



Standards Oversight Council (SOC)

Developing effective technical standards that protect Wisconsin's natural resources

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NRCS DRAFT 590 Standard Broad Review 2 Comments & DRAFT Responses

Comment Review Period: July 31, 2015 to August 31, 2015

The draft 590 standard and Technical Note were released for a second broad review from July 31, 2015 to August 31, 2015. Nineteen entities responded with comments. The general comments are listed first. The comments associated with specific sections follow in the order of the standard language. Each comment on specific parts of the standard is followed by a response from the SOC 590 standard revision team either individually or in a group response if several comments were related. The responses listed in orange text and are preceded with “**Response:**”

General Comments:

540

General & Multi-Section Comments:

- 1) Throughout the standard when referring to on-farm generated nutrient sources ('manure', 'process wastewater', 'other organic nutrient source produced on the farm') the terminology used is not consistent. In some cases just 'manure' is listed, in others it is 'manure and process wastewater', and in others it is 'manure or other organic nutrient source produced on the farm'. I believe that in some cases a section of the standard is specific to just one of the sources, but in other sections it might apply to all three sources; and I don't believe all sections of the standard are consistent with what source(s) it applies to.

Response: The team will review these instances where these terms are used to verify intent and be as consistent as possible. Pat.

- 2) Several sections of the standard refer to 'organic by-products'. Again the terminology used is not consistent. In most cases it is 'organic by-products', but in others it is 'other by-products', and in V.A.1.h. it is 'organic sources of nutrients'. The definition of 'organic sources' as defined in the definitions (X.) seems to include all organic or other by-products. For consistency couldn't 'organic sources of nutrients' be used in all sections.

Response: Thanks. These references were reviewed and made more consistent.

- 3) Throughout the standard when referring to composition or consistency of manure, the terminology used is not consistent. In most cases it is '% solids', but in others it is '% dry matter'. I believe both the UW manure analysis report and SNAP-Plus use '% dry matter'. The standard should use only one or the other.

Response: Thanks for the suggestion. The wording was changed to “dry matter” for consistency.

- 4) Several sections of the standard require, or restrict, certain practices when manure is of certain/specific % solids/dry matter. Because the standard does not explicitly require manure sampling/analysis (i.e. “book values” can be used), if a planner or farmer uses book values for

their manure, how are they to know if a certain practice is required or restricted for their manure? Especially if their manure is close to one of the certain/specific %s.

Response: Testing is preferred. If a planner or farmer are unsure and the manure is at a borderline % dry matter, then they should have the manure for tested.

5) There are numerous instances in the standard where a word that is defined is not italicized. Especially the word 'field'. Is this intentional? I thought all defined words were supposed to be italicized throughout the standard. (Also 'rotation' in V.A.1.g.)

Response: All defined words are now italicized, except for when they appear in the definitions section.

6) Throughout the standard when referring to frozen or snow-covered sites, the terminology is not consistent. In most cases the word 'ground' is used. However the word 'soil' is used in V.A.1.g., V.A.2.d., and V.A.3.a. Are 'ground' and 'soil' supposed to be the same thing?

Response: Yes, 'ground' and 'soil' are the same thing. For consistency, where 'ground' was used it will be changed to 'soil'.

7) Subsurface saturation definition for stacking sites vs apparent water table definition for 590.

Response: Apparent water table in Criteria B refers to soil survey. Subsurface saturation refers to table 10 in standard 313.

8) Stacking sites may be a challenge to determine enough areas for a farm to rotate sites and meet separation distances.

Response: The team will review stacking requirements.

9) Overall it seems like 590 is heading towards becoming NR 243.

Response: There are similarities and differences between these two documents.

543

Congratulations to the NM Team for considering previous comments and applying those comments to a revised proposed NRCS 590 Standard. Yours is not an easy task, but you are helping craft a Standard that will continue to keep Wisconsin at the forefront of protecting our fresh water resource while also protecting our \$88 billion agricultural industry. Thank you for providing guidance on winter manure spreading and providing options to minimize negative environmental impact. Thank you also for allowing comments to this working draft.

Response: Thanks.

544

I would like to take the time to thank everyone who worked on updating this standard. You were given a very difficult task of balancing between environment protection and crop production. By defining Adaptive Nutrient Management and adding it to the 590 standard you have given producers one more technique to maximize production and profits. Thank you for the chance to comment on this standard one more time.

Response: Thanks.

546

The premise that one Statewide uniform nutrient management standard ("level-playing field") is appropriate and applicable to all regions of the State is faulty reasoning and results in water polluting events at times. Effective and proper resource management requires more focused attention to the uniqueness of individual regions of the State. The current Standard attempts to address the uniqueness of individual regions ("Geo-Regions") but falls short by failing to address any one region adequately.

The concept of a “Geo-Region” must be addressed when developing and revising resource management standards. A “Geo-Region” recognizes the reality that the soil, geological, and geographical conditions of different areas of the State are not the same and/or consistent from region to region. Understanding the reality of varying physical conditions of differing regions of the State illustrates the need for differing land management techniques from Geo-Region to Geo-Region to adequately protect water quality.

In Northeast Wisconsin groundwater pollution can be attributed to the presence of shallow soils over a fractured carbonate aquifer occurring in the Karst Geo-Region, leaving the area very vulnerable to nonpoint ground water contamination, particularly from agricultural land uses. As proposed the revised Standard will result in continued groundwater pollution from agricultural land uses in this area of the State.

The recognition of “Geo-Regions” for areas of unique natural resource potential and limitations would put in place a Standard development structure to allow for a more focused consideration and establishment of management techniques and protection standards and appropriate for the physical conditions of that region. This concept will create a “level playing field” within Geo-Regions with similar natural resource potential and limitations and provide greater natural resource protection.

Response: The 590 standard is a statewide tool. This version of the standard did more to further protect more sensitive areas in various regions of the state. V.A.2.b. is included to provide flexibility to highlight local resource concerns. Counties also have the option of developing ordinances.

547

GROWMARK and Frontier-Servco FS appreciate the opportunity to comment on the draft proposed changes to the Wisconsin NRCS 590 Standards. We applaud the efforts of the technical committee throughout this complicated and time-intensive process and have appreciated the opportunity to engage with you and the committee during the drafting process.

In Conclusion: GROWMARK and Frontier-Servco FS are committed to sound, science-based nutrient management, and we encourage our FS members to implement agronomic practices with minimal environmental impact and optimum nutrient utilization, resulting in maximum harvest yield. We believe nutrient management recommendations should be realistic and usable. Farmers should feel empowered to implement their nutrient management recommendations in order to achieve maximum yield potential and positive environmental impacts. By allowing credit and tradeoffs for best management practices, by focusing on soil conditions, not the calendar, and by implementing technology, farmers can minimize environmental impact, optimize nutrient utilization, and maximize harvest yield.

We believe that continued partnerships between NRCS, DATCP, and the agriculture industry will be the benefit of all engaged in Wisconsin agriculture. We look forward to further discussion and interaction with your team as the revised 590 is finalized and into the future.

Response: Thanks for taking the time to give us feedback.

550

All restrictions that are not required but merely “recommended” by the standard should be eliminated to provide clarity as to the required standards. See, for example, our comment related to section VI.

Response: Considerations offer more planning guidance and are not always appropriate to all operations across the state and therefore are not required for everyone. Considerations are also part of the national standard.

551

Overall we believe the current revision of the 590 Standard is heavily based on the dairy industry and does not take into consideration the large difference in the type of manure between the dairy industry and poultry.

Response: Thanks for the feedback.

556

Many draft standard requirements and procedures (e.g., winter spreading plan, drain tiles, minimizing N leaching to groundwater) attempt to strike an effective balance between water quality protection and practical implementation by both small and large agricultural operations and reflect some critical regional differences within the state (i.e., soils and topography). Collectively, we believe the draft requirements help improve upon the current (2005) Wisconsin NRCS 590 standard and, accordingly, we support many of the revisions.

Because of their focus upon surface and ground water quality protection, we support the USDA NRCS National 590 Standard requirements including, but not limited to, the items listed below. We believe the draft standard attempts to substantively meet many of these national requirements and this will help improve upon the current (2005) Wisconsin NRCS 590 standard.

- Purpose: Minimizing agricultural nonpoint source pollution of surface and groundwater resources
- General Criteria:
 - Nitrogen and Phosphorus Risk Assessments
 - Areas contained with minimum application setbacks (e.g., sinkholes, wellheads, gullies, ditches or surface inlets) must receive nutrients consistent with the setback restrictions.
- Manure Sampling:
 - Manure samples must be collected and analyzed at least annually, or more frequently, if needed to account for operational changes impacting manure nutrient concentrations
 - Samples must be collected, prepared, stored and shipped following land-grant university guidance
- Nutrient Application Rates: Estimates of yield response must consider factors
- Nutrient Application Timing and Placement: Nutrients must not be surface applied on frozen and snow covered soils and when the top two inches of soil are saturated from rainfall or snowmelt. Exceptions for these criteria can be made for surface-applied manure when specified conditions are met and adequate conservation measures are installed to prevent off-site delivery of nutrients. The adequate treatment level and specified conditions for winter applications of manure must be defined by NRCS in concurrence with the water quality control authority in the State. Adequate setback distances to protect local water quality must be considered.
- Additional Criteria to Minimize Agricultural Nonpoint Source Pollution of Surface and Groundwater:
 - Planners must use the current NRCS-approved nitrogen, phosphorus and soil erosion risk assessment tools to assess the risk of nutrient and soil loss.
 - Where there is a high risk of transport of nutrients, conservation practices must be coordinated to avoid, control, or trap manure and nutrients before they can leave the field by surface or subsurface drainage (e.g., tile). The number of applications and the application rates must also be considered to limit the transport of nutrients to tile.
- Additional Criteria Applicable to Properly Utilize Manure or Organic By-Products as Plant Nutrient Source
 - The total single application of manure must be based upon crop rooting depth and must be adjusted to avoid runoff or loss to subsurface drains.

