Friday, June 6, 2025 at 13:59:18 Pacific Daylight Time

Subject:	DEQ Comments Compilation for ODA LUBGWMA Rulemaking
Date:	Thursday, June 5, 2025 at 2:54:23 PM Pacific Daylight Time
From:	NANCE Trea * DEQ <Trea.NANCE@deq.oregon.gov>
To:	STAPLETON Isaak * ODA <Isaak.STAPLETON@oda.oregon.gov>, MOULUN Renee * ODA <Renee.MOULUN@oda.oregon.gov>
CC:	HIATT Mike * DEQ <Mike.HIATT@deq.oregon.gov>, SUMMERS Sunny * ODA <Sunny.SUMMERS@oda.oregon.gov>
Attachments:	image001.png, LUBGWMA Rule Draft 3.3.25_DEQ Review.docx, LUBGWMA RAC Comments-DEQ - 20250506.docx

Hi Isaak and Renee,
Please find DEQ's comments on the proposed rule attached. The comments encompass the comments from DEQ's internal review team on the draft dated 3/3/25.
The internal review team at DEQ includes Trea Nance and Mike Hiatt (RAC members) as well as several additional technical experts: Justin Sterger, Zahra Mohsin, Carl Makepeace, Ann Farris, and Pat Heins.

Please let Mike or me know if you have any questions,
Cheers,
Trea

Trea Nance (she/her)
TMDL Basin Coordinator
Oregon Department of Environmental Quality
Eastern Region - Bend
971-263-0841
Trea.nance@deq.oregon.gov

DEQ
CELEBRATING 50 YEARS OF THE CLEAN WATER ACT

Oregon DEQ Review of LUBGWMA Rule Draft

ODA Rulemaking Webpage for LUBGWMA RAC: ODA : Rulemaking at ODA : Oregon Agriculture : State of Oregon

DEQ RAC Invited Members: Mike Hiatt, Trea Nance

DEQ Internal Review Team/Commenters: Carl Makepeace, Justin Sterger, Zahra Mohsin, Ann Farris, Mike Hiatt, Pat Heins, Trea Nance.

DEQ comments in addition to those on the rule markup:

Annual Nitrogen Budget:

1) (Carl Makepeace on 3/20/2025):
    a. My main concern is that the ANB Evaluation language in section XX12 may not be sufficiently well defined. As it is, it's not clear what N balance or soil NO3 numbers would cause a field to be considered to not have an accurate N budget. We deal with this in WQ permitting—unless a condition clearly defines the logic and mechanics of what needs to happen, it ends up being unenforceable. Or at the very least, enforcing such language requires an inordinate amount of stress and staff time. With this language, what's to prevent landowners from saying "all the environmental N loss is from denitrification, therefore no leaching occurred", or "16 mg/kg NO3 at 3 ft depth should not be considered 'high', therefore my agronomic rate is accurate"?
    b. Another concern is that requiring N tracking for all large landowners could be a huge amount of work for ODA and for landowners. There are so many things that could go wrong with N balance calculations that could hide problems, and ODA may not have the resources to check to make sure that everyone is doing their calculations in the way that ODA considers proper and accurate. And at the heart of the N balance tracking is an "agronomic rate", which is defined in this rule as being protective of groundwater, however, fertilizer guides are not designed with groundwater protection in mind. In other words, I am concerned that a lot of staff time and political goodwill could be expended on blanket N tracking requirements without achieving actual groundwater improvements. As we've discussed in WQ permitting, I think the best approach may be to try to directly detect NO3 leaching past the root

zone, and to target our efforts on the fields whose data demonstrates a clear impact to groundwater.

c. With these thoughts in mind, here are my suggestions:
    i. Instead of requiring N balance tracking for every large landowner, move it to the table of required actions under XX12.
    ii. Increase the depth requirements for soil NO3 sampling to: 0 – 3 ft, 3 – 6 ft, and 6 – 9 ft.
    iii. To make XX12 more enforceable, replace items 2) and 3) with a narrative requirement along the lines of "fluctuations or increases in soil NO3 at the 6 – 9 ft depth will be considered an indicator of practices harmful to groundwater, and the landowner will be required to implement actions as required in Table XX". Alternatively, "soil NO3 greater than XX mg/kg at the 6 – 9 ft depth will be considered an indicator of practices… etc."

DRAFT

RULES GOVERNING AGRICULTURAL ACTIVITIES IN
THE LOWER UMATILLA BASIN
GROUNDWATER MANAGEMENT AREA

3/3/25

603-XX-XX01
Purpose and Authority

(1) The Lower Umatilla Basin Groundwater Management Area (LUBGWMA) is comprised of about 550 square miles in northern Morrow and northeastern Umatilla counties as shown in **Appendix A.** The Oregon Department of Environmental Quality (DEQ) has designated the area as a groundwater management area because of high levels of nitrate in ~~water wells used for human consumption~~groundwater. High levels of nitrate in drinking water can cause serious health effects and is particularly dangerous for infants and pregnant persons. The LUBGWMA contains groundwater wells used for human consumption.
(2) Understanding that agriculture within the LUBGWMA provides valuable food and fiber products to communities worldwide, these area rules are intended to prevent the discharge of nitrates into groundwater from agricultural activities while maintaining the economic viability of agriculture within the LUBGWMA. These area rules implement the Umatilla and Willow Creek Water Quality Management Area Plans as those plans address nitrate pollution in groundwater within the LUBGWMA and contain actions necessary to minimize nitrate leaching to groundwater.
(3) The Oregon Department of Agriculture's authority for these rules is ORS 561.191, ORS 568.900 – 930 and ORS 468B.184(2). Other authorities include ORS 561.200 and ORS 561.265 - 290 as applicable.

