



Standards Oversight Council (SOC)

Developing effective technical standards that protect Wisconsin's natural resources

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NRCS 380 Windbreak-Shelterbelt Establishment and Renovation Standard Update Team MEETING NOTES

Wednesday, March 30, 2022 ▲ 1:00pm – 3:30pm ▲

Online meeting

1:00 Welcome & Introduction (Kate, Allan)

Goal: Welcome and review today's meeting objective.

Welcome everyone!

Confirm Attendance: Kate Brunner (SOC Program Manager)

Allan Braun (Team Leader) – NRCS

Drew Zelle, DATCP

Mike Stanek

Mic Armstrong, NRCS

Michael Demchik, UW Stevens Point

Roy Diver, NRCS

Shannon Rohde, Portage Co., Central WI Windshed Partnership

Matt Wilson, Savanna Institute

Peter Wisniewski, WisDOT

Eric Hurley (Sponsor) – NRCS

Tony Johnson, UW Madison Division Extension

Absent: Jeremiah Auer

Guests: None

Notes Review (Kate)

Goal: Review and approve 2/23/2022 draft meeting notes. Identify open action items.

Draft meeting notes from February meeting were emailed to the team for review.

- Action Items Complete
- One correction – Jeremiah works for DNR!
- No other questions or comments to the notes were raised by the team, so Kate will post online as final.

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Living Snow Fence (Peter, Team)

Goal: Provide summary of windbreaks as a living snow fence.

Some key points presentation and team discussion:

- WisDOT has a snow drift control program, both living and manmade. Living snow fences were lesser used in the 80s and 90s but now being used more frequently since Peter took over the drift control project in 2013.
- From DOT standpoint, snow removal is very expensive compared to trapping it with a fence to achieve drift-free roads so better for taxpayers. It's also better for driver visibility, accident reduction, environment (less salt, fewer truck trips, less roadway damage). Also increases crop yields by keeping soil in place, allowing natural snowmelt moisture in soil and even some fertilizing benefit.
- Living snow fence – trees, shrubs and native grasses planted along roadways designed to capture snow. Their design may need to consider things like distance to fogline and center line, distance to fence or right of way, topography, adjacent property use, other purposes (noise barrier, delineate snowmobile trail traffic).
- DOT uses a variety of trees and shrubs. They like evergreen shrubs as they are low cost and bloom throughout the growing season to provide food source and shelter for pollinators. They typically plant evergreens in 2-3 rows, 8' apart, 6' between rows.
- In some cases they pay farmers to leave 8-16 rows of standing corn up over winter and that works as a snow fence.
- Manmade fences can be preferred since they can get a little closer to the road than a living snow fence. They can be temporary or permanent.
- Roadside snow fences may require coordination with state and county and private landowners depending on who owns the road and adjacent land. May also need to consider outdoor advertising and utilities.
- Their design incorporates some standard models of wind direction, snow depth, fence height, and solid vs porosity to determine transport and capacity.
- DOT has been mapping their living snow fences for planning and protection purposes.
- Prairie grasses (warm season grass strips) not used by DOT. They do mow grasses in differing patterns in some areas for some windbreak benefit.
- Is there a preferred porosity in the design for snow control? DOT designs according to distance from the road and then adjusts porosity based on that. Usually you can't see through a living snow fence. NRCS usually is looking for about 50% porosity for wind erosion control.

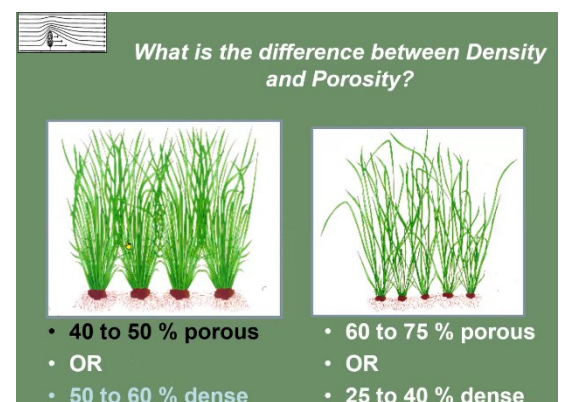
- DOT considers “far snow” and “near snow” impacts. Max. distance for traveling snow is 3000 meters and near snow is <300 feet.
- There are geographic differences based on the roadway and also the primary wind direction in winter. In some areas, primary wind direction changes from early winter to late winter (in southern part of the state, primary direction changes from north to south).
- Right of way varies on smaller roads. County GISs are a good source of this information.

Quantifying Soil Loss (Mike, Team)

Goal: Provide summary of tools for quantifying soil loss, focusing on wind erosion. Begin team discussion.

Some key points presentation and team discussion:

- NRCS has one tool to quantify soil loss from wind erosion: [Wind Erosion Prediction System](#) (WEPS). There was previously an equation to track wind erosion but it was less accurate, slow.
- Wind erosion can cause soil creep across a field, create rills, bigger dust clouds moving particles far away.
- WEPS breaks the field down into a grid to adjust for wind differences (including seasonal changes) and soil differences across a field.
- You can add a barrier to model field with some protection – sufficient density to create a sheltered zone downwind. This may include single or multiple rows of trees, shrubs or grasses, even annuals like corn. Barriers can also include snow fences, boardwalks, earthen banks, rock walls, and more.
- Barriers influence wind erosion 10x height of the barrier. A portion of air will flow through a windbreak but should go around and over the barrier.
- Results – lower wind velocity causing particulate deposition, vegetation physically traps particulate, adsorb some chemicals attached to particulate, and alters the microclimate. Windbreaks can also have a benefit for pesticide drift, but that wouldn’t be part of sheet and rill erosion. Improving air quality is in the purpose list.
- Porosity vs density –
 - Barrier porosity—percentage of the open portion of the barrier to the total area of the barrier. Varies by spacing of trees and species. Measurement of the open portion.



