



# 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**

Wednesday, June 24, 2020 ▲ 9:00am – 12:45pm ▲

Remote Meeting (online)

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#### **9:00 Welcome & Notes Approval (Kate, Team)**

Goal: Welcome, attendance, meeting goals, approve 5/20/20 draft meeting notes.

Confirmation of attendance:

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

Absent: None

As in the past, we know that a remote meeting is harder for all of us to focus and participate.

- You have permission to get into any conversation.
- If you have something you'd like to discuss, please unmute yourself and interject at a pause, or you may use the Chat Box to let me know you'd like to speak and I will call on you.
- Please try to set aside distractions for the term of this meeting.

Meeting goal: identify the groups of issues and team roles for adjustments to the standards.

A draft of the 5/20/20 Meeting Notes was emailed to the team for review. No comments or questions. **Kate** will finalize and post these notes publicly on our team website within a week.

#### **Breakout Group Report (Bart and Faith)**

Goal: 20 min review of redline text for Open Channel (582) standard; 10 min Q&A

Bart and Faith see this update as a large undertaking – they still have questions to discuss with others, and few suggestions yet. The steps they identified:

1. Referral criteria
2. Analytical methodologies
3. Opportunities for language modification
4. Redline the federal CPS text to incorporate their findings.

They started with implementation thus far:

- DATCP engineering staff have not worked on any 582 projects over the past 5 years. It's not eligible for state SWRM funding and there's DNR reluctance to commit channel mod under this practice. There is EQIP funding, as a 2-stage ditch.
- In practice, NRCS can fund beyond 2-stage ditch since they can stretch this out for similar practices (for example, channel bank shaping). NRCS is also opening different payment scenarios for EQIP cost sharing in the future.
- ATCP 50 code drives DATCP work, including which conservation practices are eligible for cost share funding through the state SWRM funding.

This group proposed some revisions to have this apply as a stand-alone practice, while also identifying how it applies to a stream corridor restoration. WI standard has same purpose as the federal standard: flood prevention, drainage, habitat and other water management purposes.

The 2-stage ditch mention in the standard applies only to existing agricultural drainage ditch. There is a wider statement in the state standard, but it's confusing, wordy language related to stability requirements. This group identified several opportunities for referral criteria to broaden the use.

Hydrology and Hydraulics (H&H) – this is their next step

- They'd like to hear from other teams on H&H since this is part of all the standards this team is updating.
- Standard references 3 documents – they are thousands of pages of text with many options. They'd like to narrow that down. They'd like feedback from others on the team on how the documents are used in practice.
- Some recommended changes related to the criteria for ditching and drainageways. They identified issues on capacity, sizing, and flow language (depth, cross-section, bankfull flow, ordinary high-water mark, low flow). They would adjust so there's consistency within the standard.

Open channel currently has been traditionally used by NRCS in artificial ditches that manage flow: drainage ditches, irrigation ditches, and artificial channels (like from dam outlet to natural stream). It hasn't included logs, ice debris, fish and wildlife—proportion a channel to carry consistent managed flows.

We are now trying to open the standard up to address adjustments of natural stream channels and push the boundaries of the standard beyond an artificial drainage ditch. An owner may want to keep their stream linear, fighting nature (where natural streams are functioning as a drainage ditch). NRCS would provide program assistance for more natural geomorphic planforms more conducive to fish and wildlife via Open Channel standard. They could also add other features like a buffer. Not all landowners are amenable to allowing or encouraging meandering streams. Permitting would also need to be on-board with this type of channel adjustment.

582 follow-up discussion for parking lot:

- 1) Possible issues with encouraging a meandering stream: Not all landowners are amenable, especially if they are losing cropland. Permitting would also need to be on-board with this type of channel adjustment.
- 2) What happened to the national reference to the 1 square mile drainage area in the Wisconsin standard? Didn't think we could change from National to Wisconsin?

**Breakout Group Report (Ken and Seth)**

Goal: 20 min review of redline text for Channel Bed Stabilization (584) standard; 10 min Q&A

Ken and Seth identified that Stream Restoration Design Handbook Chapters 3, 4, and 13 have great detail, and they started with question: **When** to use Channel Bed Stabilization standard? What criteria leads to this practice being activated? Chapter 13 of design handbook has a helpful table to identify indicators of channel degradation. This group will take a closer look at the referral criteria.

These are effectively a weir or other structure in the stream to change hydraulic gradient, cause scouring downstream and stabilize flow above.

584 hasn't been used much. There are no strong funding options at NRCS or DATCP.

