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Washington State Department of Agriculture (WSDA) recognizes the substantial efforts by the Department of Ecology (Ecology) to meet a court mandated deadline and produce an agricultural Best Management Plan (BMP) guidance to control nonpoint source pollution for inclusion in the State's 2025 319 Plan Update. WSDA appreciates the opportunity to provide formal public comment on the final draft of the agricultural BMP guidance, which is the "Voluntary Clean Water Guidance for Agriculture" (VCWG). WSDA focused comments on areas in which we noticed Ecology made improvements from earlier draft chapters. We also highlight several overarching concerns that we've shared throughout Ecology's drafting of these chapters since 2022. Also attached is an addendum which refers to more specific issues by chapter that continue to concern WSDA and have carried over into this final draft.

As the state lead agency for agriculture in Washington State, WSDA is proud to apply sound scientific practices in our effort to support the millions of acres of food production land that feed Washington families and fuel our state's economy. WSDA takes pride in working collaboratively with a wide range of state and federal partners to fulfill our mission of serving the public by keeping agriculture viable while protecting consumers, public health, and the environment. WSDA's environmental and scientific programs, which house our expert science, policy, and regulatory staff, are one of our greatest assets in carrying out this mission. By offering our staff's time and subject matter expertise to collaborate with scientists from other backgrounds on this project, we intended to become partners and help develop the best possible product. WSDA would like to see continuation of efforts and adherence to the collaboration process that was originally laid out to further improve this guidance. When sister agencies were first brought to the table, WSDA's stakeholder contacts and rapport were used so the ideal list of participants could be developed to help guide this project. In addition to our own staff, agriculture experts and those with lived experience of the related complex issues were brought in, anticipating that trust could be built through participating in the advisory process, and that science could ultimately inform policy.

Washington State produces over 300 different agricultural commodities across more than 200,000 farm fields in extremely diverse climatic and geological settings. This guidance should more clearly acknowledge the complexities of Washington State's site-specific conditions across the diverse cropping systems and landscapes. This is central in informing WSDA's recommendation that Ecology implement a more diversified approach to BMPs instead of a universal or one-size-fits-all framework, which was shared with Ecology through feedback on several draft chapters. Local scientific research from regional institutions such as Pacific Northwest land grant universities were offered, reviewed and some were included in these draft chapters. However, most chapters relied far too heavily on research from agricultural systems different from those common in Washington State. WSDA expresses concern that they do not adequately represent Washington State's unique cropping systems and thus lack relevance to Washington farmers' site-specific situations.

The latest USDA Agricultural Census (2022) for Washington State documents over 32,000 farms across 13.855 million acres. Nearly two-thirds of these are less than 50 acres in size, and 9,100 are less than 10 acres in total size. Over forty-two percent of Washington State farms have less than $2,500 dollars in sales. Only 18 percent have sales of $100,000 or greater. This means that the vast majority of our state's farms are small, family operations supported with off-farm income. Many of these farmers belong to marginalized communities that are disproportionately affected by the negative impacts and burdens of any agency actions and policies. One of WSDA's core missions is to sustain agricultural viability and preserve farmland for crop and food production, which maintains food security. Farmers face unique stressors and pressures, especially those in marginalized communities. Approaching BMPs on agricultural lands with flexibility, thorough consideration of feasibility, and by exploring motivators for implementation are the best ways to drive farmers to successfully adopt voluntary practices without overburdening small farms.

In WSDA's "Equity for Underrepresented Farmers and Ranchers"[1] report to the Legislature published in 2022, we want to highlight our recommendations to prioritize representation, inclusion, belonging, and centering on the voices and experiences of underrepresented farmers and ranchers in our state. The development of BMP guidance on working lands should not only aim to be consistent with the rural vision, planning and frameworks of all aspects of the Growth Management Act (GMA), including Natural Resource Lands[2], but also needs to more deeply involve community input throughout the entire process.

The VCWG document was a huge undertaking by Ecology's team. As drafted, it consists of 13 chapters and over 1550 pages in total length. Given that *"the purpose of this guidance is to describe best management practices (BMPs) that agricultural producers can use to protect water quality*[3]" and is further stated to provide certainty and predictability to the intended audiences of landowners and agricultural producers, this guidance document should focus on a "person-centered design" and fulfill customer service responsibilities.[4] A guidance document needs to be written in plain language[5] if it is to be equitable and accessible. WSDA has continued concern that the length and style used do not suit the grower community, and create additional barriers to successful implementation of BMPs, especially on small family farms.

Further emphasis on using plain language would also go a long way to provide clarity to the agricultural community and clear up confusion on what should be "voluntary guidance". WSDA has pointed out numerous instances where misleading language was used throughout that presents items in this guidance as *required*, rather than *voluntary*, BMPs. We noted that a good portion of those instances have been corrected, but Ecology still has work to do to clarify which practices are voluntary or if some are required. Without clear prioritization among the hundreds of recommendations, the message becomes muddled. Growers will be frustrated, which could lead to low adoption rates of BMPs and use of this guidance.

We appreciate the opportunity to comment and provide feedback, and hope that the delivering on your court-mandated completion date will not close this work, but rather open up opportunities for improved dialog, data sharing, and chapter by chapter improvements. Please see attached addendum that covers specific items by chapter. If you have questions or need additional details, please reach out to Kelly McLain, Assistant Director of WSDA's Agricultural Environmental Services Division at (360) 359-8091 or kelly.mclainaardal@agr.wa.gov

Addendum: Overarching Concerns and Specific Feedback by Chapter

The Advisory Workgroups - Concerns with Process and Participation:

The process of creating a voluntary clean water guidance advisory group was well-intentioned, but needs administration improvements, by properly involving stakeholder representation, reflecting their input in the final product, and ensuring referenced material is accurately represented.

