

New Rule I - Sewage Lagoon and Water Well Setback Summary

- Setback designed to protect wells from pathogens
- Previous setback of 500 feet in statute (WQA)
- 2017 – HB 368 removed 500 foot statute and directed DEQ to establish new rules (New Rule I)
 - Variable setback for site-specific conditions
 - Prescribes location for both sewage lagoon and water wells
 - Coordinated with DNRC to update well drillers rules

BER

- Ground water rules
- Concentrated animal feeding operation rules
- Public water/wastewater plan rules
- Circular DEQ-1 (Water works)
- Circular DEQ-2 (Wastewater facilities)
- Circular DEQ-3 (Small water systems)

DEQ - NEW RULE I

DEQ

- Subdivision rules
- Solid waste management rules

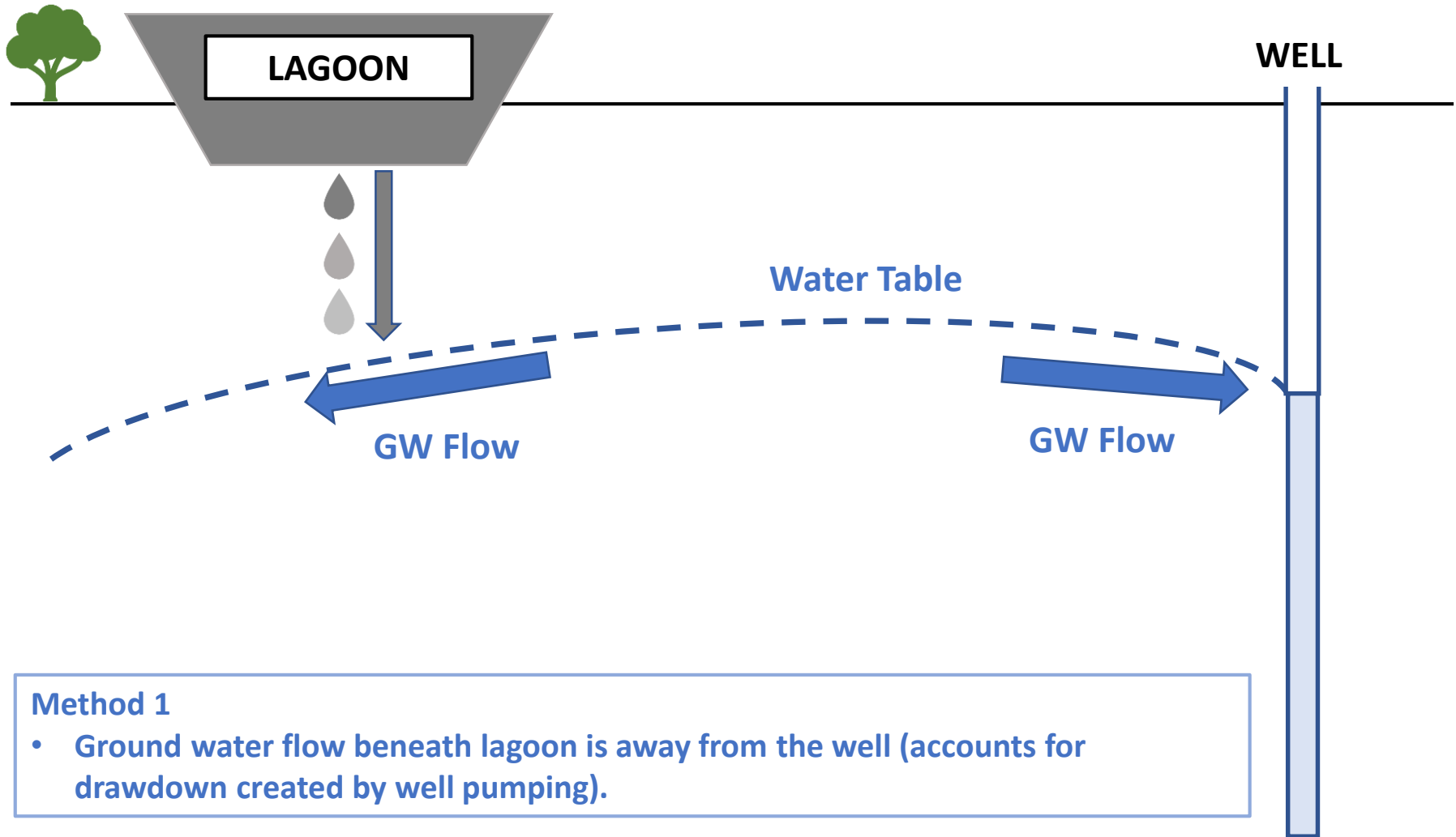
DNRC

- Well drillers rules

Sewage Lagoon and Water Well Setback - Technical Requirements