- Plans and Specifications – all criteria
 - Operation and Maintenance all criteria, and specifically: Records must be maintained for at least five years to document plan implementation and maintenance.
- Some draft standard requirements for manure spreading setbacks and operation and maintenance reflect some NR 243 requirements. We support this approach because it will not only better protect water quality, but also help reduce the differences between small and large farm (CAFO) manure spreading requirements.
 - Some draft standard requirements will impact large animal feeding operations (CAFOs). We support those requirements because they better protect water quality, are achievable, practical and help clarify the criteria CAFOs need to follow when implementing their nutrient management plans.
 - We support the new or revised definitions within the draft standard. These will help clarify what some of the standard criteria or practices mean and improve implementation of nutrient management plans by both small and large (CAFO) farms.

Response: Thanks for acknowledging the changes proposed to meet the national standard.

557

I am a retired professor from UW-SP and spent 32 years teaching, doing soil and water quality research and conducting many extension projects in Wisconsin. Since retirement I have worked part time doing consulting work mostly related to issues related to surface and groundwater quality related to agricultural activities in a number of States. I have participated on past reviews of the 590 standard and served on a number of statewide committees over my career.

I am largely disappointed in the lack of progress being made in addressing the water quality issues in the Wisconsin that are directly linked to agricultural activities. The proposed 590 standard does little to address these issues and in some cases is likely to be a step backward.

Thank you for the opportunity to comment on this standard. I appreciate the hard work the committee has done but feel there is still many improvements needed in this standard as outlined above.

Response: Thanks for the feedback.

Specific Comments

II. Purpose

556

We support including “To minimize agricultural nonpoint source pollution of surface and groundwater resources” as a purpose of the draft standard. We believe inclusion of this national requirement will help set a clear objective for NM plans and change the perception that the Wisconsin NRCS 590 standard is an ‘agronomic’ and not a water quality based standard.

Response: Thanks.

III. Conditions Where Practice Applies

548

There should at least be some mention of pasture in this section.

At some point mechanically applied nutrient to pastures and winter grazing within Water Quality Management Areas received special attention. Clarification and cohesion with NR151, ATCP 50, the Phosphorous Index, and the above mentioned Agricultural Performance Standards would be appreciated.

Response: The definition of fields includes pastures.

IV. Federal, State, and Local Laws

557

Both section IV and the Extension document A2809 clearly state that following the guidance in these documents are not any assurance that water quality standards will be achieved. This is a major environmental problem as many documents have identified agriculture as the dominate source of nutrients to surface and groundwater. This needs to be at least clearly stated in the introduction even under the purpose it should be made clear that the major goal is not to achieve water quality standards but agricultural profitability. The statement of minimizing the risk to surface and groundwater is not acceptable when achieving water quality standards is what the long term needs of agriculture, society and the environment are what this standard should be attempting to achieve.

Response: The team worked very hard at attempting to balance all resource concerns. The purpose of the standard is to minimize the risk and not eliminate the risk.

V.A. Criteria for Surface and Groundwater Resources

V.A.1.b.

541

Regarding "Yield goals should not be higher than 15% above the previous 3-5 year average." A provision should be added to acknowledge that if a farmer installs irrigation equipment, yield goals can be higher than 15%.

Response: If management changes, which includes the installation of irrigation, then the yield goals could reflect those changes. Planners should make note of the changes in the narrative of the NMP, and the plan should be updated with what is really happening on the farm.

557

I find it totally unjustified to establish yield goals and nutrient additions to achieve these goals to be 15 percent above previous 3-5 year yields as allowed in section IV.A.1.b. this will guarantee that, on the average, excess nutrients will be applied and available for leaching to groundwater and runoff to surface water.

Response: Establishing yield goals which are based on many factors are required by the national standard. The research shows that nutrient recommendations are not substantially increased or decreased based on yield goals.

V.A.1.c.

556

We recommend referencing V.A.2.d (winter spreading plan criteria 1-7) to ensure winter spreading plans meet all requirements. Currently, the draft standard references only VII. Plans and Specifications and Technical Note are WI-1 Part II which contain some, but not all, winter spreading plan requirements.

Response: Thanks for the suggestion. Edited.

V.A.1.d.

540

Is this a mass balance of nutrients produced on farm vs nutrients removed by crops? Will this physically be shown in the plan to prove adequate acreage for nutrients produced on the farm?

Response: This requirement is not based on a mass balance of nutrients. The plan shall demonstrate that all nutrients on the farm can be utilized while complying with the standard.

543

Agree with the sentences "The plan must show adequate acreage is available for all manure nutrients. If an adequate land base is NOT present, then plan shall document the use of the remaining nutrient source(s) produced on the farm." Suggest adding "s" to "source" to account for all nutrient sources.

Response: Edited. Thanks.

V.A.1.e.

557

Section V.a.1.e, requires Soil testing only every 4 years and even then only the top foot of soil and no nitrogen testing is required at all. Many other states are implementing post harvest or pre-plant testing to fine tune nutrient management especially for nitrate. Nitrogen application guidance in the WI 590 standard relies on A2809 nitrogen recommendations. These are based on optimum crop profitability and when followed may result in over application and impacts to groundwater. When these guidelines are followed the 590 standard should require a pre-plant nitrate analysis of the top two feet of soil to credit carryover or past over applications and make sure applications are not in excess of reasonable crop yield goals.

Response: There are guidelines for pre-plant testing in UWEX A2809. Pre-testing is not appropriate for all conditions across the state and therefore not required. The four year requirement for soil testing does not preclude farmers from testing more frequently, and offers a balance to encourage higher compliance of this standard across the state. Other states, like the Dakotas and even western Minnesota that require increased testing often have drier climates than Wisconsin.

V.A.1.g.

546

Modify to read.... Annual P and K recommendations may be combined into a single application that does not exceed the total nutrient recommendation for a single growing season.

-This will reduce over application of nutrients and in turn will maintain optimal soil test levels.

Response: No change.

V.A.1.h.

540

This is the first section that addresses nitrogen, so 'N' should be spelled out in parentheses. I.e. nitrogen (N). This is done in V.A.1.i. in error.

Response: Edited. Thanks.

557

Section V.a.1.h allows up to 20 pounds per acre of P₂O₅ in starter fertilizer even when there is excessive high phosphorus soil tests this is not needed and not supported by any research I am aware of. This same section allows and additional 20 pounds of nitrogen fertilizer to be applied as a starter when the entire nutrient supply is based on organic sources. This again will guarantee a surplus of nitrogen over crop removal and would alone result in leaching concentrations to exceed the groundwater standard.

Response: The revised rate is lower than the rate in the 2005 version of the 590 standard. There is research to support using starter fertilizer on high testing soils.

V.A.1.i.

543

Agree with the “N deficiency” proposal to document N deficiency before applying additional nitrogen. Is there research to support limiting rates to 40 lb available N/Ac or is there a way to provide a range of nitrogen rates to apply based on amount and form of nitrogen already applied combined with the amount of rainfall and maybe soil temperature?

Response: Smaller rates provide the most economical response. The 40lb rate provides an incremental addition to reduce the risk of further loss. Providing a range of rates based on numerous factors is too complicated to require in this standard.

545

a) Requiring 2 tools to document the need for additional in-season N is duplicative. One should be enough.

Response: Note that two tools are only required when more than 46lbs (changed from 40lbs) of N are desired. If planners would like to apply more than 46lbs of N, then two tools showing the amount needed is required. The use of one tool is need for applying less than 46lbs of N.

b) Does research support 40 lb/ac upper limit?

Response: Research does exist to support these lower limits, and additional studies are currently in progress.

547

We appreciate the recognition of Adaptive Management practices as a legitimate and allowable exception to A2809 recommendations in the event of nutrient loss due to a significant rainfall event. This exception will allow farmers to appropriately address constant plant nutrient needs in an inconstant weather environment.

Response: Thanks for the support.

550

This provision should limit N application rates to 50 lbs/ac as the proposed restriction of 40 lbs/ac is too restrictive. Also, producers should only have to document additional need for nitrogen by one of the tools found in Appendix 3 (especially considering that most of the tools in Appendix 3 require a N rich strip to already be in place).

Response: Note that two tools are only required when more than 46lbs of N are desired. The team feels that requiring two different tools to document the need for additional N is appropriate, given that that each tool relies on different factors which could provide a range in results. Several tools are offered in Appendix 3, none of which are too burdensome. Only one tool, using crop canopy sensors, requires strips. The rate was changed to 46lbs of N to reflect fertilizer concentrations (ie 100lbs of urea = 46lbs of N).

554

A 40# cap is too low, if using Urea as the source of N, our current fertilizer application equipment cannot spread 40# of N, 50# of N is what the cap should get raised to. That is just over a 100# of Urea which the spreaders can spread very effectively. Also why isn't it good enough to document a need for additional N, with one tool? If the crop shows deficiency and a PSNT proves the lack of N in the soil that should be enough to recuse the crop with additional N. That statement should be changed to “1” tool needed not two.

Response: The rate was changed to 46lbs of N to reflect fertilizer concentrations (ie 100lbs of urea = 46lbs of N). Note that two tools are only required when more than 46lbs of N are desired. The team feels that requiring two different tools to document the need for additional N is appropriate, given that that each tool relies on different factors which could provide a range in results. Several tools are offered in Appendix 3, none of which are too burdensome.