The original process outlined in 2020 indicated that every section of each chapter would have time for review and input over multiple review periods as each chapter was prepared. For each chapter, stakeholders anticipated a total of six meetings of coordinated involvement from inception to completion of each chapter. Instead, a single meeting of each workgroup and a single period of review occurred. These review periods were brief, lasting from just 9 days to 3 weeks. Often, multiple chapters were released simultaneously. Further compounding this short review time were ongoing concerns with chapter length, sources of literature being referenced, and complex language used throughout each chapter.

The process did not create conditions where WSDA could appropriately convene staff and external partners to evaluate and synthesize feedback. The result becomes less overall input, feedback, or participation from agricultural conservation experts who work with and provide technical assistance on conservation practices to the agricultural community.

Rigorous interagency and outside peer review is needed to ensure the document provides accurate and accessible guidance for growers and agriculturalists. State and regional agricultural conservation experts, including farm planners, agronomists, agricultural engineers, crop scientists, and researchers, should be given a substantial role and adequate time to properly contribute their expertise to the effort.

Plain Language- Communicating Predictability, Certainty, and the Customer Service Experience

WSDA has equity and accessibility concerns regarding the length and overall style used for the VCWG document. It is an ambitious undertaking to create one comprehensive guidance document that suitably targets such varied audiences that range from consultant conservation specialists to landowners. WSDA is also concerned that the highly technical nature of this document will become a barrier to those trying to utilize it. We worry these factors will decrease overall adoption and detract from meeting Ecology's goal to provide certainty and predictability to growers, farm planners, or practitioners.

WSDA is concerned that readers will have difficulty discerning which practices or specific actions they should be prioritizing to be protective of water quality. In the layout and design, each chapter consists of a "Recommendations" section, an "Effectiveness Synthesis" section, which is intended to provide research links, and finally an "Implementations Considerations" section. Each BMP is discussed in each of the separate sections. This setup leaves readers hunting for relevant information scattered across various sections, and often, recommendations are repeated in each section, but with new recommendations. Sometimes context is interspersed and becomes hard to track.

Repetition throughout the VCWG makes it longer than it should be, which even further decreases accessibility. The document could be substantially shortened and simplified with no loss of content. An executive summary that could include a roadmap to the material, or a table of contents, would also

improve the readers' ability to find relevant information. In addition, clear adherence to Washington State Plain Language Guidelines would greatly improve the customer experience. WSDA recommends condensing, removing repetition, and adjusting the tone of the writing; this document would better meet customer service needs for a broader audience of growers and natural resource management professionals. By building more broad, high-level practical considerations as a framework, farmers can more readily see the value in employing voluntary practices on their farms. Instead, what we see is a "precision approach" that we worry will become a limiting factor in any farmer's ability to adopt practices. We would like to see widespread implementation and voluntary use of BMPs that are protective of water quality across the entire agricultural community.

Diversified Approach to BMPs - Concerns with a one-size-fits-all and universalized approach:

One goal of this process was to provide predictability and certainty to producers about the practices to best protect water quality and prevent water pollution[1] This was a tall order in a state with over 300 different commodities, 32,000 farms across over 13 million acres of diverse climates, soils, and geology. It is perhaps an impossible task to universalize guidance and provide any degree of specificity to address this diversity. Throughout the various draft chapter reviews, WSDA has expressed specific concerns over utilizing a universalized one-size-fits-all approach. For example, WSDA supports the use of appropriate buffers, but taking a generalized approach that expects increasingly larger buffers across all sites, does not align with current science and policy. Smaller, more strategically designed buffers could achieve equivalent water quality protections, are more likely to be feasible, and through greater adoption, may lead to better habitat protection outcomes.

Voluntary vs. Obligatory Language - Concerns with clarity for compliance purposes

Mandatory language used throughout the document is misleading and creates confusion. For example, throughout the draft chapters, the word "must" appears 235 times and 335 times if the approved chapters are included. WSDA sees the word "must" is used to convey an obligation to landowners who use this guidance document. However, we don't believe that was Ecology's intent. The term is typically reserved for legal requirements, so one could reasonably conclude that statements using the term "must" are requirements for compliance. Similarly, "should" currently appears 634 times in the draft chapters (986 total times) and may be the more appropriate term for a guidance document with the intent of presenting "a suite of options for producers to help ensure compliance with state water quality laws."[2] WSDA supports additional targeted review to ensure the language used is consistent throughout various chapters, the terminology is appropriately applied within a guidance document and is clear for future users. This would help it meet the goal to "provide certainty and predictability to producers."

Specific Feedback by Chapter

[1] [1] Focus on: Voluntary Clean Water Guidance for Agriculture, https://apps.ecology.wa.gov/publications/documents/2010009.pdf.
[2] Focus on: Voluntary Clean Water Guidance for Agriculture, https://apps.ecology.wa.gov/publications/documents/2010009.pdf

Chapter 2 – Crop Systems

The studies referenced in this Chapter, for example Table 2 on page 33, refer to climates substantially different from the primary climate zones present in the state's major cropped areas. WSDA cautions that any conclusions drawn from these studies about the efficacy of specific conservation practices could be inaccurate when applied to cropping areas in and across Washington State. Extending research from areas with substantially different temperatures, precipitation patterns, soils, geology, typical farm size, and even crop patterns may not provide accurate information from which to make decisions. If these research references are to be included in the VCWG, then WSDA recommends specifically noting that such guidance should be used with caution.