- 1,000 foot default setback
- 100 foot minimum setback
- Setback less than 1,000 feet allowed for these site-specific conditions:
 - Leakage from sewage lagoon that is hydraulically disconnected from the aquifer supplying the water well. Setback = 100 feet.
 - Sufficient soil beneath the sewage lagoon and horizontal distance to the water well to provide 4-log (99.99%) pathogen reduction. Methods to determine pathogen reduction are in the rule. Setback = between 100 – 1,000 feet.
 - Disinfection of a public water supply well or disinfection of wastewater in sewage lagoon. Setback = 200 feet.

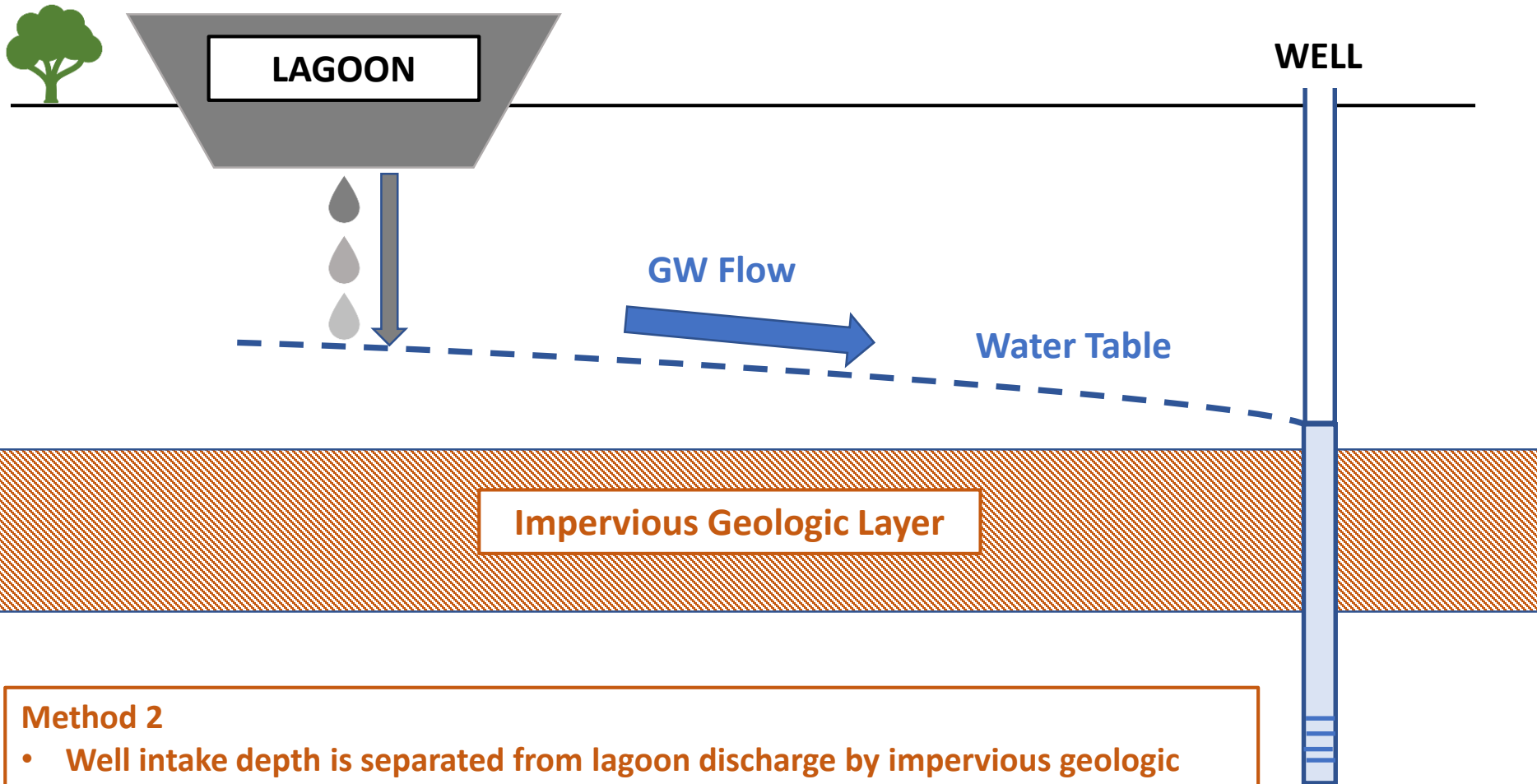
HYDRAULICALLY DISCONNECTED BY GROUNDWATER FLOW



Method 1

- Ground water flow beneath lagoon is away from the well (accounts for drawdown created by well pumping).

