

River and stream water quality and ecological health



What is water quality and ecological health?



Rivers vary naturally

Which means their “values”
and “issues” vary

- Climate, rainfall, flow, gradient, geology, substrate, size, etc.
- A river changes from the headwaters to the sea



Landcover is a major driver

As forest/vegetation cover decreases

- Water quality gets poorer
- Habitat gets poorer
- Ecological health gets poorer

Waste-water from towns also impacts

Landcover is a major driver



So what does this mean in the whaitua?

- Water quality and ecological health decline as you move from the forested headwaters to the farmed valley
- Water quality and ecological health are worst in smaller rivers/streams in areas of intensive agriculture
- Rivers in the east have poor water quality and ecological health (less forest cover and more susceptible)

Is it getting better or worse?

- There has been no significant change in water quality in the Ruamāhanga River over the last 20 years

Is it safe to swim in our rivers and streams?

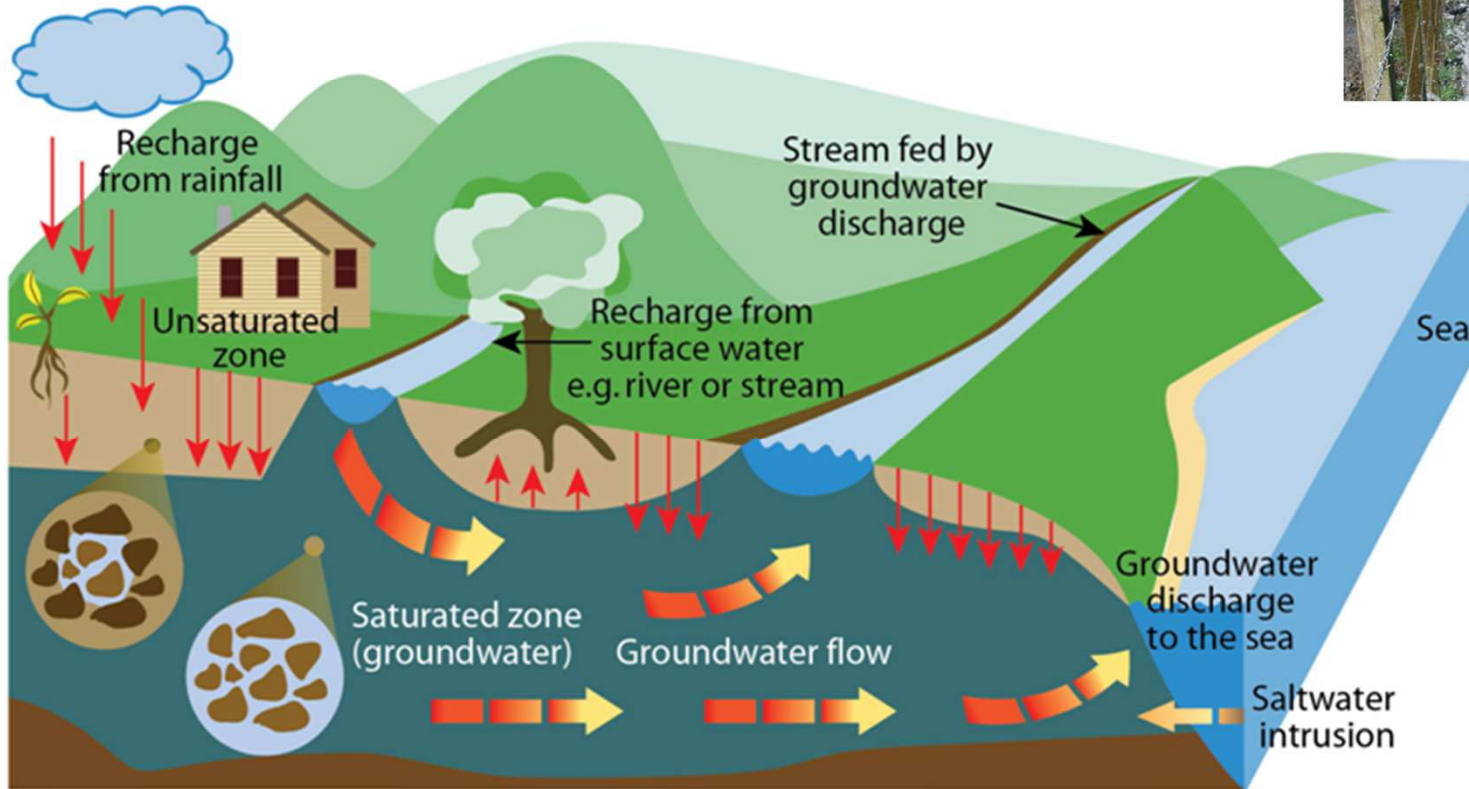
- Some rivers are unsafe to swim in
- Most popular swimming rivers are safe to swim in during dry weather
- Rivers are unsafe to swim in
 - below wastewater discharges
 - after rainfall due to pathogens being washed off farms and urban areas
- Toxic algae affects a number of popular swimming rivers



