OREGON DEPARTMENT OF AGRICULTURE

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To: Jonathan Sandau, Deputy Director, Oregon Department of Agriculture

Subject: Proposed Rulemaking - Hearing Officer's Report

From: Sunny Summers

Date: March 10, 2026

Rule Summary - The purpose of this rulemaking is to address agricultural activities and nitrate pollution in groundwater within the Lower Umatilla Basin Groundwater Management Area. The proposed rules contain those actions necessary to prevent or minimize nitrate leaching to groundwater.

Public Hearing – The proposed rules were noticed in the Oregon Bulletin on October 31, 2025 with the public comment period running until December 22, 2025. An in-person and virtual public hearing was held at the SAGE Center in Boardman, Oregon on December 15, 2025. Another virtual hearing was held December 16, 2025.

SUMMARY OF COMMENTS - Written testimony was accepted through 5:00 p.m. on December 22, 2025. Those comments can be found on the following pages. The following are summaries of the verbal comments received at the two hearings:

- Concerns about the rulemaking process, the effectiveness of the proposed rules, and the need for fair and meaningful enforcement;
- The rules for nitrogen application in the Lower Umatilla Basin Ground Water Management Area are considered insufficient, as they are voluntary and lack enforceable consequences, allowing large irrigators to continue polluting the water with nitrates;
- Residents affected by nitrate pollution in their well water expressed concerns that the proposed rules will not effectively reduce nitrate levels without mandatory requirements and repercussions for non-compliance;
- The rules need to be enforceable, requiring post-harvest sampling and making nitrogen plans mandatory to prevent further pollution and protect groundwater;
- Concerns were raised about the science behind some of the requirements, including deep soil sampling, and the lack of a clear method for analyzing the results;
- The rule is considered a blanket rule that does not account for variation in nitrate levels across different areas, and it was suggested that the requirement for deep soil sampling be removed; and
- Questions were asked about the measurable outcomes expected from the rules and how their success would be determined, with concerns that the rules are based on 20-year-old data.

Dated this 10th day of March 2026

Sunny Summers, Hearings Officer
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Written Comments

Commenter	Comment	Response
Dan C. (also provided verbal comments on 12/15/25 at SAGE Center)	I am Dan McCarty I farm 7000 to 10,000 acres of ground/year in both Umatilla and Morrow counties. I am a graduate of OSU and have a degree in general Ag with a minor in Agri-business. I have farmed in the Columbia Basing since 1993. My family has a family farm that was settled in 1876. I have several concerns about the proposed rules: 1. Cost, these rules will cost me $75,000-$150,000/year. I will have to hire another qualified employee. This will cost me $75,000/year. Then I will have to supply them health insurance $6000/yr. Purchase another vehicle $40,000/yr. Buy equipment that will sample 4 and 5 ft deep without contamination from soil in the 1-3 ft zones $40,000/year. I currently take 2-3 soil samples a year from the rut zones of the crops that I grow. The costs for the lab the run my sold samples is $68 for the first ft, and then $22 for each foot for 2-5 ft. This added expense will not be offset by N savings because I am educated on the Nitrogen cycle and already soil sample and apply Nitrogen in an efficient manner. 2. Liability, I would be required to turn over records to the ODA which gives no insurance of privacy. These then could be used to sue my family farm, even if no laws are broken. 3. I would propose taking something that I think that has worked for ODA. ODA is currently in charge of the application of	Thank you for your comments. Regarding comment (1), we understand and acknowledge the costs associated with deep soil sampling. We are removing deep soil sampling from the rules and are adding alternative metrics that do not rely on deep soil sampling for program evaluation. The deletion of the deep soil sampling requirement should eliminate the fiscal impacts noted by the comment. Regarding comment (2), records including nutrient management plans and soil sample results will be maintained on farm and will only be reviewed by ODA during audits or compliance investigations. Regarding comment (3), ODA is developing and implementing these rules with existing resources. Implementing a testing and certification program is not possible with existing resources. Regarding comment (4) The ODA has decided to delete the proposed rule requiring that deep soil samples be taken and sample results sent to ODA to aid in evaluation on the program's effectiveness. The remaining proposed rules do not require the submission of soil sample results to ODA. Regarding comment (5). The ODA did not examine recharge as a possible mechanism for diluting nitrate pollution and instead

	pesticides. For me or one or my employees to apply pesticides we have to a take a test that proves that we know how to handle pesticides, mix pesticides and apply pesticides correctly in amount and timing. I have to take a test every 5 years, or obtain class credits in order to keep my pesticide license. If I do not have a pesticide license I can not apply pesticides. The same thing can be done for nitrogen and fertilizer in general. This would only cost my farm $1000-$5000/year. It would keep farmers educated on the use and application of fertilizer, which seems to be the goal of all of these proposed rules. I think this has a greater change of success, without breaking the bank for each farm over 500 acres. 4. Sending soil samples to ODA. Any soil samples results should be held in possession of the farmer, and only presented for review in a person visit by ODA. My fear is that soils samples sent to ODA in Umatilla and Morrow County will become public record proving use of nitrogen use. This proof will then be followed by lawsuits against farmers in hopes of getting settlements regardless of any wrongdoing. 5. The chances these the rules imposed will only at best give a 50% chance of lowering N in wells in the Irrigon and Boardman area, and that it is 100% likely not to lower them below drinking water standards. The reason for this is that farmers are becoming more and more efficient with irrigation practices, thus resulting in less water leaching into the shallow ground water table. Less water results in a higher concentration on N in the remaining water that is in the shallow aquifer. If the state wants to help those aquifers, they should establish recharge zones with the goal diluting the concentration of N in those shallow aquifers. West Extension Irrigation district has done numerous	focused on best management practices that address the application of nitrate to fields and the application of water to fields with the aim of reducing the amount of nitrate in the soil and prevent nitrate from leaching into groundwater. The proposed rules promote efficient irrigation and fertilizer application practices that may be employed by all farmers regardless of the size of their agricultural operation. Methods such as recharge as the commenter suggests are outside of ODA's authority.

	projects promoted by the federal government that takes flood irritation ground in their district that puts on up to 6-acre ft of water on ground/year and pressurize this flood ground converting it to sprinkler irrigation. This sprinkle irritation is up to 50% more efficient, dropping the that amount of water applied to this ground to 3-acre ft or less. Irrigation water out of West Extensions irrigation ditch has less that 2 ppm N. McCarty Ranch located on butter creek does recharge every winter. We have drain tile that only produces water after the start of flood irrigation in the winter. We have a N monitor that tracks the connection of N coming out of the water from this drain tile. Every year the highest N reading is at startup of flood irritation. After a couple of days N levels in the tile water starts to drop and by then in of flood irrigation season, the N in the water is below 2 ppm. McCarty Ranch though a ASR permit then pumps the tile water and stores it in a deep-water aquifer. When it is pulled back out of this aquifer the N is tracked coming out of the well. It has always been below drinking water standards. What can we conclude from over 20 years of data. First is that McCarty Ranch does not over fertilize. Second, that flood irrigation dilutes the amount of N in shallow drain tile. Can this be applied to Boardman and Irrigan high nitrate areas. I think it can by using low nitrate West Extension water or low nitrate Columbia River water to recharge the shallow water aquifer in these areas. This has a high chance of lowering the N in these aquifers, however, reality is that getting these areas below drinking water standard is highly unlikely. The owners of these well are going to have to plan on that being the case.	

Todd C.	I have been involved with farming for over 50 years in the states of California, Washington, and Oregon. Within the LUBGWMA there are many different soil series. These soil series are difficult to manage particulary if they are under overhead irrigation. The Winchester series is very prone to piping and difficult to manage soil moisture. The Quincy soil series also has severe piping issues and when dry, this soil tends to become what is called hydrophobic. There are other issues with soils in this irrigated basin. The Winchester and Quincy are common soils in the area. I would suggest that the State of Oregon develop remediation plans for these problematic soil series. If this can not be achieved, then I suggest that the Nitrate mitigation measures be altered. If my memory serves me well, the Port of Morrow offered to transfer water rights from a low nitrate source of theirs, to communities in the Boardman area suffering from high nitrate levels. This potable water transfer was made about 14 years ago and it was turned down by the State of Oregon due to politics.	Thank you for your comments. The ODA did not examine the feasibility of transferring potable water to communities in need but understands that the Oregon Health Authority is addressing access to potable water. The ODA instead focused on agricultural activities and best management practices that reduce the amount of nitrate in the soil and prevent nitrate from leaching into groundwater. The proposed rules specify that landowners conducting agricultural activities within the LUBGWMA employ best practicable management measures to implement these proposed rules according to the site-specific attributes and needs of each agricultural operation. The ODA determined that farmers would adapt the practices in the rules to the specific contingencies that each site presents rather than developing specific rules to address each soil series.
Justin G., Exec. Director of Water for Eastern Oregon	Water for Eastern Oregon (H2OEO) submits the following comments on the proposed Oregon Department of Agriculture rules governing agricultural activities in the Lower Umatilla Basin (Proposed Rules). H2OEO is a non-profit coalition of local businesses and farmers in Morrow and Umatilla counties supporting efforts to provide clean drinking water to every household and resident. H2OEO is committed to supporting efforts to reduce groundwater nitrate concentrations. We drive collaboration among businesses, government, and community organizations, and support the science to mitigate current impacts and restore groundwater. The Lower Umatilla Basin is a world leader in irrigation and nutrient management technology. Modern agricultural systems are designed to prevent loss of nutrients and irrigation water. A	Thank you for your comment. The Department acknowledges that deep soil sampling (as proposed; 10% of fields every 5 years) is not necessarily representative of potential impacts to groundwater. We are removing deep soil sampling from the rules but are adding alternative metrics for program evaluation.

	healthy crop needs nutrients at the right time and the right place to be healthy. Too little fertilization leads to an unhealthy crop; too much fertilization leads to an unhealthy crop. Modern nutrient management systems are highly sophisticated which is why most nitrates in groundwater today likely originated decades ago, not from current practices. The Proposed Rules would be the first of its kind regulating agricultural activities in the State of Oregon. While trends reports show nutrients increasing in some areas of the LUBGWMA and decreasing in others, the Proposed Rules are blanket regulations, lacking specific data on how they will benefit groundwater monitoring wells with increasing nitrate trends. We have serious concerns regarding the scientific basis for the Proposed Rules. That being said, H2OEO and its members are proud of their nutrient management practices. We recognize it is important for the public to know agricultural operations responsibly manage nutrients and that the state is contributing resources to working with the agricultural community. The rule establishes a nutrient management baseline and levels the playing field. The Proposed Rule was the result of a strong rulemaking advisory committee process involving over 22 members representing community groups, environmental groups, the counties, state agencies, Oregon State University and farmers. There was a strong back and forth between the agency and committee members, with the agency clearly explaining its perspective and position on rule language. While we are generally satisfied with the proposed rule, we have significant concerns regarding the scientific basis for certain rule requirements and the agency's understanding of modern farming practices.	

	For example, the rule requires deep soil sampling. Deep soil sampling is not necessarily representative of potential impacts to groundwater. No studies exist to help the agency interpret what numbers or ranges are ideal. In addition, one sample is not representative of soil conditions, especially over time. It is not clear how the agency will use the data. Without a strong scientific understanding of soil dynamics, irrigation management, and crop root depth, those sample results are likely to be misinterpreted and not provide an accurate assessment of conditions. The agency should not be imposing requirements to collect data they have no methodology for interpreting. Especially an agency that continues to struggle with staffing and resources. We continue to support investments in the basin, providing agencies with necessary resources, and supporting research in the basin. There is no one solution to addressing groundwater quality. There are many positive steps being taken to address groundwater quality and this is one of those positive steps. Through its strategic implementation area process, ODA will be working with farms of all sizes to provide consultation and education on nutrient management practices. Thank you for the opportunity to provide comments on the Proposed Rules and for the hard work ODA has committed to the rulemaking process. We look forward to continued partnership with ODA to ensure science-based solutions that protect groundwater and support agricultural sustainability.	
Umatilla and Morrow County Boards of Commissioners	The Boards of County Commissioners for Morrow County and Umatilla County appreciate the opportunity to provide comments on the Oregon Department of Agriculture's proposed rules concerning agricultural activities in the Lower Umatilla Basin Groundwater Management Area	Thank you for your comments. Regarding the 500-acre threshold and targeting of larger landowners. There are rules related to all agricultural lands and activities regardless of acreage. These rules as they are related larger acreage operations are intended to ensure the nutrient and irrigation management plans are being

	(LUBGWMA). Our counties share a deeply interconnected agricultural economy and have long worked collaboratively to address nitrate concerns in the region. We value ODA's engagement in this rulemaking process and are pleased to contribute our comments. While our counties recognize the Department of Agriculture's commitment to improving groundwater quality in Morrow and Umatilla counties, we do have concerns regarding the underlying basis for the rules. Specifically, there is not a clear data set showing how the proposed rules will provide meaningful improvement to groundwater quality in the basin. The Proposed Rules lack the needed data to support the ongoing implementation of these rules. Without relevant data and meaningful scientific analysis, our counties will continue to struggle with statistically significant measurable improvements in environmental quality. The state has been aware of elevated nitrate levels in the basin going back to the 1980s, if not earlier. A robust data set and a clear scientific understanding of the hydrogeology of the basin and sources of nitrates are essential to justify a new regulatory program for farmers in our counties. To date, no such data set or scientific research has been conducted to provide such a justification. Oregon State University has issued a report confirming that the basin is made up of a series of aquifers with varying levels of low connectivity. However, a study tying the findings of that report to areas of high nitrate concentrations has not been performed. Until this foundational scientific work is completed, any new regulatory framework would be dealing with only a partial understanding of a complex problem.	followed. The Department acknowledges that deep soil sampling (as proposed; 10% of fields every 5 years) is not necessarily representative of potential impacts to groundwater. We are removing deep soil sampling from the rules but are adding alternative metrics for program evaluation.

	Land use planners from both counties participated in the rulemaking process. One concern raised by the land use planners to the County Commissioners is the lack of data demonstrating that a 500-acre threshold is protective of groundwater. The land-use pattern within the LUBGWMA is a patchwork of parcels of varying sizes-supporting livestock grazing, crop production, and rural residential properties with dwellings and septic systems—making it difficult to attribute elevated nitrate levels to any single source. As written, the 500-acre threshold appears to disproportionately target large-scale agricultural operations, which are already implementing advanced control measures and sophisticated best management practices. Finally, the Proposed Rule requests farmers to conduct soil sampling at the five-foot depth level without explaining how that data will be used and provides no scientific research showing that such data is relevant to protecting groundwater. Unfortunately, our counties, and the state, have seen farming data be misconstrued and weaponized against farmers. Data collection requirements with no scientific basis should not be included in the rule. Additionally, the making of that information public record is extremely troublesome. In particular, what statistically relevant data do we hope to gain from this requirement? The data will be so spread out, and subject to such randomness, that it will be difficult to gain any real insight as to what is occurring. Many of these rules are in fact already practiced by our producers. We are concerned that these rules do not reliably move the needle forward, leave large gaps under 500 acres, and create data collection requirements that could very well be misleading in any direction.	

