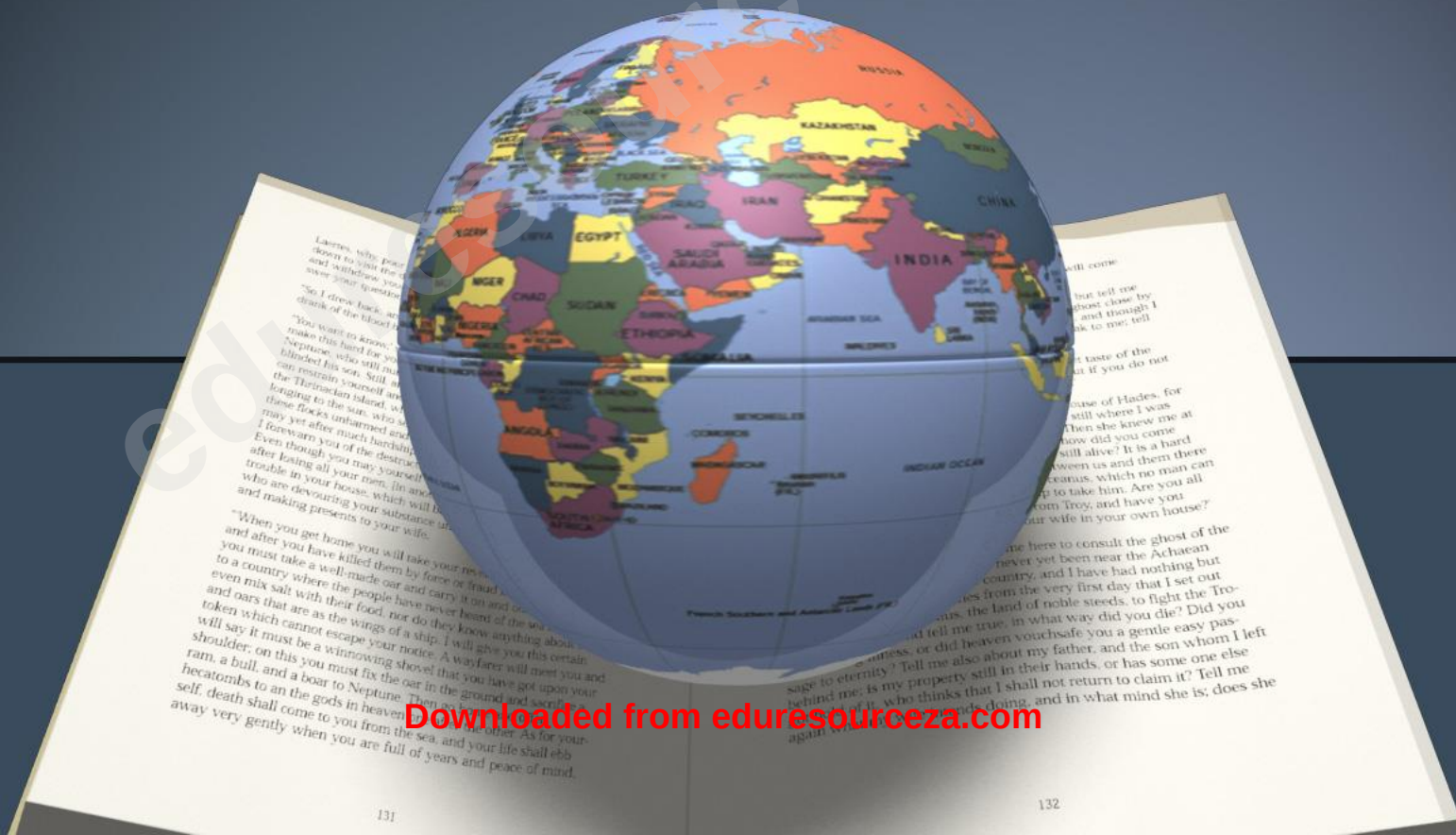




GEOGRAPHY

Revision

Geomorphology



TOPICS

1

Stream patterns

2

Stream orders

3

Longitudinal & cross profiles

4

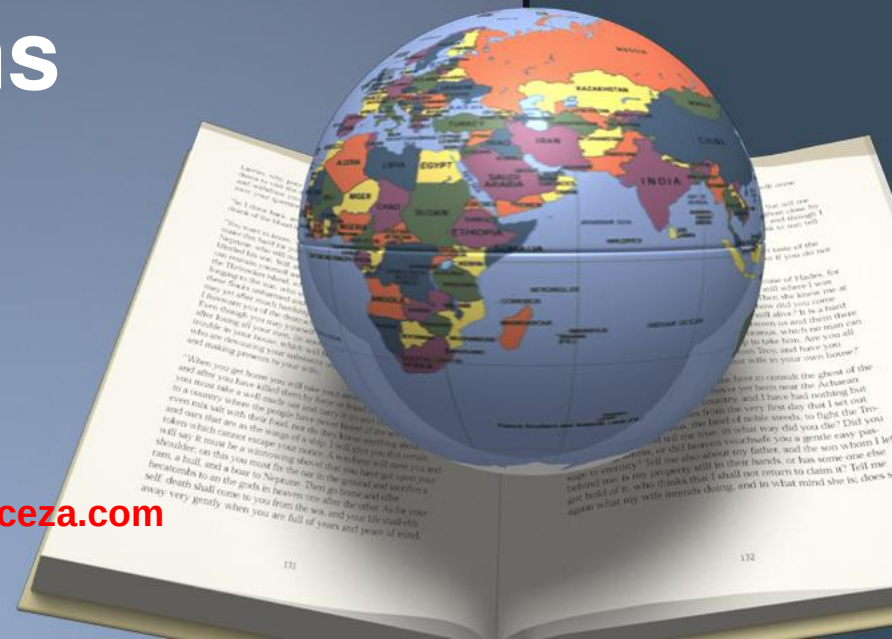
Fluvial landforms

5

Stream piracy

6

Rejuvenation





STREAM PATTERNS

RADIAL

- From highest central point (butte/conical hill)

RECTANGULAR

- Bends 90°
- Tributaries 90°
- Joints and faults

DENDRITIC

- Tree
- Uniform rocks

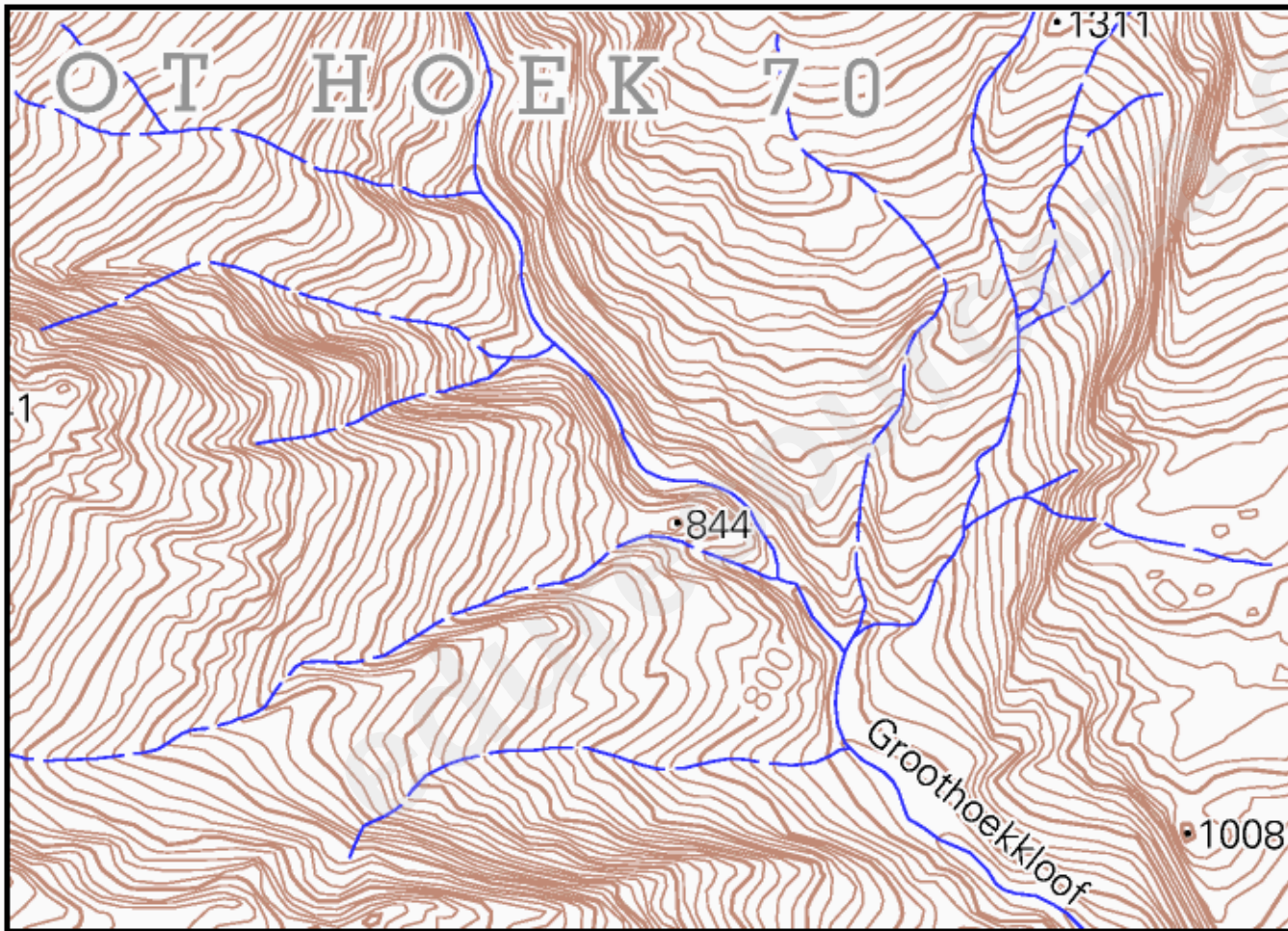
TRELLIS

- Alternating layers of hard and soft rock
- Parallel streams

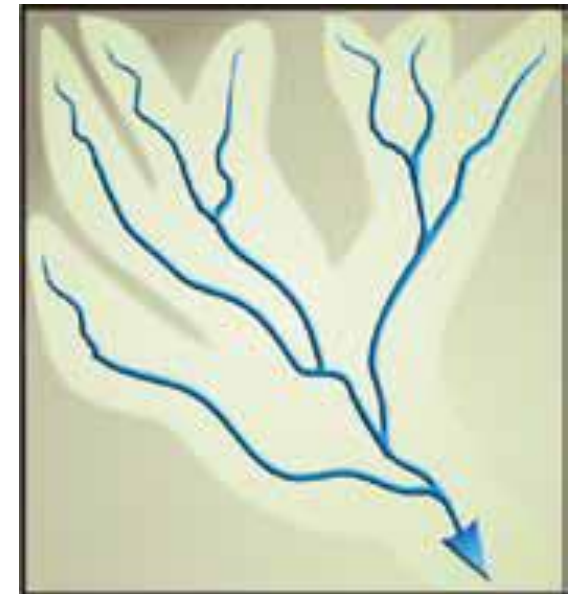
MUST KNOW THE FOLLOWING

- What does it look like
- Description
- Underlying structures

DENDRITIC PATTERN

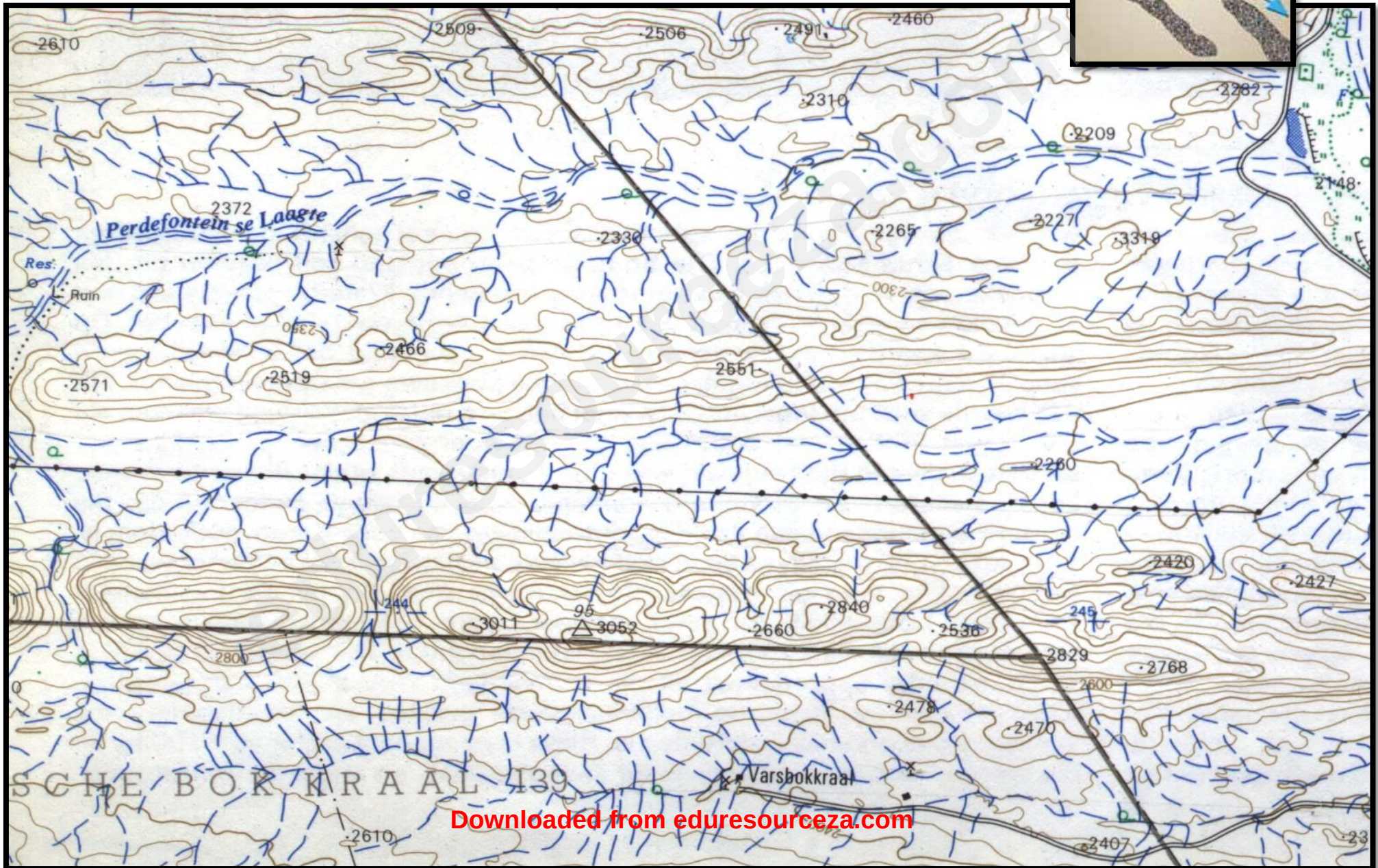
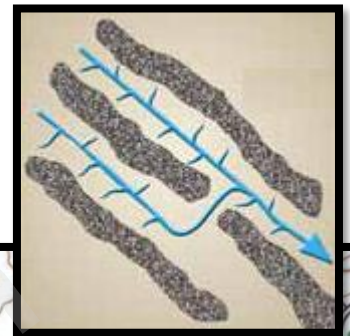


