Monday, June 18, 2018

- Telecon: Wade Hurt, Mike Vepraskas, Steve Monteith, Tony Jenkins, Jacob Berkowitz, Colby Moorberg, Rusty Griffin, Paul Rodrigue.
- Present: Lenore Vasilas, Annie Rossi, Richard Griffin, Ron McCormick, Aaron Miller, Karen Vaughn, Chelsea Duvall (Graduate Student)
- Meeting Minutes from 2017. No comments or errors. Richard moves to approve minutes, Annie seconds.
- Discussion of F13 proposal. Mid-Atlantic
  - Broad Mineral Flats, don’t meet indicators like F6. In southeast coastal plain, high OM that is black means it’s wet. Proposal to get rid of landscape requirement in F13.
  - Mike wants to know whether proposal is to just remove landscape terminology. Lenore confirmed that is the proposal, and not to add any language.
  - Jacob comments that we haven’t seen any data forms that point out where the problems exist. Wants to have something to point to for justifying the recommendation.
  - Mike will provide some supporting data to justify this decision.
  - Wade moves to accept the language changes in the F13 indicator. Mike sends. All in favor, Karen abstains.
  - Delete the following language in red:

F13.—Umbric Surface. For use in LRRs P, T, and U and MLRA 122 of LRR N. In depressions and other concave landforms, a layer 25 cm (10 inches) or more thick, starting at a depth ≤ 15 cm (6 inches) from the soil surface, in which the upper 15 cm (6 inches) has value of 3 or less and chroma of 1 or less and in which the lower 10 cm (4 inches) has the same colors as those described above or any other color that has chroma of 2 or less.

User Notes: The thickness requirements may be slightly less than those for an umbric epipedon (fig. 37). Microlows (approximately 1 m) are not considered to be concave landforms. Umbric surfaces in the higher landscape positions, such as side slopes dominated by Humic Dystrudepts, are excluded.

- Discussion of terminology definition issues
  - Definition of Depleted Matrix – Add “chroma of 1 or less” to point #4 with Matrix value of 4. Wade motions to accept, Richard seconds. All in favor.
  - Definition of a layer - Layer(s). A horizon, subhorizon, or combination of contiguous horizons or subhorizons sharing at least one property referred to in the indicators.
    - The use of “shared property” is confusing.
    - Lenore thinks it should say “properties required by the indicator”
    - Aaron proposed this wording: “A horizon, subhorizon, or combination of contiguous horizons or subhorizons sharing the properties required by the indicator”.
    - Wade motions to accept, Richard seconds. All in favor.
- Need for publication of technical standard – Karen proposal
  - Originally discussed in 2016 meeting to publish HSTS
  - When publishing, it’s hard to cite the HSTS consistently
  - Lends credibility, accessible, searchable
  - Where to publish? Authorship? Lead person for the role?
  - Lenore might be able to get funding and push through NRCS review.
Jacob volunteered to push it through the journal.
Published under NTCHS authorship.
Mike will help to add historical context
Karen and Jacob will get it started and include NTCHS members as needed.

- **USACE Update by Jacob**
  - Continuation of Red Parent Materials – Finishing this effort. Thesis from U-Maryland will publish the results.
    - Maps of RPM in US
    - Lists of soil series and related geologic formations
    - Draft article will be shared with NTCHS for questions or comments
  - Automated Data Forms for Wetland ID
    - Hydric soils forms released for 2 regions SW and NE
    - Changes to indicators require form updates
  - Interest in publishing HSTS

- **Chelsea Duvall’s presentation**
  - Quantification of FeS Expression in Arid Wetlands
  - No existing hydric indicator for FeS
  - 2% precipitation of FeS indicates stronger reducing conditions than just Fe reduction.
  - Black masses can be FeS or other organic or Mn features
  - Using 3% H2O2
    - FeS = color change (drastic)
    - Organic bodies or Mn = effervesce
  - Steve suggests looking at the minimum amounts of total S required for these features to exist.
  - Aaron pointed out a few location in NM that an FeS indicator would be the only way to ID a hydric soil
  - Question as to whether the HCl - H2S smell test would also work as an indicator. Committee will test this tomorrow in the field.

- **NRCS Updates**
  - Lenore – Thinking of creating a hydric soils focus team.
  - Steve – NWCA soil analysis completed. Still processing data and EPA will handle it before its public. The intensification pedons that NRCS assisted with will be entered into Kellogg database.
  - Tony – New England has next version of their hydric indicators coming.

- **Annie Rossi**

Update on the “Waters of the United States Rulemaking Efforts

EPA and the Department of the Army have been busy with three rulemaking efforts regarding the definition of “waters of the United States” in light of a February 2015 Presidential Executive Order directing the agencies to review the final 2015 Clean Water Rule and to publish for notice and comment a proposed rule rescinding or revising the rule.