603-XX-XX02
Geographic and Programmatic Scope

(1) Operational boundaries for the agricultural lands subject to these area rules are as provided in **Appendix A** and include all lands within the LUBGWMA in agricultural use.
(2) These area rules do not apply to public lands managed by federal agencies, lands that make up the Reservation of the Confederated Tribes of the Umatilla Indian Reservation, and land or activities subject to Oregon's Forest Practices Act.
(3) All landowners conducting agricultural activities on lands in agricultural use within the LUBGWMA shall comply with these area rules as ~~they are~~ applicable to the size and type of agricultural operation.
(4) These area rules do not authorize violation of any federal, state, or local law or regulation.
(5) These area rules do not constitute a National Pollutant Discharge Elimination System Permit or Water Pollution Control Facilities~~y~~ Permit issued pursuant to the Federal Clean Water Act or ORS 468B.050. Compliance with these area rules does not exempt a landowner from the Federal Clean Water Act or state water pollution control laws.

Commented [RM1]: This draft incorporates comments submitted prior to 2/20 and oral comments by Isaak Stapleton on 2/28/25

Commented [JS2]: The GWMA is declared due to groundwater impacts, regardless of the presence of wells used for human consumption.

Commented [JS3]: Use term "minimize" here also as cropping systems likely will never be zero loss to groundwater.

Commented [JS4]: This seems to imply that sites covered under a permit (with DEQ or ODA) are subject to these rules. I don't believe that is the intent. Item B references that the rules do not constitute a permit, but it seems as written that the rules would apply to sources that do hold a permit and could lead to inconsistency if the conditions in these rules are different than what is in existing permits, NMPs, etc.

Commented [JS5]: Add statement that facilities issued an NPDES or WPCF permit must comply with those permits which supercede these rules?

(6) The fact that it is necessary to halt or reduce activities contributing to discharges to maintain compliance with these area rules shall not be a defense for violation of these rules.
(7) The requirements in these area rules do not authorize the commission of any act causing injury to property of another or protect the landowner from liabilities under other federal, state, county, or local laws.
(8) These area rules do not apply to conditions resulting from unusual weather events or other exceptional circumstances beyond the reasonable control of the landowner. An example of reasonable control of the landowner means that technically sound and economically feasible measures are available to address conditions described in these rules.

603-XX-XX03
Definitions

For the purposes of these rules unless the context requires otherwise.

(1) "Agricultural activities" means engaging in any generally accepted, reasonable and prudent method of growing or harvesting agricultural crops and commodities.
(2) "Agronomic application rate" or "agronomic rate" means the rate of synthetic fertilizers, compost or manure required to achieve estimated crop yield with minimal leaching of nitrate.
(3) "Agricultural land(s)" means lands that are permitted to be used for agricultural activities.
(4) "Agricultural operation" means (a) all agricultural land, whether or not contiguous, that is under the effective control of a landowner engaged in any commercial activity relating to the growing or harvesting of agricultural crops or the production of agricultural commodities; (b) synonym for a "farm".
(5) "Area Plan" or "Agricultural Water Quality Management Area Plan" means a plan for the prevention and control of water pollution from agricultural activities and soil erosion in a management area that has been designated under ORS 568.909.
(6) "Area Rules" are administrative rules adopted by the Oregon Department of Agriculture, in consultation with the Oregon Board of Agriculture and the Oregon Department of Environmental Quality, for the implementation of the Area Plans referenced in these rules.
(7) "Certifier" means a qualified irrigation and nitrogen management plan specialist as provided in OAR 603-XX-XX16(1)(a).
(8) "Compost" has that meaning given in ORS 633.311(5).
(9) "Department" means the Oregon Department of Agriculture.
(10) "Director" means the director of the Oregon Department of Agriculture.
(11) "Estimated crop yield" means the near-maximum or optimum crop yield estimated for each field according to sources such as recommendations by land grant universities, the Natural Resources Conservation Service, commodity groups, or according to site-specific knowledge based on previous experience.
(12) "Fertilizer" has the meaning given in ORS 633.311(12).
(13) "Field" means an area of land that is used for agricultural activities and enclosed or otherwise marked by a physical, topographical or other boundary.
(14) "Groundwater" or "groundwater of the state" means water within the LUBGWMA that is in a saturated zone or stratum beneath the surface of land or below a surface water body.

Commented [JS6]: Suggest that the considerations for beyond reasonable control are specifically defined in the Definitions section of the rules. Our DEQ enforcement guide defines BRC as follows, which could be considered in the definition for these rules: "beyond reasonable control" means the violation resulted from: (i) an act of war, sabotage, or unforeseeable and unpreventable vandalism; (ii) an extreme act of nature; (iii) negligence on the part of local, state or federal government; (iv) an act or omission of a 3rd party (not including an agent of violator) without regard to whether any such act or omission was or was not negligent; or (v) the violation could not have been reasonably anticipated or prevented….focus on whether the violator took all of the steps DEQ expected of the violator, including following permit requirements, following operational and maintenance plans, addressing repeated violations, and implementing such other reasonable steps that, if taken, would have eliminated the violation. A finding of beyond reasonable control must be based on known facts and circumstances and is not appropriate when the cause of the violation is not known or not understood. An example of a violation which was not reasonably preventable: equipment failure is when the equipment is subject to a reasonable inspection and maintenance and replacement schedule and there are reasonable alarm/backup systems in place.

Commented [JS7]: This definition specifically excludes reclaimed water or treated effluent – so in the context of these rules, application of reuse water would not be considered a fertilizer addition. If these rules are not to cover permitted facilities, not a big concern, but if they apply to all agricultural operations in the LUB, we need to define where reuse effluent should be covered.