**Looks like the
branches of a
tree**



TRELLIS PATTERN

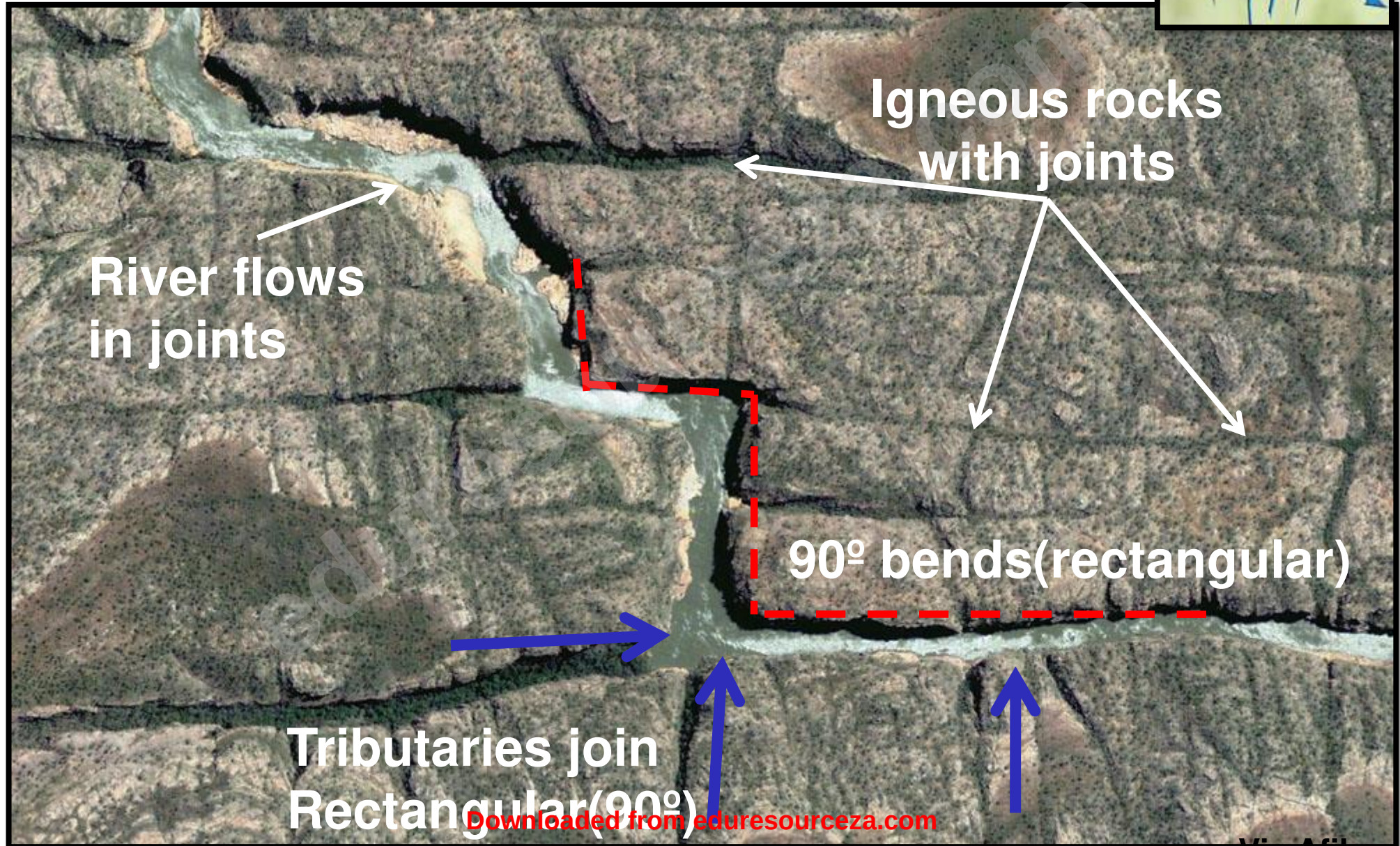
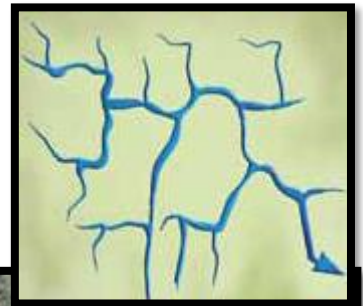
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GOOGLE EARTH IMAGE RECTANGULAR STREAM PATTERN

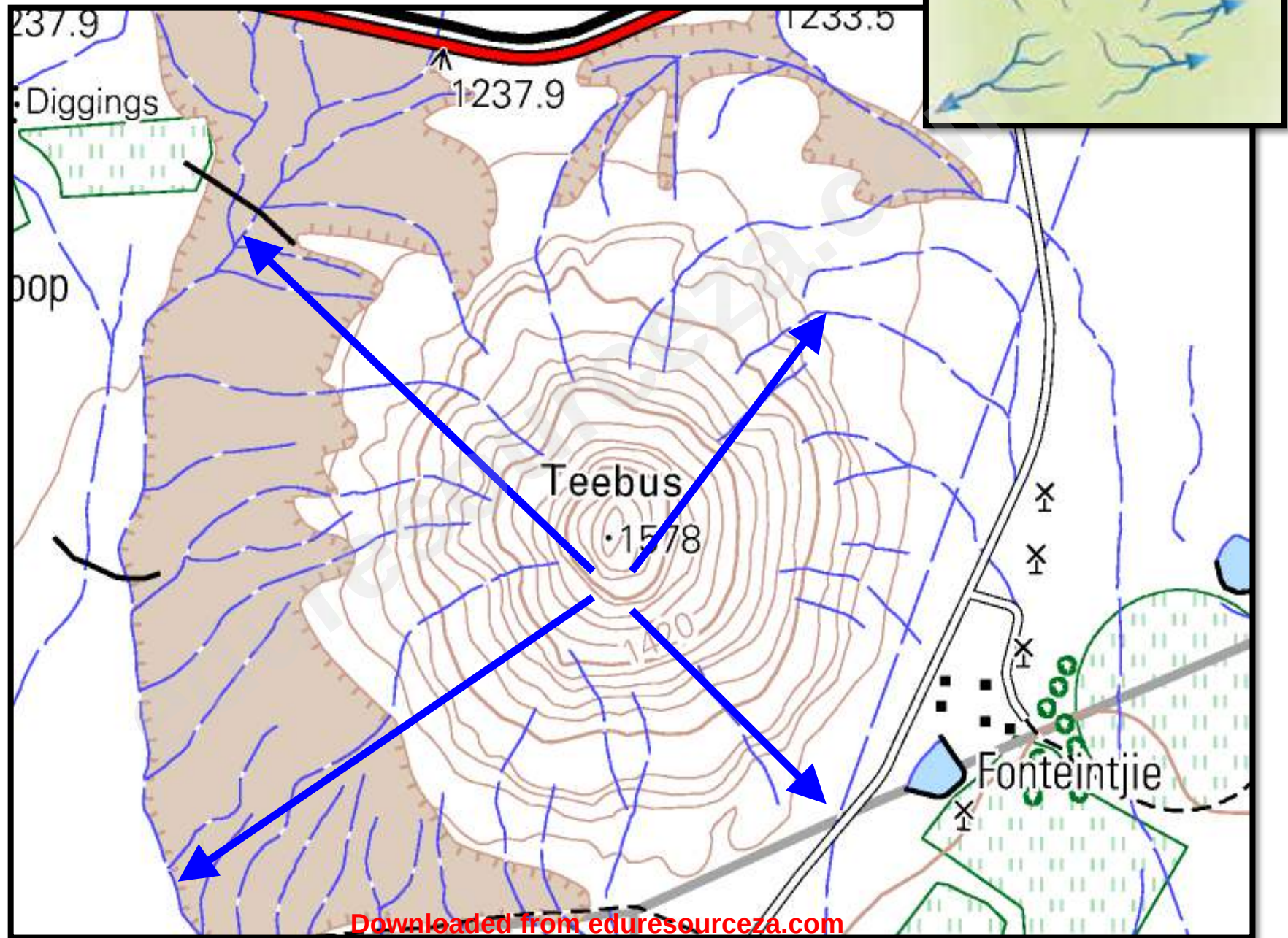
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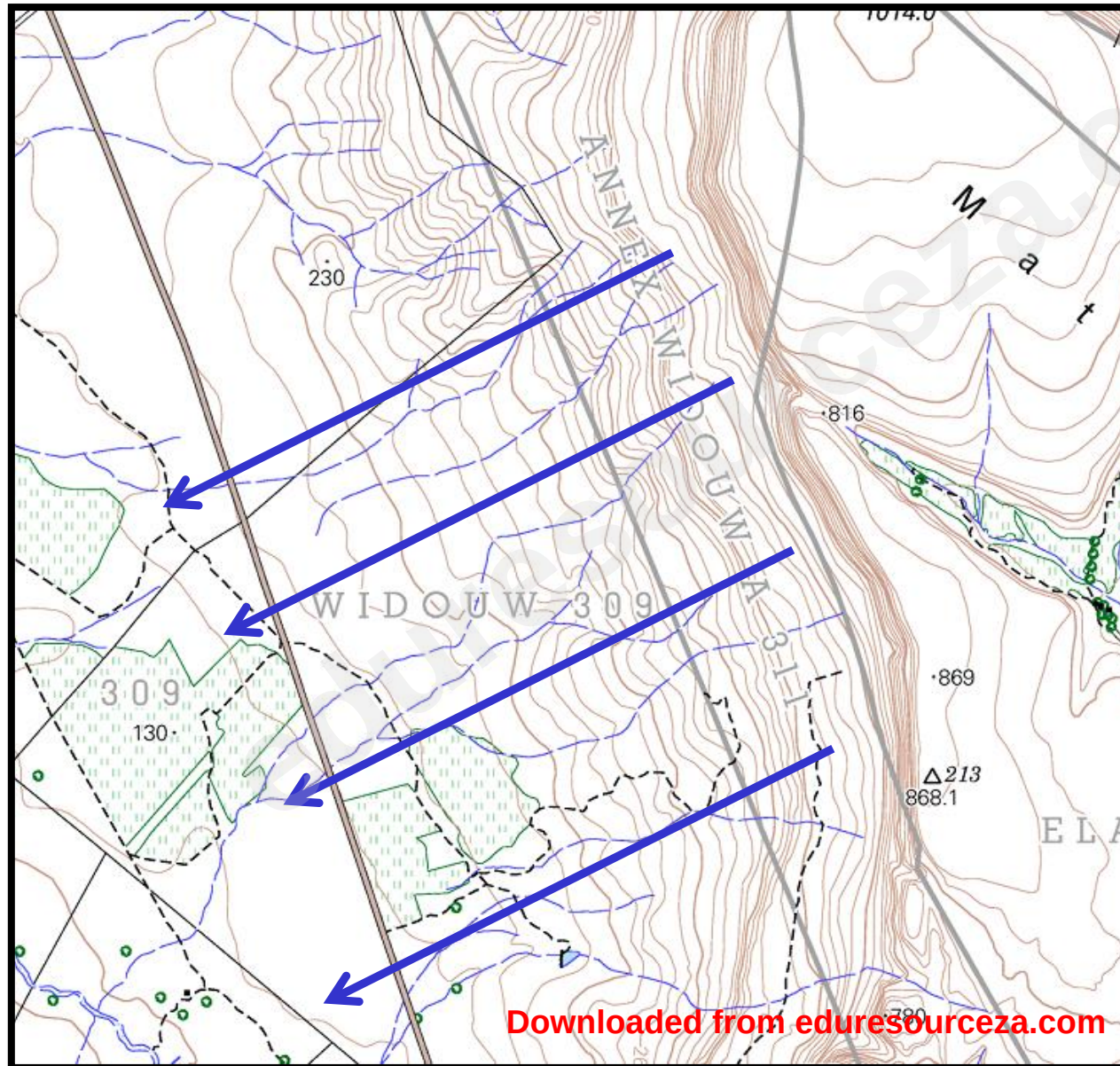
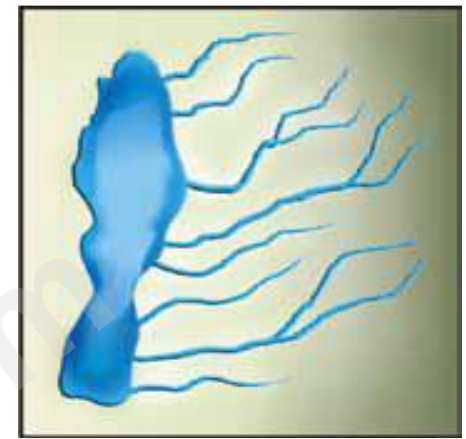
RADIAL PATTERN

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PARALLEL PATTERN

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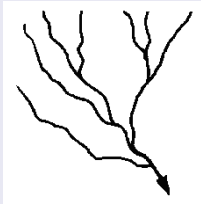
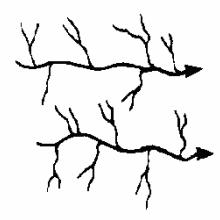
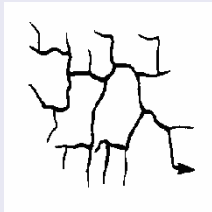
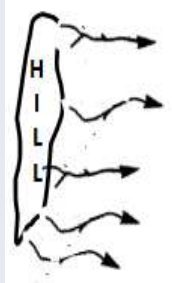


Common along a ridge or hill. Streams flow parallel to each other.

