National Technical Committee for Hydric Soils Annual Meeting Minutes

Tolland, CT

5/22/14-5/24/14

Members present: Steve Lawrence, Chris Noble, Tony Jenkins, Steve Monteith, Richard Griffin, Larisa Ford, Aaron Miller, and Lenore Vasilas

Members that called in: Mike Vepraskas, Wade Hurt, Chien-Lu Ping, Karen Vaughn, Ralph Spagnolo, Rusty Griffin, and Paul Rodrigue

Guests present at meeting: Donald Parizek to present field trip information, Mark Stolt by phone to discuss New England issues, and Mike Robotham on phone for introduction

1. Introductions and opening remarks by Mike Robotham on the phone.

2. Edits made to correct last year's meeting minutes. On page 7 need to strike Marl for regions in FL, site B and C should read A16 and not TA16, and Jerome is spelled with a J and not a G. Chris Noble motions to accept the minutes and Tony Jenkins seconds. Unanimously approved. Edits will be made and the minutes will be reposted on the NTCHS website.

3. NRCS Regional Updates:

a. Lenore: WSS hydric update – There are now multiple ways to access hydric soils data through Web Soil Survey. The interpretive map is now based on a 5 category interpretation that was approved by the committee a few years ago. You can also still download the interpretive table for the previous 3 categories as well as a table that includes all hydric components and their percentages as well as the full table with all components with percentages and hydric classification.

b. Steve Lawrence – Discussed Soil Data Join Recorrelation (SDJR) issues in the southeast.

c. Tony –

1. Expressed concern that through SDJR rep pedons for components with the same soil that traditionally crossed the hydric/non-hydric boundary are being recorrelated to representative pedons that represent the hydric portion of the components range and that the representative pedon meets a hydric soil definition and when possible an indicator; indicator(s) expressed by the component or at least whether it meets an indicator should be a NASIS data element

2. Concerned over loss of pedologists working in the hydric soils field and wetland science becoming predominantly the realm of botanists. Therefore, soil science/morphology/genesis is getting short shrift in (especially) CWA wetland determinations. SSSs need to maintain tech leadership to "wetland science" associations etc. by providing outreach to the wetland regulators and community.

4. Mid-Atlantic proposal

Barrier Island Sandy Indicator Proposal

Ann Rossi and Marty Rabenhorst provided the committee with data in support of a proposed change to the Field Indicator A9 1 cm of muck indicator as well as a new indicator to address the identification of hydric soil in interdunal swale wetlands found on barrier islands in the mid-Atlantic.

Wade cautions that he wouldn't call a sandy soil hydric unless it started within 15cm. Currently all S indicators start within 15.

Chris N. will reword the proposed indicator for review and discussion on Thursday.

Richard would like to see diagrams or photos showing the relative landform positions for these sites. Lenore will request these from Annie.

Steve M. would like to see a landform diagram inserted into the actual indicator.

Aaron M. suggests other indicators could benefit from this.

Through discussions of the changes of the A9 indicator it was decided that changes to the indicator could not be made as it might cause issues in other areas where the changes were not tested. However, the committee felt it had enough data to support a new indicator with the changes specifically for the landscape position and MLRAs tested in the study. Chris Noble volunteered to work on revising the proposed indicator and the discussion was tabled until Thursday so that we could review and discuss Chris' draft of the proposed indicator.

Concerns were brought up over the clarity of the proposed new indicator. Interpretations varied among the NTCHS members. Concerns over the depth requirement of the indicator were also discussed. The new proposed indicator was for sandy soils. Anaerobic conditions in the upper 15 cm must exist in a sandy soil for it to be considered hydric based on the technical standard yet the indicator allows one to look to a depth of 30 cm for evidence of anaerobic conditions. After these discussions it was decided that Chris would also draft a version of this indicator that was more clearly understandable and narrowed the depth requirement to 15 cm instead of 30 cm. This discussion was also tabled until Thursday.