WSDA provided references to regionally appropriate research conducted over a number of common cropping systems within Washington State, and requests that these references to relevant research be included. We want to emphasize what we've previously shared during earlier draft chapter comments highlighting a statement from Pacific Northwest STEEP, a collection of research and educational programs working on solutions to environmental and economic problems:

"Growers are reluctant to adopt new technologies not developed or tested in their area, particularly if the production practice requires a significant financial investment or risk. Because of soil, climate, and production system differences across the Northwest, there is a need to evaluate new technologies under site-specific conditions." https://pnnwsteep.wsu.edu/on-farm-testing referenced in April 11, 2025 feedback letter to Ecology"

Chapter 3 – Nutrient Management

Ecology made many improvements from the earlier draft on Chapter 3: Nutrient Management, and we appreciate the incorporation of much of WSDA's specific feedback. There are some areas where WSDA still sees room to improve the guidance. To reiterate the following concerns we have previously shared:

"Significant detail and specific guidance on nutrient management applied universally across the state without significant regard to climate, geological and crop specific adjustments is not scientifically supported and will not achieve desired results. Meaningful guidance on nutrient management will benefit from brevity, clarity, and being focused on the big picture of good agronomy related to timing, rate, placement and source." WSDA Chapter 3 Draft comments, March 28, 2025

WSDA continues to recommend the removing of crop-specific information from the chapter. Information included in the chapter appears to solely focus on three commodities: forage grass, pasture silage, and corn, to the exclusion of crops of which Washington is the number one producer. Thus, the chapter addresses nutrient management on about 850,000 acres of crop land but doesn't provide any guidance for the remaining 3,400,000 acres of cropland.

Some of the specific guidance provided for these three commodities is not supported by research, such as the recommendation to avoid applications of nitrogen to cool season grass after October 1 throughout the state (pp. 14 and 15). The guidance universalizes the application timing of plant available commercial nitrogen to pasture and harvested forage crops in both Western and Eastern Washington. The guidance doesn't consider nitrogen source and its plant availability. The Extension guidance in pasture calendars

(PNW699 and PNW809) is more nuanced and specific to climate zone and also to nitrogen source. The Extension guidance show manure application may be appropriate in Western Washington as early as January 15 and as late as November 30 (PNW699, p. 9) while on the East side, application should start between late February or as late as April, and end either in late October or mid-November, depending upon region (PNW809, pp. 33 and 37-40).

Adaptive management actions (pages 23-30 and 91-97) based upon specific post-harvest soil test results are presented. The chapter does not clarify the basis for these soil test levels. WSDA requests clarity on what research these values are based upon and how Ecology determined what levels and the specific associated adaptive management actions would be appropriate. WSDA is concerned that the diverse commodities, soils and cropping systems across the state were not given appropriate consideration. WSDA notes a specific Extension guidance concern that different form information presented:

"An example of the mismatch between proposed adaptive management guidance and actual practice is found when using existing WSU calculators and tools.
https://wheattools.wsu.edu/Applications/Fertilizer%20Use%20Calculator/NitrogenRecommendation

https://smallgrainscalculators.cahnrs.wsu.edu/SpringCanolaNitrogenRate/Calculator

WSDA endorses tools such as these from Washington's land grant university that identify supplemental nitrogen needs to fields even when soil nitrate-N tests are above 30 ppm under a wide array of scenarios. Any scenario where a subsequent crop is anticipated to remove more than 100 pounds of nitrogen could be adversely impacted by the limitations of the proposed adaptive management guidelines through reduced crop yields and lower economic returns."- WSDA Chapter 3 Draft comments, March 28, 2025

The levels presented in the VCWG for nitrate-N appear to align with the targets present in university extension guidelines for perennial grass forage crops in Western Washington, Oregon State Extension publication EM 8832. However, as shared in previous feedback, WSDA is concerned that this guidance is being used for other geographic locations or crops when not appropriate.

"WSDA suggests Ecology avoid universalizing this guidance without sufficient assessment of the potential impacts. There is a high risk of using unvetted guidance for all the future purposes intended for this voluntary guidance document, including impacts to grant funding. Was any evaluation of these recommendations made for other commodity crops grown in Washington? Extension guidance EM 8832 also does not align with the proposed guidance in this chapter for one of the two crop types addressed within the Extension publication. EM 8832 states that post-harvest soil nitrate-N in corn fields is excessive at levels above 45ppm, not 30ppm as indicated in the guidance document. Similar issues are likely to arise for other commodity crops."

The inclusion of universal adaptive management guidelines for nitrate-N is not supported by relevant research and WSDA recommends its removal.

WSDA previously provided comments in the chapter guidance for risk management associated with phosphorus. The phosphorus levels presented as universalized guidance in all fields, crop systems, soils and location is not supported by research.

