

WATER EROSION AND DEPOSITION

Surface Water
Ground Water
Ocean Shoreline

SECTION 1: SURFACE WATER

Objective:

1. Identify the causes of runoff
2. Compare rill, gully, sheet and stream erosion
3. Identify three different stages of stream development
4. Explain how alluvial fans and deltas forms



I. RUNOFF

The rainwater that does not soak into the ground or evaporate.



A. FACTORS AFFECTING RUNOFF

1. **The amount of rain**
 - light rain vs. heavy rain
2. **The length of time it is raining** - soaking time
3. **Steepness of slope**
 - gentle slope vs. steep slope
4. **vegetation** - plants vs. no plants



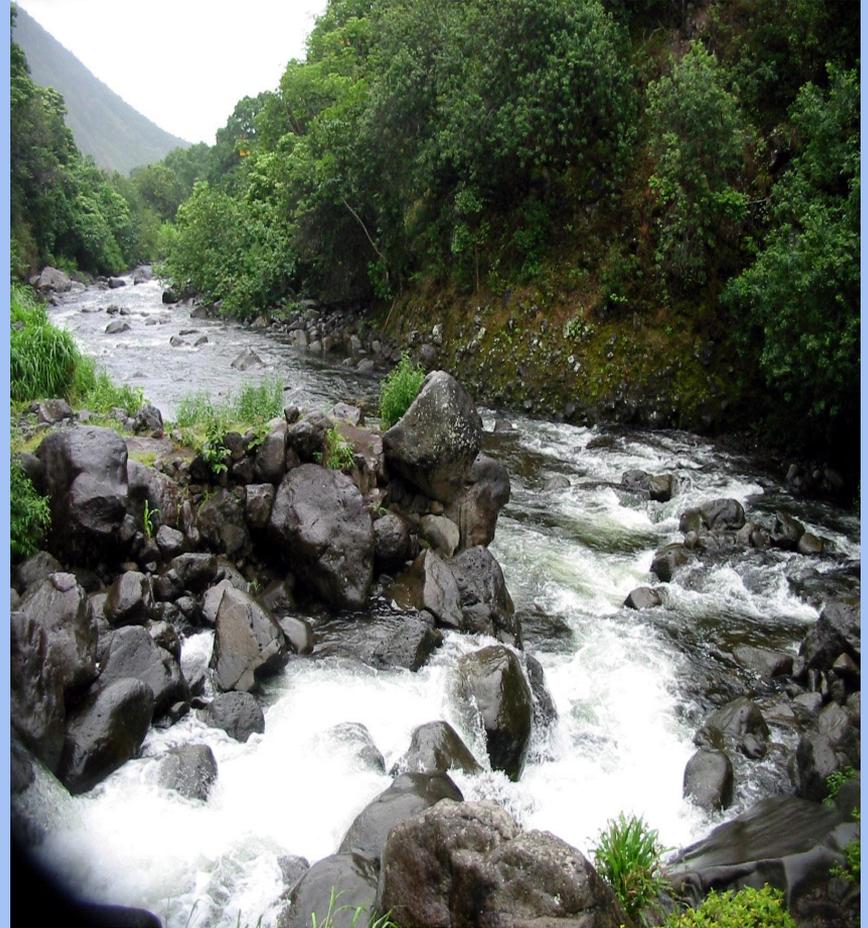


B. EFFECTS OF GRAVITY

Gravity:

The attraction force all objects have for one another

Gravity pulls water toward the Earth. As the water moves, it builds energy and erodes the surrounding rock and soil.



II. WATER EROSION

Erosion

The movement of soil and rock from one place to another



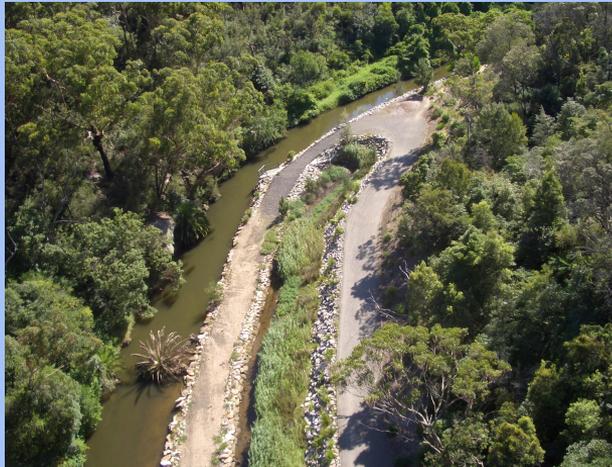
A. RILL AND GULLY EROSION

Rill erosion

occurs after heavy rains small streams form and erode the land.