5. Chris Noble-NTCHS

St. Paul found a typo in the current errata sheet about the expansion of S7 for use in K, L, and M. This will be fixed in the next edition of the errata. S7 was expanded for use in MLRA's K, L & based on data presented to the committee 2 years ago when it met in MI. Some soil scientists believe the indicator will lead to false positives. They requested the data that led the committee to make the change to indicator. Chris sent them the Berkowitz-Sallee article that justified the change and Chris has yet to hear back from the group regarding any further concerns. In order for the committee to make any further decisions on the use of these indicators in these LRRs the committee would need data to support that the indicator

does in fact lead to false positives as all data presented to the committee supports that it does in fact work in these LRRs.

Chris will forward any further communication on this issue to the Committee.

6. EPA – Ralph Spagnolo – agency occupied with recent rule. EPA has built a tool using hydric soils as one of the criteria when identifying a site as having potential for restoration. They have had issues with how to get the hydric soils data from WSS for their models. The term "partially Hydric" is complicating things.

Lenore commented that it sounds like they are using a previous version of the Web Soil Survey data and new changes to the report has 5 categories related to the percent of hydric components in a map unit. She also noted that you can also get a report that includes percentage of hydric component so that the user can set their own thresholds to categories the map units based on percent of the map unit that is hydric. She also suggested looking at using the gridded SSURGO package to identify Potential Wetland Landscapes put together for the Wetland Mapping Consortium by NRCS that identifies soils with the potential for wetland restoration and/or creation.

9. USACOE – Chris Noble;

a. Discussion of red parent material study being started with M. Rabenhorst to identify and map areas where red parent materials meeting the appropriate CCPI to use the approved field indicator F21. It is hoped to be used to identify those areas where the problematic parent material does occur to eliminate the use of the indicator in those soils that don't qualify as problematic red parent material. Jacob Berkowitz is heading up this mapping project.

b. The update Wetland Determination and Delineation Manual, the umbrella manual to the Regional Supplements, is still on hold and it is not known when it may move forward. There are still issues to be resolved related to the vegetation methodology. Chris is optimistic that sometime in the next year it will be resolved.

c. The National Advisory Team is preparing to update the supplements: AK will be first! AK expressed interest in adopting methodologies created in supplements for other regions after the AK indicator was finalized since the AK indicator was the first to be completed.

d. They are still looking for wetland botanist for the ERDC wetland staff in Vicksburg.

10. BLM – Larissa Ford

BLM is working on an effort to educate their staff about hydric soils.

11. Universities

Richard Griffin –

a. Sub-Saharan dust, and wetland function. Looking to see if the material reduces from the dust traps. Material will go into solution then reoxidize/precipitate into ferrihydrite. Is there enough OC to drive the system?
b. Wetland mitigation banks- Corps has rejected areas due to their inability to function. What are the standards that say this soil is functioning as a wetland?
c. Columbia bottomland hardwoods- misinterpretation of concentrations from the bioturbation from crawdads bringing parent materials up into the redox zone. Look like concentrations.

Mike Vepraskas –

a. Second edition of "Wetland Soils" being revised and edited now. Older authors resisted revisions so newer authors brought on board. Some in this room.
b. At NCSU – studies on wetland hydrology technical standards developed for evaluating hydrology and restoration sites. These are based on current technical standards used by NTCHS. There is little funding for this.
c. Climate change effects on wetland boundaries were assessed and will happen but not be very big.
d. Mike may take on Dept. Head duties next year and be less available than now.

Karen Vaughan (UCalPoly) some research on problem sites (serpentine)

a. Cal Poly SLO is a teaching Univ. mostly and not much research.
b. Problematic sites are being looked at in SLO serpentine, may try to propose a new indicator.
c. Vernal pools in Carrizo plain are of interest but they have been dry for the last few years, need winter moisture to look at them. Looking at sulfur reduction on IRIS tubes. Will go away if left exposed. Can IRIS tubes work in this area?