"Extension guidance, specifically the OSU Soil Test Interpretation Guide (2019, EC1478), specifically notes that high soil phosphorus (P) must be combined with P movement from soil into surface water to cause environmental impacts. Since phosphorus accumulates and is largely immobile in soil and is particularly prone to accumulation in the upper portion of the soil profile, a key adaptive management strategy should be to prevent soil loss. WSDA suggests simplifying this phosphorus guidance to encourage farmers' use of the NRCS Phosphorus Index to better understand the risk of phosphorus losses, the most likely loss pathways for individual fields, and then take steps in those fields that represent a real risk of loss. Without more rigorous analysis, making recommendations to stop applying phosphorus at specific soil test levels, absent an understanding of loss risk factors, could have a substantial adverse economic impact."

The current VCWG directs growers to test each spring, test each fall, test corn prior to side-dressing, and test for a broad array of macro- and micronutrients each year or no less frequently than every three years. WSDA noted the following approach supported by NRCS practice standards in our previous comments:

"a soil testing approach for a complete set of macro nutrients and chemical properties done once every three years and an annual soil nitrogen test as per the NRCS 590 guidance would be more than adequate across most cropland to address nutrient management issues. Nitrate-N testing should be crop, climate, and system specific. Testing soils multiple times a year is not part of the NRCS 590 Nutrient Management Conservation Practice Standard."

WSDA recommends alignment with NRCS soil testing practices, and removal of the current guidance of frequent, deep, and comprehensive soil testing. WSDA supports soil testing and believes its appropriate use improves farm management. However, the frequency, type, depth, and constituents included should be commodity and location-specific.

The guidance document, particularly Chapter 3, relies substantially on requirements embodied in the Confined Animal Feeding Operation (CAFO) National Pollutant Discharge Elimination System (NPDES) permit. The permit is issued and intended for sites with a substantial risk for, or history of, discharges to water. The applicability of the rigorous permit requirements for nutrient management is not appropriate for most agricultural operations across the state, many of which are deficient in on-site nutrients and reliant on purchased inputs. As WSDA previously shared:

"Ecology should <u>not</u> apply the same guidance to the vast majority of farms that do not use organic manure nutrients as is being applied as CAFO permit requirements to large livestock operations that generate substantial quantities of organic manure nutrients. This does not align with crop-specific guidance from Extension, nor appears to be grounded in science."

Examples of CAFO permit soil test requirements in the guidance document include:

- annual complete soil testing,
- spring soil nitrogen testing,
- annual fall nitrate-nitrogen testing
- routine testing of organic nutrient sources
- triennial soil testing of phosphorus

Soil testing requirements presented in the VCWG that are more rigorous than currently mandated for NPDES CAFO permitted facilities and is not necessary to address nonpoint pollution at most farms. WSDA's previous feedback on this chapter about the mismatch between this guidance and university

guidance for specific commodities point to our concerns that this could create great potential harms to agriculture.
Additionally, there are instances where the guidance document recommends more extensive or rigorous soil testing than is required for permittees. WSDA points to the following examples:

- Testing corn fields (pre-sidedress nitrate test) prior to fertilizing after crop emergence
- Testing soils for aluminum, iron and calcium mineral
- Testing twice annually farm fields east of the Cascades "in one-foot increments to a depth of 2 to 5 feet."
- Testing phosphorus levels east of the Cascades to a two-foot depth.

Most notable, the adaptive management guidelines for nitrate-nitrogen are substantially more restrictive than those in in Ecology's existing CAFO permit as shown in the following table (from Table 9, pp. 91-93).

Adaptive Management for Nitrate-N		
VCWG		CAFO Permit
<10	Low	<15
10-20	Medium	15-30
20-30	High	31-45
>30	Very High	>45

WSDA supports use of research-backed crop-specific guidance specific to Washington and NRCS Technical Notes for nitrogen and phosphorus that assess nitrogen leaching potential and phosphorus index based upon the specific site conditions rather than a single set of numeric criteria.

WSDA is concerned that a potential outcome of presenting such guidance in this way, will be to eventually use it as the basis of support for more restrictive permit requirements and watershed cleanup plans. From Chapter 3, this potential is highly concerning for CAFOs regarding soil testing and adaptive management of nutrients (Chapter 3, pp. 23-30 and 91-97).

WSDA agrees with Ecology's statement in the draft guidance document: "Ultimately, nutrient management planning can be right-sized and specific for producer's needs, making it an adaptable and effective practice that is well-tailored to providing a range of benefits" (p. 107). WSDA also believes that the approach to nutrient management should be tailored to the farm system, size, and type, coupled with operator goals and resources. In many cases this does not require extensive or intensive soil testing. Effective nutrient management can rely upon application and crop yield records, perhaps augmented by soil tests on a subset of fields, on a less frequent basis, or on specific fields where crop issues are noted. From WSDA's experience, conservation planners and agronomists working beside farm operators are best suited to provide appropriate guidance.

Chapter 4 – Pesticide Management

WSDA appreciates the inclusion and acceptance of the vast majority of our comments during this chapter's draft review period. We noted improvements in the plain language used and clarification given

to this chapter. We recommend that in some places there could be better distinguishment, maybe by re-formatting between what is required vs. voluntary. Thank you for considering and better including Washington State specific data, such as adding a table and some monitoring data in this chapter. We appreciate your request of more Washington Specific data. We can direct you to additional Washington State data, and we look forward to continuing the discussion on improving this guidance.

WSDA recommends that the VCWG mention and reference that federal pesticide labels are changing, and many already include active ingredient specific mitigation measures that direct growers to implement conservation practices.

