential into the basin.
95	Gregory Johnson	74			Same comment. I think that drainage patterns should be left as a primary indicator. This is often the only indicator easily observed in wetlands not related to groundwater but that are inundated early in the growing season due to high water in adjacent streams or rivers	The working group agreed that this is a valid indicator of surface flow, but were concerned about the likelihood of short durations and the possibility of wind-produced indicators on the plains.
96	Gregory Johnson	77	2	3	I'm not sure I understand the purpose of this indicator as it is stated here. This sentence states that the presence of ferrous iron indicates that the soil is saturated at the time of sampling. If that is the case why not just use indicator A3? I believe this should state that the presence of ferrous iron indicates that the soil had been saturated sometime prior to the time of sampling.	It is very possible to have saturated soil without reduced iron. Both observations are important. The User Note says that the indicator shows that the soil has been "saturated for an extended period." No change is necessary.
97	Frank Norman	77	3	general	During conference call, local soil scientist noted the presence of ferrous ion in upland soils in playas in KS and Texas.	We don't understand the comment. Does this mean that the site was not wet at the time of sampling? Clarification of the issue is needed.
98	Stephen Parke	77			This should be part of hydric soils determination; one would expect other hydrology indicators to be persistent in an area with these soil conditions. It is probably a better practice to separate hydric soil indicators from hydrology indicators for the purposes of scoring. Not a good practice to include hydric soil indicators as hydrology indicators.	As stated in the supplement, this indicator is strong evidence for current saturation and anaerobic conditions, which meets the definition of wetland hydrology. The reviewer is confusing the definitions of each factor (hydric soils, hydrophytic vegetation, wetland hydrology) and indicators of each factor. It is certainly possible for one indicator to represent more than one factor. However, we agree that most hydric soil indicators would make poor wetland hydrology indicators due to the possibility of relict soil features. No change is necessary.
99	Frank Norman	78	3	general	During conference call, local soil scientist commented that the thin muck surface is rare in KS, having observed it in some small depressional areas in Reno, KS.	No response or change is necessary.
100	Stephen Parke	78			This is similar if not the same as hydric soil indicator A9. Should not utilize hydric soil indicators as hydrology indicators. Would assume that other hydrology indicators or professional experience could be utilized to meet wetland hydrology in these situations.	See Response # 98. A thin muck surface indicates an <u>ongoing</u> wetland hydrologic regime. Therefore, it is a reliable indicator of wetland hydrology. No change is necessary.
101	Gregory Johnson	79	3	1	Would it make sense to have this as a primary indicator in all areas except tilled crop fields?	One might need to identify areas that were tilled in the past but are no longer being cultivated. The working group will consider the suggestion.
102	Stephen Parke	79			This indicator can be confusing to use in the field. 1. Living roots as a requirement is questionable. Living roots can be difficult to locate and this indicator is often observed in recently developed (but not living) roots. 2. Certain species like <u>Phalaris arundinacea</u> will produce oxidized rhizospheres in upland conditions. 3. Oxidized rhizospheres are essentially a redoximorphic features. As stated above, these should be covered in hydric soils indicators.	(1.) In this case, one would have to use other indicators. (2.) Oxidized rhizospheres can only form if reduced (ferrous) iron is present in the soil, which rarely occurs in uplands. When it does occur, the three-factor approach ensures that these areas will not be mistaken for wetlands. (3.) When a living root is present, the indicator reflects <i>recent</i> soil saturation (i.e., during the life of the plant). Therefore, it meets the requirements of a wetland hydrology indicator. See also Response #98.
103	Barbi Hayes	80			Crayfish. We observed an increased number of burrows on mitigation sites in 2006 over previous years.	No response or change is necessary.
104	Stephen Parke	81			Question the reliability of this indicator and the need for it. 1. Signature from aerials can easily be misinterpreted. Field verification is required. (agree with this) This is currently included as other data	The reviewer's comment is not clear. As he states, the indicator requires field verification that the photo signatures correlate with other evidence of a shallow water table. Thus, it is a reliable indicator of soil saturation.