- Barrier density is percentage of the solid portion of the barrier to the total area of the barrier. Measurement of the thicker, solid portion.
- Porosity/density can vary from top to bottom of the windbreak, and for deciduous trees will vary from winter to summer. Pruning trees can reduce benefit of windbreak.
- Generally, 10x height of the barrier is the zone of protection (leeward) as a rule of thumb; WEPS models details with other factors like wind velocity and site specifics.
- Vegetable producers can put down a rye cover crop that also protects fragile, newly emerging plants (like carrots, potatoes).
- Herbaceous Wind Barriers – there's another standard that covers that grass-type barrier.
- Forest blocks can also operate as a wind barrier but not as effectively as a narrow shelterbelt.
- Barrier limitations – lifespans (also include storm damage, insect pressure)

Demonstration of WEPS on-screen together. Some key points:

- You can use WEPS to confirm the resource concern exists before applying the standard. A producer may want to use windbreaks for reasons other than wind erosion (like pesticide drift); this is included in the Purpose list.
- There are both web-based and downloadable software versions. See Web based version is here:
<https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/technical/tools/weps/>
- Much of the software is filling in blanks and using dropdown menus for options. There are lots of field customizations available—size, shape, orientation, soil type, crop type, barrier planned (height, porosity, veg type).
- WEPS allows for different windbreak shapes (one side, L shaped, full perimeter)
- Cropping system option is important for accuracy. CRLMOD is cropland database and we are in CMZ4 for most of the state (CMZ1 is Ashland, Bayfield and Iron Counties). Mike can help with the many abbreviations, if needed (for example, FP = fall plow, FC = fall chisel).
- Porosity is a % so number you enter should be <1.
- Soil drop down may be slow; be patient.
- When done, start the model by clicking the running man button at the top.

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Technical Standard Language Review (Allan, Team)

Goal: As time allows, begin focus on federal standard language to amend.

Meeting time does not allow for discussion on language specifics. This topic will be postponed to another meeting.

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

Goal: Identify priority topics and goals for next meeting. Review Action Items.

Next meeting will be online, on April 27 from 1:00 -4:00 pm.

Team had previously discussed a field trip. April meeting too soon since plants still greening up, May and June are really busy for field staff and attendance would be light. Team agrees to **July** tour.

Action Items developed today:

1. Homework – **Team** should review federal standard and think of critiques to make it more applicable to WI.
2. Mic and Jeremiah could presenters at next meeting on stock and seedlings. Mic can be ready; he and Kate will confirm availability with Jeremiah.
3. Field trip planning – Shannon to host the team at Hancock ARS on July 27. Kate will assist with logistics and provide drinks/snacks.
4. **Kate**: finalize and post meeting notes from 2/23.
5. **Kate**: draft 3/30 meeting notes. Reviewed by **Allan**, then reviewed by full **Team**.
6. **Allan and Kate**: prepare agenda for 4/27 meeting and send to team one week prior to meeting. Agenda expected to include:
 - a. Start looking at the technical standard language
 - b. Mic presentation on types of planting stock - Perhaps with Jeremiah to cover the seedling end of things.

3:30 *End*

Some outstanding topics to discuss at a future meeting:

- Team will continue to discuss concepts, then will look at specifics for document revision, then pivot to the guidance documents.
- Discussion topics:
 - Criteria evaluation specific to outside elements: roads, utilities above and below ground, and other living snow fence recommendations (Peter presented on DOT and living snow fence at March meeting). Figure 1 in Forestry Tech Note 4 shows setbacks. See also Dairyland Power guide for plantings near power lines. Each utility is likely to have different rules for plantings under power lines.

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- Wildlife habitat – potential incorporation into CPS and guidance doc (may need input or presentation by a wildlife biologist). NRCS hedgerow standard would have more wildlife focus than windbreaks and NRCS is having internal discussions now on whether to add hedgerows.
- Resource concerns – Carbon already on the new national standard; team may think about specific criteria or considerations specific to that purpose.
- Stock types - Guidance document material (Tech Note 4), so that would be later in process after standard is drafted. Could include presentation by Jeremiah Auer and Mic Armstrong. (possible May meeting topic)
- O&M – could be a new guidance document for the “how to.” Where to include the expectation and get it done.
- Should we have a tool like the Excel spreadsheet that Iowa uses (guidance document).
- Team previously discussed a field trip (later in spring?) to see the windbreaks in person together—firsthand look at what is “good” and “bad” and what rehabilitation and better O&M could look like. Shannon could host at Hancock Research Station, which also has meeting space. We would see old, run-down windbreaks as well as good, high quality windbreaks. Best to wait until summer for better view with leaves—anticipate for July meeting date. If needed, another possible option to see different stock would be UW Arboretum in Madison.

FROM EMAIL FROM PETER: clarify WisDOT right-of-way vs private easement. Utilities are guests on state r/w, which means the needs of the state trump the policies of the utilities. The state at any point can revoke their permit and ask for the utility to be removed from state property. This is or may not be the case with private properties. Most easements give the utility the right to manage/maintain their utility, including but not limited to vegetation removal. I am curious what the language states in some easements, because the utility internal policy may be very different from the federal regulations.