Erosion & Deposition

ESPQS 217

Warm-up

Weathering breaks and makes it.

Erosion takes it.

Deposition drops it.

What is it?

Sediment!

Name:_____

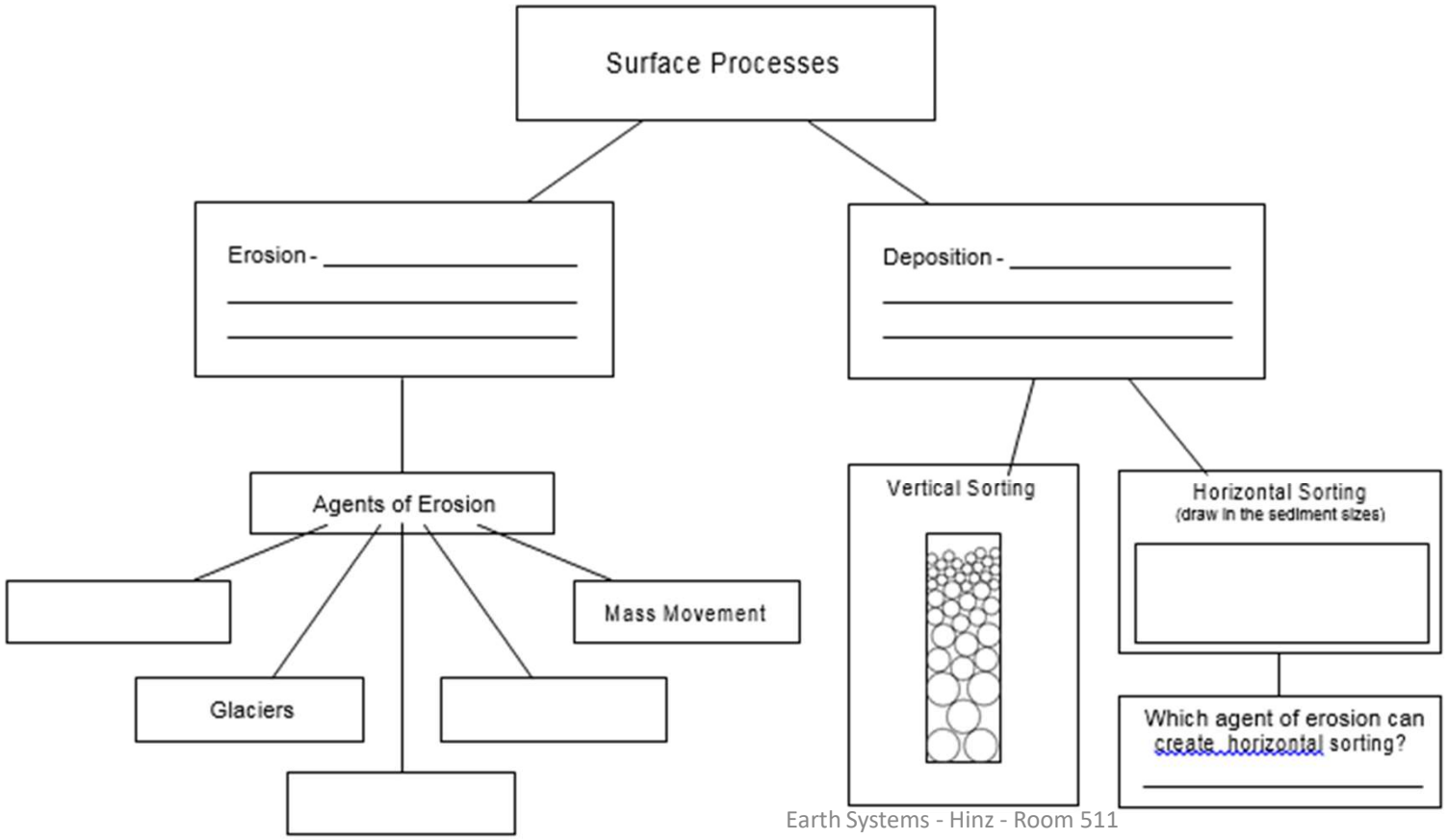
Date:_____Period: _____

Surface Processes

The Physical Setting: Earth Science

Resource 4V

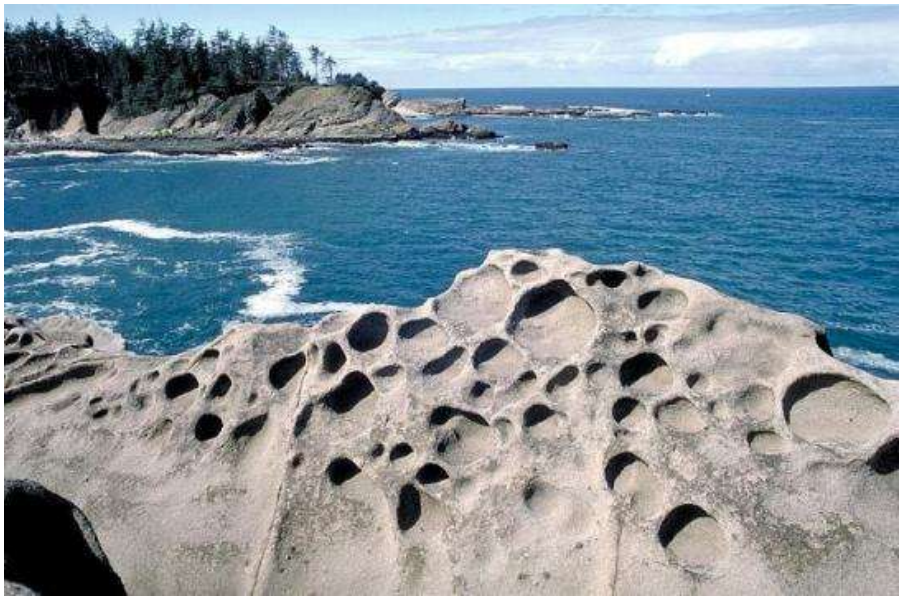
Erosion and Deposition



Weathering versus Erosion

Weathering:

<u>Breaks</u> down rocks & soil…



https://www.americangeosciences.org/education/k5geosource/content/rocks/what-is-weathering

Erosion:

<u>Takes</u> weathered material away…

https://en.wikipedia.org/wiki/Soil_erosion

Key Terms

- Weathering:

Weathering is the process where rock is dissolved, worn away or broken down into smaller and smaller pieces.

