

Solutions

2.1

: pond/stream layout, exposed layered rock or loose sediment.: reeds or insects. Water indicators may be chemical observations, not organisms.

2.2

: water crosses the boundary through rainfall or stream inflow.: it also leaves through outlet flow or evaporation.

2.3

: storage change = inputs – outlet – evaporation – extraction.: without extraction, $30 - 18 - 7 = +5 \text{ m}^3$.: with proposed extraction, $30 - 18 - 7 - 12 = -7 \text{ m}^3$ for the stated period.

2.4

each: proposed extraction exceeds the simplified period's net replenishment; one period does not establish long-term supply/seasonal variation; omitted processes and estimates need checking or approval is absent. Accept environmental flow/ecosystem requirements as a relevant additional check, not as an already measured result.

3.1

each: reeds do not establish drinking-water safety; the record supplies no relevant safety assessment; layering alone does not classify all rocks or establish exact age; a photo cannot replace suitable field/data checks; cite map and measurement sources with dates/methods; connect physical, chemical and biological evidence without treating one as proof of all the others.

3.2

Local analytic rubric, 8 ×: identify local evidence types; describe open boundary; give $+5 \text{ m}^3$ initial estimate; give -7 m^3 proposed estimate; bound simplified assumptions; reject unlimited renewable use; reject drinking-water/rock-age proof; propose cited approved monitoring; coherent truthful 80–110 word response. Example: “The supplied pond record includes physical features, chemical measurements and living organisms. Water crosses its boundary, so it is not a closed local system. Under the simplified assumptions, inputs exceed outlet and evaporation losses by five cubic metres. Adding the proposed extraction would give a seven-cubic-metre storage decrease for that period. These estimates need checking and do not establish long-term sustainability. Renewable water can still be used faster than it is replenished. Reeds do not prove drinking-water safety, and rock layering does not establish every rock's exact age. A permitted follow-up should cite its sources and improve comparable monitoring.”