

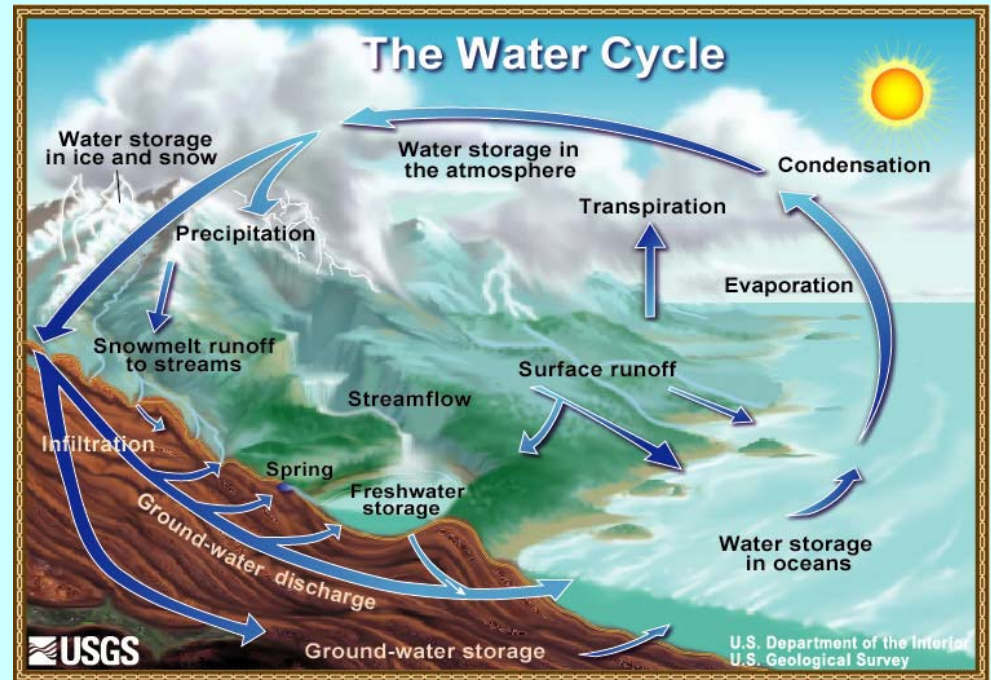
# BASIC CONCEPTS OF GROUND WATER FLOW

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# HOW DOES WATER GET INTO THE GROUND, STAY THERE, AND MOVE AROUND?

- Ground water is part of the hydrologic cycle.
- Rather than “staying there”, it too is constantly moving, generally from higher ground to lower ground.



# How Does Ground Water Get Into the Ground?

- When rain falls or snow melts, the water begins to flow from high ground to lower ground due to the force of gravity as **surface runoff**.
- Some of the rain and snowmelt also soaks into pores (open holes) in sediments, and pores and cracks (fractures, faults) in rocks. This process is referred to as **Infiltration**. *The rain and snowmelt infiltrates into the ground due to the force of gravity.*

# What Controls Ground Water Movement?

- Ground water flows from one point to the other due to the combined forces of **gravity and pressure**.
- It can flow up, down, or sideways.
- Think of going to the Superbowl!