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DRAINAGE PATTERNS

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Pattern	Dendritic	Trellis	Radial	Rectangular	Centripetal	Deranged	Parallel
Diagram							
Description	Looks like branches of a tree. Tributaries join at acute angles.	Strong main stream joined by short tributaries at right angles	Looks like spokes of a wheel when viewed from above	Tributaries join at right angles and have bends of 90°	Opposite of radial pattern.	Small streams that have no specific pattern	Streams flow parallel to each other
Underlying structures	Uniform rocks of similar hardness	Gently sloping alternating layers of hard and soft rock	Rivers flow away from a high central point such like a butte or mesa	In areas with hard rock that is well jointed.	Streams flow towards a central basin such as a marsh or lake	Very flat areas that have experienced recent glaciation	Common along a ridge or hills.

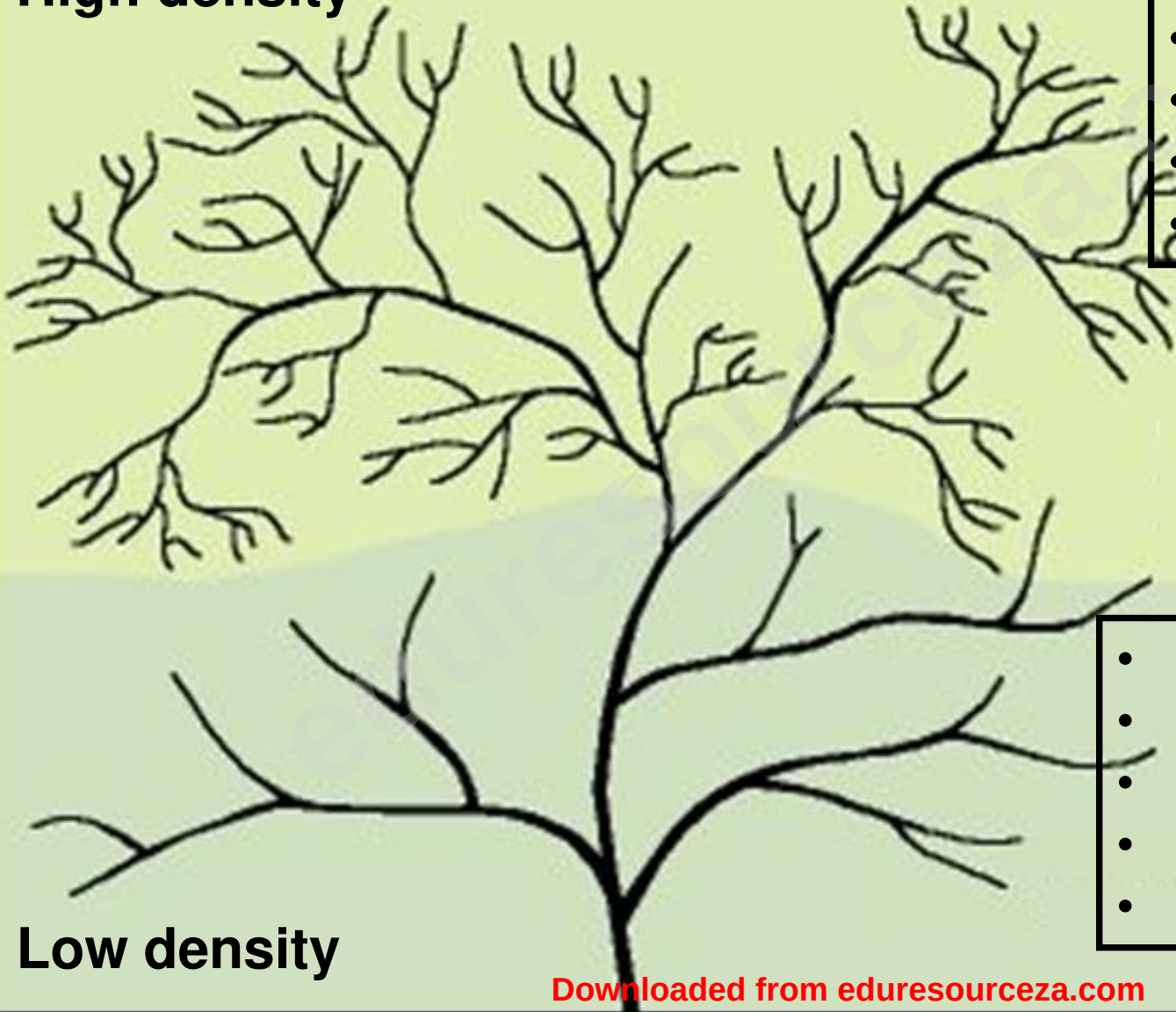
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DRAINAGE DENSITY

High density

- High rainfall
- Hard rocks
- Steep slopes
- Less vegetation
- Less infiltration



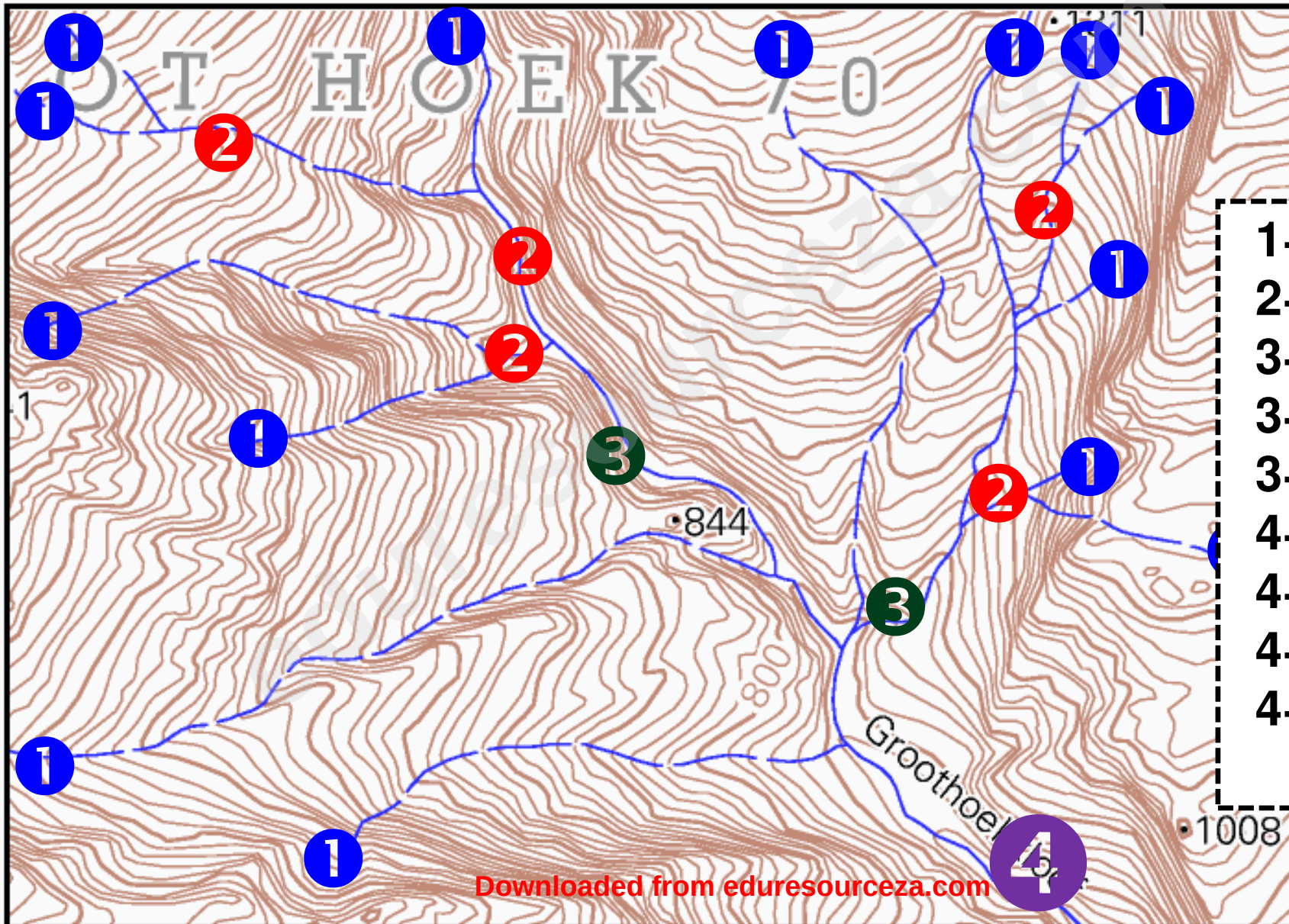
Low density

- Low rainfall
- Softer rocks
- Gentle slope
- Lots of vegetation
- More infiltration

STREAM ORDERS

First order streams are like fingertips

CONCEPTS Source and Confluence



1+1=2
2+2=3
3+1=3
3+2=3
3+3=4
4+1=4
4+2=4
4+3=4
4+4=5
etc

Discharge of a River

Laminar flow



- Water flows as parallel sheets.
- River bed is even.
- Less erosion.
- Lower course

Turbulent flow



- Water flows turbulent.
- River bed is uneven.
- More erosion.
- Upper course.

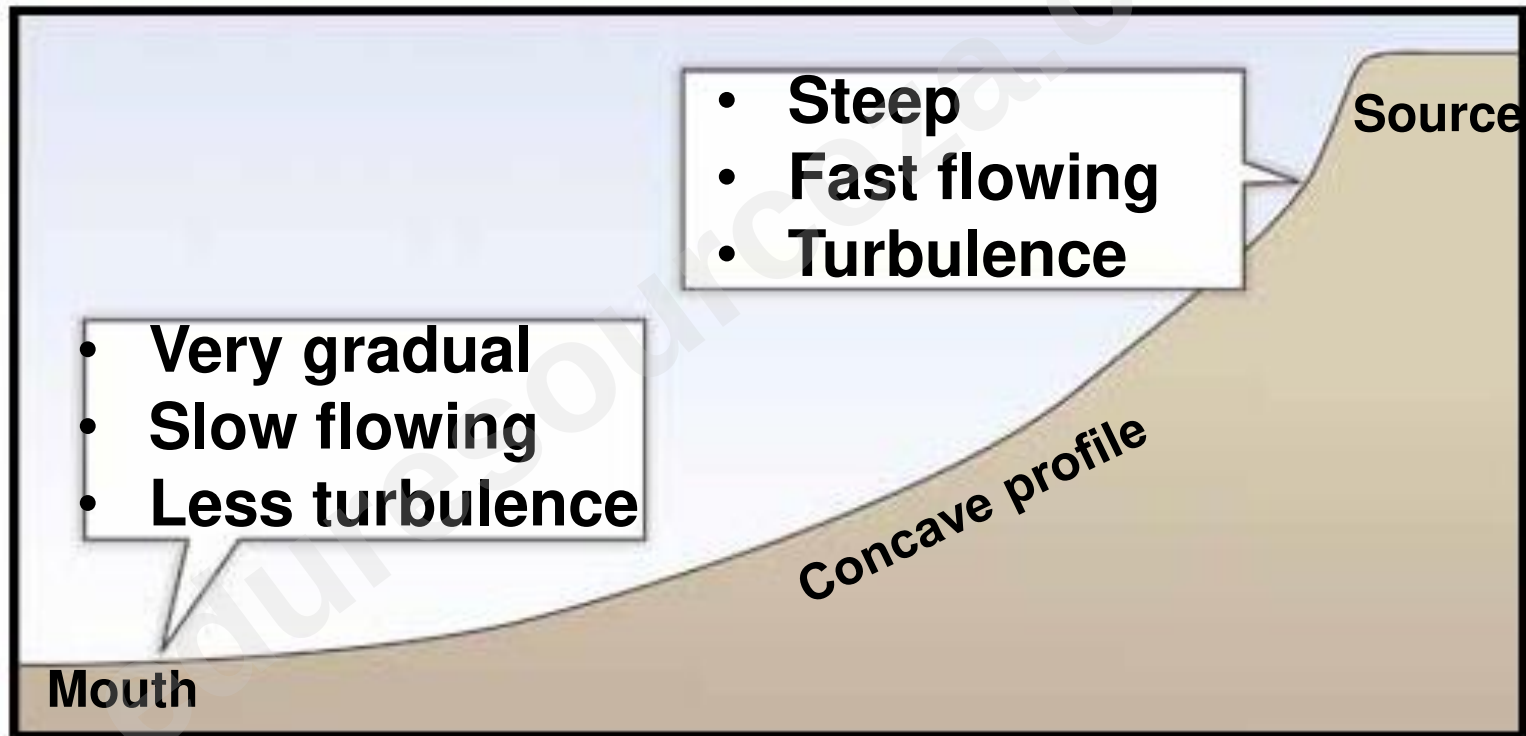


Longitudinal and Cross Profiles

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Longitudinal Profile

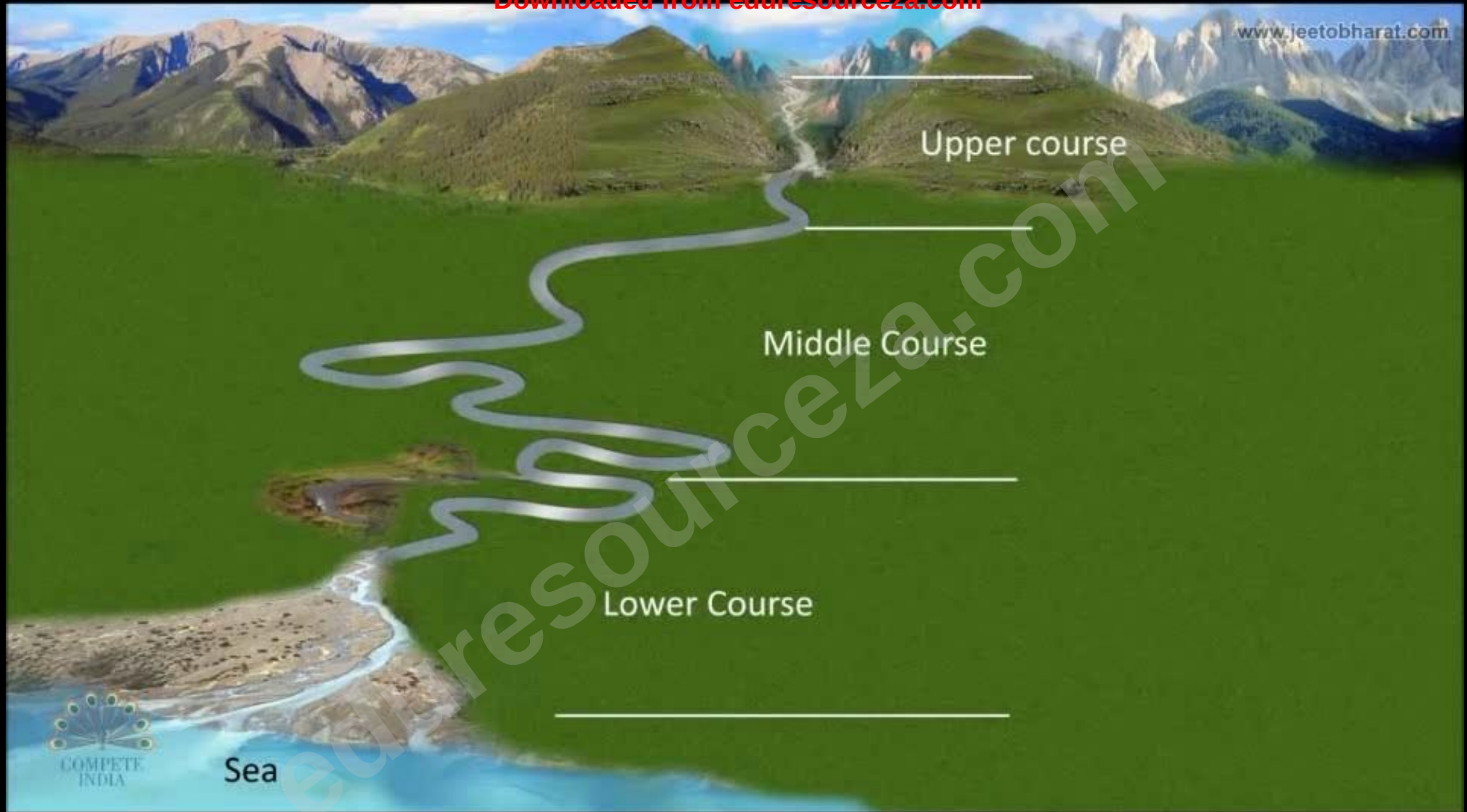
Side view of a river from source to mouth