- Erosion:

Erosion happens when rocks and sediments are picked up and moved to another place by ice, water, wind or gravity

Agents of Erosion

Ice / Glaciers

Waves (Water)

Mass Movement (Gravity)

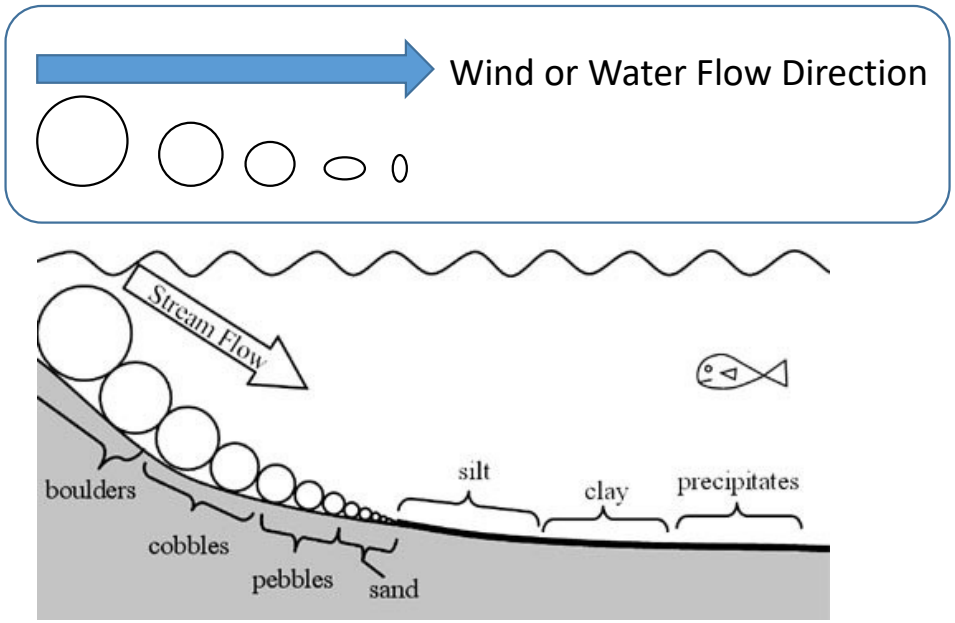
Wind

Streams (Water)

Deposition - Occurs where the agents of erosion lay down the sediment. (Drop it off)

Vertical Sorting (Water only)

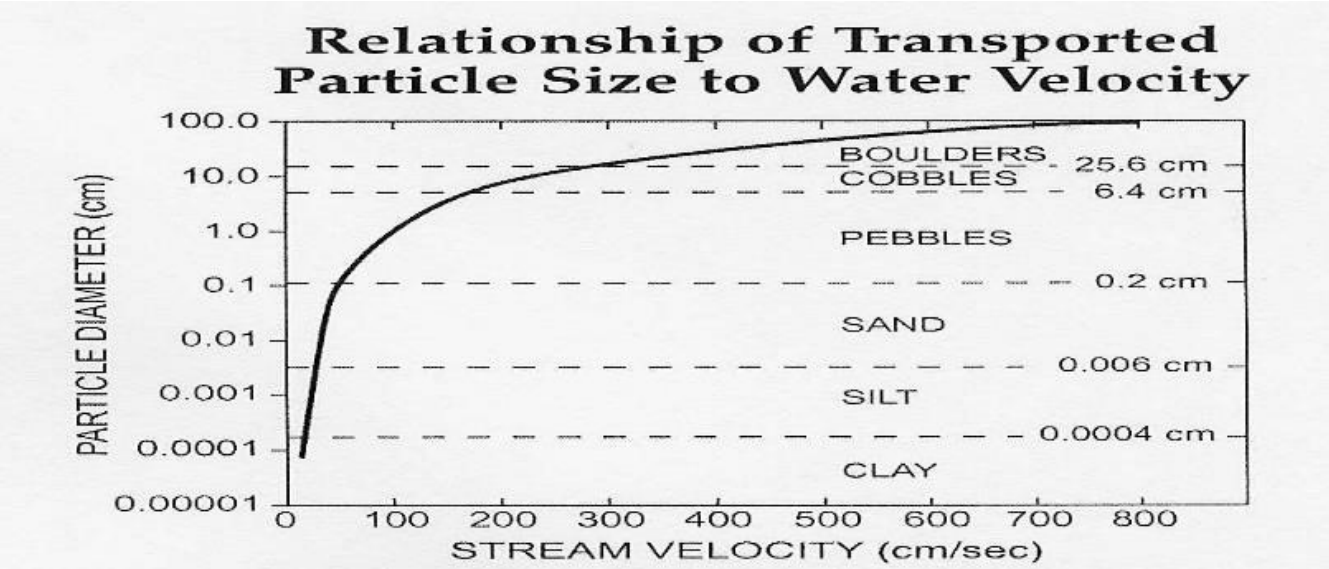
Horizontal Sorting (Water and Wind)



If its not Vertically or Horizontally Sorted, its “UN”-sorted!