(15) “Irrigated agricultural lands” or “irrigated agriculture” means agricultural lands irrigated to produce crops or pasture and including lands that are planted to commercial crops that are not yet marketable such as vineyards and tree crops. Irrigated lands include nurseries.
(16) “Landowner” has the meaning given in ORS 568.210 and ORS 568.903 and includes an “operator” as defined in ORS 568.900(2).
(17) “Manure” means solids or liquids excreted from an animal.
(18) “Nitrogen Management Measures” means measures to match fertilizer and nitrogen applications to agronomic demands and includes a determination of the appropriate agronomic application rate to achieve estimated crop yield. Nitrogen management measures include the 4Rs of nutrient stewardship as provided in NRCS Conservation Practice Standard Nutrient Management Code 590 (2019).
(19) “Operator” has the meaning given in ORS 568.200(2).
(20) “Pasture” means land that sustains vegetative growth in the normal growing season that is primarily used to grow forage for grazing livestock where the livestock are not confined in pens or lots or on a prepared surface and where waste is not managed using a waste water control facility.
(21) “Pollution” or “water pollution” has the meaning given in ORS 468B.005.
(22) “Saturated soil” means soil with all available pore space filled that has reached its maximum retentive capacity.
(23) “Synthetic fertilizer” is fertilizer made from ammonia, nitrogen, phosphate minerals, and other chemicals through human-controlled chemical reactions. Synthetic fertilizers include dry fertilizer, liquid fertilizer, foliar fertilizer, and any other type of fertilizer that has a guaranteed nutrient content.
(24) “Waste” or “wastes” has that meaning given in ORS 468B.005(9) with the clarification that waste or wastes includes but is not limited to commercial fertilizers, soil amendments, composts, animal wastes, vegetative materials and includes nitrate that enters groundwater by any means.
(25) “Water” or the “waters of the state” has the meaning given in ORS 468B.005.

603-XX-XX04
Prohibited Acts
[This rule applies to all landowners in the LUBGWMA]

(1) The discharge of waste to the groundwater of this state from agricultural activities is prohibited.
(2) Wastes may not be placed in a location where such wastes are likely to escape or be carried into groundwater by any means.
(3) The discharge of fertilizers, fumigants, or pesticides into groundwater via back flow through a water supply well is prohibited.
(4) The discharge of fertilizers, fumigants, or pesticides down a groundwater well casing is prohibited.
(5) A landowner within the LUBGWMA may not violate the provisions of 603-XX-XX05.

603-XX-XX05
Land Application Rates and Restrictions
[These rules apply to all landowners within the LUBGWMA]

Commented [JS8]: This definition includes industrial wastes, so would loop back in recycled water from industrial sources.

Commented [JS9]: Does not specify exclusion to permitted sites otherwise covered via permit restrictions.

Commented [JS10]: This condition specifies a zero loss “no discharge” policy, so are we saying no leaching may occur? Leaching is occurring at sites, especially irrigated ag sites over winter periods and this would prohibit any losses.

(1) A landowner shall employ nitrogen management measures when making land applications of synthetic fertilizers, compost, ~~or~~ manure, or any other nitrogen sources.
(2) Before synthetic fertilizers, compost or manure may be applied a landowner shall:
(a) Take soil samples consistent with [SOIL SAMPLE PROTOCOL RULE]; and
(b) Take into consideration existing plant available nitrogen levels in soil and estimated crop yields when making an application of ~~fertilizers or compost~~nitrogen sources.
(3) A landowner shall document, and upon request by the department make available for inspection, the following for each field to which synthetic fertilizers, compost, or manure are applied:
(a) The date(s) and location(s) of all nitrogen applications;
(b) The weather conditions and soil moisture at the time of application; and
(c) The agronomic application rate used
(4) A landowner shall prevent the downward movement of nitrate in the soil by managing irrigation water so that the amount of water applied from the combination of precipitation and irrigation does not exceed the water holding capacity of the soil beyond the crop root depth.
(5) A landowner may not apply synthetic fertilizers, compost, ~~or~~ manure, or other nitrogen sources in a manner that causes direct, indirect, or precipitation-related discharge ~~of nitrate~~ to groundwater.
(6) A landowner may not apply synthetic fertilizers, compost, ~~or~~ manure, or other nitrogen sources:
(a) To fields with a frozen surface crust (2 inches) or deeper, or if the soil is at or below zero degrees Celsius (32 degrees Fahrenheit).
(b) To fields that are snow covered.
(c) To fields with soils that are or will become saturated with forecasted precipitation prior to infiltration or incorporation.
(d) If the water table is within 12 inches or less to the surface.
(e) If precipitation is forecasted in the next 24 hours for the field location and it is likely that application will result in a prohibited act.
(f) To fields that are bare unless the landowner is preparing the bare fields for the current year's annual crop planting and the application is within 30 days of planting.

603-XX-XX06
Animal Pasturing
[This rule applies to all landowners within the LUBGWMA]

(1) A landowner grazing livestock on pasture within the LUBGWMA shall rotate livestock and limit livestock numbers to prevent bare ground and promote and maintain adequate vegetative cover.
(a) In determining an appropriate stocking rate for livestock grazing on pasture, a landowner shall match livestock requirements with the available forage and frequently monitor forage growth to adjust the stocking rate and grazing period to prevent runoff or overgrazing.
(2) Where animals are concentrated to a distinct heavy use area during the rainy season when the soil is prone to compaction or when inadequate forage growth would result in over-grazing, a landowner shall remove manure and waste feed from these areas and maintain grassy buffer strips around the area.

Commented [ZM11]: (18) "Nitrogen Management Measures" means measures to match fertilizer and nitrogen applications to agronomic demands and includes a determination of the appropriate agronomic application rate to achieve estimated crop yield..... Nitrogen management measures include the 4Rs of nutrient stewardship as provided in NRCS Conservation Practice Standard Nutrient Management Code 590 (2019).