Rusty Griffin – USFWS –

a. NWI data digitized in lower 48, 100% digitized. 30% of AK and 100% of HI. $225 Million and 7 years of work!!!
b. Some new report for Prairie Pothole region being released soon, this is a subset of the national status report. Trends suggest temporary wetlands are decreasing, less occurrence of flooding. Wetter, more permanent flooded areas are growing and becoming flooded more. Overall wetland acreage trends are declining due mostly to ditching and draining of the wetlands. Will deliver a report on request.

Chien-Lu Ping –

a. transition of andisol to spodosols, field trip in first week of September.
b. August – field trip to North slope, review of hydric soils

Wade Hurt – nothing to report, wants minutes rapidly

NSSC update – Steve Monteith

Has been busy with Haiti project

Lab CCPI results:

a. Variability fairly low within horizons for triplicate replications.
b. Increasing sand causes increasing CCPI within parent materials.
c. Sample preparation and moisture state is important.
d. Larger grain size -> larger variability in colorimeter readings.

Manganese tubes

a. Burnasite too soft, trying "porous" plastic tube.
b. With porous tubes, looks good after 12-18 days in bucket mesocosm.
c. Christine Coffin used Mn tube in FL marl, were less sensitive IRIS tubes.
d. Possible cold soil applications.
e. Discussion of relative benefits of flat surfaces instead of tubes for ease of field quantification

IRIS tubes

Steve distributed graph of IRIS data for a cornfield soil with very high Fe removal down to 20cm or so. (Graph attached). Routon series, TN. IRIS data indicates reduction, but that site is drained.

Some further discussion ensued regarding IRIS tubes versus "plates" etc, including remarks from Karen noting the high variability among visual estimations among individuals.

12. Lenore – ND Technical notes for Food Security Act (FSA) Wetland determination purposes. (3 - Seasonally ponded, High OM, and Alkaline Soils). This is an informal request for the NTCHS' opinion on these notes. Motion was made by Tony to respond that the NTCHS can respond to proposals to add, delete, or edit indicators, but would need data and draft indicator verbiage; however the NTCHS cannot evaluate interpretive guidance that is generated by States or other entities. It was seconded by Richard. Discussion focused around how this is primarily guidance on applying Chapter 5 of the regional supplements for problem soils (e.g. not meeting indicators), as well as applying some existing NIs. This kind of guidance to state NRCS programs is understandable but not appropriate for the NTCHS to evaluate. It would be the States' responsibility to accurately apply the Field Indicators and the Hydric Soil Technical Standard. Motion sustained.

13. Aaron Miller – presentation on salty southwestern wetlands.

Feedback is being sought by the NM staff to begin to collect data on the hypergypsic and gypsic wetland soils from the Tularosa Basin.

Mike V. suggests focusing on the areas where there is decent vegetation so that the system is driven. Also try to install a reporting well for sites.

Terrier series is major candidate for study, including IRIS tubes. Also Malpaispring, which has veg as well. And Rioperdido, with its pup fish habitat.

Aaron will be requesting IRIS tubes from Lincoln (Steve Monteith will help out) within the next few weeks.

An attempt will be made by NM staff led by Aaron to install the IRIS tubes before the monsoon season hits this summer.

Richard G. might try to make a trip to NM to see the study sites and assist in the installation.

14. Mark Stolt called in to discuss issues with organic terminology and TA-6:

1. Definition of organic terminology uses pyrophosphate test but it is seldom applied and is a poor indication.
2. Terminology of organic materials inconsistently applied within and among FIs, Soil Taxonomy, Field Handbook for Describing Soils, SSM, etc. Would prefer to use sapric, hemic, fibric and drop the use of muck, peat etc. This will be presented to the NE regional NCCS Conference. The recommendations from that will go on as a recommendation to the NCCS Standards committee for appropriate revisions.
3. TA6: vernal pools on sandy soils – lack of redox features, lack of iron, etc. was motivating factor here.
4. Trying to identify source of spodic horizons' red colors when low in Fe but not clearly from particular SOM component.
5. Discussion of color books obsolescence and subjectivity of color observations. Marty Rabenhorst has looked at changes over time of color book chips and found they change pretty rapidly but the change slows over time.

