

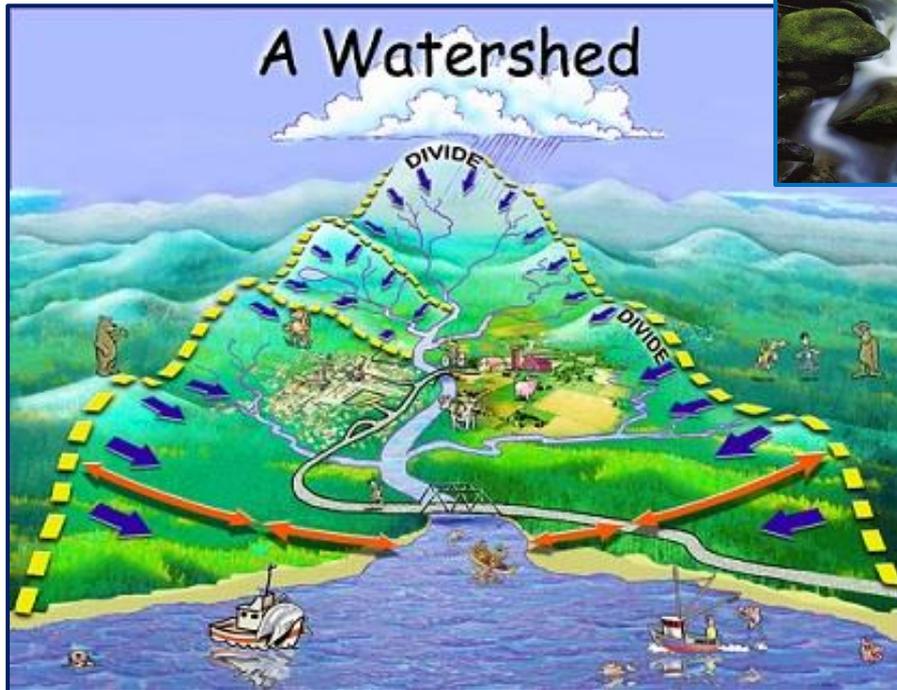
THE HYDROSPHERE



PART 2

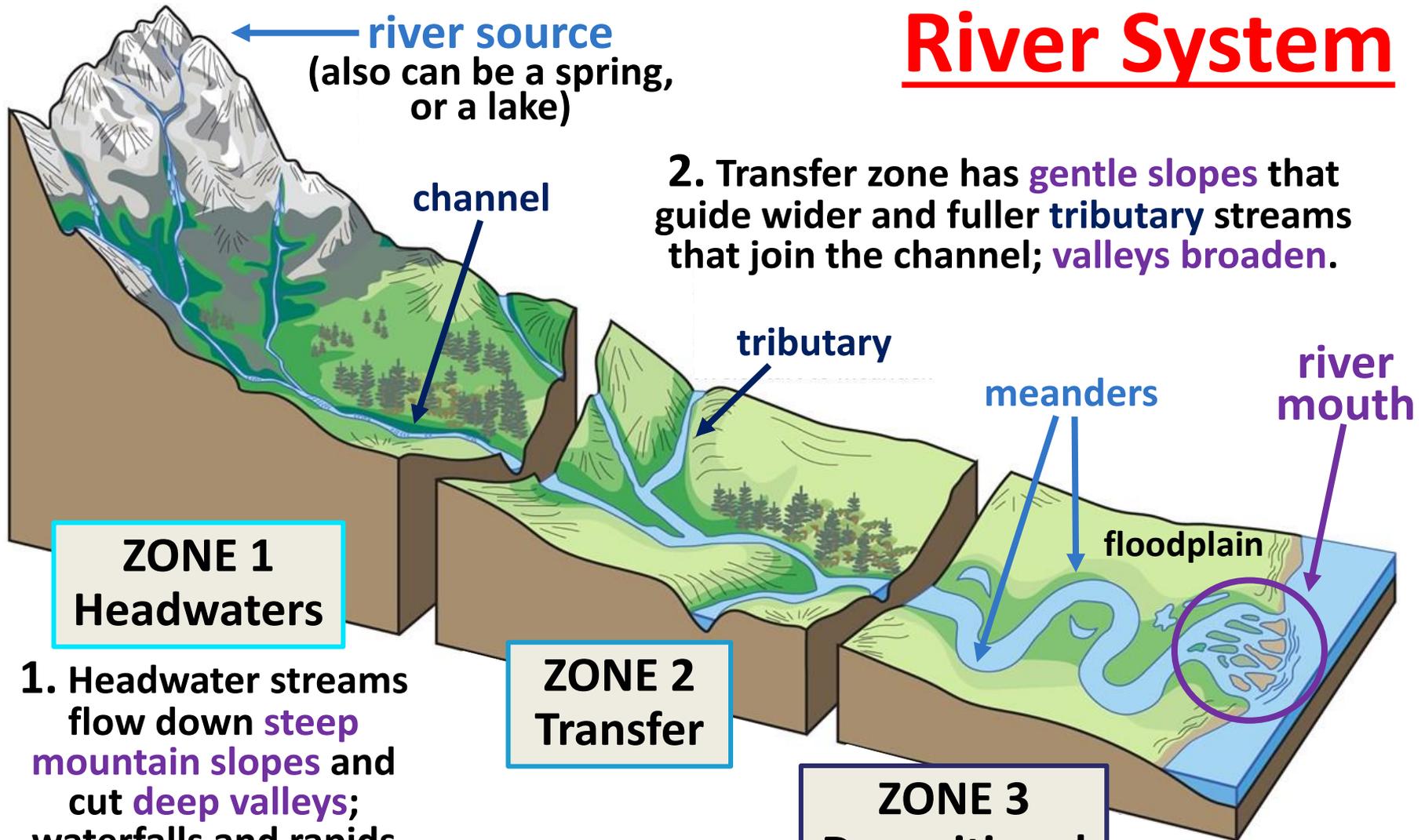
Surface Runoff

- A **river** is a large channel along which water is continually flowing down a slope; it is made of many *streams* (smaller channels) that come together; streams, in turn, are made of small *gullies*.



- A **watershed** is an area that drains into a smaller river or stream.
- A **River Basin** is an area that *drains into a large river*; larger river basins of the world consist of multiple interconnected watersheds.

River System



2. Transfer zone has gentle slopes that guide wider and fuller tributary streams that join the channel; valleys broaden.

1. Headwater streams flow down steep mountain slopes and cut deep valleys; waterfalls and rapids occur in this zone; streams come together to form main channel.