OR Seed Council	On behalf of the Oregon Seed Council, thank you for the opportunity to provide comments on the Lower Umatilla Basin Ground Water Management Area (LUBGWMA) Rulemaking. The Oregon Seed Council (OSC) is a trade organization that brings together seed farmers, marketers, brokers, researchers, and others involved in the Oregon seed industry from when the seed is planted to when the seed ultimately makes it to the hands of consumers. Through our membership, OSC represents approximately 1,300 grass, legume, and specialty seed growers in Oregon, and our industry drives employment in many rural areas of the state, employing an estimated 10,000 Oregonians. I am writing to express OSC's concerns regarding the Oregon Department of Agriculture proposed rules for the LUBGWMA: **Evaluation of Annual Nitrogen Plans** In the proposed rules, the four methods for determining if a nitrogen plan was followed, have been improved from previous drafts. However, we are concerned that the proposed rules assume that presence of post-harvest nitrogen is an indicator of poor fertilizer management. Presence of nitrogen is not inherently linked to bad practices. In addition, half of the proposed methods of determining use of a plan do not have the data available to use the methods. This would require Oregon State University or another research agency to generate nitrogen coefficient data for each crop grown in the LUB before the methods could be used. Finally, the rules focus on usage of "total nitrogen applied" rather than "plant available nitrogen" in calculation of nitrogen applied	Thank you for your comment. The Department understands that deep soil sampling (as proposed; 10% of fields every 5 years) is not necessarily representative of potential impacts to groundwater. We are removing deep soil sampling from the rules but are adding alternative metrics for program evaluation. Eliminating deep soil sampling removes the concerns related to cost, fiscal impact, and capacity. Regarding the proposed methods of evaluating annual nitrogen plans, the rules allow farmers to choose from any one or more of four methodologies according to the attributes and needs of each agricultural operation. Two of the methodologies do not require the development of any new data to implement. One methodology allows for determining post nitrate soil levels to evaluate the efficacy of an annual nitrogen plan, but that methodology need not be used if it is not an accurate indicator for a particular site, although two methodologies are currently largely unsupported by Oregon-specific data, and the Department plans to work with partners to obtain data to support these methods. Once additional data is developed, these two methodologies will allow greater sophistication in the evaluation of annual nitrogen plans. However, pending the development of data, a farmer may use either one or both of the remaining methods offered in the proposed rules. Regarding the focus on "total nitrogen applied" the annual nitrogen plan is a nitrogen budget. Nitrogen budgets constitute a scientifically accepted methodology that focuses on total nitrogen applied vs. total nitrogen removed to approximate nitrogen use efficiency. Determining nitrogen use efficiency is a valuable tool for farmers and used in combination with efficient irrigation practices helps prevent nitrate leaching.

	to the field. Not all applied nitrogen is available to the plant, and similarly, not all applied nitrogen is subject to leaching. **Program Evaluation and Metrics of Rule Success** We are concerned about how the rules propose elevation and metrics for success. The rule evaluation is to be based on trends in deep soil samples taken every five years on 10 percent of the fields from "large" operations within the LUBGWMA. However, the rules do not take into account that residual soil nitrate levels are influenced by many factors outside of producer control. Regional drought, high rainfall years, temperature, or crop failure are all examples of factors not taken into account that are outside of a producer's control. Further, residual soil nitrate levels are highly variable within a field and fluctuate depending on where in the annual rotation cycle a field is in. No other states with nitrate rules use the deep soil metric for measuring regulatory success. We are concerned about why this was selected as a measure, when even an expert panel in California explicitly recommended against using residual soil nitrate as a reporting metric in the California Irrigated Lands Regulatory Program. There is a lack of scientific basis for this method, and the proposed rules indicate that ODA will conduct trend analysis on residual soil nitrate levels. This assertion is concerning due to the aforementioned concerns, and the fact that there are ***no peer-reviewed scientific studies*** that have performed analysis using this type of data, nor is there any research to suggest samples will have any scientific value. We also see that while landowners are required to produce these records for data that lacks scientific value, the records will	Regarding concern over laboratory capacity to process soil samples, the ODA has deleted the deep soil sampling provisions and moved the deadline for submission of proof of certification of an annual nitrogen plan to May 1 to allow more time for the taking and processing of soil samples. Regarding the removal of the water quality certification program and agreements section – The draft rules discussed during the Rules Advisroy Committee meetings was in regards to Voluntary Stewardship Agreements. The Department has water quality rules which exist beyond the scope of this body of rules; specifically, OAR 629-0210-0100 to 629-021-1100 is under the Department of Forestry (but includes Oregon Department of Agriculture) related to Stewardship Agreements. The removal of the certification program section is an acknowledgment that there are other existing rules for stewardship agreements that may have been in conflict with the proposed language. Any rule changes in relation to stewardship agreements would need to be done in 629-021-1100. The program is able to enter into a stewardship agreement within the LUBGWMA under the existing rules.

	become public record. Results could be taken out of context, and there is no clear scientific basis for interpretation. **Application of Rules** Under the draft rules, there are different requirements made for "large" operations defined as 500 acres or more and "small" operations as 499 acres or less. These numbers are arbitrary. In previous drafts, the rules listed "large" operations as greater than 1,000 acres. **Costs and Fiscal Impact** The proposed rules put undue financial burden on producers. These financial pressures include lab costs for soil analysis (estimated to be between $7 and $10/sample by ODA); labor for soil sampling, record-keeping costs; and for some, purchase of additional equipment to pull samples from deeper depths. Unfortunately, the rules put the burden of data collection on producers and the data sought provides no meaningful purpose and no context to why nutrients are being applied. **Capacity** There is also a limit to how much labs will be able to process, and we are concerned that local agricultural labs will not have capacity to process all required samples within the timeframes required from the proposed rules. **Removal of Water Quality Certification Program and Agreements Section** The draft rules presented to the rulemaking advisory committee described a voluntary agreement between ODA and landowners. The voluntary agreement described management and sampling requirements a landowner could conduct in exchange for	

	regulatory certainty, recognition that landowner practices are protective of water quality, and priority access to technical and financial assistance. We are concerned that this section has been removed from the proposed rules. While we have listed a number of concerns, paramount is that the measurement for success of these rules is not founded on a scientific basis and the cost and data collection for those measurements is being placed on our producers who are operating on slim-to-sometimes negative margins. Thank you for your consideration of our concerns.	
Jake M.	My name is Jake Madison and I'm writing to you today to offer public comments on the new Rules being proposed by the Oregon Department of Agriculture. I'm a 4th generation farmer that farms inside the LUBGWMA and will be affected by these rules. I also serve on the LUBGWMA committee as the irrigated ag representative. I would like to see progress made towards improving the water quality issues in the LUBGWMA and model my farming practices around best management practices designed to eliminate irrigation and nitrogen waste. I appreciate amount of man hours from the RAC members that drafted these rules. I believe the intent of the rules is good but will not be the thing that cleans up the alluvial aquifers that have been contaminated for over 50 years. I believe that these rules are a result of the state and department being influenced and pressured by special interest groups that have an agenda and don't understand today's best management practices, the hydrogeology of the region, or have a real understanding of causation of the problem. I truly believe that this is another least cost option by the state that is going to continue pushing the problem further down the road. The only thing that has changed over the last 50 years is the technology and economics	Thank you for your comments. Regarding the suggested need for nitrate remediation the Department is authorized to develop rules necessary to prevent and control water pollution from agricultural activities. These proposed rules implement that legislative direction. Regarding the comment related to 603-095-5020 – 60 days prior for application of a synthetic fertilizer is too long. The Department acknowledges that agricultural operations managing thousands of acres may be limited by equipment availability. The 60-day window for application of synthetic fertilizers before planting allows for producers to utilize equipment and BMP's to ensure that the correct fertility is in place when the crop uptake requires it. The 60-day window minimizes the risk to N losses but allows flexibility for environmental conditions beyond the control of the producers. Regarding the comment related to 603-095-5040; Annual Nitrogen plan - The Department does not plan to modify the rule. The Department envisions that if a cropping or fertility plan changes after May 1st the changes will be captured in the post season reporting.

	surrounding fertility and irrigation management, and in a region where the rest of the world comes to learn and develop fertility and water management strategies, the problem still exists. If we don't do something to remediate the actual ground water that has existed for over 50 years, why should we expect anything to change. If the state and other groups are serious about fixing this issue they need to quit looking at agriculture because it's big and convenient to point at. We need to start objectively trying to fix the problem instead of chasing our tails. Modern ag best management practices maximize water and fertility efficiency and containment. The state and region need to work to develop a nitrate remediation project if they want to start seeing results in wells during our lifetime. Given the level of management that occurs on farms today, these rules are going to do nothing to treat the already contaminated alluvial aquifer water trapped on top of the basalt layers. Below I have outlined a few items that stand out to me that can hopefully be addressed in an effort to improve the effectiveness and clarity of these proposed rules. Rule: 603-095-5020; Land Application Rates and Restrictions This rule sets forth the rules surrounding nitrogen application practices and timing. Section 6 of this rule states that no synthetic fertilizer shall be applied more than 60 days prior to planting. This rule needs clarification. 60 days prior to planting for commercial fertility is too long of a window. There is no need to apply nitrogen a field 60 days prior to planting. The only time that this rule could be relevant is if an operation that is applying a manure-based product that has EPA preharvest restrictions. Given the fact that manure-based products are not readily plant available because they take time, moisture, and temperature to break down and become available to the crop (or leachable), the	Regarding the comment related to 603-095-5070; Residual Soil Nitrate Levels – The Department acknowledges that deep soil sampling (as proposed; 10% of fields every 5 years) is not necessarily representative of potential impacts to groundwater. We are removing deep soil sampling from the rules but are adding alternative metrics for program evaluation. Regarding the comment related to 603-095-5075; Large Irrigated Acreages Program Evaluation – The agency has adjusted the timeline that the agency may begin audit from, 3 year for 1000 acres or more and 5 for acres of 500 to 999, to 1 year and 2 years respectively.

	risk created by applying a manure-based product this early is very low. Rule: 603-095-5040; Annual Nitrogen plan. This rule requires proof of a certified plan submitted to the department by May 1 of each year. Many times, farms plans change after May 1. This rule needs to be modified to provide clarification that if a cropping or fertility plan changes after May 1st the changes will be captured in the post season reporting. It is understood that all the rules still apply to any cropping changes that occur after May 1st, we just need to make sure it isn't a violation to have a cropping change should a market opportunity present itself. Rule: 603-095-5070; Residual Soil Nitrate Levels This rule requires 48"-60" post-harvest soil tests on 10% of the acres, once every 5 years and requires the results to be submitted to the department. By requiring these results to be submitted to the department, the department is opening the door for the results to be subject to public misinterpretation, manipulation, and litigation. The department should be able to review sample results when reviewing management plans on site. Rule: 903-095-5075; Large Irrigated Acreages Program Evaluation This rule gives the department 3 years prior to conducting an evaluation. Do my farm this fall. There is no need to wait 3 years. We are already meeting all the requirements of these proposed rules on our non-DEQ permitted fields, we just need a copy of the department's forms to populate. Thank you for your time and consideration.	

Dave D., Pres. Food Northwest	On behalf of Food Northwest, thank you for the opportunity to comment on the ODA proposed rules related to agriculture in the Lower Umatilla Basin Groundwater Management Area (LUBGWMA). Food Northwest is the nonprofit trade association for food companies in Oregon, Washington and Idaho. Several Food Northwest member companies operate in or near the LUBGWMA and are affected by the outcome of this rulemaking. Food companies are integral to the social and economic well-being of these communities. In turn, these companies are dependent on the farm and ranch families in the region and their ability to operate within ODA requirements that are attainable and scientifically sound. We support the goal of reducing nitrate loading in the LUBGWMA and our member companies in the region have invested millions of dollars in support of this objective. We believe any metrics adopted by rule should correlate with farmer-controlled activities. We are concerned in particular that the five-foot/five year sampling protocol in the proposed rule is not the right metric to accomplish this. Numerous variables outside a farmer's control — or even influence —impact the levels measured at this depth and interval. These natural factors cannot be differentiated from human activity without additional data points to provide the context and fuller understanding of nitrate movement and levels. We have found no other U.S. jurisdiction or peer-reviewed mechanism where this type of nitrate residual testing is the key metric for this kind of regulation. Other jurisdictions seem to favor focus on management practices while at least one, California's Agricultural Expert Panel, specifically opposed residual nitrate testing for this purpose.	Thank you for your comments. The Department understands the rules should correlate with farmer-controlled activities. Deep soil sampling (as proposed; 10% of fields every 5 years) is not necessarily representative of potential impacts to groundwater. We are removing deep soil sampling from the rules but are adding alternative metrics for program evaluation.

	Effective rules regarding the LUBGWMA should rely on metrics which are supported by data sets that give context and full interpretive meaning to the metric. Otherwise we risk expending resources to collect data that does not correlate to human activity and therefore is not actionable while not being scientifically defensible in support of our collective goals for the basin. We respectfully request that no proposed rule be adopted with metric(s) that are not correlated to regulated activity, scientifically defensible, and actionable and attainable.	
Oregon Farm Bureau	The Oregon Farm Bureau (OFB) appreciates the opportunity to submit comments on the Oregon Department of Agriculture's proposed rules governing agricultural activities in the Lower Umatilla Basin Groundwater Management Area (LUBGWMA). OFB represents nearly 6,500 farm and ranch families across Oregon, including many producers who live and work within the LUBGWMA. Agriculture remains a cornerstone of the region's economy and rural communities, and OFB members have a direct and long-standing interest in both protecting groundwater quality and sustaining economically viable farming operations. OFB supports the underlying objective of this rulemaking: To reduce nitrate loading to groundwater and protect domestic drinking water supplies. Farmers in the Basin share this goal and have already made significant investments in improved irrigation efficiency, precision nutrient management, soil health practices, and water conservation technologies. We also recognize and appreciate the work of ODA staff and the Rulemaking Advisory Committee to refine the proposed rules in response to stakeholder input throughout the process. At the same time, OFB remains concerned that certain elements of the proposed rules risk blurring the line between a regulatory	Thank you for your comments. The Department understands that deep soil sampling (as proposed; 10% of fields every 5 years) is not necessarily representative of potential impacts to groundwater. We are removing deep soil sampling from the rules but are adding alternative metrics for program evaluation. Regarding the importance of maintaining the distinction between compliance obligations and research needs and tools or assumptions that have not yet reached regulatory maturity - the Department plans to work with partners to obtain data to support these methods. In the meantime, the proposed rules contain methods for evaluating an annual nitrogen plan that do not require additional research or data development. All data will be maintained by producers and only requested by the Department for an audit or compliance investigation.

	program and a research initiative. A durable and credible regulatory framework must be grounded in management practices and evaluation tools that are scientifically validated, consistently interpretable, and suitable for use at a regulatory scale. When rules rely on metrics that remain experimental or lack clear interpretive standards, they risk undermining both program credibility and producer confidence. In particular, OFB shares concerns regarding the role of deep residual soil nitrate sampling as a programmatic evaluation tool for large irrigated operations. While soil testing can be a valuable on-farm decision-making aid, residual nitrate measurements at depth are highly variable and influenced by numerous factors beyond a producer's control, including weather, crop rotation, soil characteristics, and post-harvest conditions. As a result, such data can be difficult to interpret in isolation and may not reliably reflect grower management or progress toward groundwater protection goals. OFB is concerned that reliance on this metric as an indicator of regulatory success could create confusion, misinterpretation, or unintended consequences without meaningfully advancing water quality outcomes. OFB also reiterates the importance of maintaining a clear distinction between compliance obligations and research needs. Where data gaps exist—such as the development of crop- specific nitrogen removal coefficients or the evaluation of long-term nitrate movement— those gaps are more appropriately addressed through targeted research and technical assistance rather than embedded as compliance expectations within enforceable rules. Farmers should not be placed in a position where compliance hinges on tools or assumptions that have not yet reached regulatory maturity.	