15. Don Parizak

Review for areas that will be visited for red soils with low CCPI values in the Connecticut River Valley. Don presented rationale and data for proposal to decrease % redox features requirement. Wilbraham series and others will be visited. Proposal is supported by dipyridyl and IRIS tube data/observations.

Don passed around 5 IRIS tubes from CT009003 2012 (Cooke Rd) site, which would be an example of a profile not meeting F21 but would meet the proposal (6% faint redox concentrations in Ap2). The water table data did appear to be sufficient to meet hydrology for 2012, but not for 2013. The tubes were 2/5 meeting the HSTS. The site does meet the CCPI with very low values (7.9). The Wilbraham (this soil)

series is on the hydric soils list. The site overall does not appear to meet the technical standard. Don has a very well prepared presentation and data set.

Meeting adjourned for the day at 4:30PM

Wednesday Field Trip

Members present: Lenore Vasilas, Steve Lawrence, Chris Noble, Tony Jenkins, Steve Monteith, Richard Griffin, Larisa Ford, and Aaron Miller

Others present: Donald Parizek, USDA-NRCS 12-TOL soil survey project leader; Jacob Isleib, USDA-NRCS 12-TOL soil scientist; Marissa Theve, USDA- NRCS 12-TOL soil scientist; Nels Barrett, USDA-NRCS 12-TOL Ecological Site Specialist; Jim Turenne, USDA-NRCS, Assistant State Soil Scientist for RI; Eric Ford, URI Graduate Student and private consultant; Mark Stolt, URI soil science professor; Tom Pietras, private consultant; Mike Sheehan, U.S. Army Corps of Engineers, retired; Mike Narcisi, U.S. Army Corps of Engineers, Concord, MA; Paul Minkin, U.S. Army Corps of Engineers, Concord, MA; Thursday 2014.05.22 NTCHS Annual Meeting Tolland, CT

Visited four sites used to establish a proposed new indicator for soils derived from red parent material in the region that is different than the one adopted for the mid-Atlantic region. Differences include the requirement of only 5 percent redox concentrations as opposed to 10 percent redox concentration and/or depletions and the allowance of faint concentrations as opposed to only distinct or prominent.

Some of the issues discussed were whether faint concentrations were actually identifiable, discrepancies in whether the redox concentration abundance was between 5 and 10 percent or greater than 10 percent, lack of redox concentrations at the appropriate depth to meet the indicator, and whether the material in the layer where the indicator occurred was in fact red parent material or a mixture of red parent material and other materials. One site met the proposed indicator but did not have the appropriate abundance of redox features to meet F21. However, it was only a small area that did not meet F21. The majority of the wetland met F21 or F3. At one site the abundance of redox features was questioned. Some thought it would meet F21; others thought the abundance was between 5 and 10 percent. One site had no redox features. And, the last site had redox features too deep to meet either F21 or the proposed indicator. So, there is some doubt as to the utility of adopting the new indicator as it would have only identified a small portion of one wetland that was visited. However, it is clear that there is a parent material issue that is affecting the ability of these soils to be identified as hydric based on current indicators. Richard Griffin tested all sites with 3 percent hydrogen peroxide on all sites to evaluate the presence of Mn in the system. At all sites in the study that met the technical standard for hydric soils, those that met F21, the proposed indicator, and did not meet any indicator, there was a reaction in the upper part of the soil to the hydrogen peroxide indicating a presence of Mn. The upland sites did not exhibit this reaction.