"References on pesticide labels direct applicators to a suite of mitigation practices, which can be found on EPA's Mitigation Menu website[3]. Many pesticide labels are now including directions to visit EPA's Bulletin's Live Two! webpage[4] to obtain "Bulletins." Bulletins are legally enforceable extensions of the pesticide label and exist in geographically specific sensitive areas, which in Washington State include salmon bearing streams as Pesticide Use Limitation Areas (PULAs)."-WSDA comment to Chapter 4 review October 13, 2025.

During EPA's recent Endangered Species Act (ESA) Workplan (2022) developed in consultation with the U.S. Fish and Wildlife Services (USFWS) and The National Marine Fisheries Service (NOAA), mitigation strategies have been established that farmers could implement that better protect habitat. Furthermore, in February of 2024, EPA and USDA signed a Memorandum of Understanding (MOU) around these mitigation strategies and have developed a crosswalk between EPA's Ecological Mitigation Measures alongside USDA Natural Resources Conservation Service (NRCS) conservation practices.

These practices are becoming more familiar to growers, and there have been multi-agency efforts in helping farmers adopt these practices. WSDA has already been working with the agricultural community to assess feasibility and provide technical assistance through direct grower outreach over the last two years. We have also partnered with consultants, Oregon Department of Agriculture (ODA), Washington State University (WSU), Oregon State University (OSU), other State Lead Agency staff, and local conservation program staff to provide outreach and support to landowners as they learn about adopting mitigation practices on their land. These strategies and resources focus on a diversified approach. Any Washington State BMP guidance document for agriculture should better aim to reflect the current strategy and approaches that are already in place, including the suite of mitigation practices that growers are already becoming familiar with. Further coordination and continuity around this topic between all government agencies will only increase the likelihood of growers adopting these practices.

Chapter 5 –Sediment Control – Vegetative

WSDA appreciates and acknowledges the updates that Ecology made to this chapter based on feedback provided in February 2025. This final draft of chapter 5 has more regionally appropriate references within the wind erosion section, but more could be added throughout the chapter to improve relevancy. While

[3] 3 EPA's Mitigation Menu website: https://www.epa.gov/pesticides/mitigation-menu
[4] EPA's Bulletins Live Two! Webpage to obtain Bulletins in Pesticide Use Limitation Areas https://www.epa.gov/endangered-species/bulletins-live-two-view-bulletins

research from other regions can point toward promising management practices, the standard for adoption of practices is to use local research. That way growers can better see relationships to their local setting and situation.

The inclusion of Chapter 5 Appendix Part B with numerous references to research and publications from within the state is helpful. In addition, we like the numerous NRCS Conservation Practices Standards (CPS) referenced in this list that starts on page 73. Something important to note though, is these reference national standards, which can be useful, but may not include practices that are available to Washington growers. Washington Farm owners and operators working with NRCS can only use CPS that the state NRCS has approved for and adopted specifically to Washington State.

Chapter 7 – Water Management – Irrigation

WSDA recommends additional detailed review through this chapter regarding citations and relevance for reference.

Several references within the text are missing from the bibliography. For instance, Castillo (2024) is referenced four times in this chapter (on pp. 25, 34, 61) but is not included in the bibliography

Some references appear misplaced or relevant to a guidance document on agriculture. For instance, Peters (2015, p. 68), is a reference to the use of drip irrigation in the yard and garden, not a commercial farm or agricultural site. It is not an accurate reference for a paragraph on subsurface drip systems, which the Extension Fact Sheet does not discuss.

Some programs listed are not applicable in Washington State, such as the "Agricultural Management Assistance Program." This program is limited to 16 states and does not include Washington State. (https://www.nrcs.usda.gov/programs-initiatives/agricultural-management-assistance).

The "Implementation Considerations" section provides information on subsurface irrigation but includes irrelevant references:

Regarding misplaced information on subsurface irrigation:

- Page 70 Category "Associated Costs" relating to Surface Drip Irrigation Costs repeatedly refers to subsurface drip irrigation systems.
- Page 70 sub-bullet refers to deficit irrigation, a concept that is crop specific and specific within a crop, such as grapes (wine vs. juice, red vs. white) and developmental stage. See, for instance: Moeyer M. et al. Irrigation Basics for Eastern Washington Vineyards. 2013. WSU Extension Publication EM061E.

Regarding off-topic materials in the chapter:

- This bullet near the middle of page 72 appears to refer to on-site sewage drainfield lines: *"All materials must carry warranties for sewage applications and demonstrate resistance to common operational challenges such as solid accumulation, bacterial growth, and root intrusion."*

- This bullet point on page 73 also refers to on-site septic drain fields: *"Installation requires adherence to specific regulatory requirements. Only proprietary system products registered with the department and listed in current Registered On-Site Treatment and Distribution Products may receive local health jurisdiction permits, as specified in Chapter 246-272A WAC. The system requires both installation and operational permits, and construction permits must include provisions for a reserve area meeting minimum pretreatment requirements."*
- This bullet on page 75 appears to also refer to on-site sewer system requirements: *"Refer to the Recommended Standard and Guidance (RS&G) established by the Washington State Department of Health for implementation standards and resources for subsurface drip irrigation systems."* See https://doh.wa.gov/sites/default/files/legacy/Documents/Pubs/337-009.pdf
- References to three Snohomish County demonstration gardens and two King County gardens seem misplaced in this chapter. There are demonstration gardens in many Washington counties, typically managed by Master Gardeners. They may offer useful information but are not typical sources of information useful for commercial farmers.

Chapter 8 – Subsurface Drainage Management

WSDA reiterates our requests for citations in areas where conclusions were made without providing any references.