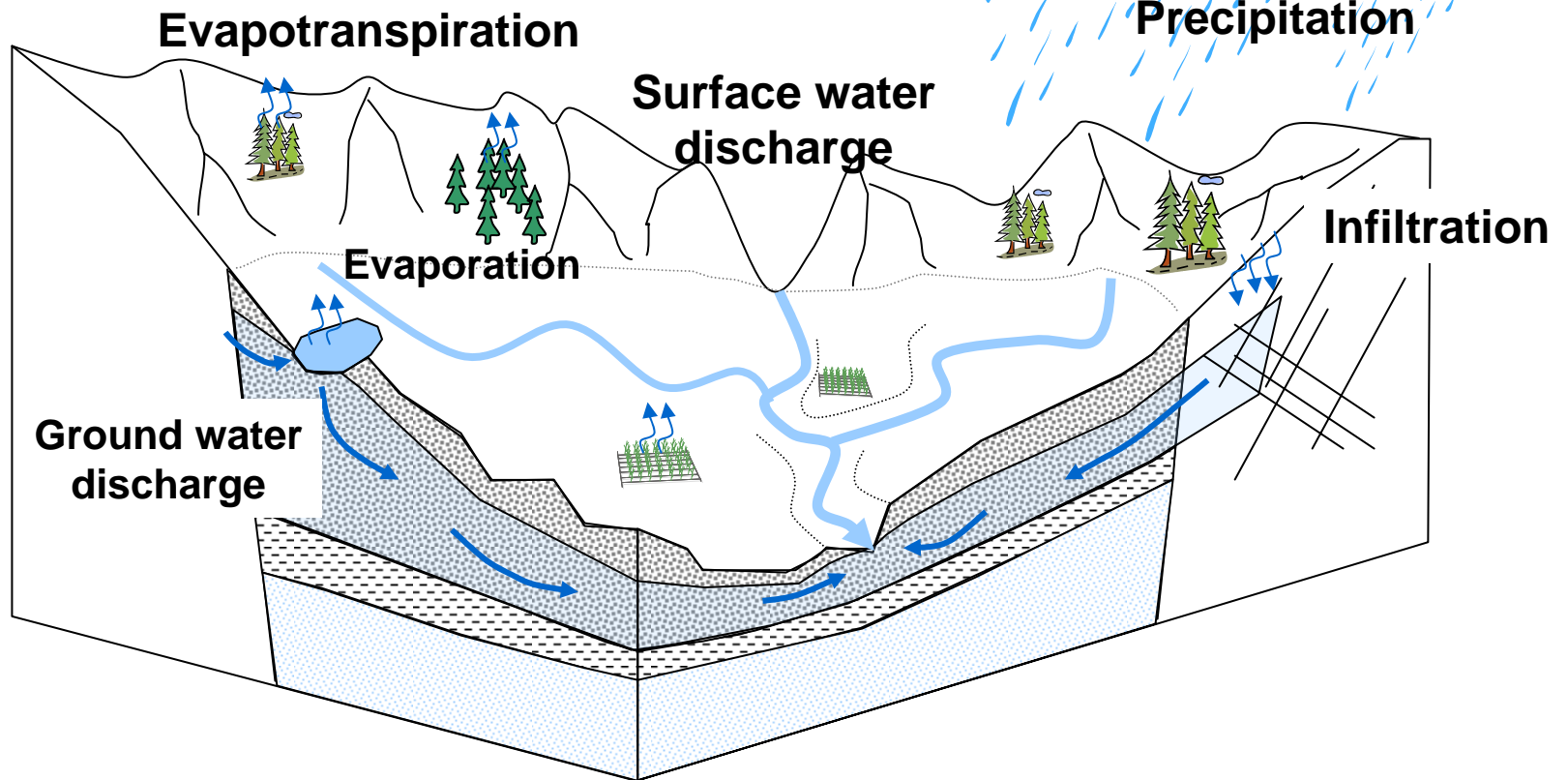
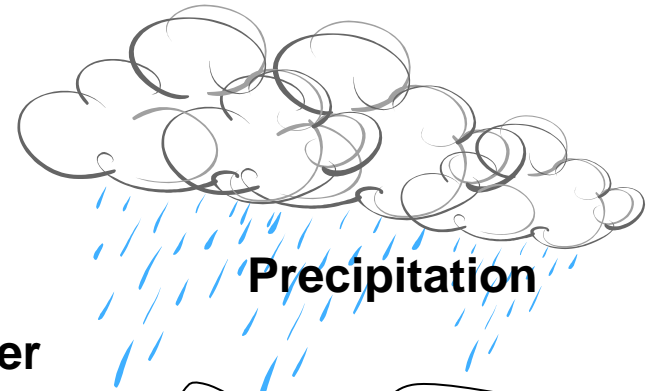


# Ground Water Moves Through Aquifers

- **Aquifer:** A permeable geologic unit that can transmit and store significant quantities of water.
- **Aquifer Types:** There are two basic types of aquifers, **unconfined** and **confined**.



# How Does Ground Water Connect with Surface Water?



# The Concept of Base Flow

- Storm water and snow melt contribute flow to streams and rivers via overland flow.
- Streams and rivers also receive flow from discharging ground water, referred to as “Base Flow”.



