WISCONSIN STANDARDS OVERSIGHT COUNCIL

Standards Oversight Council (SOC)

Developing effective technical standards that protect Wisconsin's natural resources

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NRCS Stream Restoration Standards Team
MEETING NOTES

Tuesday, April 21, 2020 ▲ 9:30am – 12:30pm ▲
Remote meeting via webinar and phone

9:30 **Welcome & Notes Approval** (Kate, Team)
Goal: Welcome, meeting goals, adjust 3/24/20 draft meeting notes as necessary and approve.

Attendance: Kate, Steve, Nate, Bart, Stacy, Mike, Faith, Jeff, Joe, Jeff, Seth, Ben, Marty, Bob, Ken

Team Absences: None

Meeting goal: Hear from some team members on their experience. Through that, and as time allows, we'll update and clarify our list of key issues.

A draft of the 3/24/20 Meeting Notes was emailed around to the team. No questions or edits raised by the team. **Kate** will finalize and post these notes publicly on our team website within a week.

Team Quorum (Kate, Team)
Goal: Decide on what constitutes a quorum.

Team discusses what constitutes a quorum: 1) minimum to hold a meeting; and 2) desired agreement for decision making.

Quorum:

- Team Leader must be present to hold a meeting.
- Of our 14-member team, the team agrees that a minimum of 9 Team Members should be present to hold a meeting.
- Attendance can be by phone/webinar participation.
- Team does not want to allow substitutes. Meetings are public and you could have a colleague come listen in.
- We may also invite guests to speak to the group; these are not considered substitutes for team members. For example, we may identify knowledge gaps in the team and want a colleague or other expert to inform us about a specific topic.

Decision Making:

- For decisions, we'll strive for consensus but ultimately a decision may be based on a majority of those present (whether it's a 9-person meeting or a 14-person meeting).
- Team Members participating remotely can vote.
- Do not share information about individual's decisions. These are team decisions now. This includes not sharing details of votes other than the outcome.
- We will try not to review old decisions unless there's truly new information. The team decides and we move on.
- If we have trouble making decisions, the team may also consider:
  - Tabling contentious topics as necessary to allow thoughts to develop, or seek further input;
  - Inserting a placeholder text into the draft and send out for initial or broad review; or
  - Placing item in Considerations section of the standard (i.e., more of a recommendations than a requirement).
- If you hear input from outside "complainers", you can ask them to submit research to support their viewpoint, and they can contact the Custodian (Steve Becker) directly as well. We don't want non-team members to undermine the process. Non-team members can also stay informed by reading the meeting minutes on our team webpage.

Case Studies – Part 1

Goal: Some Team Members present successes and failures in stream restoration related to their expertise.

Team hears a series of presentations from 7 of our Team Members. These are not necessarily success stories or worst-case fails, but a variety of situations that show each presenter's area of expertise and experience, and some corresponding issues related to the 4 technical standards this team is updating.

We'll use this discussion to further flesh out our list of key issues, which is expected to be our jumping off point for subsequent meetings.

Kate will get permissions from today's presenters and post PDFs of slides in the private, password-protected portion of team website. Some key points from the presentations and team discussion are below.

Presentation by Faith

1. Groundwater contribution/hydrologic connections: What important aspects are we missing for processes that happen underneath the ground?

2. Resiliency in designs relative to large climatic events = geomorphic evolution = can we identify reaches under risk for geomorphic change, or from large episodic dumps of sediment from upstream infrastructure failures?
    a. Floodplains evolve, esp. following large floods.
    b. Large floods pushing into geomorphic evolution of wider valleys and bigger floodplains.
    c. Map out risky areas where there would be a change in hydrology. ID which areas are susceptible and plan where there's a higher risk of failure.
3. Include diversity of channel types:
    a. How do we make sure the standards are not biased toward meandering pool/riffle channels?
    b. How do we incorporate low gradient/seepage dominated, and possibly depositional settings like headwater wetlands, confluences, and multi-channel systems?
    c. Can we address channel restoration with natural variations and complications like wetlands, complex stratigraphy, and beaver dams?
4. Natural streams have greater variability in bank heights and planforms—engineered streams typically reduce shape variations and are not necessarily fitting for the diversity of the stream.
    a. Channel forms not always uniform.
    b. Glacial landforms are different from karst, for example. Some settings (esp. urban settings) more altered stream to start.
    c. Ultimate goal is to reduce runoff and increase base flow.