Transverse (Cross) Profile

Shape of river valley from one bank to the opposite bank

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Longitudinal profile of a river

Longitudinal & Cross Profiles

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UPPER COURSE

- Steep
- Fast flowing
- Downward erosion
- Water falls, rapids, interlocking spurs

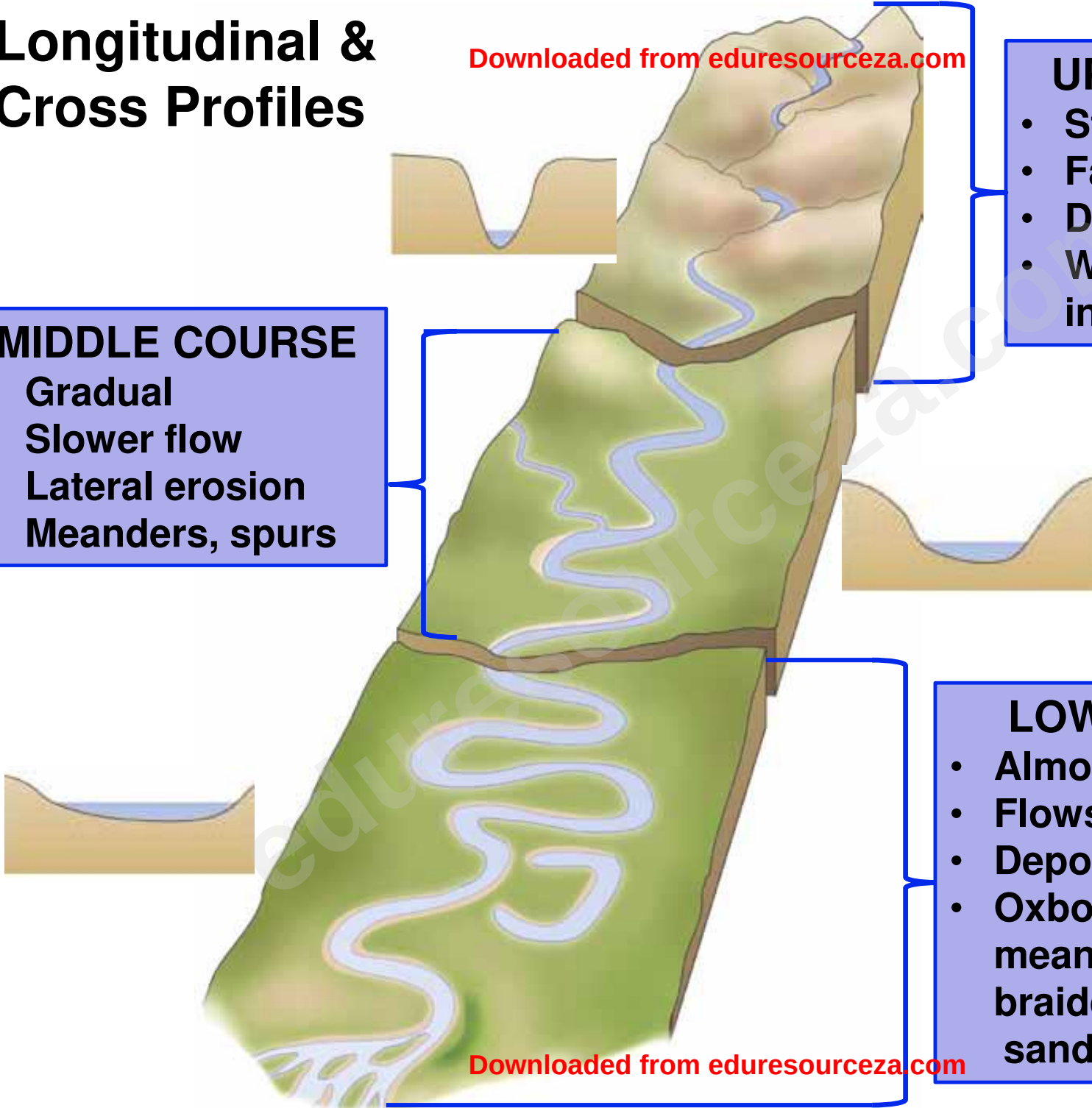
MIDDLE COURSE

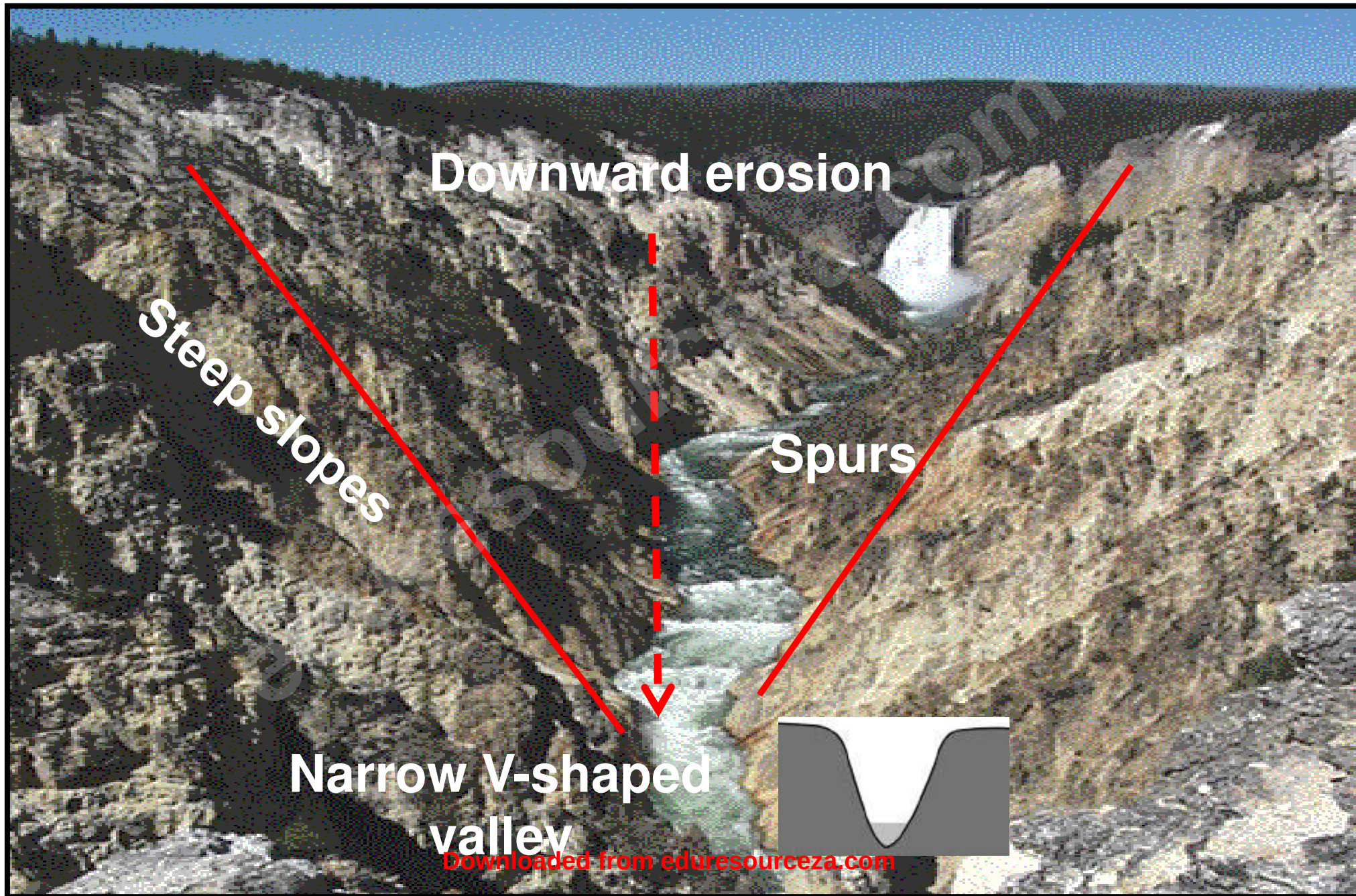
- Gradual
- Slower flow
- Lateral erosion
- Meanders, spurs

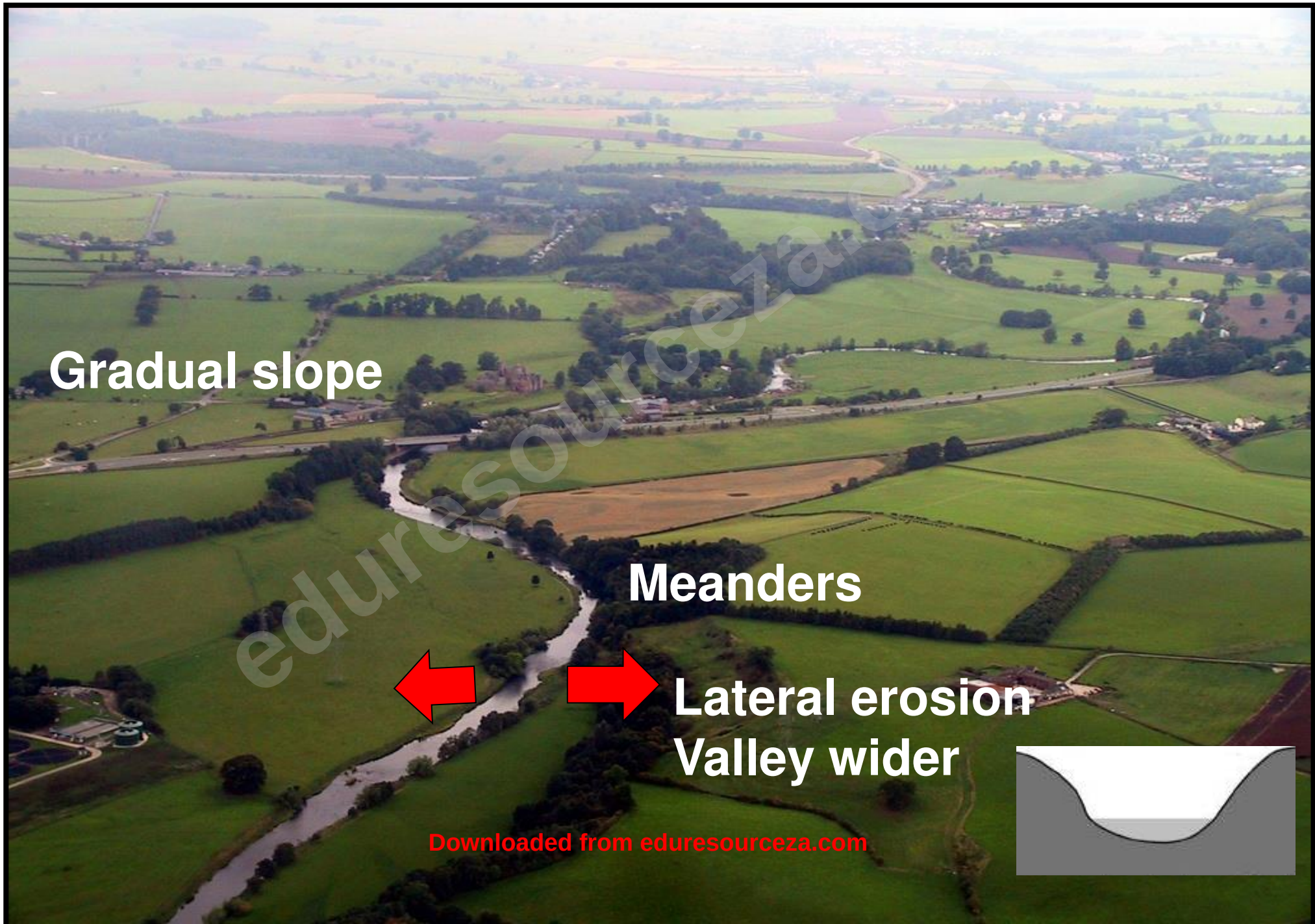
LOWER COURSE

- Almost flat
- Flows very slowly
- Deposition
- Oxbow lakes, deltas meanders, marshes braided streams, sand banks

