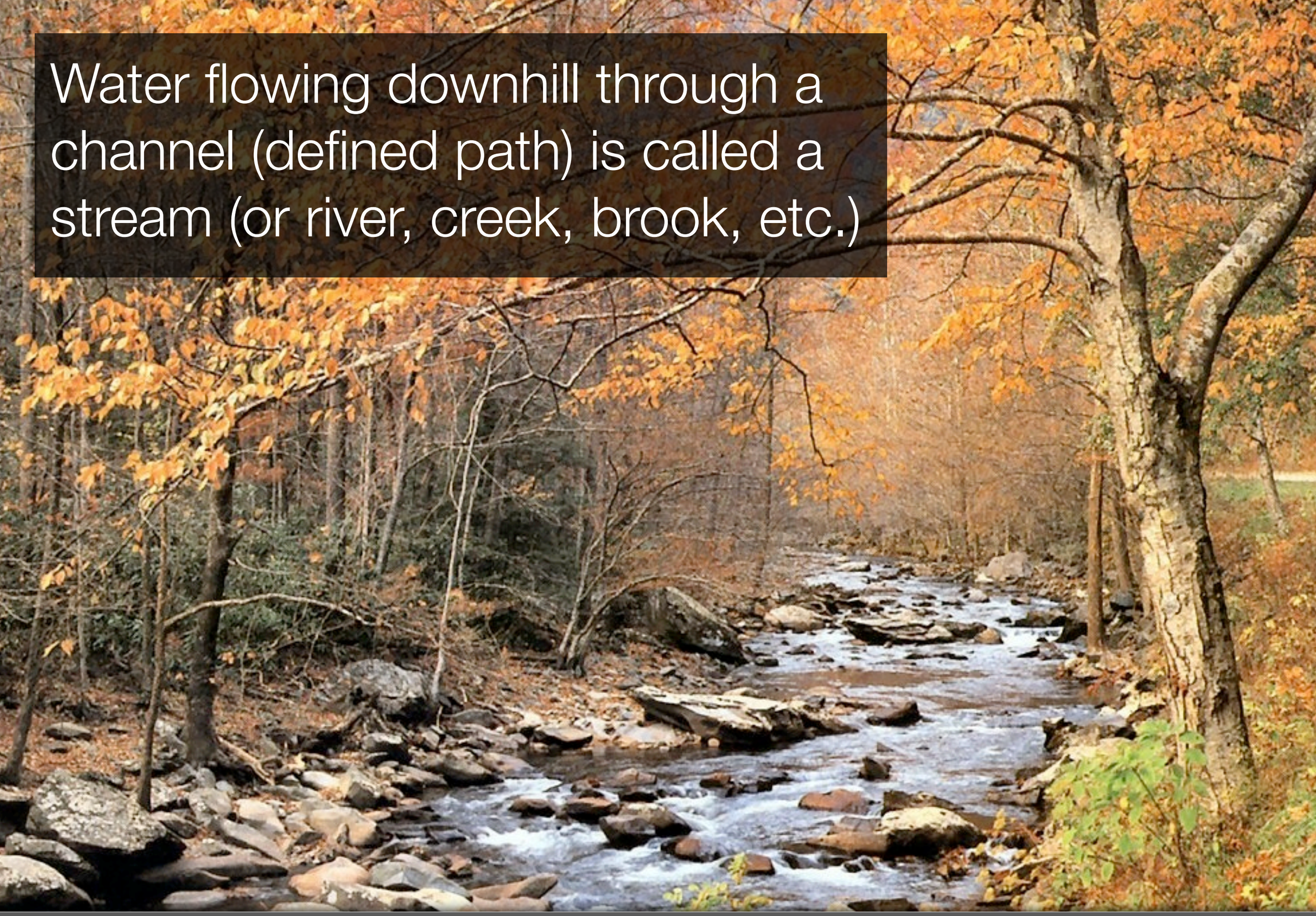
Stream Erosion and Deposition

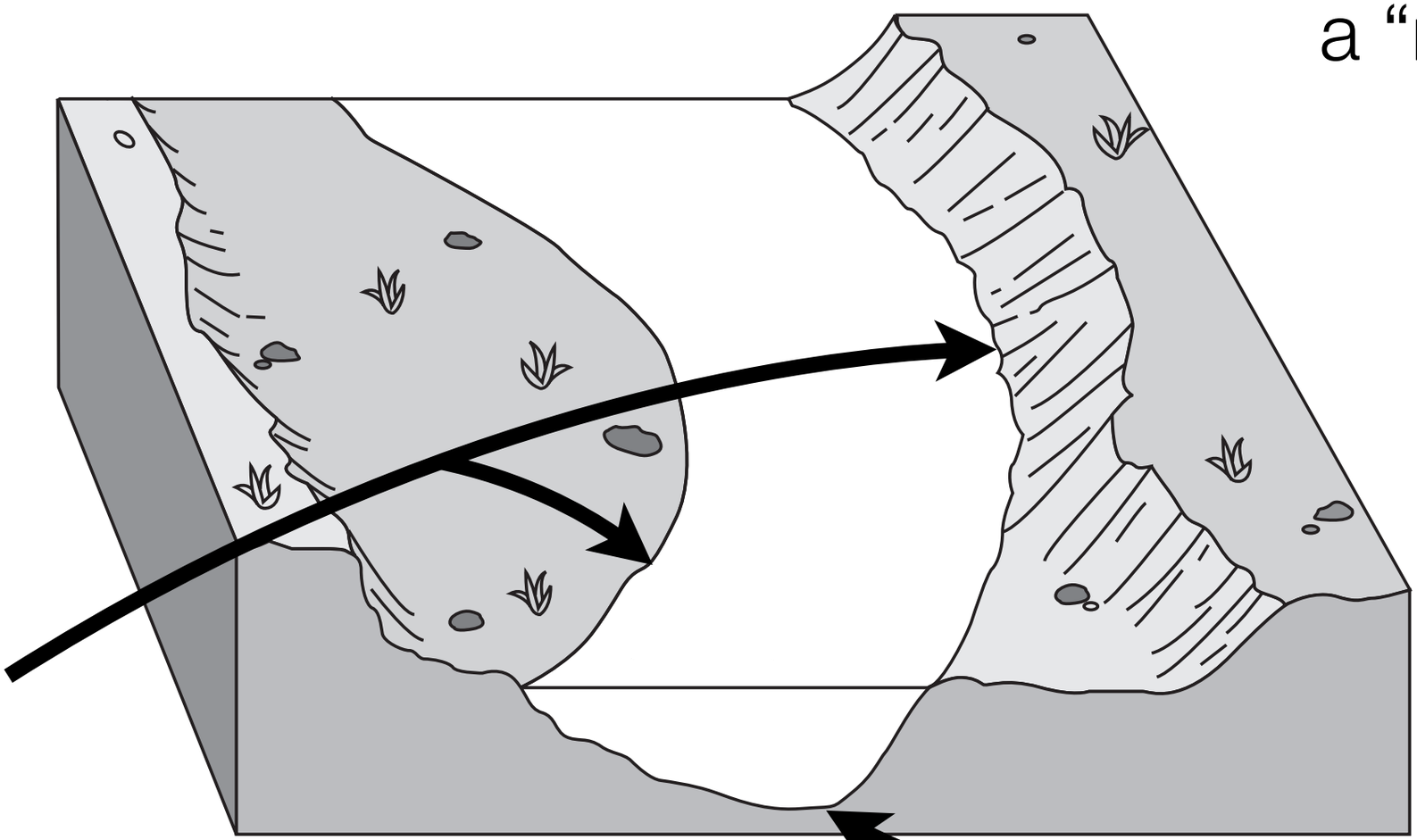
(Tap to begin)

Water flowing downhill through a channel (defined path) is called a stream (or river, creek, brook, etc.)

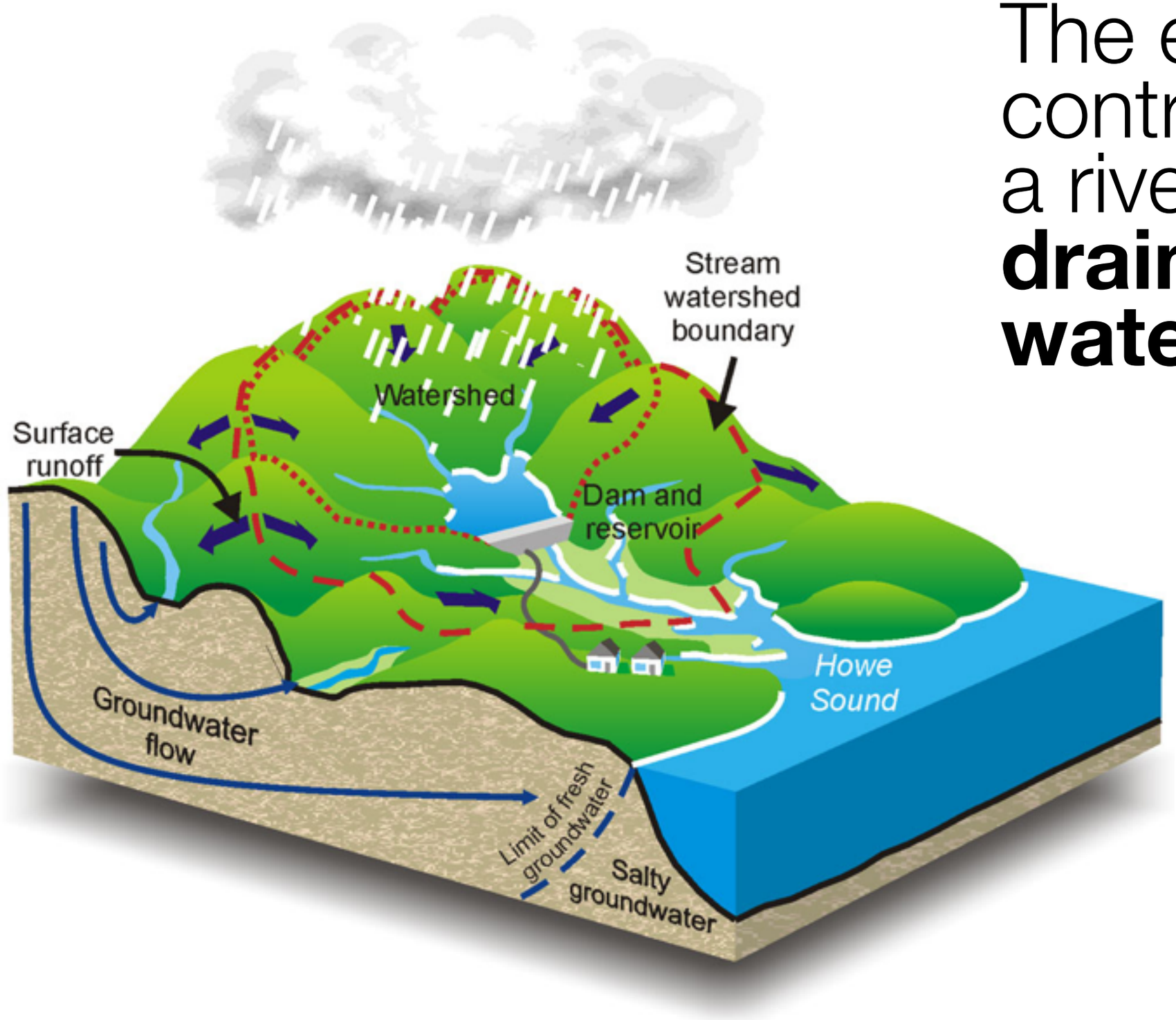


Anatomy of a Stream

A curve in a stream is called a “meander”



A smaller stream flowing into and merging with a larger one is called a tributary.



The entire area that contributes water to a river is called the **drainage basin** or **watershed**.