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105	Gregory Johnson	84			This page makes reference to plants rated as FAC- and FAC+. I have heard the Corps is going to quit using the + and - qualifiers for plants, at least in Region 9. Does anybody know if this is proposed for other regions as well?	Our National Advisory Team has allowed each region to decide how to use plus and minus modifiers on plant indicator statuses in the Dominance Test. Two western regions, the Arid West and Western Mountains, have decided to disregard the modifiers. They believe that the modifiers have no ecological meaning; many were assigned simply to facilitate plant panel decisions when opinions were split. The Great Plains, however, voted to keep the current system of counting FAC- species among the UPL and FACU species in the Dominance Test. No region uses the plus and minus modifiers in the Prevalence Index.
106	Greg Larson	85			Local soil survey data. The statement "must not be hydrologically modified" should be better-explained. (During the review of Chapter 5, I will have more comments on the topic of altered hydrology.) For now, I would suggest adding the following sentence after the one ending in "modified". <u>This indicator hinges on the assumption that the hydrologic and landscape conditions behind the soil survey data have not been altered to the extent that the soil will no longer support a water table within 12 in. (30 cm) of the surface or ponding of flooding for long or very long duration, during the growing season in most years. Determinations of hydrologic modification may require drainage scope and effect determinations.</u>	The point is well taken. There has been considerable discussion about this indicator. The National Technical Committee for Hydric Soils recommends that soil survey data not be used as an indicator of current hydrology. However, some working groups consider the information to be reliable in their regions. The working group will reconsider the issue, including the reviewer's proposed addition.
107	Trilety Wade	86	1	4&5	A "Problem" wetland simply sounds like a "Non-wetland" A wetland that " may permanently lack certain indicators due to the nature of the soils or plants species on the site" sounds less like a wetland and more like an upland. No. 77, Section G of Part IV of the 87 Manual provides a better definition of Problem Areas.	By definition, Problem Area wetlands are <i>wetlands</i> (not uplands) that lack currently identified indicators due to normal environmental variations (i.e., not human alteration) but still meet the basic wetland definition and the definitions of a hydric soil, hydrophytic plant community, and wetland hydrology. Section G of the 1987 Manual is not changed or replaced by this supplement.
108	Barbi Hayes	86	1		If an area permanently lacks a hydrophytic vegetation indicator then maybe it should not be considered a wetland.	It is correct that all wetlands have hydrophytic vegetation. However, in some wetlands we have difficulty recognizing the adaptations that plants have made for life in saturated soil conditions. If a plant community clearly thrives in an area that is inundated or saturated for long periods during the growing season in most years, it is hydrophytic no matter what its species composition. This section of the supplement gives procedures for identifying the rare situations where such communities do not exhibit standard hydrophytic vegetation indicators.
109	Frank Norman	86	2	3	Italicized sentence says it all for the entire delineation process not only problematic wetlands.	We agree.
110	Barbi Hayes	86			A clear statement should be made in this section, as stated in the manual, "This section is not intended to bring nonwetland areas having wetland indicators of two, but not all three, parameters into Section 404 jurisdiction." This should be restated in this supplement.	There is no need. The supplement does not change or replace this section of the 1987 Manual (see Table 1).
111	Trilety Wade	87	4	i,ii	It is not usually possible for a wetland delineator to visit the site at a later date - the manual and supplement are supposed to provide guidance which is applicable to the profession of delineators. As such, it is often a one time shot for the delineator to determine whether or not an area is jurisdictional and delineate the boundaries.	We agree. The supplement was designed to identify wetlands accurately based on a single site visit. In disturbed or problematic situations, this supplement gives guidance for making the most reliable determination possible from a single visit. However, in controversial cases, there may be no option but to revisit the site to verify an earlier decision.
112	Barbi Hayes	87	4		Not always possible to re-examine the site at a later date.	See Response #111.
113	Barbi Hayes	87	iii		NWI maps are not reliable.	We recognize the shortcomings of NWI maps for regulatory work. However, they provide another source of information to help make a decision.