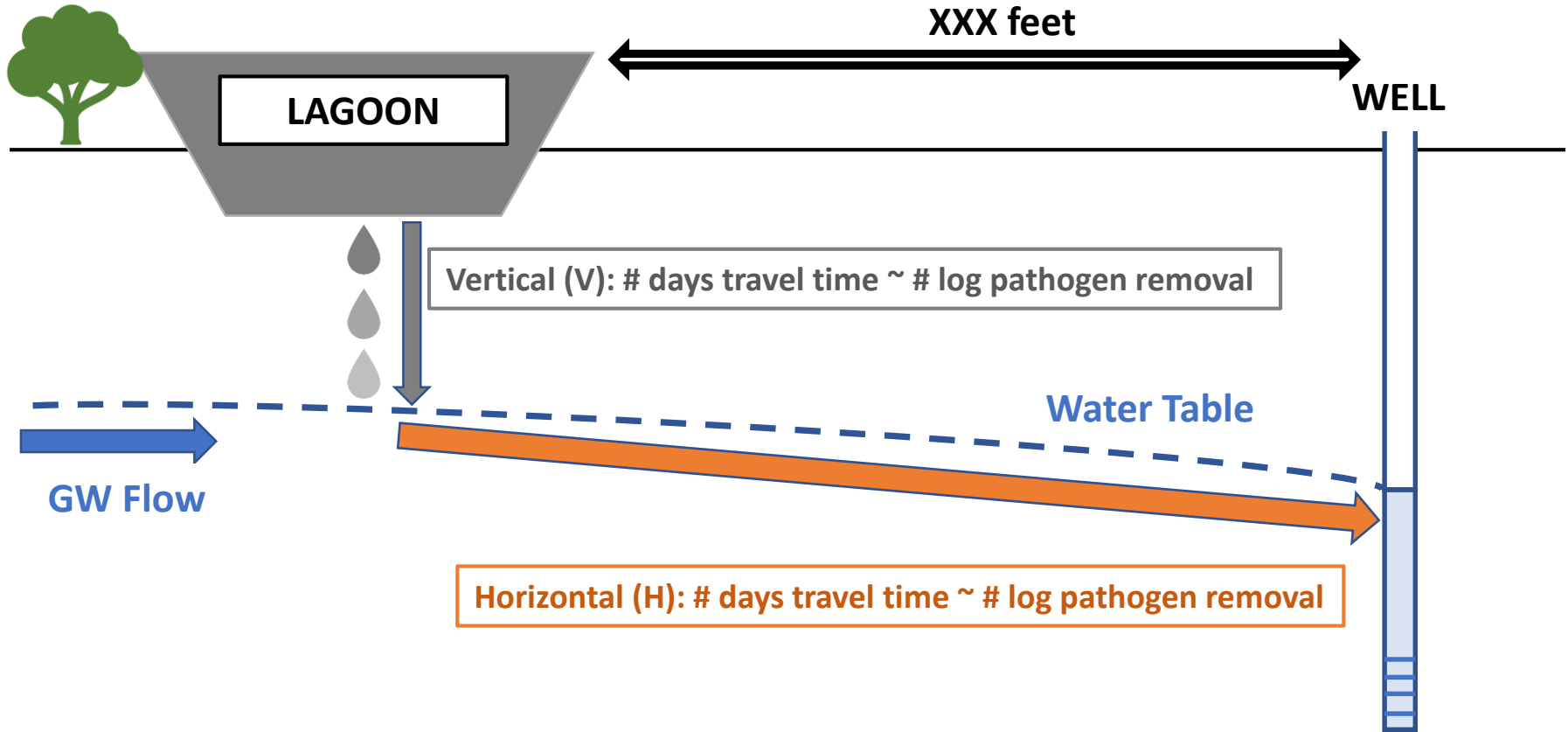
HYDRAULICALLY DISCONNECTED BY CONFINED GEOLOGY



Method 2

- Well intake depth is separated from lagoon discharge by impervious geologic layer (e.g. glacial till, clay, unfractured bedrock). Doesn't matter which direction groundwater is flowing.

PATHOGEN REMOVAL EXAMPLE



Method 3

- If $V + H > 4$ log pathogen removal (99.99% removal), then XXX foot setback is OK
- IF $V + H < 4$ log pathogen removal, then setback should be increased until pathogen removal exceeds 4 logs (up to maximum setback of 1,000 feet)