The velocity of a river depends on three things:

1. Stream discharge (more water = faster)
2. Slope of stream bed (steeper = faster)
3. Stream channel shape (rounder = faster)

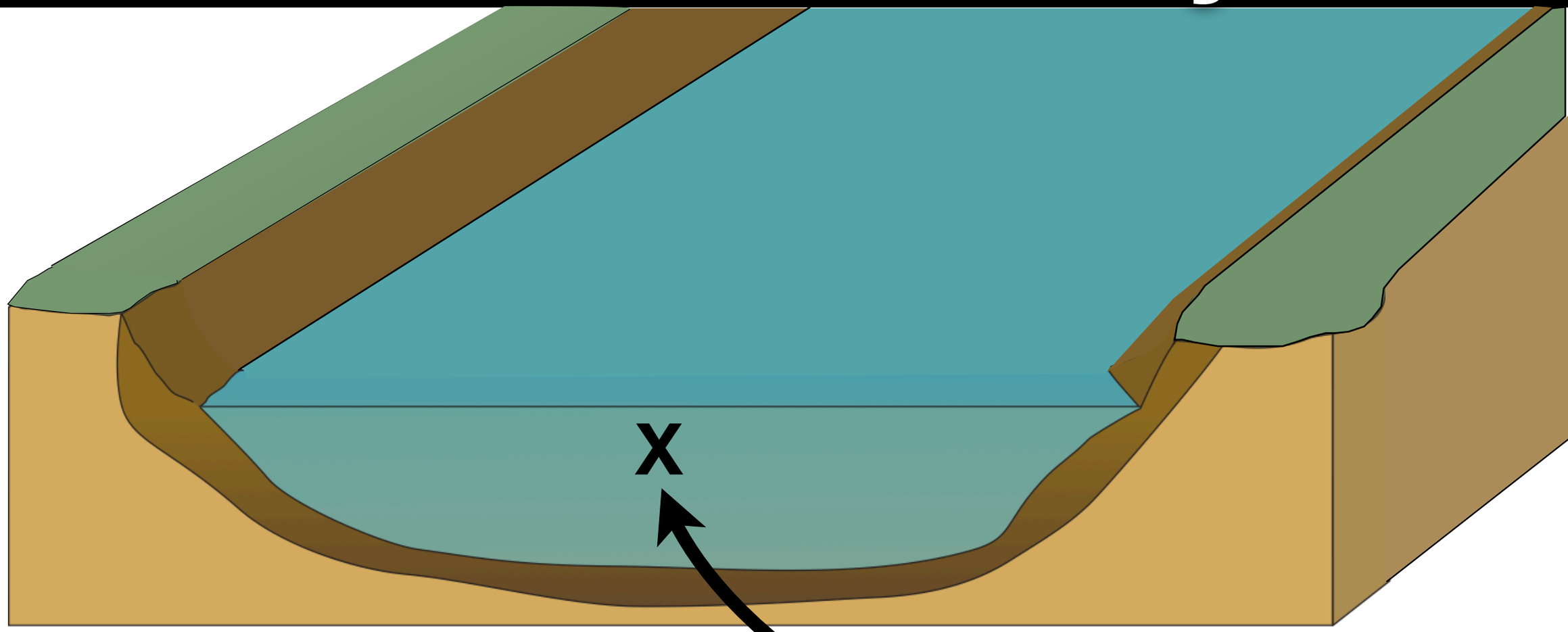
Characteristics of a young river system

1. Steep gradient
2. Deep, steep-sided channel
3. High velocity flow
4. Possible rapids
5. More erosion than deposition

Characteristics of an old river system

1. Very gradual slope
2. Shallow, wide channel
3. Slow flow
4. Wide meanders (curves)
5. More deposition than erosion

Stream Flow Velocity

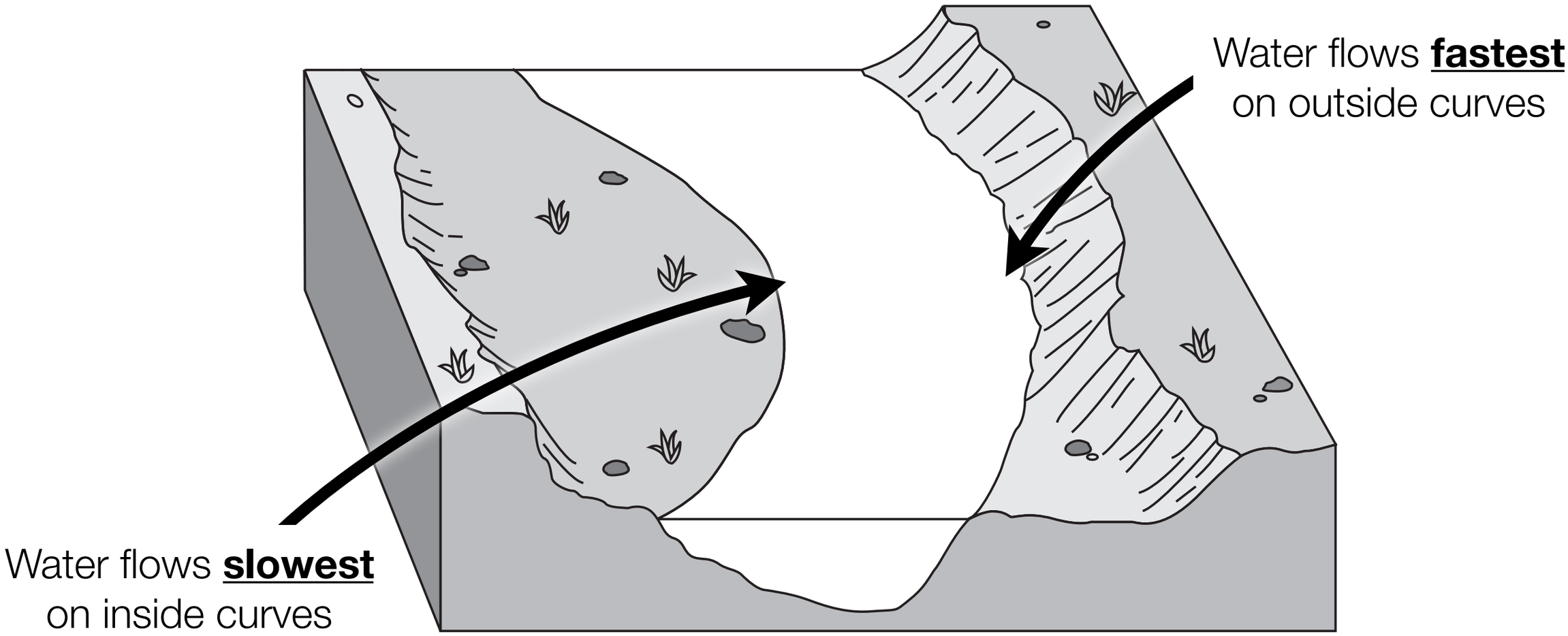


In a straight stream, water flows fastest in the center, near the surface.

Whenever streams flow quickly, they pick up and carry away sediment (erosion).

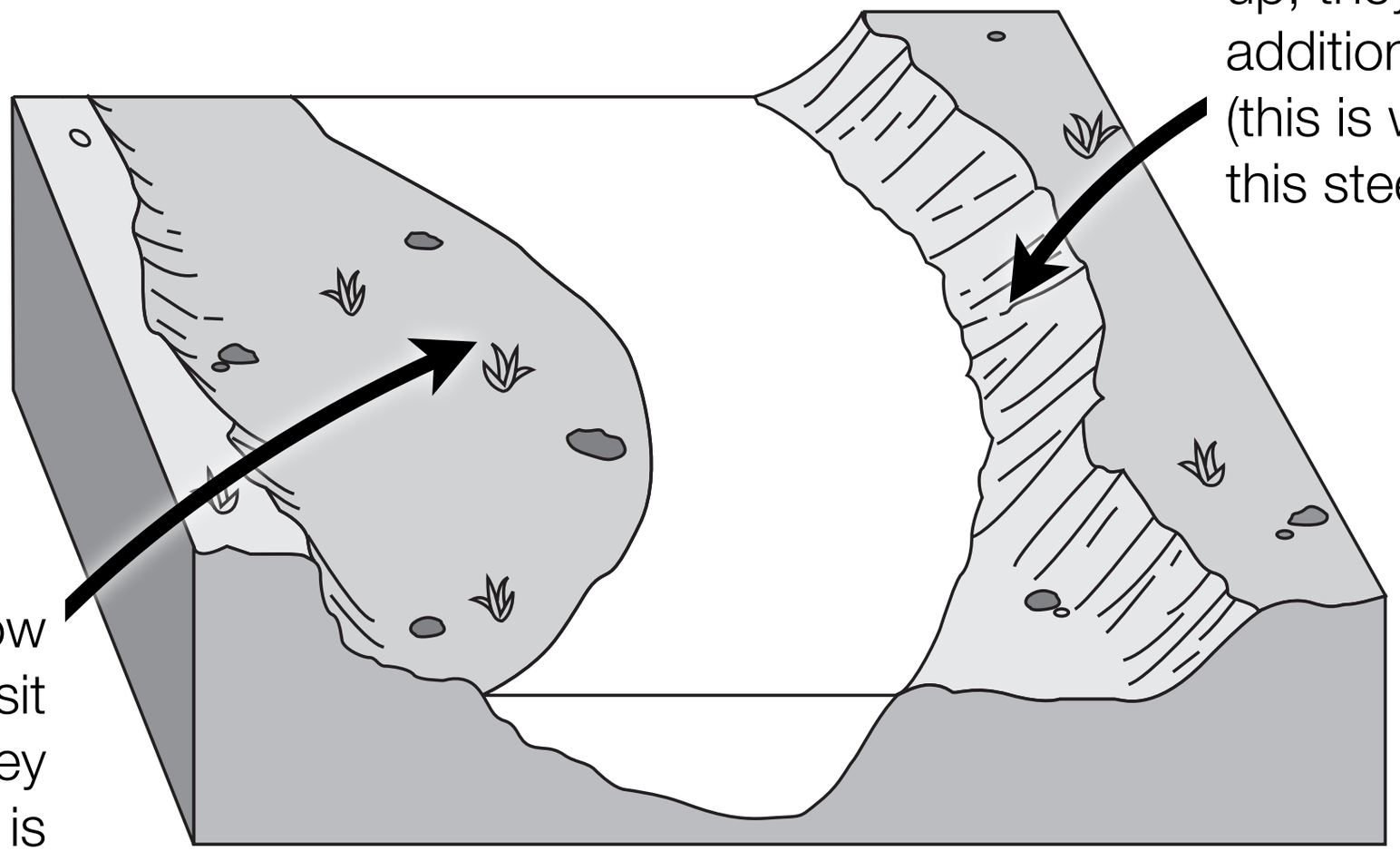
Whenever streams slow down, they drop off some or all of the sediments they are carrying (deposition).

Stream Erosion and Deposition



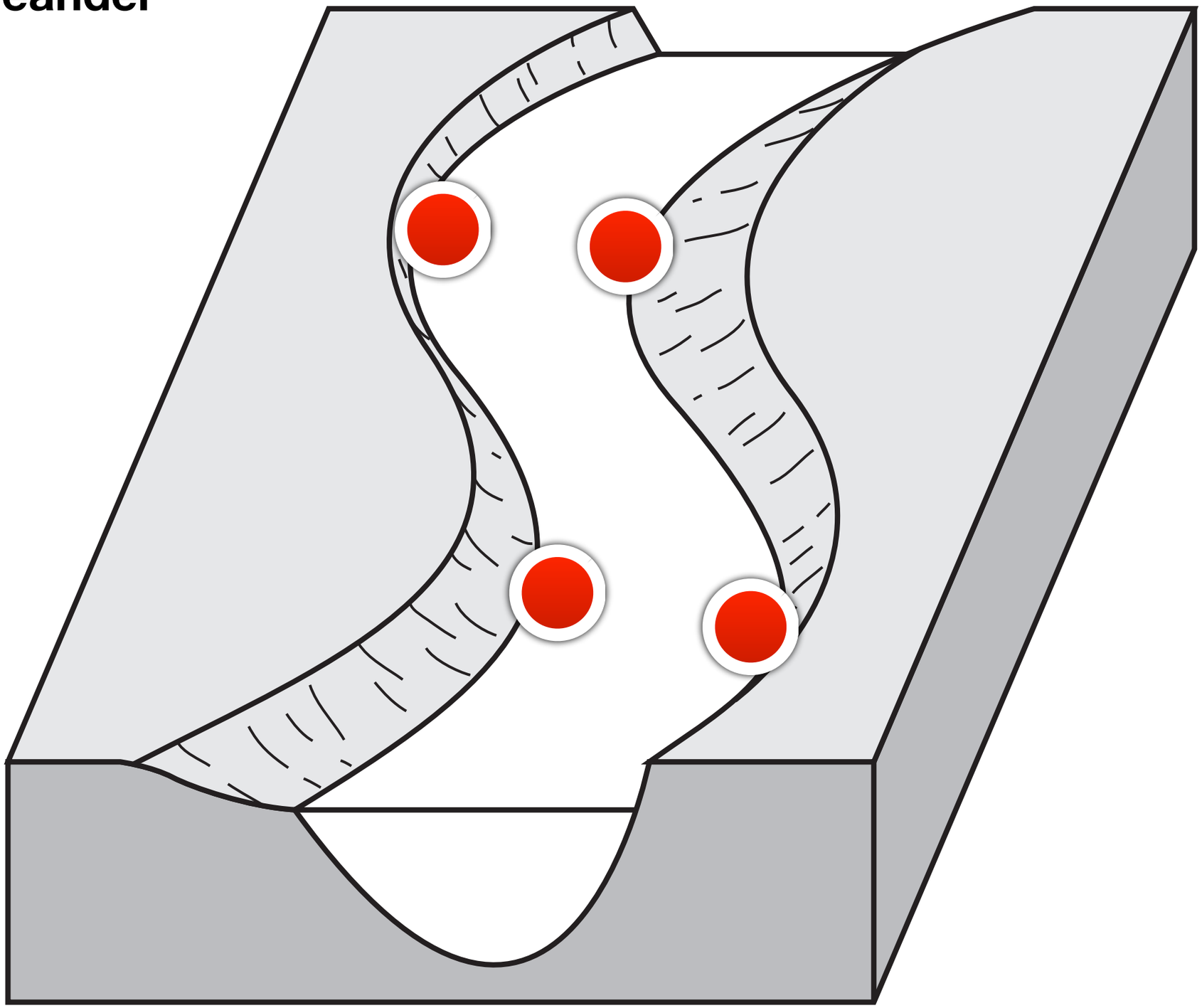
Stream Erosion and Deposition

When streams speed up, they erode additional sediment (this is what formed this steep river bank)