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114	Barbi Hayes	88	b		"unvegetated" means no vegetation - it does not mean less than 5 percent. Consider a better way to state this.	We clearly define our use of the term in this context. There should be no confusion.
115	Barbi Hayes	89	5		As stated above, be careful if you are trying to use the two-parameter method.	No response is needed.
116	Gregory Johnson	89			There seems to be an issue with scale in the example figure. I'm not sure what the solution is. For example, it looks like you could also treat the entire area in the photo as a wetland with 5% plant cover rather than just the areas they have circled, which appear to have far more than 5% cover. Perhaps there could be more guidance on when you should try to delineate the vegetated areas vs. when to just call the whole area a wetland based on presence of 5% plant cover.	We prefer to let the delineator make this decision.
117	Frank Norman	90	1	bullet no. 2	Oddly worded sentence because in each riparian corridor you will be delineating for wetlands and a conveyance since by its definition a riparian corridor has a watercourse.	We do not understand the comment. Wetlands would be delineated as wetlands by the three-factor approach. The "conveyance" would likely be delineated by OHW indicators if it failed the wetland test.
118	Barbi Hayes	91	#3		Again, NWI maps are unreliable and often do not show existing wetlands.	We recognize the shortcomings of NWI maps for regulatory work. However, they provide another source of information to help make a decision.
119	Barbi Hayes	91	#4		Basically you are allowing a grazed site to be determined on two parameters. One can always say an appropriate ungrazed area cannot be located, etc., to justify use of two parameters.	We cannot reasonably provide fixes for sloppy or deliberately biased wetland delineations. We expect delineators to act responsibly and follow the complete guidance given in the 1987 Manual and this supplement. If they did so, a two-factor decision would only be necessary if it was impossible to reconstruct the vegetation's unaltered condition. As the 1987 Manual states (Section F, paragraph 73, step 3) "If it is impossible to determine the plant community types that occurred on the area prior to alteration, a determination cannot be made using all three parameters." The supplement does not change this guidance.
120	Trilety Wade	92	2	#1	It is not feasible to leave an area fallow for a growing season and then revisit it at a later date. A full growing season isn't necessary as weedy species will colonize the cleared/plowed area almost immediately.	The delineator and land owner must decide what is feasible on a particular site.
121	Barbi Hayes	92	#3		same as above	See Response # 119.
122	Barbi Hayes	92	#4		same as above	See Response # 119.
123	Frank Norman	93	1	4	During conference call, reed canary grass and its growth habit and response to stress was discussed. Sometimes in some places (rare occasions) just its morphological appearance (slightly less vigorous or a bit stressed) can be used to delineate the wetland boundary.	We don't understand the comment. This section of the supplement allows the user to consider plant stress in determining the wetland boundary.
124	Trilety Wade	93	#3	#3	What are these FACU species that are functioning as hydrophytes? Does this happen often? Maybe they should be re-assigned an accurate indicator.	By definition, FACU plants are present in wetlands (and, thus, may be functioning as hydrophytes) up to 33% of the time. Their indicator status is not necessary incorrect. We simply need special procedures to identify those unusual instances when FACU plants may <i>dominate</i> in a wetland.
125	Barbi Hayes	93	#3		same concerns as stated above regarding FACU as hydrophyte	See Response #124.
126	Barbi Hayes	93	3a		essentially you are assuming the site is a wetland without the vegetation parameter - it is safer to make assumptions about hydrology (when there is a lack thereof) than vegetation.	The site is clearly a wetland based on direct hydrologic observations. No assumptions are involved.
127	Barbi Hayes	93	g3		Is this evidence of plant vigor/stress of any species not just hydrophytic? Basing a vegetation determination on stress can be very misleading.	The stress is more likely to be manifested in species that are not well adapted to long periods of soil saturation. The supplement gives adequate cautions to avoid situations where stress may be caused by other factors than wetness.

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128	Trilety Wade	94	2	c	This technical literature should also be taken into consideration when FACW species invade upland areas which do not meet soils and hydrology, ie <i>Phalaris arundinacea</i> a terrestrial loving invasive is often determined by the Corps to indicate the presence of a wetland.	The point is a good one. However, the three-factor approach already ensures that such areas will not be mistaken for wetlands.