3. River meanders across a broad, nearly flat valley and floodplain; at the mouth, it may divide into separate channels or form a delta.

Longest River: Nile, Africa

The **Nile River** is ~6,650 km (~4,130 miles) long, generally considered the **longest in the world**; it is located in northeastern Africa and flows into the Mediterranean Sea. The drainage basin of the Nile covers about 10% of the area of Africa.



The **Nile Delta**, where the river spreads out and drains into the Mediterranean Sea, is **one of the world's largest river deltas** covering 240 km (150 mi) of the coastline - and is a rich agricultural region. The Nile has been the lifeline of civilization in Egypt since the Stone Age.

Largest Rivers in the USA

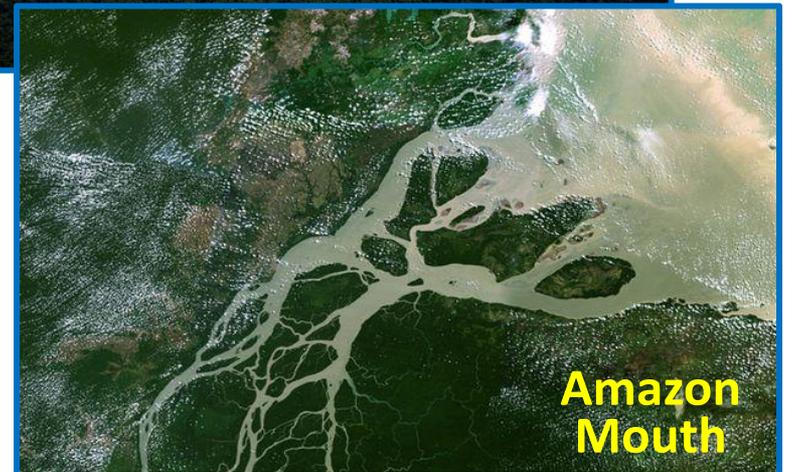
Mississippi: 2,340 mi (3,770 km)

Missouri: 2,540 mi (4,090 km)