When streams slow down, they deposit the sediment they are carrying (this is what formed this wide, flat river bank)

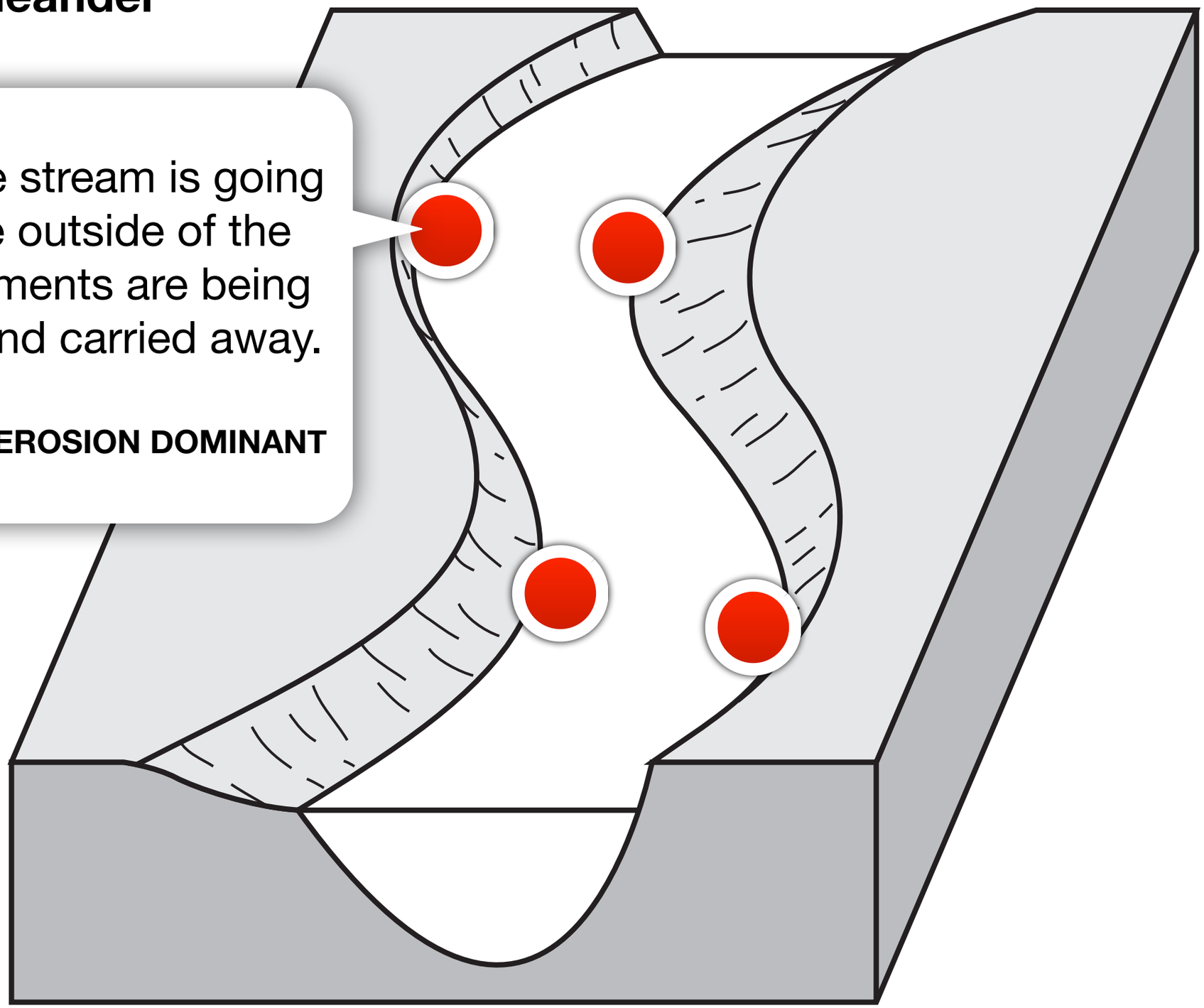
Tap a red button to see what happens on either side of the meander



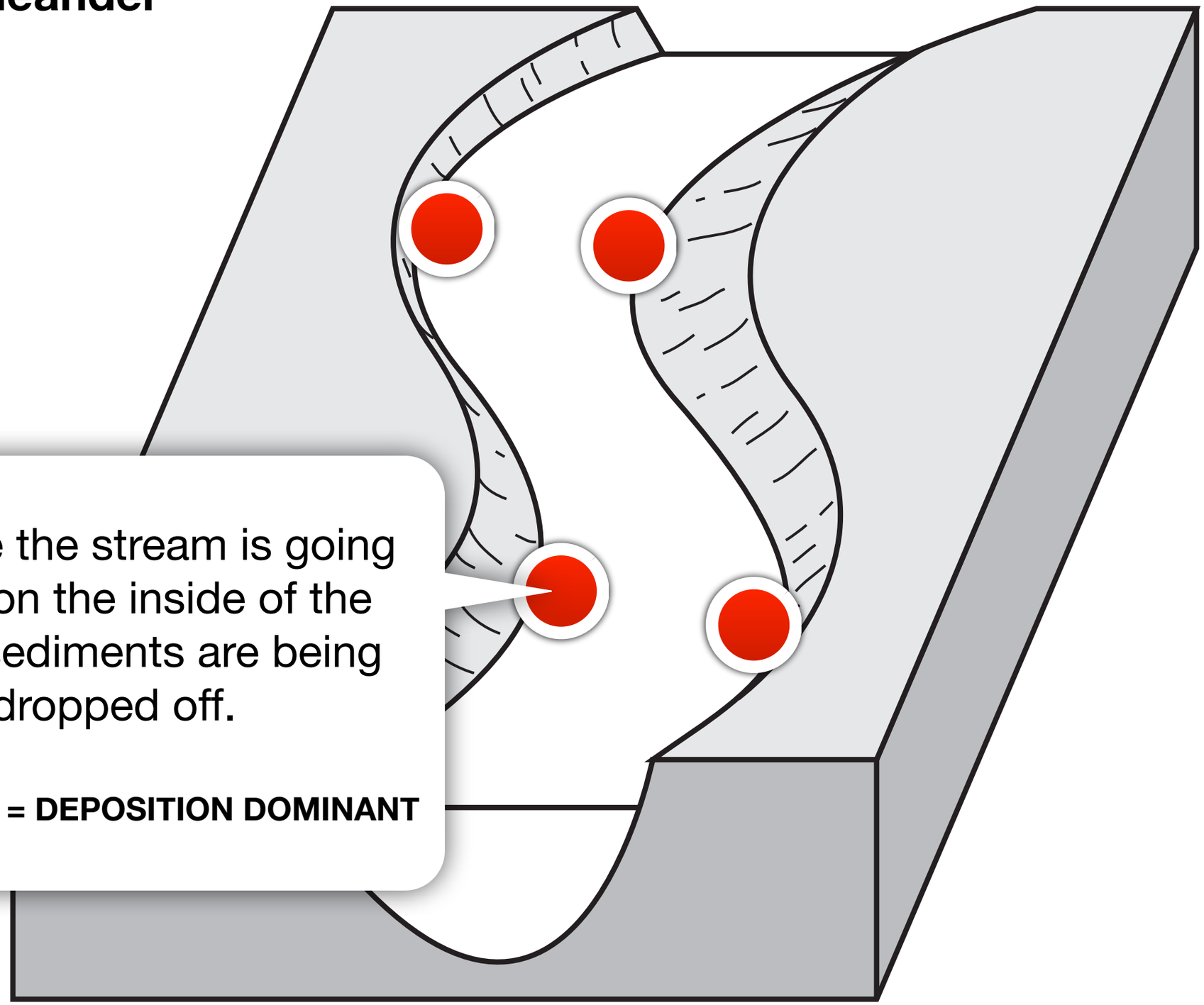
Tap a red button to see what happens on either side of the meander

Because the stream is going fast on the outside of the curve, sediments are being picked up and carried away.

HIGH SPEED = EROSION DOMINANT



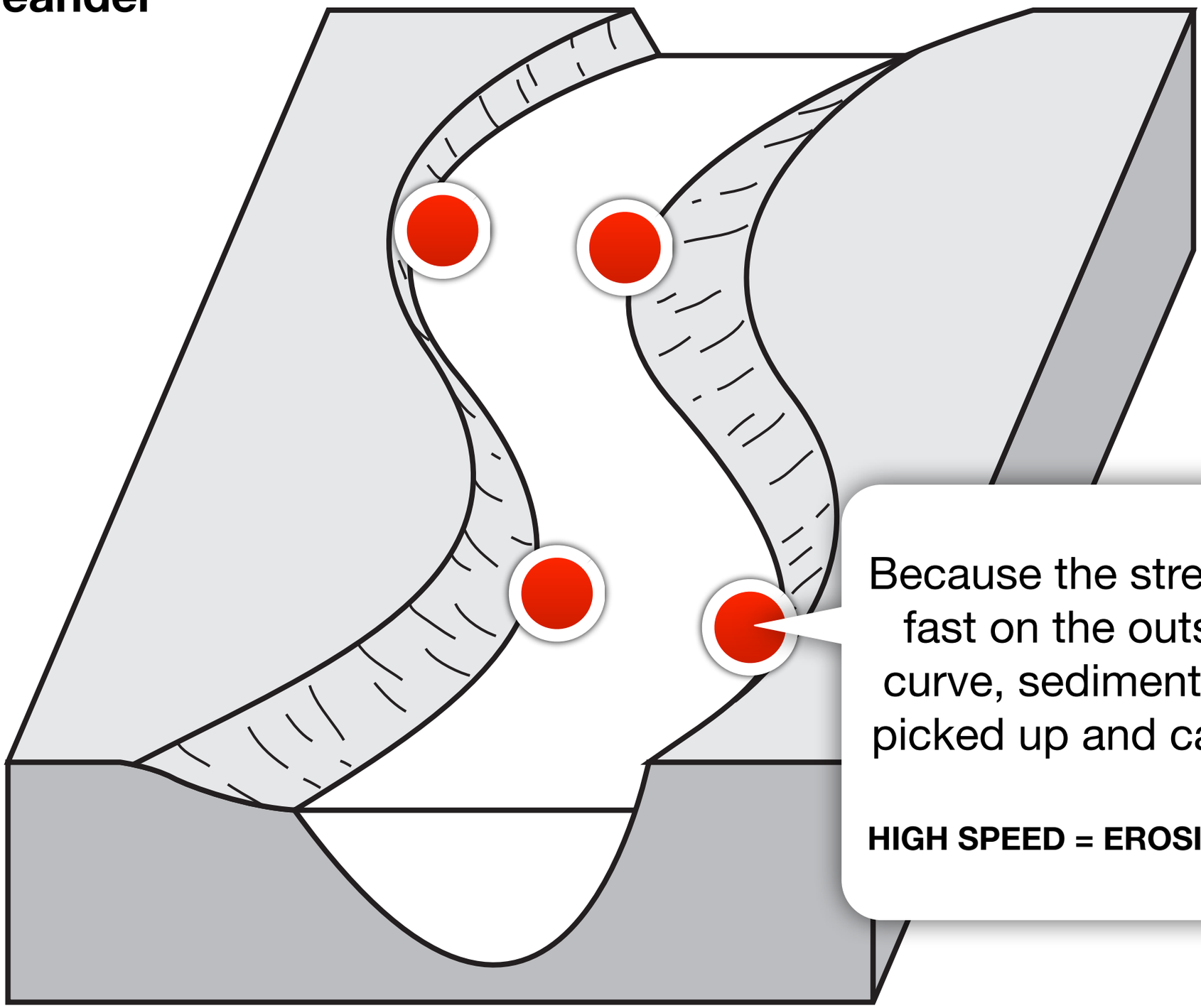
Tap a red button to see what happens on either side of the meander



Because the stream is going slowly on the inside of the curve, sediments are being dropped off.