Current WI standard very similar to national standard. The redlines of proposed edits reviewed on-screen and/or discussed with the team include the following:

- Encourage stabilization as part of a comprehensive assessment. 582 could be better tied to 580.
- Applied some parallel site assessment criteria to 584 (similar to what's in the 580 standard). The site assessment is to understand what's happening in the stream to inform a design.
- Additional design criteria to identify what kind of flow should these structures be designed for.
- 654 standard supplement (grade stabilization techniques) has good detail on calculations and design.
- May consider linking up flow similar to what's in the 410 standard.
- They will keep in mind to include both drainage ditches and natural streams.
- Floodplain connectivity is an important part of this practice.
- H&H analysis is a bigger discussion, and should match other standards the team is working on (esp. 580).
- The revisions should encourage improvement, not harm. This standard should maintain a distinction from 395 (Rock Weir).
- A series of low-grade riffles may be better and easier than larger weir or other structure. Structure (riffle) could be tied out into floodplain to allow the river to move without damaging the structure.

584 follow-up discussion points for parking lot:

- 1) for floodplain wide weirs, is this a problem to include in a "channel" specific standard?

- 2) raising stage seems to cause a problem in permitting which has a requirement of not raising the 100 yr stage (might be simplifying this)
- 3) is there precedent in other states that use this for natural streams? If so, we could use their language as an example. **Steve** will check.

**Breakout Group Report (Mike and Bob)**

Goal: 20 min review of redline text for Streambank and Shoreline Protection (580); 10 min Q&A

New draft federal 580 is posted but not yet finalized and they don't want to work off of an old or incomplete file. They'll work through some issues before working on that detail.

Key issues:

- Where the practice applies – scope vs restoration
  - Purpose is generic and open-ended, incorporates a lot of options.
  - When does 580 project become stream restoration (e.g., with open channel)
  - Current standard has a break in criteria (>600' or multiple sites w/in ¼ mile totaling >1000') with larger projects requiring more stream classification (proposing that bigger sites refer to 582)
- Potential quality criteria (identifies resource concern)
  - BEPI rating in NR328 – All streams have some degree of erosion potential. This table is a good tool if there isn't a measured rate of recession (like via aerial photos).
  - Recession rates and how to document this (not in NR328 for streambanks but there is for shoreline).
    - There is also an NRCS erosion estimation table that has different categories of impact with a quantified lateral recession rate [reference: eFOTG Section 3, Erosion Prediction, Streambank and Shoreline Erosion].
    - Recession rate approach should acknowledge that not all banks are the same (e.g. not all banks with exposed roots are the same).
  - Estimated soil loss (e.g. tons/ft),
  - SVAP2 rating for streambank erosion – a visual assessment and users assigns a number,
  - Lakeshore Erosion Intensity (EI) form in NR328. This would help with decision on when do we apply streambank protection.
  - If there is excessive bank erosion, is streambank protection really addressing the problem? The real problem may be that there are row crops. Is something like riparian buffer a better solution, for example?
- Criteria for design
  - Keep EFH Ch. 16 method references for rock sizing, (wave heights for shoreline protection and velocities for streambank protection).
    - Proposed change would be to use both velocity and shear stress methods for streambank rock sizing.
    - If you rock on the outside bend, would you also need open channel excavation on the inside to get the entrenchment ration and bankfull width-to-depth ratio?
    - Suggestion to add a geomorphic assessment?

- Design wouldn't necessarily be rock all the way to top of bank. Shaping the bank and rocking the toe could be an option.
- Current 580 assigns design storm based on land use (10 yr storm for cropland, 25 yr for farm buildings and roads, 100 yr for residences, businesses, state highways) **unless out of bank flow occurs at a lower stage**. Out of bank flow isn't defined in standard but in practice, it's often used as a low bank floodplain.
  - Proposed change is to design to 100-yr flood flow or to point where water enters highest active floodplain.
  - This design element may carry over to other standards for consistency.
  - We may also want to look at hydrologic study that informs the flows.
- Buffer requirements
  - No current requirements though referenced saying if the cause is denuding the banks, then restore the vegetation "if possible".
  - DNR shoreland zoning rule incorporates vegetation management.
  - Would like feedback: Should we include grazing management requirements?
    - No requirement to keep cows off. Should there be?
    - Good practice to keep cows off until vegetation has taken hold. They currently encourage fencing or include easements with county, DNR, TU, other partners. Encourage managed grazing.
- Lakeshore issues – Need to review for compatibility between 580 standard and NR328 rule
  - Rock gradations for NRCS purposes have a lower end for rock sizes than 328.
  - Max rock height varies from NRCS design spreadsheet and DNR.
  - Could permanent breakwaters be considered? (temp. breakwaters are included)
  - NR328 may change so how to maintain future compatibility?
- OHWM and bankfull – defined separately in the standard but a note indicates they are equivalent. Team should discuss to use consistent language and definitions (this applies in 580 and 582, possibly others)—parking lot for future discussion.
- Revise mgmt. and site assessments - it's an extensive list and a lot don't apply so users get bogged down in things that aren't applicable. Change to focus on short list of the critical items for all projects, then move other items to a secondary list to be used as applicable.
- Other standards to consider in the future edits: Clearing and Snagging (326), Obstruction Removal (500), Critical Area Planting (342), and Riparian Herbaceous Cover (390, not WI adopted).

