



Standards Oversight Council (SOC)

Developing effective technical standards that protect Wisconsin's natural resources

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01 Verification of Land Features in Silurian Bedrock/Karst Areas Standard Team

MEETING NOTES

Thursday, May 23, 2019 ▲ 9:30am – 3:00pm ▲

UW Division of Extension - 625 E. County Road Y, Meeting Room D, Oshkosh, WI

9:30 Welcome, Introduction, Notes Approval

Goal: Welcome, review objective for meeting today, review and, if needed, adjust 4/25/19 draft meeting notes as necessary and approve.

Present: Kate Brunner, Mark Jenks, Rachel Rushmann, Joe Baeten, Travis Engels, Amy Haak, David Hart, Maureen Muldoon, Nathen Nysse, Tony Reali, Matt Komiskey, , and Matt Woodrow.
Absent: Francisco Arriaga, Jason Nemecek, Jamie Patton
Invited Guests (remotely): Richard, NRCS (for Jason Nemecek)
Public Guests: None

No edits to 4/25 notes were raised. Kate will post final online in a week so please email her any lingering comments this week.

Goal today will be to look at depth variations, then focus on criteria for hand probing, Geoprobe and excavation. We'll start thinking more along the lines of the structure of the final standard.

Administrative changes: Mark is leaving DATCP so he is leaving the team and will not be attending meetings after today. Maureen is taking a leave from UW Oshkosh to work for WGNHS for a couple years; she will continue to participate on this team.

Review Methods by Depth

Goal: Discuss methodologies appropriate to each depth interval in NR 151.075.

Team reviews what the preferred methods are by depth, and updates table already begun with consensus on the ranking of appropriate methods for each depth interval in NR 151.075.

There are site conditions that may complicate use of a method in some situations beyond just depth. For example, equipment already available on the farm, site topography, soil moisture, etc. These would be itemized as we prepare technical standard Criteria or could be a Consideration. User will have the option to use the method that is appropriate and we won't specify just one method to use for each depth.

The quality of the data also depends on operator expertise.

Boundary at 3' (between 2-3' and 3-5') may be complicated to differentiate and restrictions between the two seem to be minor. Team may consider combining depth categories.

When looking at method by depth interval, we may want to clarify if it's the top end or the bottom end we are delineating because method use varies. For example, hand probe is effective for 3', but not nearly as good at 5' depth.

Review Samples of Bedrock Variability

Goal: Show and tell of team member examples of depth to bedrock data sets, with discussion related to variability across one field.

Discussion on variability in bedrock depths using examples of different methodologies from **Dave, Travis, Amy, and Nathen.**

Aerial photo review, NRCS soil map review, and farmer input are helpful before probing. Aerial photo review of multiple years is informative—can catch a dry year or different seasons. Aerials can show ledges, cracks and sinkholes that may not be evident from the ground.

It's also important to understand farmer objectives—for example, sometimes only 2' boundary is important to this farmer (i.e., spread vs no-spread) so they wouldn't need or want a uniform grid across their entire field. Team discusses that there could still be unknown bedrock depths elsewhere on a field so some data points would be needed across entire field, not just to delineate boundary.

One example reviewed was Veris EM38 geophysics combined with in-field probing (for confirmation). Veris creates output with different zones that are field-specific, depending on range of the data. Veris not intended for depth to bedrock but measures conductivity differences in soil so can be effective tool for rock. Veris turn radius results in 35' spacing of transects.

Less frequent measurements may be appropriate with deeper bedrock.

Variation of depth to bedrock across one field can easily be several feet—some examples reviewed varied from surface outcropping to >48" (not pursued deeper) for example with shallower rock and from 16' to 40' for example with deeper rock.

Bedrock is not necessarily uniform pitch and may vary based on surface topography or variable bedrock surface. Sometimes you can do 2 probes like 5 feet away and get very different results.

Draft Criteria by Method (Small group exercise)

Goal: Break out into 3 groups and start laying out the criteria for hand probing, Geoprobings and excavation.

MEETING NOTES

Thursday, May 23, 2019

Page 3

Copies of Standards 632 and 1057 are provided as a starting point in style and structure. 1057 is the current SOC format. Both these examples have criteria broken down into different equipment/methods.

The 3 teams discuss:

Steps to the method and how frequent to test.

Who is collecting the data?

What documentation should be submitted?