LOW SPEED = DEPOSITION DOMINANT

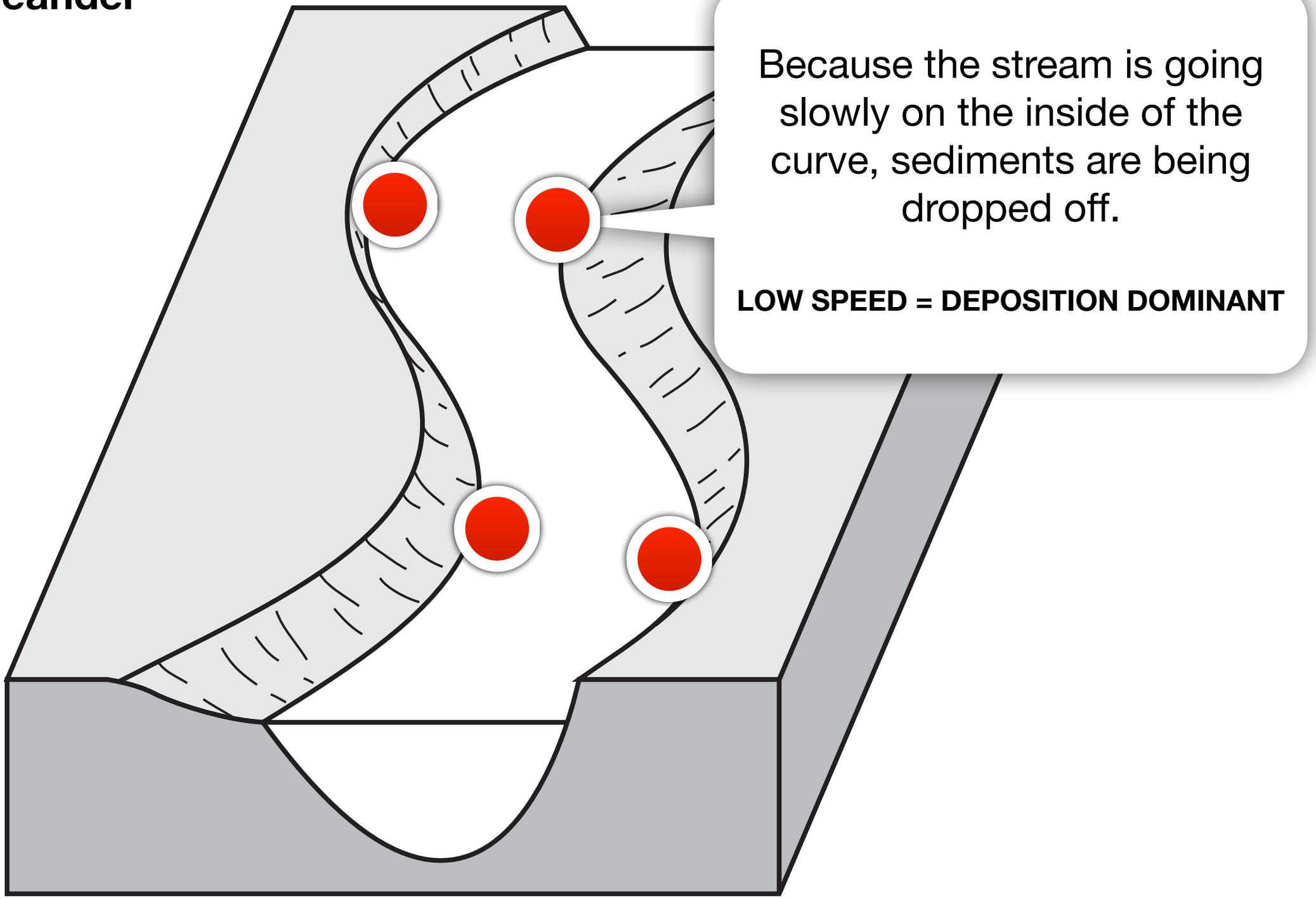
Tap a red button to see what happens on either side of the meander



Because the stream is going fast on the outside of the curve, sediments are being picked up and carried away.

HIGH SPEED = EROSION DOMINANT

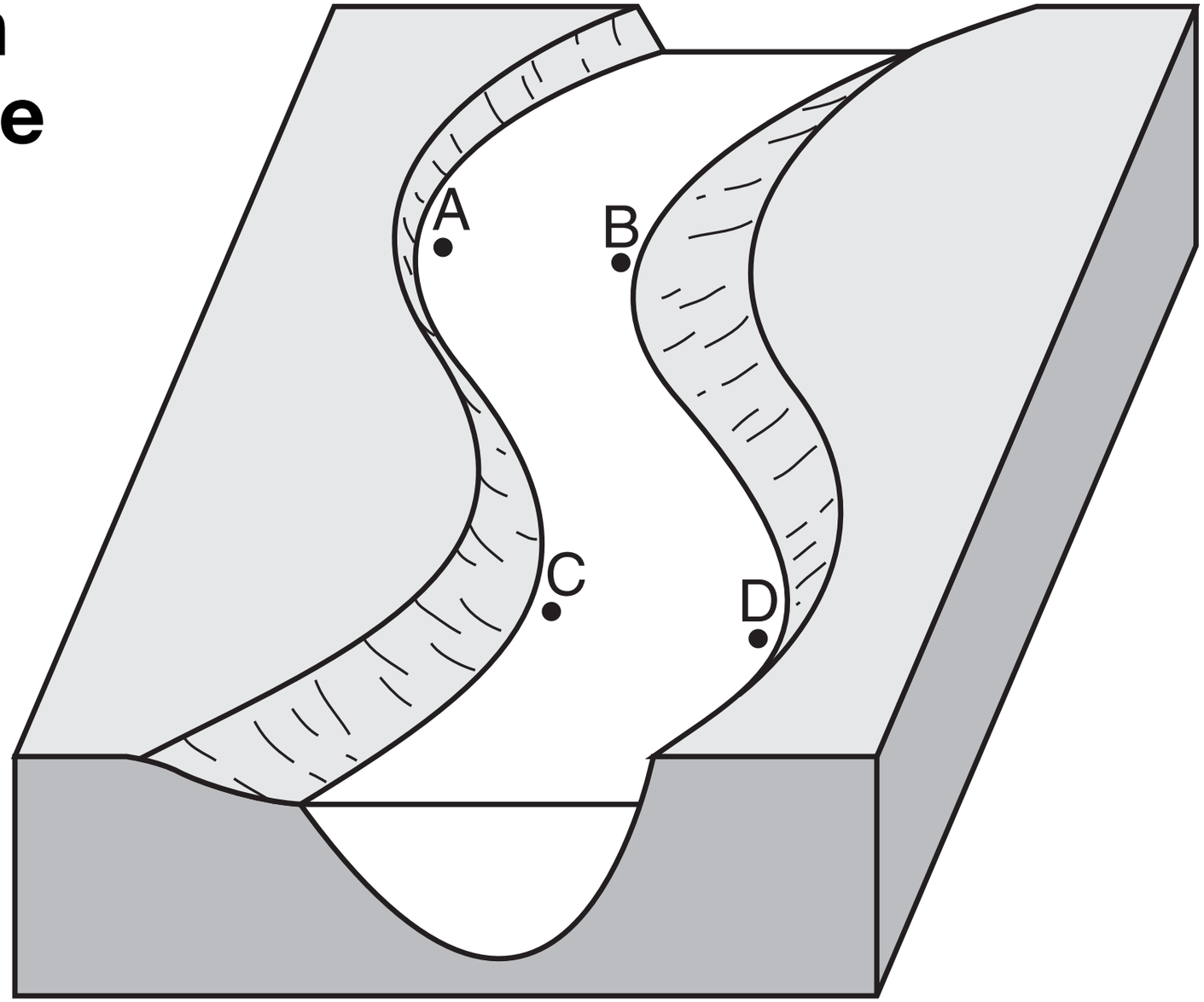
Tap a red button to see what happens on either side of the meander

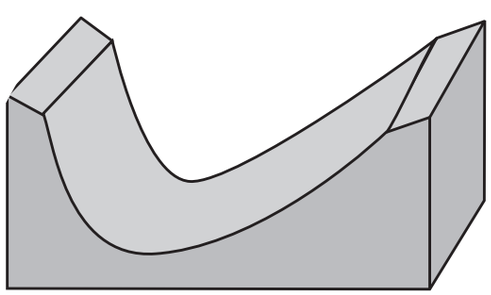


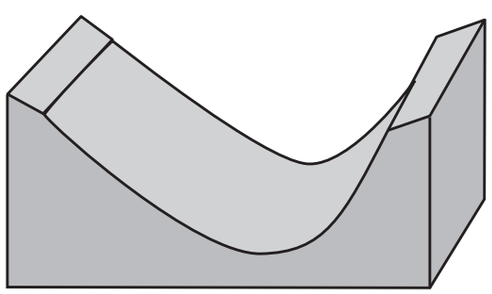
Because the stream is going slowly on the inside of the curve, sediments are being dropped off.

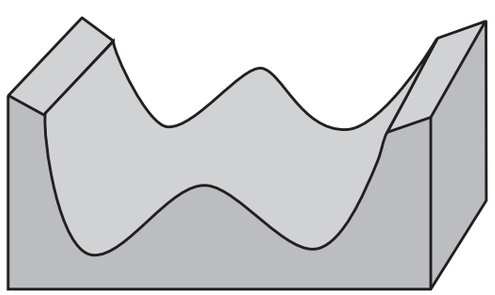
LOW SPEED = DEPOSITION DOMINANT

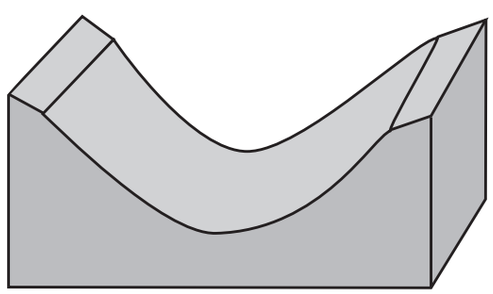
Tap the cross section which shows what the river will look like from points A to B.









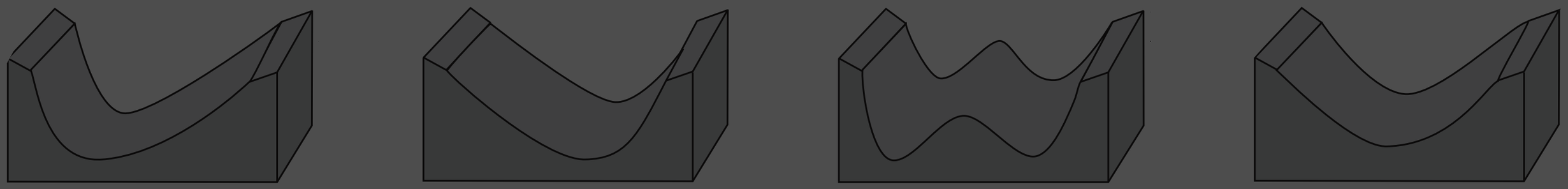


Tap the cross section which shows what the river will look like from points A to B.



Nice Job!

Tap to Continue

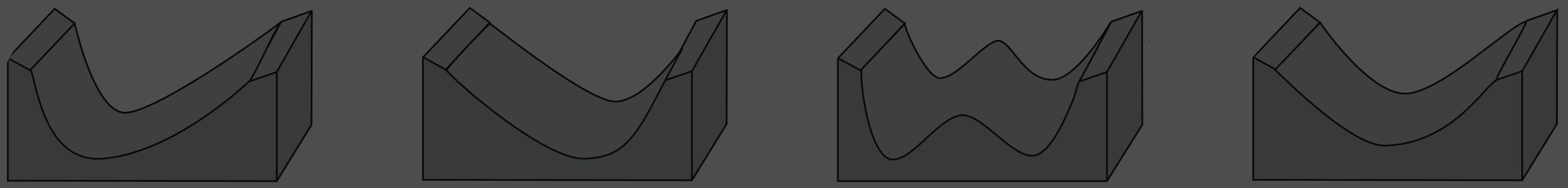


Tap the cross section which shows what the river will look like from points A to B.