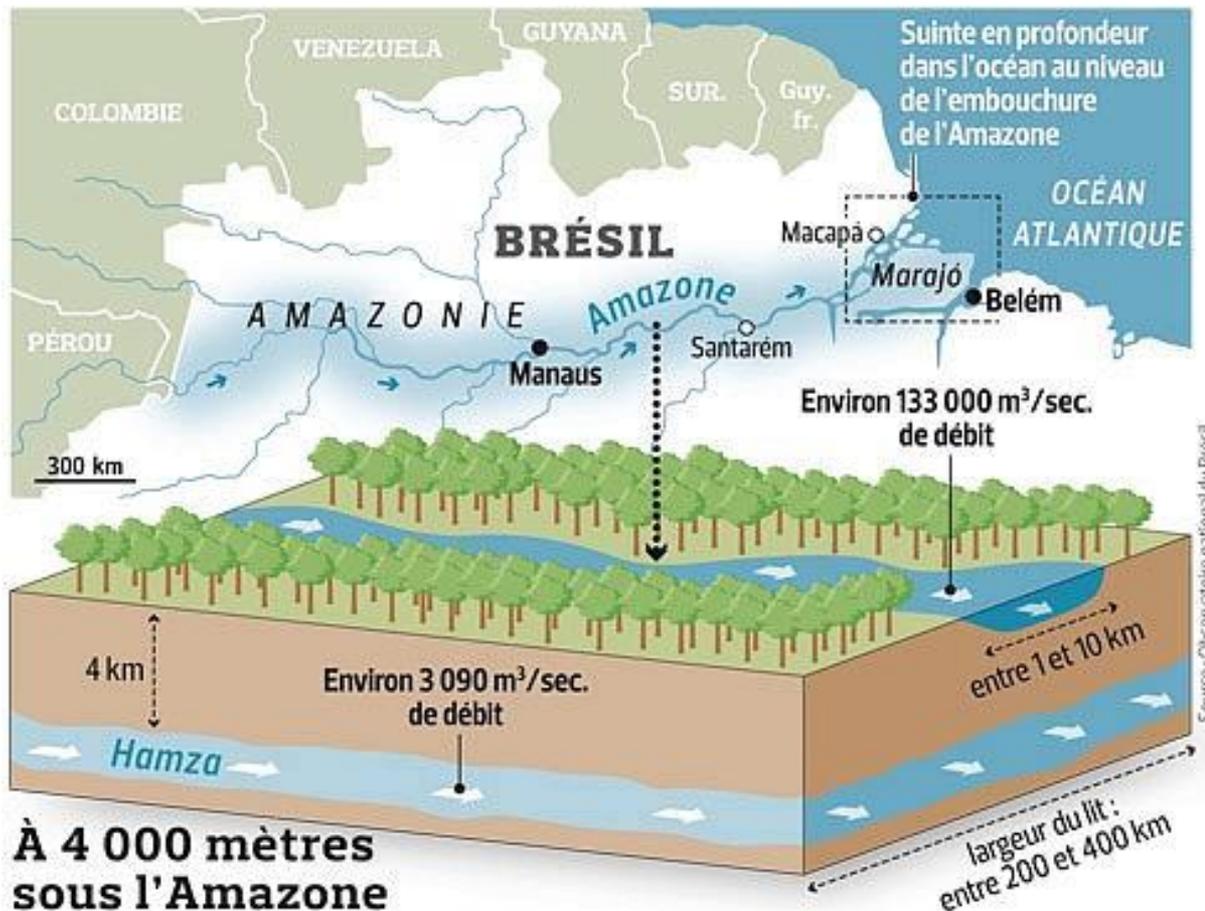
Amazon River Basin

The **Amazon River** in South America is the **largest river by the discharge of water** and also the **second longest river** in the world (~6400 km). The **Amazon Basin**, the **largest drainage basin** in the world, covers about 40% of South America, an area of approximately 7,050,000 km² (2,720,000 sq mi). It drains from west to east, flowing into the Atlantic Ocean.



Rio (River) Hamza *(slowly flowing aquifer)*

The Amazon River has an **underground “twin sister”** named **Hamza** (*discovered in 2011*)! It runs for a length of 6,000 km (3,700 mi) at a depth of nearly 4,000 m (13,000 feet).