Groups focused on the main criteria, but also identified some complicating factors

Report Back from Morning Break-Out Groups

Goal: Each of the three small groups will report back on the criteria they've identified. Review suggestions for further criteria or considerations to be added. Team discussion of adjustments.

Each of the 3 teams reported back a summary of their group's discussions. We tabulate some answers for comparison. Key points are also indicated below:

- Sampling on a uniform frequency like a grid pattern across a field is preferred, and 1 sample per acre generally suggested.
 - Frequency of sampling could shift to be less frequent for deeper bedrock. Team may consider adjustments in frequency by depth (e.g., min. 1 per acre when >3' depth; 1 per 0.5 acre (100' grid) when 2-3 depth range.
 - Frequency of sampling could increase to determine boundaries, especially 2' depth.
 - Frequency of sampling could change if multiple verification methods are used (for example, geophysics plus hand probing).
 - We'll pick up discussion on changes to sampling density in a later meeting.
- Person collecting the data for each of these 3 methods (hand probe, geoprobe, excavation) will need some experience using the tools. These methods don't require specific credentials, but data should be available for 3rd party review.
- Before probing, review background info (aka site assessment) such as aerial photos or other remote sensing, Lidar, soil maps, interview with farmer.
- Restoration/abandonment may be DNR citation and not new protocol decided by this team. There are different requirements in different programs; **Joe** will look into this and report DNR requirements back to the team.
- Similar basic information should be reported for all methods. We'd list basic documentation/submittal requirements in the standard.
 - **Matt W** is familiar with the NRCS soil log so he will review this and DNR boring log form to prepare a list of information we'd identify for field documentation needs.
 - For boring/probe depth, it should be noted on log whether bottom is just bottom of the probe or whether it is bedrock.
 - All documentation should be available for agency or third-party review and confirmation.
- One complication of data will be GPS accuracy. Off-the-shelf units have published accuracy of several meters (though are believed to be more accurate most of the time).

MEETING NOTES

Thursday, May 23, 2019

Page 4

More accurate GPS units (sub-meter) are at least several thousand dollars. This team would like to know what the cost escalation is for different levels of accuracy. 3' accuracy is preferred but we'd need to also confirm that this is readily available for farmer/hauler (i.e., consider accuracy in recording the measurement and in spreading). **Nathen** will contact Brian Luck at Extension and see if he's able to present regarding GPS and farming at our next meeting.

- Discussion today is starting point. Criteria will be further refined at a later date.

Next Meeting Topics and Plan of Action (Kate, Team)

Goal: Identify and understand the topics, concerns, and goals for next meeting. Review Action Items and agenda items for next meeting.

Future meetings are planned for June 27, July 18, Aug 22, Sept 26, Oct 24, and Dec. 17 (note: rescheduled from Dec. 19), 2019.

Topics for next meeting include GPS and geophysics. See action items #3 to #6 below.

Action Items:

1. **Matt W** - review the NRCS soil log and DNR boring log forms and prepare a list of information we'd identify in our list for field documentation needs. Please send summary to Kate.
2. **Joe** - distill the DNR requirements and guidance for backfill/restoration of borings and test pits. Please send summary to Kate.
3. **Nathen** - contact Brian Luck at Extension and see if he's able to present at our next meeting (6/27) and discuss with him information we'd like to understand from him [GPS accuracy options and cost for accuracy, both for initial point location and for farmer/hauler use for future spreading]. If he's available in person or report on 6/27, please find out times available and connect Kate with him for details.
4. **Nathen** - contact Veris rep and see if they are able to present and participate in Q&A at our next meeting (6/27).

If so, please prep them with what we are looking for and find out times available and connect Kate with the appropriate person for details on remote connections. If not, please find out as much as you can about their line of products. Some details may include: We would be trying to distinguish depth to bedrock at depths of 2', 3', 5', and 20'--which products are appropriate and at which depths, what is the accuracy of each at these depths, what frequency of spacing?

5. **Matt K** - contact Geonics tech support rep and see if they are able to present and participate in Q&A at our next meeting (6/27). Same follow-up as listed in #4 above for Veris.

MEETING NOTES

Thursday, May 23, 2019

Page 5

6. **Dave** - There's no specific action item right now, but Kate or Rachel will be in touch to discuss clarification on geophysical methods after we get a chance to look at the summary geophysics information Kate recently received from Dante Fratta.

3:00 End