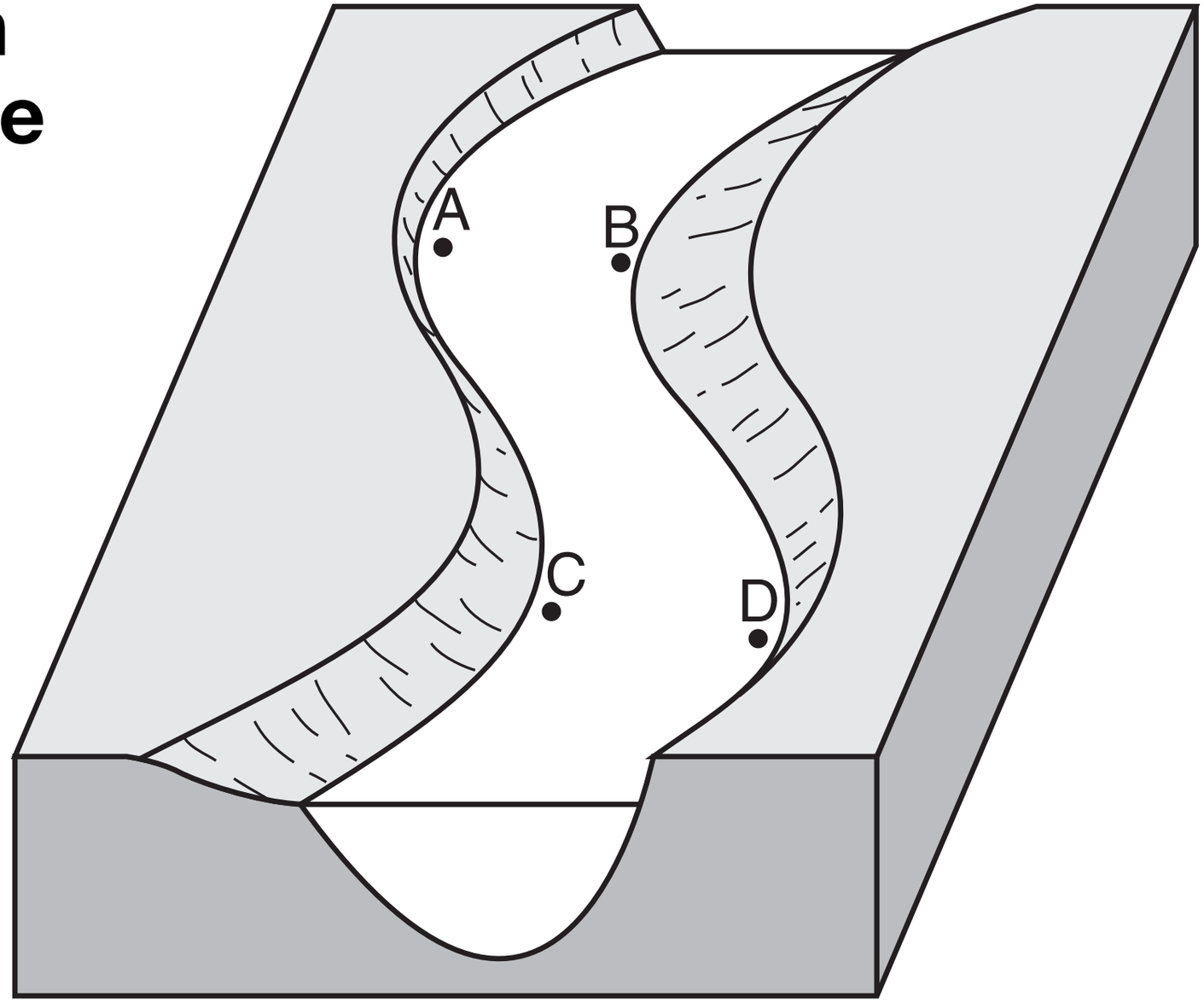


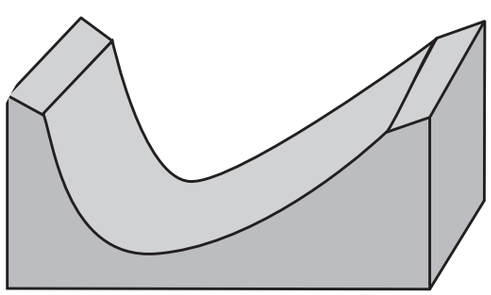
Uh Oh...

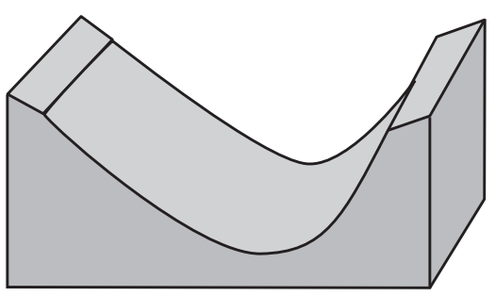
Tap to try again.

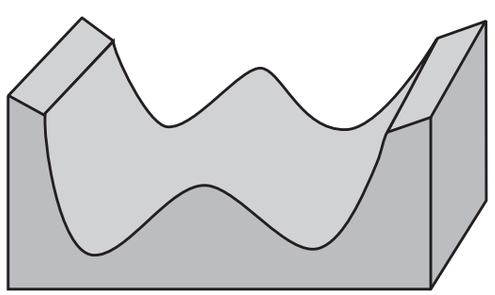


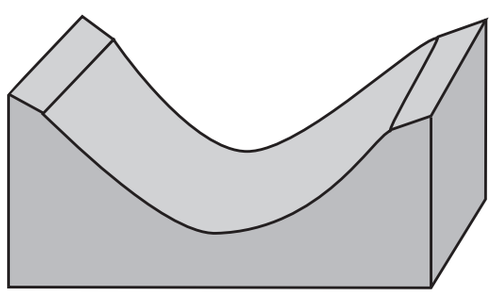
Tap the cross section which shows what the river will look like from points C to D.









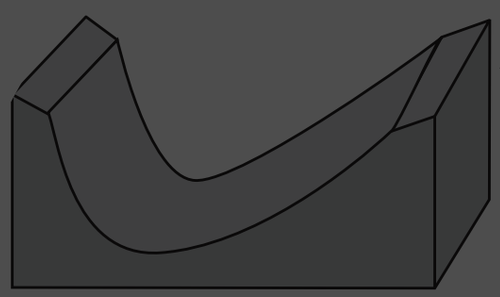


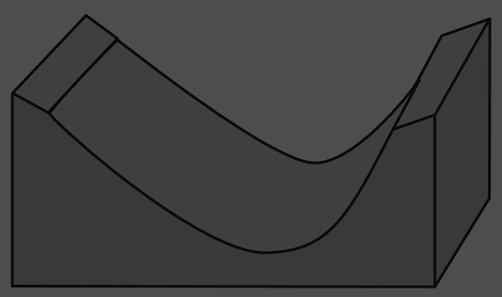
Tap the cross section which shows what the river will look like from points C to D.

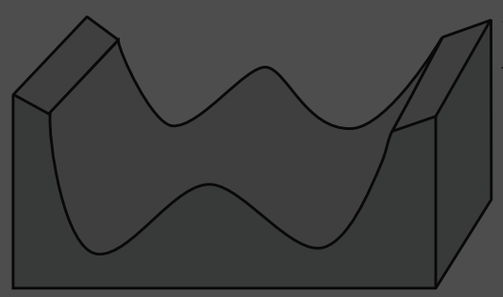


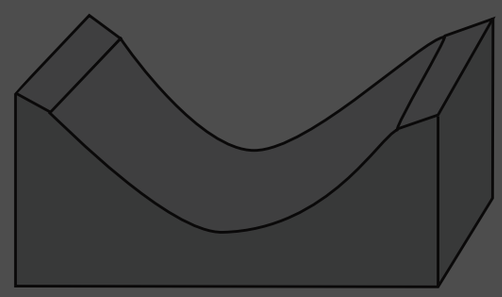
Nice Job!

Tap to Continue







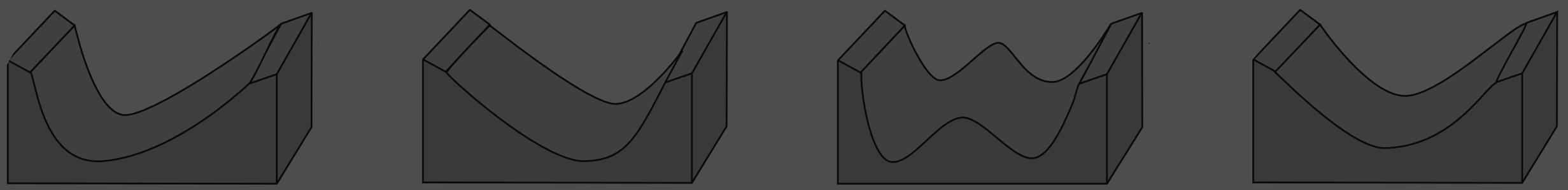


Tap the cross section which shows what the river will look like from points C to D.

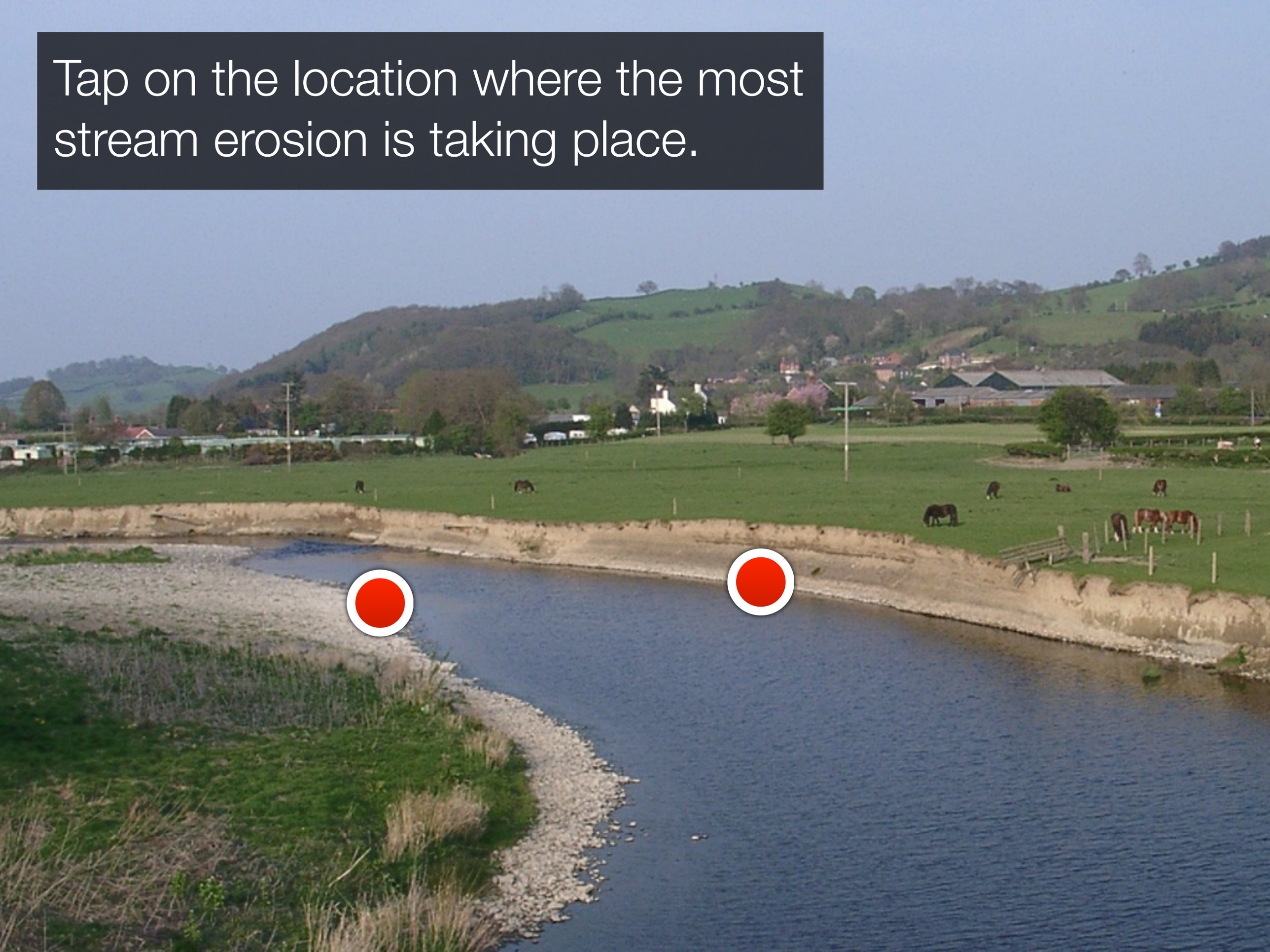


Uh Oh...

Tap to try again.



Tap on the location where the most stream erosion is taking place.



Tap on the location where the most stream erosion is taking place.

Nice Job!