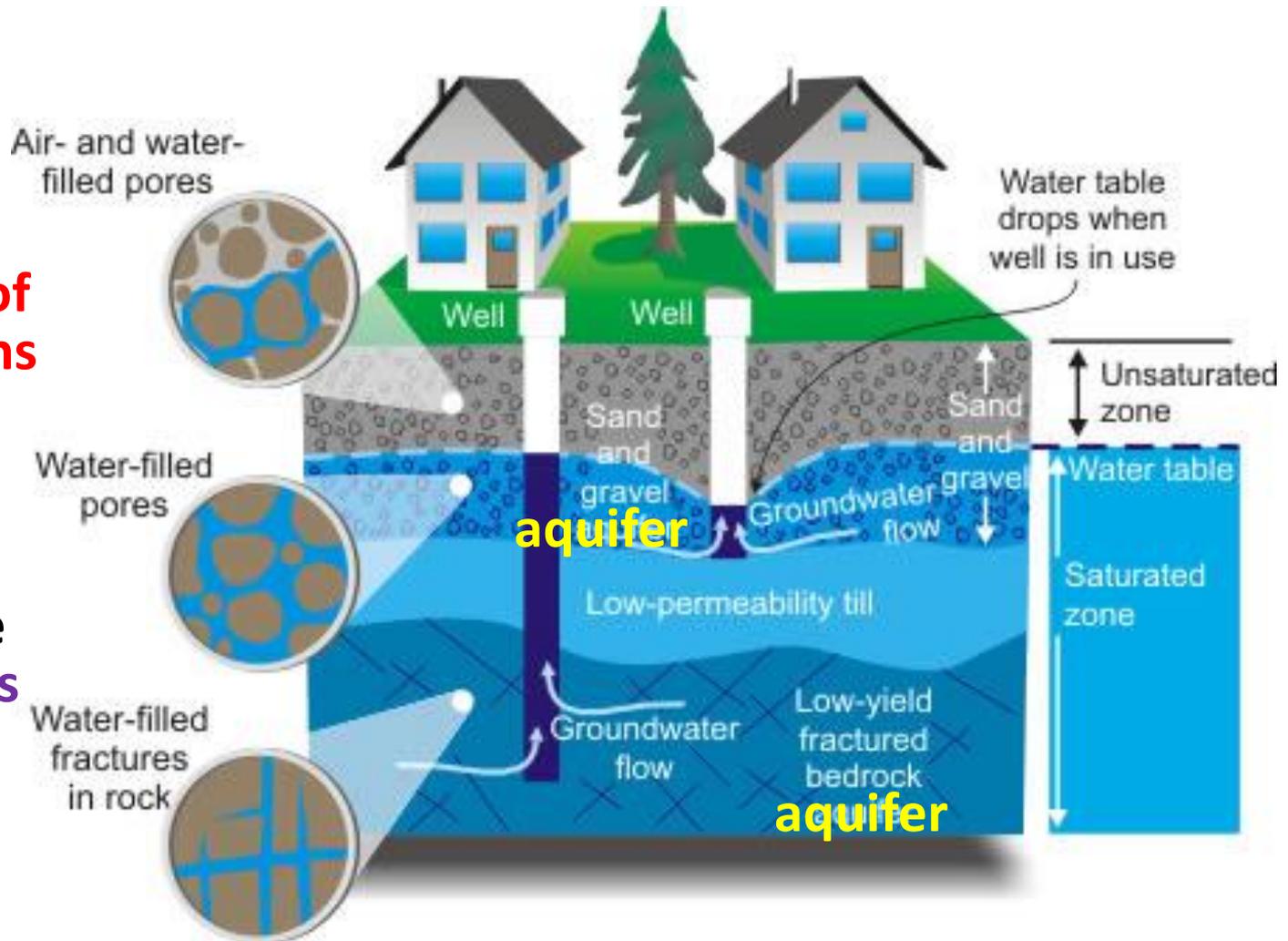
Except for the flow direction, the rivers have very different characteristics:

- **flow speed** - it is **5 m/s (16 feet/s)** in the Amazon and **less than 1 mm/s (0.039 in/s)** in the Hamza
- **width** - the Amazon is **1 km (0.62 mi) to 100 km (62 mi)** wide, the Hamza is **200 km (120 mi) to 400 km (250 mi)**, much wider