Q: In the above definition for the "Nitrogen Management Measures" minimal leaching of nitrate to GW should be considered/ added. Otherwise the land application of fertilizer will only be focused to achieve estimated crop yield as per current definition. Even though landowner will be employing the nitrogen management measures but without considering Groundwater quality.

Commented [JS12]: More broadly define all nitrogen sources?

Commented [JS13]: Define what we consider to be soil PAN (ammonium and nitrate in the crop root zone, or other).

Commented [ZM14]: Q: Are they (Landowners) measuring the N in water (either the process water or pumping from ground) used for irrigation before application of fertilizer, compost or manure? It will make it more clear if we add the language in one more bullet point like its added for soil sample.

Example: The water (either processed or pumped from ground) should be tested for nitrates before irrigation.

Commented [JS15]: Want to also ask for the crop type, fertilizer guide resource, and yield? I don't think we need to get to the specifics of seed hybrid, just crop type and the associated fertilizer guide they use as resource.

Commented [HD16]: I think we would want to discourage winter application. Maybe a provision that indicates a prohibition if non-compliance is determined.

Commented [JS17R16]: Also, how are they tracking soil temperature or assessing that the surface crust is frozen to specific depth and is there standard practice we want them to use?

Commented [ZM18]: Is this range of within 30 days of planting based on some criteria? I am wondering if bare fields are fertilized and receiving precipitation, there is more probability of nutrient runoff or leaching to groundwater. So is it possible to bring it within 2 weeks or based on the fertilizer release timeline.

Commented [JS19]: Including or excluding DEQ and ODA permitted sites?

(3) A landowner applying synthetic fertilizer, compost, ~~or~~ manure, or other nitrogen sources to irrigated pasture shall conduct nutrient management in a manner that prevents the over-application of nitrogen and reduces the likelihood of nitrate leaching to groundwater.
(a) A landowner applying synthetic fertilizers, compost, ~~or~~ manure, or other nitrogen sources to pasture shall first conduct a soil test consistent with [CITE SOIL SAMPLE RULE] to establish plant available nitrogen in the soil.
(4) A landowner shall prevent the downward movement of nitrate in the soil by managing irrigation water so that the amount of water applied from the combination of precipitation and irrigation does not exceed the soil's water holding capacity within the forage root depth.

603-XX-XX07
Control Measures for Irrigated Agriculture on Large Acreages
[This rule applies only to landowners irrigating large acreages]

(1) The area rules provided in [OAR 603-XX01 – XX19] govern agricultural activities on irrigated agricultural lands where the total land acreage under the ownership or control of a landowner is equal to or greater than 1,000 acres and where irrigation is used to grow crops or pasture on those acreages.
(2) These area rules describe those irrigation and nitrogen management measures necessary to minimize percolation of nitrate~~waste~~ to groundwater and prevent excess nitrogen application relative to crop need.
(a) Measures include irrigation water management, an annual nitrogen budget, and annual post-harvest summary records. Records that implement these measures shall be retained by the landowner at the landowner's principal place of business for the agricultural operation and made available for inspection at the request of the department.
(3) Each landowner shall employ best practicable management practices to implement the irrigation and nitrogen management measures in these area rules according to the site-specific attributes and needs of each agricultural operation.

603-XX-XX08
Irrigation Water Management
[This rule applies only to landowners irrigating large acreages]

(1) A landowner subject to these rules shall prevent the downward movement of nitrate in the soil by managing irrigation water so that the amount of water applied from the combination of precipitation and irrigation does not exceed the soil's water holding capacity within the crop's rooting depth.
(2) A landowner subject to these rules shall base the volume of water needed for each irrigation event on at least the following information as relevant to a crop or field:
(a) Available water-holding capacity of the soil for the crop rooting depth;
(b) Management allowed soil water depletion;
(c) Current soil moisture status;
(d) Distribution uniformity of the irrigation event;
(e) Water table contribution;
(f) Computerized irrigation scheduling recommendation.

Commented [ZM20]: They should keep record of nutrient management plan and application of synthetic fertilizer, compost and manure (including their application rate, month applied, irrigation data, etc.)

Commented [JS21]: Excluding those under permits?

Commented [CM22]: Suggest providing a definition.

Commented [JS23]: Would be good if they used a consistent N budget tracking tool for reporting as template. DEQ has examples we can share if ODA would like to standardize. Maybe mandate a specific form be utilized, otherwise reporting information will be more difficult for ODA to review consistently.

Commented [JS24]: How is AWHC to be determined so that it is accurate is crucial. This should be prescriptive with resource for how it will be determined.

(3) A landowner subject to these rules shall plan the rate and volume of irrigation water to minimize the transport of nutrients to groundwater by:
(a) Controlling the rate of water application to limit the transport of nitrogen through the soil profile to groundwater; and
(b) Matching irrigation application quantities and rates to the crop, soil type, soil moisture content, and agronomic demands of each crop type such that irrigation does not exceed the soil's infiltration rate or available water holding capacity within the crop root zone.

603-XX-XX09
Annual Nitrogen Budget
[This rule applies only to landowners irrigating large acreages]