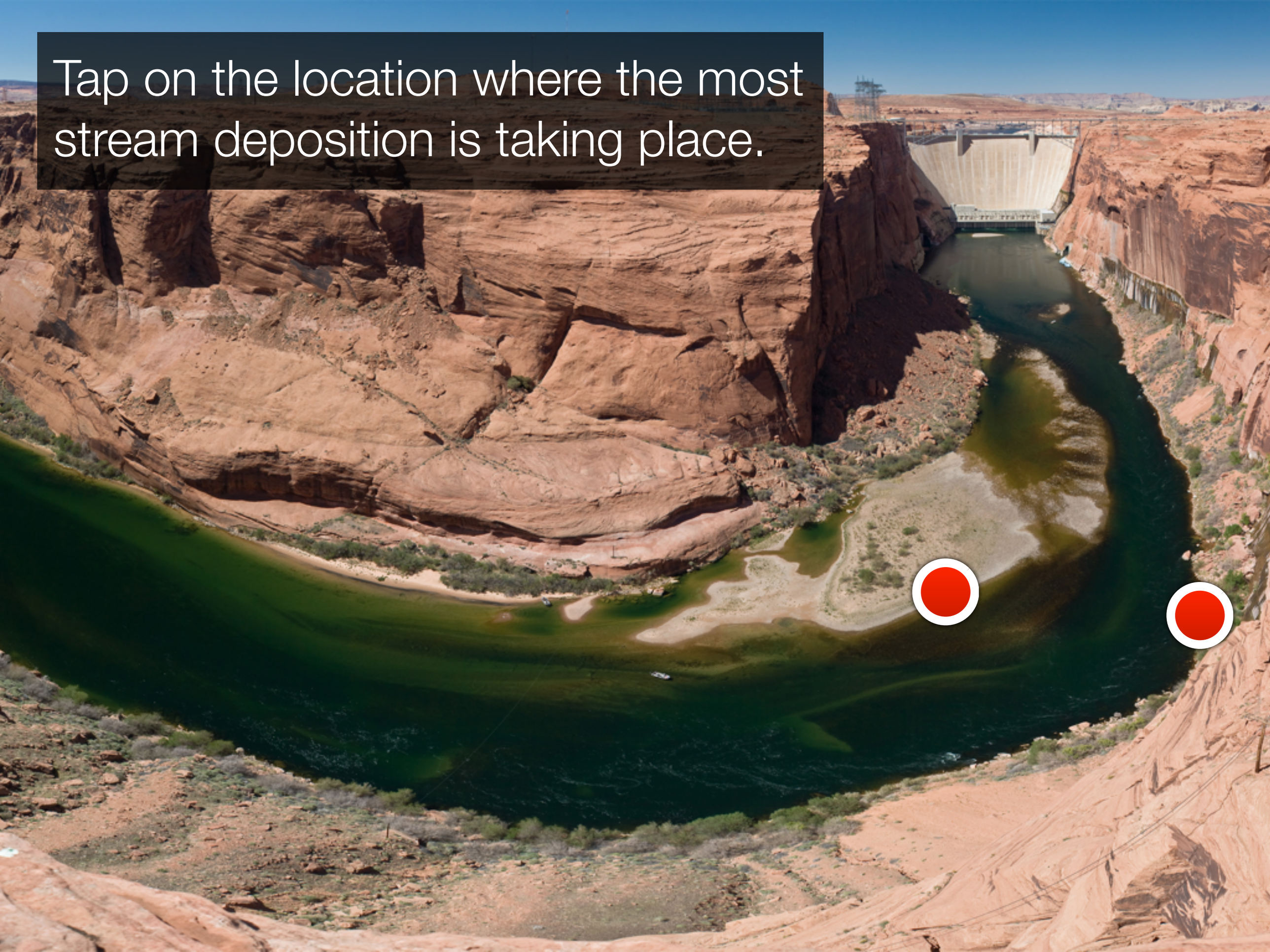
Tap to Continue

Tap on the location where the most stream erosion is taking place.

Uh Oh...

Tap to try again.

Tap on the location where the most stream deposition is taking place.



Tap on the location where the most stream deposition is taking place.

Nice Job!

Tap to Continue.

Tap on the location where the most stream deposition is taking place.

Uh Oh...

Tap to try again.

Tap on the location where the stream velocity is the greatest.





Tap on the location where the most stream velocity is the greatest.

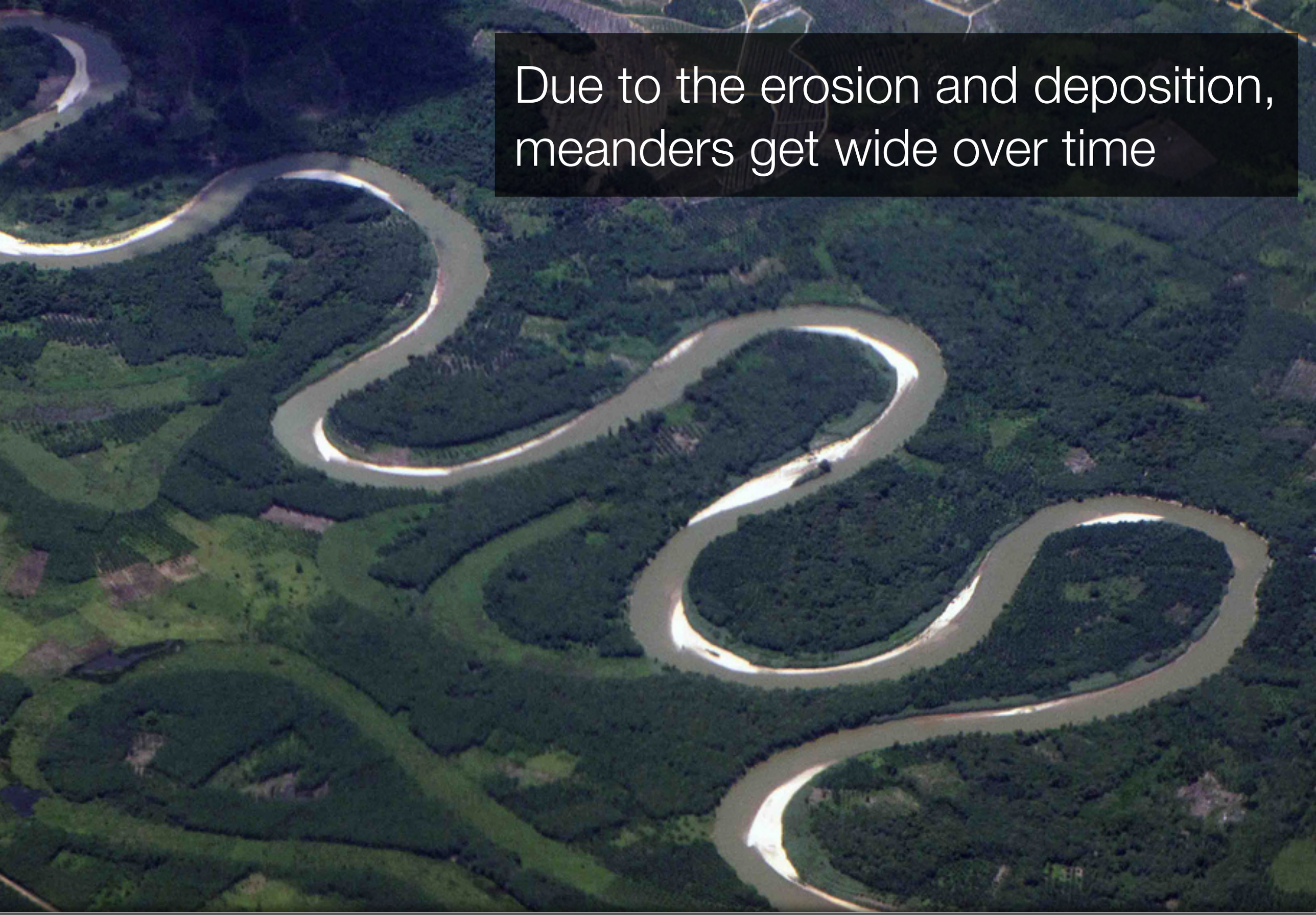
Nice Job!

Tap to Continue.

Tap on the location where the most stream velocity is the greatest.

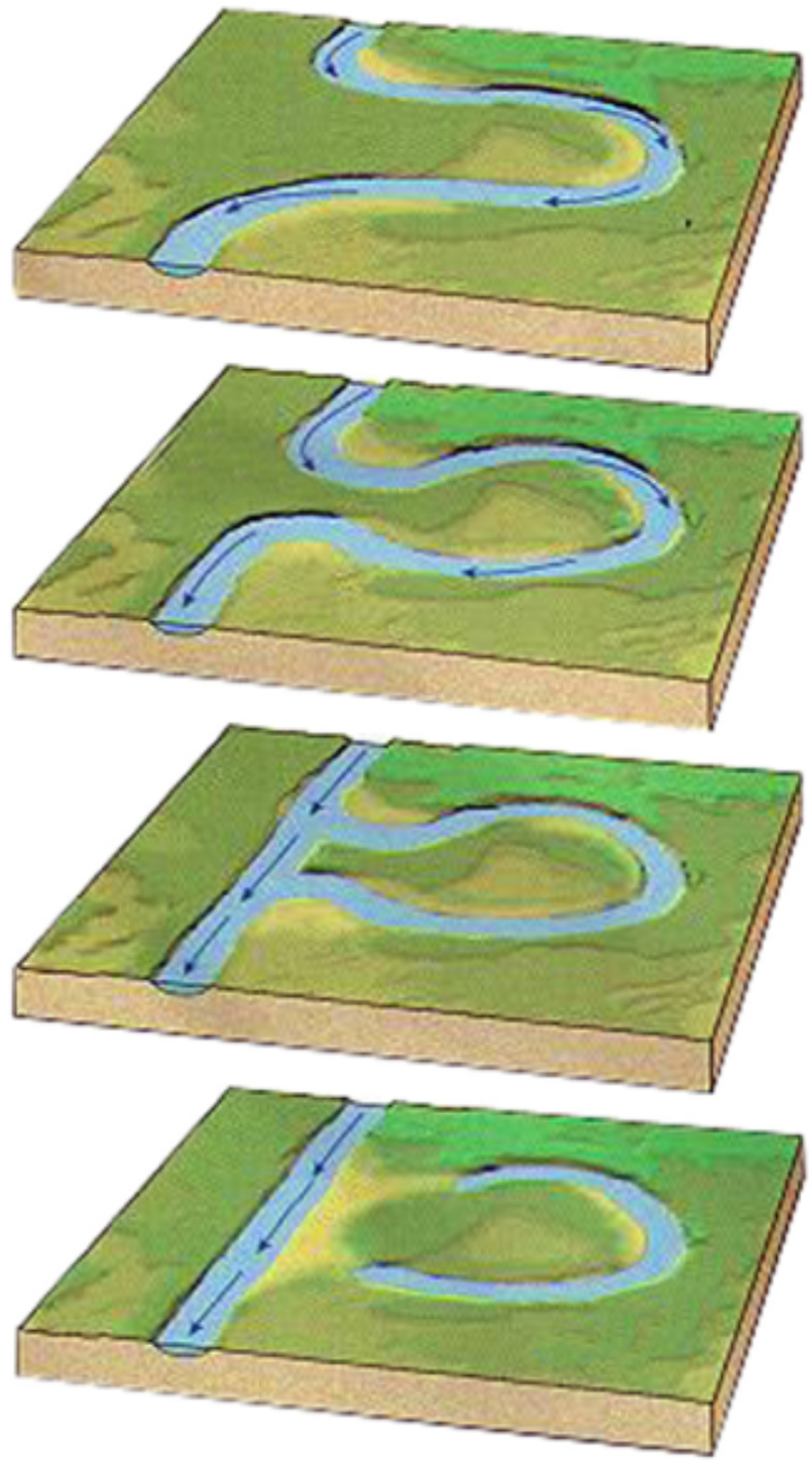
Uh Oh...

Tap to try again.



Due to the erosion and deposition, meanders get wide over time

If the erosion and deposition continue long enough, the meanders may get so wide that they meet and form an oxbow lake.