For all the standards we're looking at: if we're putting something in the stream that wasn't there before, we have to make sure the design is stable and we're not harming the system.

Follow-up discussion points for parking lot:

- 1) Definitions and applications of different factors: OHWM, bankfull discharge, effective flow, channel-forming flow (relative to 580 and 582 at min.)
- 2) as built and aged definitions,
- 3) can meander belt width be worked into the terminology for resource concern (Fluvial Erosion Hazard)

**Breakout Group Report (Nate and Jeff H)**

Goal: 20 min review of redline text for Stream Habitat Improvement (395) standard; 10 min Q&A

This group reviewed the issues on the list prepared by the team and looked at the national standard document and applied comments. The team reviews the redlined version on-screen together.

Some key edits proposed:

- Add reference to DNR fisheries mgmt. plan. DNR sets the stream goals.
- External refs (like SVAP2) is vague and lengthy document; it's not the best tool. A walk-through with local DNR fisheries biologist and the habitat site assessment tool (NRCS State Biologist Steve Bertjens' work) would be more direct way to really understand the stream and the needs in that specific area.
- Identify species through review of watershed plan and in coordination with local fisheries biologist.
  - Identify what the biologist resources are (watershed plan, etc.). 654 National Engineering Handbook Ch. 1, 2 and 3 establishes details on what to look at.
  - Standard could provide some targets for identifying species of concern: Is it just fish species? Species and size? Include invertebrates?
  - You may need DNR approval anyway if there's also a Chapter 30 permit.
  - DNR General Permit for restoration by government agencies has requirements. This citation can be added.
  - Are there specific resources or targets to assess for biologic species of concern? Would need to consider state wide resources, and warm vs cold water fisheries.
- Using native plant materials is a good concept but there are parts of riparian area where it doesn't get established as well. Also, grasses may need mowing or burning so maintenance is needed (and often not done). Good turf mixes may also be appropriate and better in the long run.
- Adjust the consideration related to meander migration. Since this is usually part of bank stabilization then the project typically wouldn't encourage meander migration. NRCS typically doesn't monitor, or go back to project they fund.
- Adjust/clarify the consideration for Stream temperature moderation – complicated by trees since tree removal can drastically change temperature and habitat. The habitat is typically tied to vegetation.
- Remove option for flexible (unanchored, unpinned) wood placement, or temper the statement since there is risk for this. This could be applicable in a lower key situation.
- Remove option for beaver habitat restoration? This is typically not encouraged (at least not in their experience in Driftless area); however, beavers are a viable option in some parts of the state. Standard could be open to this, but not all streams and all projects.
- Plans and Specs are pretty vague and could use a couple small clarifications. Clarify responsible party--is post-construction survey data being collected? Same point applies to post-project evaluation of the stream and habitat conditions—who?
- O&M – WI does not have state funds for veg management. Who monitors this? Is this the landowner responsibility or contracted out?

This standard can be complicated for state-wide development. Need to maintain some flexibility in use of habitat.

In the past, 395 was used for backwater refuge, in-stream rock placement, in-stream wood placement, and lunger structures--these are the current EQIP scenarios. NRCS could look at the available cost-share payment scenarios. If they are missing some good ones, please let Steve know.

Follow-up issues for all teams: Each group could provide a list of the major issues that team is working on our group website—like their individual to-do list. This list may also include the bigger issues that need discussion with the full team, and issues from the team list from our first team meeting. Each team should type this “to-do list” at the end of the standard file that each team is working on.

**12:45** Meeting Ends for Most. Some continue to review the work of the remaining breakout groups.

**Breakout Group Report (Jeff and Joe)**

Goal: 20 min review of redline text for laws & regs; 10 min Q&A

This team reviewed the permit requirements and other procedures that may apply. Permits have different threshold requirements (e.g. general permit vs individual permit) and exemptions and mitigation requirements. General Permits are made to capture the majority of projects.