Groundwater



What is groundwater?

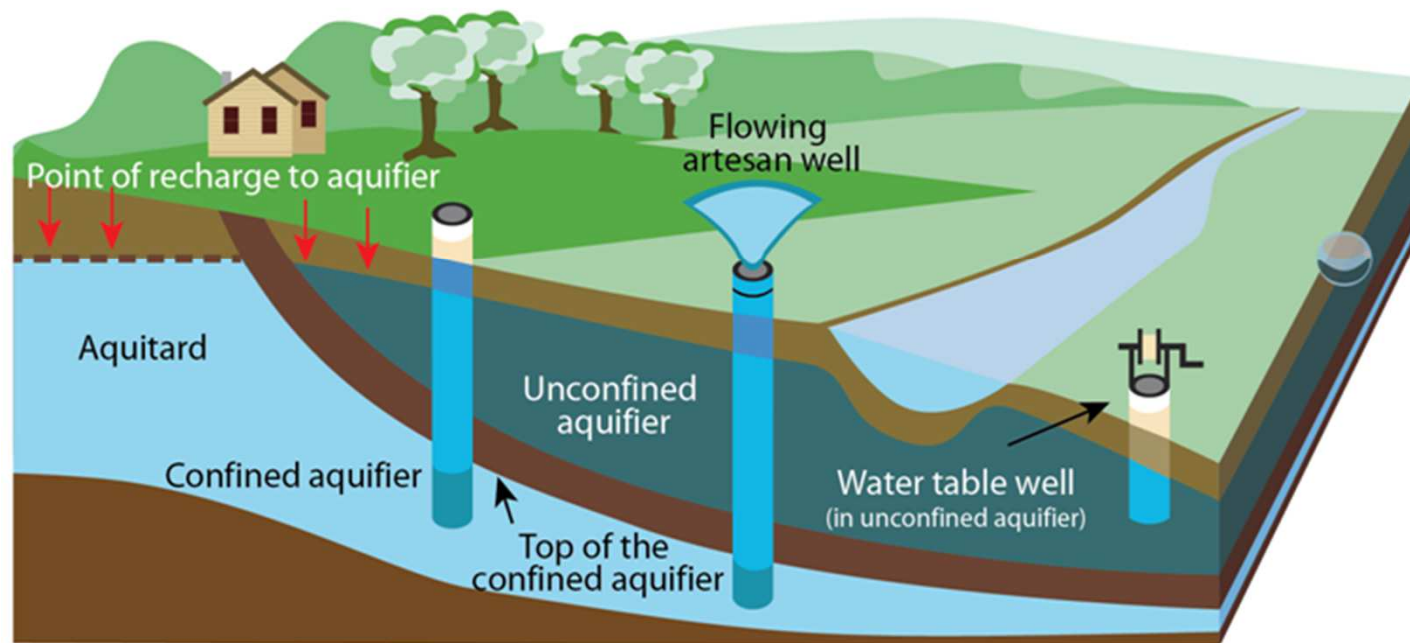


(Source: Environment Canada)