555

The cap of 40 pounds should be removed. A single test shall indicate the amount needed to correct the situation with all respect for environmental and crop requirements based on UW research. Sometimes the need will be 0 pounds and sometimes it may be more depending on the amount of loss determined. Clay soils are notorious for this scenario. As an agronomist, I do not have time to collect a soil sample and a tissue sample in a normal field and a nitrogen enriched strip when this situation occurs. Most growers do not have the patience to allow me to conduct these tests as is...let alone to wait longer for more data to be collected.

Response: The text was re-written to clearly convey that if a producer wants to apply supplement N after excessive rainfall, they must document the need for it using one method outlined in Appendix 3 of the Tech Note and the rate is limited to 46 lb N/a. The 40 lb N/a rate was raised to 46 lb N/a to allow for a 100 lb/a application of urea. If the producer wants to apply more than 46 lb/a of supplemental N, then they must document the need for a higher rate using two methods outlined in the Tech Note. The rate is limited to 46 lb N/a with one method of documentation for two reasons:

1. With any method of evaluation there is a fair bit of uncertainty in the amount of N needed to correct the situation. Over application of N after excessive rainfall has caused N loss will only further degrade water quality. Thus, two methods confirming the need for additional N is required.
2. There greatest economic response will occur with the smallest increment of N. Over application will only result in greater economic losses.

556

We recommend providing definitions for 'crop N deficiency' and 'excessive rainfall' within the draft standard. Providing definitions will not only help clarify how, when and where supplemental rescue N applications are necessary, but also help avoid poorly documented cases for in season rescue N applications. We recommend referencing or using the following criteria when developing definitions for these two terms:

Crop N Deficiency -

[https://www.ipni.net/ppiweb/bcrops.nsf/\\$webindex/8A1BFC4E9E01AEB0852568F1005777B C/\\$file/97-3p08.pdf](https://www.ipni.net/ppiweb/bcrops.nsf/$webindex/8A1BFC4E9E01AEB0852568F1005777B C/$file/97-3p08.pdf)

Excessive Rainfall – factors to evaluate when making this determination:

- o Rainfall event size (e.g., 10 year, 24 hour storm event)
- o Rainfall event timing (e.g., excessive rainfall occurs after crop establishment)
- o Rainfall event frequency (e.g., how much cumulative rainfall occurs over a specified time period)
- o Using NRCS T55 spreadsheet to determine measured rainfall amounts against defined rainfall storm event sizes, by county:
 - http://www.nrcs.usda.gov/wps/portal/nrcs/detail/wi/technical/engineering/?cid=nrcs142p2_025422
- o Impact of excessive rainfall on field area (e.g., saturated soils and/or standing water in all or a majority of a planted crop field for a prolonged period of time)

We also recommend revising this section require that any in season rescue N application, not just those that exceed 40 lbs/N/acre, be required to use two or more of the tools found in this section of Appendix 3 to avoid false or poorly documented cases for in season rescue N applications.

Response: Crop N deficiency is now defined. The effect of any rainfall event on a field is very site specific. Exact rainfall amounts or frequencies by themselves do not define excessive rainfall with regard to N loss. Additional text was added to the tech note to outline the type of information which should be considered when estimating N loss from excessive rainfall. We acknowledge the uncertainty surrounding estimates of N loss (see response to reviewer 555 on this topic); however, the committee felt that two methods of evaluation and documentation should be used to justify application of more than 46 lb N/a.

557

Section V.a.1.i in the second paragraph makes an attempt to allow for an additional application of 40 or more pounds per acre of nitrogen if there is an excessive rainfall event. Excessive is not defined and there is no documentation that this is ever needed. If allowed this should only be permitted if soil tests of the upper 3 feet of soil for both nitrate and ammonia show a severe deficiency. Plant color is not a diagnostic for soil deficiency especially following a wet period.

Response: More information on how to document excessive rainfall will be included in the standard and the Tech Note.

V.A.1.j.

557

Sections V.a.1.j and l. require nitrogen credits for legume and manure to be taken only in the first and second year prior guidance has listed and required credits for the first, second and third year. Why was this changed when it known that these organic sources continue to release nitrogen for a number of years?

Response: A2809 has never suggested third year legume credits. Third year manure credits can be highly variable based on soil and manure type and are not necessarily reliable.

V.A.1.k.

548

This also speaks to pasture so more clarification of intent or details could be included here.

Response: See definition of gleaning or pasturing.

V.A.1.l.(2)

540

This section refers to Part IV, Table 4 of the Technical Note WI-1. I don't see a Table 4 in Part IV of the Technical Note WI-1.

Response: This should have referenced Table 3. It's now edited. Thanks.

V.A.1.n

540

I believe '...during or immediately after application.' should be removed.

I have seen too many cases when decisions are made to make manure applications (especially when emptying manure pits) right before rain is forecast because it is presumed that once it rains fields will not be accessible; and we all know where that manure ends up...running off.

Response: The language will remain unchanged. The team understands that runoff may occur during wet conditions. The purpose of the standard is to minimize runoff events.

546

First sentence should say... Nutrients shall not runoff the site.

-Nutrients should never leave the site no matter the timeframe, by adding this verbiage it will ensure that the applicators will take preventative measure before application. Often the evidence of improper nutrient application can only be documented by water samples monitored for excessive nutrient content and for this provision to be enforceable the term nutrients must be included.

Response: The language will remain unchanged. The team understands that runoff may occur during wet conditions. The purpose of the standard is to minimize runoff events.

V.A.1.n.(3)

540

I believe the words 'and/or' should be added before 'timing'.

Response: Edited. Thanks.

V.A.2.a.(2)

546

Add 25' setback to non-farmed wetland.

Applies to all sizes of operations to protect the waters of the state; to require of only CAFOs somehow illogically suggests that non-CAFO animal waste is less polluting. To adequately protect the wetland "waters of the State" a protective and abating buffer must be required.

Response: Based on previous comments and input, the team decided the current setbacks are appropriate. Given that this is the first time the group would be discussing additional setbacks to wetlands, this is not the highest resource concern.

V.A.2.a.(3)

546

A hundred foot setback to protect the public health and drinking water supply is the bare minimum setback required to protect ground water quality. We stress "DIRECT CONDUITS TO (DRINKING) GROUNDWATER".

Response: The team discussed this at length, and the current setbacks will remain the same. Greater setbacks could be implemented at the county local.

549

Remove the exemption that allows grazing animals to deposit manure within 50' of a private well or conduit to groundwater. I still think manure is manure and it should not matter how it is placed on the landscape. Grazing animals that are allowed to congregate around a well can cause contamination as well. The standard has a setback of 8 feet from an irrigation well then why not the same for grazing. Grazing standards should require that water sources for pastured livestock need to be located a minimum of 50 from the actual well. Watering areas are high traffic areas and can have the potential for high nutrient loading.

Response: If managers are abiding by the grazing or pasturing definition, the animals will not be congregating. The exception is provided to ensure grazing animals have an accessible source of water.

550

The prohibition on nutrient applications within 50 feet of a potable well or direct conduits to groundwater is impractical to implement for a majority of farm operations. Farmers need at least the ability to put starter fertilizer in these areas.

Response: The team discussed this at length, and the current setbacks will remain the same. The 50 feet setback was a compromise already. Starter fertilizer was included as an exception.

554

How does this rule affect starter fertilizer? If we are putting the starter in the ground this will not affect a well or direct conduits to ground water.

Response: Starter fertilizer was included as an exception, as it does not pose an environmental risk.

555

I understand the reasoning behind this change, however this standard favors organic farmers. In areas where land is sought after and highly competed for this will favor the operations that are not applying any nutrients to the land. Manure is what causes issues not commercial fertilizer or starter fertilizer. This will allow farmers that are not applying any starter fertilizer a significant advantage.

Response: Starter fertilizer was included as an exception, as it does not pose an environmental risk.

V.A.2.a.(4)

540

Why would an irrigation well only have an eight foot setback? When all other direct conduits to groundwater have a 50 foot setback.

Response: The eight foot setback is in the well code, 812.08(4)(a)(10).

544

Where does the 8 feet for irrigation wells come from? Will they still be able to use fertigation? Many irrigation systems pass directly over the well.

Response: The eight foot setback is in the well code, 812.08(4)(a)(10). Fertigation is allowed.

547

Reducing the setback from irrigation wells from 50 feet to eight feet is a recognized and warranted improvement over the previous standard. These wells are used to apply water directly to the crop and therefore should not be subject to the same setbacks as drinking water wells. The change in setback in this draft rule acknowledges that difference and we appreciate the change.

Response: Thanks for the support.

V.A.2.b.

540

Why use 'substantially buried' instead of 'effective incorporation' as used in other sections of the standard?

Response: The term 'substantially buried' sets an 80% threshold for incorporation and is specific to direct conduits to groundwater. Using different terms was intentional to highlight the different intent and encourage standard users to read the definitions.

541

...”unless the manure is substantially buried within 24 of application.”

The word “buried” should be changed to either “properly incorporated” or to “adequately incorporated.” The word buried is not used by farmers when talking about applying manure.

Response: Point noted. Using different terms was intentional to highlight the different intent and encourage standard users to read the definitions. The term 'substantially buried' sets an 80% threshold for incorporation and is specific to direct conduits to groundwater. Although the term 'incorporated' is more commonly used, it was decided to use a term that would be different than 'effectively incorporated'.

543

“...unless manure is substantially buried within ...” Should “effectively incorporated” be substituted for “substantially buried” in order to maintain consistent language in the standard?

Response: Using different terms was intentional to highlight the different intent and encourage standard users to read the definitions. The term 'substantially buried' sets an 80% threshold for incorporation of manure into the soil and is specific to direct conduits to groundwater.

544

Why use 'substantially buried' instead of 'effective incorporation' as used in other sections of the standard?