> *"The chapter does not provide sufficient syntheses or guidance relating to drainage water management for permanent crops or integration of drainage management with the crop systems chapter. The most notable example of this is how winter cover or conservation crops may require sufficient drainage to survive, making controlled tile drainage unfit for such fields. These types of tradeoffs are important considerations for farmers to understand and make before committing time and resources toward voluntary compliance efforts." --WSDA Ch. 8 feedback provided April 11, 2025*

On page 19, the statement "Uncontrolled tile drainage on cropland is a significant source of pollution in Washington," still has no citation where a conclusion is being drawn.

In addition, the referenced research in this chapter relied considerably upon other geographies, climates, and cropping systems that don't exist in the Pacific Northwest, most notably the Midwest corn-soybean-wheat rotations. WSDA requests that the more relevant Pacific Northwest references be incorporated into the guidance for relevancy. Tables (1-5) in this chapter most clearly reflect this concern since no references include crop systems, climate zones, or precipitation patterns typical in Washington State.

The "Implementation Considerations" sections provide reasonable guidance about the concerns and challenges that growers would face when attempting to implement the practices in this chapter. WSDA is aware of some efforts to implement some of the practices in parts of Washington with varying degrees of operational success.

Chapter 9 – Stormwater control

WSDA has a couple of recommendations to correct terminology and some references used in this chapter.

The term *phosphorous* 23 times and *phosphorus* 3 times. All 23 references to *phosphorous* (an adjective) should be changed to *phosphorus* (noun).

The chapter refers to an increase in the "amount of livestock produced in the last 10 years" (p. 25). WSDA requested a reference for this statement. This does not align with data from The USDA National Agricultural Statistics Service (NASS), which reports a decrease. The NASS 10-year data trend (between January 2015 and January 2025) show a reduction of 30,000 cattle and calves, a decline of 5,000 sheep, and an increase of 1,000 milk goats. Within cattle and calves, the number of milk cows has declined by 22,000, or nearly 8 percent. Thirty-four thousand fewer total livestock is a three percent reduction in the number of livestock in Washington.

This same section of Chapter 9 references a document on nutrient recovery from WSU Extension. WSDA appreciates any inclusion of Washington State University Extension guidance, however this particular document is not a relevant source for the sentence it footnotes. While the statement about livestock phosphorus use efficiency is accurate, WSDA recommends referring to the following instead: https://www.ars.usda.gov/is/np/bestmgmtpractices/best%20management%20practices.pdf. This document more specifically relates to management practices that address nutrient runoff.

The use of certain references over others would better present the nuances associated with the use of organic nutrients such as manure or compost. For instance, Gilley, J.E., and L.M. Risse. 2000. Runoff and soil loss as affected by the application of manure. Transactions of the American Society of Agricultural Engineers 43:1583–1588 references in the USDA document on BMPs noted above include the following findings: For selected locations at which manure was added annually, runoff was reduced from 2 to 62%, and soil loss decreased from 15 to 65% compared to non-manured sites. Measured runoff and soil loss values were reduced substantially as manure application rates increased. Like other research, this one is place-based and may not correspond to Washington. However, it indicates that the effect of nutrient source (organic nutrients versus commercial fertilizer) has ramifications on more than simply nutrient management.

Chapter 11 – Livestock Animal Confinement

WSDA recommends that Ecology revisit the previous feedback submitted for this chapter. This includes suggestions for clarity, data corrections, and terminology used. A specific data correction is in Table 1on page 22, which refers to stocking densities of 25-50 square feet per head, while the references refer to densities of 65-89 square feet and 100 square feet, respectively. An example of improper terminology used is *leak* when the more accurate term is *seepage.*

Definitions

WSDA maintains our recommendations to use existing federal definitions for terms such as *Animal Feeding Operation* (AFO) and *Concentrated Animal Feeding Operation* CAFO (pp. 10-11), or when Washington State Administrative Code already defines a term such as *composting* (p. 11 and WAC 173-

350-100), or when the term is defined in the NPDES CAFO permit such as *freeboard* (p. 11). Any new proposed definitions of terms that do not align with federal or familiar state definitions are likely to confuse the reader and not meet Washington State plain language guidelines

The definition used for *storage period* (p. 13), "The period, extending from fall through early spring, during which [organic] products must be stored" is imprecise and does not align with the descriptions of *storage period* in the body of this guidance document. The VCWG describes *storage capacity* on page 20 in that it "should be able to accommodate up to a 7-month manure/bedding inflow level." Later on page 71 *storage capacity* is described as the period where "[a]t a minimum, it is recommended that operational wastewater inflows be held in storage from approximately mid-September to mid-March for both western and eastern Washington locations, a period of 6-months".

Voluntary Guidelines Exceed CAFO Permit Requirements

There are several notable examples of guidelines in the VCWG for all livestock confinement, regardless of size or intensity, that are more restrictive than the current legal requirements for permitted CAFO facilities. Examples of guidelines more restrictive than permit requirements include:

- The acceptable specific discharge rate of 10^{-7} cm/sec or less for waste storage ponds (p. 11, 28, 29, 130)
- Storage period for livestock manure (pp. 30-31, 54, 61, 67-70, 77).
- Restricting the use of vegetated treatment areas to only the time period between mid-March and mid-September (pp. 35, 59)
- Recommending all manure solids be stored on a concrete slab with stub walls (p. 21)
- Locating all confinement areas and heavy use areas a minimum of 215 feet from waterways in western Washington and 150 feet in eastern Washington (p. 14-15).