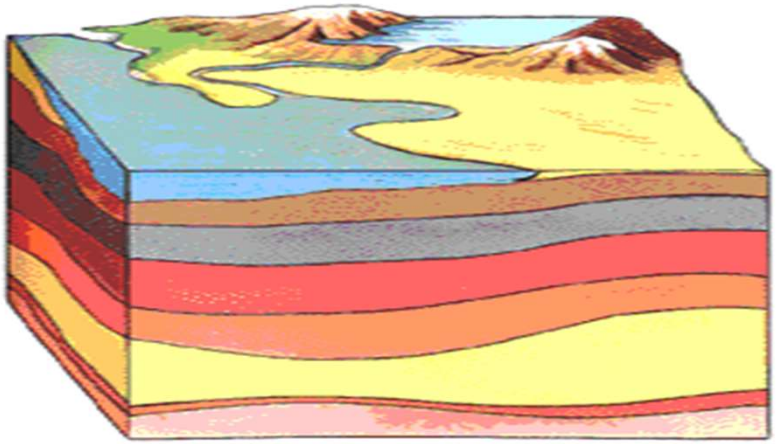
There are 4 basic products of weathering, that can be eroded:

1. **Soils**
2. **Solid Sediments (boulders, cobbles, pebbles, sand, silt)**
3. **Colloids/Clay Particles (not visible to your eye)**
4. **Ions (very small electrically charged particles)**



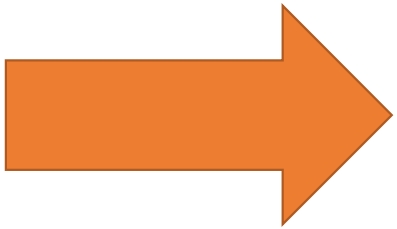
- Weathering, Erosion, and Deposition act together in a cycle that wears down and builds up Earth's surface.

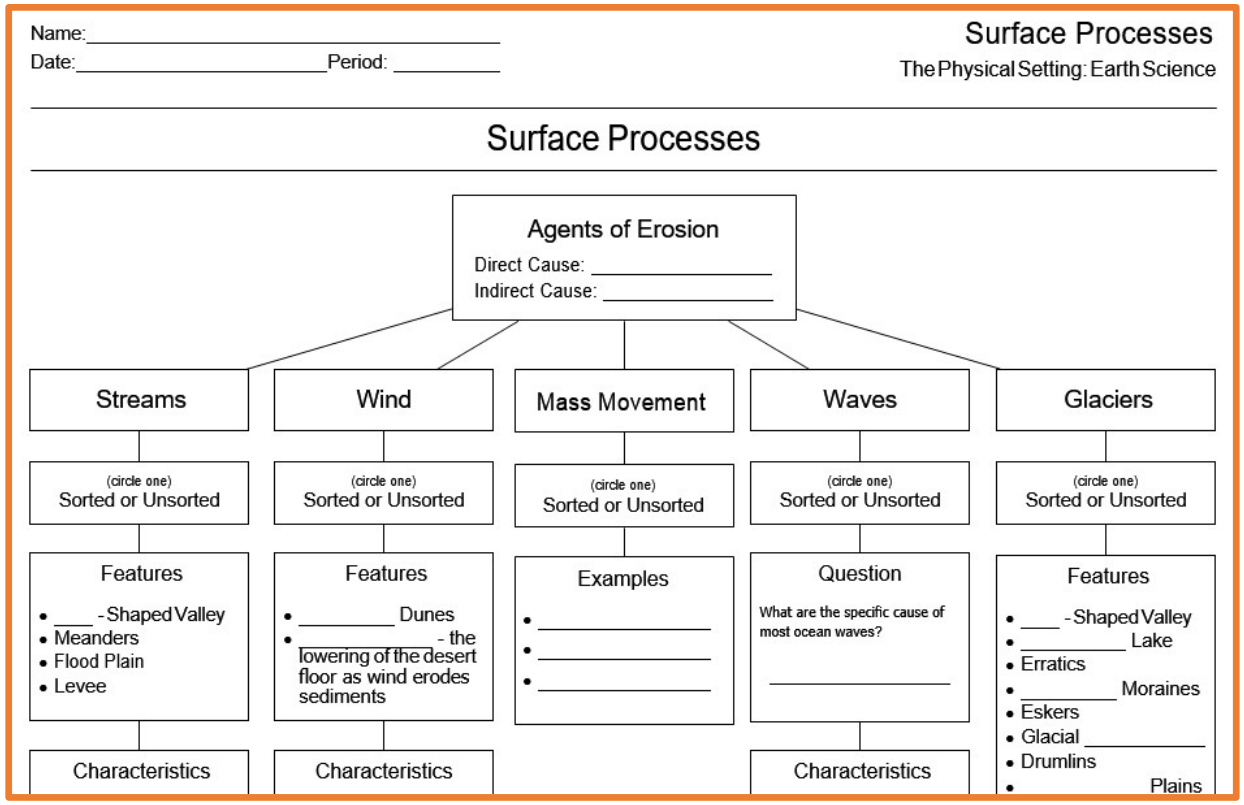
Weathering —Erosion→ Deposition



- **The most important force of erosion is gravity.**
- **The most important agent of erosion is water.**

You are Here





Name:_____

Date:_____Period: _____

Surface Processes

The Physical Setting: Earth Science

Surface Processes

Agents of Erosion

Direct Cause: _____

Indirect Cause: _____

Streams	Wind	Mass Movement	Waves	Glaciers
(circle one) Sorted or Unsorted	(circle one) Sorted or Unsorted	(circle one) Sorted or Unsorted	(circle one) Sorted or Unsorted	(circle one) Sorted or Unsorted
Features • ____ - Shaped Valley • Meanders • Flood Plain • Levee	Features • _____ Dunes • _____ - the lowering of the desert floor as wind erodes sediments	Examples • _____ • _____ • _____	Question What are the specific cause of most ocean waves? _____	Features • ____ - Shaped Valley • _____ Lake • Erratics • _____ Moraines • Eskers • Glacial _____ • Drumlins • Plains
Characteristics	Characteristics		Characteristics	