129	Barbi Hayes	94	3b		how close/far is a "nearby wetland reference area"? If this paragraph is under "Problematic Hydrophytic Vegetation" then how can the wetland in question have substantially the same vegetation as the reference site (sentence 1)?	These are decisions that must be made on a case-by-case basis. The final decision rests with the appropriate Corps District.
130	Trilety Wade	95	3	#4	If hydrology is adequate, soils do not take long to begin exhibiting hydric indicators. This empirical evidence has been gathered during the consecutive monitoring of 20+ mitigation sites.	The reviewer is correct that soils in some constructed wetlands start to exhibit visible color changes in as little as two years and may develop fully formed hydric soil indicators in only a few years. In these cases, the wetlands could be delineated using indicators and there would be no need to refer to Chapter 5. However, some wetlands may take longer to develop hydric soil indicators. The caution for recently developed wetlands is still appropriate.
131	Gregory Johnson	96	4		Under step 1 under procedure, it says to verify that one or more indicators of hydrophytic vegetation are present. Shouldn't this state that you should verify the vegetation is classified as hydrophytic based on guidance in Chapter 2? Presence of a FACW species at 5% cover is technically an indicator of hydrophytic vegetation, but it doesn't mean the site would meet that criteria for delineation purposes.	The guidance is simpler as stated in the supplement.
132	Barbi Hayes	97	last		I love the comment about sunglasses	This is not a technical comment, no response is needed
133	Barbi Hayes	101	e		Hydrology tools. These are good for large scale long term projects but not tools that would be regularly used by most wetland delineators.	No response is needed.
134	Frank Norman	101		bullet no. e.	During conference call, the efficacy of the Hydrology Tools was discussed. It may vary depending on the support of the NRCS office in the area.	The supplement simply lists the Hydrology Tools as an option, particularly for users who may not be familiar with them.
135	Barbi Hayes	102	top list		#4 and #6 will give different results	Very possibly, given that both methods are approximations of reality. However, if the methods are applied correctly, the results should be close.
136	Frank Norman	105			Daubenmire, RF (1968) reference: title of book needs to be capitalized.	An ERDC editor will make format corrections before publication.
137	Trilety Wade	117	data form	data form	The data form, with its heavy load of information, is organized well and easy to understand and use.	No response is needed.
138	Barbi Hayes	117			Data form. Vegetation. Scientific names are preferred however common names are just as necessary for those not familiar with the other. Even agency personnel do not always know the scientific names.	In general, one cannot use the wetland plant lists effectively without knowing the proper scientific name.
139	Barbi Hayes	117			Data form. Vegetation. For what are you using percent bare ground? It is not discussed in the narrative.	This was intended as a check on the total cover of the herb stratum, to help document the overall "sparseness" of the herb layer. Adding up the cover values for individual species could overestimate total cover due to overlap of plant canopies.

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140	Greg Larson	117			The Data Form: This concerns Lines 8 and 9 and "significantly disturbed" and "naturally problematic" vegetation, soils and hydrology. To determine "significantly" and "problematic", A reference should be made on the form to refer to "Difficult wetland situations in the Great Plains" part of the supplement. Also, the form should say "explain in remarks"--similar to what is stated for "Normal Circumstances". One might consider a reference to the use of Data Form 3 from the unchanged 87 Manual (page B6). This form is a good one and remains relevant. Its use aids in the documentation of disturbances.	These two questions are basically the same as those on the old 1992 data form. The comment to "explain any answers in Remarks" refers to these questions as well. Further comments would only clutter an already full form.
141	Barbi Hayes	118			Data form. Hydrology. Water-stained leaves should be a secondary indicator not a primary indicator.	See Response #92.
142	Barbi Hayes	7 thru 9			Types and Distribution section. A general comment on saline and slope wetlands in eastern NE. I have observed some saline wetlands change composition due to direct inputs of freshwater from human activity. Some slope wetlands were "lost" due to no direct connection. Other slope wetlands were lost due to development up to their boundaries that changed the hydrology.	No response is needed.