Base Flow in Sypes Creek



# How is Ground Water Affected by Human Activities?

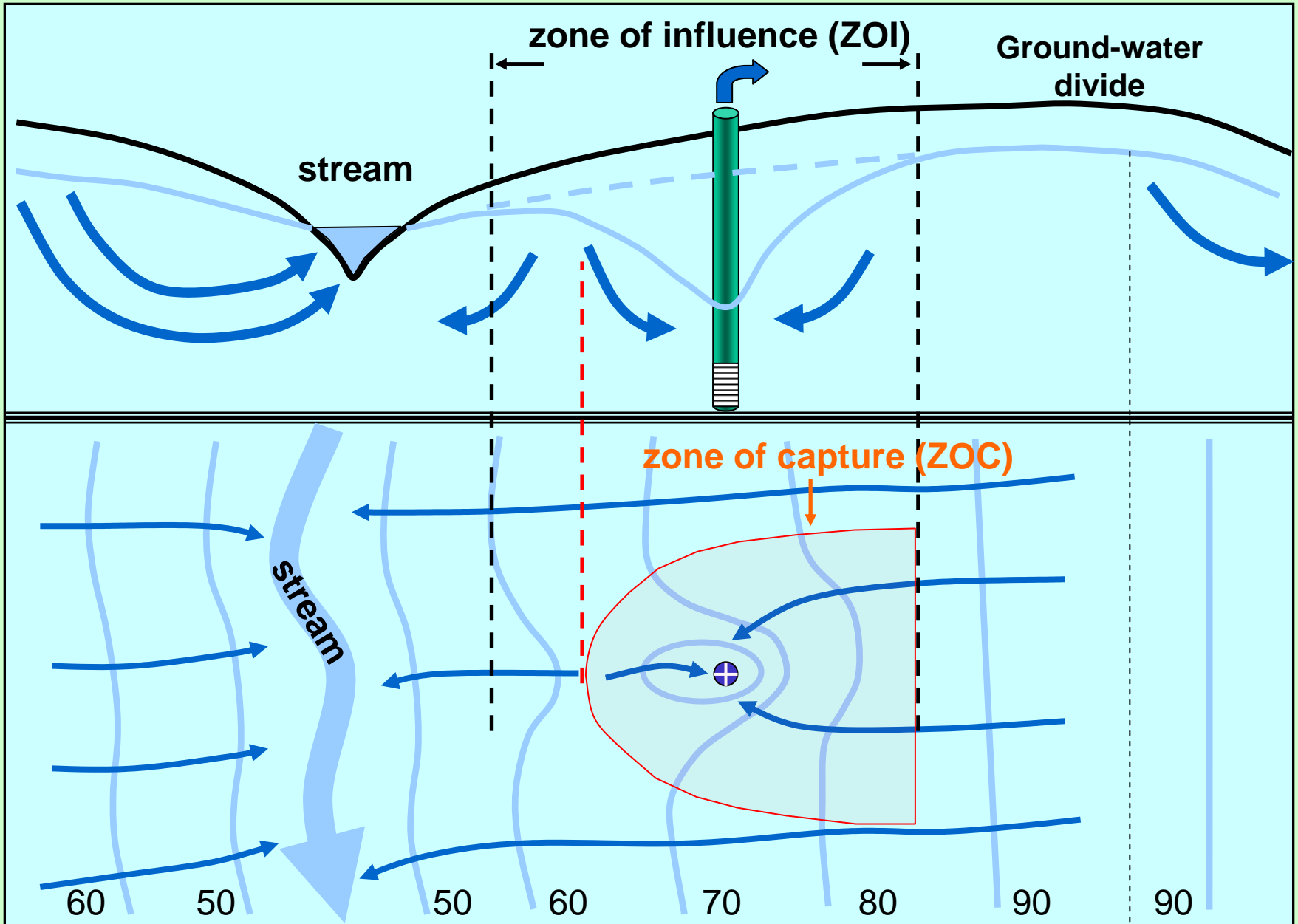
- Ground water pumping can lower ground water tables and decrease the amount of ground water that discharges to surface water features.
- Ground water pumping is often referred to as ground water capture.