Agents of Erosion

Ice / Glaciers

Waves (Water)

Mass Movement (Gravity)

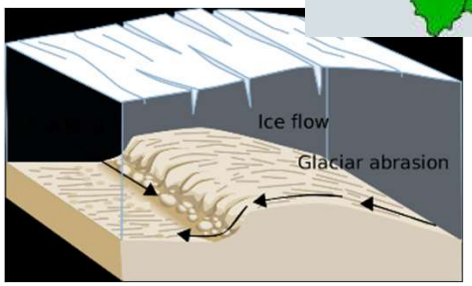
Wind

Streams (Water)

Agents of Erosion

Ice / Glaciers

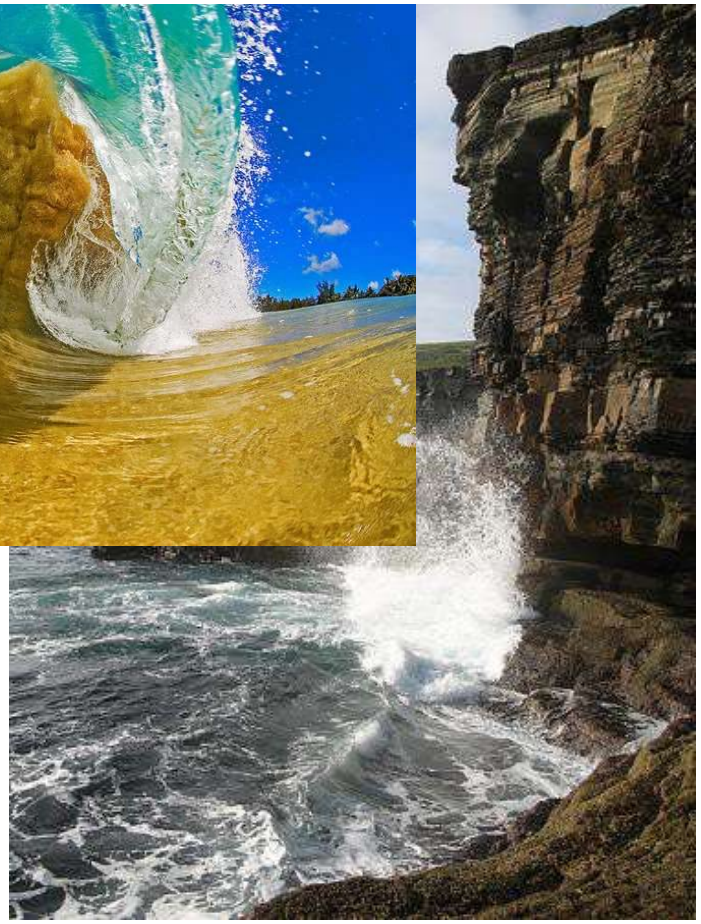
- **Sediments that have been transported by glaciers appear scratched and grooved.**
- **They are deposited in completely unsorted piles**
  - **they were dropped during melting.**
- **Glaciers formed the Great Lakes.**
- **Large boulders only be transported by glaciers.**



Agents of Erosion

Waves (Water)

Waves - move in the ocean and move sediment. The rocks rub together eventually making sand. If the waves hit land, the water can tear away at the land because it is carrying the rock particles.



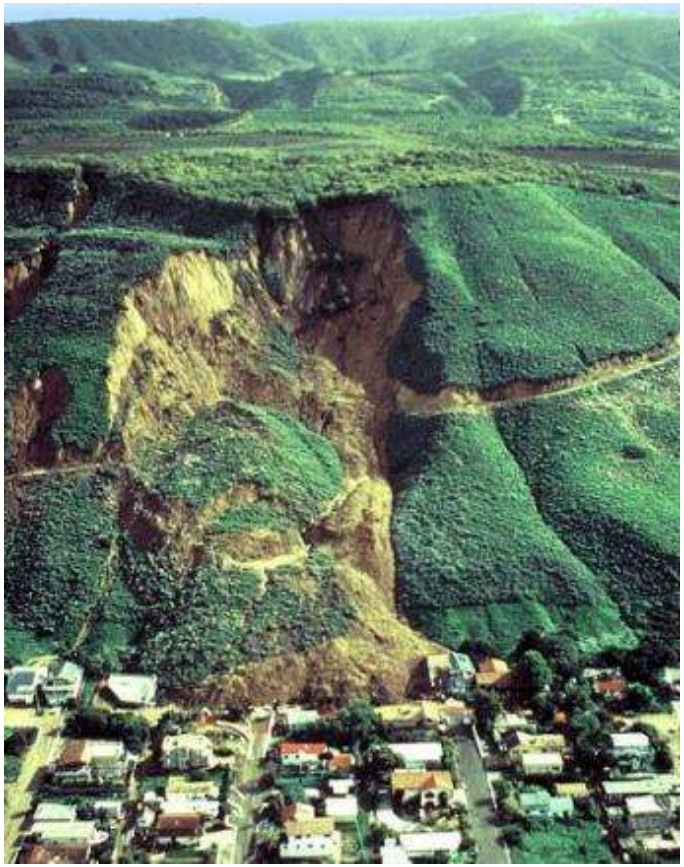
Agents of Erosion

Mass Movement (Gravity)

Gravity – **sediments that are transported by gravity are found in piles at the bottom of cliffs or steep slopes. They appear angular (jagged) and unsorted.**

Agents of Erosion

Mass Movement (Gravity)



Agents of Erosion

Mass Movement (Gravity)

HOME / BAY BULLETIN / LANDSLIDES DAMAGE MOUNT VERNON'S POTOMAC RIVERFRONT

BAY BULLETIN

LANDSLIDES DAMAGE MOUNT VERNON'S POTOMAC RIVERFRONT

November 21, 2018

Gravity always wins!