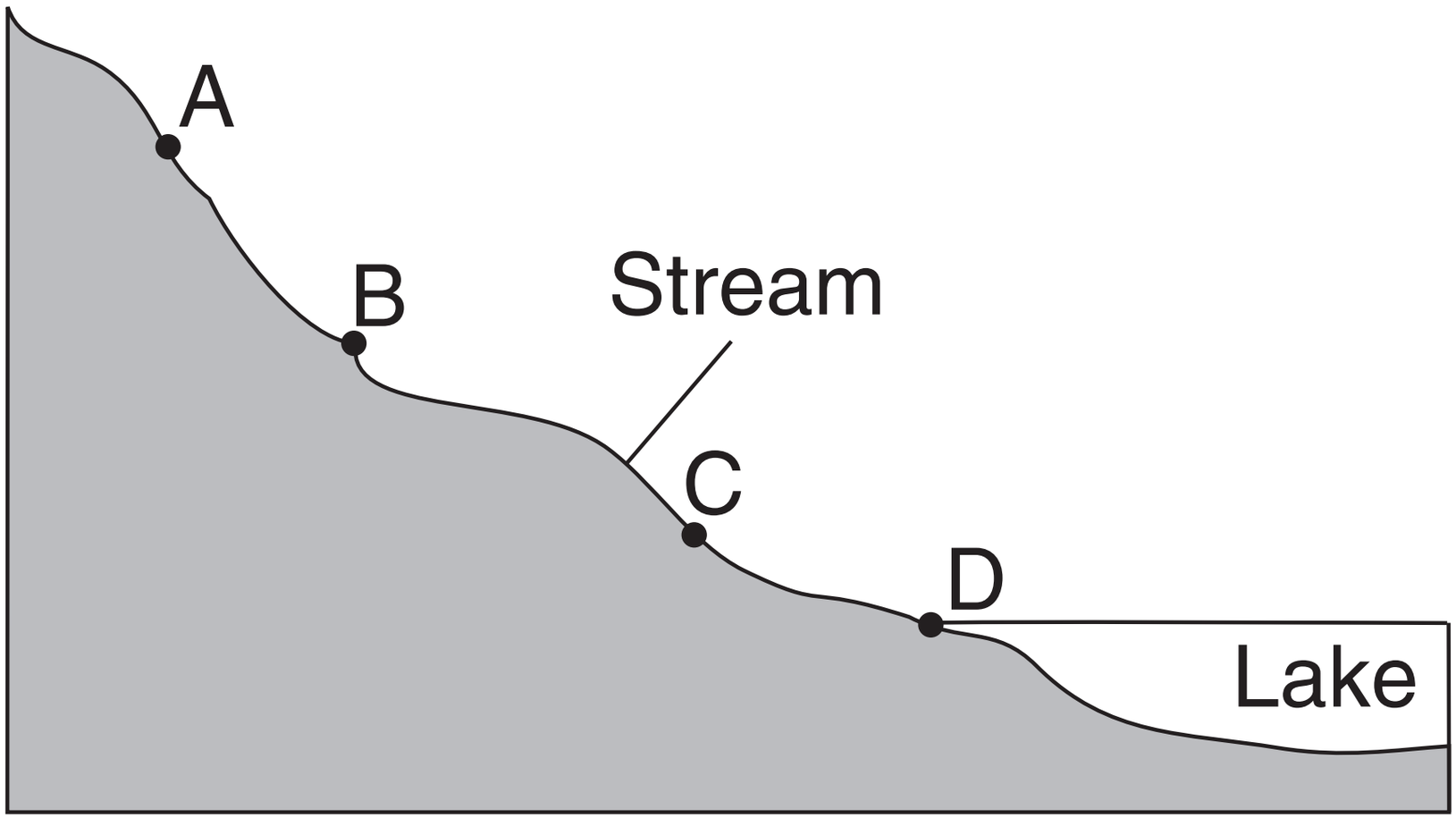


This river will likely form an oxbow lake in the near future.

Can you find the oxbow lake?

Streams don’t only slow down and deposit sediment on the inside of meanders, they also slow down when entering large bodies of water like lakes, other rivers, or the ocean.

The stream slows when it enters the lake at point D.



Deposition occurs at point D.

The sediment deposited as a stream enters a large body of water forms a delta.



Stage 1



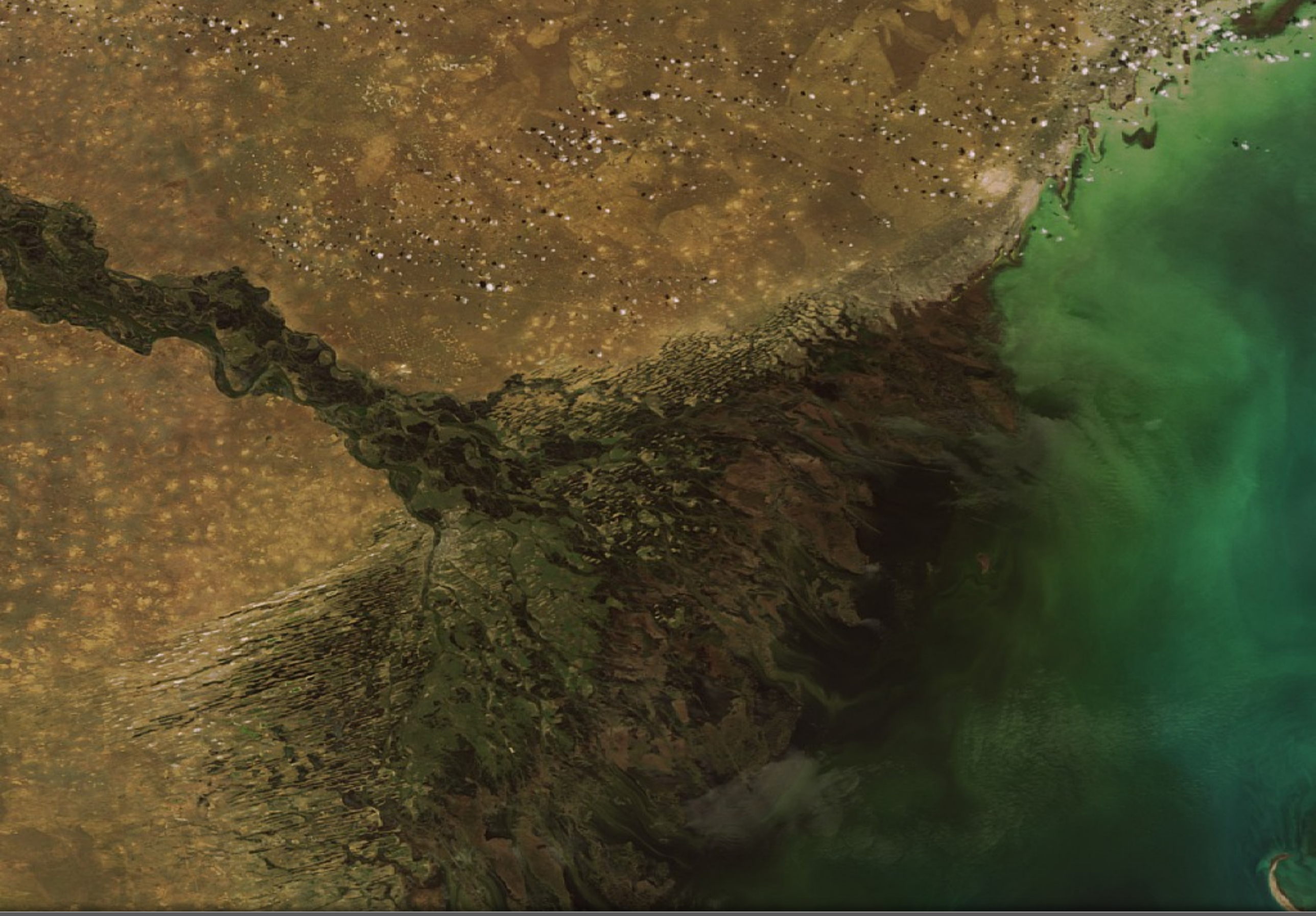
Stage 2

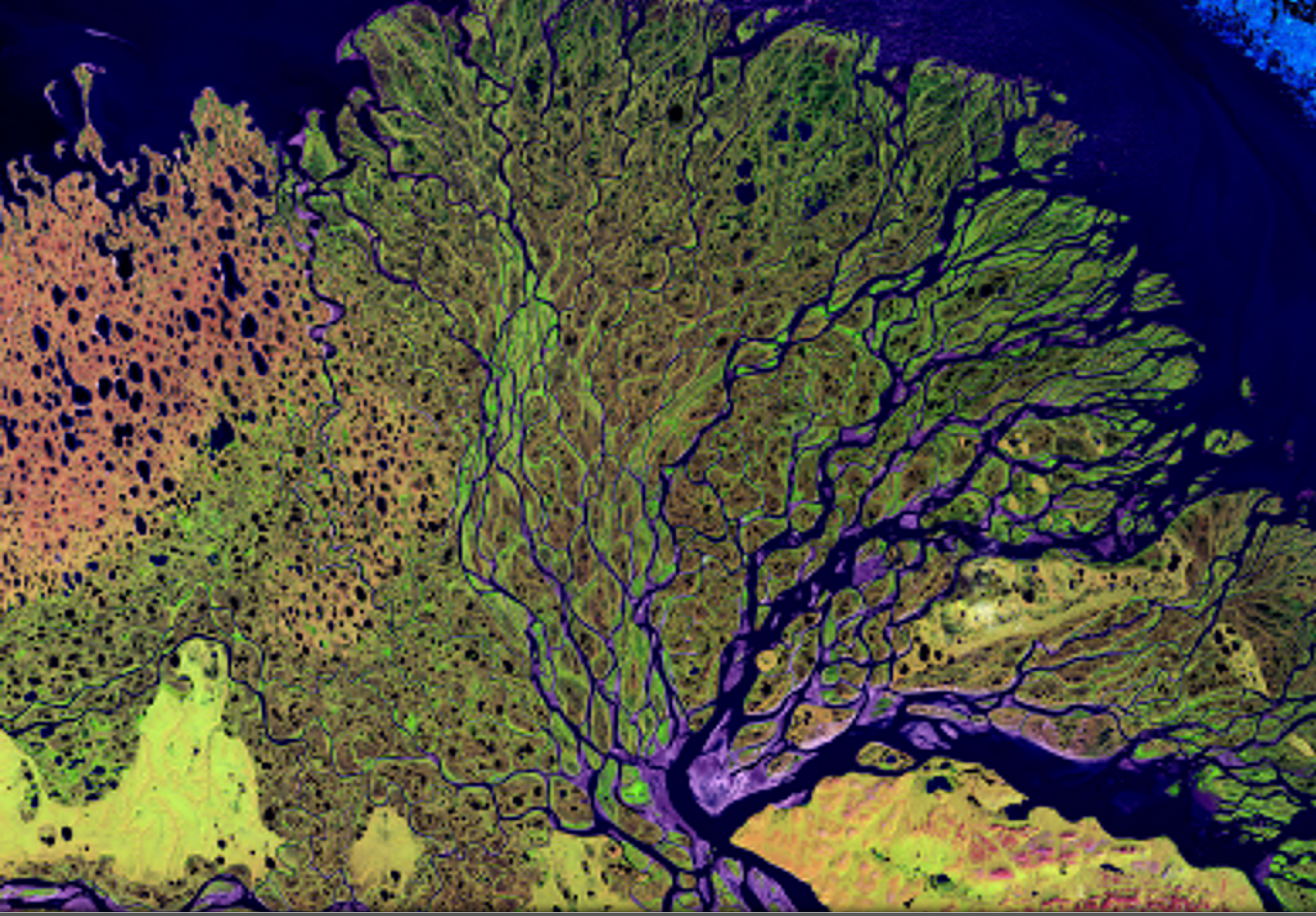


Stage 3





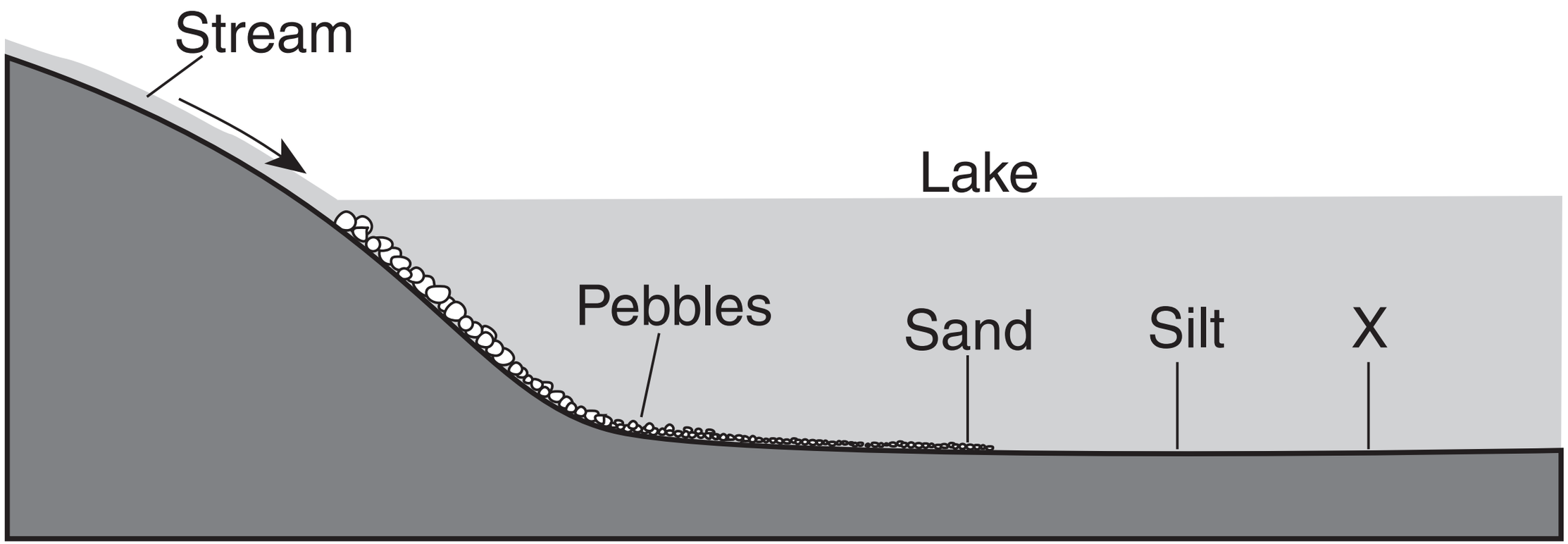




The sediments deposited in a delta are sorted by particle size.