Gullies form when rills become broader and deeper



RILL TO GULLY



B. SHEET EROSION

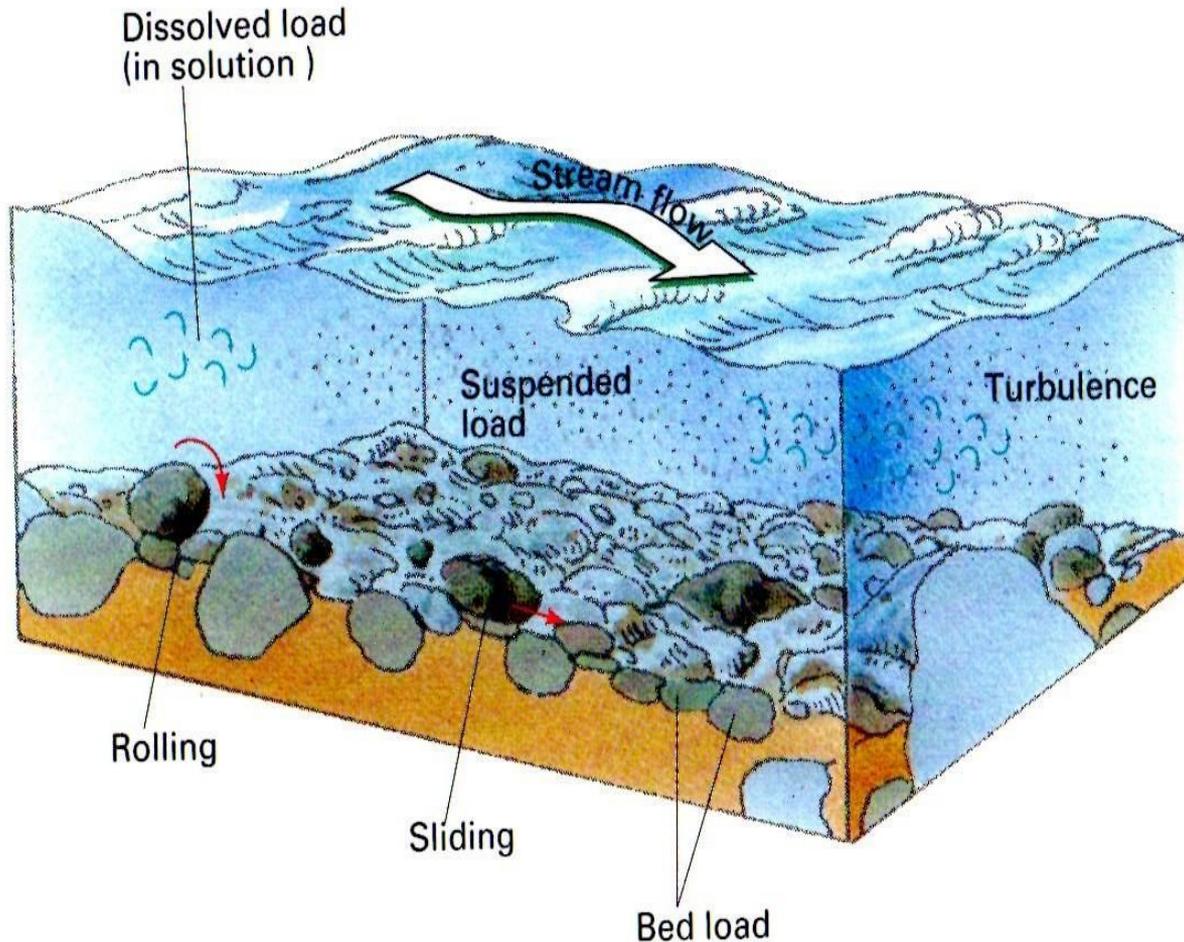
occurs when water that is flowing as sheets, over a flat area and picks up and carries away sediment



C. STREAM EROSION

When a stream forms, the water continues to pick up sediments from the bottom and the sides of the channel.