- **Creep:** Mass movement with sediments slowly shifting their position down hill
- **Slump:** Mass of material slipping downhill along a curve
- **Mudflow:** Thick mixture of sediment and water flowing down hill
- **Rockfalls:** Blocks of rock break loose and tumble through the air
- **Rockslide:** Layers of rock breaking loose and slipping downhill suddenly
- **Landslides:** Combination of mass movements such as slump, rock slides, and mudflow

Agents of Erosion

Wind

Wind - sediments transported by wind are deposited in sorted piles. Only very small particles can usually be transported by the wind. Wind erosion is dirt and other particles that are blown around eventually reshaping the land.

Deflation- erosion by wind of loose material from flat areas of dry, uncemented sediments such as those occurring in deserts, dry lake beds, floodplains, and glacial outwash plains

Agents of Erosion

Streams (Running Water)

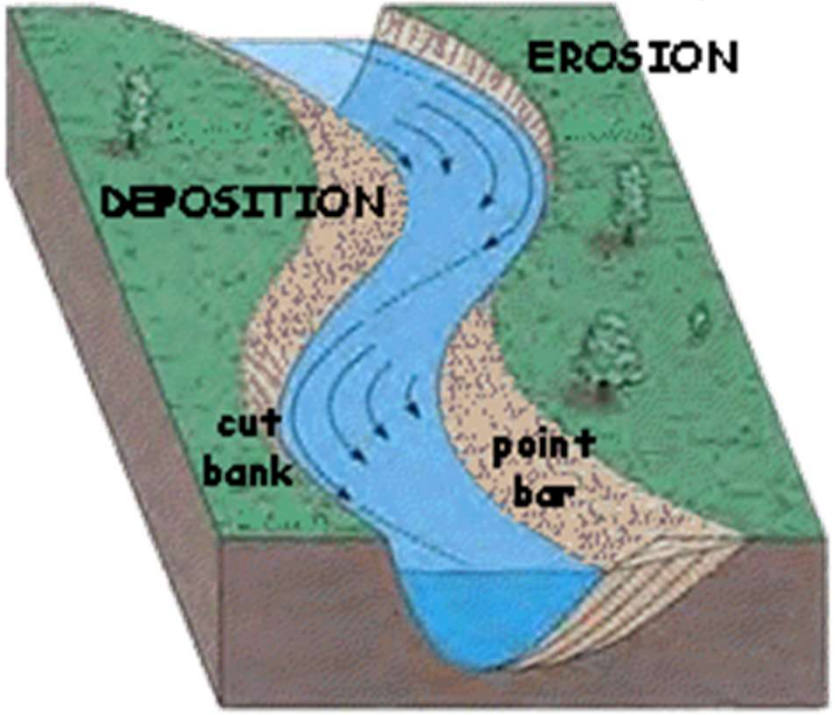
Moving water is a major agent of erosion:

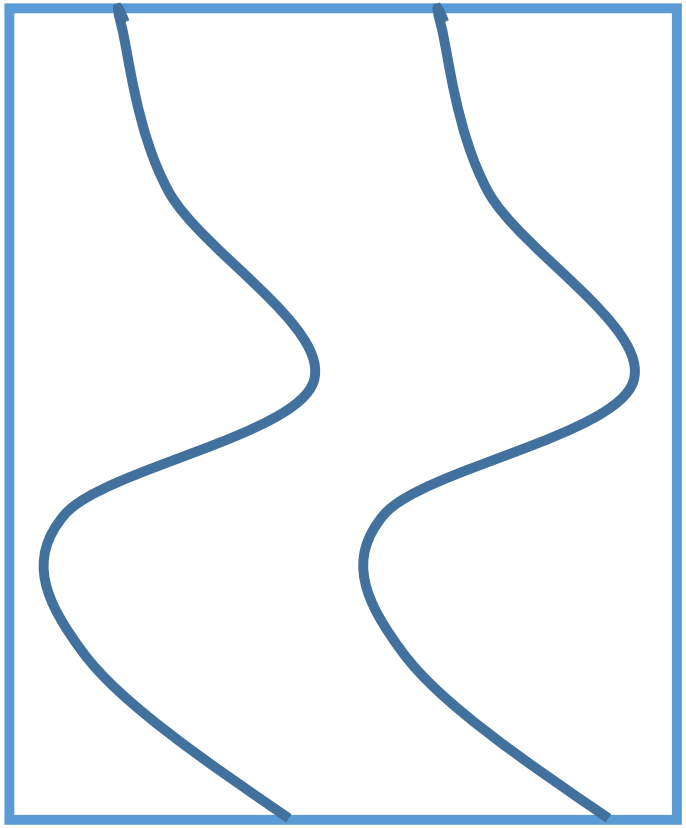
- Water that moves over Earth's surface when it rains is called **Runoff**.

