

NRCS 590 Nutrient Management Standard Team

MEETING NOTES

Thursday, June 27, 2024 ▲ 9:30am – 3:00pm ▲

Portage Public Library, 253 W. Edgewater St., Portage, WI 53901 ▲ Teen Community Room ▲

Agenda-In-Brief:

- 9:30 Welcome (Kate, Team)
 - 9:35 Notes Review (Kate, Team)
 - 9:40 Nutrient Loss to Groundwater (Dan, Andrea, Kyle, Andrew, Mike)
 - 10:15 *Break as needed*
 - ~~10:30 Runoff Risk Advisory Tool (Dustin Goering, NOAA)~~ (postponed to next meeting)
 - 11:00 Winter Spreading (Mike, Morgan, Andrea, and Dan)
 - 12:00 *Lunch, provided*
 - 12:30 Winter Spreading, continued (Mike, Team)
 - Break as needed*
 - 1:45 Setbacks (Mike, Morgan, Aaron, Eric, Travis)
 - 2:45 Meeting Review (Kate)
 - 3:00 *End*
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9:30 Welcome (Kate, Team)

Goal: Attendance and review the meeting objective.

Attendance: Kate Brunner, Mike Stanek, Daniel Smith, Aaron O'Rourke, Andrew Craig, Travis Engels, Andrea Topper, Carl Hahn, Sara Walling, Matt Ruark, Eric Hurley, Cody Calkins

Absent: Morgan Kepler, Kyle Much

Guests: Chad Zuleger (DBA)

Mike Stanek is part of NRCS team that is revising the national 590 standard; he has series of meetings in mid-July to work on national revisions. Mike can report back on the expected changes at the next team meeting. When draft is available for review, Mike and Kate can let this Team know.

9:35 Notes Review (Kate, Team)

Goal: Brief Action Item reports and approve 5/23/24 meeting notes.

Draft notes from the 5/23 meeting were emailed to the team. Some action items will be discussed in-meeting today and some are being tracked as longer-term items. Updates:

- **Andrew** shared examples of WDNR's TMDL SNAP+ modeling results that define edge of field P and Sediment reduction targets by watershed with Mike and Kate. The DNR TMDL modeling results define agricultural P and Sediment Loss by watershed and also determine the amount of reduction necessary on ag land to restore P or Sediment impaired waters and meet WQ standards. Rather than create a new P Index to apply across the state, can the 590 standard 'piggy back' on this TMDL watershed modelling results to define more specific P related criteria for agricultural lands. Mike will review and assess on options to use with this standard.
- **Matt** will look into the data for N and irrigation and see if he can identify some threshold/logic for N crediting, varied for both potatoes and non-potatoes. This topic will be carried forward.
- **Mike** will obtain input from NRCS state soils staff on using Ksat in P soil definition.

There were no questions or updates on the May meeting notes, so Kate will finalize and post online.

9:40 Nutrient Loss to Groundwater

Goal: Agree to remaining changes to Criteria to Minimize Entry of Nutrients to GW.

Sensitive area definitions vary in the tech note vs the viewer. Team discusses concerns and options:

1. "Phase 1" is simple approach – using more recent data, lumps together restrictions by Section.
2. "Phase 2" is more complex – detailed and more refined, but may exclude areas with higher nitrate [min. 25 samples and 10% exceed 10 mg/L and avg. is >5 mg/L].
3. A targeted approach for nutrient management may work for P. For N, targeting doesn't have the same impact.
 - a. Additional tool for identifying high risk

Morgan and Andrew reached out to Kevin Masarik about using well water quality sampling data as one resource for the high risk category. Kevin's response was that the wells they sample go into annual(ish) updates to the well water viewer and it was recently updated. They also include data from the DNR-required sampling of new wells and/or well/pump work. Data is here:

<https://www3.uwsp.edu/cnr-ap/watershed/Pages/WellWaterViewer.aspx>

The aggregated data (section level...i.e. 1x1 sq. mi grid cells) is also available for download on a figshare site.

https://figshare.com/articles/dataset/Nitrate_Data_by_Section/12482345/14

- Team has concern over who manages all the combined data and how frequently updated? Team has discussed the map that exists from the N performance standard group but isn't being updated. It could be added as a tab on the Runoff Risk Advisory Tool or SnapPlus layer but it's needs updating, and someone else would need to input it.