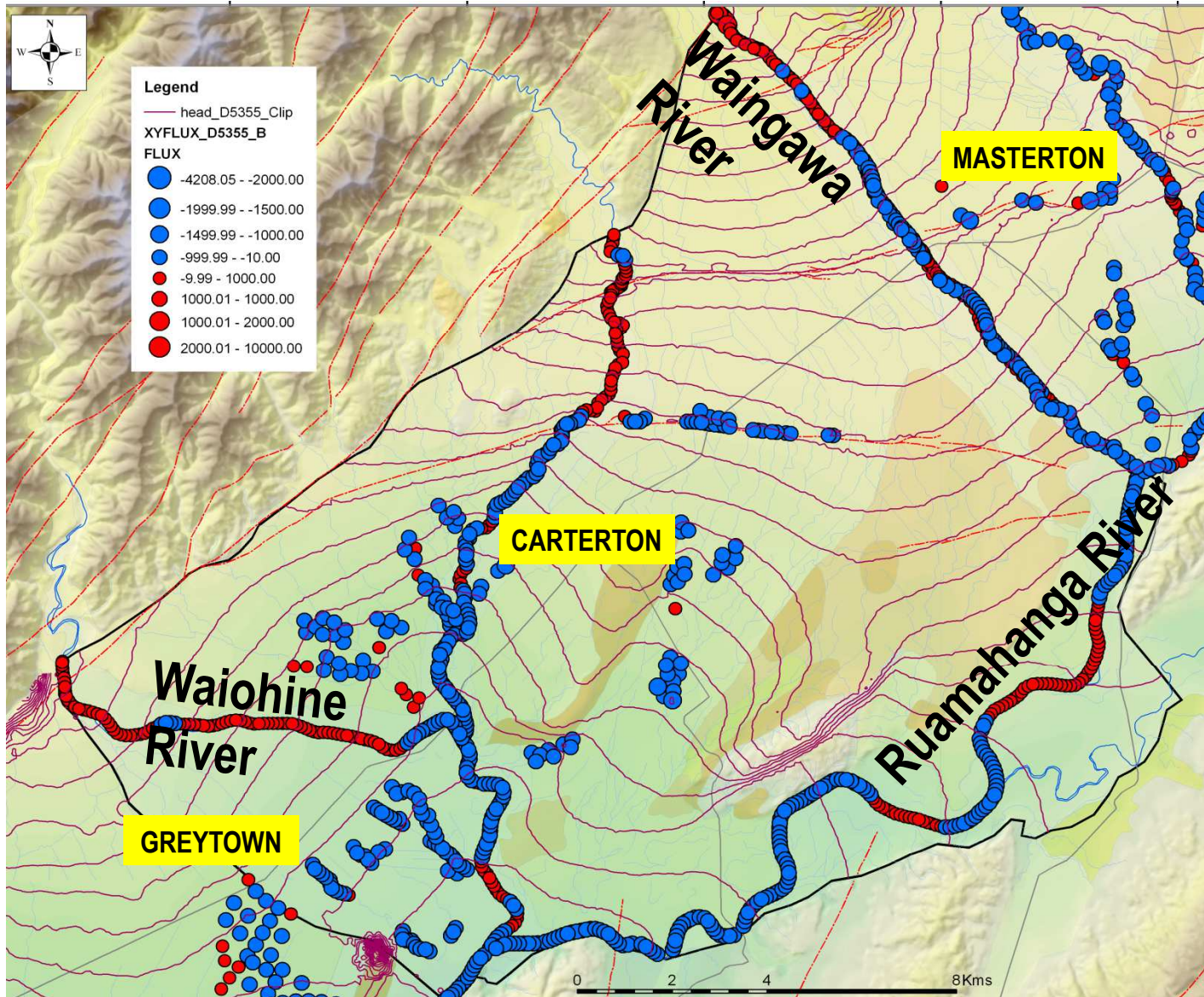
Photo: N Boustead (NIWA)

What is an aquifer?