Response: Using different terms was intentional to highlight the different intent and encourage standard users to read the definitions. The term 'substantially buried' requires an 80% threshold for incorporation of manure into the soil and is used specifically to address direct conduits to groundwater.

549

The term “buried” is used throughout the proposed standard. This seems to be a new term that is basically the same as effective incorporation. Can we stick with effective incorporation and not add a new definition.

Response: Using different terms was intentional to highlight the different intent and encourage standard users to read the definitions. The term 'substantially buried' requires an 80% threshold for incorporation of manure into the soil and is used specifically to address direct conduits to groundwater.

556

We recommend revising this section to reflect the language below. This recommendation reflects the criteria from the current 590 standard (i.e., V.2.b.2 - areas that contribute nutrients to *direct conduits to surface waters*) and will help better protect surface water quality (phosphorus impaired waters).

Do not apply manure within areas delineated by the local Land Conservation Committee or in a conservation plan as *areas contributing runoff* to either *direct conduits to surface water* or *direct conduits to groundwater* unless the manure is substantially buried within 24 hours of application.

The current draft 590 language only identifies *areas contributing runoff* to *direct conduits to groundwater*, unless substantially buried in 24 hours of application. We support the requirement to incorporate manure because this practice can help reduce or eliminate manure nutrient losses to groundwater conduits via surface flow. We recommend the same approach be taken to reduce or eliminate manure nutrient losses to surface waters.

Surface runoff from agricultural crop fields to downstream waters has been repeatedly documented (e.g., Lower Fox River, St. Croix and Rock River TMDL reports), via water quality monitoring and modeling, as a significant source of phosphorus pollution that causes or contributes to phosphorus impaired waters within Wisconsin. Excluding manure surface runoff from the standard will not be consistent with Wisconsin TMDL's and other non-point pollution control plans strategies (e.g., County Land and Water Resource Management Plans, 9 Key Element and TMDL implementation plans, Priority Watershed Plans).

Response: The team understands the concerns raised for better protecting surface waters and debated this section at length. It is understood that once a formal water quality planning process is initiated in a watershed additional required Phosphorus reduction measures may be needed in the future to further protect water quality. With additional research currently being implemented, the team believes this should be addressed in the next revision of the 590 standard with more accurate data. Including this language now in the process would be difficult for users without having gone through the review process. The team also feels the current standard does more to protect surface water quality than in the previous version of the standard.

V.A.2.c.

543

Well Setbacks

The well setback distances appear to be manageable. Is it possible for the DNR to put the well registrations, both single user and community wells, on an interactive map in order to comply with the setbacks? What is the time frame for the DNR Well Compensation Fund sites? Are wells that were contaminated ever cleared for use again?

Response: The 1000' buffer around community wells is already an available map layer on the DATCP Manure Advisory website. There are not good locations available for single user wells, and therefore a map layer will not be available for those wells. The layers will be updated when data is available, typically annually. Wells using Well Compensation Funds are abandoned and replaced at another location. They are not cleared for use again.

549

I find the restrictions within 1000' of a community well and 250' of a non-community well confusing. If I am reading the draft standard correctly the only nutrients that can be applied in these areas are treated manure? This 1000' setback from community wells can and will have a large impact on small producers who farm around these features. Many farms do have solid/semi-solid manure that I believe can be applied within these 250' and 1000' zones safely. Can some sort of exemption or rate limit be applied to allow the spreading of solid manure in these areas? I have looked into what it would take for some of these smaller farms to implement composting on their operations so they could spread manure in these areas. I believe the additional mgmt and costs associated with needing a county permit for a manure storage area are cost prohibitive for many smaller farms to implement composting activities. Not to mention the cost of purchasing proper composting equipment for turning piles. No winter spreading in these areas makes sense. Also if no commercial

fertilizer can even be applied within 1000' of a community well then what do you propose to do long term once P & K have been mined out of the soils in these areas???

Response: Thanks for the comment. The "note" below was added to clarify the prohibitions.

"Note: Commercial fertilizer and manure deposited by grazing animals may be applied consistent with this standard."

550

This standard should be revised to at least be consistent with Wis. Admin. Code ch. NR 243.14(2)(b)(9) by requiring manure and process wastewater to not be spread within 100 feet of a non-community well. Additionally, it is very difficult to locate non-community potable water wells because it is not readily apparent to farm operators whether a dwelling is connected to city water or has a private well.

Response: The proposed revisions to the 590 standard are more specific to different kinds of wells and the prohibitions reflect the potential impact contamination may have. The 250' setback was selected as a compromise and is consistent with the well code. However, the setback now is changed to 100 feet of non-community wells.

552

The new restrictions on spreading manure next to municipal wells is unreasonable and not backed by research that warrants making this change on all farmland next to municipal wells. This type of regulation will eliminate the ability of producers to apply manure fertilizer on thousands and possibly hundreds of thousands of acres around nearly 500 municipalities in Wisconsin.

This regulation is unnecessary and the restriction of manure spreading around municipal wells should only be done if there is sufficient documentation and research which shows there is justification for restricting the application of manure near these wells on a well by well basis.

Just as the process used to permit high capacity wells, their needs to be documentation which proves that manure cannot be applied around these municipal wells on a well by well basis, not by a blanket regulation which is unnecessary. If manure spreading is not allowed around these wells then the producers should be compensated for their economic losses for not being allowed to apply manure to these acres.

In addition, farmers who wish to use manure rather than commercial fertilizer on these fields for organic food production will no longer be able to do so. Organic gardening in and near cities located next to municipal wells will not be possible if this regulation is imposed.

Just because a city came out to the edge of their city limits and drilled a high capacity well next to a farmers field should not pass the responsibility of whether that well will provide a safe water supply on to the neighboring farmer.

Instead when the city planned and sought out approval for a well from DNR, the city and the DNR should have taken into account where the well was relative to the farmland in the area. If they had sufficient research to document that the well would be at risk if the fields near it were receiving manure, then they should have moved the well within their city to a location which they and the DNR felt was sufficiently safe rather than expecting the farmer to quit using his land for application of his farms manure.

When farmers apply for high capacity wells they have to make sure they do not affect the cities wells and land use and therefore cities should also have the same responsibility to make sure their drilling

of wells or the design of their wells should be in a way that they do not inhibit the farmers reasonable use of his land.

The same also goes for public water supplies. The DNR and entity putting in the public water supply should have to make sure reasonable applications of manure nutrients on lands near them will not cause them any problems. If this is not the case then they should make other accommodations for locating there well somewhere else or buy up enough land around them so they don't take away a neighboring farmers ability to use his land for reasonable application of manure.

Response: The group clarified that commercial fertilizer and grazing are allowed in these setbacks to community and non-community potable water wells. The distinction between allowing commercial fertilizer versus manure has to do with reducing the risk of pathogen contamination in the groundwater. This version of the 590 standard is more specific, as well as flexible, in regards to application restrictions near various wells. NR 243 has a clear 100' setback on all wells. This standard increased setbacks for manure on community and non-community wells, and reduced setbacks and prohibitions on private wells and irrigation wells. All of these restrictions were agreed upon as a compromise to best protect water quality and allow for agronomic need. The setback to non-community potable water wells was adjusted to 100 feet.

558

I recently realized the detrimental impact the change in well restrictions could have on the Arlington Station. As we have multiple locations that service more than 25 employees, we would have multiple wells on the station that would have the extended 1000' buffer around them. My biggest concern is for our certified organic fields which are directly across the road from headquarters. With a 1000' buffer, we would not be able to fertilize quite a few acres of the organic fields. The dairy facility may also be classified as a community well, which would affect research plots in that area. There is also a church just north of the station that would also affect manure on research. The more I think about this, the impacts to large dairy's with many employees, or dairy's near large rural businesses that have many employees. This will be significant if it moves forward.

Response: The proposed revisions to the 590 standard are more specific to different kinds of wells and the prohibitions reflect the potential impact contamination may have. This standard increased setbacks for manure on community and non-community wells, and reduced setbacks and prohibitions on private wells and irrigation wells. The 250' setback initially was selected as a compromise and is consistent with the well code. However, the setback now is changed to 100 feet of non-community wells. The agencies will continue to work on mapping of all of the wells. Tools for locating community and non-community wells do exist.

V.A.2.c.2.

554

How is this going to be noted, how are planners supposed to find or know where these wells are located, very difficult to put this on the planner to find, may need to start a data base with each township for these locations.

Response: The 1000' buffers around community wells is already mapped and available on the DATCP 590 restrictions map site. More information on locating the wells will be included in the Technical Note WI -1.

V.A.2.d.

539

The third bullet point of this section states, "If the farm has manure that is 16% or more solids without permanent storage, a minimum of three temporary manure stacking sites, with no more than two stacking sites per 40 acres per year, to provide an alternative to spreading manure during frozen or snow covered-ground. All stacking sites shall be consistent with stacking requirements within the NRCS 313 Standard;"

Please reword this bullet point to only state: "All manure stacking sites shall be consistent with stacking requirements within the NRCS 313 Standard." The requirements for permanent manure stacking and temporary manure stacking sites are well established as listed in Sections V.C and V.D of NRCS Standard 313, and the user of the NRCS 590 standard should be directed to Standard 313 for the proper design, establishment, and operation of stacking areas. Please remove wording which states that only "two stacking sites [are allowable] per 40 acres per year." If stacking sites are designed, established, and operated in accordance with sections V.C. and V.D of NRCS Standard 313, the number of stacks per 40 acres per year should not result in a resource concern, even if greater than 2 stacking areas exist.

Response: The stacking requirement statement was reviewed and revised to reference the NRCS 313 standard.