The largest sediments are dropped off first, followed by smaller and smaller sediments.

Streams deposit sorted sediments

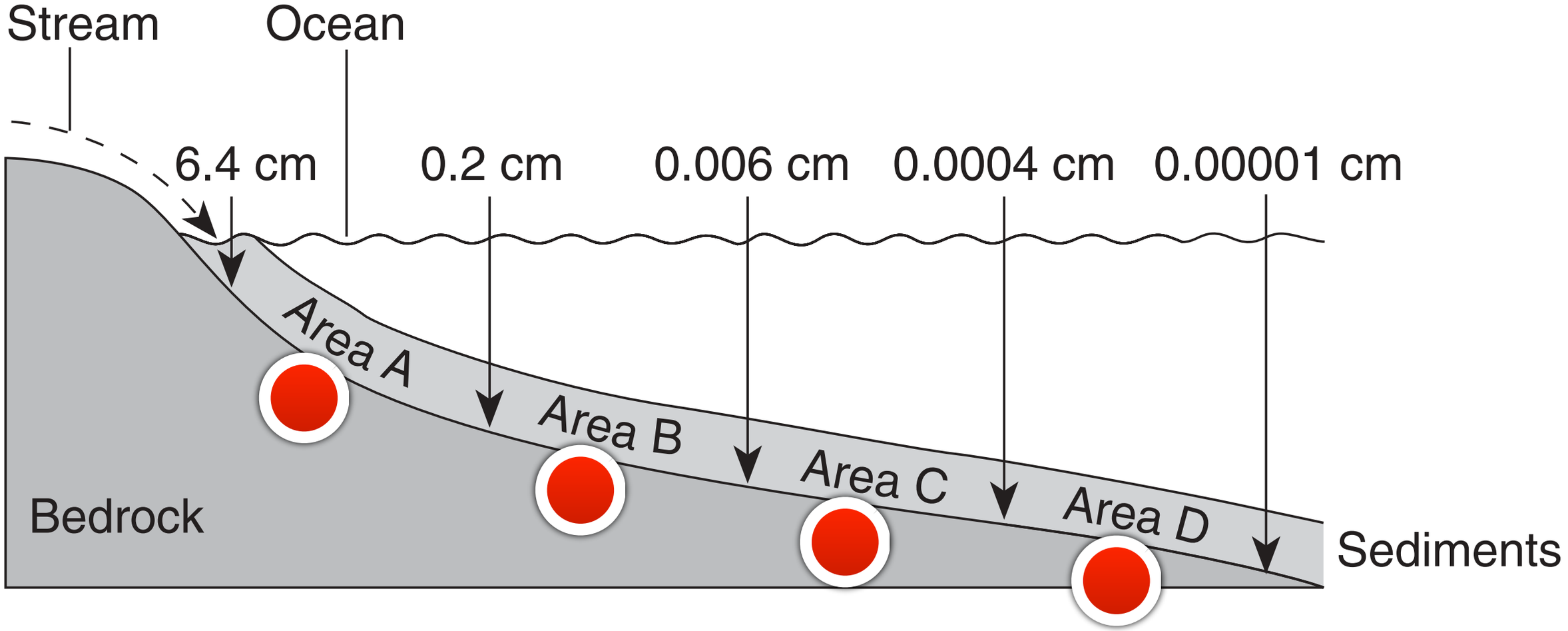


(Not drawn to scale)

This type of sorting is called "horizontal sorting."

Tap the area where a sandstone is likely to form from the deposited sediments.

(HINT: USE YOUR ESRT)



Tap the area where a sandstone is likely to form from the deposited sediments.

(HINT: USE YOUR ESRT)

Nice Job!



Tap to Continue.

Tap the area where a sandstone is likely to form from the deposited sediments.

(HINT: USE YOUR ESRT)

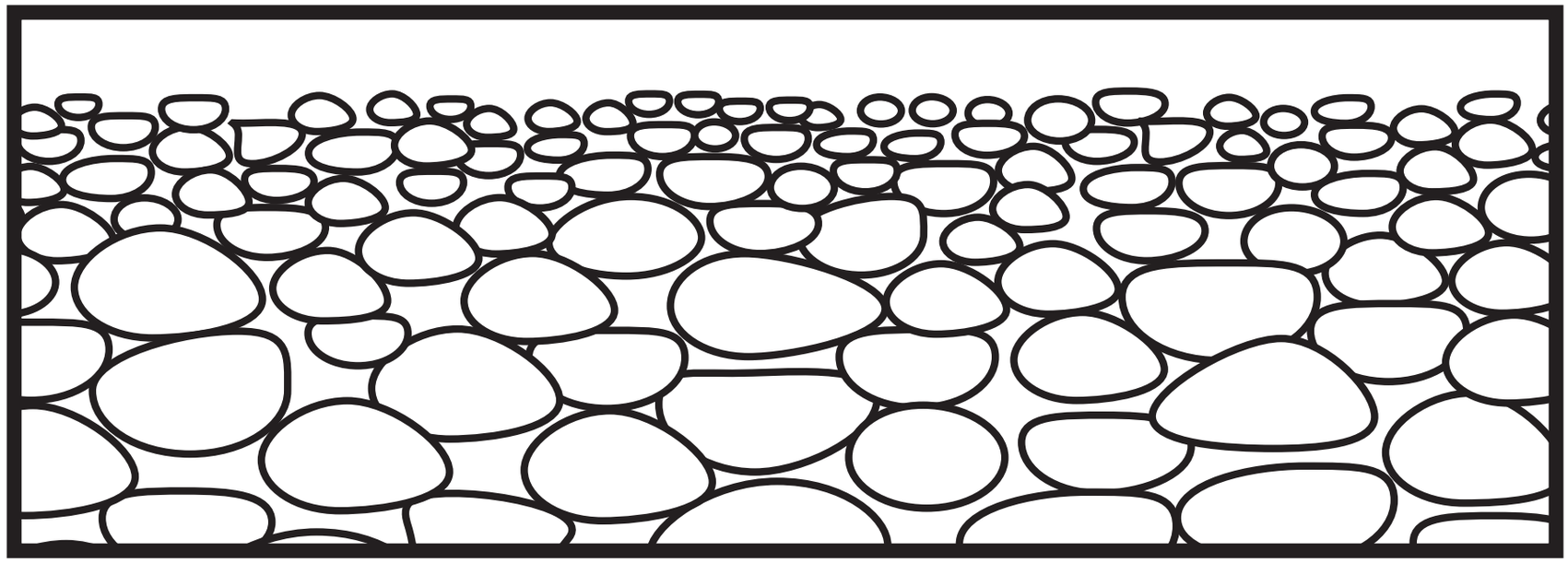
Uh Oh...



Tap to try again.

If the sediments are deposited quickly (like during a rock slide on the side of a cliff or if water comes to a complete stop) they will be sorted vertically.

Streams deposit sorted sediments



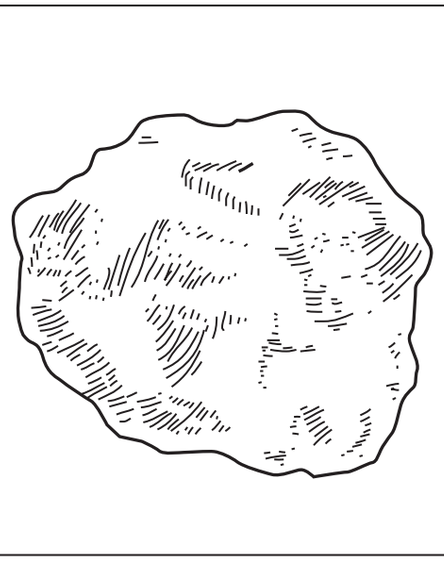
(Drawn to scale)

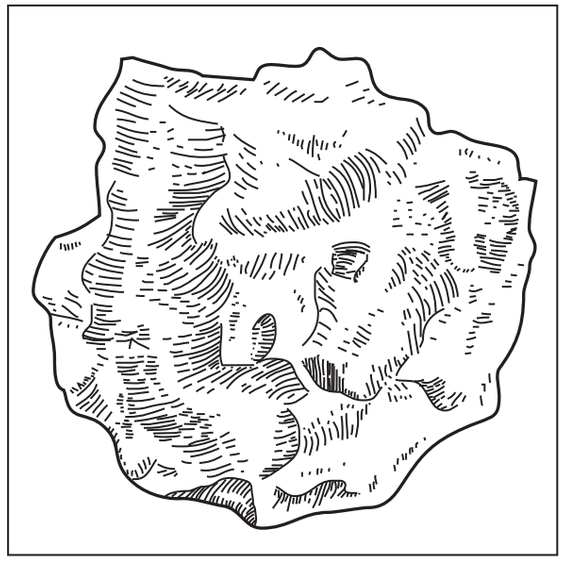
This type of sorting is called “vertical sorting” or “graded bedding.”

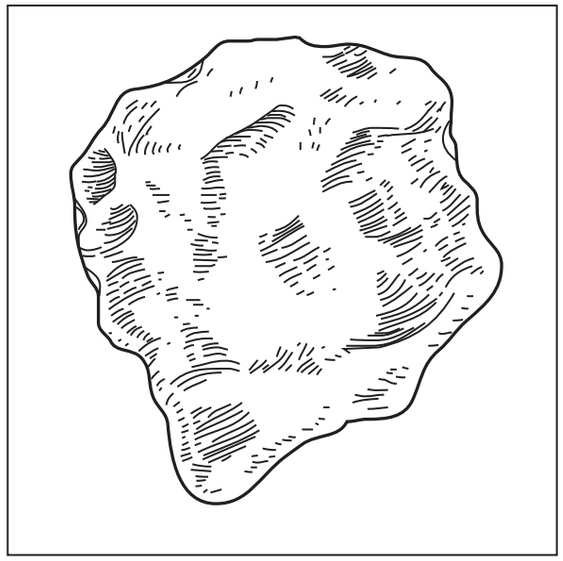
Due to extensive abrasion, the sediments deposited by streams are generally rounded and smooth.

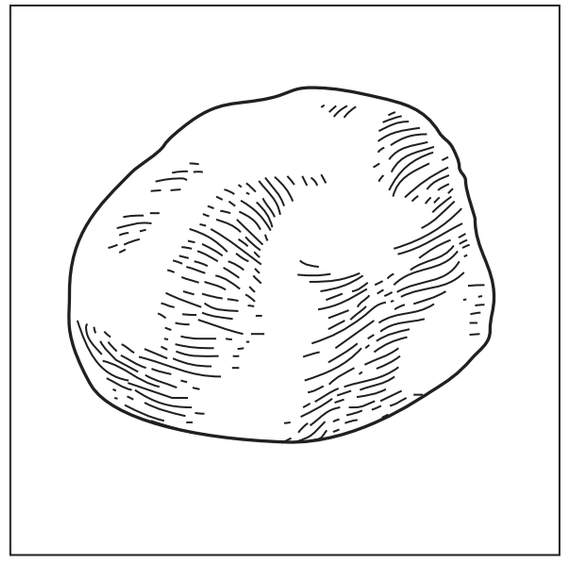


Tap the sediment that was likely weathered and eroded by running water.









Tap the sediment that was likely weathered and eroded by running water.

Nice Job!



Tap to Continue.

Tap the sediment that was likely weathered and eroded by running water.

Uh Oh...

Tap to try again.



You're Done!

Be sure to study and review all this information