- Team raises additional questions about data management.
 - What about areas where majority of samples are older?
 - What if an owner samples a well a second or third time?
 - What if the data set in an area has fewer samples during follow-up and the min. 25 is harder to achieve?
 - What about wells that have treatment systems?

The Team likes the idea of a central area for the data but still many questions. This project of data gathering and management is outside of Team process—more an issue of what the agencies are capable of. **Andrew** will reach out to Kevin Masarik, Joe Baeten, and DNR drinking water staff to identify what's achievable and implementable to collect, manage, maintain, and map.

b. Ksat as part of P soil definition (Mike)

Mike has not yet connected with NRCS soils staff (Mike England) to discuss; still on hold.

c. 12 in vs 24 inches to apparent water table (Cody)

Cody prepared maps of 12 in. to water table and 24 in. to water table however in current form it's for all land uses, including wetlands. **Cody** will next look at the maps of depth to water table for just cropland so the acreage is specific to that with NM implications.

d. Number of days forecast >50 (Dan)

Dan had homework from the last meeting to look more closely at the temperature in soil data for late summer/fall temperatures with the question: How many days with air temperatures below 50° F are needed for soil temperatures to remain below 50° F?

Dan provides additional recommendations and Team discusses while looking at proposed language related to measured soil temperature and forecasted air temperature:

- The Lancaster Agricultural Research Station has been home to a weather station collecting air and soil temperatures for many years. Data from 2002-2021 is housed by UW-Madison and only contains air temperatures (other data available but not useful for this purpose). This weather station collected a variety of data, and this included maximum air temperature and max soil temperature at 5 centimeters. From 2021-2022 the station data was managed by Michigan State University, see data here: [MSU Weather](#).
- Starting in August 2022, the ARS weather station location was updated to a WiscoNet site and data is now available at [WiscoNet Lancaster](#). This has much more data, including various soil temperature depths, is now available for stations across the state.
- Data Summary: Although only three years of weather data with soil temperatures were available, the data tells a similar story. Preliminary investigation yielded that soil temperature and daily high air temperature should be combined to ensure soil temperatures remain below 50° F. At the Lancaster station, two of the three years of data saw four days of air temperatures below 50° F resulting in below 50° F soil temperatures and then a few days of higher air temperatures.

- Upon further preliminary review of the limited data available from the Marshfield Agriculture Research station, five days captures variability experienced in the as well. In several cases air or soil temperature exceeded 50° F even after the 5-day period later on in the season, these cases were isolated to a few days in a couple of years and moving to a longer interval to capture these outliers would significantly decrease days before the ground froze.
 - The data is included in a PDF and Excel sheet Dan sent to Kate and Mike.
 - On farm soil temperatures should be collected at a depth of 2 inches.
- When does this happen? At the Lancaster Agriculture Research station, air and soil temperature data was available for 2021, 2022, and 2023 growing seasons. Additionally, the WiscoNet is collecting this same data at numerous sites in Wisconsin and plans on continuing this process in the future as well. Daily high air temperature data is available starting in 2002 at the Lancaster Agriculture Research Station [Dan sent Kate and Mike Excel sheet of this data]. Since only three years of soil temperatures are available, the 2002-2023 Lancaster max daily air temperature data was used with the new 5-day window (forecasted high temperatures to be 50° F or less as for a five-day period once soil temperatures have reached 50° F). The average date for spreading to begin would be November 5th. The earliest start date would have been 11/9/09 and latest would have been 11/20/16.
- Dan recommends forecasted high temperatures to be (max high) 50° F or less as for a five-day period once soil temperatures have reached 50° F as minimum recommendation to ensure soil temperatures remain below 50° F. Team agrees though wants the option for either a date or the temp ("Nov. 1 or forecasted high 50....").
- Team likes the idea of a different date for different parts of the state. Mesonet is WI dataset that might also be useful moving forward. Mesonet would allow more location specific weather data rather than statewide. This is still being built and currently doesn't provide enough stations across the state, but more stations always being added. Team can revisit in a few months and see where stations are at that time, prior to publication of revised standard.