	Additionally, OFB continues to emphasize the need for economic realism in rule implementation. Many agricultural operations in the LUBGWMA are already operating under significant economic pressure. Additional sampling, recordkeeping, and reporting requirements—particularly those requiring specialized equipment or limited laboratory capacity—carry real costs. Rules designed to protect groundwater should not inadvertently erode the economic viability of farms that are essential to the region's communities and food system. Finally, OFB urges ODA to ensure that any data collected under these rules are used in a manner that is fair, contextual, and protective of producer trust. In a region subject to heightened public scrutiny and ongoing litigation, the release or interpretation of raw data without appropriate agronomic context risks creating misleading narratives that do not accurately reflect on-farm practices or intent. Other states have demonstrated that groundwater protection goals can be advanced using aggregated, management-based metrics that track participation, compliance, and reductions in applied nitrogen without exposing individual producers to unnecessary risk. In closing, OFB remains committed to working collaboratively with ODA to ensure that the final rules achieve meaningful groundwater protection while remaining grounded in sound science, proven management practices, and practical implementation. A regulatory framework that is credible, defensible, and workable will best serve both public health and the long-term sustainability of agriculture in the Lower Umatilla Basin. Thank you for the opportunity to provide comments.	

Kelly D.	I hope this letter finds you healthy and well. I hope you understand that the residents of the LUBGMA are not so healthy or well. Over 30 years of voluntary actions have resulted in the degradation of our water, our economy, the environment, and the health of the communities of our region. We are living from 5 gal jugs of water, and these are the best rules you can develop to stop the contamination. Citizens are being forced to drill deeper into a finite water source that's not rechargeable on a human timescale. That's not a sustainable solution, nor is water delivery. It's no secret that commercial fertilizer and animal manure applied to cropland are the primary non-point source of nitrate pollution in the region. Under state agency care, like the Department of Agriculture, it continues to worsen. That is fact, and can be read in the trend analysis, certified by a registered geologist. Where in these rules do you meet any of the benchmarks of the Nitrate reduction plan or the agriculture water quality management objectives (OAR 603-095-2840). You indicate that these rules will prevent or minimize nitrate leaching to ground water, though you have provided no measurable outcomes by benchmark or timeline. At what point do you implement your own general policy OAR 603-095-030-(3) Enforcement action to achieve compliance with water quality management area plans and rules be pursued only when reasonable attempts at voluntary solutions have failed. 35 years of failed voluntary solutions is quite impressive.	Thank you for your comments. Regarding your concern over the lack of enforceable standards in the proposed rules, OAR 603-095-5015 includes prohibited acts which include a prohibition on violating the rules. The rules, in turn, contain prohibitions and limitations that govern all growers within the LUBGWMA and regulate the application of fertilizer so as to prevent nitrate leaching. In addition, OAR 603-095-5085 details the complaint and investigation procedures related to the rules. OAR 603-095-5085(6) states, "If the department determines that a violation of ORS 468B.025, ORS 568.900 through 568.933 or OAR 603-95-5000 – 5070 has occurred, the department may proceed with the enforcement procedures provided in OAR 603-090-0060 through 602-090-0120. Regarding your concern about benchmarks and timelines, OAR 603-095-5075 specifies timelines for evaluating the large irrigated acreage program. Enforcement mechanisms also permit Specific Action Requirements (OAR 603-095-5080) and measures for Complaints and Investigations (OAR 603-095-5085).

	It's not your job to maintain the economic viability of private businesses that violate ground water standards, in fact it is contrary to the scope of OAR 603-095 -2800. Required testing of the 4th and 5th ft should be a BMP, you indicate that regional farmers are generally following BMP's, however you lack the data to support your assumptions. Knowing the full scope of where nitrate residuals lay in the soil profile are tantamount to reducing risk of nitrate leaching, it's a early warning signal. Yet you only require 10% of fields to be mapped and not on a regular basis where a trend could be considered. Think of the fertilizer savings as well as the protections it would serve. Every 1ppm of residual nitrate could reduce the required fertilizer use by 8 lbs/acre. Enough with the symbolic rhetoric and paper rules. Stop the political posturing and focus on the health of the water. Put the water first and the stakeholder concerns are eliminated. Everyone deserves clean water, do whatever you have within your powers to achieve that goal. Do it now, don't wait any longer.	
Brian P., WaterWatch of Oregon	Thank you for the chance to comment on draft rules for the Lower Umatilla Basin Groundwater Management Area. WaterWatch of Oregon joined comments submitted by Oregon Rural Action. WaterWatch makes the following additional comments: 1. The rules should require all nitrate contributors (including CAFOs and other agriculture) to have nitrate management plans that, if followed, would prevent further nitrate contamination of groundwater. We appreciate that the draft rules generally seek to do this.	Thank you for your comments. Regarding comment (1) - CAFOs are required to have nutrient management plans as part of their permit. Regarding comment (2) - OAR 603-095-5015 includes prohibited acts and OAR 603-095-5085 details the complaint and investigation procedures related to the rules. OAR 603-095-5085(6) states, "If the department determines that a violation of ORS 468B.025, ORS 568.900 through 568.933 or OAR 603-95-5000 – 5070 has occurred, the department may proceed with the enforcement procedures provided in OAR 603-090-0060 through 602-090-0120. Regarding comments (3) to (5) – 603-095-5025 addresses irrigation water management and includes prohibition on exceeding

	2. The nitrate management plans should be subject to regulatory monitoring for compliance and penalties for noncompliance. Otherwise nitrate contamination in the area will get worse because compliance with plans is unlikely without monitoring and enforcement. 3. We appreciate that the rules require plans to address water use with the goal of making water use more efficient, apparently in recognition that inefficient water use makes nitrate contamination more likely because excess water is likely to return to groundwater with contaminants. Making water use more efficient would, we hope, have the indirect effect of reducing demands on already overstressed water resources in the area – both groundwater and surface water. 4. The rules should also recognize that groundwater use in the area increases nitrate contamination problems in other ways. See attached. 5. The rules should have requirements that will not only prevent further contamination of groundwater but will help reduce existing contamination; e.g., requirements that would increase groundwater levels in the area. Thank you for considering these additional comments.	field capacity of soils beyond the root depth and a requirement to follow certain practices to inform their irrigation rate and volume. Additionally, 603-095-5045 and 603-095-5050 requires documentation of irrigation water management measures. The rules are not intended to address water quantity but to address water quality and potential impacts to groundwater from agricultural activities.
Kaleb L., Oregon Rural Action, Beyond Toxics, Columbia Riverkeeper, Center for Food Safety, APANO	Oregon Rural Action is a grassroots, community-led nonprofit organization that has worked for years with the communities directly affected by the ongoing nitrate contamination crisis in the Lower Umatilla Basin. We work directly with those impacted by polluted drinking water to elevate their voices and their needs to advance meaningful policy changes in rural Oregon.	Thank you for your comments. **1. Allow ODA to enforce against industrial-scale ag operations that do not follow their required nitrogen management plans; and 2. Require that ODA evaluate compliance with nitrogen management plans, rather than allowing operations to self-evaluate compliance;**

CUF, Animal Legal Defense Fund, Friends of Family Farmers, Water Watch of Oregon	Since the Lower Umatilla Basin Groundwater Management Area (LUBGWMA) was declared in 1990, nitrate levels have continued to rise. The drinking water of thousands of Basin residents has been rendered unsafe for decades, and despite the clear public health crisis and lack of progress, sources of pollution have consistently been allowed to relentlessly grow and expand. Oregon's water quality laws remain effectively unenforced in the Lower Umatilla Basin, as they have for decades. We submit the following comments on the proposed rules for non-point agricultural activities in the LUBGWMA in the context of our extensive history working with directly impacted community members, our expertise on the subject of LUBGWMA groundwater pollution, and as a member of the Rulemaking Advisory Committee. We believe these proposed rules are alarmingly insufficient to fulfill ODA's mandate to prevent pollution of waters of the state from industrial-scale irrigated agriculture in the LUBGWMA. Key elements of the rules are made unenforceable by rule, the scope of the rules is severely limited, and oversight & transparency are not sufficient to ensure these rules are meaningful. In order for these rules to meet that mandate and uphold Oregon's water quality laws, ODA must amend the rules to: **1. Allow ODA to enforce against industrial-scale ag operations that do not follow their required nitrogen management plans;** **2. Require that ODA evaluate compliance with nitrogen management plans, rather than allowing operations to self-evaluate compliance;** **3. Require operations to test all of their fields for residual soil nitrate levels each year, rather than just 10 percent of fields;4.**	OAR 603-095-5015 includes prohibited acts which include a prohibition against violating the application rates and restrictions in the proposed rules. Among other requirements, all growers will need to test soil and apply only as much nitrogen as is necessary to achieve an agronomic application rate that is protective of groundwater and allows for achievement of estimated yields. OAR 603-095-5085 details the complaint and investigation procedures related to the rules. OAR 603-095-5085(6) states, "If the department determines that a violation of ORS 468B.025, ORS 568.900 through 568.933 or OAR 603-95-5000 – 5070 has occurred, the department may proceed with the enforcement procedures provided in OAR 603-090-0060 through 602-090-0120. Enforcement mechanisms also permit Specific Action Requirements (OAR 603-095-5080) and measures for Complaints and Investigations (OAR 603-095-5085). In addition, under OAR 603-095-5055, Table 1, the Department may initiate an audit if a producer enters the red category. **2.Irrigators evaluate their own compliance with nitrogen plans** The rules requires that all landowners comply with the application rates and restrictions in OAR 603-095-5020. Compliance with these rules is not voluntary. See OAR 603-095-5015(3). In addition, the rules require landowners irrigating large acreages (500+ acres) to create annual nitrogen plans and develop agronomic application rates that take into consideration plant-available nitrogen in the soil. Proof that a certified plan had been created must be submitted to the Department each calendar year. Landowners are in the best position to create and evaluate their annual nitrogen plans and to adopt adaptive management practices. Continual inability to meet annual nitrate plans will result

	Require that operations subject to these rules submit their annual nitrogen plans and associated records directly to ODA each year; or: **a. Extend the records retention period from 5 years to at least 10 years;** **and,** **b. Allow ODA to begin inspecting records for all subject operations within 2 years of implementation.** **Background** The need for strong, enforceable rules to reduce nitrate pollution from the irrigated agriculture sector in the LUBGWMA is abundantly clear. Testing by the Oregon Health Authority (OHA) has revealed that at least 634 domestic drinking water wells in the LUBGWMA have been rendered unsafe by nitrate, with levels reaching as high as 94.8 mg/L – nearly ten times the federal limit for drinking water. Another 421 show elevated nitrate levels that may lead to long-term health problems. The overall rate of domestic well pollution also continues to rise as new wells get tested and re-tested wells go from safe to unsafe due to rising nitrate in groundwater, as shown in the graph below. Public water systems in Hermiston, in Boardman, in Irrigon, at the Port of Morrow, and more show elevated nitrate levels in groundwater sources. A January 2025 study by the Department of Environmental Quality (DEQ) also showed that nitrate levels have risen significantly in the decade since the previous such study, which also found that nitrate levels had gone up. The dominant sources of nitrate pollution in the LUBGWMA are, indisputably: industrial-scale irrigated agriculture, associated industrial processed food manufacturing, confined animal feeding	in the required adoption of measures to address inability to meet a plan, and violation of ORS 468B.025(1) may be enforced. **3. Require operations to test all of their fields for residual soil nitrate levels each year, rather than just 10 percent of fields;** While we understand the importance of sampling and data, we do not think it is feasible to require testing of every field every year. We recognize that 10 percent of fields every five years does not provide adequate data. Although the deep soil sampling requirement is being removed, all growers are required to sample and keep records of either pre or post harvest to determine plant available nitrogen. The requirement to test soil for plant available nitrogen will help growers determine an agronomic application rate that is protective of groundwater and still allows the achievement of estimated yield. **4. Require that operations subject to these rules submit their annual nitrogen plans and associated records directly to ODA each year; or:** **a. Extend the records retention period from 5 years to at least 10 years;** The Department agrees that due to the time frame associated with audits and adaptive management actions it is prudent to extend records retention to 10 years within the rules. **and,** **b. Allow ODA to begin inspecting records for all subject operations within 2 years of implementation.** The agency has adjusted the timeline that the agency may begin audit from, 3 year for 1000 acres or more and 5 for acres of 500 to 999, to 1 year and 2 years respectively.

	operations (CAFOs), and land application of industrial wastewater. Each of these sectors were identified as leading sources of nitrate polluting LUBGWMA groundwater in a DEQ study from 2011, which found that the **largest polluting sector in the Basin was the irrigated agriculture sector**. Notably, each of these sectors has undergone massive expansion since then, increasing the overall nitrogen loading in the region from many sectors. The Oregon Department of Agriculture (ODA) is responsible for regulating and preventing pollution of waters of the state from this irrigated agriculture sector through its agricultural water quality program. Like most agencies with authority to control LUBGWMA pollution, ODA has consistently relied on either voluntary or effectively unenforceable measures to reduce pollution since the LUBGWMA was established in 1990. Clearly, that approach has failed, and public health in the Lower Umatilla Basin has consistently suffered as a result. Correcting these failures – and thus finally beginning to enforce Oregon's water quality laws under ORS 468B – will require correcting the approach of Oregon's agencies. Priorities must shift away from the profit-driven status quo of voluntary regulation in favor of the mandatory, public health driven approach that Oregonians in the Lower Umatilla Basin badly need. This rulemaking represented the best opportunity thus far for ODA to implement that corrective action. And while there is potential in the proposed rules, it is clear that they do not represent that shift away from voluntary regulation that puts profits first. In order to protect public health in the LUBGWMA,	**At an absolute minimum, ODA must enforce compliance with the annual nitrogen plans.** The proposed rules require that landowners submit proof that they have a certified annual nitrogen plan by May 1 of each year. In addition, "conditions that indicate a violation of ORS 468B.025(1) may result in enforcement by the Department." The Department may enforce against any violation of ORS 468B.025(1). In addition, the application rates and restrictions are enforceable terms of the rules and apply to all landowners within the LUBGWMA. Regarding the comment that the definition of "agronomic application rate" is not protective of groundwater and only focuses on estimated yield, please note that the definition of agronomic application rate refers to a rate that achieves estimated crop yield "with no or minimal leaching of nitrate beyond the crop root zone." **5. Residual nitrate testing only required in 10% of fields** The residual nitrate soil testing metric is being omitted from the final rules and is being replaced by a more informative metric for evaluating program effectiveness. **6. Rulemaking Committee structure heavily favored ag industry** The Rules Advisory Committee (RAC) members all had equal opportunity to provide feedback throughout the process. The complete list of members and their affiliation can be found on the ODA rulemaking webpage under the Lower Umatilla Basin Groundwater Management Area (LUBGWMA) Rules. The public comment process and public hearings process also yielded

	Oregon's regulatory agencies must adopt and enforce a zero-tolerance policy for nitrate pollution from industrialized agriculture. **Comments on Proposed Rules** While the hard work of individual staff members at ODA during this rulemaking is commendable, the proposed rules represent yet another failure by ODA as an institution to use its regulatory authority. Currently, **these rules fail to meet ODA's responsibility to uphold Oregon's water quality laws**, including ORS 468B.025, which states that **"no person shall cause pollution of any waters of the state or place or cause to be placed any wastes in a location where such wastes are likely to escape or be carried into the waters of the state by any means."** ODA has responsibility to enforce this policy under state law from agricultural sources. To fulfill that mandate, **ODA must amend the proposed rules to address the key failures laid out in the points below.** **1. Irrigators are not required to follow their nitrogen plan** The key component of these proposed rules (as they relate to industrial-scale irrigated agriculture) is the requirement that irrigated operations over 500 acres adopt an annual nitrogen plan each year and certify that plan with an agronomist. Compliance with that plan is used to determine if an operation is contributing to nitrate pollution, and the rules outline steps that irrigators should take if they fail to follow their nitrogen plan each year (with increasing measures for each consecutive year of noncompliance).	additional public comments that were not presented during the RAC.