(1) Each year, prior to the first application of synthetic fertilizers, compost, or manure, a landowner subject to these rules shall prepare an annual nitrogen budget that demonstrates that synthetic fertilizers, compost, ~~or~~ manure, and other nitrogen sources will be applied only at the agronomic application rate necessary to support estimated crop yield.
(a) An annual nitrogen budget shall cover the entire growing season and include double-crops, and winter cover crops.
(2) An annual nitrogen budget shall include all anticipated nitrogen management measures including the anticipated agronomic application rate for each crop. To determine agronomic rates:
(a) A landowner shall test soil to determine plant available nitrogen prior to planting;
(b) A landowner shall conduct soil sampling to determine plant available nitrogen and/or conduct plant tissue sampling and analysis to determine nitrogen need prior to mid-growing season application, and prior to late-season application;
(3) Because annual nitrogen budgets are prepared in advance of the crop season and based on circumstances that are forecasted, actual conditions may differ from those forecasted in a certified annual nitrogen budget.
(a) Where crop season conditions differ from those forecasted, an annual nitrogen budget may be adjusted to reflect changes in weather, water availability, or other unanticipated circumstances.
(b) Should an adjustment to an annual nitrogen budget be necessary, a landowner should document the reasons for the adjustments in the annual nitrogen budget. The documentation shall be retained at the landowner's principal place of business for the agricultural operation and be made available upon request by the department.
(4) A landowner's inability to follow an annual nitrogen budget may not result in enforcement action by the department. However, failure to submit proof of certification of an annual nitrogen budget by January 1 of each year, may result in an enforcement action by the department, and conditions that indicate a violation of ORS 468B.025(1) may result in an enforcement action by the department.
(5) Proof of certification of an annual nitrogen budget shall be submitted to the department by January 1 of each year.

603-XX-XX10
Annual Nitrogen Budget Contents
[This rule applies only to landowners irrigating large acreages]

Commented [ZM25]: It would be good to add beyond instead of within. Or adding language like 2 feet below the root depth zone would be helpful to ensure the leaching factor.

Commented [JS26]: This is more stringent than many permitted operations currently perform at least according to permit requirements. Some do it as BMP.

Commented [JS27]: If this is only for unpermitted activities, should specify the correct subsection of (1). If permitted activities are proposed to be included, subsection (2) would need to be referenced.

Annual nitrogen budgets shall include each of the following elements.
(1) Landowner name: Record the name of the landowner and the name of the operator if operator is not the owner of the land. If a certifier prepares the form, then the name of the certifier shall also be included.
(2) Crop year: Record the crop year for the calendar year that the crop is harvested.
(3) Field identification and acreage: Identification and the acreage of each field.
(4) For each field, record the soil type of the field and record pre-planting levels of plant available nitrogen as determined by pre-planting soil sample results.
(a) For the first annual nitrogen budget prepared after the effective date of these rules, record the residual soil nitrate levels for each field.
(5) Nitrogen management measures: For each field, record anticipated nitrogen management measures and specify the anticipated agronomic application rate. An agronomic application rate shall include total nitrogen applied in irrigation water.
(6) Irrigation Water Management Measures: Record methodology that will be used to determine appropriate water application rates so that the amount of water applied from the combination of precipitation and irrigation does not exceed the soil's water holding capacity within the crop's rooting depth.
(7) Crop type: For each field identify the crop type(s) for the upcoming season.
(8) Estimated crop yield: For each field, estimate yield target per acre for each crop type.
(9) Anticipated Total Nitrogen: For each field, record estimated total nitrogen to be applied in irrigation water, synthetic fertilizers, compost, ~~or~~ manure, and other nitrogen sources and estimated mineralization and atmospheric deposition.
(10) Recommended or planned total nitrogen: For each field, record the nitrogen recommended or planned to meet the estimated yield target.
(11) Adaptive management measures provided in 603-XX-XX12 as applicable.
(12) Certification. A landowner shall provide proof of certification of an annual nitrogen budget to the department by [SPECIFY DATE].

Commented [JS28]: Require a map?

Commented [JS29]: What about soil ammonium?

Commented [JS30]: Should they specify the fertilizer guide source used to determine the application rate? Or site specific information based on their actual field and crop performance can be used where warranted?

Commented [JS31]: This requires also that they test their irrigation water for total nitrogen (TKN plus nitrate) to factor into the rate. Perhaps specify this testing in the document.

Commented [JS32]: What will the agency consider acceptable rates of mineralization and atmospheric deposition?

Commented [JS33]: Above it says Jan. 1 each year.

603-XX-XX11
Post Harvest Summary Records
[This rule applies only to landowners irrigating large acreages]

Each year, a landowner subject to these rules shall prepare a post-harvest summary record to evaluate the effectiveness of their annual nitrogen budget. A post-harvest summary record shall include each of the following elements.
(1) Landowner name: Record the name of the landowner and the name of the operator if operator is not the owner of the land. If a certifier prepares the form, then the name of the certifier shall also be included.
(2) Crop year (harvested): Record the crop year for the calendar year that the crop is harvested.
(3) Crop type: For each field, record the type of crop harvested.
(4) Crop harvest yield: Record the crop harvest yield in crop production units per acre and include all harvested materials from primary harvest, secondary crop harvests, and crop residue (lb/acre).
(5) Nitrogen management measures: Record nitrogen management measures implemented including the agronomic application rate and fertilizer guide source used for each crop.

(6) Total nitrogen applied (lbs/acre): For each field, record the total nitrogen applied as follows:
(a) Total nitrogen applied through irrigation water;
(b) Total nitrogen applied through synthetic fertilizers;
(c) Total nitrogen applied through compost; and
(d) Total nitrogen applied through manure.
(e) Total nitrogen applied from any other sources.
(7) For each field, a determination according to 603-XX-XX12 of whether the annual nitrogen budget was followed and a description of the methodology used to make this conclusion.
(8) For each field, describe any applicable adaptive management measures to be employed in the following year's annual nitrogen budget.