10:15 Break**10:30 Runoff Risk Advisory Tool** (Dustin Goering, NOAA) (postponed to next meeting)

Goal: Review data and mechanics behind the RRAT, answer team questions.

Dustin was unable to make it today due to flooding in his area. He has been rescheduled for the July meeting.

11:00 Winter Spreading (Mike, Morgan, Andrea, and Dan)

Goal: Review recommendations from breakout group work on changes to the current standard language related to setbacks. Get team input and agreement on modifications. This breakout group notes and recommendations are shown on screen and the Team critiques together.

- a. Interpretation challenges and SnapMaps complications (Andrea)

Snap Plus automatically reduces the acres when winter season is selected. Winter practices can be selected by field or by full farm.

SnapMaps concentrated flow channels shown directly, but if avoiding 200' buffer, that has to be turned on separately in SnapMaps.

The different options and check boxes in Snap Plus require knowledge of practices and implementation and the software. Implementation is tricky.

Concentrated flow practices list (the practices list of "at least 2 of the following") was something previous team spent a lot of time on, including with producer input. Are those working? Yes, working for farms with daily haul, no storage. Tracking the loads are not easy (like tracking and inputting # loads on each field and tracking the 14-day wait). The intent of this list was to allow growers in a tough spot to handle manure in the best way possible.

b. In-field challenges (e.g. storage, daily spreading) (Dan and Mike)

It's a good idea to have storage but not possible on all farms.

Storage is a supporting practice to nutrient management but doesn't end the manure handling issues. Also, storage can leak or overtop (especially with rain or snow melt events).

Daily haul farmers are often using box spreader, so lower moisture and lower rates.

c. Recommended changes to winter spreading restriction (Mike)

There are additional practices (like filter strips) that will reduce manure runoff, including in winter.

PA has an Excel spreadsheet as their winter spreading decision tool; WI could do similar.

Runoff Risk Advisory Tool will be used; team will find out more on applicability from Dustin at next meeting. This tool doesn't take into account liquid vs solid. Tool updates 4 times a day and the risk can change by middle of the day. When frozen, RRAT looks at a 10-day period.

Mike will share some Discovery Farms papers on winter spreading and runoff.

5 tons/acre spreading for solids is too low, not achievable by all technologies. 10 tons per acre more reasonable. Jefferson County asked Insight for minimums and confirm/calibrate the spreaders on their farms and 10 tons/acre was what they found. Team likes the idea of pounds P per season rather than application rate. [Refer to previous team discussion about book value vs manure sampling.]

CAFOs have 60 lbs P2O5 per winter season. 10 tons/acre is 30 pounds P2O5 for dairy.

For all applications, nutrients can't leave the site, regardless of water or note, liquid vs solid.

Team discusses concept of including fall tillage (and specify which type, min ridge height, on the contour) for winter spreading, like what is in CAFO program.

This subgroup (**Mike, Morgan, Andrea, and Dan**) will meet again to review edits from team discussions and develop standard language to present to team at next meeting.

12:00 *Lunch, provided*

12:30 **Winter Spreading**, continued

See notes above.

Break as needed

1:45 **Setbacks** (Mike, Morgan, Aaron, Eric, Travis)

Goal: Confirm team agreement with matching setbacks matching NR243. Discuss and confirm whether/how to include commercial fertilizer.