Agents of Erosion

Streams (Running Water)

The Parts of a River





Point bar- where sediments are deposited along a stream due to low stream velocity
Cut bank- where sediments are eroded from along a stream due to high stream velocity

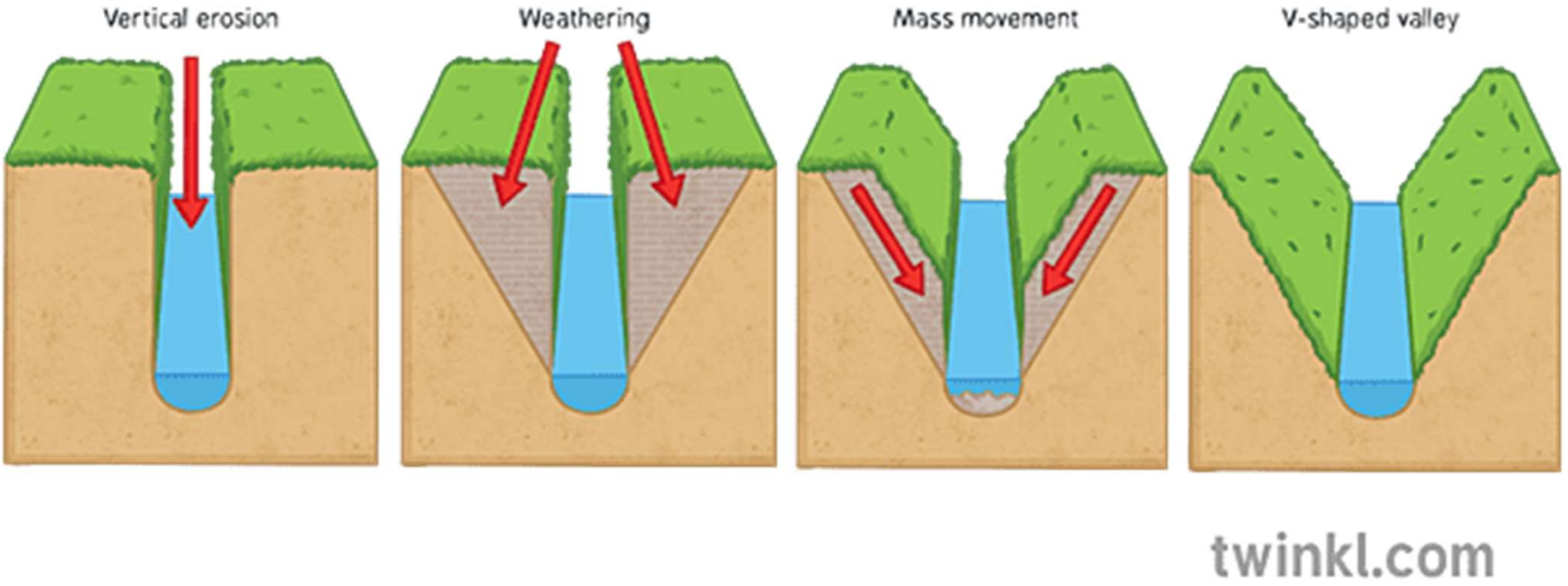
Cut bank – stream erosion

A.

B.

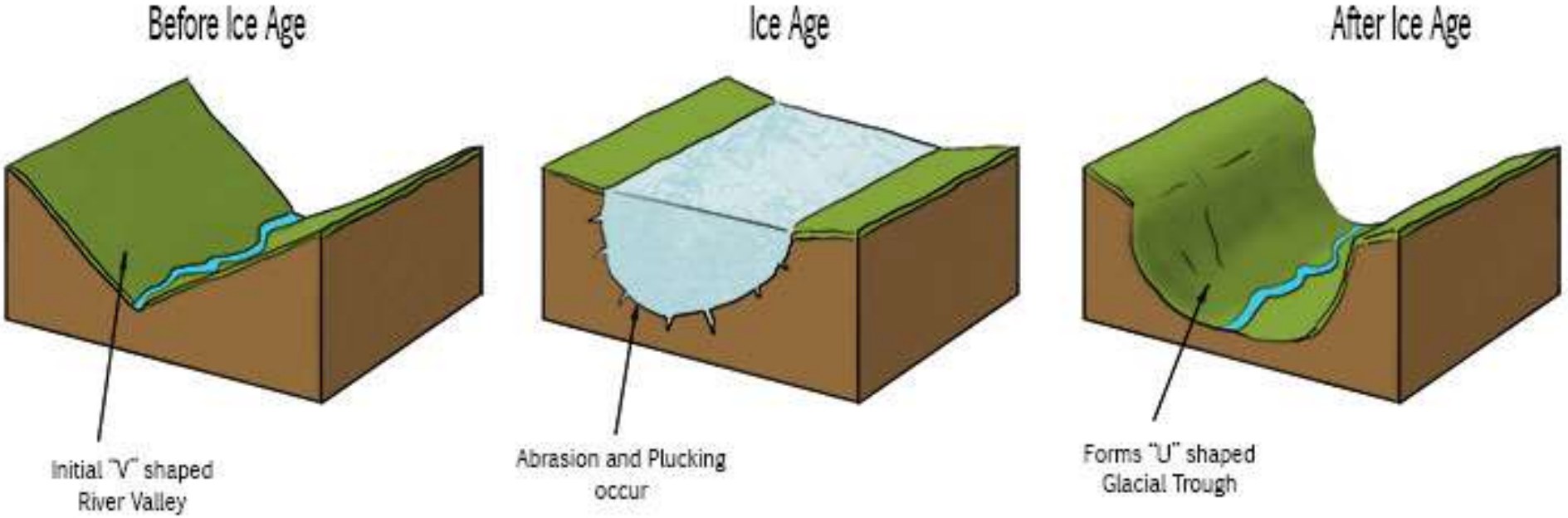
Agents of Erosion

Streams (Running Water)