The general permit categories discussed are:

- DNR Chapter 30 (exemption, general permit [GP], or individual permit [IP]). IP if >10,000 sf and would require mitigation.
- DNR wetland disturbance permit (require for discharges to wetlands >10,000sf). Can be GP or IP.
- DNR construction site storm water permit (1 acre or more)
- ACOE review
- County shoreland zoning (NR115)
- County floodplain zoning
- Any other local, city, village or township government requirements
- Joint application

They also prepared a list of regulations with citations that apply to each of the standards. They kept the list to the more significant ones since this could get extremely long, especially with cross-referencing within a regulation. This includes citations from the following sources:

- State Statutes
- State Adm. Codes, including some examples of possible state permits
- Federal, including some examples of possible federal permits
- Local
- Tribal

We'll have a disclaimer that the list is not all-encompassing and user should confirm they are using most current rules and regs.

Citations will need some flexibility as permit processes and regulations may change; most current will apply.

**Breakout Group Report (Marty, Stacy, Ben)**

Goal: 20 min review of redline text for Additional Criteria for Stream Restoration; 10 min Q&A

Their breakout group didn't have a starting point since they are creating new information. They created a flow chart and a decision tree to frame their work—this tool could end up in the standard or just be an internal tool to guide their work.

First step should be to determine there's a need and what to do as a sort of Risk Assessment. The things to consider may include recovery potential with riparian vegetation mgmt., bank height, gradient, sediment (removed and deposited), scale of disturbance (already defined by what triggers std?), close to hydraulic structure. At some step, consultation with geomorphologist or river engineer would be appropriate.

Then this group looked at problems, their causes, tools to evaluate the problem, and possible solutions. The group developed another flow chart with some general problems:

- Infrastructure – flooding, channel migration
- Vertical stability – incision, floodplain aggradation
- Lateral stability – eroding bank heights, channel changing sinuosity
- Poor habitat – riparian veg, aquatic complexity, passage issue

Finally, they started to develop a decision tree, which incorporates categories from Part 654 Stream Restoration Design NEH. Problem > infrastructure risk > hydrology > bank heights > treatment/practice. This decision tree could be referred back to individual standards and/or technical supplements.

Some additional discussion points:

- The team may further discuss **protection vs restoration**. A key component to these decisions is: what is the starting project objective – erosion prevention, land use protection, habitat, sedimentation, etc.
- Design flow is the most important design criteria. The designer could look at this related to liability for failure beyond that flow. DATCP and NRCS approve projects and want to see a project meet a minimum level of stability, sediment competency, etc. Design is relative to what you're protecting (cropland vs a home).
- Standards are written by NRCS, and adopted largely by DATCP. If a design meets a standard, they are eligible for state and/or federal cost sharing. The design elements need some metrics for approval to guide the designer and the agency staff approving the project. However, we don't want this so prescriptive as to bind professional judgment. For example, it isn't always feasible to design to 100-year flood and need is project specific.

- Steve and Bart would like to join this group's next meeting.

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

Goal: Identify goals for next meeting. Review Action Items.

Next meeting is 7/28 and it will again be remote.

Action items:

1. **Kate:** finalize 5/20 notes and post online.
2. **Kate:** prepare 6/24 draft meeting notes; Steve reviews, then full Team reviews.
3. **Kate and Steve:** prepare agenda for 7/28.
4. **Steve:** check in with each team with feedback. (You can reach out to another team too!)
5. **Steve:** Look into whether there is precedent in other states to use Channel Bed Stabilization for natural streams.
6. **Full Team:** more breakout group work. Files to **Kate**, who will post on team website.
7. **Full Team:** prepare list of what you are working on next (incl. key issues) – keep as part of your working file.

Parking Lot for future team discussion

1. 582
  - a. Possible issues with encouraging a meandering stream: Not all landowners are amenable, especially if they are losing cropland. Permitting would also need to be on-board with straight-t-meandering type of channel adjustment.
  - b. What happened to the national reference to the 1 square mile drainage area in the Wisconsin standard? Can we change this from National to Wisconsin standard?
2. 584
  - a. For floodplain wide weirs, is this a problem to include in a "channel" specific standard?
  - b. Raising stage seems to cause a problem in permitting which has a requirement of not raising the 100 yr stage (might be simplifying this)
  - c. Is there precedent in other states that use Channel Bed Stabilization for natural streams? If so, we could use their language as an example.
3. Multiple stds
  - a. Definitions and applications of different factors: OHWM, bankfull discharge, effective flow, channel-forming flow (relative to 580 and 582 at min.)
  - b. as built and aged definitions,
  - c. can meander belt width be worked into the terminology for resource concern (Fluvial Erosion Hazard)

2:00 End