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**River
mouth**

Floodplain

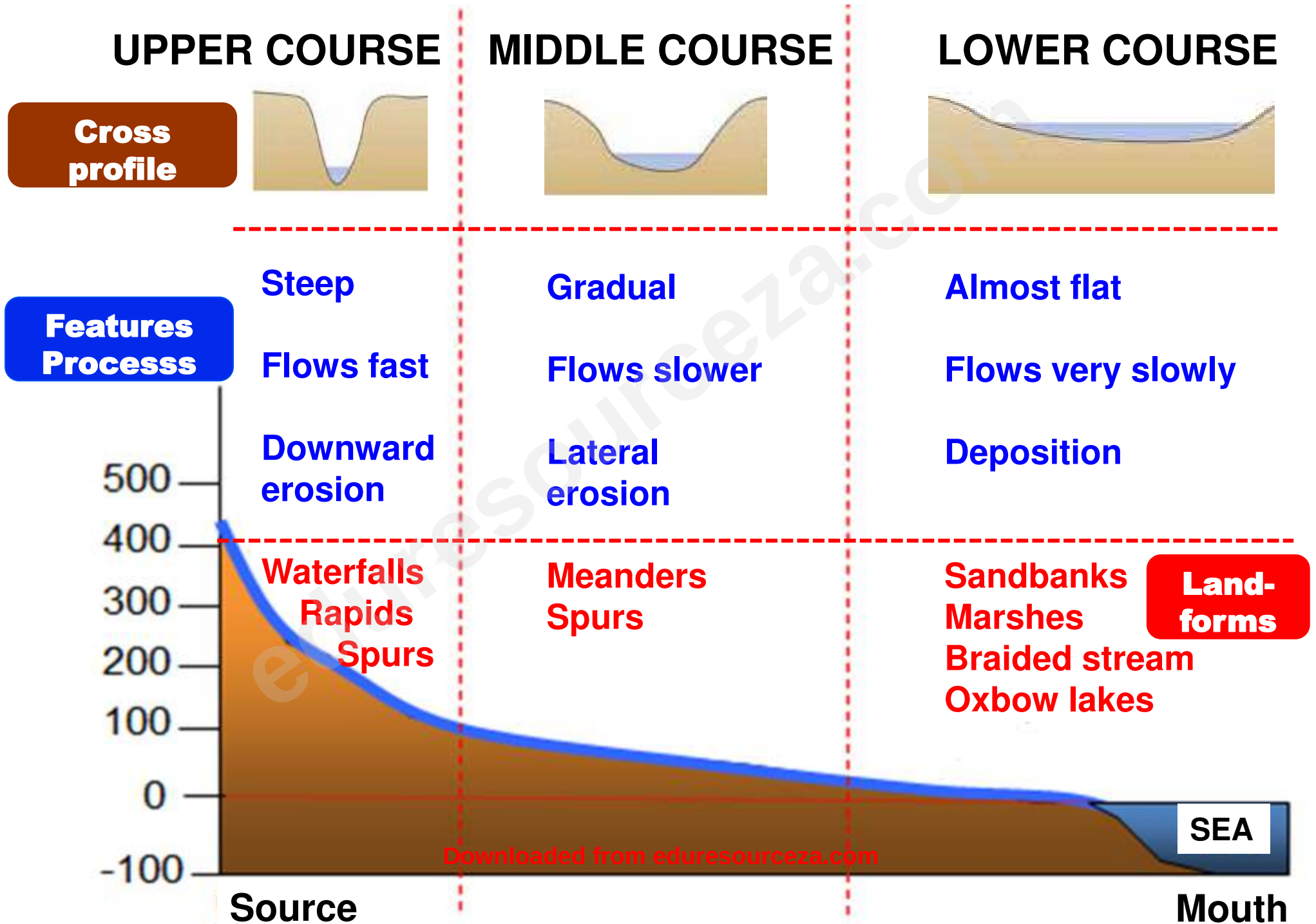
Almost flat

Meanders



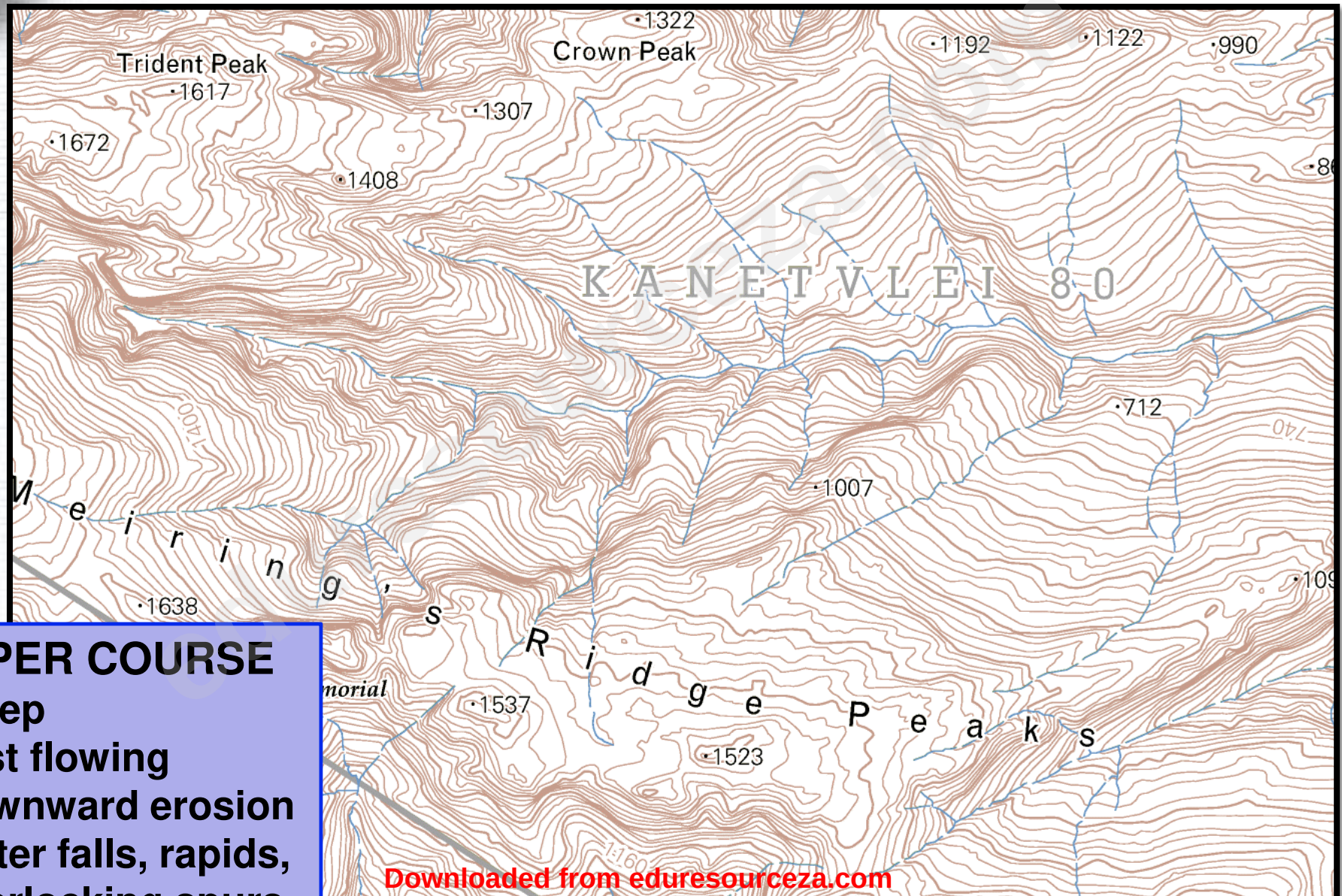
Wide channel

Summary: Longitudinal & Cross profiles





Topographic map: Upper course



UPPER COURSE

- Steep
- Fast flowing
- Downward erosion
- Water falls, rapids, interlocking spurs



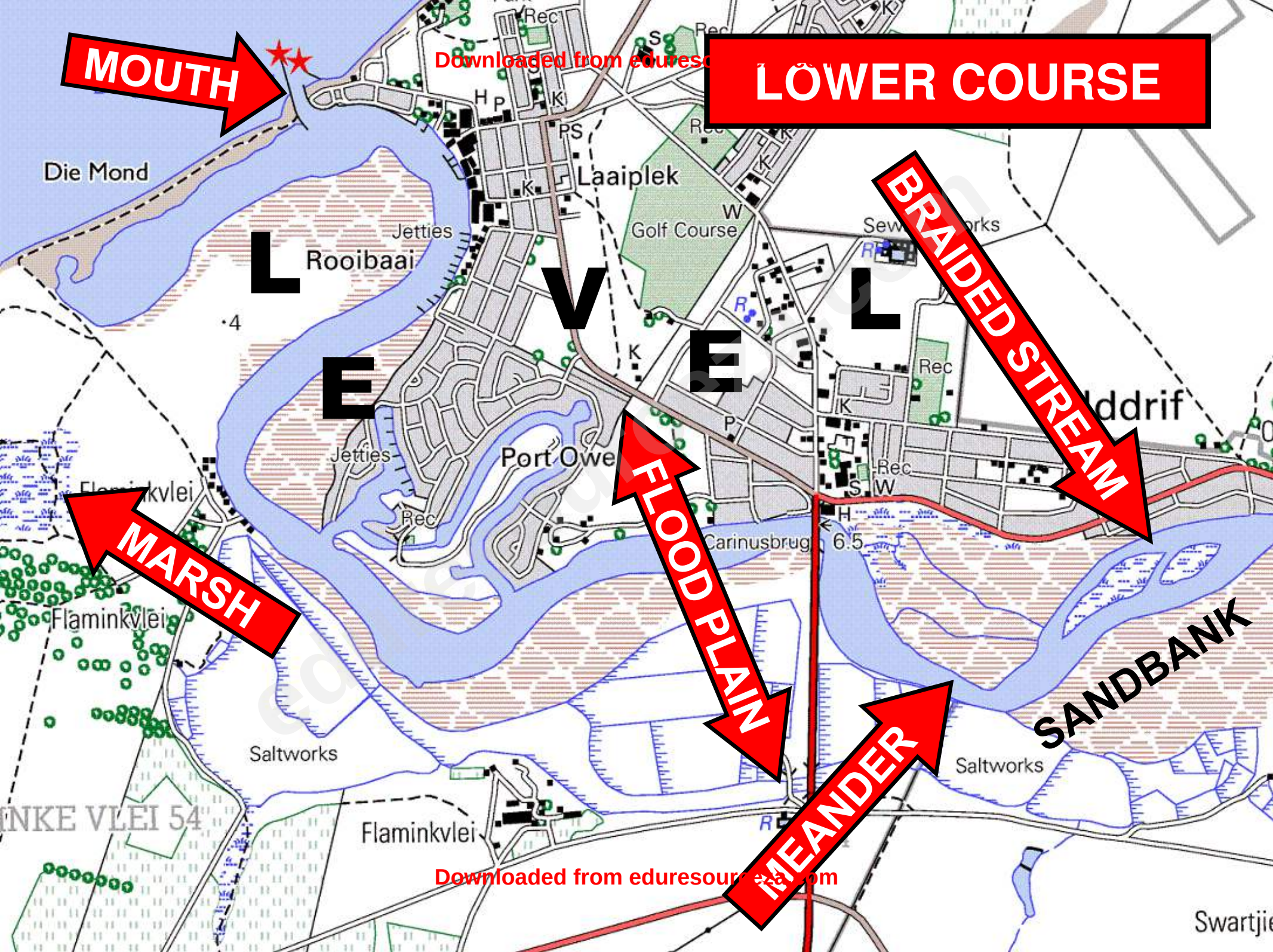
- **Gradual**
- **Slower flow**
- **Lateral erosion**
- **Meanders, spurs**