A "Voluntary Guidance Document" is misleading if it presents restrictions as requirements, beyond those mandated by law for a specific subset of confined animal feeding operations required to obtain CAFO permit coverage.

Lagoons or Waste Storage Ponds

The chapter adds a new section on lagoons. If used, the term *lagoon* should be added to the definitions in the guidance document, particularly as the term is associated with a specific NRCS conservation practice standard (CPS): Waste Treatment *Lagoon* (NRCS CPS 359). In this CPS, the term lagoon is described as "a liquid storage facility specifically intended to reduce nitrogen, phosphorus, and biological oxygen demand." The majority of liquid waste storage facilities at livestock operations in Washington State are designed and operated following a different practice standard: Waste Storage Facility (NRCS CPS 313). When built with earthen materials and intended to store liquid, they are generally referred to as waste storage ponds. Both treatment *lagoons* and storage facilities are associated with additional CPS: Pond Sealing or Lining, Compacted Soil Treatment (CPS 520), Pond Sealing or Lining, Geomembrane or Geosynthetic Clay Liner (CPS 512), or Pond Sealing or Lining, Concrete (CPS 522) are used. Waste storage facilities used to store liquid may also be constructed of concrete or steel tanks.

A major operational difference between the two is that a *lagoon* must maintain a minimum treatment volume, while waste storage *ponds* are designed to be substantially or totally emptied, maximizing storage capacity for future storage periods. The draft chapter appears to conflate the two types of storage systems, *treatment lagoons* and *storage facilities*, and provides guidance specific to the former in certain

cases (such as on pages 68-69 with reference to the *sludge retention volume* and *minimum treatment volume)*, terms not related to storage facilities.

The *lagoon* section consistently refers to *leakage;* a term used 62 times in the draft chapter. In most cases, the appropriate term is *seepage*, as all materials intended to hold liquid have a *seepage rate*. Refer to https://apps.ecology.wa.gov/publications/documents/oftr9303.pdf for the various *seepage rates* associated with canal lining materials. A *leak* is due to liquid moving through a crack, gap, or opening that was unintended. *Seepage* is instead the movement of a liquid through the inherent porosity of material such as concrete or soil.

The NRCS has an established maximum specific discharge rate of $1x10^{-6}cm^3/cm^2/s$ without consideration of manure sealing as the allowable rate of seepage from a manure waste storage structure. See Appendix 10D of the NRCS Animal Waste Management Field Handbook. As noted on page 2 of Appendix 10D:

> *"The procedures in appendix 10D to the AWMFH provide a rational approach to selecting an optimal combination of liner thickness and permeability to achieve a relatively economical, but effective, liner design. It recognizes that manipulating the permeability of the soil liner is usually the most cost-effective approach to reduce seepage quantity. While clay liners obviously allow some seepage, the limited seepage from a properly designed site should have minimal impact on ground water quality. Numerous studies, such as those done by Kansas State University (2000), have shown that waste storage ponds located in low permeability soils of sufficient thickness have a limited impact on the quality of ground water."*

WSDA recommends that this be clarified, and the use of the NRCS specific discharge rate, or a seepage rate of $1x10^{-6}$ cm/sec, in the voluntary guidance document is appropriate until the time Washington State establishes by public process, such as a law or rule, a more restrictive rate. **WSDA does not believe a voluntary guidance document should publish or establish a more restrictive rate.**

The lagoon section on pages 72-73 includes references to a range of research into the functionality and seepage rates from waste storage ponds. Many of these references do not appear in the chapter's bibliography, so we recommend they be added.

Storage period

The VCWG presents a single uniform statewide *storage period*, despite the variety of soils, climates, weather, and cropping patterns across the state. The guidance does not align with WSDA's experience in reviewing the work of conservation districts from throughout the state. Storage periods that comply with NRCS Conservation Practice Standards have been designed to range from as little as ten days to as long as over seven months depending on livestock numbers, acreage, cropping, and soils and manure management system. Like many recommendations, there is not a single uniform approach that guarantees clean water, and guidance that puts forth one is neither scientifically-based nor useful to producers across the state's varied settings.

The *storage period* is defined and described in several different ways in the draft guidance document. Descriptions include: the time when manure "must" be stored, is "recommended" to be stored, or when "effluent cannot be land applied." The storage period "extends from fall through early spring" or "from approximately mid-September to mid-March" but "may begin earlier" and "can also extend beyond mid-March." This variability in language is unclear and misleading.

There is no legal requirement for producers to have a *storage period* that minimally starts in mid-September and extends through mid-March. Currently, the only legally required storage period applies to

CAFO permitted facilities, which starts October 1 and lasts until the temperature-derived "T-Sum 200." However, the permit also includes exceptions for a demonstrated need.

WSDA recommends updates to specific items in the guidance document regarding *storage periods*:

Page 71, Figure 1- This figure is adapted from a Pacific Northwest Pasture Management extension document. It shows that cool season pasture grasses are between 5% and 49% of their maximum growth potential during the storage period.

WSDA created the table below to indicate the amount of nitrogen a perennial grass forage crop would use per acre per month. This table is based upon the growth potential shown in Ecology's Figure 1, and uses yields from Whatcom County research by Carey et al, 2014.[5]

Growth potential and N uptake for a Whatcom County perennial forage													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL
% growth potential	9	5	8	41	100	38	29	41	49	21	9	8	
Lbs of N removal per acre	11	6	10	49	120	46	35	49	59	25	11	10	431

Using Ecology's recommended storage period of six months starting in mid-September, Ecology's Figure 1 on page 71, indicates a productive perennial grass field removes nearly 100 pounds of nitrogen per acre during the storage period. This is 22 percent of the annual plant N uptake on a field in northwest Washington.