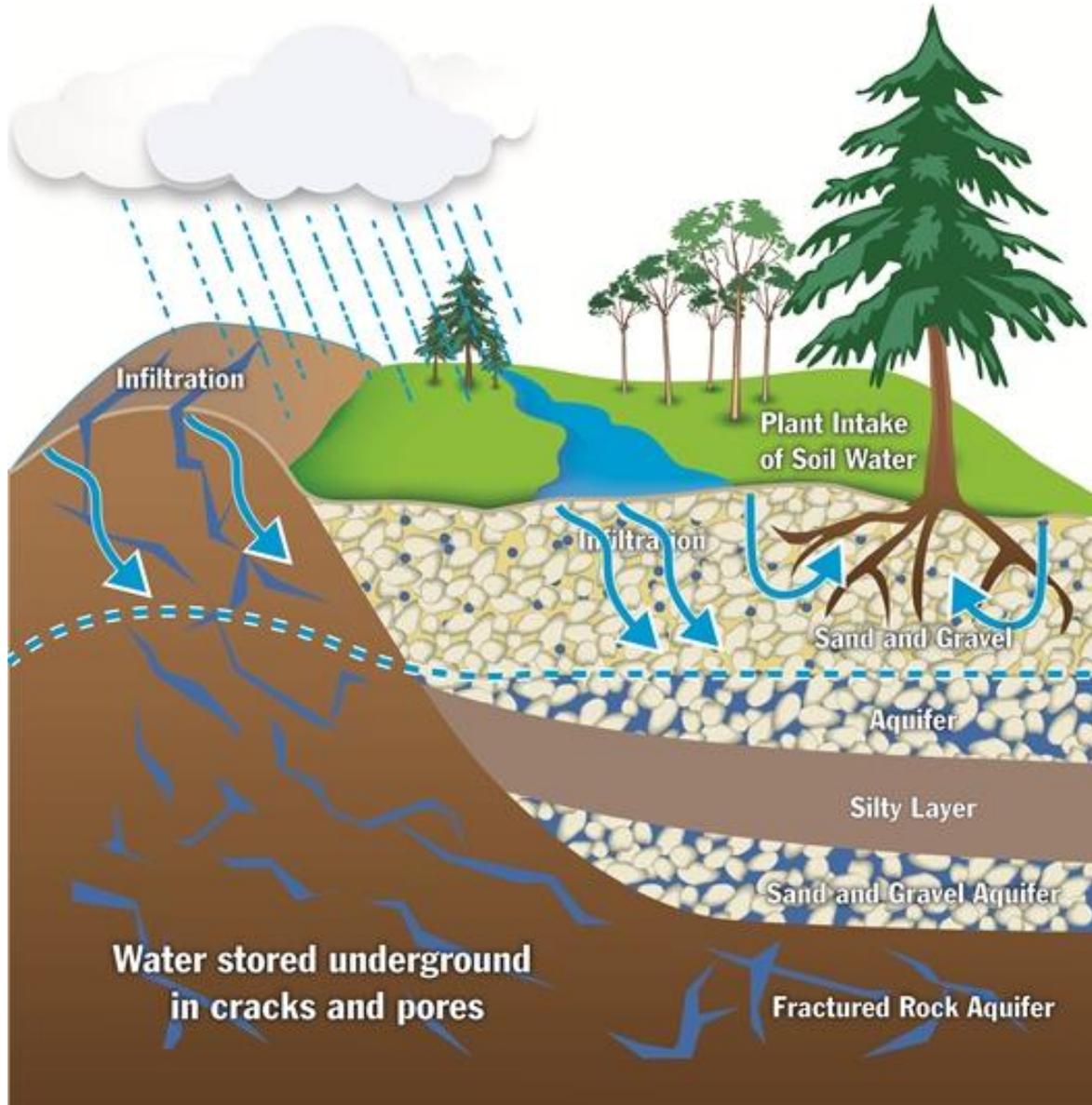
Groundwater Aquifer

Aquifer is an underground sand/gravel or rock layer that stores water and allows water to flow through it.

- **Drinking water supply.**
- About **half of all Americans** get *most* of their water from wells.
- Aquifers are **Long Island's only source** of potable water.



Groundwater



About **1/3** of **all freshwater** on the planet is found underground.

Part air part water
unsaturated zone



Water table



Saturated zone: water fills all pores and cracks