9:00am begin session

Red Parent Materials:

- We had sites that met indicators, sites that met no indicators, sites that were clearly hydric, and sites that were questionable.
- Several sites met F21. One site would have met the proposed indicator that would not have met F21.
- Proposed Recommendations were to adopt F21 for this region and for them to go back and develop an indicator that was partially based on their proposal with an element that includes Mn identification.
- Tony thinks the evidence supporting F21 expansion into the region is a good idea, he motions to adopt this in region R MLRA 145 and for them to explore using peroxide to ID Mn as a component of an indicator to capture those areas that do not meet F21 but do meet the technical standard.
- Aaron seconds this.
- Unanimous agreement.

Barrier Islands

- Chris Noble presented his revisions to the proposed indicators. They are as follows:
    - Revision to Hydric Soil Field Indicator A9, 1 cm Muck: A layer of muck 1 cm or more thick with value of 3 or less and chroma of 2 or less and starting within 15 cm of the soil surface.

      Sxx. Sandy Barrier Islands 1 cm Muck. *For use in MLRA 153B and 153D of LRRs T. In closed depressions subject to ponding within the dune-and- swale complexes of barrier islands.* A layer of muck 1 cm (0.5 inch) or more thick with value of 3 or less and chroma of 2 or less and starting within 15 cm (6 inches) of the soil surface.

      User notes: This indicator is similar to A9 but allows chroma of greater than 1, but not greater than 2. The indicator is limited to depressions that pond water in sandy soils in the dune-swale complex on barrier islands.

      Proposed New Indicator
      Sandy Low Chroma Matrix Indicator. A layer 10 cm or more thick with a low chroma matrix that has a hue of 2.5Y or yellower, a value of 4 or more and a chroma less than 2, starting within 30 cm of the soil surface. An overlying surface layer at least 1 cm thick must have an accumulation of organic matter with a value of 4 or less and a chroma of 2 or less.

      Revisions to the proposed new indicator
      Sxx. Sandy Barrier Islands Low Chroma Matrix. *For use in MLRA 153B and 153D of LRRs T.* In closed depressions subject to ponding within the dune-and-swale complexes of barrier islands, a surface layer 1 cm (0.5 inch) or more thick with value 4 or less and chroma 2 or less. Below the dark surface, a layer(s) 10 cm (4 inches) or more thick with

a dominant hue of 2.5Y or yellower and value 4 or more and chroma less than 2 starting within 15 cm (6 inches) of the soil surface.

User notes: The requirement of a dark surface layer above the low chroma layer excludes sediments from recent depositional events (especially common in overwash areas) which are not hydric. Low chroma colors in recent deposits are likely due to the nature of the parent material and not related to hydrology. There is no color requirement for any layer(s) between the dark surface and the low chroma matrix.

- We looked at photos sent from Annie to clarify landscape position.
- We had a problem with changing A9 but had no problem creating a new indicator proposal.
- We will send this proposal back to the authors for their approval.
- We will look to get a confirmation from them in a few weeks and then we can have a vote to approve at that time.
- Wade would like a comment about the colors being rounded for the new Sandy Barrier Indicator. You can round to the nearest Hue and Value but not chroma.
- Lenore had added a statement in the last errata clarifying the color rounding rules.
- The rewrite of amended A9 indicator proposed by Ann and Marty as amended by Chris Noble will be sent back to Mid Atlantic Committee for their approval.
- Unanimous approval.
- A terse analysis of their data shows that 3 of their pedons would meet our revised depth version of the SB indicator, and only 2 pedons would require the original 30cm depth requirement.
- Again, we recommend that we stick with the shallower 15cm depth proposal version of the indicator for Sandy Barrier Islands.
- The color rounding rules should be put into the user notes for the proposed new Sandy Barrier Indicator as a reminder of the clarification.
- Wade recommends that we express our concerns with the proposed sandy barrier islands indicator and with changes we made
- All in favor, no opposition.