Approximately forty percent of annual crop nitrogen uptake occurs in the ten weeks immediately following Ecology's proposed statewide storage period (March 15-end of May). If adequate plant available N is not present during this period, the crop will be less productive. Most manure nitrogen must undergo transformations to become plant available. These transformations occur slowly in cold soil temperatures. If organic sources of nitrogen are applied too late, mineralization will not align with plant nitrogen update. The OSU Extension Publication EM 9235 (2019) by Sullivan et al is a useful reference.

Manure applications ahead of the major growing periods maximize the growth potential of forage crops. The challenge is to be able to do this agronomically, using appropriate rates, methods, sources, and timing to manage environmental risks. Site-specific evaluation is needed to simultaneously address risks and maximize yields. Relying on a universal storage period does not achieve this.

One additional challenge of using perennial pasture guidance is the fact that many animal confinement operations make their first seasonal applications to annual crops such as triticale or winter rye, not to perennials. Application recommendations specific to annual crops should be part of any equation to discuss storage period.

WSDA supports guidance that directs producers to work with local planners in developing a storage period appropriate for their operation, climate, soils, organic nutrient form, groundwater and surface water risks. This approach should replace current one-size-fits-all guidance on the *storage period*.

In developing a *storage period*, research conducted in Whatcom County such as Carey (2014) and Embertson (2016)[6] should be considered. A recommendation that planners and producers evaluate and

[5] Carey, B and Harrison, J. **Nitrogen Dynamics at a Manured Grass Field Overlying the Sumas-Blaine Aquifer in Whatcom County**, 2014.

[6] Embertson, N. **Protecting Puget Sound Watersheds from Agricultural Pollution Using a Progressive Manure Application Risk Management (ARM) System**. 2016

plan for conditions worse than average could also be appropriate in areas where research and trend analysis shows changing weather patterns with higher rates of or annual precipitation patterns.

Vegetated Treatment Areas (VTAs)

WSDA draws different conclusions from *Fransen et al* pasture calendars regarding vegetated treatment areas. The pasture Extension publications are relied upon in the VCWG to support Ecology's recommendation that VTAs not be used from "approximately March - September" (p. 35) or "fall until early spring" (p. 59). As noted, the pasture calendars do not show complete dormancy in grasses when nutrient uptake ceases, but do show dramatic changes in nutrient uptake that occur seasonally in perennial forage crops.

Appropriate guidance for the use of vegetated treatment should be to assess and design systems to manage for the seasonal variations in nutrient availability and uptake and will depend upon soils and crops used, among other factors. Each system is different, receiving widely variable nutrient loads and volumes. WSDA's Nutrient Management Technical Services most commonly see VTAs used to manage runoff that may contain substantial sediment but low nutrient concentrations, typically stormwater originating in areas outside of livestock confinement. Such systems will be different than a system designed to manage runoff from an open lot. Recommendations that do not reflect this variability hinder effective implementation of appropriate management practices. **WSDA supports the removal of recommendations that prevent the use of VTAs for half of the year**.

References

WSDA provided many suggestions for reference material during the course of VCWG development and referred to technical experts including engineers from local conservation districts and Washington-based NRCS staff to provide greater Washington-specific information on various topics.

WSDA was unable to conduct a thorough review of all references found throughout the draft VCWG, including in chapter 11. But from WSDA's cursory review we found some references we recommend need updates in this chapter. Including:

- References to items not included in the bibliography, for example, Koelsch, et al. 2006 referenced four times on pages 58-59, Woodbury et al. 2006 also referenced four times on the same pages.
- Data referenced from the outdated 2017 Census of Agriculture should be replaced with most recent 2022 data in the introduction (p. 9).
- References to outdated documents that have been replaced. For example, the link to NRCS651 Ch.10. (n.d.) on page 85 is to a 1997 version of Chapter 10 of the NRCS Agricultural Waste Management Field Handbook. The Handbook was last updated in 2012 and is available at: https://directives.nrcs.usda.gov/sites/default/files2/1712930985/Part%20651%20-%20Agricultural%20Waste%20Management%20Field%20Handbook.pdf
- References to NRCS CPS from other states. For example, footnote 120 (p. 137) refers to a Massachusetts NRCS CPS, rather than a Washington CPS
- References to the national CPS (e.g. footnotes 117 and 119) rather than to the Washington state specific CPS
- Broken links are found to references (e.g. Footnotes 85, 114, 116, 118, 121)

Citations to some of WSDA's suggested references appear in chapter 11 footnotes as interviews, but the person providing information is not listed, limiting the value as a reference. In many cases, these footnote references do not distinguish between why certain information has an interview footnote while most information has no reference. An example of this is found on page 112:

- "When determining the size of a storage facility, the main considerations are number of animals, amount of bedding and length of storage needed.[87] Other factors may include projected herd expansion, breed, production level, feed intake, and ration balance. Along with volume of manure produced, local characteristics, timing of application, and management approach will also inform the facility's design. Six months of storage is optimal, but three months is more realistic given budget and size constraints. If possible, an additional 1 to 2 months of storage capacity should be included as a buffer."[87]Thurston County Conservation District. Interview. May 19, 2023.