1. At the last meeting the team agreed to the concept of using setbacks in NR243 but some wanted to see comparisons to understand the change more completely. Andrew had shared one table before the previous team meeting and Travis had variation to also include Silurian bedrock restrictions. Team has seen this comparison and decides to **use the NR243 setbacks for manure in new 590 standard**.
2. Remaining topic to decide was whether (or how) to include commercial fertilizer in setbacks. Team likes the current style keeping commercial fertilizer out of setbacks with other restrictions on commercial applications.
 - a. Early team discussion revealed that the setbacks wouldn't have the same purpose for manure vs commercial application—differences in content (e.g. nitrogen vs. pathogens), application, timing, and precision.
 - b. Team prefers to keep in the private well setback for mechanical application of nutrients within 50 feet of private well.
 - i. Keep out mentions about livestock gleaning or grazing; this could be addressed by other factors. If someone puts an animal by their own well isn't it a health issue rather than a NM planning issue.
 - ii. Instead of gleaning or pasturing prohibition (Item 2.a.(3)), no nutrient applications within 50 feet of a potable well. No mechanical application within 100' of a private well.
 - c. Current standard: "For commercial N fertilizer applications: No late summer or fall applications on areas identified as having soil depth of 5 feet or less over bedrock, P, R, W soils, areas within 1,000 feet of a Community and non-community potable water well, except where needed for establishment of fall seeded crops or blended commercial fertilizer materials are needed to meet UWEX Pub. A2809 guidelines. For these exceptions, the N application rate shall not exceed 36 pounds N per acre and all nutrients must be credited towards the requirement of the crop."
3. Direct conduits to groundwater functionally includes wells, but there are separate setbacks listed. Tile inlet may also be a direct conduit to groundwater. This is a conflict in Silurian bedrock standard but not in NR243.
 - a. Bedrock fractures might need to be included as direct conduit to groundwater, but this varies with depth of fracture, depth to bedrock, etc. This is also an issue that needs more research and documentation by geologists before action by this team.

- b. SnapPlus says that in the winter, a well is a conduit to groundwater.
4. Include well comp areas?
 - a. It's complicated for DNR to locate and map since they don't always know specific sources for contamination. Team wouldn't want to include ALL well comps but only livestock.
 - b. The Team already agreed to remove the Well Compensation Language statement to restrict liquid manure application on all lands Feb-March so this is no longer an issue.
5. Mike will take information from setbacks discussion and incorporate into tech standard language and the new national framework.

2:45 Meeting Review (Kate)

Goal: Review Action Items and prepare for the next meeting.

Next meeting is scheduled for July 25, again at the Portage Public Library from 9:30-3:00.

Dan will be absent July 25; no other absences known. Let Kate know so we can confirm quorum.

Possible topics for the agenda for July or beyond include:

1. Dustin from NOAA will present on RRAF
2. More refined language from winter spreading subgroup
3. *Idea from previous meeting:* wells and geology—fracture traces, closed depressions – could include presentation by Madeline Gotkowitz.
4. *Idea from previous meeting:* Andrew sent Kate and Mike TMDL SNAP+ modeling results that define edge of field P and sediment reduction targets by watershed. The DNR TMDL modeling results define agricultural P and Sediment Loss by watershed and also determine the amount of reduction necessary on ag land to restore P or Sediment impaired waters and meet WQ standards. He could present at a later meeting on options to use this with the standard. Rather than create a new P Index to apply across the state, standard could piggy back on the TMDL modelling for more specific P related criteria

ACTION ITEMS

- Carried forward from previous meeting:
 - **Mike** reviewing information on using Ksat in P soil definition.
 - **Matt** will look into the data for N and irrigation water more closely and see if he can identify some threshold for when the crediting makes sense, for both potatoes and non-potatoes.
- **Cody** will develop maps of 12 vs 24 inches depth to water table for just cropland and present to the team.
- **Andrew** will reach out to Kevin Masarik, Joe Baeten, and DNR drinking water staff to identify what's achievable and implementable to collect, manage, maintain, and map for nitrate groundwater data.
- Mike will send Team link to Discovery Farms papers on winter spreading.

- The winter spreading subgroup (Mike, Morgan, Andrea, and Dan) will meet again to review edits from team discussions and develop standard language to present to team at next meeting.
- Kate will publish final May meeting notes.
- Kate and Mike will develop agenda for next meeting and send it to team along with any reading materials one week prior.

3:00 End