OAR 603-XX-XX12
Annual Nitrogen Budget Evaluation

A landowner shall determine the success of their annual nitrogen budget by determining whether their forecasted budget was accurate and whether environmental loss of nitrogen was minimized
(1) An annual nitrogen budget is considered accurate if, for each field, the plant-available nitrogen applied from all sources does not exceed the total nitrogen required to reach each crop's ~~estimated~~ actual yield and environmental loss and leaching of nitrogen into groundwater is prevented or minimized.
(a) A landowner may determine the accuracy of their annual nitrogen budget by using either one or both of the methods described in subsections (2) and (3) of this section.
(2) A landowner may compare the sum of all nitrogen inputs with the sum of all nitrogen outputs as follows:
(a) Total nitrogen input is calculated as the sum of all nitrogen inputs from applied synthetic fertilizers, compost, manure, irrigation water, nitrogen applied from other sources, and estimated mineralization and atmospheric deposition.
(b) Total nitrogen output is calculated as the sum total nitrogen removed from crop yield removal (lb/acre x N content of crop) and from crop biomass harvested (lb/acre) multiplied by tissue nitrogen concentration (%).
(c) Environmental nitrogen loss may occur through leaching, denitrification, or volatilization.~~n or leaching~~. Environmental nitrogen (N) loss may be estimated as follows:

$$\text{Environmental N loss} = \Sigma N \text{ Inputs} - \Sigma N \text{ Removal}$$

(3) A landowner may determine soil nitrate levels in post-harvest soil samples consistent with [CITE SOIL SAMPLE PROTOCOL RULE].
(a) Low postharvest soil nitrate concentrations may indicate that a landowner has applied fertilizers and/or organic nutrients at an appropriate agronomic rate.
(b) Increasing or high postharvest soil nitrate concentrations may indicate that a landowner has not applied fertilizers and/or organic nutrients at an appropriate agronomic rate.
(4) For each field, a landowner shall determine and record in their post-harvest summary report whether their annual nitrogen budget was accurate or not.
(5) Adaptive Management Measures: For each field where an annual nitrogen budget was not accurate or followed, a landowner shall record in the following year's annual nitrogen budget, the adaptive management measures they will employ according to Table 1.
(a) Table 1: Adaptive Management Measures

Commented [RM34]: Think we need to go back to whether the ANB was followed or not. The rule gets distorted otherwise.

Commented [JS35]: Here there is reference to minimizing losses but earlier in the prohibited acts section it seems to state a zero loss requirement.

Commented [JS36]: Not sure how this can be stated here unless there is monitoring of soils past the root zone, of percolate past the root zone, or via groundwater monitoring.

Commented [CM37R36]: Agree. I think it is reasonable to monitor post-season soil NO3 below the root zone. If that parameter is elevated or increasing, then it is a much stronger indicator of nitrate leaching loss.

Commented [JS38]: If the intent is to include total N, should define it as TKN plus nitrate.

Commented [TN39R38]: Agreed, it is unclear if you are referring to an analysis (TKN + NO3) or if just referring to a sum of the nitrogen inputs.

Commented [JS40]: This equation should also consider sum of PAN left in the soil profile (i.e. that is not considered lost, but is there pending uptake by the next crop), otherwise soil residual is considered environmental N loss which will receive significant pushback from irrigators.

Commented [CM41]: How is the result of this equation to be used? What requirements are based on this calculation?

Commented [JS42]: Also soil ammonium?

Commented [JS43]: What about soil ammonium?

Commented [CM44]: Add "the nitrogen budget should be considered not accurate"? Also, what is considered "high" or "low"?

Commented [TN45]: It is a bigger issue if they are not following the budget vs. the budget not being accurate. Wouldn't they then just say "will follow the budget" as their adaptive management?

Annual Nitrogen Budget Accurate?	Required Actions	Required Actions Based Upon Trends (after 2 Consecutive Years)
Yes	- No changes to current practices required	- N/A
No Year 1	Document reason(s) for post-harvest soil sample analysis results. Reevaluate nitrogen budget assumptions for estimated crop yield, nitrogen volatilization, mineralization and other sources of nitrogen. - Verify actual land application rates and recalibrate land application equipment as necessary.	- N/A
No Year 3	**Continue the actions for Year 1 and**: - Document reason(s) for post-harvest soil sample analysis results in post-harvest summary record. - Adjust land application timing so nutrient availability aligns with peak crop uptake. - Stop land application after peak crop uptake. - Collect and analyze an additional fall soil sample at the second foot depth (24-36 inches).	**Continue the actions in the Required Actions column and:** - Reduce nitrogen application to fields. - Hire a professional/consultant to develop annual nitrogen budget and application rates.
No Year 5	**Continue the actions for Year 3 and:** - Assume no nitrogen losses from denitrification and volatilization on the annual nitrogen budget for all applicable fields. - Enhance nitrogen removal via cropping with deeper rooted, higher nitrogen uptake crops. - Reduce nitrogen application amount to field.	**Continue the actions in the Required Action column and:** - Stop land application of nitrogen to the field. - Hire a professional/consultant to develop annual nitrogen budgets and application rates and implement nitrogen management measures advised. - Collect additional post-harvest soil samples at the second, third, and fourth foot depth or until refusal or groundwater is reached and analyze for nitrate.

(7) A landowner shall certify the post-harvest summary record as described in [CITE RULE] and provide proof of certification to the department by [x date].

603-XX-XX13
Residual Soil Nitrate Levels
[This rule applies only to landowners irrigating large acreages]

(1) A landowner subject to these rules shall determine residual soil nitrate levels for each field under their ownership or control using the soil sampling protocol in [CITE SOIL SAMPLE PROTOCOL RULE]:
(a) Initial residual nitrate soil samples shall be taken in the spring prior to planting; and
(b) Thereafter, residual soil nitrate samples shall be taken in the fall, post-harvest, once every five years.
(c) Soil sample results shall be certified by the processing laboratory.

Commented [JS46]: What about at depths past the root zone for deeper rooted crops?

Commented [JS47]: Carl-- this is along the lines with DEQ's rationale for not allowing ammonia volatilization losses in calculations for POM and LWI – because they have impacted gw already and are under RI/FS.

Commented [JS48]: Soil ammonium also?

Commented [JS49]: The rules focus only on soil nitrate but are silent on soil ammonium as PAN.