- **Gradual**
- **Slower flow**
- **Lateral erosion**
- **Meanders, spurs**

MOUTH

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LOWER COURSE



BRAIDED STREAM

FLOOD PLAIN

MEANDER

MARSH

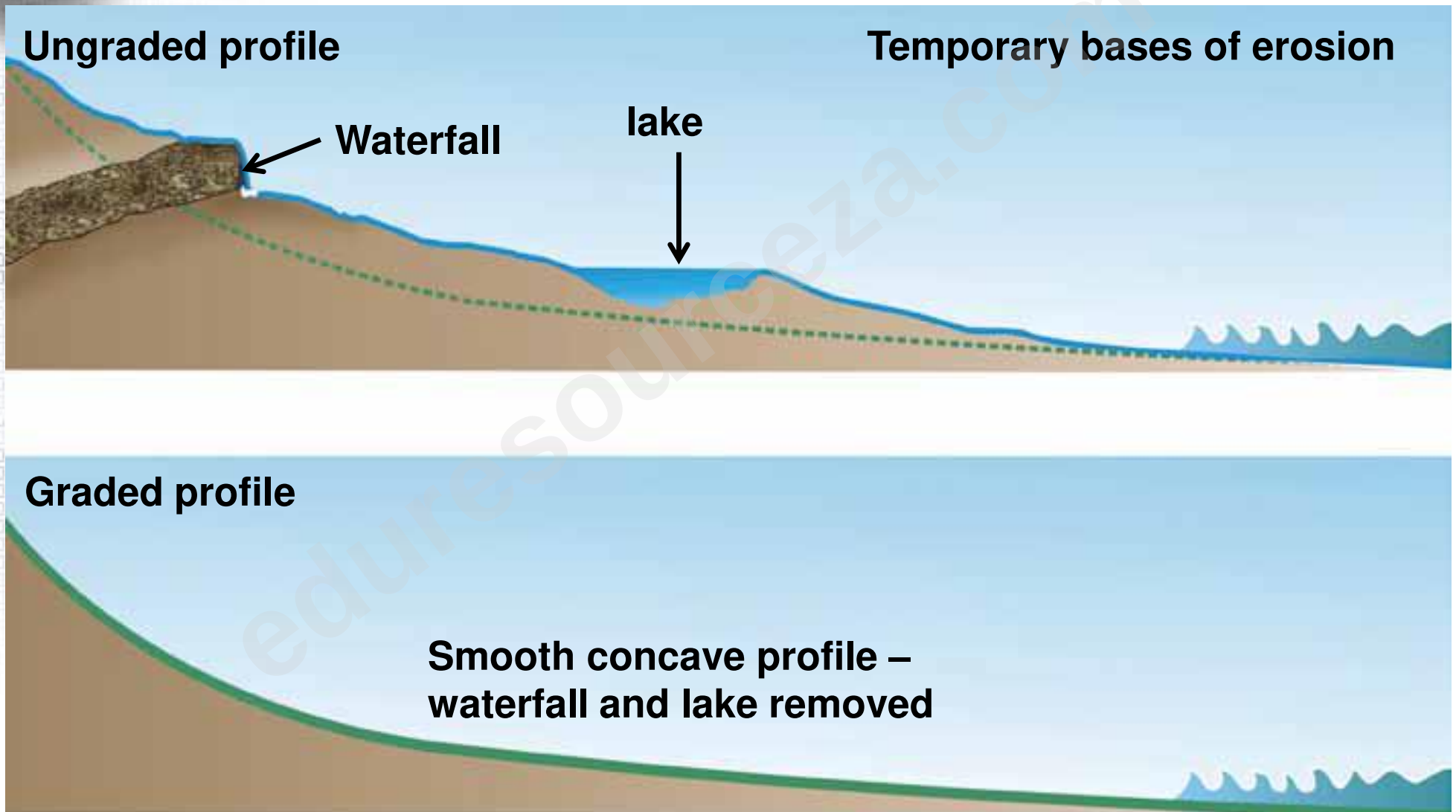
SANDBANK

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River grading

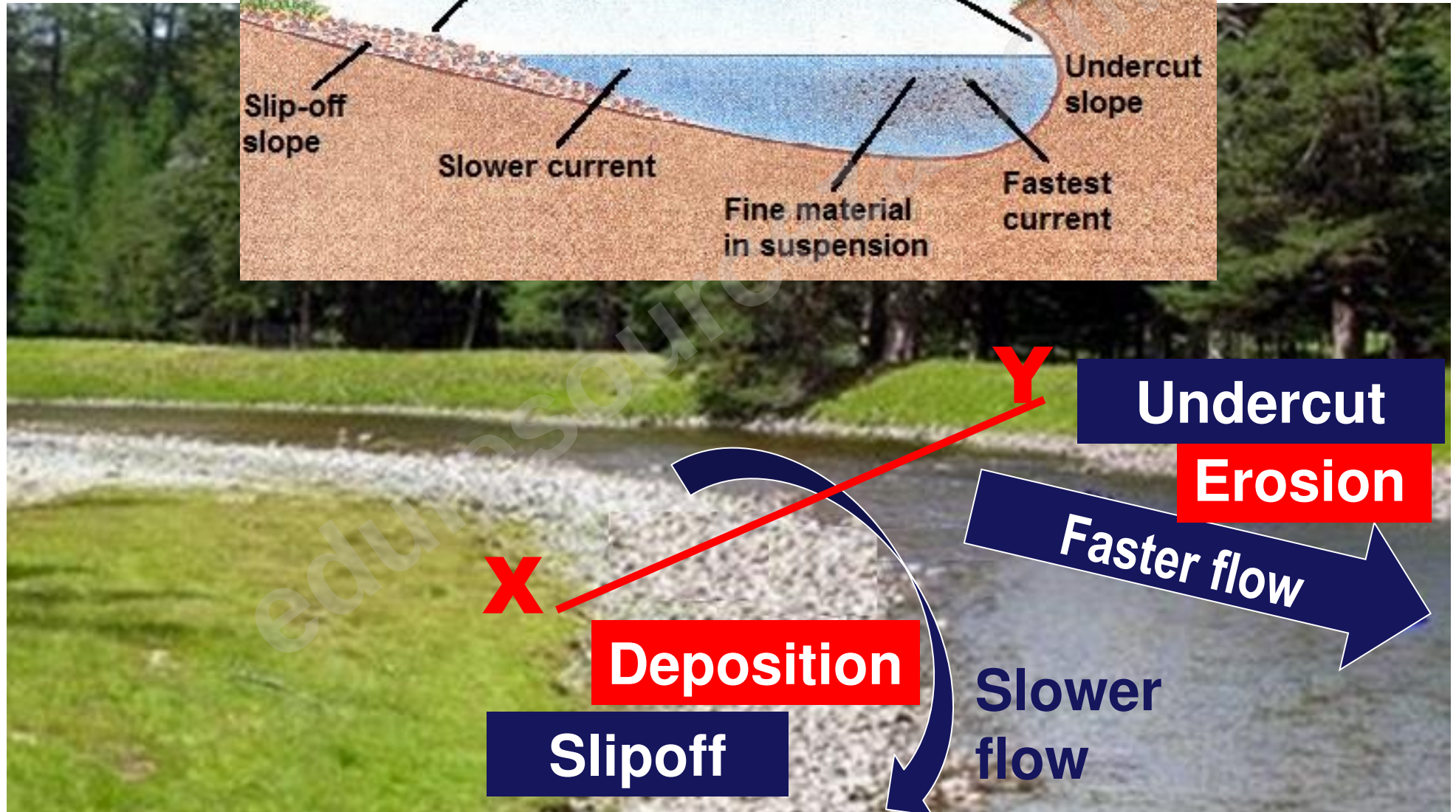
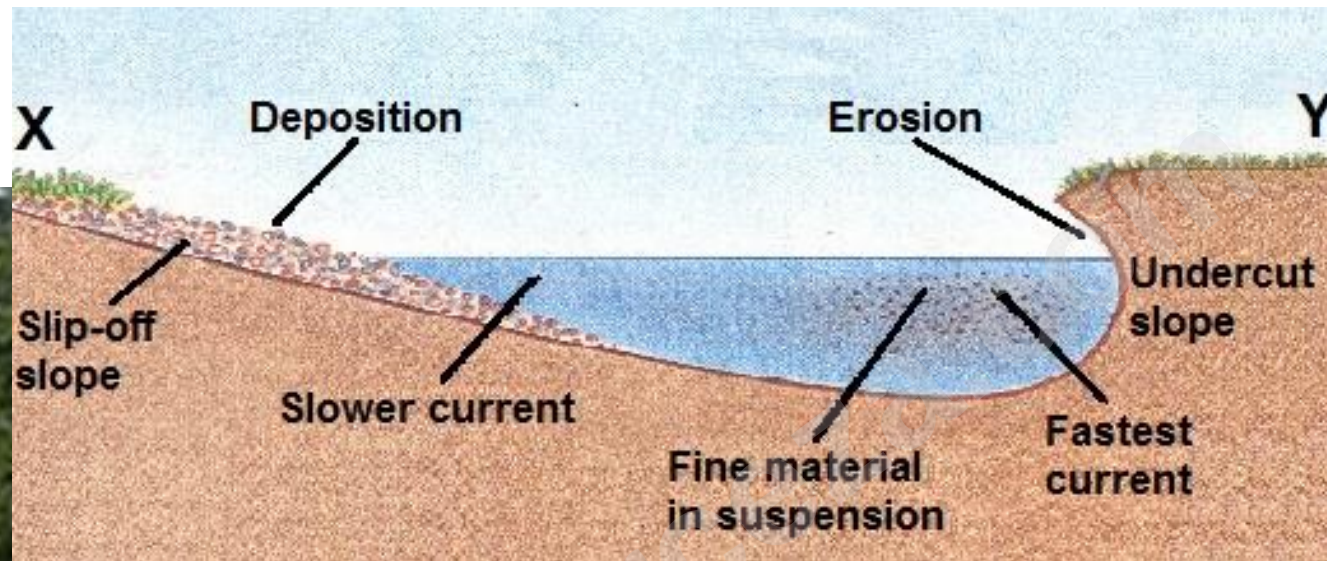
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CROSS PROFILE ROUND A BEND

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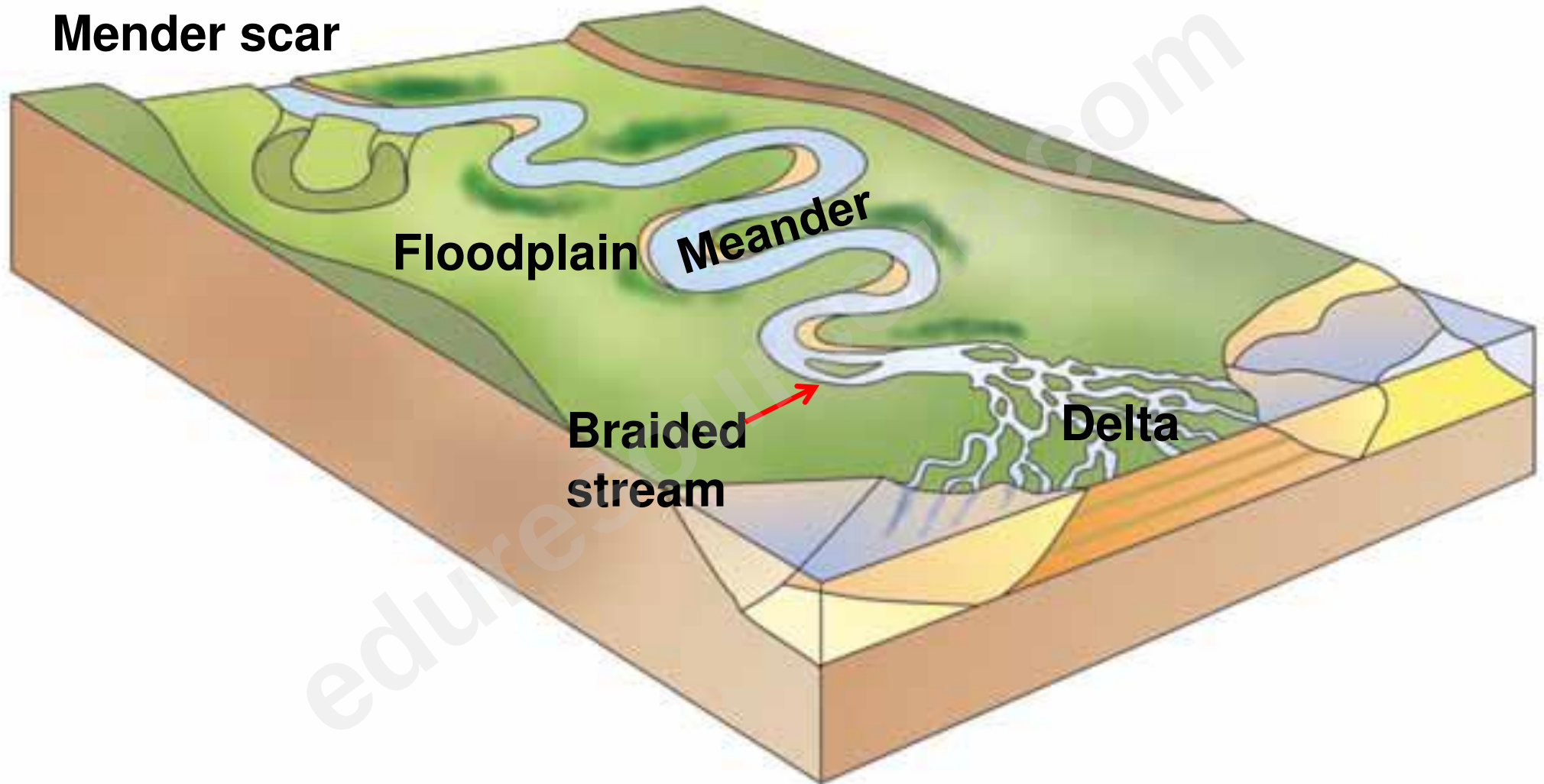


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Fluvial landforms

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Oxbow lake
Mender scar



Floodplain: Found in lower course of river
Are flat and adjacent to the river

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Waterfalls

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Rapids



**Softer less
resistant rock
eroded faster**

**Where gradient increases
Flows over harder & softer rock
Increased turbulence**



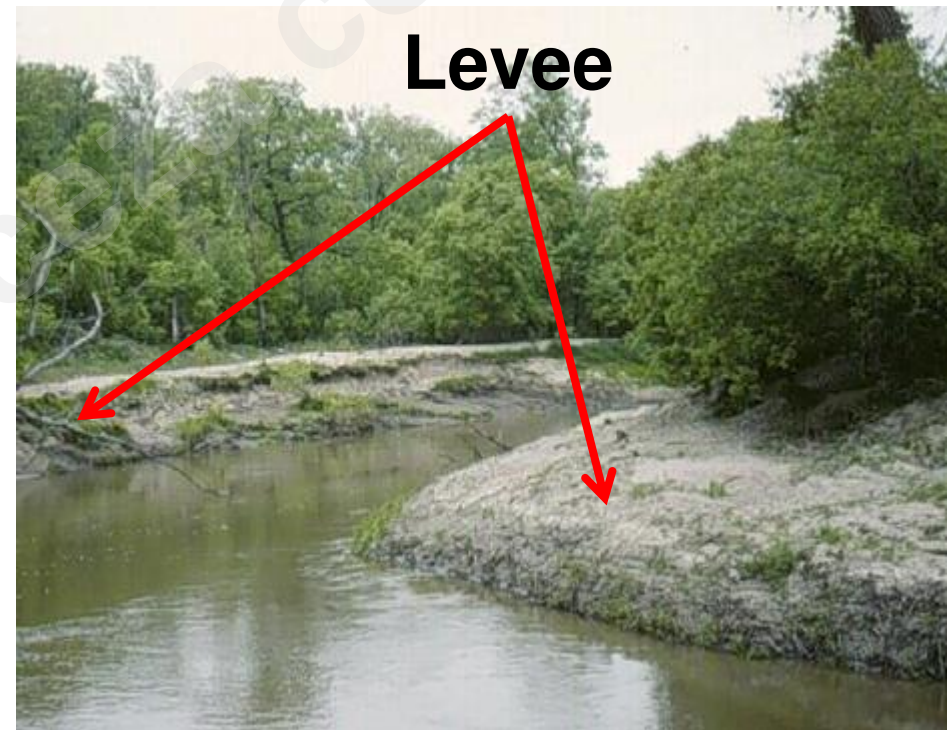
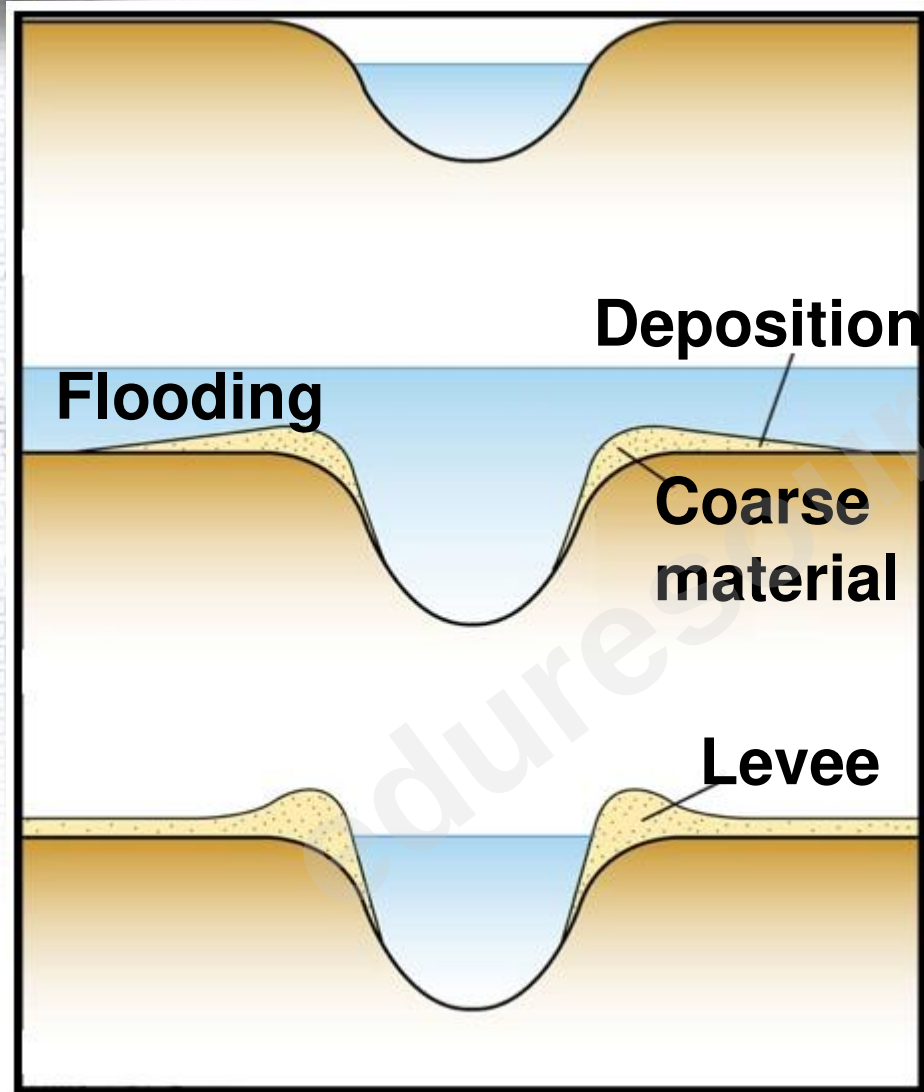
Small steps along course