540

This section and VII.B. Both of these sections require identification of temporary manure stacking sites for manure with 16% or more solids when the farm does not have permanent storage. I understand that manure with less than 16% solids does not stack; however, I presume that the purpose of the planning requirement for manure stacking sites is to allow for a backup to or additional option to daily hauling. So, if a farm has manure with less than 16% solids and does not have permanent storage, shouldn't there be a requirement for a different/comparable backup or additional option to daily hauling like there is for 16% or more solids? If not, it seems we are being more restrictive for solid manure than semi-solid, slurry, and liquid?

Response: This standard is requiring that all farms have adequate acreage to handle the manure and process wastewater generated on the farm. Even farms with permanent storage of liquid manure have to develop a Winter Spreading Plan for at least 14 days of manure generated or all manure intended to be spread in the winter. The reference to the stacking requirements in NRCS 313 encourages planning for unanticipated situations.

541

All farms mechanically applying manure or process wastewater must have a Winter Spreading Plan that identifies:

WFBF is supportive of having a winter manure spreading plan. In the third bullet point, a provision states that a farmer cannot have more than two stacking sites per 40 acres. Initially this is acceptable, but a provision should be included to allow more than 2 stacking sites per 40 acres if approved by an accredited agronomist. This flexibility is needed to account for a winter with significant snow fall or other weather conditions that may prohibit a farmer from stacking manure where originally planned.

Response: Thanks for the feedback. This team will not be revising the NRCS 313 standard, and can only reference that standard. We did revise the language to be more flexible for those that do not need to stack manure.

543

Good options for “When frozen or snow-covered soils prevent effective incorporation at the time of application” directions and options.

Response: Thanks.

544

Why are they only allowed to have two stacking sites per 40 acres? Shouldn't this be in line with the 313 standard?

Response: Yes, this is consistent with the NRCS 313 standard.

547

This portion of the 590 standard has been the focus of much discussion and compromise. We appreciate NRCS's commitment to listening to stakeholder input on this section in particular. The winter spreading plan requirements and application restrictions are much more restrictive than what was required in the previous version of the 590 standard but it is evident that the working group heard agriculture's concerns in the first comment period and has attempted to address those concerns in this revised version. We are concerned that the requirements in this draft are still rather complicated, difficult to track and implement, and nearly impossible to enforce but we appreciate the technical group's and NRCS's commitment to finding the middle ground on this important issue.

Response: Thank you for recognizing the compromises and consideration put into the current revisions. Although some of the requirements may be more complicated, this version offers options to farmers in making the best decisions for their operation. Allowing more options and flexibility adds complication in the planning guidance.

551

Allowing only 2 stacking sites per 40 is too restrictive for the driftless area of the state when stacking poultry manure. The Discovery Farms has done research and a publication on the movement of poultry manure in stacks and has shown that it can be stacked safely with little movement of the stack or nutrients. The focus should be on the application of manure with a high amount of solids not on the stacking of it.

Response: Thanks for the reference to the Discovery Farms research. The stacking language has been revised based on the comments received. The team acknowledges the greater water holding capacity of poultry manure, and encourages you to provide these comments to NRCS when the 313 standard is reviewed again.

556

We support how the proposed winter spreading plan requirements have been simplified to achieve greater adoption and implementation of winter spreading plans. We believe criteria (1)-(7), in conjunction with other winter spreading plan requirements, will help identify fields with low or high risk for runoff and, on fields with high risk for winter runoff, require some mitigation practices that protect surface or groundwater quality (as well as public health from reduced bacteria/pathogen exposure). We support how some of the winter spreading requirements reflect the 2013 and 2014 Discovery Farm considerations for Winter Applications of manure (cited in the tech note) while others help reduce the differences between small and large farm (CAFO) winter manure spreading requirements.

However, with respect to surface water quality protection, restoration of impaired waters and meeting the National 590 requirements for winter manure applications (i.e., adequate setback distances to protect local water quality; specified conditions are met and adequate conservation measures are installed to prevent delivery; concurrence with the state water quality authority), we recommend

eliminating mitigation practice (3)(f) – no manure application within 200 feet of all *concentrated flow channels* – from the draft standard and then include the following item after criteria (7):

(8) Do not apply manure within 200 feet of all *concentrated flow channels*, unless the plan documents that meeting criteria (8) would result in not enough field acres available to apply 14 days of manure and process wastewater generated by the farm or all manure and process wastewater anticipated to be spread. If the plan documents inadequate acres are available after meeting (8), then do not apply manure within 100 feet of all *concentrated flow channels*.

We propose criteria (8) to better protect surface water quality. Surface runoff events from agricultural crop fields during the months of February, March, April have been repeatedly documented via DNR water quality monitoring, runoff complaint investigations and TMDL reports (e.g., Lower Fox River and Rock River), as a significant source of phosphorus pollution that cause or contribute to phosphorus impaired waters. For the Rock and Lower Fox River basins, 60-80% of the annual phosphorus load has been shown to occur during the meltdown/runoff events which occur during the months of February-April. Winter manure spreading - during or before these months - is either a primary or contributing source of this phosphorus pollution load; cropland sediment and particulate or dissolved P are other sources. Due to these factors, the proposed 200ft setback from concentrated flow channels as an optional mitigation practice, versus a requirement, is unlikely to protect local surface water quality and may result in more, not less, phosphorus impaired waters across the state due to winter manure spreading and runoff.

Response: The team appreciates this comment and the concerns raised for adequately protecting surface waters. Based on the research reviewed during the team deliberations it was concluded that surface runoff from winter spread manure on agricultural lands was one component of several contributing factors to phosphorus impaired waters. The team agrees that more research is needed to further refine the water quality risk associated with winter applied manure. It is understood that once a formal water quality planning process is initiated in a watershed additional required Phosphorus reduction measures may be needed in the future to further protect water quality. With additional research currently being implemented, the team believes this should be addressed in the next revision of the 590 standard with more accurate data. This use of generalized risk assessment and mitigation practices is a compromise to balance the practical implementation of the standard and environmental protection. The current DRAFT 590 standard does provide additional restrictions on the winter application of manure and requires mitigation practices on all fields with slopes greater than 6%, the team believes that this standard is more protective of surface waters than prior versions.

V.A.2.d.(3)

540

Does the clarification in parentheses '(excludes removal of silage or bedding)' mean that it is OK to remove these or it is not OK to remove these? I'm not sure this is clear.

Response: Thanks for the comment. The intent is for ALL crop residue to be left on the field, which prohibits the removal of residue for silage or bedding. The language has been revised to be more clear.

541

Do not apply nutrients to fields where concentrated flow channels are present unless two or more of the following are implement.

WFBF is supportive of allowing farmers to pick two or more of seven options to in order to spread manure on fields where concentrated flow channels are present.

Response: Thanks for the support.

V.A.2.d.(4)

551

In order for our growers to meet the requirement of not exceeding the 60 lbs. of P2O5 the slope restriction needs to be changed to 9%. The 60 lbs. limits the amount we can spread on any particular field and we need more fields available to spread on thus going to 9%.

Response: The 60lb limit applies on all slopes. If greater than 6% slope, then you can spread if you mitigate with two of the mitigation options. The current revisions do open up more land for winter spreading, if two or more mitigation options are implemented. The 9% and 12% slope restrictions were eliminated and replaced with a 6% slope prohibition, unless no other fields are accessible and two or more mitigation practices are implemented. The reduced rate was compromised with the increased access to more fields.

539

This section states " Do not apply nutrients on slopes greater than 6%, unless the plan documents that no other accessible fields are available for winter spreading AND two or more of the following are implemented:"

-The wording of this section applies considerable subjectivity to the regulator, nutrient management plan writer, and/or the farm operator since the statement includes the word "unless." In addition, many farms in the southwestern portion of Wisconsin (i.e. Driftless Area) will have difficulty finding any suitable land available for winter spreading due to steep slopes (>6%) and/or SWQMAs on their farm. Many farms in the Driftless Area of the Wisconsin may have difficulty simply finding acceptable land for winter spreading with the existing language in the current 590 NRCS Standard which states "Do not apply nutrients on slopes greater than 9%, except for manure on slopes up to 12% where cropland is contoured or contour strip cropped." I highly prefer the language in the existing 590 standard as it is more implementable statewide.

-Is there any scientific justification for establishing a slope criteria of 6%, as opposed to the current NRCS 590 Standard language which prohibits the application of manure on slopes greater than 9%, except for slopes up to 12% where cropland is contoured? If so, please provide references.

Response: The team created these alternatives with the Driftless area in mind, and created more options for winter spreading on steeper slopes. Although mitigation practices are listed, this version of the standard opens up more land for winter spreading. The wording does allow for flexibility and requires professional judgement as to which lands are available and which practices will best protect water quality.

541

Do not apply nutrients on slopes greater than 6%, unless the plan documents that no other accessible fields are available for winter spreading and two or more of the following are implemented.

WFBF is supportive of allowing farmers to spread manure on slopes greater than 6%, if necessary, provided that farmers implement two or more of five options.

Response: Thanks.

551

Change the slope restrictions back to 9% for the reasons above. Have consistency between winter application and stacking for slopes downhill of 9%.

Response: With the current revisions, the team has increased the amount of land for winter spreading by eliminating the 9% and 12% slope prohibitions, as long as two of the mitigation practices are implemented. This is a compromise to best protect water quality.

V.A.2.d.(6)

543

Will DATCP, DNR, or local LCD's provide maps of where Silurian dolomite is located?

Response: Yes, maps of the Silurian dolomite soils currently located on the DATCP Manure Management Advisory system as part of the 590 restriction map series.