Commented [JS50]: Except more frequent sampling post-harvest should be done for sites that don't certify their ANB?

Commented [JS51]: Specify a soils/agronomy lab be used.

Commented [TN52R51]: They should also ensure the laboratory is accredited.

(2) A landowner shall record residual soil nitrate levels for each field under their ownership or control on a worksheet supplied by the department and shall submit completed worksheets to the department within 30 days of obtaining sample results from the processing laboratory.
(a) Notwithstanding who the operator is, a landowner shall assure that residual soil nitrate samples are taken, recorded, and sample results submitted consistent with this rule.
(3) Where a residual soil nitrate sample indicates a violation of ORS 468B.025, the department may proceed to determine a landowner's compliance with the rules governing a landowner irrigating large acreages and if necessary, may proceed with appropriate enforcement.

603-XX-XX14
Certification of Annual Nitrogen Budgets, Post Harvest Summary Records and Residual Soil Nitrate Levels
[This rule applies only to landowners irrigating large acreages]

(1) Annual nitrogen budgets, post-harvest summary records, and residual soil nitrate sample results shall be certified in one of the following ways:
(a) Certified by an irrigation and nitrogen management plan specialist. In certifying a plan, a specialist shall attest that the record accurately reflects the conditions and management of the agricultural operation, that they can answer questions relevant to the document certified, and are competent and proficient by education and experience relevant to the development of the document. These specialists may include Professional Soil Scientists, Professional Agronomists, or Crop Advisors certified by the American Society of Agronomy, and Technical Service Providers certified in nutrient management in Oregon by the National Resource Conservation Service (NRCS);
(b) Self-certified by the landowner who attests that the document adheres to a site-specific recommendation from the NRCS or the Oregon State University Cooperative Extension [NEED SPECIFICS]; or
(c) Self-certified by the landowner if the landowner states that they apply no fertilizer to any field on the agricultural operation.
(2) Each record for which proof of certification is required shall include the name of the farm operator if different than the landowner, certifier, the date of plan certification, and certification method used.
(a) Each submission of proof of certification shall be contained on a form provided by the department and contain a statement stating that under penalty of law, the certified record is true, accurate and complete.

603-XX-XX15
Soil Sampling Protocol

(1) A landowner taking pre-planting soil samples or soil samples taken prior to application of synthetic fertilizers, compost, or manure shall collect separate composite soil samples across the field to ~~at~~ the depth of the root zone according to guidance contained in EC628.

Commented [JS53]: Key to work up this template and we can use consistent template between DEQ and ODA.

Commented [JS54]: Within 30 days or just with the annual ANB certification?

Commented [JS55]: This is implying that a residual soil nitrate value indicates that pollution has been caused or that a discharge to reduce state water quality has occurred. Not sure if this is how the rule should cite violations.

Commented [JS56]: Soil PAN instead of just soil nitrate?

Commented [JS57]: Should they provide such recommendation with their ANB?

Commented [JS58]: No fertilizer or no nitrogen applications from other sources?

Commented [JS59]: These protocols would apply also to post-harvest or other soil samples, right? Maybe not specify it is only for pre-plant or prior to application samples.

Commented [JS60]: Note that EC628 specifies nitrate analysis east of the cascades but not ammonium. However ammonium is considered PAN and discussed in EC1478.

(2) A landowner using post-harvest soil samples to determine whether they have followed an annual nitrogen budget shall collect separate composite post-harvest soil samples after harvest of annual crops and before 3 inches of rainfall accumulates. September 1 shall be the start date for tallying the accumulation of rainfall in this protocol.
(a) Separate composite soil samples across each field shall be collected at the 0-12 inch depth, the 12-24 inch depth and the 24 – 36 inch depth according to guidance contained in PNW 570-E, EM 8832-E for post-harvest nitrate-nitrogen.
(b) If the soil sample is taken after 3 inches of rainfall accumulates, a landowner shall collect an additional composite soil sample for the 72 - 84 inch depth to account for nitrate leaching.
(3) To determine soil nitrate residues as required in [CITE RESIDUAL SOIL NITRATE RULE], a landowner shall collect separate composite soil samples after harvest of annual crops and before 3 inches of rainfall accumulates. September 1 shall be the start date for tallying the accumulation of rainfall.
(a) Separate composite soil samples shall be collected at the 36 – 48 inch depth according to guidance contained in PNW 570-E, EM 8832-E for post-harvest nitrate-nitrogen.
(b) If the soil sample is taken after 3 inches of rainfall accumulates, a landowner shall collect an additional composite soil sample for the 72 - 84 inch depth to account for nitrate leaching.

Commented [JS61]: PNW 570E states that ammonium testing may not be valuable because of rapid conversion to nitrate. However, for ammonium concentrations seen in a soil sample pre-plant, it has not been converted to nitrate yet, but could be considered a PAN source to the crop during the crop period or otherwise convert to nitrate that can be lost. EM8832 specifies that postharvest soil testing for ammonium may be less valuable, which in these instances where winter irrigation is not occuring may be true. However, shouldn't pre-plant soil nitrate and ammonium be considered PAN? Suggest confirmation from OSU on protective approach.

Commented [JS62]: Could they also collect at 60-72 inch depth past most crop root zones?

603-XX-XX16
Large Irrigated Acreages Program Evaluation
[This rule applies only to landowners irrigating large acreages]

(1) The department shall conduct an evaluation of agricultural operations with large irrigated acreage areas to determine whether and to what extent the nitrogen management measures and annual nitrogen budgets have been implemented and adaptive management measures adopted.
(a) The department shall not conduct an evaluation under this subsection for at least three growing seasons subsequent to the effective date of these rules.
(b) The department's evaluation shall include an audit to determine the percentage of landowners who have submitted proof of certifications for annual nitrogen budgets and post-summary harvest records and the percentage of total landowners who have submitted residual soil nitrate sample results;
(c) Upon inspection of documents for which proof of certification shall be submitted; and
(d) Upon inspection of the agricultural operation.
(2) The department's evaluation shall include a determination of the trends of residual soil nitrate levels.