Agents of Erosion

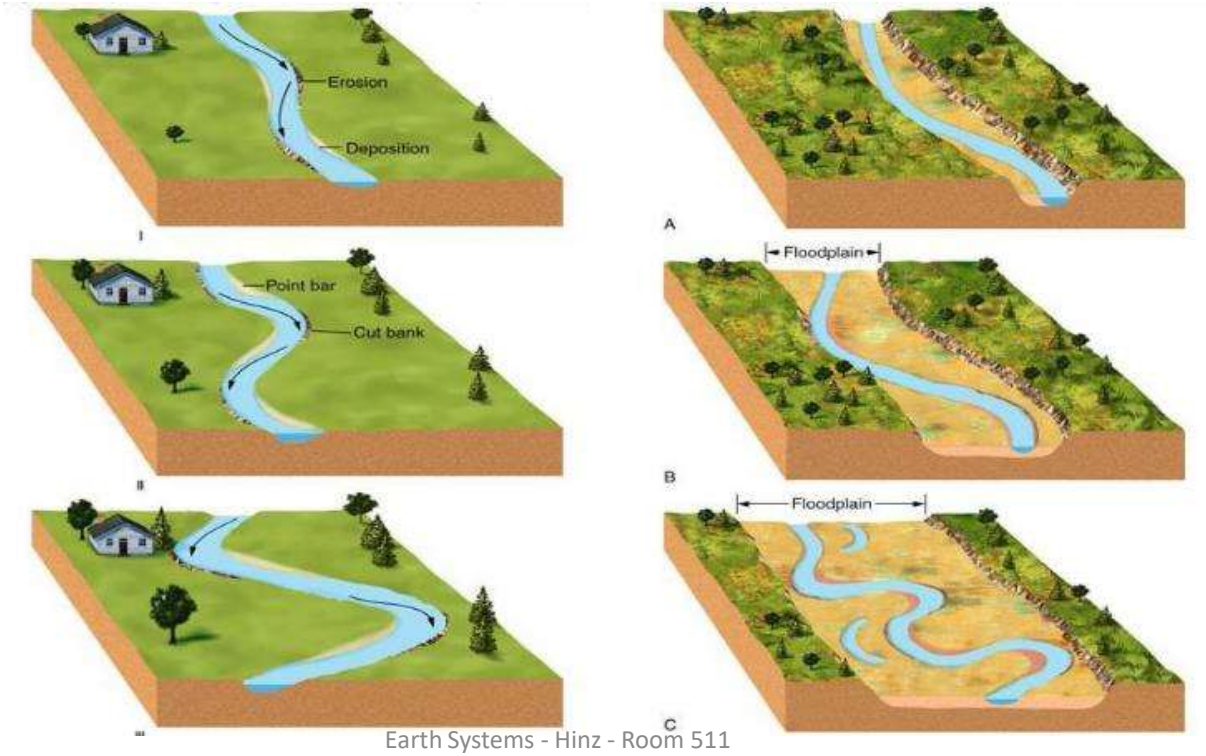
Streams (Running Water)



Agents of Erosion

Streams (Running Water)

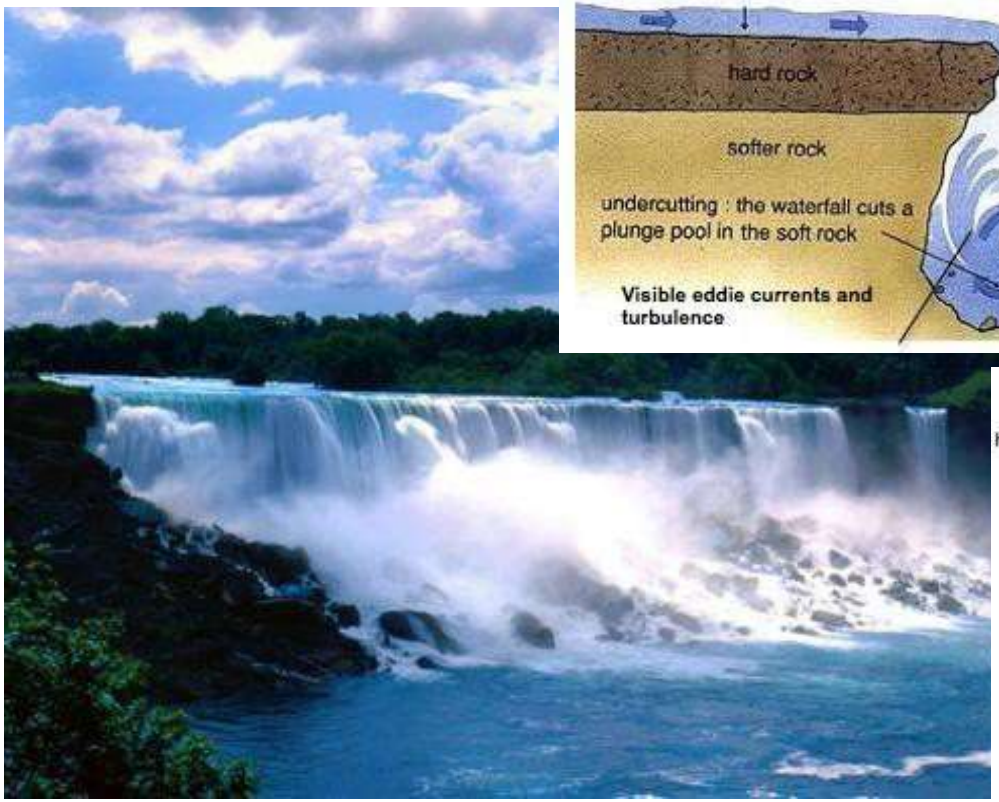
Water erodes sediment on the outside curves and deposits (drops) sediment on the inside curves.