Organic terminology issue

- Mark Stolt wanted some clarification on the usage for terminology for sapric/hemic/fibric vs. muck/mucky-peat/peat.
- The field indicators use the terms muck, mucky peat and peat in the field indicator and have them defined using the terms sapric, hemic and fibric. The definitions of these terms in the glossary are marked as definitions that may be different than other uses of the same terms in other references such as soil taxonomy. So, the committee feels that this is a taxonomy issue and that the terminology for use with the field indicators is properly defined.
- Tony suggests we wait to hear if any suggestions come from other conferences that deal with these topics.

Data for NTCHS meetings

- Tony commented that we had a great deal of data to deal with for this meeting and it was well presented and much hard work went into it. He would like to see a more formal requirement for data presented to us that highlights the data that meets HSTS or not.
- Perhaps we present a formal table that folks can see for a minimum dataset requirement and a timeline for us to consume before meetings. It was also suggested that we put together a spreadsheet that contains a minimum dataset in a summarized manner to make it easier to review whether a site meets the technical standard.

Tony Item 2

- Activities of SSO's across country involve correlating series to one representative pedon during SDJR. Often more than 10 pedons are recorrelated into one. We need the offices to consider whether there are any hydric soils within the recorrelation. He would like the committee to draft a note that addresses our concerns regarding this topic.
- Also would like a NASIS table for the hydric indicator met.
- Lenore mentioned that in the past we have discussed having in the OSD a section that addresses potential indicators met.
- Lenore will draft a note to Dave Hoover about our concerns with SDJR and hydric soils.

Location for next year meeting

- Tony is moving next week to Seattle and is strongly pushing for AK.
- AK has many pending issues that the committee has not been able to address due to lack of data and knowledge of the soils and site characteristics by the majority of the committee. Visiting sites may assist in the committees understanding and allow the committee to better address the concerns.
- Chris mentioned that it would be well timed to assist in the revisions of the AK Regional Supplement.
- Alaska it is for next year!!! Probably mid to late June through September, but before October.
- Tony will get some recommendations for when a good time to visit AK would be.

Kudos to the local NRCS and University staff for preparing the field tour and all the data. They did an excellent job. The homemade cream cheese cake and treats were an added bonus!!!

Much thanks to everyone who participated and to the local NRCS staff for use of their conference space.

Meeting adjourned 10:21 am 5/22/14

Follow-up Teleconference – 8/8/14

Members present – Lenore Vasilas, Wade Hurt, Rusty Griffin, Chris Noble, Steve Lawrence, Aaron Miller, Steve Monteith, Tony Jenkins, and Richard Griffin

A follow-up teleconference was held to discuss and vote on a few lingering discussion items where more information was needed before a decision could be made.

Revisions for proposed Barrier Island indicators were sent back to Annie Rossi and Marty Rabenhorst and they agreed on the changes. A final decision to remove the word sandy from the name of the indicators was made and Chris Noble made a motion to accept the following indicator.

S12. Barrier Islands 1 cm Muck. For use in MLRA 153B and 153D of LRRs T. In the swale portion of dune-and- swale complexes of barrier islands, a layer of muck 1 cm (0.5 inch) or more thick with value of 3 or less and chroma of 2 or less and starting within 15 cm (6 inches) of the soil surface.

User notes: This indicator is similar to A9 but allows chroma of greater than 1, but not greater than 2. The indicator is limited to depressions that pond water in sandy soils in the dune-swale complex on barrier islands.

He also proposed to accept the following indicator as a test indicator.

TS7. Barrier Islands Low Chroma Matrix. For use in MLRA 153B and 153D of LRRs T. In the swale portion of dune-and-swale complexes of barrier islands, a surface layer 1 cm (0.5 inch) or more thick with value 4 or less and chroma 2 or less. Below the dark surface, a layer(s) 10 cm (4 inches) or more thick with a dominant hue of 2.5Y or yellower and value 4 or more and chroma less than 2 starting within 15 cm (6 inches) of the soil surface.