550

This provision would apparently prohibit surface application of liquid manure during February and March on areas depicted on the 590 spreading restriction maps as "areas where DNR Well Compensation funds provided replacement water supplies for wells contaminated with livestock manure" As an initial matter, it is unclear how many areas in the state would be impacted by this new restriction, which should be an important consideration when deciding if these areas are the most appropriate ones for such prohibitions. In addition, DBA is concerned that the reason(s) why well compensation funds are awarded are not always readily available and DNR's decision to grant compensation funds may be related to several factors, not just whether the wells were contaminated with livestock manure (and in some instances DNR will just *assume* that livestock manure was the cause of the problem without actually establishing as much). Moreover, the reason why any particular well requires replacement is important. For example, in a situation where poor well construction played a role in the well ultimately becoming contaminated, it would be inappropriate to use that well replacement as the basis for a newly designated area that restricts manure application. In some instances it is known that a well is contaminated with fecal coliform, but additional testing may not have been completed to determine if the contamination emanated from a livestock source. In other instances, wells are contaminated by both human and livestock fecal matter. These are just a few examples that demonstrate how difficult it would be for this restriction to be applied in any meaningful way. Moreover, any standard along these lines should also state how far from the well the restrictions apply and for what period of time the restrictions apply. Additionally, emergency application should still be allowed in such areas provided that appropriate protocols are followed. Given these concerns, DBA would recommend that this provision be omitted and further considered /developed for subsequent revisions of the standard.

Response: This restriction around Well Compensation Fund areas will affect 2,440 acres of cropland. The DNR authority to establish special casing areas is through 280 Wis Statutes and NR 812.10(5) and Nr 812.12(3). The DNR is required to declare an area of special eligibility for compensation for well contamination if contamination reports include: 1) Results of tests performed by a laboratory certified under s.299.11 establish that wells in the area are contaminated by fecal bacteria, and 2) evidence demonstrates that the bacterial contamination is caused by livestock. They usually determine fecal contamination using E. Coli results and then use Microbial Source Tracking to determine if it was caused by livestock.

V.A.3.a.

540

Shouldn't the words 'or non-snow-covered' be added in the first sentence after 'non-frozen'?

Response: The team considered this revision, and decided the language is most clear if it is left unchanged. Snow covered soil is addressed earlier and is specific to incorporation.

V.A.3.a.(3)

540

I don't believe the words 'shall occur' are necessary.

Response: Agreed.

V.A.3.b.

540

Why 7 days between sequential applications in a SWQMA? Why won't a farmer or applicator look at the soil/field conditions to make a determination?

Response: Waiting seven days is intended to reduce hydraulic loading and risk for runoff.

546

12,000 gal/ac is too high

-Reducing this to 6,000-7,000 gal/ac will reduce the risk of runoff to the SWQMA or subsurface drains. This application 6,000-7,000 rate is comparable to a topdressing alfalfa application that we commonly see. Applications of 12,000 gallons per acre will, and do, result in violating runoff events.

Response: This change is now consistent with rates allowed for W soils. Where runoff from tiles has occurred, the rates were documented as higher than 12000 gal/ac. Other factors ensuring compliance with this standard, such as not exceeding P and N recommendations, could also limit the rate.

550

We would encourage the retention of Table 1 or the creation of a new numeric moisture standard that could take its place. We would also strongly encourage an alternative to the 7-day application prohibition be provided for producers with the technological and agronomical expertise necessary to utilize it. Also, the term "liquid manure" should only apply to manure with a solids content of less than 12% to be consistent with Wis. Stat. ch. NR 243.03(32). Use of the term "11.0% dry matter" in V.A.3.b. creates unnecessary conflict between NRCS 590 and Wisconsin's Administrative Code ch. NR 243 for those farms regulated under NR 243.

Response: Table 1 was confusing and needed modification. The elimination of Table 1 simplifies and clarifies this section. The 590 standard refers to the 11.0% dry matter classification of liquid manure in the new UWEX Pub. A2809. In the future, NR 243 may be changed to also reference 11.0% dry matter.

556

We recommend including an additional bullet item (below) that references applicable drain tiles sections of the standard. Providing these will help planners or farmers to find and implement drain tile requirements within the standard.

- Follow VII.A, VIII.B subsurface tile practices and review consideration VI.O.

We believe the proposed drain tile practices, referenced guidance documents in the Technical Note are an improvement upon the current (2005) standard and meet the National 590 requirements for drain tiles (i.e., conservation practices coordinated to avoid, control or trap manure and nutrients before they can leave the field by subsurface drainage (e.g., tile); number of applications and application rates must be considered to limit transport of nutrients to tile; total single application of manure must be adjusted to avoid loss to subsurface tile drains).

Response: The team is considering this addition, and agrees it mimics other sections that refer to various parts of the standard. The team reviewed sections VII.A. and VIII.B. for content. Consideration O was moved to the Tech Note under the subsurface drainage section. The Emergency Action Plan section in VII.A. was revised to refer to appropriate resources now listed in Tech Note WI-1. The two bullets in the Plans & Specs referring to subsurface drainage were combined.

V.B.1.

540

20 inches for bedrock vs 12 inches for groundwater. Why not have both at 20 inches. At 12 inches for groundwater a farmer/applicator could easily be injecting manure just above that groundwater zone.

Response: The soil depths to bedrock used are standard interpretation depths available through NASIS. These depths were used because this is the data that is available and they can be field verified.

544

Why not have W and R soils at 24 inches to be consistent with NR 243? Is there that big of a difference between CAFO manure and non CAFO manure?

Response: The soil depths to bedrock used are standard interpretation depths available through NASIS. These depths were used because this is the data that is available and they can be field verified.

550

This standard should be revised to restrict applying manure and process wastewater on fields where a depth to bedrock is less than 24 inches to be consistent with Wis. Stat. ch. NR 243.14(2)(b)(7). Conflicting regulatory frameworks only add confusion and uncertainty.

Response: The soil depths to bedrock used are standard interpretation depths available through NASIS. These depths were used because this is the data that is available and they can be field verified.

556

Given recent efforts by the Department to address groundwater pollution concerns within Kewaunee County, we recommend the following practices be included in this section to reduce the risk for loss of liquid manure nutrients and bacteria, via soil cracks or macropores, on soils with shallow fractured bedrock:

- On *Silurian dolomite* (SD) soils in the spring, summer or fall and before crop planting or after crop harvest, do not inject or surface apply liquid manure unless one of the following are implemented:
 - Complete pre-tillage prior to application
 - Immediately incorporate manure after application
 - Reduce application rate to 7,000 gallons per application; complete sequential applications to meet desired nutrient additions consistent with this standard. Wait a minimum of three days between sequential applications.

Response: Included as a consideration.

557

Nitrogen leaching is known to occur and be a serious groundwater problem in many parts of the state including areas dominated by silt loam soils. The current use in section V.B.1 of only Hydrologic group A soils for criteria to minimize nitrate leaching to groundwater is not adequate to protect groundwater. At a minimum both hydrologic unit A and B soils should be included in this section for N-restricted soils. The definition of Group A and B follows indicating both are well drained soils that are susceptible to nitrate leaching if applications exceed crop removal.

Group A is sand, loamy sand or sandy loam types of soils. It has low runoff potential and high infiltration rates even when thoroughly wetted. They consist chiefly of deep, well to excessively drained sands or gravels and have a high rate of water transmission.

Group B is silt loam or loam. It has a moderate infiltration rate when thoroughly wetted and consists chiefly or moderately deep to deep, moderately well to well drained soils with moderately fine to moderately coarse textures.

Response: There is increased risk for groundwater leaching on Group A soils versus Group B. The infiltration rate for Group A soils, sandy soils, is much higher.

V.B.1.a.(1) and (2)

540

When specifying the N application rates, these sections are not consistent with regards to the units of measurement of N. In some cases it is listed as just 'lbs.' N and in others it is 'lbs. available' N. I believe it should always be "lbs. available".

Response: There is a reason for using different units. The "lbs available" refers to manure N content and "lbs" refers to commercial fertilizer.

V.B.1.a (2)

540

For liquid manure why not have manure up to 11.0% solids instead of 4% solids for W soils.

Response: Less than 4% solids manure will infiltrate much faster and has a higher ammonium content posing greater risk.

542

Fourth bullet: Surface apply and do not incorporate for at least 3 days and V.B.1.a (4) second bullet: Or surface apply and do not incorporate for at least 7 days.

Comment: If soil moisture conditions on any soil types are dry showing significant cracks in the soil itself and on the hills where parent material is exposed along with very little surface residue, leaving

manure with 4.0% solids or less for any length of time has a potential to find a crack in the soil straight through to the tile lines, bedrock and surface run off.

Response. The delay for incorporation was changed to 3 days in both cases.

546

Surface apply and do not incorporate for at least 3 days.

-If this is one of the options there are many variables to consider; we understand that leaving manure unincorporated for 3 days nitrogen will volatilize but, what about the increased risk of runoff of other nutrients and pathogens associated with manure. Three days of not incorporating should only be allowed if a prescribed list of conditions are met including, but not limited to, soil moisture, level slopes, confirmed clear weather forecasts, animal composition and more. Failure to include prescribed conditions will result in adverse runoff events and discharges to groundwater.

Response. The delay for incorporation was changed to at least 3 days in both cases. UV exposure is a documented best practice for reducing pathogens. Manure is still required to not runoff the field.

550

The inclusion of the ability to “delay application until October 1 or soil temperatures are less than 50°F” is a helpful addition that gives farms more flexibility.

Response. Thanks.

554

“Delay application until October 1 or *soil temperatures are less than 50°F.*”

Good addition to give farmers more flexibility, farmers succeed more when they have more options. Keep this one.

Response. Thanks.

555

• Delay application until October 1 or *soil temperatures are less than 50°F.*

Perfect option and excellent to give farms more options to better manage our resources.

Response. Thanks.