(Source: Environment Canada)

Groundwater is connected to the rivers



Groundwater quality in the whaitua

- Groundwater quality is generally good for drinking purposes and has not changed significantly
- In some areas:
 - nitrate is elevated (unconfined aquifers)
 - nitrate-rich groundwater is entering rivers and streams
- Caused by intensive land use- past and present



Lake water quality and ecological health



What is lake water quality and ecological health?



Three main lakes...

- **Lake Wairarapa**
 - **Lake Onoke**
 - **Lake Pounui**
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- Shallow lowland coastal lakes
 - Wairarapa and Onoke significantly modified by LWVD scheme
 - Pounui unusual in NZ in that its catchment is largely unmodified

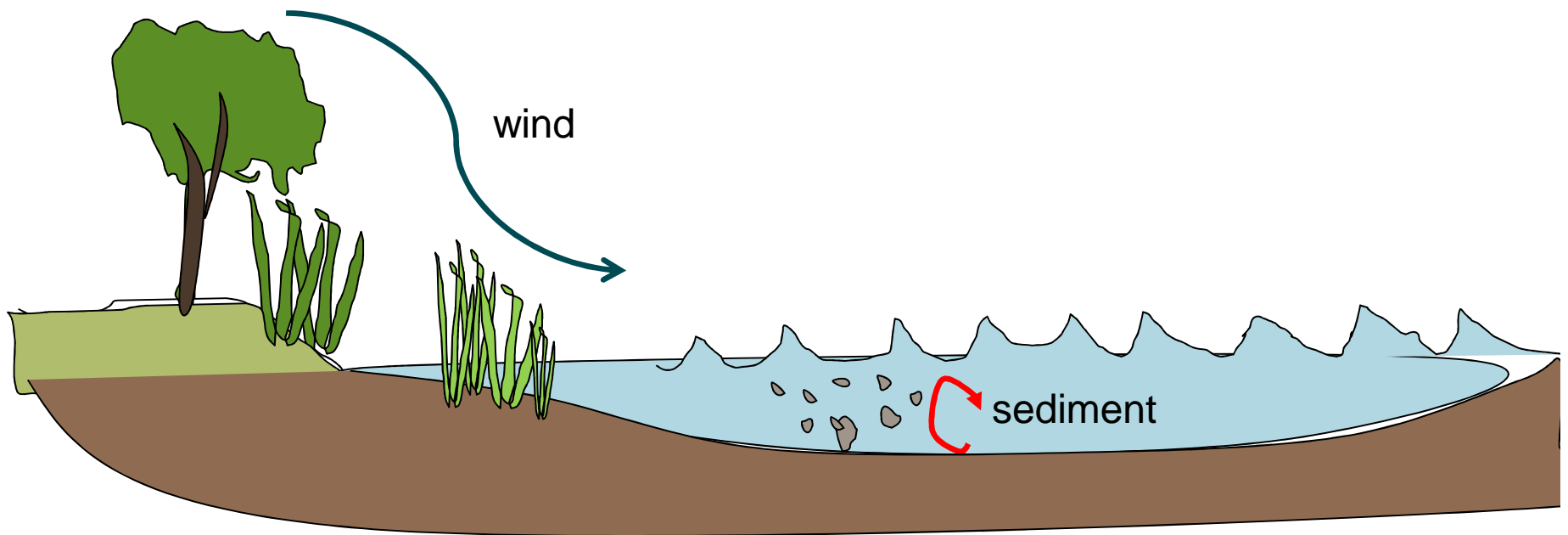






Key drivers...

- Wairarapa and Onoke:
 - Largely pastoral catchments
 - Shallow and wind/waves re-suspend sediments
 - Tidal water
- Pounui
 - Largely unmodified forest catchment



Sediment suspension in a shallow lake

Lake Wairarapa

- High nutrients, poor water clarity and lots of algae
- Relatively stable since 1994
- Sink - a store of nutrients in lakebed sediments

Lake Onoke

- High nutrients, poor water clarity and, at times, lots of algae
- More of an estuary than lake

Lake Pounui

- Aquatic plants indicate high ecological condition
- Aquatic plant community stable for the last 30/40 years
- Water quality?