User notes: The requirement of a dark surface layer above the low chroma layer excludes sediments from recent depositional events (especially common in overwash areas) which are not hydric. Low chroma colors in recent deposits are likely due to the nature of the parent material and not related to hydrology. There is no color requirement for any layer(s) between the dark surface and the low chroma matrix.

Richard Griffin seconded the motion and all were in favor so the motion passed.

A proposal was submitted by Wade Hurt to correct wording errors in indicators A11 Dark Surface and A12 Thick Dark Surface to capture the original intent of the indicators.

Chris Noble motioned to accept the proposed changes and Wade Hurt seconded. All were in favor.

Field indicator will be updated as follows:

A11. Depleted Below Dark Surface. For use in all LRRs, except for W, X, and Y; for testing in LRRs W, X, and Y. A layer with a depleted or gleyed matrix that has 60 percent or more chroma of 2 or less, starting within 30 cm (12 inches) of the soil surface, and having a minimum thickness of either:

a. 15 cm (6 inches), or

b. 5 cm (2 inches) if the 5 cm consists of fragmental soil material.

Loamy or clayey layer(s) above the depleted or gleyed matrix must have value of 3 or less and chroma of 2 or less. Any sandy material above the depleted or gleyed matrix must have value of 3 or less and chroma of 1 or less, and, viewed through a 10x or 15x hand lens, at least 70 percent of the visible soil particles must be masked with organic material. Observed without a hand lens, the particles appear to be close to 100 percent masked.

will be changed to

A11. Depleted Below Dark Surface. For use in all LRRs, except for W, X, and Y; for testing in LRRs W, X, and Y. A layer with a depleted or gleyed matrix that has 60 percent or more chroma of 2 or less, starting within 30 cm (12 inches) of the soil surface, and having a minimum thickness of either:

a. 15 cm (6 inches), or

b. 5 cm (2 inches) if the 5 cm consists of fragmental soil material.

Sandy layer(s) with value of 3 or less and chroma 1 or less and, viewed through a 10x or 15x hand lens, at least 70 percent of the visible soil particles must be masked with organic material or dark loamy or clayey layer(s) with value 3 or less and chroma of 2 or less must occur immediately above the depleted matrix and within 15 cm (6 inches) of the soil surface. Sandy layers observed without a hand lens, the particles appear to be close to 100 percent masked.

and

A12. Thick Dark Surface. For use in all LRRs. A layer at least 15 cm (6 inches) thick with a depleted or gleyed matrix that has 60 percent or more chroma of 2 or less starting below 30 cm (12 inches) of the surface. The layer(s) above the depleted or gleyed matrix must have value of 2.5 or less and chroma of 1 or less to a depth of at least 30 cm (12 inches) and value of 3 or less and chroma of 1 or less in any remaining layers above the depleted or gleyed matrix. In any sandy material above the depleted or gleyed matrix, at least 70 percent of the visible soil particles must be masked with organic material, viewed through a 10x or 15x hand lens. Observed without a hand lens, the particles appear to be close to 100 percent masked.

will be changed to

A12. Thick Dark Surface. For use in all LRRs. A layer at least 15 cm (6 inches) thick with a depleted or gleyed matrix that has 60 percent or more chroma of 2 or less starting below 30 cm (12 inches) of the surface. A layer(s) starting within 15 cm (6 inches) and above the depleted or gleyed matrix must have value of 2.5 or less and chroma of 1 or less and be at least 30 cm (12 inches) thick and any remaining layer(s) above the depleted matrix must have value of 3 or less and chroma of 1 or less. In any sandy material above the depleted or gleyed matrix, at least 70 percent of the visible soil particles must be masked with organic material, viewed through a 10x or 15x hand lens. Observed without a hand lens, the particles appear to be close to 100 percent masked.

The changes to A11 and A12 allow for 6 inches of any color above the indicator as is allowed in most other indicators.