V.B.1.a. (1,2,3,4)

540

These sections are not consistent when referencing soil temperature. ‘Soil temperature greater than 50 F’ is defined in the definitions (X.). However, in these sections, three of the four references to soil temperature list ‘soil temperatures are less than 50 F’ in italics. This could be solved by just having the words ‘soil temperature’ italics and correspondingly just having ‘soil temperature’ defined.

Response: Edited. Thanks for the suggestion.

543

Please check consistency with using either symbols (<) or words: “< 4.0% solids” or using “4.0% solids or less.”

Also in V.A.3.b. “...less than or equal to 11% dry matter...”

Also in VII.B. 5th bullet point “...manure with 16% solids or more...”

Response: Edited to use symbols. Thanks.

V.B.1.a.(3)

543

This is a good practice when applying anhydrous ammonia where equipment availability is not an issue. Unfortunately equipment availability is an issue for farmers that utilize custom manure haulers to apply their manure. If corn silage is harvested by September 15 and the soil temperature is still above 50 degrees F., what options does a custom manure hauler/farmer have? Please consider giving the farmer options such as using nitrification inhibitors, cover crops, or other methods to tie up nitrogen for the following crop season. This section needs better clarification. Waiting until the soil temperature is below 50 degrees F. to apply manure will be difficult to implement following corn silage harvest.

Response: Cover crops are covered in this section as an option. An inhibitor is an option after October 1 or when soil temperatures are less than 50F. Inhibitors decompose in 4 to 6 weeks and therefore may not protect the N until the soil temperatures have dropped.

550

This restriction appears to limit the application of manure on established or summer seeded alfalfa to 60 lbs. per acre if applied prior to October 1st. However, this crop has a greater capacity to capture and utilize nitrogen than any other crop at that particular time. This appears to present a lost opportunity for some farmers to further spread out their manure application, which is a desirable outcome. Therefore, we would recommend either clarifying the intent of this provision or removing it entirely.

Response: The language was clarified. The rates are not limited on established alfalfa.

V.B.1.a.(4)

542

Comment regarding 7 day delay: If soil moisture conditions on any soil types are dry showing significant cracks in the soil itself and on the hills where parent material is exposed along with very little surface residue, leaving manure with 4.0% solids or less for any length of time has a potential to find a crack in the soil straight through to the tile lines, bedrock and surface run off.
Response. Thanks. The delay was changed to 3 days to be consistent with V.B.2.

543

What is the rationale for not incorporating manure for at least 7 days? It seems this would add to air quality concerns. Is there any research basis for the 7 day period? Is it possible to allow for light incorporation of the manure with an Aerway type tool in order to minimize both odor and volatilization concerns?

Response. Thanks. The delay was changed to 3 days to be consistent with V.B.2.

546

Surface apply and do not incorporate for at least 7 days.

-If this is one of the options there are many variables to consider; we understand that leaving manure unincorporated for 7 days nitrogen will volatilize but, what about the increased risk of runoff of other nutrients and pathogens associated with manure. Seven days of not incorporating should only be allow if a prescribed list of conditions are met including, but not limited to, soil moisture, level slopes, confirmed clear weather forecasts, animal composition and more. Fail to include prescribed conditions will result in adverse runoff events and discharges to groundwater.

Response. Thanks. The delay was changed to 3 days to be consistent with V.B.2.

556

We recommended revising the first bullet to clarify what application rate can be used on for cover crops on P and R soils. The current language implies manure N can be applied to 120 lbs. per acre on cover crops. This rate will exceed the N requirement of most cover crops listed in A2809 and result in N leaching below the root zone.

- For perennial and overwintering crops, including cover crops, use rates that will not smother these crops and limit available manure N to the lesser of 120 lbs. per acre or crop N guidelines specified in A2809.

Response: Language was modified to be more clear about using whichever rate is less for that crop.

V.B.1.b.

556

We recommend including criteria for manure applications on P and R soils **in the spring and summer** that reflect language within the current (2005) standard for irrigated manure applications:

- On P and R soils, when manure is applied using irrigation equipment, do not exceed the crop N rate guidelines from all sources and apply one of the following management strategies:
 - A split or delayed application to apply a majority of N after crop establishment
 - Use a N inhibitor
 - Apply on a perennial crop, established cover crop, or an overwintering annual crop

Response: Manure is handled in other sections, whether it is irrigated or not. By following the A2809 recommendations, planners are addressing these concerns.

V.B.1.b.2

554

(2) On P soils, when commercial N is applied **for full season crops**, do not exceed the crop N rate guidelines and apply one of the following management strategies:

Please add the language in "RED" to the above sentence.

Response: Language was already added. Thank you.

555

Vegetable crops and forage crops have fast uptakes and a short window to respond in a growing season. This addition of "for full season crops" provides more diversity for the farms that manage short season crops.

Response: Thanks.

V.B.2.

540

It talks about implementing practices to reduce phosphorus delivery to groundwater. What are the practices?

Response: The requirement is from the national standard. The conservation practices could be part of a conservation plan, indicated in NRCS FOTG V.

550

This is one of a couple instances where it is intimated in the draft that phosphorus is a groundwater concern or a "conservation planning concern" whatever that may mean. There is little data to support this view. Indeed, there is contradictory evidence. Perhaps this explains why the language of this section is so vague and non-committal. There is no clear guidance regarding when phosphorus

should be viewed as a “conservation planning concern” and no details regarding practices that could address such concerns. Without a firm scientific basis or a standard to apply, there is no good reason to include this type of vague directive in the revised NRCS 590. This should be omitted in its entirety.

Response: The requirement is from the national standard. The conservation practices could be part of a conservation plan, indicated in NRCS FOTG V.

V.C. Additional Criteria to Minimize Entry of Nutrients to Surface Water

V.C.1.b.

546

Modify to read... Establish perennial vegetation cover in all areas of concentrated flow.

-Concentrated flow channels may have formed for many reasons; post glacial event features, rain events, poor farming, constructed etc. Requiring only areas of gully erosion to be vegetated only addresses a fraction erosion and runoff issues. All “concentrated flow” areas convey significant waters, which carry sediment and nutrients and should be vegetated for the stable conveyance and abatement of the runoff.

Response: The current language is adequate to protect soil erosion.

V.C.2

543

I agree with using a phosphorus management strategy to minimize surface water quality impacts. The Phosphorus Index is supposed to be sensitive to the possibility of transporting phosphorus laden soil particles to surface water. Therefore, if a field is nowhere near surface water, why should it have phosphorus restrictions applied to it? Similarly, if a field is near surface water, could sequential soil sampling be used as measure for manure application restrictions? I understand that “nowhere near” and “near” need better definitions. But still, if a farm demonstrates that soil test phosphorus is either stable or declining over a three to four year period, what other restrictions need to be applied? And if a farm’s soil test phosphorus is increasing over a three to four year period, above the seemingly arbitrary 50 ppm P, then absolutely restrictions on manure applications need to be enacted.

Response: This section was not changed from the previous standard and already offers two options.

557

The use of a Phosphorus index with no action as long as the index does not exceed 6 is known to result if runoff concentrations that far exceed the surface water standards implemented in the state. There is virtually no mention of this in the standard and neither the P index or soil test criteria address this issue. There is some good logic and recommendations in section VI but these are only optional management considerations that very few will follow unless they are required. Many of these need to be moved into the required practice section if water quality standards are ever going to be achieved. A phosphorus index of 3 or less instead of 6 and a soil phosphorus concentration of 30 ppm which is optimum for most crops needs to be achieved.

Response: There is no new research data to support changes to the P Index.

V.C.2.a.

540

I believe the words ‘soil fertility recommendations’ should be replaced with ‘Pub. A2809’.

Response: Okay.

V.C.2.b.

550

There should be two separate sets of guidelines for nutrient application based upon soil test results. For soils where the P.I. is less than six and there is minimal risk of phosphorus reaching ground or surface waters, a set of guidelines using higher soil test results for phosphorus should be developed. This adaptable approach would allow for the greatest potential use of beneficial nutrients while still minimizing potential risks of nutrient runoff or leaching.

Response: Research does not support building soil P levels.

V.C.2.b.(3)

540

The colon after 'soil test P' should be replaced with a hyphen to be consistent with (1) and (2).

Response: Edited.

550

The following language is ambiguous in this section and should be removed: "If manure P applications above these guidelines are necessary due to lack of suitable application sites" It is unclear what "suitable application sites" means and the additional language is not necessary.

Response: Language was revised from the previous standard to enable producers to comply with the standard and a balance between agronomic productivity and environmental protection.

554

(3) Greater than 100 ppm soil test P: total P applications from all sources shall not exceed guidelines from UWEX Pub. A2809. **If manure P applications above these guidelines are necessary due to lack of suitable application sites**, P applications shall be 25% less than the cumulative annual crop removal over a maximum rotation length of 8 years.

The language in "RED" in the above paragraph is ambiguous please take out, very hard to understand.

Response: Language was revised from the previous standard to enable producers to comply with the standard and support a balance between agronomic productivity and environmental protection.

555

"If manure P applications above these guidelines are necessary due to lack of suitable application sites....",

This statement needs to be removed or reworded. Remove "due to the lack of suitable application sites" because a suitable site can always be found. Distance, destruction of a crop, crop rotation, emergency situations are all reasons that this may make a situation a suitable application site even if it is above the soil test level recommended in A2809.

Response: Language was revised from the previous standard to enable producers to comply with the standard and support a balance between agronomic productivity and environmental protection.

V.D. Additional Criteria to Protect Air Quality...

543

"Do not apply when there is a high probability that wind will blow poultry litter, manure, or organic by-products of similar dryness/density when there is a high probability that wind will blow the material

offsite.” If this remains part of the standard, does it leave WI agriculture open to making sure corn husks and soybean residue remain onsite despite wind conditions? What about harvest operations that can create dust that may move offsite...or tillage operations? Suggest striking the whole sentence.

