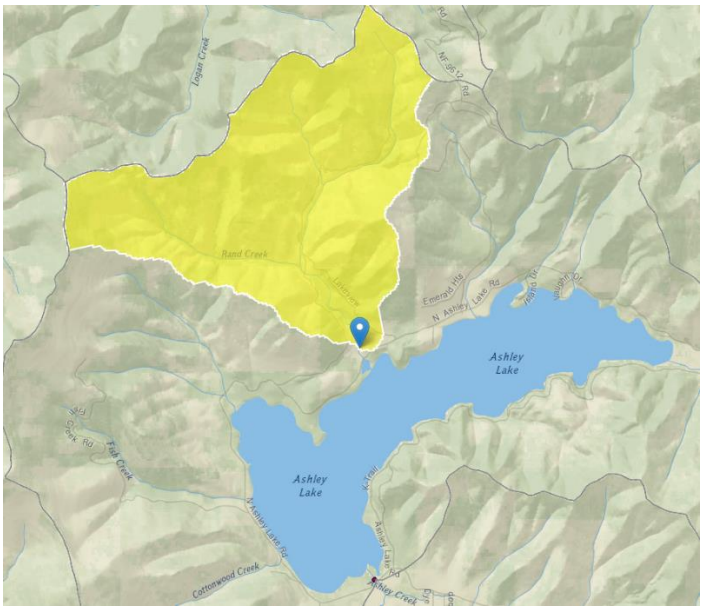
Non-Deg: Demystified



Why and when do we perform non-degradation analysis?

The non-degradation rules were created and written into the Administrative Rules of Montana in 1993 to protect high quality state ground and surface waters. Installation of a septic system is an activity that may impact water quality, and thus the permitting agency is required to ensure compliance of such activities with the non-degradation rule.

According to the rule, a non-degradation analysis must be performed every time a ***new or increased source*** of pollution is proposed. This is defined in the rule as "...an activity resulting in a change of existing water quality occurring on or after April 29, 1993." This means that the non-degradation rule applies to all new installations and expansions of septic systems unless they meet one or more of the following exceptions:

- The lot is in a platted subdivision without sanitary restriction created after 1961. This means that anything with an existing Certificate of Subdivision Approval (COSA) will not require additional analysis. All subdivisions created after 1993 would have had non-degradation completed prior to their approval by the state.
- The lot has an existing septic system that was installed prior to April 29, 1993 and the proposed development is not more than what was originally connected (for example, a 4-bedroom home is replaced with a 4-bedroom home.)

What is a non-degradation analysis?

Non-degradation analysis is a model that uses environmental factors to calculate the nutrient load that a new septic system will add to nearby water sources. The data used in these calculations comes from the following sources:

- Water sample analyzed by a Lab for Nitrate + Nitrate Total
- Surrounding well logs
- Soils analysis
- Topography/ slopes
- Proximity to ground and surface water
- Direction of groundwater flow and contributing drainages
- Quantity and concentration of effluent

This data is then plugged into a series of equations and models to answer the following questions:

- What is the concentration of Total Nitrogen created by the drainfield? This is called *Nitrate Sensitivity.*
- What is the capacity of the surrounding soils to adhere to phosphorous molecules? This is called *Phosphorous Breakthrough.*
- If located near surface water, what will the increase in nutrient load transported to the surface water be? This is called *Trigger Analysis.*

Each of these three models requires that the data provided produces values that are below a defined threshold. If it is found during the analysis that these thresholds cannot be met using standard drainfield requirements, the sanitarian may consider putting certain requirements on the drainfield to reduce contaminant levels such as:

- Specifying a **drainfield orientation** to ensure that the drainfield is perpendicular to groundwater flow.
- Increasing required **lateral length**– increasing the lateral lengths can dilute the contamination plume generated from a drainfield.
- Extending the **length of the mixing zone**– A mixing zone is typically a 100' plume that is generated away from the drainfield in the direction of groundwater flow. Extending the length of this plume can accommodate for more dilution of nutrients.
- **Requiring Level II treatment**– Level II treatment treats effluent to a greater degree and allow the size of the drainfield to be reduced by 50%.