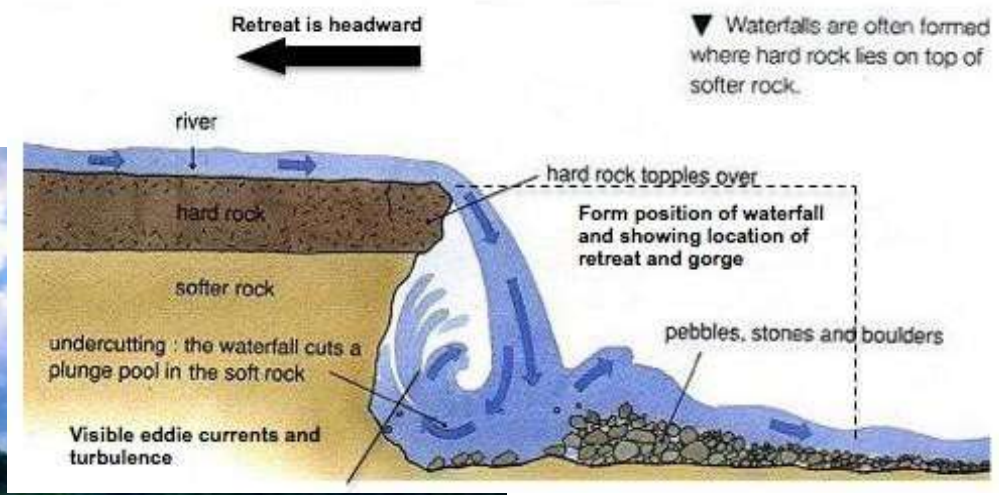


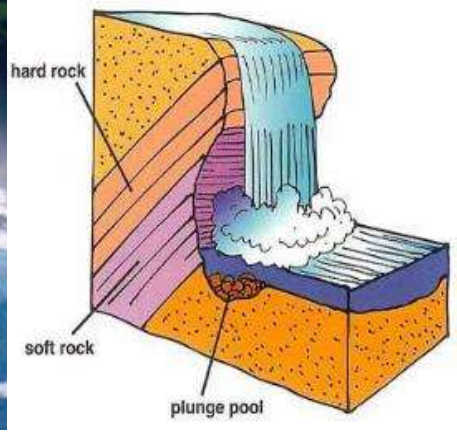
Agents of Erosion

Streams (Running Water)

NIAGARA FALLS



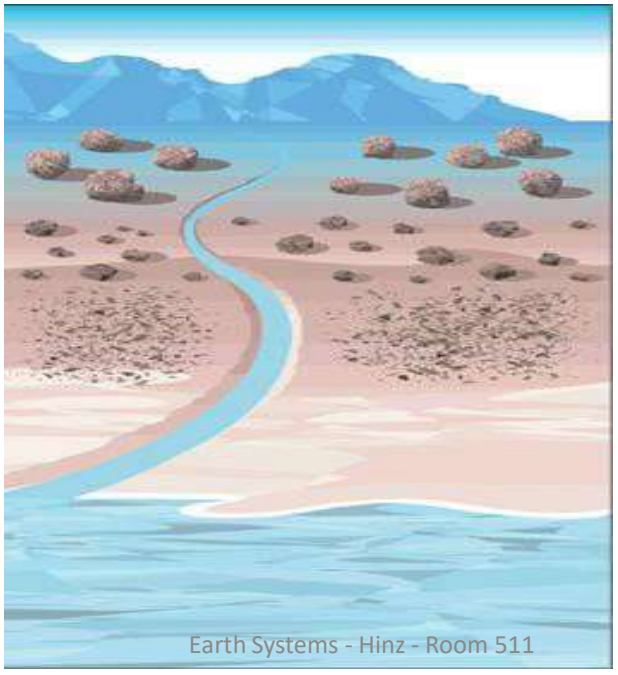




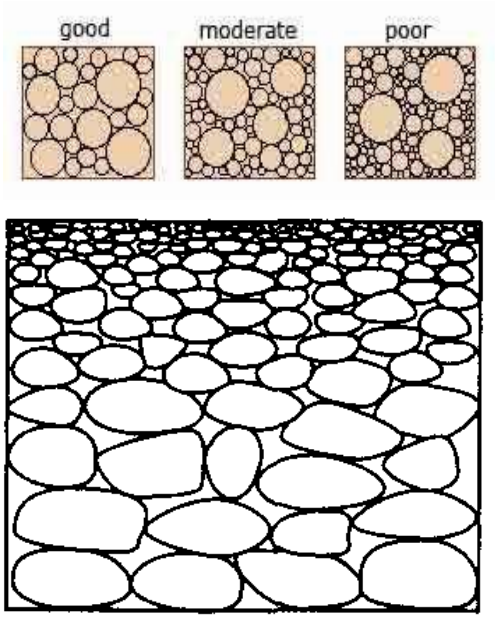
Agents of Erosion—Running Water

Running Water – sediments that have been transported through running water appear rounded and smooth and are deposited in sorted piles.

Boulders
Cobbles
Gravel
Sand
Silt
Clay



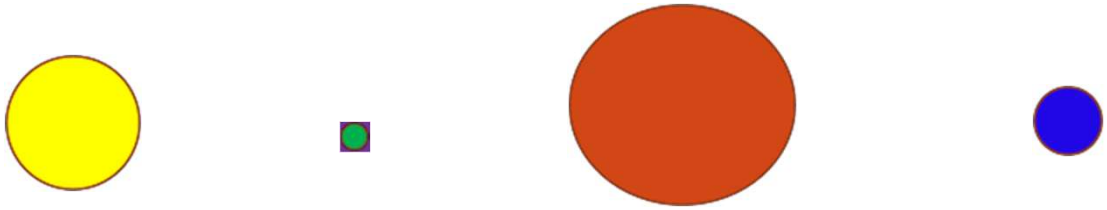
Sorting



Agents of Erosion

Streams (Running Water)

In What Order will These Sediments Settle



C A D B