	This model, if mandatory and enforced, could provide a meaningful framework for long-term pollution reduction from irrigated agriculture. However, under these proposed rules, **these industrial-scale irrigators would not be required to follow their annual nitrogen plans**. Instead, irrigators would only be required to submit proof that such a plan exists, and keep records related to self-evaluations of annual compliance. ODA has also been clear with its intentions in public meetings, emphasizing that the agency does not view these nitrogen plans as a regulatory tool whatsoever. Instead, once again, the Department is choosing to rely on sources of nitrate pollution to rein themselves in and is hoping that the availability of better tools will facilitate that change. As proposed, OAR 603-095-5040 (4) would state: *"**A landowner's inability to follow an annual nitrogen plan may not result in enforcement by the department**. However, failure to submit proof of certification of an annual nitrogen plan by May 1 of each calendar year may result in enforcement by the department…"* In other words, these operations would be required to have a plan, but would not be required to follow it. If a rule is not enforceable, then it is not a rule – it is a request. This is also inconsistent with the goals laid out in Oregon's Nitrate Reduction Plan for the LUBGWMA, which states that "the most effective and feasible approach to managing widespread groundwater contamination, such as that in the LUBGWMA, is to control and reduce the sources of pollutants." The proposed approach– which is essentially to require sources of pollution to have a plan, but not to require that plan to be followed – does not	

	represent an approach that will control or reduce sources of nitrate pollutants. Instead, it is a strategy based on hope that yet another voluntary tool in the hands of pollution sources will be enough. In addition, it must be noted that this annual nitrogen plan scheme is built on tools that are designed to maximize crop yield and profitability, rather than to be protective of groundwater, and therefore the efficacy of these rules is questionable even if they are followed. Agronomic rates are designed to maximize yield and are not set at levels designed to protect water quality, meaning they are not an adequate baseline for reducing nitrogen applications to prevent groundwater pollution and **are not calculated to result in compliance with ORS 468B.025.** An investigation into nutrient applications from the California State Water Resource Control Board, for example, found that dairies that applied under their nutrient management plans at agronomic rates still negatively affected groundwater quality, and the EPA has found that nutrient management plans generally are neither designed to protect water quality nor are effective in doing so. More aggressive and direct measures specifically tied to water quality outcomes should be the focus of these rules and, more broadly, ODA's agricultural water quality and CAFO programs in general. At a minimum, ODA must **amend this section to make compliance with annual nitrogen plans mandatory and enforceable.** Continuing to rely on unenforceable measures like this, which are essentially voluntary, amount to not just an extension of the unsustainable status quo in the LUBGWMA, but to an entrenchment. **2. Irrigators evaluate their own compliance with nitrogen plans**	

	Under the proposed rules, irrigators will not have to submit their plans to ODA and will be responsible for assessing their own compliance with those plans each year. Through conversations with ODA and other state staff in recent months & years, we understand that the reason for these "self-evaluation" tactics are two-fold: first, because ODA is badly understaffed and under-resourced, and therefore is unable to establish a reporting mechanism for the plans; second, because industrial interests have insisted that these plans not become available to the public through Oregon's public record laws. This only pushes these rules further into the realm of "voluntary." If an operation subject to these rules can not only fail to follow their required plan, but can also determine for itself if it has done so, then there is very little incentive to actually follow the plan. ODA would largely be relying on the honor system. This amount of trust has not been earned. Quite the opposite – if the honor system, or if relying on the goodwill of industrial-scale irrigators were enough to reduce nitrate pollution, then there would be evidence of that. But in the nearly 36 years of the LUBGWMA's existence, during which the state has relied almost exclusively on voluntary actions to reduce pollution, it never has. Furthermore, the lengths to which ODA seems willing to go in order to prevent the public from having access to these plans is deeply troubling. The lack of transparency surrounding sources of pollution and their impact on LUBGWMA groundwater has been a pervasive issue since the GWMA was established in 1990. Shielding corporate shareholders and industrial profits at the expense of public transparency and public health is neither in keeping with the goals of the LUBGWMA nor with the mission of ODA.	

	The public should have full access to records related to nitrogen management under this rule. This will not only ensure that industrial growers are held accountable, but that ODA is held accountable to the public as well. **3. Irrigators are only required to maintain records for 5 years** The proposed rules will only require large irrigated operations to maintain records related to their nitrogen management for 5 years. This retention timeline must be extended significantly to ensure that ODA actually has the opportunity to audit these records. The proposed rules state that records must only be kept for 5 years; at the same time, the proposed rules prohibit ODA from inspecting the records until 5 years after the rules are implemented. This means that by the time ODA is even allowed by rule to begin inspections, some records required under this rule may be permissibly disposed of. Chronic understaffing and underfunding of state agencies, which is expected to become significantly worse in the coming years as the state grapples with budgetary issues, will only make this problem more acute. ODA staff capacity to conduct these kinds of audits is already extremely limited, and backlogs in this process are possible, if not likely. **This problem would best be solved by simply requiring these records to be submitted to ODA each year**. The Department would then be able to build a more comprehensive dataset to understand nitrogen use in the LUBGWMA, assess impacts to groundwater, assess compliance with the rules and nitrogen plans, and begin targeted efforts to reduce pollution.	

	In lieu of this ideal solution, the record retention timeframe should be extended to at least 10 years. This would allow ODA more time to address backlogs and actually conduct these audits, and hopefully not lose access to critical data in the process. **4. ODA will not begin auditing operations for up to 5 years** The proposed rules prohibit ODA from beginning to inspect records related to an operation's nitrogen plan for 3 - 5 years (3 years for operations over 1,000 acres, and 5 years for operations from 500 - 999 acres). In addition to creating the potential problems with accessing records as noted above, this long lag before beginning to inspect records is unnecessary. While there is some merit to allowing data to accrue, there is equal merit in beginning to evaluate nitrogen use as quickly as possible. Nitrate pollution is driving an urgent public health crisis, and ODA should act with appropriate urgency to identify operations in the irrigated agriculture sector contributing to nitrate pollution and address those issues. Creating self-imposed wait times before the Department could even conceivably begin to address these issues is both unnecessary and improper. ODA should significantly reduce the time before it can inspect records. Once again, **the ideal solution to this problem would be to simply require operations to report their records directly to the Department each year**, rather than relying on the resource-intensive and unreliable scheme of auditing records. This would be a more practical, more transparent, and more effective strategy. In lieu of this ideal solution, we suggest that the timeline for allowing inspection should be set at **no more than 2 years for all operations subject to these rules**.	

	5. Residual nitrate testing only required in 10% of fields Under the "Residual soil nitrate levels" section of the proposed rules, ODA would only require industrial-scale operations to test 10 percent of their fields each year to determine the amount of residual nitrate in their soil. This is alarmingly inadequate. Residual soil nitrate level measurements are critical for not only determining whether too much nitrogen was applied to a crop during the growing season, but also for tracking nitrogen loss during the growing season. To require this sampling on only 10 percent of the fields in an industrial-scale operation – and the same fields in perpetuity – is not only inadequate, it also creates an unacceptably "gameable" system. During the rulemaking process, representatives of the industrial agriculture sector indicated that this 10 percent figure was appropriate because testing more of their fields would create a paperwork burden. Concerns about laboratory capacity were also raised, but would likely be addressed long-term as the market responds to increased demand. Rules to rein in pollution that is fueling a public health crisis should not be dictated by what is convenient to sources of pollution. **While the paperwork burden of testing every field may be inconvenient for industrial-scale operations, it is far outweighed by the burden and inconvenience being felt by the LUBGWMA residents whose drinking water has been contaminated and whose health has suffered as a result.** Additionally, only requiring this testing in 10 percent of fields would severely limit ODA's ability to enforce Oregon's water quality laws through the inspection process, which itself is deeply flawed. In order for the Department to have the ability to meet its	

	statutory obligations under ORS 468B.025, these rules must require post-harvest sampling records for all fields. These operations have a responsibility to strictly manage all of the nitrogen in all of their fields, and ODA has a responsibility to ensure they do so. This section of the proposed rules is inadequate and must be expanded to **require industrial-scale irrigators to test for residual nitrate levels in all fields, every year**. **6. Rulemaking Committee structure heavily favored ag industry** The degree to which the agricultural industry – particularly the most massive-scale operators and the lobby groups that defend them professionally – were represented during this rulemaking must be addressed. While ORA was grateful for the opportunity to serve on this committee, we were the only members who work directly with those who are affected by nitrate pollution. The entire rulemaking committee, excluding state agency representatives, was as follows: - 7 industrial agriculture representatives - 2 County planning officials - 2 Portland-based environmental groups -1 OSU Extension official - 1 Board of Ag member - 1 SWCD official - 1 community leader (not a well user affected by nitrate) - 1 Oregon Rural Action Staff	

	It is no wonder that the proposed rules are so deeply inadequate given that the interests of industrialized agriculture – the dominant source of pollution in the LUBGWMA – are so over-represented in these proposed rules, while the needs of the communities affected by nitrate are not. The over-representation of big ag in this rulemaking is not an outlier in the LUBGWMA, it is the norm. The LUBGWMA committee, which has long spearheaded the fruitless reliance on voluntary measures to reduce pollution, is still dominated by representatives and allies of industrialized agriculture. Even seats on committees specifically created to represent the interests of the community are regularly filled by individuals who are not directly affected by nitrate pollution, and do not even work with those who are. This is simply a reflection of the State's priorities and the status quo in the Lower Umatilla Basin. If Oregon truly wants to address nitrate pollution and make meaningful progress in ending this public health crisis, then it needs to stop letting sources of pollution dictate how that is being done. **Conclusion** As proposed, these rules are shockingly inadequate and deferential to sources of pollution. We believe that approving these rules as presented would only serve to further entrench the status quo of increasing pollution levels and minimal oversight by state agencies. However, the rules could be salvaged and, potentially, contribute to meaningful long-term pollution reductions with just a few changes:	

	1. Allow ODA to enforce against industrial-scale ag operations that do not follow their required nitrogen management plans; 2. Require that ODA evaluate compliance with nitrogen management plans, rather than allowing operations to self-evaluate compliance; 3. Require operations to test all of their fields for residual soil nitrate levels each year, rather than just 10 percent of fields; 4. Require that operations subject to these rules submit their annual nitrogen plans and associated records directly to ODA each year; or: a. Extend the records retention period from 5 years to at least 10 years; and, b. Allow ODA to begin inspecting records for all subject operations within 2 years of implementation. **At an absolute minimum, ODA must enforce compliance with the annual nitrogen plans.** To do any less would be to continue the long-failed practice of relying on voluntary measures to reduce pollution – an approach that has failed wholesale since at least 1990. Failure to implement strong, enforceable, mandatory rules is critical to protecting the viability of the region's groundwater long-term. Public water systems, well users, businesses, and the environment will all be affected by these rules for decades to come. In the strongest possible terms, we ask that ODA incorporate the above recommendations into these rules and implement them as quickly as possible.	

Carlos B., OSU LUBGWMA Working Group	As the OSU Working Group, we appreciate the opportunity to contribute to the development of rules governing agricultural activities in the Lower Umatilla Basin Groundwater Management Area (LUBGWMA). We would like to emphasize and further elaborate on some key recommendations we have offered throughout this process. We believe these ideas can help strengthen the standards and support more effective implementation moving forward. We would like to reiterate that the Oregon State University LUBGWMA Working Group recommends against implementing a soil core nitrate testing protocol for protecting drinking water in the Lower Umatilla Basin Groundwater Management Area (LUBGWMA). Our recommendation is supported by previous and well-documented research that shows nitrate concentrations in soil fluctuate over time and space, and that this inherent variability limits the value of data obtained by the currently proposed (draft) sampling procedure. Additionally, there is a lack of precedent for using soil nitrate in regulatory programs, as well as guidance from Oregon State University Extension against such use. We also believe that sampling to a depth of five feet is not always practical. **1. Technical Feasibility of 5-Foot Sampling** The 5-foot sampling protocol is unrealistic. Many fields have duripans, gravel layers, or compacted horizons that are virtually impenetrable. Sampling from deep soils (soils that do not have root restricting layers or horizons) is certainly possible, but maintenance of sample (core) integrity is difficult. Core integrity	Thank you for your comments. The Department understands that deep soil sampling (as proposed; 10% of fields every 5 years) is not necessarily representative of potential impacts to groundwater. We are removing deep soil sampling from the rules but are adding alternative metrics for program evaluation. Regarding, a limited, strategically selected pilot network of vadose-zone and shallow groundwater monitoring – this is not currently feasible with current resources.

	is critical because it minimizes errors associated with sample collection. **2. Field Variability and Representativeness of Soil Nitrate** A major challenge—often underestimated—is the extreme spatial and temporal variability of soil nitrate, which makes it very difficult to obtain a representative soil sample at any depth. Soil nitrate is highly mobile and changes rapidly with irrigation, rainfall, crop uptake, and mineralization. Even multiple cores from the same field on the same day can produce widely different nitrate values, especially at depth. The Andrews (2023, 2024) surveys in the Okanagan directly illustrate this problem: • Soil nitrate varied substantially both across and within fields, even under consistent sampling protocols. • Nitrate was distributed unevenly across depth increments (0–30, 30–60, 60–90 cm), with no uniform pattern among farms. • Because nitrate is constantly moving, the reports state that sampling results "do not allow for determination of the origin or fate of nitrate." These findings align with those of Carey et al. (2017), who demonstrated that intensively collected soil nitrate measurements overpredicted groundwater nitrate by 40%, whereas nitrogen-budget estimates underpredicted by 63%. Neither approach reliably predicted groundwater conditions due to the dynamic and heterogeneous nature of soil nitrate. Taken together, soil nitrate at any depth is not a stable or representative metric for evaluating nitrogen leaching or assessing grower progress. **3. Considering Shallower Sampling Depths**	