EPA and the Department of the Army are working through a two-step process to consider revisions to the definition of “waters of the United States.”
- **Step 1:** The agencies are currently reviewing the 685,000 comments we received on the Step 1 proposed rule (proposed July 2017), which would rescind the 2015 rule and recodify the prior regulations.
• One of the takeaways from our comment period is that the scope of efforts wasn’t entirely clear. Rather than wait for the final rule, EPA and the Army are planning to issue a supplemental notice of proposed rulemaking to provide further clarity and to solicit additional public comments.
• The supplemental notice sent to the Office of Management and Budget on April 11 for interagency review.
• Once interagency review concludes, the supplemental notice will be published in the Federal Register. The agencies will consider all comments received as they work to finalize a Step 1 rule.

• Step 2: The agencies are planning to propose a new definition of “waters of the United States” in the Step 2 rule, taking into consideration the direction from the February 2017 Executive Order.
  - Proposed Rule Outreach: Consulting with our state and tribal partners in developing a new rule to define “water of the United States” have been a top priority. The agencies have received important feedback through several rounds of discussions with state, local government, tribal governments, and stakeholders.
  - This has included formal tribal and federalism consultation periods, held from April-June of 2017.
  - Last fall, the agencies also held a series of 10 listening sessions for a variety of stakeholders and an in-person meeting for small entities, as well as opened an administrative docket. The purpose of these efforts was to solicit proposal input regarding what the redefinition of “waters of the United States” should look like.
  - The agencies have continued to engage or state and tribal co-regulators. In March, along with the Army, EPA hosted two, two-day workshops with a select number of our state and tribal co-regulators to seek further input on the Step 2 proposal to redefine “waters of the United States.”
  - Next Steps: The agencies recently sent a proposed Step 2 rule to the Office of Management and Budget for interagency review (Friday, June 15). The agencies will issue the proposal for public comment after the interagency review process is complete.

• New Applicability Rule: In addition to the two-step rulemaking process, on February 6, 2018, EPA published a final rule adding an applicability date to the 2015 Clean Water Rule, with an immediate effective date. As a result, the 2015 Clean Water Rule will not become applicable before February 6, 2020.
  - National Wetland Condition Assessment
    - Ecological condition of nation’s wetlands, and their stressors.
    - 2011 data all public, 2016 is coming to public. Still in QA phase.
    - Final release report in 2019. Change analysis from 2011,
    - Potential for new indicators?
    - Promoting data use!
      - OC, combining NWCA and RACA
      - Nutrients and P
      - Hydric soil field indicators
      - ESDs
  - F6 Indicator Proposal
    - Need to decide what New England means in terms of MLRA assignments.
Suggested changes to the proposed indicator reads:

**Technical Description**

A17.---Mesic Spodic: For use in MLRA 144A and 145 of LRR R and MLRA 149B of LRR S. A layer 5 cm (2 in) or more thick, starting at a depth \( \leq \) less than or equal to 15 cm (6 in) from the mineral soil surface that has value of 3 or less and chroma of 2 or less and is directly underlain by either:

a) One or more layers of spodic materials 8 cm (3 in) or more thick, occurring starting at a depth \( \leq \) less than or equal to 30 cm (12 in) from the mineral soil surface, having a value and chroma of 3 or less; or

b) One or more layers 5 cm (2 in) or more thick, occurring starting at a depth \( \leq \) less than or equal to 30 cm (12 in) from the mineral soil surface, having a value of 4 or more and chroma of 2 or less, and is directly underlain by one or more layers 8 cm (3 in) or more thick of spodic materials that have a value and chroma of 3 or less.

**User Notes:** For use in the New England portions of MLRA 144A and 145 of LRR R and in MLRA 149B of LRR S. This indicator is used to identify wet soils that have spodic materials or that meet the definition of Spodosols. The layer described above that has value of 4 or more and chroma of 2 or less is typically described as an E or Eg horizon. The layer(s) that are 8 cm (3 in) or more with value and chroma 3 or less and meet the definition of a spodic materials (i.e. have an illuvial accumulation of amorphous materials consisting of organic carbon and aluminum with or without Fe) are typically described as Bh, Bhs, or Bhsm horizons. These layers typically have several color patterns and/or cementation.

- It was felt that indicators should not end at state boundaries and the committee was unsure what the implications of allowing the indicator outside of New England would be. Lenore volunteered to request input from NJ, NY and PA as to whether the indicator being allowed in their states would be an issue before final vote on approval.
- Wade motioned to encourage Lenore on this action item, Richard seconds, all agreed.

- **Pinedale field trip overview**
  - White soil in wet areas with no redox features.
  - 4 sites, we will visit 3 of them
  - Matt King master’s student did research here.
  - IRIS tubes, wells installed 2016, monitored for about 2 years.
  - Mesocosm core study.