OAR XXX-XX-XX17
Water Quality Certification Program and Agreements
[This rule applies only to landowners irrigating large acreages]

(1) The Agricultural Water Quality Certification Program is a voluntary opportunity for a landowner who irrigates large acreages to take the lead in implementing [CITE RULE SECTIONS]. Through this program, certified a landowner who has entered into an Agricultural Water Quality Certification Agreement with the department may:

(a) Upon entry into a Water Quality Certification Agreement with the department, receive regulatory certainty. 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;
(b) Receive recognition that certified landowner's agricultural practices are protective of water quality; and
(c) Receive priority access to specially designated technical and financial assistance to implement practices that promote groundwater quality as that assistance is available.
(2) Qualifying landowners may apply for certification on an Oregon Agricultural Water Quality Certification Program form supplied by the department. Application elements shall include:
(a) A statement from the landowner agreeing to produce any documents requested for inspection by the department during the term of the Agricultural Water Quality Certification Agreement;
(b) A statement from the landowner agreeing to submit to the department post-harvest soil sample results each year for each field;
(c) A statement from the landowner agreeing to submit to the department residual soil nitrate samples; and
(d) A statement from the landowner agreeing that the department may use the data collected during landowner's participation in the Agricultural Water Quality Certification Program to support the program.
(3) The department may enter into an Agricultural Water Quality Certification Agreement with a landowner if:
(a) The application is complete; and
(b) The landowner agrees to the terms of the agreement.
(4) An Agricultural Water Quality Certification Agreement shall, among other terms, contain terms specifying that the landowner's duties include the duty to:
(a) Maintain compliance with all applicable water quality rules in place at the time of certification and to notify the department within 30 days of a violation of applicable water quality rules;
(b) Continue to implement the annual nitrogen budgets, soil sampling as appropriate to implement the annual nitrogen budget, and post-harvest and residual soil nitrate soil sampling regimes.
(c) Inform the department upon the sale of any lands subject to the certification agreement or inform the department upon the purchase or lease of any additional agricultural land after the start of the certification agreement;
(d) Retain all records pertinent to the certification agreement and make them available to the department upon request;
(e) Allow entry by the department at agreed-upon dates and times to lands subject to the certification agreement for the purpose of the department's inspection for compliance with the terms of the agreement; and
(f) Inform the department if landowner is unable to comply with the terms of the certification agreement due to circumstances the landowner believes are beyond the landowner's control.
(5) An Agricultural Water Quality Certification Agreement shall, among other terms, contain terms specifying that the department:
(a) May conduct periodic audits with the landowner on lands subject to the certification agreement. An audit means a review of land management practices on lands subject to the

Commented [JS63]: How is this confirmed in absence of monitoring groundwater or leachate beneath the root zone?

Commented [JS64]: It would be really nice if this RAC came with staff appropriations to do this type of work.

certification agreement and a review of documents necessary to determine compliance with the certification agreement's terms;
(b) Shall notify landowner if documents or data retained by the department pursuant to a certification agreement are requested for disclosure under the Oregon Public Records Act;
(c) May recognize that all documents submitted to the department as part of landowner's certification agreement are exempt from disclosure provided that the documents are confidential submissions as provided in ORS 192.355(4), exempt as provided in ORS 192.355(9)(a), are trade secrets as provided in ORS 192.345(2) or are otherwise determined as lawfully exempt from disclosure;
(d) May terminate the certification agreement upon a final determination that the landowner has violated any state water quality law and rule in effect during the period of the certification agreement;
(e) May terminate the certification agreement if the department finds the landowner is no longer complying with any term of the certification agreement.

OAR 603-XX-XX18
Specific Action Requirements

(1) A landowner subject to the rules in this chapter may be required to undertake additional, site-specific practices designed to prevent agricultural wastes from entering the groundwater of the state if after inspection of an agricultural operation, the department determines that a landowner is in compliance with the rules of this chapter but there still exists the potential for agricultural wastes to enter the waters of the groundwater of the state.
(2) A landowner may appeal a specific action requirement as provided in OAR 603-090-0040 – 50.

Commented [JS65]: Does ODA see instances where enforcements or investigations would require groundwater monitoring of conventional ag sites?

OAR 603-XX-XX19
Complaints and Investigations

(1) When the department receives notice of an alleged occurrence of agricultural pollution through a written complaint, its own observation, through notification by another agency, or by other means, the department may conduct an investigation. The department may, in its discretion, coordinate inspection activities with the appropriate Local Management Agency.
(2) Each notice of an alleged occurrence of agricultural pollution shall be evaluated in accordance with the criteria in ORS 568.900 to 568.933 and any rules adopted thereunder to determine whether an investigation is warranted.
(3) Any person allegedly being damaged or otherwise adversely affected by agricultural pollution or alleging any violation of ORS 468B.025, ORS 568.900 to 568.933 or any rules adopted thereunder may file a complaint with the department.
(4) The department will evaluate or investigate a complaint filed by a person under OAR 603-095-0380(3) if the complaint is in writing, signed and dated by the complainant and indicates the location and description of:
(a) The waters of the state allegedly being damaged or impacted; and
(b) The property allegedly being managed under conditions violating ORS 468B.025, ORS 568.900 to 568.933 or any rules adopted thereunder.

(5) As used in subsection (4) of this section, “person” does not include any local, state or federal agency.
(6) If the department determines that a violation of ORS 468B.025, ORS 568.900 through 568.933 or any rules adopted thereunder has occurred, the department may proceed with the enforcement procedures provided in OAR 693-090-60 through 603-090-0120.