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Natural Levee





Braided stream

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- Multiple channels
- Islands between streams
- Deposition in channel

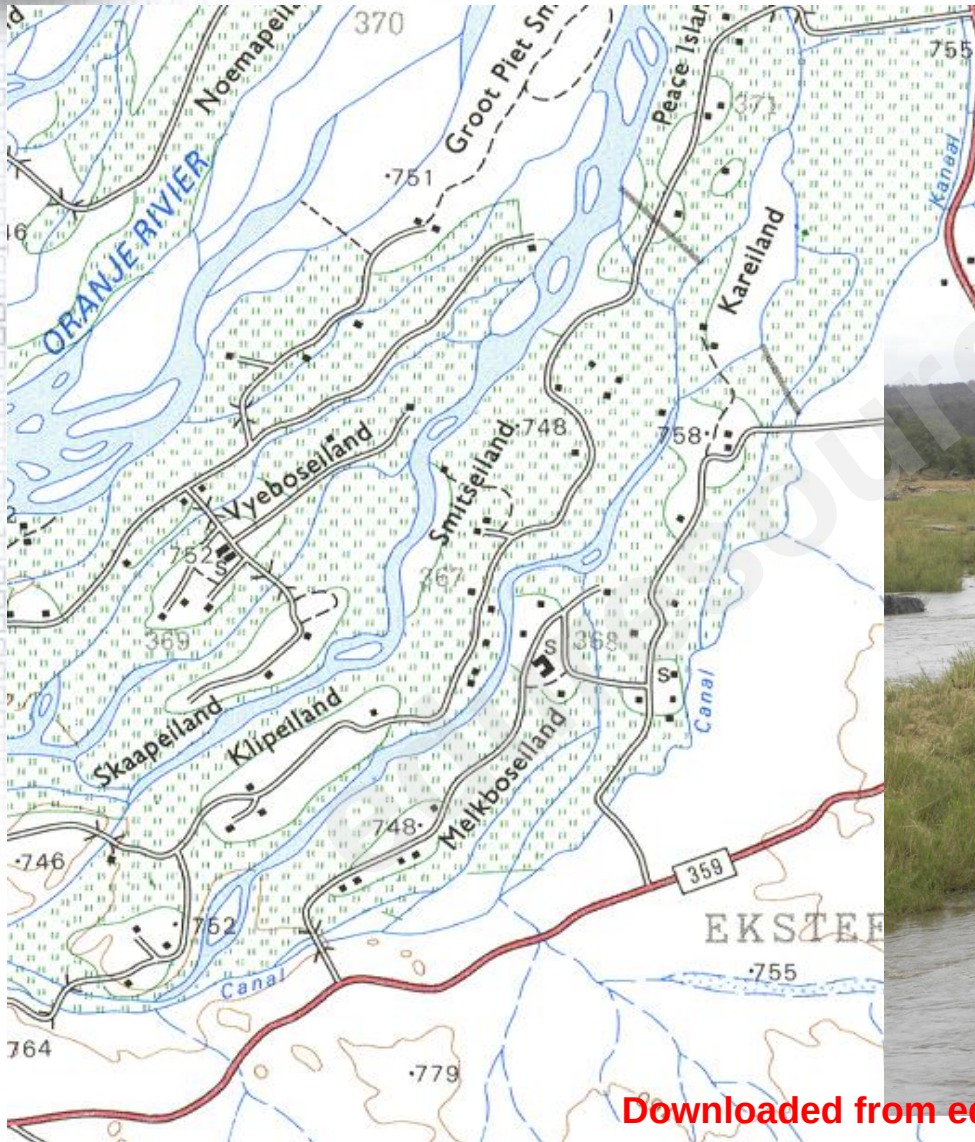
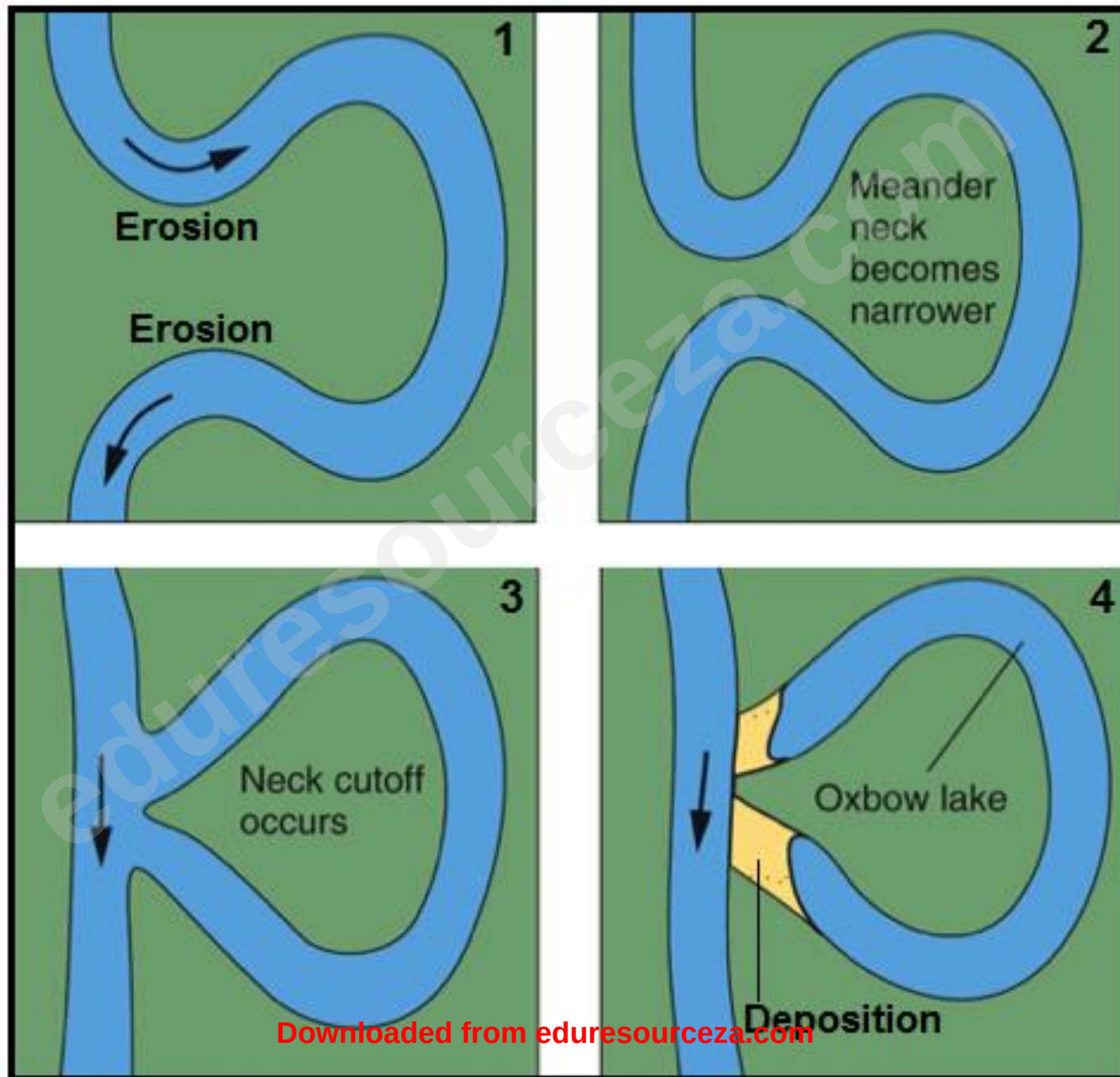


Photo: A Hambly

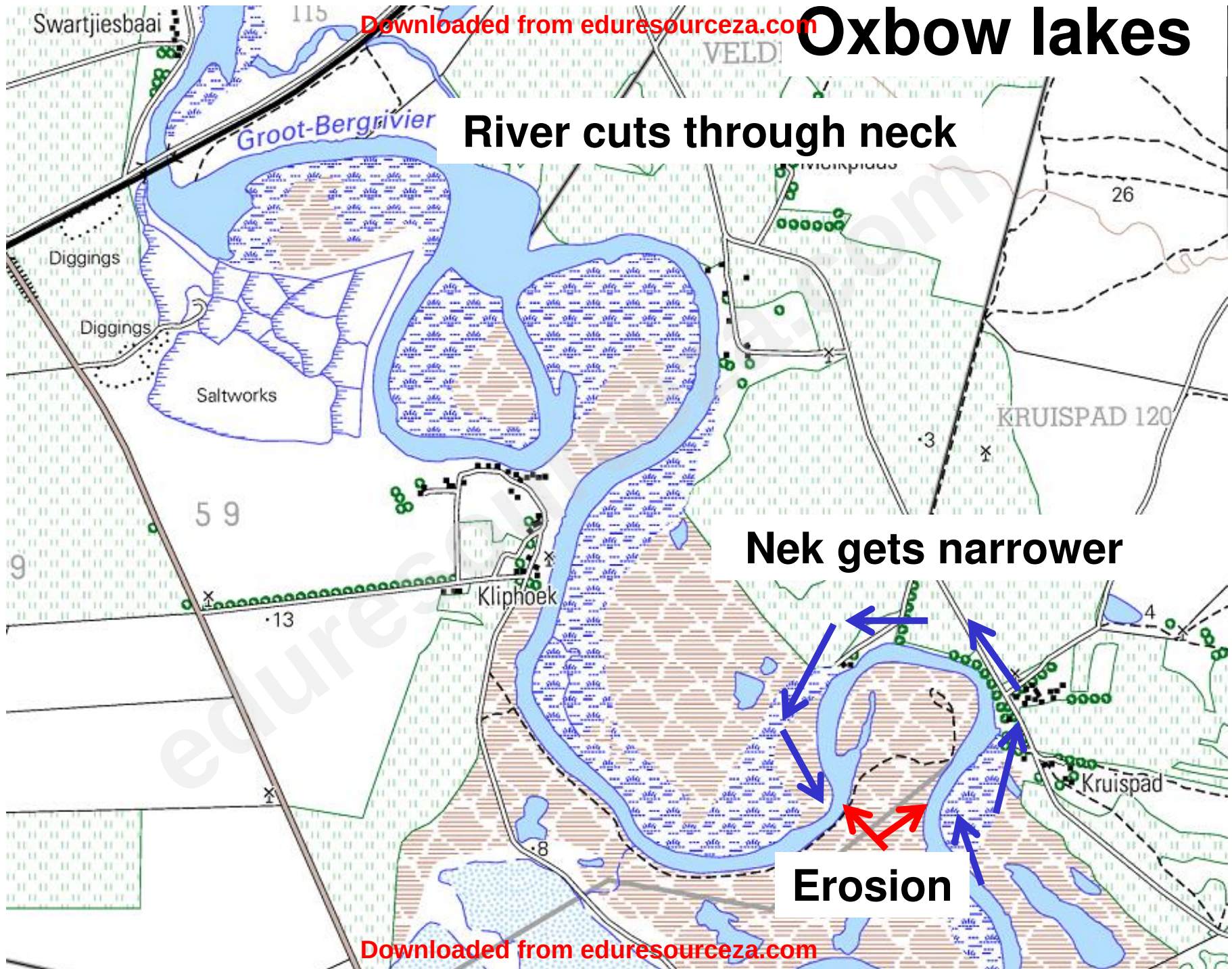
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The formation of Oxbow lakes