	Shallower depths (0–30 or 0–60 cm) are easier to sample but provide even less interpretable information for groundwater protection: • Surface nitrate often reflects residue mineralization rather than leaching potential. • Higher surface nitrate may indicate effective irrigation management that keeps nitrate in the root zone. • Low surface nitrate may indicate over-irrigation, meaning nitrate has already moved below the sampled layer. • Carey et al. (2017) found no relationship between first-foot post-harvest nitrate and groundwater nitrate beneath the same field. Thus, while shallow sampling may be logistically simpler, it is not a good indicator of nitrate leaching risk. **4. Lack of Precedent for Using Soil Nitrate in Regulatory Programs** State nitrate management programs across the U.S. have not adopted residual soil nitrate as a regulatory indicator. Even in California—where groundwater nitrate regulations are among the most developed—a multidisciplinary expert panel (agronomists, soil scientists, and hydrogeologists) advised against including residual soil N in compliance reporting. The panel noted that soil nitrate fluctuates rapidly and cannot provide the stability or consistency needed for regulatory decision-making. **5. OSU Extension Also Advises Against Regulatory Use of Soil Nitrate Tests** OSU Extension encourages the use of post-harvest soil nitrate tests as a voluntary management tool, but does not support applying these tests to regulatory oversight or groundwater protection. EM-8832 explains that post-harvest	

	nitrate values are strongly influenced by in-field biological and hydrological processes and show only limited, inconsistent relationships with actual leaching risk. Studies by the Washington Department of Ecology similarly demonstrate that post-harvest nitrate levels serve only as rough indicators—not reliable predictors—of groundwater nitrate outcomes. **Alternate Approach: Selective Vadose-Zone & Groundwater Monitoring to Validate BMP Effectiveness Purpose.** As an alternative to one-time soil core sampling, a limited, strategically selected pilot network of vadose-zone and shallow groundwater monitoring can provide more reliable and actionable insight into nitrate leaching and BMP effectiveness. Decades of field and modeling studies show that nitrate can persist and migrate through the vadose zone over multi-year to multi-decadal timescales, resulting in delayed groundwater responses even after BMP implementation, with leaching dominated by seasonal fall–winter percolation, strong depth-dependent attenuation, and substantial legacy nitrogen storage (Weitzman et al., 2022; Turkeltaub et al., 2016; Jiang et al., 2017; Harter et al., 2024, Meals et al., 2010). Continuous or high- frequency vadose-zone monitoring using drainage and suction lysimeters paired with soil moisture/EC/temperature sensors enables early detection of nitrate flux below the root zone, well before changes are observable in groundwater, and allows direct linkage of leaching events to irrigation, fertigation, and precipitation (Kimsey, 2005). When combined with crop-based nitrogen removal metrics (A/R) and sentinel groundwater wells, this depth-stratified approach provides a defensible, multi-line-of-evidence framework that reduces misinterpretation caused by spatial and temporal variability and helps distinguish local leaching from legacy or upgradient sources. Given cost and	

	logistical considerations, this approach is best implemented initially through voluntary, cost-shared, demonstration-scale sites at representative hydrogeologic settings, supported by technical assistance and integrated modeling (HYDRUS, SWAT/WSWAT, MODFLOW/MT3D-Plus) to validate trends and inform future regulatory decisions. **Overall Recommendation** Given the feasibility challenges, high spatial and temporal variability, lack of policy precedent, and weak relationship between soil nitrate and groundwater conditions, soil nitrate testing is not recommended as a tool for monitoring grower N-management progress in efforts to reduce nitrate leaching in the LUBGWMA. As an alternative, a limited, strategically selected pilot network of vadose-zone and shallow groundwater monitoring—implemented on a voluntary, cost-shared basis—could provide earlier, flux-based evidence of nitrate leaching and BMP effectiveness and help validate other performance metrics proposed in the rules, while recognizing that groundwater responses may lag by years to decades. We believe these ideas will be beneficial in shaping the rules and ultimately lead to a more successful implementation. We are available to discuss this further at your convenience.	
Greg H., Threemile Canyon Farms	Thank you for the opportunity to submit comments on the proposed Lower Umatilla Basin Groundwater Management Area (LUBGWMA) Rules. On behalf of Threemile Canyon Farms, I served as a member of the Rules Advisory Committee (RAC). As explained below, I support many of the improvements made to the draft rules that will both reduce the regulatory burden on area farms and maintain groundwater quality protection.	Thank you for your comments. The Department understands that evaluation and metrics of success should be based on scientifically valid measures. The Department understands that deep soil sampling (as proposed; 10% of fields every 5 years) is not necessarily representative of potential impacts to groundwater. We are removing deep soil sampling from the rules but are adding alternative metrics for program evaluation.

	Since our founding in 1999, Threemile has responsibly provided for a growing population of people who care about where their food comes from. Throughout this time, we have routinely gone beyond regulatory environmental requirements and exceeded established standards. We do this not just because of rules and regulations, but because we believe in being stewards of the land and we know that what sets us apart isn't just what we do, but how we do it. We were early innovators in building a "closed-loop" system of sustainable farming. The circular agriculture system we champion is made possible by bringing together crop farming and dairy production. These are highly complementary pursuits when done with care. The legacy groundwater quality challenges in the LUBGWMA have a history that began decades before the founding of Threemile Canyon Farms. Our modern farming practices are not a cause or contributor to the challenges this rule hopes to address. Nevertheless, we also understand our responsibility to farm in a responsible manner and support the goal of the rulemaking. Please accept the following detailed comments to provisions in the proposed rules: Program evaluation and metrics of success should be based on scientifically valid measures. At present, the proposed metric of a deep residual nitrate testing, requiring a five-foot soil sample every five years, has not been peer reviewed to evaluate this method as valid. Further, Oregon State University (OSU) has clearly cautioned against using post-harvest soil nitrate tests as a regulatory evaluation tool. While these tests may be insightful for growers, they should not be used as a regulatory metric. It is	Regarding that evaluation methods rely on crop coefficients that may not be accurate given that they have not been developed for the specific crops and growing conditions in the Columbia Basin, the Department plans to work with partners to obtain data to support these methods. Regarding the concern that in some cases post-harvest soil nitrate testing may not be an accurate indicator of farming practices, the rule governing evaluation of annual nitrogen plans contains other methodologies that do not require nitrate testing, such as evaluating estimated crop yield.

	worth noting that other states, including California, have considered this method as an evaluation tool, and have determined using these tests in this manner is inappropriate because there is no basis in science to support it. This is why this method is not required in any state. It would be a mistake to allow the results to become part of the public record and open to misinterpretation. Even though growers like us would have to produce data that lack scientific value, these data would become public record. Results could be taken out of context which is particularly concerning to private enterprises managing litigation risk. Evaluation of annual nitrogen plans should be based on valid regionally-relevant coefficients. There are four methods proposed in the rules for determining if a nitrogen plan was followed. We support the addition of an A/R ratio since earlier rule drafts. However, we are concerned that two of the remaining evaluation methods rely on crop coefficients that may not be accurate given that they have not been developed for the specific crops and growing conditions in the Columbia Basin. We request that funding be prioritized for research by Oregon State University on the nitrogen removal coefficients that will yield a more accurate result. Rather than using valuable ODA resources and staff time to evaluate nonscientific test results, we would encourage the agency to consider an incremental investment in educational resources for growers as one additional way to achieve the goal of responsible nitrogen management and reduced risk in the groundwater. We would be happy to provide guidance and insight on what these resources might include and how growers and the environment could benefit.	

	I appreciate the opportunity to participate in the RAC and the efforts of ODA to ensure that any new rules are meaningful and scientifically rigorous. Thank you for the opportunity to comment.	
Arthur P.	The Proposed rules are a step in the right direction. As some people may know or may not know, determining contamination is extremely important and hard to do, and has a large part to do with soil types, cultural practices and history. The unintended consequence of growing food is there is always residue left behind, similar to leaves falling to the ground and decomposing. The information indicates that some nitrate levels are going down, continual updated information is important . and information on efficient ways to use fertilizer is useful. The change of type of Fertilizer being used since ammonium nitrate was taken away because of the Oklahoma city bombing and the high use of Urea has increased the volatilizing in the air of nitrates and may have changed some farms fertilizing practices.	Thank you for your comments.
Jeff K.	I strongly oppose the adoption of this rule as the methodology proposed for deep nitrate measurement is flawed as it is unpredictable and will lead to inaccurate results that may lead to unnecessary and ineffective regulations.	Thank you for your comments. The Department understands that deep soil sampling (as proposed; 10% of fields every 5 years) is not necessarily representative of potential impacts to groundwater. We are removing deep soil sampling from the rules but are adding alternative metrics for program evaluation.
Dani L, Oregonians for Food and Shelter	On behalf of Oregonians for Food and Shelter (OFS), I appreciate the opportunity to submit comments on the Oregon Department of Agriculture's (ODA) Proposed Rules governing agricultural activities in the Lower Umatilla Basin Groundwater Management Area (LUBGWMA). OFS is a non-profit coalition representing more than 700 agricultural, forestry, and allied operations and organizations that rely on fertilizers, pesticides, and	Thank you for your comments. The Department understands that deep soil sampling (as proposed; 10% of fields every 5 years) is not necessarily representative of potential impacts to groundwater. We are removing deep soil sampling from the rules but are adding alternative metrics for program evaluation.

	biotechnology to produce food and fiber. Our membership includes Oregon's major commodity groups, timber-related trade associations, and national companies and organizations. A core mission of OFS is to advocate for science-based regulation of production tools. As a member of the Rulemaking Advisory Committee (RAC), I want to acknowledge that ODA staff have been receptive to stakeholder input. Changes made throughout the rulemaking process reflect meaningful progress, including improved alignment of deadlines with on-the-ground practices, adjustments to reduce laboratory capacity constraints, and expanded options for evaluating Annual Nitrogen Plans (ANPs). While we support the overall goal of reducing nitrate loading to groundwater, OFS remains concerned with the use of residual soil nitrate sampling at the five-foot depth, collected once every five years, as a programmatic evaluation metric, as described in OAR 603-095-5070 and OAR 603-095-5075. This requirement will not generate data that can be interpreted using clear, scientifically acceptable methods, nor will it meaningfully reflect grower management or regulatory progress at the scale contemplated by these rules. **Scientific Limitations of Residual Soil Nitrate Sampling** Residual soil nitrate levels exhibit extremely high spatial and temporal variability that cannot be adequately controlled for through the proposed sampling design or frequency. Levels fluctuate within and between fields depending on crop type, rotation, whether land is single- or double-cropped, and timing of harvest. While fertilization and irrigation practices influence nitrate movement, deep soil nitrate is also strongly affected by factors outside a producer's control, including drought, excessive rainfall, variable irrigation water availability, mineralization rates, soil temperature, and crop failure.	

	Elevated values may reflect short-term conditions unrelated to management decisions. For example, potato vines will naturally release nitrate during breakdown following harvest. Conversely, low deep-soil nitrate values do not necessarily indicate successful nitrogen management. Over-irrigation or heavy precipitation can move nitrate beyond the 5 th foot, producing low testing results while still risking nitrate loss to groundwater. Without the agronomic, climatic, and hydrologic context, residual nitrate measurements are inherently ambiguous and do not provide a reliable basis for regulatory evaluation. Local data from within the LUBGWMA illustrate these challenges. An ODA-funded study conducted between 2014 and 2016 evaluated deep soil nitrate in a single field managed using high-level irrigation and fertilizer best management practices and rotated among grain, onions, and carrots. Across three years, deep soil nitrate values fluctuated dramatically, from less than 10 pounds of nitrogen to more than 30 pounds1. The authors were unable to explain the spike observed in the second year, underscoring the difficulty of attributing deep nitrate levels to management actions alone even under conditions of intensive data collection and documented best management practices. **This degree of unexplained variability is precisely why residual soil nitrate is a poor choice for use as a programmatic metric of impacts or rule effectiveness.** Throughout the rulemaking process, OFS has repeatedly asked ODA for examples of other states using a similar residual soil nitrate testing approach as a regulatory success metric. At various points, ODA pointed to the Minnesota Groundwater Protection Rule, an Oregon DEQ permit issued to Lamb Weston2, and a North Carolina Extension Publication3. None of these	

	provide examples of how a residual soil nitrate dataset is analyzed for trends or used to evaluate program performance. The Minnesota Groundwater Protection Rule tracks grower compliance with best management practices, not residual soil nitrate. The Oregon DEQ permit does require the permittee to collect deep soil residual nitrate samples but provides no precedent or peer-reviewed guidance on how those samples should be analyzed or interpreted. Finally, the North Carolina publication referenced by ODA describes soil sampling for phosphorus, which is a different nutrient entirely. **Metrics in Other State Programs** Other states with longstanding, large-scale agricultural nitrate regulatory programs do not rely on deep soil nitrate measurements to evaluate program success, including in regions with documented groundwater impairment. This is the case even when soil testing is required as a fertilizer management decision-making tool. California's expert panel of agronomists, soil scientists, and hydrogeologists explicitly recommended against residual soil nitrate in their Irrigated Lands Regulatory Program. As they stated in their final report, "The Panel does not include residual nitrogen in its reporting recommendations because it is difficult to quantify and is subject to potentially large short-term fluctuations." Below are examples of state nitrate regulatory programs, as well as metrics they track to demonstrate programmatic impacts: • California – Irrigated Lands Regulatory Program: Program success is evaluated using applied- to removed (A/R) nitrogen ratios and the percentage of growers meeting A/R targets. • Florida – Florida Watershed Restoration Act - Basin Management Action Plans: Progress is measured through basin-wide reductions in applied nitrogen.	

	• Minnesota – Groundwater Protection Rule: Metrics focus on grower compliance with best management practices and ongoing evaluation and refinement of those practices. • Nebraska – Nitrogen Reduction Incentive Act; Ground Water Management and Protection Act: Metrics include reductions in applied nitrogen rates and number of acres in various management phases defined by groundwater nitrate concentration. • North Carolina – Neuse Agricultural Rule: Calculates a basin-wide percent reduction in nitrogen loss using the Nitrogen Loss Estimation Worksheet (NLEW), an accounting tool based on soil type, crop, applied nitrogen, yield, nitrogen use efficiency, and cover crop adoption. • Wisconsin – Kewaunee County Land and Water Resource Management Plan: Progress is tracked through acres utilizing best management practices and the percentage of growers verifying nutrient management plans. None of these programs rely on five-foot residual soil nitrate sampling at multi-year intervals as a primary indicator of program effectiveness, nor do they identify such sampling as necessary to demonstrate regulatory progress. Across these programs, two common categories of metrics emerge: 1. Participation and compliance metrics, such as the percentage of growers implementing BMPs, acres covered by nutrient management plans, or growers meeting plan targets. 2. Nitrogen loading metrics, such as reductions in applied nitrogen or modeled nitrogen loss. **Alternative Metrics Better Aligned with Program Goals** Programmatic evaluation needs to shift away from deep residual soil nitrate measurements and toward metrics that are already embedded in the rules and collected through audits. These metrics are more directly tied to management actions, regulated	

	under the proposed rule structure, more scientifically defensible, and consistent with approaches used in other states. ODA already proposes to track the percentage of "large" landowners submitting certified ANPs each year. Metrics that ODA could collect during the audit process and report in aggregate include: • The percentage of fields meeting or not meeting ANPs. • The distribution of fields in each adaptive management category (e.g., green/yellow/orange/red), as defined in Table 1 of OAR 603-095-5055. • The percentage of fields following irrigation water management plans consistent with OAR 603-095-5025(1). • Aggregated applied-to-removed (A/R) ratios or A–R differences. • Nitrogen applied relative to agronomic rates reported in the Annual Nitrogen Plans. These approaches would allow ODA to demonstrate progress, identify areas for technical assistance, and refine program implementation without relying on a metric that is poorly suited to regulatory evaluation. Additionally, collecting these data during the audit process would avoid creating additional record submission requirements for producers, addressing confidentiality concerns in a highly litigious region. **Conclusion** Proposed OAR 603-095-5075(3) appropriately acknowledges that residual soil nitrate trends should only be evaluated if ODA has a sufficient dataset for a scientifically acceptable analysis. Given the sampling frequency (once every five years) and the high variability described above, it is unlikely that such a dataset will ever meet that standard. Continuing to require five-foot residual sampling for program evaluation risks creating a regulatory obligation that produces data without clear interpretive value for ODA, producers, or the	