Load: The sediment that a stream carries

suspended load: lightweight sediments

Bed load: heavy sediment

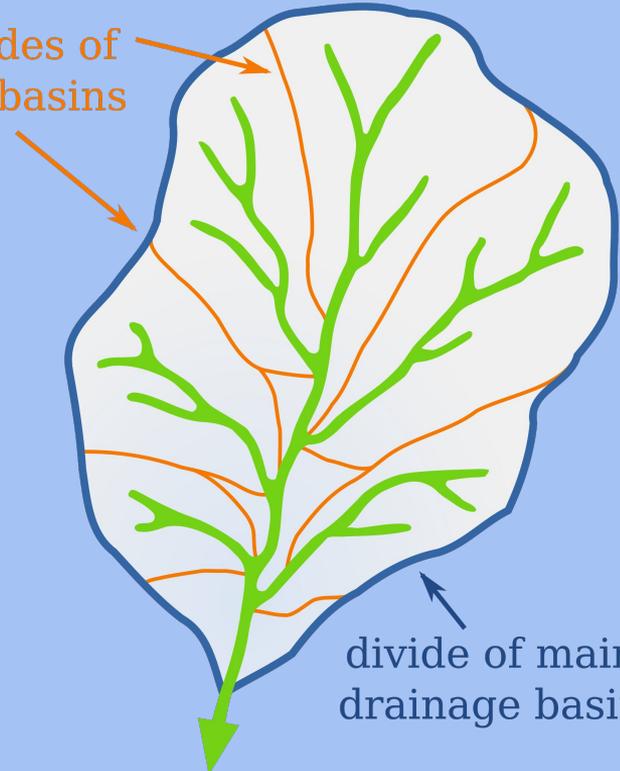
Solution: dissolved sediment

III. RIVER SYSTEM DEVELOPMENT

River systems vs. Drainage Basins



divides of sub-basins



divide of main drainage basin

A. RIVER SYSTEM

Water from rills, gullies and small streams located upstream flow into larger streams which flow into rivers.



B. DRAINAGE BASINS

the area of land from which a stream or river collects runoff.

The largest drainage basin in the US is the Mississippi River Drainage Basin.



DRAINAGE BASINS AND RIVER SYSTEMS



IV. STAGES OF STREAM DEVELOPMENT



Young

Mature

Old



A. YOUNG STREAM

- The beginning
- flows swiftly through a steep valley
- may have white rapids and waterfalls
- high level of energy
- erodes at the bottom



B. MATURE STREAM

- flows more smoothly
- on nearly level ground
- larger rocks have eroded
- erosion occurs on the sides
- meanders are present
 - a broad bend or arch in a stream