Presentation by Mike

1. Overview of the type and amount of work completed by NRCS/partners in SW Wisconsin.
    a. Just in SW WI area of WI, average about 50 projects for NRCS 580 practices per year over past 5 years. Per year average is $1.3M in 580 practices and $95K in habitat projects.
2. Managing Obj and Expectations and Site Limitations
    a. There are design, site, and landowner constraints.
    b. Typical design is based on a 10-year storm event. Failures often a different issue--may be much larger storm events, below a dam breach, or before the restoration vegetation is complete.
    c. Landowners typically want to control erosion and protect their property. They may not want a project that takes more of their property or requires more maintenance (seedings, invasives, burns, etc.).
    d. What partners are involved in the project, what grants are available to help? What is the landowner or sponsor willing to contribute to the project?

    e. Need to match the goal and objectives with the resources available to plan a successful project.
3. Streambank protection vs. stream habitat improvement vs. stream corridor restoration.
    a. Project scope starts with streambank protections – erosion control and fish habitat;
    b. Projects may be intended for one goal (like erosion) and may not address something like habitat or vegetation.
4. Sediment transport
    a. Small streams have bigger issues;
    b. Braided channel would have greater deposition.

Presentation by Stacy

1. Standards apply to the full state. Her experience in northern area of WI is different stream types, geology, soils, land cover, stream length, habitats, etc. from other parts of the state.
2. Her experience is that projects are typically initiated with the NRCS CPS 580 Streambank and Shoreline Protection Standard, as that is funded (EQIP).
3. She summarizes a few projects--how they were planned, designed, and constructed. Hits on lessons learned, and successes or challenges faced.
4. Rosgen is often as a design tool, though not required if the project is <600'. This could be used as one option but with evaluation to ensure that it's site-specific; not just checking a box.
5. Other constraints include permitting, land ownership, accessibility, and funding sources.
    a. Permitting (typ. DNR) requirements can change or even prevent a restoration.
    b. Owners may be concerned with losing property, moving fences or driveway, etc.
    c. It's more frequent to install practices with funding.

Presentation by Marty

1. Design standards in river restoration
    a. Stream restoration is typically engineering (how funded, requires engineer stamp) though there are many fields to consider and a range of practices. Really there should be collaboration to consider a lot of factors (compromise?).
    b. Acknowledge risk and analyze accordingly – design based on the need of the project.

2. Standards are needed to provide a measure for success
    a. Goals and objectives identified and understood - performance based standards tend to be more successful.
    b. Engineering experience.
    c. Design criteria: consider spatial limits, design flows (base flow?), allowable deformability (stone, wood, fabric, plantings), created habitat.
    d. Prescriptive templates
        i. Prescriptive standards of practice or specific training (like Rosgen), doesn't allow for creativity and collaboration of multiple disciplines. May require knowledge of only one discipline.
        ii. Often inappropriately sited;
        iii. May have a lower standard of care than the designer wants to have;
        iv. **Marty** will try to locate one of these prescriptive SOPs and share with the team.

Case Studies – Part 2

Goal: Select Team Members present successes and failures in stream restoration related to their expertise.

Presentation by Ben

1. Problems in streams across the state include vertical stability, lateral stability, habitat
    a. Range of variability in bankfull conditions – channel isn't static;
    b. Climate change – flow and channel size may change over time, could be both less than design or more;
    c. Channel movement creates diversity of wetlands, backwater channels, refugia, substrates, and vegetation communities;
    d. Human disturbances are superimposed on natural disturbances – design somewhere in the middle to create self-sustaining, healthy streams.
2. His design philosophy – rivers and streams should be allowed to adjust shape
    a. Bank stabilization – set hard limits on the meander belt but don't constrain movement within the meander belt (erodible corridor);
    b. Utilize natural materials if possible – wood may last only 10-15 years but allows stabilization and natural processes.
    c. Eliminate sediment delivery while allowing channel movement
        i. Understand that the volume of eroded bank does not increase the sediment load the same amount;
        ii. Recognize concurrent sediment deposition with lateral migration;
        iii. Geomorphology evaluation as part of design to understand natural progress;
        iv. Mimic natural floodplain shape and vegetation.