	public, undermining confidence in the program and imposing unnecessary risks to producers in the region. OFS supports ODA's commitment to reducing nitrate contamination in the LUBGWMA while maintaining the economic viability of irrigated agriculture. We respectfully request that ODA reconsider the role of residual soil nitrate sampling in proposed OAR 603-095-5070 and OAR 603- 095-5075 and instead rely on metrics that more accurately reflect grower behavior and program progress, and that can be defended using established scientific and regulatory precedents. Thank you for the opportunity to comment.	
Stacey J.	While the intention of this rule on the surface seems good this will cause a burden to small farms that already have limited time and resources. Farmers fertilize the minimum needed as any more than that is cost inefficient. Please reconsider additional testing and records demand to these small business owners.	Thank you for your comments.
Robert L.	I am writing to express serious concerns regarding the proposed rulemaking for fertilizer management within the Lower Umatilla Basin Groundwater Management Area. While I appreciate the Department's commitment to protecting Oregon's water quality, I believe this rule, as currently drafted, presents significant procedural, fiscal, and scientific issues that must be addressed before adoption. **1. Representation and Stakeholder Input** The composition of the Rulemaking Advisory Committee (RAC) did not adequately represent the irrigated agricultural community that will be most affected by these rules. Under the Administrative Procedures Act (ORS 183.333), agencies are required to involve those directly impacted by a rule to the maximum extent possible. Producers and scientific experts bring essential, science-based knowledge that should meaningfully	Thank you for your comments. The Department understands that deep soil sampling (as proposed; 10% of fields every 5 years) is not necessarily representative of potential impacts to groundwater. We are removing deep soil sampling from the rules but are adding alternative metrics for program evaluation. This should address much of the concern related to fiscal impact and economic burden and lab capacity. Regarding confidentiality and data use - All data will be maintained by producers and only requested by the Department for an audit or compliance investigation. Regarding the composition of the RAC, there were a number of members of the RAC that represented the irrigated agricultural community. In addition, the Department has sought "public input to the maximum extent possible" through the convening of 8 RAC

	shape regulatory design. Without robust stakeholder participation, the success of any rulemaking is put at risk. A further analysis of the participants needs to be undertaken by looking at insufficient representation of producers directly affected and an overrepresentation of NGO's and agencies. **2. Fiscal Impact and Economic Burden** The Department has not attached or publicly presented a clear fiscal statement for this rulemaking, despite ongoing and anticipated agency expenditures, 4 representatives of ODA and Board of Ag at this RAC with ongoing requirements of record keeping into the future. More importantly, the economic effect on producers has not been properly assessed. Soil sampling and reporting requirements—particularly deep sampling at 60 inches—impose new and substantial costs for equipment, labor, laboratory analysis, and recordkeeping. These burdens fall disproportionately on irrigators already operating on thin margins. **3. Scientific Validity and Data Integrity** Several of the proposed metrics for measuring "success," such as post-harvest residual soil nitrate sampling, lack a scientific foundation. No peer-reviewed research supports the use of deep soil nitrate levels as an indicator of regulatory compliance or management success. Using unvalidated data as the basis for enforcement or public reporting risks turning producers into unwilling participants in an unreliable experiment and exposes them to potential misrepresentation or litigation. **4. Confidentiality and Data Use** Requiring producers to submit raw data that will become part of the public record creates unnecessary risk. In regions such as the	meetings, 2 Board of Agriculture meetings, a public comment period, and 2 public hearings. Regarding the removal of the water quality certification program and agreements section – the Department has water quality rules which exist beyond the scope of this body of rules; specifically, OAR 629-0210-0100 to 629-021-1100 is under the Department of Forestry (but includes Oregon Department of Agriculture) related to Stewardship Agreements. The removal of the certification program section is an acknowledgment that there are other existing rules for stewardship agreements that may have been in conflict with the proposed language, thus requiring a separate rule making process.

	Lower Umatilla Basin, where water quality issues are contentious and often litigated, data taken out of context could be used against producers rather than in collaboration with them. It is unacceptable for ODA to release data that lacks scientific validity or is private information. This needs to be corrected in the final rule. **5. Practical Implementation and Capacity** It is unclear whether local laboratories and technical support systems have the capacity to process the volume of required soil samples within the prescribed timelines. Additionally, flood-irrigated operations may be unable to comply with irrigation scheduling requirements that assume modernized systems or technology not available to every farm. **6. Removal of Voluntary Compliance Options** The elimination of the Water Quality Certification Program and voluntary agreements from earlier drafts removes an effective and collaborative tool for compliance. A voluntary, incentive-based framework would provide both accountability and recognition for landowners who implement best management practices without creating unnecessary regulatory strain. In its current form, this rule risks imposing costly, unproven, and poorly supported mandates on rural producers who have long demonstrated a willingness to partner in responsible stewardship of Oregon's natural resources. I urge ODA to pause adoption of these rules until the Department can fully evaluate the fiscal impacts, strengthen scientific justification, restore voluntary compliance pathways, and ensure that stakeholder representation meets statutory and practical expectations.	

	Thank you for your attention to these concerns and for your continued work on behalf of Oregon's agricultural communities. I would welcome the opportunity to discuss these issues further and work toward a rule that both protects water quality and sustains the farmers and ranchers who are the backbone of our rural economy.	
E. Philip S. – Land Profile, Inc.	See following pages	Thank you for your comments. The intention of these rules is to allow producers to capture annual data and then utilize that collected information to evaluate management processes over a multi-year period; as intended by the inclusion of the adaptive management "schedule" as described in OAR 603-095-5055 and shown in Table 1. Response to "Fix 1": The annual Nitrogen Plan Evaluation is a producer tool to evaluate nitrate in the rooting zone based off of an evaluation method. The Department included methodologies that will need to have additional data collected in order to make them available to producers as the individual crop coefficients are developed for each specific crop type. The Department acknowledges that the "A/R" and "A-R" methods are still being refined for the LUBGWMA area. Response to "Fix 2": as stated above, the nitrate levels are intended to be managed by the producers in the region, with the opportunity to utilize adaptive management strategies to respond to nitrogen levels in the soil based on BMP's for the region. Regarding the residual (5-foot) nitrate data: the Department intends to remove this requirement from the rules as the method is not necessarily representative of potential impacts to groundwater. While we are removing deep soil sampling from the rules we are adding alternative metrics for program evaluation. Response to "Fix 3": The Department acknowledges that nitrogen movement, formulation, and utilization in a natural system provides

		for unintended loss pathways. As written; these rules will not identify violations based on real-time 100% tracking of all nitrogen pathways. The focus of these rules is on accountability for developing nitrogen management plans and the evaluation of those plans focusing on improving trends of nitrogen retained in the soil environment of the rooting zones for crops produced in the region.

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Title: The Case for Mandatory Deep Soil Nitrate Testing in Agricultural Regulation
Subtitle: Why Data Collection Must Proceed Despite Implementation Challenges in the Lower Umatilla Basin
Version: 2.6 Final
Purpose: Public comment in support of the Rulemaking Process for Chapter 603: Rules governing agricultural activities in the Lower Umatilla Groundwater Management Area.
Date: December 22, 2025
Status: Complete

White Paper: The Case for Mandatory Deep Soil Nitrate Testing in Agricultural Regulation

WHY DATA COLLECTION MUST PROCEED DESPITE IMPLEMENTATION CHALLENGES IN THE LOWER UMATILLA BASIN PART 1: WHY BASELINE DATA MATTERS

Current Contamination Baseline

The Lower Umatilla Basin Groundwater Management Area contains nitrate concentrations that exceed the 10 mg/L drinking water standard in approximately 40 of the monitored wells (long-term average: 32 wells). (Oregon Department of Environmental Quality 2025) High concentrations are distributed throughout the area with no predictable geographic pattern. (Oregon Department of Environmental Quality 2025) Over the 32-year monitoring period, the LUBGWMA network shows more wells with increasing nitrate concentrations than decreasing concentrations. (Oregon Department of Environmental Quality 2025) The 2012 DEQ analysis determined that "the goal of decreasing nitrate trends throughout the GWMA by the end of 2009 was not met." (Oregon Department of Environmental Quality 2025) A similar pattern has been documented in the Lower Yakima Valley, where, despite 35 years of regulatory activity, nitrate concentrations have continued to increase without approaching stated management objectives. (Toppenish Creek 2019) Nitrate in groundwater is associated with documented health risks, including methemoglobinemia (blue baby syndrome) in infants and potential reproductive and developmental effects in other populations. (Oregon Department of Agriculture 2025c; Oregon Department of Agriculture 2025a)

Attribution and Data Gaps

The Oregon Department of Environmental Quality's 2024 Nitrate Reduction Plan identifies a critical information gap:

> "There have been no on-the-ground studies or sampling to determine or estimate current irrigation and nutrient practices in nonpoint source irrigated agriculture and their impact on groundwater nitrate levels from these sources." (Oregon Department of Environmental Quality 2024)

Irrigated agriculture is estimated to account for approximately 70% of nitrate sources. Yet, the state maintains permit authority over less than half of the basin's irrigated agricultural land—approximately 58% of the 160,000 acres operate without permit requirements. (Oregon Department of Environmental Quality 2024) Agricultural producers possess detailed information about their operational practices—irrigation timing,

fertilizer application rates, crop rotation, and soil conditions—that regulatory agencies do not routinely obtain. This information asymmetry limits the state's ability to identify which land management practices contribute to observed nitrate concentrations and to distinguish between operations that comply with applicable standards and those that do not. (Oregon Department of Agriculture 2025c; Oregon Department of Environmental Quality 2024)

Limits on Regulatory Authority

Oregon law (ORS 468B.025) establishes that pollution or placement of wastes "where such wastes are likely to escape or be carried into the waters of the state" is prohibited. (Oregon Department of Agriculture 2025c; Oregon Department of Environmental Quality 2024)
Enforcement of this prohibition requires objective evidence that such pollution is occurring. In the absence of mandatory monitoring data, regulators cannot reliably identify pollution sources, assess whether specific operations comply with applicable standards, allocate resources for targeted compliance activities, support enforcement actions through documented evidence, or determine the effectiveness of implemented regulatory measures. (Oregon Department of Environmental Quality 2024) Throughout, the rules frame the standard as "prevent or minimize nitrate leaching to groundwater," not merely as a generic aspiration to "improve" practices, anchoring the program in a clear groundwater-protection objective with an explicit performance orientation. [OAR 603-095-5001(2)]

Rationale for Mandatory Data Collection

The Oregon Department of Environmental Quality has characterized groundwater nitrate contamination as a long-term problem unlikely to improve without enhanced understanding of current agricultural practices in areas lacking regulatory oversight. (Oregon Department of Environmental Quality 2024) Regulatory enforcement under ORS 468B.025 requires evidence-based identification of pollution sources and assessment of regulatory effectiveness. Currently, the state lacks field-level data on soil nitrate conditions and agricultural practices necessary to identify specific contributors to contamination or to evaluate whether regulatory interventions produce measurable changes in groundwater quality. (Oregon Department of Environmental Quality 2024) The LUBGWMA rules are "intended to prevent or minimize nitrate leaching to groundwater as a result of agricultural activities, while also maintaining the economic viability of agriculture within the LUBGWMA." [OAR 603-095-5001(2)] For the first time in Oregon, the rules require large irrigated operations to determine residual soil nitrate levels at five feet (60 inches) on a statistically meaningful subset of fields: ten percent of irrigated fields each year, on a recurring five-year cycle, using standardized OSU protocols and NAPT-accredited laboratories. [OAR 603-095-5015(1)–(2)] Collection of field-scale data— even with acknowledged measurement limitations—establishes an empirical baseline that permits regulators to assess which management practices correlate with observed nitrate levels, to identify areas and operations requiring focused attention, and to measure whether regulatory changes alter the trajectory of groundwater quality. (Oregon Department of Environmental Quality 2024)
This baseline data collection framework is implemented using the Rules.

PART 2: HOW THE RULES WORK

The Lower Umatilla Basin Groundwater Management Area (LUBGWMA) rules are intended to "prevent or minimize nitrate leaching to groundwater as a result of agricultural activities, while also maintaining the economic viability of agriculture within the LUBGWMA." [OAR 603-095-5001(2)] To accomplish this, the rules

systematically address stakeholder concerns about post-harvest soil nitrate testing by incorporating multiple compliance metrics and adaptive management measures rather than relying on single-year snapshots or uniform thresholds.

Multi-Metric Compliance Framework

Oregon State University's (OSU) October 2025 memo confirms that post-harvest soil nitrate testing, when combined with nitrogen input/output data, strengthens regulatory frameworks. (Oregon Department of Agriculture 2025d)

The draft rules establish three alternative compliance pathways under OAR 603-095-5012 (Annual Nitrogen Plan Evaluation):

1. **Applied/Removed (A/R) ratio**: Calculating multi-year efficiency through nitrogen applied divided by nitrogen removed, to achieve or approach balance with nitrogen storage. This serves as the primary efficiency indicator. [OAR 603-095-5012(2)]

2. **Applied minus Removed (A-R) calculation**: Determining change in soil nitrogen storage as a supplementary indicator of nitrogen surplus trends, used alongside AR to assess whether excess nitrogen is declining year over year. [OAR 603-0955012(2)]

3. **Post-harvest soil nitrate testing**: Measuring residual nitrate at standardized depths (0-12", 12-24", 24-36") and an additional 36-48" depth if sampling occurs after 3 inches of rainfall to verify appropriate application rates and track trends over time. [OAR 603-095-5014]

4. **Yield-based assessment**: Achieving or exceeding estimated crop yields to indicate sufficient nitrogen supply and reduce leaching risk, evaluated with other metrics. [OAR 603-095-5012(4)]

No single metric determines compliance. Operations must demonstrate improvement across these indicators over time.

This multi-metric framework is particularly important for interpreting crop-specific nitrogen dynamics. As OSU has noted, post-harvest soil nitrate serves as a trend indicator and management planning tool rather than a direct measure of leaching risk—which is why the rules couple it with irrigation management data and A/R efficiency metrics rather than using soil tests as standalone compliance thresholds.

Part 5 of this paper proposes specific revisions to these evaluation methods to reflect Oregon State University's recommendations on A/R metrics and the practical limits of post-harvest soil nitrate testing in the LUBGWMA. (Group and Bonilla 2025)

Crop-Specific Interpretation Standards

Oregonians for Food & Shelter (OFS) raises concerns about crop-specific variability, noting that "residual nitrate levels fluctuate widely within fields, by the crop that is being produced, and whether the field is single cropped or double cropped during that growing season. They are also strongly influenced by conditions producers cannot control, such as drought, heavy rainfall, or crop failure." (Oregonians for Food & Shelter 2025) OFS emphasizes that this variability is especially pronounced for crops such as potatoes and onions, where nitrogen is naturally released as vines break down after harvest: "The presence of nitrate is not a sign of mismanagement." (Oregonians for Food & Shelter 2025) To support this concern, OFS cites an ODA-funded study (GSI Water Solutions 2017) examining a LUBGWMA field rotated among grain, onions, and carrots, which demonstrates that even under "high level irrigation and fertilizer BMPs," (Oregonians for Food & Shelter 2025) residual soil nitrate varied substantially.

Elevated post-harvest soil nitrate levels may reflect crop-specific nitrogen release patterns rather than overapplication. This distinction matters for fair regulatory interpretation. Without standardized baseline data, regulators cannot distinguish normal crop residue decomposition from overapplication. (Oregonians for Food & Shelter 2025) Systematic field-level monitoring is essential to establish expected patterns across crop types.

The draft rules address crop-specific factors by using nitrogen balance equations that account for crop residues. (Oregon Department of Agriculture 2025c) Compliance requires conjunctive assessment: "application of fertilizer at an agronomic application rate has resulted in achieving each crop's estimated yield, and post-harvest soil nitrate levels are low or decreasing." (Oregon Department of Agriculture 2025c) The rules incorporate cropspecific understanding into regulatory interpretation rather than applying uniform thresholds. Beyond accounting for crop-specific patterns, the rules incorporate multi-year adaptive management to address temporal variability.