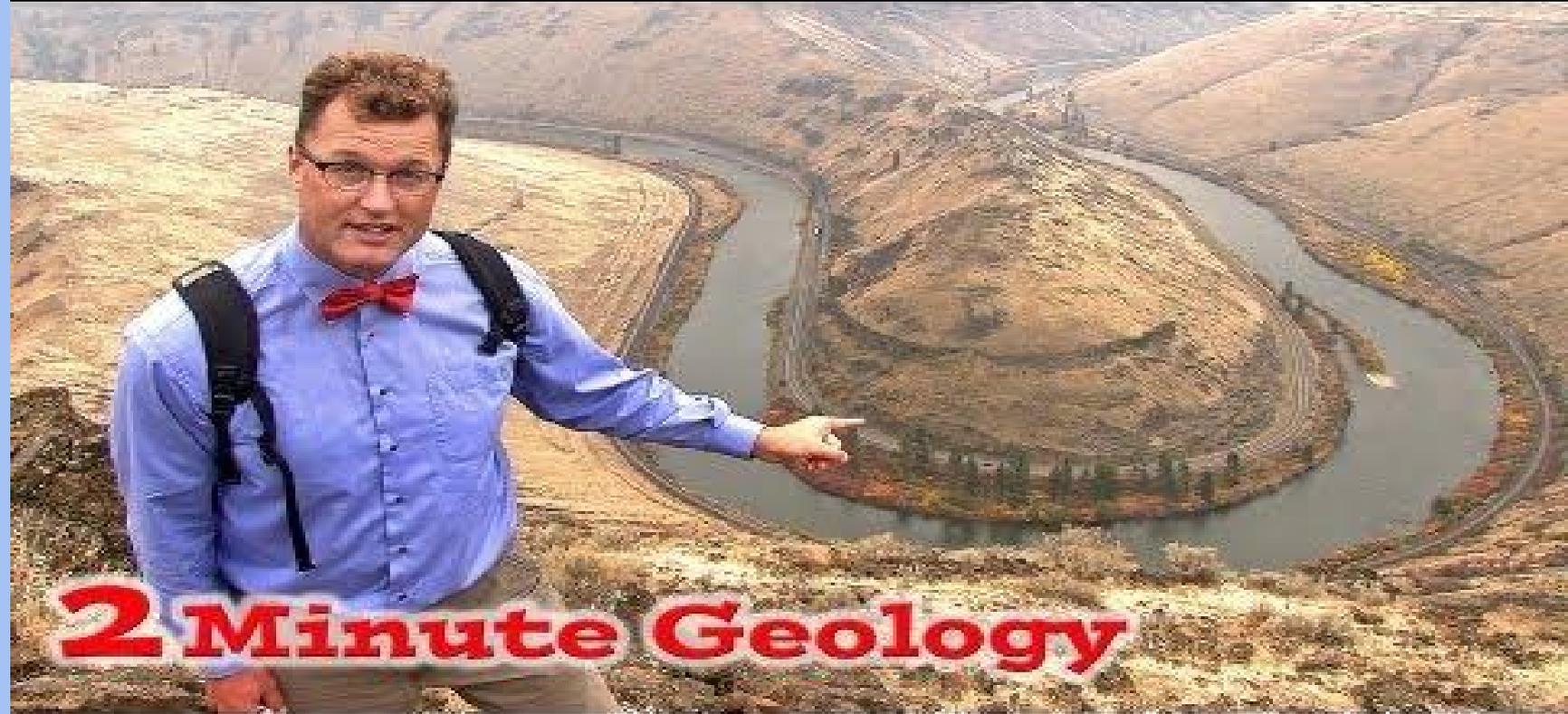


C. OLD STREAM

- flows slowly through floodplains
- broad



MEANDER



2 Minute Geology

V. TOO MUCH WATER

- flooding
- A dam is built to prevent water flow downstream
- Levees are mounds of earth that are built along the sides of a river

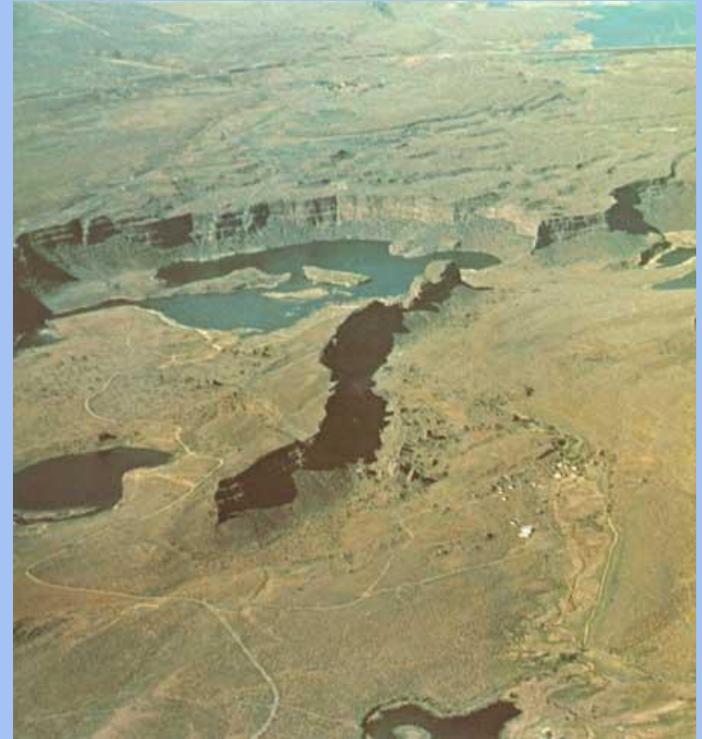
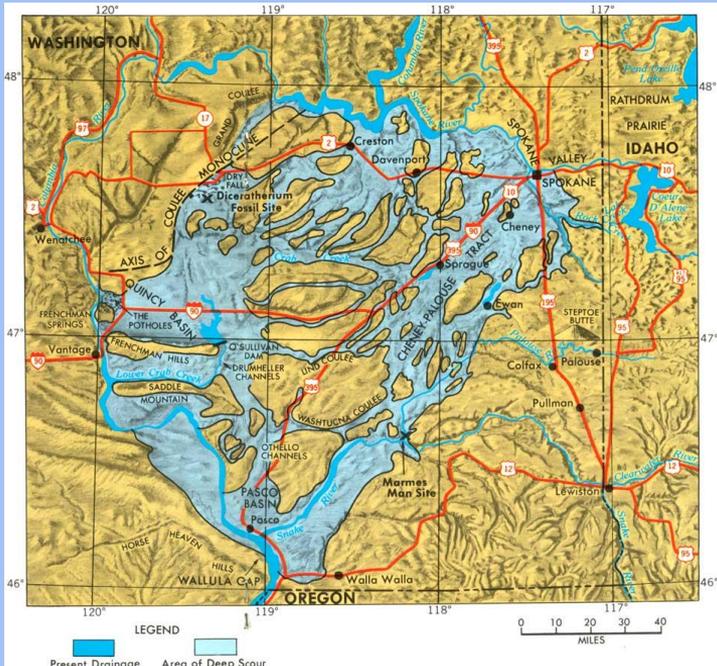


An aerial photograph showing a large, multi-story house partially submerged in floodwaters. The house is surrounded by trees and a lawn, with the water level reaching up to the second floor in some areas. The sky is overcast.

THE GREAT
FLOOD
OF '93

A. CATASTROPHIC FLOODS

Floods that cause a lot of damage - The Channeled Scablands
- formed when Lake Missoula drained





VI. DEPOSITION BY SURFACE WATER

Deposition

the dropping of sediment when an agent of erosion loses energy



DELTA

Sediment that is deposited as water empties into an ocean or lake forms a triangular, or fan-shaped deposit called a delta.

NILE DELTA





ALLUVIAL FAN

An alluvial fan is made by sediments being dropped as a river flows on a level surface and slows down.



