

Memo



To: Jade Krueger, Planning Administrator, Teton County
Idaho

From: Ted Van Holland, P.E. & Jennifer Zung, P.E.

CC: Sharon Fox, Planner I, Teton County, Idaho

Date: 9/12/2023

Re: Trestles and Wildflower Subdivisions Combined Level I Nutrient-Pathogen Evaluation
Review

Per request from the Teton County Planning and Zoning Department, Harmony Design & Engineering has reviewed the Level I Nutrient Pathogen Evaluation for the Trestles and Wildflower Subdivisions dated April 14, 2023, prepared by Civilize, PLLC. The report is sealed by an Idaho-licensed professional engineer and follows the basic steps outlined in DEQ guidance (Howarth, et al., 2002). The following are comments that should be addressed.

1. Subdivision Compliance Boundary

The report only evaluates the impact of “six worst case individual lots” shown in Appendix I; Aquifer Width Perpendicular to Flow with mass balance spreadsheets included for each lot in Appendix J. However, by only considering 6 isolated lots, this analysis neglects the cumulative effect of the entire subdivision on the aquifer. While we recognize that the DEQ guidelines state that individual lot boundaries are considered when the subdivision is served by individual wells and the overall subdivision boundary is considered when a central water system is proposed, Level I NP Evaluations in Teton County have consistently evaluated the impact of the subdivision as a whole. Thus, this study should include an evaluation of the cumulative impact of the additive mass loading along the aquifer flowline for the proposed development.

If additive mass loading is considered, the worst-case scenario would be along the northern third of the development, which includes the largest number of lots oriented in line with the aquifer flow direction. Even if a larger mixing zone thickness of 45 ft is used due to a greater distance from the induction zone to the property boundary, the increase in nitrate concentration is 2.4 mg/L, which is much larger than the 1.0 mg/L considered to be negligible (revised inputs include 1300 ft aquifer width, 136 acres parcel area, 45 ft mixing zone, 84 homes on 42 lots to include ARUs). If the entire subdivision is considered, the increase is 1.6 mg/L, which is also greater than the threshold designated by Howarth (2002) as an insignificant increase (revised inputs include 4000 ft aquifer width, 281 acres parcel area, 45 ft mixing zone, 168 homes on 84 lots to include ARUs).

2. Surface Water Compliance Boundary

The surface water compliance boundary should also be evaluated due to the presence of Spring Creek on the western boundary. There is discussion of surface water hydrology but it is not demonstrated that there is no hydraulic connection between impacted groundwater and surface water.

Conclusion

Based on the selection of modeled compliance boundaries, this review finds that the conclusions of the evaluation report are not supported and that the appropriate selection of compliance boundaries would indicate a significant (per Howarth, 2002; i.e. greater than 1.0 mg/l) increase in groundwater nitrate concentrations.