Oxbow lakes

River cuts through neck

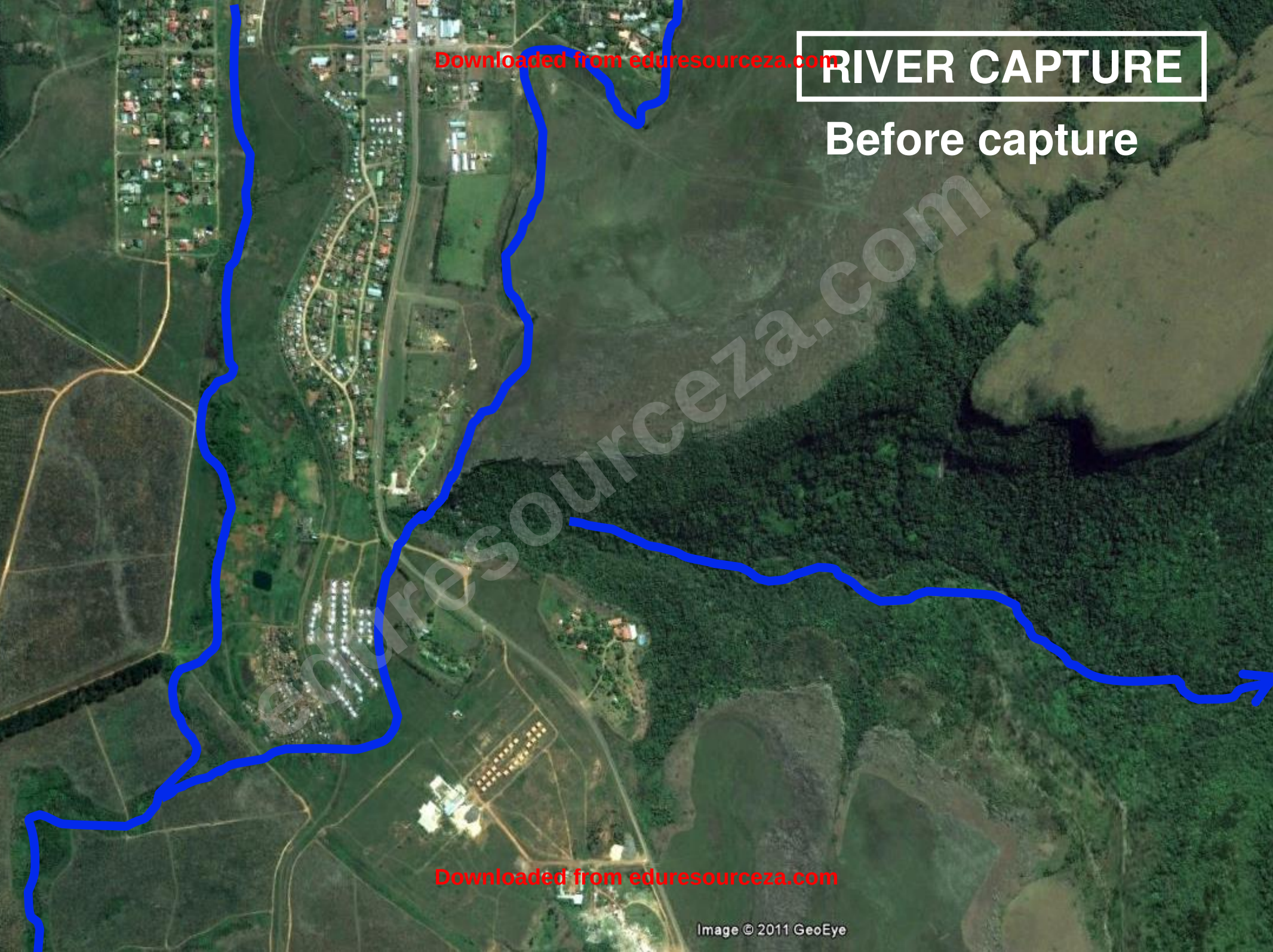


Nek gets narrower

Erosion

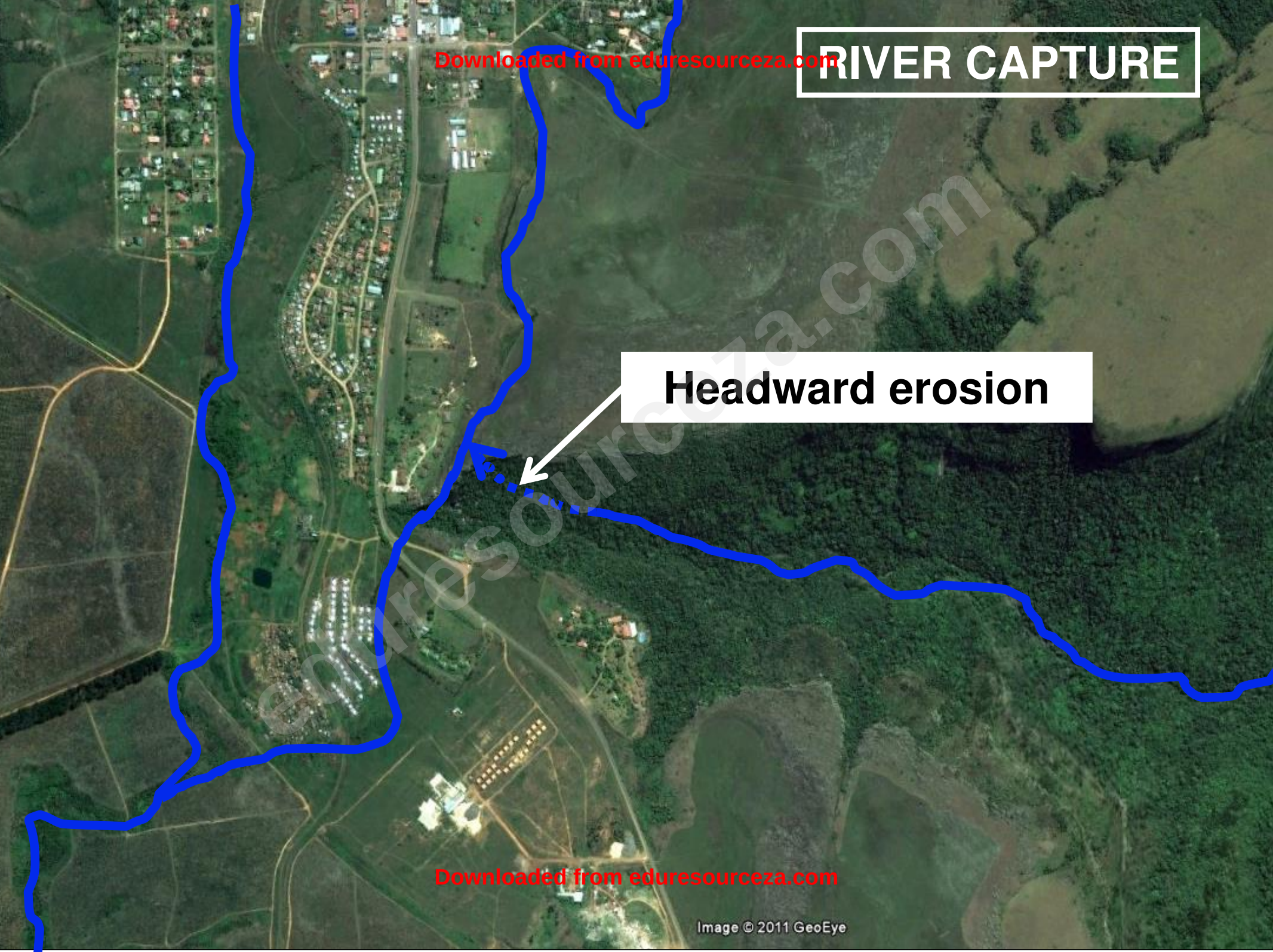
RIVER CAPTURE

Before capture



RIVER CAPTURE

Headward erosion



RIVER CAPTURE

After capture

Captured stream

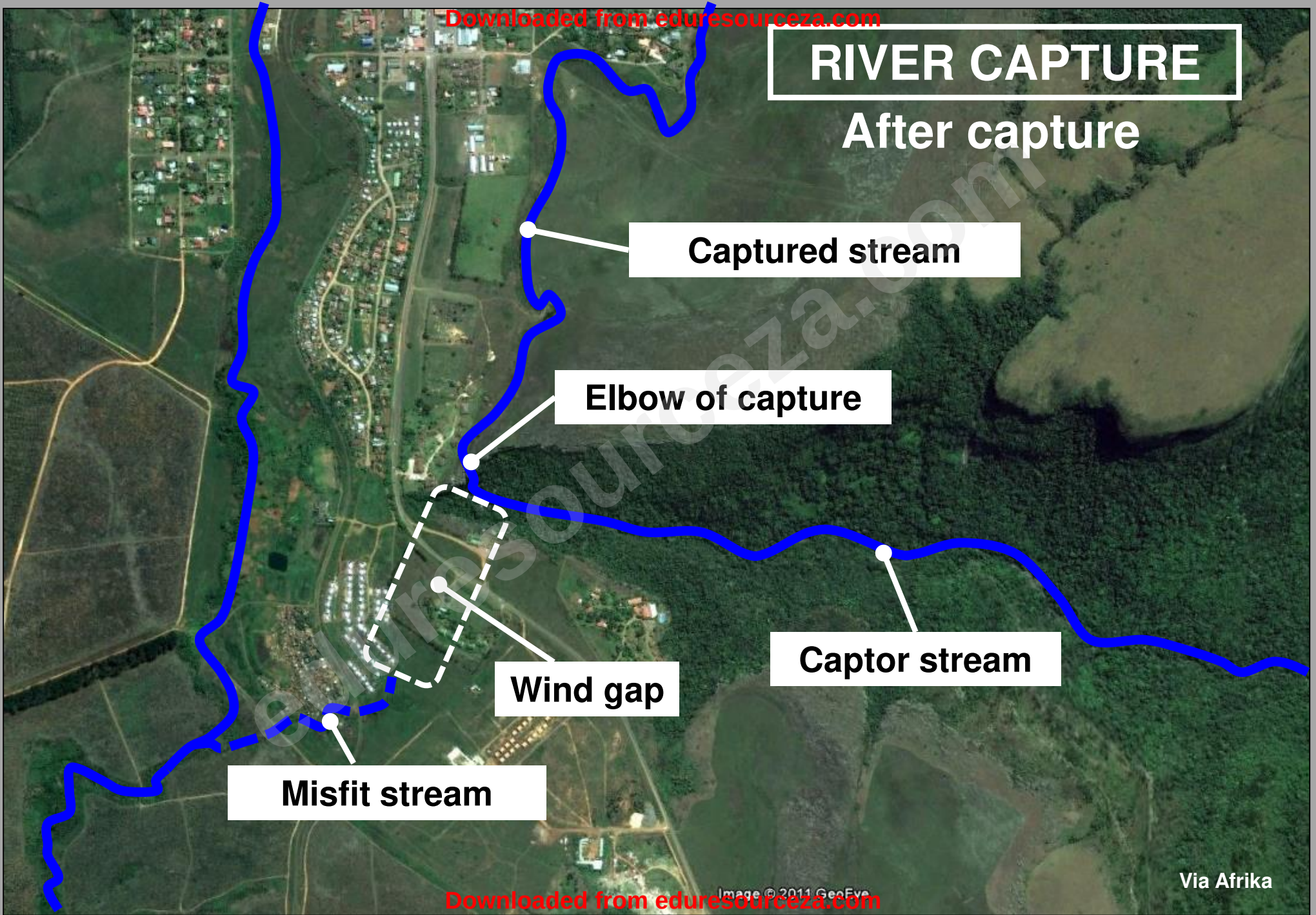
Elbow of capture

Captor stream

Wind gap

Misfit stream

Via Afrika

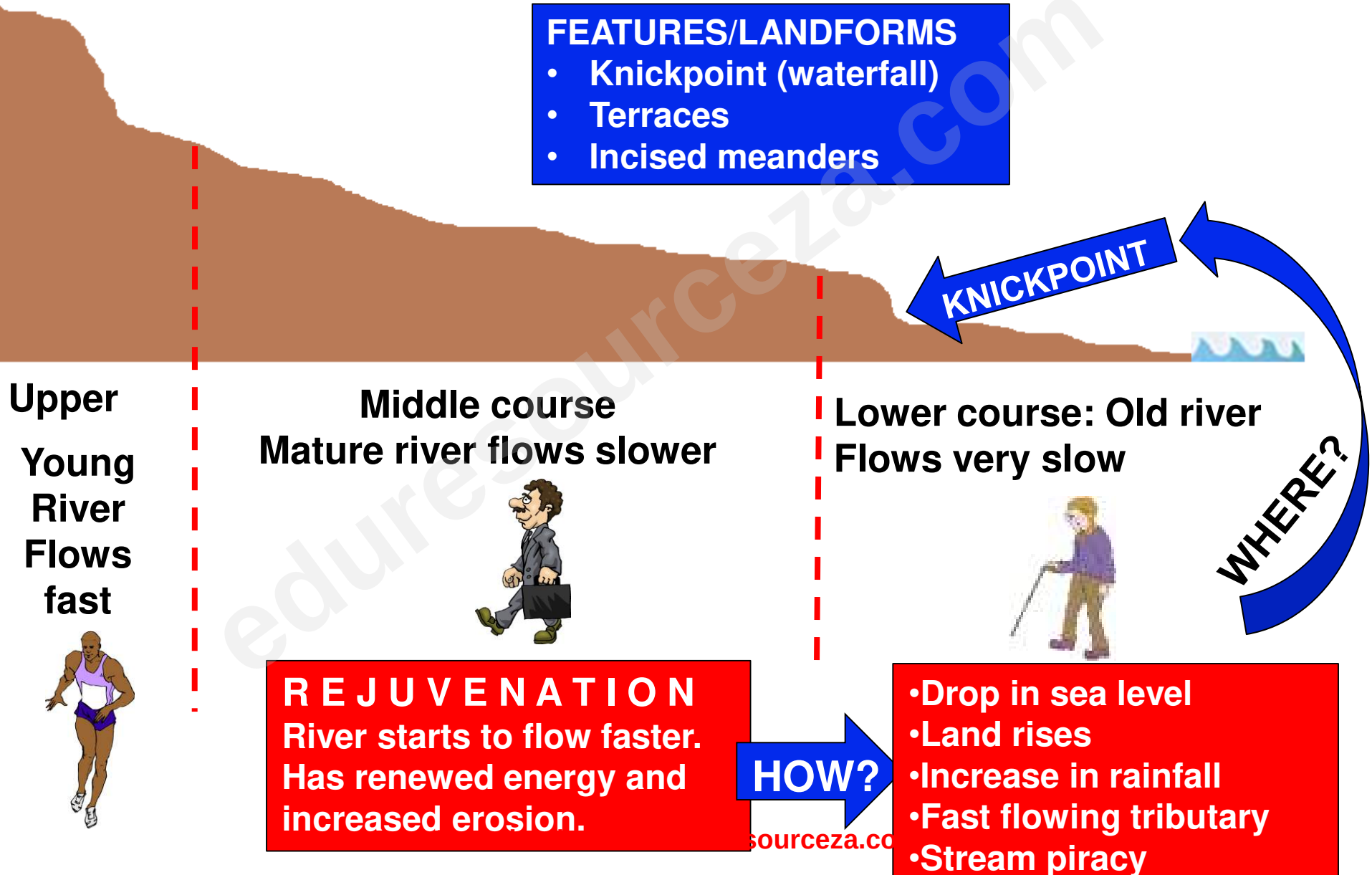


Rejuvenation

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FEATURES/LANDFORMS

- Knickpoint (waterfall)
- Terraces
- Incised meanders



Rejuvenation Features Landforms