# Ground Water Capture

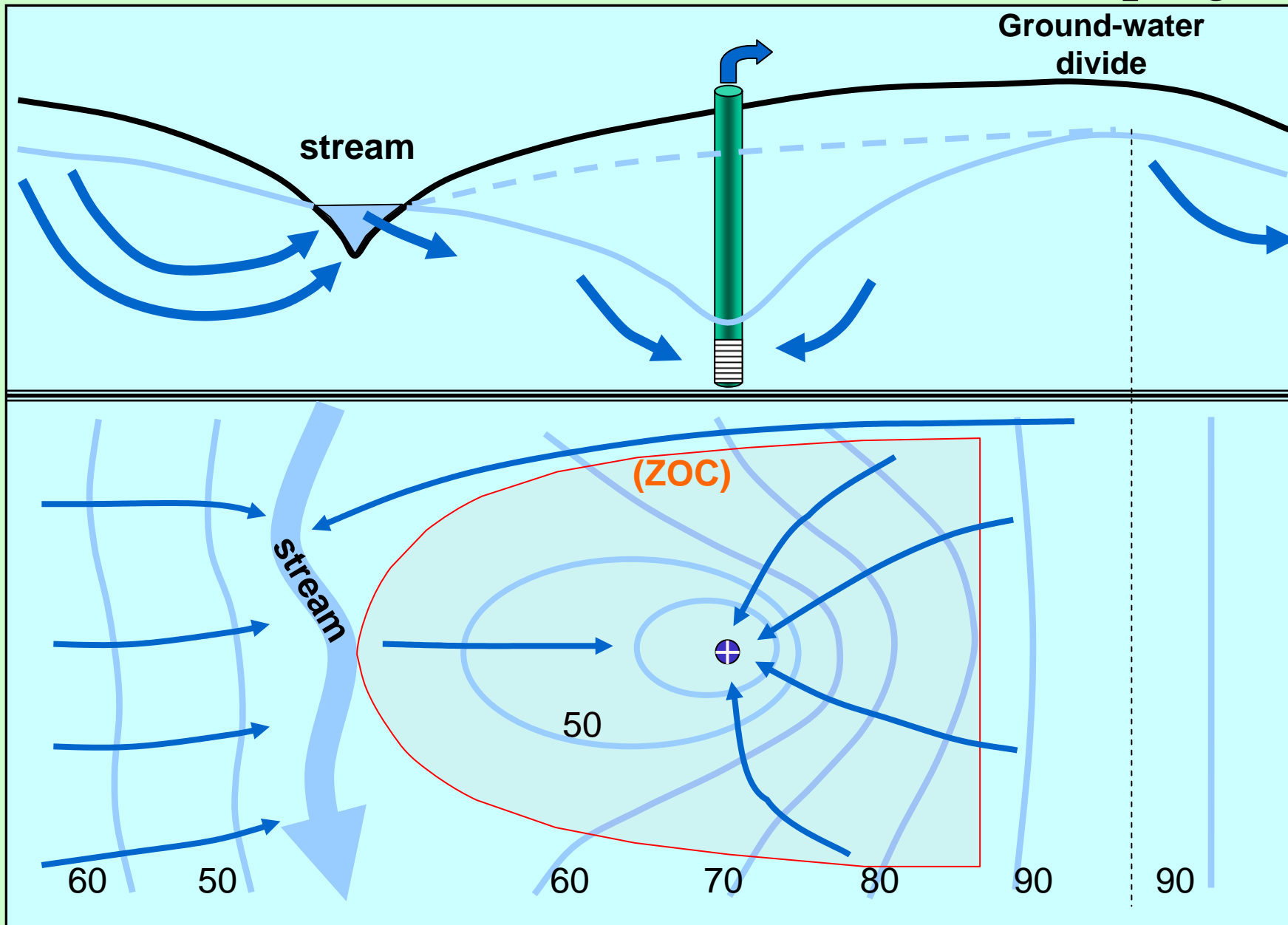


There is no free lunch

# Ground-Water Capture by a Pumping Well



# Ground-Water Flow With Increased Pumping



# Why is Ground Water Quality Important?

- If we contaminate our ground water supplies to the point they are no longer usable, it doesn't matter how much we have, we have no water to drink!
- Since ground water discharges to surface waters, contaminated ground water means contaminated rivers, streams, springs and lakes!