Adaptive Management Over Time

Elevated post-harvest soil nitrate does not constitute an automatic violation. Instead, it triggers structured, multi-year adaptive management emphasizing technical assistance over penalties. (Oregon Department of Agriculture 2025c) The rules acknowledge that balancing nitrogen inputs with crop demands is challenging and external factors (weather, market, equipment) constrain compliance. (Oregon Department of Agriculture 2025c) The enforcement escalation spans six years:

- **Years 1–2:** Document reasons, reevaluate assumptions, verify application rates, review irrigation plan, and consider cover crops.
- **Year 3:** Conduct fall soil sampling at deeper depths, hire a certified crop advisor, and plant a cover crop.
- **Years 4–5:** Implement incremental nitrogen adjustments and enhanced monitoring.
- **Year 6+:** If non-compliant, consider stopping nitrogen application. (Oregon Department of Agriculture 2025c)

This approach ensures that the rules interpret elevated nitrate levels contextually and address them through adaptive responses rather than immediate penalties. (Oregon Department of Agriculture 2025c) Technical assistance, not enforcement, forms the first response.

The adaptive management framework relies on practical implementation systems that support consistent, long-term data collection.

Practical Implementation Support

Effective implementation requires planning for resource constraints and scheduling coordination. The phased approach ensures workability across operation sizes.

Regulatory Safeguards

The draft rules establish clear data protection and regulatory certainty provisions. The Water Quality Certification Program (OAR 603-095-5017) provides qualifying landowners with regulatory certainty: the department shall consider a certified landowner "in compliance for purposes of enforcement, with ORS

468B.025 and ORS 568.930(1) and any of the department's rules implementing those statutes" during the term of the certification agreement. [OAR 603-095-5017(1)(a)]

Confidentiality is secured through three statutory pathways: documents submitted as part of a certification agreement are confidential submissions (ORS 192.355(4)), exempt from public records disclosure (ORS 192.355(9)(a)), or protected as trade secrets (ORS 192.345(2)). [OAR 603-095-5017(5)(c)] These safeguards reduce operational risk by explicitly clarifying what data regulators will collect, how they will use it, and under what conditions they may disclose it. The department must notify a landowner if certification documents are requested for disclosure under the Oregon Public Records Act. [OAR 603095-5017(5)(b)]

The rules also provide flexibility for plan adjustment. The draft rules explicitly allow for adaptation: "Actual conditions may differ from those forecasted in an annual nitrogen plan and so necessitate adjustment of a plan to reflect unanticipated changes in weather, water availability or other agronomic circumstances." [OAR 603-095-5009(2)] A landowner "shall document adjustments to an annual nitrogen plan and the reasons for the adjustments." [OAR 603-095-5009(2)(a)] This adjustment mechanism acknowledges that agricultural operations face variable conditions beyond their control and require reasonable accommodation within the regulatory framework, with a clear audit trail.

For example, a corn grower who determines that soil sampling after black-layer formation is environmentally equivalent to post-harvest sampling can make a case for pre-harvest sampling to accommodate scheduling constraints. The draft rules allow reasonable, defensible accommodations to address actual conditions when they further the regulatory intent.

Resource and Timing Coordination

Laboratory capacity presents a resource and coordination challenge that requires planning and phased implementation. The rules distribute sampling across a 5-year cycle (10% of fields per year), which moderates annual demand. (Oregon Department of Agriculture 2025c) Starting with larger operations during the first years allows smaller operations to benefit from accumulated experience, refined sampling protocols, and established laboratory workflows. This staged approach addresses implementation concerns while enabling data collection to proceed.

The rules also accommodate scheduling demands in agricultural operations. Post-harvest soil sampling timelines align with specific crop schedules in the LUBGWMA. [OAR 603095-5005(6)] Separately, the rules establish that synthetic nitrogen may only be applied to bare fields within 60 days of planting, providing reasonable lead time for pre-plant applications. [OAR 603-095-5005(6)] The 60-day window provides reasonable lead time for pre-plant nitrogen applications to integrate with planting preparation activities, allowing landowners to schedule application equipment and manage timing around weather and soil conditions.

Crop harvest timing is known in advance and documented through field records. Operations can plan soil sampling around established harvest schedules and use existing field management calendars to coordinate sampling logistics. A distributed network of North American Proficiency Testing (NAPT) accredited laboratories provides geographic accessibility and ensures that testing capacity is not concentrated in a single location or provider.

Methodological Refinement from Experience

Yakima Valley deep soil sampling experience (2014–2015) provides crucial lessons for protocol standardization. OFS points to findings of "significant differences in the average soil nitrate levels across the GWMA region fields that were sampled in fall versus the following spring" (Mendoza 2017; Oregonians for Food & Shelter 2025) as evidence that post-harvest sampling can produce variable results. Rather than abandoning the approach, that pilot experience led to methodological refinement.

The LUBGWMA draft rules now specify standardized timing for post-harvest soil sampling: after harvest of annual crops, before 3 inches of rainfall accumulates, and before significant post-harvest irrigation. [OAR 603-095-5014(2)] Multiple sampling depths are prescribed:

- Routine post-harvest samples: 0-12", 12-24", and 24-36"
- Additional 36-48" depth: Required if samples are collected after 3 inches of rainfall have accumulated, to account for nitrate leaching in wet conditions [OAR 603-0955014(2)(b)]

For operations subject to the large-acreage rules, residual nitrate samples are collected at a 60-inch (5-foot) depth once every 5 years for 10% of irrigated fields, with an initial sampling in fall post-harvest one year after the rules' effective date. [OAR 603-095-5015(1)(2)] These standardized protocols, along with requirements for consistent monitoring over a 5-year cycle, shift the program from reliance on single-year snapshots to evaluation of multi-year trends. All samples must be processed by laboratories accredited by the North American Proficiency Testing program (NAPT). [OAR 603-095-5014(3); OAR 603-0955015(2)(b)]

The Yakima Valley pilot demonstrated that methodological rigor can address variability. Ongoing refinement with OSU and OFS input ensures that the rules can be further adapted as field experience accumulates. OSU's October 2025 recommendations on nitrogen use efficiency metrics and OFS's suggestions on phased roll-out, clear timelines, and implementation support provide a platform for continued improvement. (Oregon Department of Agriculture 2025d; Oregonians for Food & Shelter 2025)

Program Scope

The draft LUBGWMA rules apply to operations covering 500 or more acres. (Oregon Department of Agriculture 2025c) This scope ensures that the program focuses resources on operations with the most significant aggregate impact on groundwater. Smaller operations benefit from accumulated data and refined protocols before potential future inclusion.
Evaluation timelines vary based on the operation's size and the implementation phase. The rules establish a 5-year monitoring cycle for larger operations, with an annual assessment of 10% of the fields. (Oregon Department of Agriculture 2025c) For pilot operations and early-phase participants, a 3-year evaluation period may apply, allowing shorter-term assessment of protocol feasibility before broader rollout.

Coverage equity remains an important consideration. As the program expands, ensuring equitable access to testing resources and regulatory support across diverse operation sizes, crop types, and geographic locations within the Lower Umatilla Basin will require sustained coordination and continued refinement based on field experience. The phased implementation approach provides an opportunity for adjustments that address emerging equity concerns as the program develops.

The LUBGWMA rules reflect an iterative design process in which stakeholder feedback from growers, agricultural experts, and technical working groups was incorporated into successive drafts and rule provisions. These design principles are not theoretical; jurisdictions worldwide have successfully implemented similar frameworks despite identical stakeholder concerns.

PART 3: HOW OTHER JURISDICTIONS HAVE IMPLEMENTED DATA COLLECTION DESPITE SIMILAR CONCERNS

Stakeholder testimony raises fundamental questions about whether mandatory agricultural data collection can be implemented fairly and effectively, without imposing excessive burdens on producers. These are not novel concerns unique to Oregon; they have consistently emerged as jurisdictions worldwide confront the need for systematic data collection to manage agricultural contamination. Examining how California, Denmark, and the European Union have implemented agricultural data systems–while addressing identical concerns about confidentiality, implementation complexity, and regulatory burden–demonstrates that these challenges can be overcome through appropriate institutional design.

California's Coalition Model: Data Collection WITH Confidentiality Protection

This section examines California's approach to grower confidentiality and privacy concerns, showing how confidentiality protections can be embedded into regulatory data systems through institutional design—specifically, third-party coalition aggregation that preserves farmer anonymity while still enabling state oversight.

California's Irrigated Lands Regulatory Program (ILRP) has required agricultural operations to submit nitrogen management data for nearly two decades. The program addressed confidentiality concerns through a specific design: **third-party coalition aggregation**.

How it works:

1. Individual growers join coalitions–industry-organized groups that collect field-level data
2. Coalitions submit data using anonymous Member IDs that protect individual operation identity while enabling state regulatory oversight
3. The coalition retains the key linking anonymous IDs to member information (Austin, Chris 2021)

Results:

- The ILRP has operated since 2003, expanding from surface water regulation (2003) to include groundwater (2012), with a coalition structure that protects grower privacy through anonymous reporting (Central Valley Regional Water Quality Control Board 2023)
- Through the ILRP, California has built multi-year datasets on nitrogen applications and removals for **millions of irrigated acres**—particularly in the Central Valley and Central Coast—providing an emerging empirical baseline for nitrogen management under irrigated agriculture, even though data coverage and standardization are still evolving. (California State Water Resources Control Board 2024)

Key Learning: Confidentiality concerns do not require abandoning data collection–they require designing appropriate institutional structures for data aggregation and protection. (Lower Yakima Valley Groundwater Advisory Committee 2019) This two-decade track record — with California's coalition structure operationalized across millions of acres and expanding regulatory scope from surface water to groundwater–demonstrates that confidentiality-protecting data systems are not experimental models but proven, durable institutional

frameworks capable of functioning effectively over regulatory timescales and across changing environmental priorities.
Oregon's October 2025 LUBGWMA rules now move in a similar direction by embedding multi-year nitrogen efficiency metrics (Applied/Removed ratios and Applied minus Removed calculations) and mandatory trend monitoring into the regulatory framework for large irrigated acreages. [OAR 603-095-5012; OAR 603-095-5014; OAR 603-095-5015]

Denmark's Mandatory Nutrient Reporting: Transparency as Regulatory Foundation

This section examines Denmark's approach to implementing comprehensive, mandatory reporting at scale, demonstrating that systematic agricultural data collection–when combined with appropriate implementation support–can achieve measurable environmental results and reverse long-term trends of groundwater contamination.
Denmark has implemented the most comprehensive agricultural nitrogen regulation in the world, requiring each farmer to:

- Submit annual fertilizer accounts to the Ministry
- Report nitrogen quota, mineral nitrogen use, crop production, animal manure utilization
- Have fertilizer retailer sales data cross-checked against farmer reports (Sommer and Knudsen 2021)

Results:

• A **45% REDUCTION IN NITRATE LEACHING** OVER APPROXIMATELY 30 YEARS

- Groundwater nitrate concentrations are declining in areas previously under management (Sommer and Knudsen 2021)
- Regulatory enforcement based on reliable, cross-verified data (Sommer and Knudsen 2021)

Critical Difference: Denmark accepted transparency as a regulatory requirement rather than treating it as an optional privacy protection.
However, Denmark also invested in comprehensive implementation support, enabling mandatory reporting for farmers. This included direct subsidies for catch crops and reduced tillage equipment, publicly funded technical advisory services available to all farmers, and comprehensive education programs. (Sommer and Knudsen 2021) These investments were essential: without them, farmer resistance to mandatory reporting would have been substantial, and many operations would have lacked the technical capacity to comply.
Denmark's experience demonstrates that mandatory data collection alone is insufficient—regulatory requirements must be coupled with economic and technical support to enable compliance and reduce the operational burden on agricultural producers.
The gradual implementation over decades allowed for iterative refinement and farmer adaptation, demonstrating that mandatory reporting alone is insufficient without corresponding support systems.

DENMARK DEMONSTRATES THAT **MANDATORY DATA COLLECTION WITH APPROPRIATE**

IMPLEMENTATION SUPPORT ACHIEVES MEASURABLE ENVIRONMENTAL RESULTS AT SCALE–A DIRECT APPLICATION TO OREGON'S REGULATORY CONTEXT, WHERE SIMILAR IMPLEMENTATION SUPPORT STRUCTURES CAN ENABLE COMPARABLE SUCCESS.

While Oregon does not replicate Denmark's full national reporting system, the LUBGWMA rules adopt the same basic logic: mandatory, operation-level nitrogen accounting and residual soil nitrate monitoring as preconditions for credible enforcement and long-term trend evaluation in a vulnerable groundwater area. [OAR 603-095-5008; OAR 603-095-5009; OAR 603-095-5015]

EU Code of Conduct: Reconciling Data Collection with Farmer Rights

This section examines the European Union's approach to reconciling farmer rights with regulatory data needs, demonstrating that principle-based frameworks emphasizing data ownership, informed consent, and transparency can structure agricultural data collection in ways that protect farmer interests while enabling environmental protection.
The European Union's voluntary Code of Conduct on Agricultural Data Sharing establishes principles explicitly designed to address stakeholder concerns:

- **Farmer ownership:** "The farmer, as data owner, must be correctly informed about what data is involved, for what purpose it is shared, and what the benefits are" (European Union 2025)
- **Purpose limitation:** Data sharing only for purposes explicitly disclosed to the farmer
- **Informed consent:** Permission required for data sharing
- **Transparency:** Clear understanding of data uses and benefits (European Union 2025)

These principles have actively enabled data collection across European agriculture by structuring how it is conducted–demonstrating that farmer rights protections and environmental data needs are complementary rather than competing objectives.

Oregon's Water Quality Certification Program follows this principle-based pattern: certification agreements specify how data will be used, tie that use to a clearly defined safe harbor from enforcement, and rely on statutory public-records exemptions (confidential submissions, trade-secret protection, and other specific exemptions) to safeguard producers' interests while allowing the state to use aggregated data for program evaluation. [OAR 603-095-5017(1)(a), (5)(b)–(c); ORS 192.345(2); ORS 192.355(4), (9)(a)]

Application to Oregon:
The draft LUBGWMA rules already incorporate several of these foundational principles— particularly through Water Quality Certification Program confidentiality requirements and multi-year adaptive management that emphasizes technical assistance over enforcement. The rules can operationalize these frameworks further by explicitly strengthening four design components that California, Denmark, and the EU have demonstrated enhance both farmer confidence and regulatory effectiveness:

- Clear disclosure of what soil data will be used for and how results will be interpreted in compliance decisions
- Explicit protections ensuring that data submitted through the Water Quality Certification Program is segregated from enforcement pathways
- Transparent interpretation standards for how soil nitrate results will be evaluated in the context of the crop-specific benchmarks and multi-year trends
- Third-party aggregation options (following California's coalition model) that maintain individual operation confidentiality while enabling state-level regulatory oversight

These enhancements operationalize the existing multi-metric compliance framework while leveraging institutional design elements that have enabled successful data collection systems in other jurisdictions.

Across three continents and diverse regulatory contexts, jurisdictions have demonstrated that agricultural data collection systems can be designed to protect farmer confidentiality, provide appropriate implementation support, and establish transparent data governance– while achieving measurable improvements in

groundwater quality. The draft LUBGWMA rules reflect these design principles; their implementation includes taking the opportunity to strengthen frameworks by adopting elements that have proven effective elsewhere.