Presentation by Jeff H

1. This presentation focuses mostly on habitat related to NRCS CPS 395. These practices provide habitat and narrow/pinch wide shallow streams to move sediment.
2. Tolls for evaluation: Rosgen, Habitat Site Index, and the local fish biologist. The biologist is familiar with the stream and knows what's missing and what needs help.
3. Stream diversity and non-game habitat are also important for restoration projects.
4. Vortex weirs, root wads, cross channel rock/logs work well to direct flow, though the problem has been installation. If not installed properly they erode and can back up water.
5. Some area engineers are using charts to determine which streams these practices are suitable for, though other tools or consultation with other disciplines may also be appropriate.
6. Tree plantings tend not to belong in most Driftless streams. Hard to get them established—flooding, beavers, other vegetation, sedimentation, etc. all problematic for trees. Erosion is more severe during flood events when there are shallow rooted trees.

Presentation by Bob

1. WI has a variety of regions with different concerns. He'll focus on Monroe County stream issues in the Driftless Area "eco-region."
2. Define 580 Limits:
    a. Upper reaches (channel slope +0.8%) – need to ID these reaches and limit the stabilization tools used to address streambank erosion along with habitat. Encourage shaping, debris removal, seeding and in-stream habitat but also connection to the floodplain.
    b. ID Crossings (bridges/culverts) within the watershed – identify setbacks below these structures or starting point where 580 can be implemented. These act as a dams during high water events.
    c. Toe stabilization and flattening the bank slope (3:1+) - Rock height no more than 1-2' above base flow, can exceed if conditions warrant (steep slope, structure protection, etc.).
3. Stream Corridor Management:
    a. Tree vs. grass cover within the stream corridor
        i. Before settlement, Oak Savanna existed but now un-desirable species such as box elder, elm and willow populate the stream corridor. These wooded corridors turn into debris dams during intense flood events. This can lead to significant erosion issues and is some cases divert and create a new channel.

ii. Wooded corridor means less ground vegetation.

b. Work with zoning to insure perennial vegetative cover within 35' of the high water mark. No row crops, which creates a vulnerable site for erosion and stream migration.

c. Emphasis corridor mgt. through fishing easements which can assist landowners with corridor management and maintenance.

i. No prescribed native plantings without mgt. guarantees.

ii. No tree planting within the immediate flood plain beyond the oak savanna footprint.

iii. They have tools like CREP and if natives used. May require mgmt. like prescribed burning, managed grazing, & or mowing.

4. Stream Tools:

a. Sediment trap/rock weir, implemented at the downstream point of construction. This traps some of the sediment during the construction phase, which would be cleaned out daily and left after the project is completed for habitat.

b. Blind toes – Riprap placed just above base flow and nature is allowed to fill with sediment and vegetation. Non-game species habitat.

c. Habitat type (tools) based on species mgt. but not limited to just key species.

i. Example: Manage for brook trout which like woody cover but may insert LUNKERS and deep holes for stream variety and diversity.

5. Climate change has resulted in increase in the number and amount of flood events since 2007. Older practices that stood the time for many years have been destroyed. We need to recognize Land use changes coupled with climate change (intense rain events) when planning stream restoration projects.

Key Issues

Goal: Review the list of key issues

Before this meeting, the team started developing a list of key issues for these 4 standards.

Based on the presentations and discussions today, the **Team** will reflect on the new information and add any expansions or clarifications to this list of key issues. Please make changes in next couple days.

Steve will then consolidate and group these items together to develop key topics for discussion at the next meeting and beyond.

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

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

Next meeting dates:

- Wed, May 20 [remote again!]
- Wed, June 24 [hopefully the first in person, full day meeting]
- Tues, July 28
- Tues, Aug 18
- Tues, Sept 15
- Tues, Oct 20

Action Items:

- **Kate:** finalize 3/24 notes and post online
- **Kate**: prepare 4/21 draft meeting notes, reviewed by **Steve,** then reviewed by full **Team**
- **Marty**: share a prescriptive SOP with team
- **Kate**: will get permissions from today's presenters and post PDFs of slides in the private, password-protected portion of team website.
- **Team** to reflect upon the presentations and perspectives provided and expand the list of key issues by Friday, April 24. **Kate** will email a reminder to the Team.
- **Steve** will then consolidate and group the key issues for presentation to the team at our next meeting.
- **Kate** and **Steve**: prepare agenda for next meeting on May 20.

Next meeting topics:

- Clarify the key issues where necessary, and prioritize the key issues.
- Examine each issue as a group. Of the highest-priority topic(s) is there research for the team to look at, or presentation of research, prior to revision, and identify potential presenters?
    - outline needed criteria and/or instruction,
    - propose research/resources that may help address the issue,
    - identify subgroups to take up some issues in detail - review research, prepare short presentations and/or contact others for support

12:30 End