- **Thursday June 21st**
  - Recap of field trip by Karen V.
    - 70% CaCO3 7.5YR 7/1
    - Hydrology and vegetation meet wetland requirements
    - Duck Creek: lots of conversation of hydrology, some histosols in area
    - Local NRCS folks joined us to help orient the group
    - Some lower locations we were able to get alpha-alpha strips to work
    - Second stop: Carbonatic masses “Klinkers” present
    - Theory one: Artesian source of groundwater in area, accreting materials of carbonate, positive piezometric water pressure, saturated surfaces
    - Third stop: Very wet, more riparian.
    - Observation of “higher” location in catena where more expressed A horizon is present. Below 1m depth, we see redox concentrations as Fe masses, with a pH below 7.8. Surface pH above 8.3 has no redox features.
    - Hydrology plays a very important role here too. Some areas have “soap holes” where cold artesian geysers exist.
    - Potential indicator elements
- Floodplain, floodplain steps, drainageways, and glacial drainage channels
- 7/2 or lighter within 10cm of surface
- Strong effervescence with 1M HCl
- Specify LRR/MLRA
- Thickness indicator
- Carbonatic mineralogy to surface
- Karen proposed language for the indicator

*Carbonatic soils: For use in MLRAs XYZ. On floodplains, floodplain steps, and drainageways, a mineral layer at least 30 cm thick, starting at a depth ≤10 cm from the soil surface, with a matrix value of 7 or greater and chroma of 2 or less. Layer must react strongly or greater upon application of 1 M HCl indicating high CaCO3 concentration.*


- Sites saturated 30 to 120 days within 30cm
- Need to install piezometers with the wells to determine the local hydrology
- Total carbon 10%
- Clay content high teens, mostly from hand textures
- OC < 0.5%
- Sand content ~10%
- Mike requests landscape diagrams, profile descriptions along catena, with chemistry data and presence of hydric indicators
- Steve asked what type of aquitard might be causing the artesian conditions. We need some information on the hydrogeology.
- Lenore mentions we might be able to get some transect data and IRIS tube data and with some water chemistry for some of these areas could be very important.
- Karen commented that operating an unfunded project 5 hours away from duty station is difficult, and that they are limited on how much they can help with further data collection needs. She will draft up some comments for what is needed to collect more data.

**Aaron brings up topic of need for FeS indicator where we have enough S, probably as CaSO4**

- Karen mentions that her work has shown that 2% visible FeS seems to be definitively anaerobic.
- Lenore agrees that FeS observation is a definitive way to identify a hydric soil, an indicator that says as much would be useful.
- Karen will send around her research paper and we can discuss pursuing the indicator next year after we get some more feedback from around the country. That means we will need to get the word out to folks to see where this indicator may be of use.

**University Report: Richard**

- Spatial Variability of Mn Oxide on an Upland/Lowland Mn study, TX Gulf Coast Prairie.
- Using new technique to quantify Mn reaction to soil within a test tube.
- Showing redistribution of Mn from higher positions in landscape to lowland areas.
- Also, wetland boundary is the highest level of MnO, with riparian buffers having higher levels at depth just below the surface
- Proposes that using quantitative Mn analysis could help to determine distribution of soluble Mn across a wetland boundary.
- Karen V. is concerned that biologicals in soil surface can impact the results of the assays. May be necessary to try to separate the organics from the Mn and try to interpret the results from that.

**University Report: Mike**
Developing and testing wetland hydrology performance
Basic question is “do these restored wetland sites have wetland hydrology?” If so, they will be successful! If not, waste of time and money.
When private sector alone was left to restore wetlands, over half of projects failed. State agency did not have good criteria for measuring success.
Need good standard to assess hydrology for restoration sites. Must include: Depth of saturation; duration of saturation; frequency of saturation.
To date, the involvement of NRCS has been minimal. This is a problem.

- **University Report: Karen**
  - Hydopedology Working Group
    - Instrumenting wetland catenas to look at the differentiation of processes
    - Water table, soil temp, IRIS/MnRIS, Decomposition sticks, SOC, SON, morphology
    - “What does it take to form hydric morphology?”
  - Grazing impacts on wetland extents
    - Cattle and sheep grazing history
    - 1.5% of WY are wetlands
    - 90% of wildlife rely on wetlands at some point in their life
    - 1999 grazing management enacted in WY, prior to that open grazing rules.
    - Comparing relict hydric features to current data from IRIS tubes
    - Average of 35% of historic wetlands lost, implications of changes in soil water storage
  - Continuation of S biogeochemistry (Chelsea Duball)
  - Revisit anomalous hydric soils on central coast of CA – masking of features by serpentitic minerals and OM

- **University Report: Colby**
  - Mini Rhizotron camera development
    - Automation using “razbsrry pies” by hooking up automated cameras (trying to conserve budget by innovative technology)
    - Pair system with other soil sensor technologies to image O-concentrations in 2-dimensions. Other observations too.
    - Help study wetland properties.
    - Mike V. suggests way to use this system to observe water table

- **Discussion for next year’s meeting**
  - Steve mentioned areas in West Tennessee. Brown soils not showing indicators, but had hydrology. Similar to piedmont soils , loaded with Mn. They lost wetland experts, so might be difficult to have a liason.
  - Topic of bringing F19 to SE is worth a discussion.
  - F13 modifications mineral flats visit? Mike is happy with our decisions to date. No further modifications needed.
  - May need to canvass the community for interest.
  - Red soils parent materials map issue areas.
  - Discussion for next year’s meeting tabled for now.

- Richard motions to adjourn.
- Ron Seconds
- All agree