PART 4: THE VOLUNTARY CERTIFICATION PATHWAY

Introduction

Stakeholders frequently ask, "How can I be confident that transparency will not result in unfair regulatory treatment?" The Water Quality Certification Pathway answers this through structural design, applying the institutional lessons from Part 3 to the Lower Umatilla Basin. While Parts 1-3 address mandatory baseline monitoring, this voluntary program offers an additional path to safe harbor status for operations that document compliance. Unlike enforcement-based data collection, this voluntary program offers a concrete path to **safe harbor status**. By documenting compliance, producers secure legal protection from enforcement, even if environmental conditions cause elevated readings later. This design transforms data transparency from a vulnerability into a strategic asset, rewarding good management while protecting responsible operators from factors beyond their control.

The Safe Harbor Framework

Under the Water Quality Certification rules, the department "shall, during the term of the certification agreement, consider a landowner as in compliance for purposes of enforcement, with ORS 468B.025 and ORS 568.930(1) and any of the department's rules implementing those statutes," so long as the landowner maintains compliance with the certification agreement and applicable water quality rules. [OAR 603-095-5017(1)(a),(4)(a)] The Certification Pathway rewards documented compliance with legal protection. The program inverts the traditional regulatory dynamic: instead of using data to assign liability, it uses data to grant a legally defined safe harbor.

This creates meaningful security. In practice, this means that elevated nitrate readings discovered during the term of a valid certification agreement do not, by themselves, trigger enforcement against a certified operation, provided the landowner continues to meet all duties under the agreement and remains in compliance with the underlying water quality rules. [OAR 603-095-5017(1)(a), (4)(a), (4)(d)–(e)] This provision acknowledges that external factors affect soil conditions, protecting responsible operators from penalties driven by factors beyond their control.

In exchange, certified landowners receive two critical benefits:

1. **Enforcement Protection:** Certainty that data serves as proof of good management.
2. **Priority Assistance:** First access to state technical and financial resources.

The rules also hard-wire confidentiality protections into the certification framework. Documents submitted under a certification agreement may be treated as confidential submissions, exempt from disclosure under Oregon's public records law, or protected as trade secrets, and the department must notify a landowner if certification records are requested. [OAR 603-095-5017(5)(b)–(c); ORS 192.345(2); ORS 192.355(4), (9)(a)] Because certification hinges on demonstrating compliance with OAR 603-095-5012's evaluation methods, the Water Quality Certification Pathway will function most effectively if those underlying metrics are tuned as described in Part 5, so that A/R ratios and soil nitrate trends reflect realistic nitrogen use efficiency rather than implied 100-percent recovery. (Group and Bonilla 2025)

Certification is not a blanket waiver; it depends on ongoing, documented compliance. Certified landowners must: maintain compliance with all applicable water quality rules; continue implementing annual nitrogen plans, soil sampling, and post-harvest and residual nitrate monitoring; notify the department of any violations within 30 days; retain all records pertinent to the agreement; and allow entry and audits at agreed-upon dates and times. [OAR 603-095-5017(4)(a)–(e)]

How Certification Complements Mandatory Monitoring

This protection framework functions effectively because it sits atop a universal baseline. Certification and mandatory monitoring serve distinct, reinforcing roles. As established in Part 1, region-wide data is essential to define "responsible management" empirically.
Without a mandatory baseline to establish the norm, certification would lack credibility.
The rules create a clear strategic choice for operators:

- **Certified Operations** secure safe harbor status and priority support. Their data verifies compliance and provides insights into regional trends.
- **Non-Certified Operations** remain subject to mandatory monitoring and standard enforcement exposure without special protections.

This architecture creates a rational incentive to certify. Producers seeking certainty have a clear mechanism to earn it. Those who decline are not punished for that choice, but they forgo the significant strategic advantages of safe harbor status.

Program Design as Applied Institutional Learning

This dual-track approach operationalizes the design lessons from California, Denmark, and the EU discussed in Part 3. Just as California's coalition model separates data collection from penalty, Oregon's certification pathway separates **documented compliance** from **enforcement risk**.
The program relies on **multi-year adaptive management** rather than one-time judgments. Certification agreements function as ongoing relationships, capable of renegotiation if ownership changes or crop rotations evolve. This flexibility ensures the regulation adapts to agricultural reality. By coupling transparency with protection, the framework drives a positive feedback loop: data refines technical assistance rather than fueling litigation.

Conclusion

The Water Quality Certification Pathway provides the definitive answer to concerns about data misuse: **transparent data submission in exchange for explicit legal protection**. It transforms transparency from a liability into a source of strength. By proving responsible management, a producer earns a legally binding safe harbor. The framework offers a clear proposition: provide the mandatory baseline data that proves compliance, and secure the regulatory certainty that responsible management deserves.

PART 5: TARGETED FIXES TO MAKE THE RULES WORK

Specific recommended edits to draft rules (OAR 603-XX-XX12 et seq.).

The Need for Scientifically Defensible Metrics

The October 10, 2025 draft rules give Oregon its first comprehensive framework for tying fertilizer applications, irrigation management, and soil nitrate monitoring together in a single, basin-wide program for large irrigated operations in the Lower Umatilla Basin. (Oregon Department of Agriculture 2025c) They establish annual nitrogen plans, post-harvest summaries, residual soil nitrate sampling, and a voluntary certification safe harbor that together can deliver the field-scale data missing from past nitrate reduction efforts. (Oregon Department of Agriculture 2025c) Because these evaluation methods are being finalized now, their scientific rigor will determine whether the program delivers measurable groundwater improvements or stalls under unrealistic expectations.

Under OAR 603-XX-XX12, the current draft evaluation methods lean heavily on a partial nitrogen balance that treats "steady-state" soil nitrogen storage as the goal, alongside single-year interpretations of post-harvest soil nitrate and yield. (Oregon Department of Agriculture 2025c) As Oregonians for Food & Shelter and Oregon State University scientists have pointed out, this structure effectively assumes near-perfect nitrogen use efficiency, underestimates necessary soil nitrogen reservoirs, and makes fall soil nitrate levels do more work than the underlying science can support. (Group and Bonilla 2025; Oregon Department of Agriculture 2025d; Oregonians for Food & Shelter 2025) In practice, that combination risks classifying careful irrigators and crop-specific residue patterns as problems. At the same time, over-irrigated fields that leach nitrogen out of the root zone may appear compliant simply because little nitrate remains in the sampled profile. (Mendoza 2017; Oregon Department of Agriculture 2025d; Oregonians for Food & Shelter 2025)

The good news is that the rule architecture does not need to be rebuilt to fix these issues. Three targeted changes—pivoting from an A–R "steady-state" compliance test to multi-year A/R benchmarking, explicitly accounting for unavoidable system losses in soil nitrogen storage, and shifting post-harvest soil nitrate from an annual pass/fail trigger to a multi-year trend indicator linked with irrigation performance—would align the program with current agronomic science while preserving its core structure. (Oregon Department of Agriculture 2025c; Oregon Department of Agriculture 2025d; Oregonians for Food & Shelter 2025) These adjustments can be made now, within the existing OAR 603-XX-XX12–XX15 framework, so that when growers begin submitting plans and soil data, both producers and the state are working toward standards that are scientifically defensible, operationally feasible, and capable of driving the reductions in nitrate leaching that vulnerable communities in the LUBGWMA urgently need. (Oregon Department of Agriculture 2025c; Oregon Department of Environmental Quality 2025)

However, as OSU has candidly noted, Oregon currently lacks established nitrogen removal coefficients for LUBGWMA crops—developing these will require multi-year, multi-site data collection, institutional coordination, and significant funding. The three targeted changes below align the program with current agronomic science while enabling this foundational work to proceed in parallel.

Fix 1. Resolve meaning of Proposed revision to OAR 603-XX-XX12 Annual Nitrogen Plan Evaluation

(A/R benchmarking replacing "steady-state" A–R test)

1.1. Amend subsection (1) to clarify multi-metric evaluation and remove the "steady-state" expectation as an immediate compliance test:

> 603-XX-XX12(1) A landowner has met or followed an annual nitrogen plan if, for each field, fertilizer was applied at an agronomic application rate, as defined in OAR 603-XX-XX03(2). The landowner demonstrates, using one or more of the methodologies in subsections (2) through (4) of this rule, that

nitrogen is being managed to support estimated crop yield while minimizing or preventing nitrate leaching to groundwater over time. (Oregon Department of Agriculture 2025c)

1.2. Replace existing subsection (2) with an A/R-based, trend-focused framework:

603-XX-XX12(2) Application–Removal ratio (A/R) as a nitrogen use efficiency indicator.

(a) For each field, a landowner may assess implementation of nitrogen management measures by calculating the ratio of total nitrogen applied to total nitrogen removed in harvested material over a multi-year period:
A/R = Total N Applied ÷ Total N Removed. (Group and Bonilla 2025; Oregon Department of Agriculture 2025c)

(b) Total N Applied shall include all plant-available nitrogen from fertilizer, organic amendments, and irrigation water, using first-year plant-available nitrogen estimates for organic sources consistent with Oregon State University guidance.
(Group and Bonilla 2025; Oregon Department of Agriculture 2025c)

(c) Total N Removed lbs/acre shall be calculated as the harvested yield of each crop, including any harvested crop residues, multiplied by a crop-specific nitrogen coefficient (CN) in N lbs/unit yield based on land grant university recommendations, commodity group data, or other research-based sources.

(d) For purposes of evaluating whether an annual nitrogen plan has been met or followed, the department shall use A/R as a **benchmarking and trend** indicator only, considering:
(A) Whether A/R values for a field are stable or improving (decreasing) over a period of at least three consecutive crop years; and
(B) Whether A/R values fall within crop- and region-specific ranges developed in consultation with Oregon State University and published by the department.

(e) Until crop- and region-specific A/R benchmark ranges are developed and published by the department in consultation with Oregon State University, A/R values shall not be used as a stand-alone basis for determining that an annual nitrogen plan has not been met or followed but may be used to inform adaptive management measures under Table 1. (Group and Bonilla 2025; Oregon Department of Agriculture 2025c)

1.3. Delete the existing "steady-state condition" language tied to A–R in current 603-XX-XX12(2), and, if desired, retain A–R only as an informational, non-threshold data point by renumbering it and prefacing with:

"The department may also consider partial nitrogen balance (A–R) as supplemental information, but shall not interpret a positive balance in a single year as evidence that an annual nitrogen plan has not been met or followed in the absence of multi-year trends or corroborating data under subsections (3) through (5)." (Group and Bonilla 2025; Oregon Department of Agriculture 2025c)

This keeps the existing structure of 603-XX-XX12, but reorients the core numeric test toward **multi-year A/R benchmarking with OSU-informed ranges**, and explicitly disables its use as an immediate, hard compliance threshold until those ranges exist.

Fix 2. Proposed revision to OAR 603-XX-XX12 and 603-XX-XX15

(Post-harvest soil nitrate as a multi-year, irrigation-linked trend indicator)

2.1. Revise OAR 603-XX-XX12(3) to emphasize multi-year trend evaluation and linkage to irrigation performance:

603-XX-XX12(3) Post-harvest soil nitrate levels as a trend indicator.

(a) A landowner may determine post-harvest nitrate levels using soil nitrate concentrations derived from post-harvest soil samples taken consistent with the soil sampling protocol in OAR 603-XX-XX14. (Oregon Department of Agriculture 2025c)

(b) For purposes of evaluating whether an annual nitrogen plan has been met or followed, the department shall consider post-harvest soil nitrate levels on a **multi-year, precipitation-normalized basis**, using at least three consecutive years of data for a given field, and in conjunction with the irrigation water management standard in OAR 603-XX-XX06. (Oregon Department of Agriculture 2025c)

(c) A three-year pattern of stable or decreasing post-harvest soil nitrate concentrations within crop- and soil-appropriate ranges, as developed by the department in consultation with Oregon State University, is an indication that fertilizer has been applied at or near an agronomic application rate and that the risk of nitrate leaching is being minimized. (Group and Bonilla 2025; Oregon Department of Agriculture 2025c)

(d) A three-year pattern of increasing post-harvest soil nitrate concentrations, particularly when combined with evidence that irrigation water applications exceeded field capacity under OAR 603-XX-XX06, may indicate an increased risk of nitrate leaching and the need for adaptive management measures under Table 1.
(Oregon Department of Agriculture 2025c)

(e) Single-year post-harvest soil nitrate results, by themselves, shall not be used as a stand-alone basis for determining that an annual nitrogen plan has not been met or followed, but may be used to prioritize technical assistance and to inform adaptive management measures. (Group and Bonilla 2025; Oregon Department of Agriculture 2025c)

2.2. Add a clarification in OAR 603-XX-XX15 on how residual (5-foot) nitrate data will be interpreted:

603-XX-XX15(4) Interpretation of residual soil nitrate levels.

(a) The department shall use residual soil nitrate results collected under this rule to evaluate **multi-year trends** in deep nitrate storage across fields and operations and to inform adaptive management and program evaluation under OAR 603-XX-XX16. (Oregon Department of Agriculture 2025c)

(b) Residual soil nitrate levels from a single sampling event on a field shall not, by themselves, be interpreted as evidence that an annual nitrogen plan has not been met or followed, but may be considered with other information, including:
(A) Post-harvest soil nitrate trends under OAR 603-XX-XX12(3);
(B) A/R benchmarking results under OAR 603-XX-XX12(2); and
(C) Irrigation water management records under OAR 603-XX-XX06. (Group and Bonilla 2025; Oregon Department of Agriculture 2025c)

(c) In developing guidance for interpreting residual soil nitrate levels, the department shall consult with Oregon State University to account for crop rotation, rooting depth, soil texture, and precipitation patterns in the LUBGWMA. (Group and Bonilla 2025; Oregon Department of Agriculture 2025c)

Fix 3. Proposed revision to OAR 603-XX-XX12(2)

(Defining "unavoidable system loss" to correct the A–R balance)

3.1. If the department retains the partial nitrogen balance (A–R) methodology in OAR 603-XX-XX12(2) as a supplemental indicator, amend the "steady-state" definition to explicitly include unavoidable losses:

603-XX-XX12(2) …

(f) When estimating the change in soil nitrogen storage (ΔN_{soil}) using the partial nitrogen balance equation (Total N Applied minus Total N Removed), the department shall account for **unavoidable system losses**.

(g) A positive nitrogen balance (A > R) does not constitute evidence that an annual nitrogen plan has not been met or followed if the balance is within the range of unavoidable system loss for the specific crop and irrigation system, as determined by:

(A) Estimates of gaseous losses (volatilization and denitrification) and non-leaching immobilization consistent with Oregon State University guidance; or

(B) Crop-specific nitrogen uptake efficiency factors that acknowledge less than 100% recovery of applied nitrogen is achievable even under best management practices.

(h) The department shall not interpret a positive partial nitrogen balance as a violation of these rules unless it exceeds the sum of: (A) The calculated unavoidable system loss; and

(B) The agronomic soil nitrogen reservoir required to sustain crop growth for the subsequent season.

This document reflects the October 10, 2025, clean draft of the LUBGWMA area rules and the October 31, 2025, proposed rules filed with the Oregon Secretary of State. All OAR citations use the 603-095-50xx numbering scheme from the final rule text. Earlier, September 23, 2025, language (Oregon Department of Agriculture 2025b) is referenced only where it illuminates rulemaking history or stakeholder input.

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Purpose: This document is submitted as public comment input to the Rulemaking Process for Chapter 603: Rules governing agricultural activities in the Lower Umatilla Groundwater Management Area.

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