Response: This language is directly from the national standard. See edited definition of ‘organic by-products’.

VI. Considerations

546

Modify to read... The following statements are optional management considerations, but are required practices if determined by reviewing government agencies or CCA.

1. Each field condition is unique. By adding this verbiage it will allow professionals to make the field specific decisions necessary to protect public health and the natural resources. To limit the list as merely consideration and include no obligation to meet the item when necessary to protect the public health and natural resources is a significant shortcoming of the proposed standard revision.

2. In addition some items should be moved from the “Consideration” area of the Standard to a required action section. Obvious examples include items “M”, “O” & “P” all which are not in any fashion “optional” actions of proper nutrient management planning and/or implementation; all three should be required!

Response: For all NRCS practice standard formats, the Considerations section is by design intended to be a consideration and not a requirement.

550

This section provides “considerations” that are “optional management considerations” and “not required practices.” Given that management considerations summarized in this section are “not required” we would recommend they be omitted from the standard entirely. There are other forums that would be more appropriate to provide these “considerations” to farm operators and the inclusion of non-required practices only reduces the standard’s clarity and ease of application.

Response: The Considerations provide additional guidance that is important and appropriate for some but possibly not all operations.

VI.H.

540

This may be a fundamental change to the standard, but I believe this ‘consideration’ should actually be a Nutrient Application Prohibition. I have seen too many cases when decisions are made to make manure applications (especially when emptying manure pits) right before rain is forecast because it is presumed that once it rains fields will not be accessible; and we all know where that manure ends up...running off. Likewise in V.A.1.n., I believe ‘...during or immediately after application.’ should be removed.

Is a manure prohibition for CAFO operations; why would this be any different for non- permitted facilities? (Under consideration section: delaying surface applications of nutrients if precipitation capable of producing runoff is forecast....)

Response: The team believes that the criteria already addresses this comment.

VI.R.

543

Suggest striking as there are no established guidelines and this statement seems to contradict Wisconsin's Right to Farm Law.

Response: This is a consideration not a requirement.

VII. Plans & Specifications

VII.A.

546

Should say... All areas of concentrated flow channels.

-Concentrated flow channels may have formed for many reasons; post glacial event features, rain events, poor farming, constructed etc. Requiring only areas of gully erosion to be vegetated only addresses a fraction erosion and runoff issues. All "concentrated flow" areas convey significant waters, which carry sediment and nutrients and should be vegetated for the stable conveyance and abatement of the runoff.

Response: Concentrated flow channels are listed in VII.A.1.b.

548

Bullet Field features identified...

Add: North arrow if not top of page.

Response: Thanks, included.

VIII. Operations and Maintenance

VIII.B.

550

The additional work and documentation needed to comply with the proposed monitoring requirements are substantial and onerous. The revisions would force producers to "visually monitor accessible tile outlets before, during, and after liquid manure applications for potential discharges of manure or organic by-products. If a discharge is observed implement the activities in V.A.n." This is unworkable. Instead, we would recommend revising this section as follows: "If discharge is observed before, during or after liquid manure applications, implement the activities in V.A.n. Evaluate the need to modify field operations..." In the alternative, this new monitoring requirement could be omitted entirely.

Response: It is best practice to monitor the accessible tile outlets.

VIII.H.

546

Should say... all areas of concentrated flow channels shall be maintained in permanent vegetation.

-Concentrated flow channels may have formed for many reasons; post glacial event features, rain events, poor farming, constructed etc. Requiring only areas of gully erosion to be vegetated only addresses a fraction erosion and runoff issues. All "concentrated flow" areas convey significant

waters, which carry sediment and nutrients and should be vegetated for the stable conveyance and abatement of the runoff.

Response: The current language is agreed to be protective for soil erosion.

X. Definitions

“Commercial Fertilizer,” “Commercial N Fertilizer,” and “Commercial P Fertilizer.”

539

Please provide a definition for “Commercial Fertilizer,” “Commercial N Fertilizer,” and “Commercial P Fertilizer.” These terms are used several times throughout the standard. My assumption is that “Commercial” implies that nutrients are NOT obtained from livestock (e.g. manure and/or manure deposited through pasturing or gleaning). By establishing a definition for the above terms, it is more obvious to the reader that prohibitions and/or requirements specific for applying “commercial fertilizer” do not necessarily apply to mechanical land applications of manure and/or manure deposited through pasturing or gleaning.

Response: These terms are generalized and not unique to this standard. Commercial fertilizer is a manufactured or processed nutrient source.

Conservation plan

542

For non-NRCS funded plans meet the training and performance criteria established by the county Land Conservation Committee.

Comment: Define training and performance criteria.

Response: The criteria is already referenced in the definition.

Direct Conduits to Groundwater

540

Why are irrigation wells excluded from being a direct conduit to groundwater?

Response: Irrigation wells are dealt with separately from other direct conduits to groundwater in the standard. There is an 8 foot setback from irrigation wells in the well code (812).

Effective Incorporation

540

I believe the word ‘the’ should be removed after ‘Means’. A comma should be added after ‘residue’.

The words ‘with topsoil’ should be removed after ‘nutrients’.

Response: Thanks.

548

Add Vertical Tillage Tool (if that would be considered effective incorporation).

Response: Vertical tillage implements are all subsets of the examples listed.

High Permeability Soils (P)

548

P is too easily confused with phosphorus (P). If possible call it (HP) (here and as used elsewhere).

Response: The team is concerned this change would be more confusing.

Technical Note WI-1

543

Good job on the changes! Thank you for listening to and incorporating comments.

Response: Thanks for the comment.

Part II. Requirements for Winter Spreading Plan

545

Way too many decisions for winter spreading. Snow depth, and expected precipitation (form and amount) are adequate. Frost depth and type of snow are much too variable and subject to personal judgment to be subjective criteria.

Response: Many factors collectively determine safe winter manure spreading. The Tech Note provides many considerations for best management which will depend on the operation and the site conditions. The Tech Note provides information to help aid planning and more informed decision making.

551

Additional Considerations letter D Table 1: The stacking size should be increased to 65,000 cubic feet. This would allow our growers to stack 8 months' worth of manure. Land slope down gradient of stack should be increased to 9% as 6% will be too restrictive. We have many fields that we can stack manure on safely that are on top of a ridge but have a greater than 6% slope downhill. These are safe areas to stack on and should be allowed.

Response: Table 1 is listed directly from NRCS Standard 313, Waste Storage Facility. The team is not addressing changes to the 313 standard, and therefore cannot make that change. The language regarding stacking in the 590 standard, V.A.2.d., was revised, which may address your concerns.

Part III. Enhanced Nutrient Management Planning

543

Good considerations and well thought out, especially concerning nitrogen assessment.

Response: Thanks.

545

- i) Should include product (4R's)
- ii) Manure rate discussion should address the ability of legumes, especially alfalfa, to utilize (scavenge) high rates of N, and expand spreadable acres.

Response: By design, the 590 standard addresses all of the 4Rs. It would be too confusing for standard users to completely re-format the current WI standard.

Part III.B.3.c.

553

Part III. B. 3 c. The Nitrogen Leaching Index equations should be removed from here for two reasons. 1) There is not enough information to allow planners to use those equations, and 2) If they could use them, there is no guidance for interpreting their results. As an alternative, you could put in a web site location where the N Index and its interpretation will be available whenever it is completed.

Response: The N Index equation was provided as information. Your comment is understood, and NRCS will provide a weblink as a placeholder for several resources related to the N Leaching Index.

Part III.B.4. Table 2.

554

Table 2. First-year available manure N application rates allowed for legume and legume plus companion crops*

These rates were drastically dropped, Alfalfa and Alfalfa seeding are scavenger crops. They will use up free N before the make their own. This should allow more manure N to be applied. Also without science based research to back the dropping of the manure rates, these rates should not be lowered.

Response: N removal values were updated using values on the International Plant Nutrition Institute website. Alfalfa seeding year and alfalfa established were combined and a user should select the appropriate yield level. Rates were capped at 205 lb available N per acre to minimize the risk of N leaching if actual legume yields are less than expected.

555

Table 2. First-year available manure N application rates allowed for legume and legume plus companion crops*

First year available manure N application rates should not be reduced on legume crops with companion crops or as stand-alone crops because a legume crop will harvest manure Nitrogen before converting atmospheric Nitrogen. A companion crop such as winter rye requires 60 to 120 units of Nitrogen for maximum forage needs. In a situation where alfalfa is under-seeded with the winter rye, the additional N will be consumed by the forage and alfalfa that is to follow. Similar situation, a Barley grain companion grain crop with an under-seeded alfalfa stand will need the 90 pounds of nitrogen with an additional need of 30-90 pounds for the following 2 crops of forage alfalfa. I will support the changes with additional research that needs to support these changes.

Response: See response to comment 554. Available manure N application rates for barley or oats for grain underseeded with alfalfa were determined by taking the N recommendation for barley or oats and adding N removal by 2 T/a of alfalfa. If barley or oats are grown for silage, then planners should select small grain silage underseeded with alfalfa.

Part IV. Determining Manure Nutrient Credits

551

Table 3. Manure Quantity Estimation for Crop Production: The quantity of broiler manure calculated in the table is too high. Does the table take into consideration that a broiler barn has a downtime between flocks of 10 to 14 days where no manure is produced? We believe this quantity is 3 to 4 times more than is actually produced in a broiler barn. Studies done with the University of Wisconsin Discovery Farms clearly shows that our broiler barns produce, on average, 467 tons of manure per year.

Response: The team reviewed the Discovery Farms poultry manure studies. The 590 standard provides options for determining manure quantity in V.A.1.I., either 1) use the book values listed in Table 3, or 2) calculate your own quantities and use those values for greater accuracy.