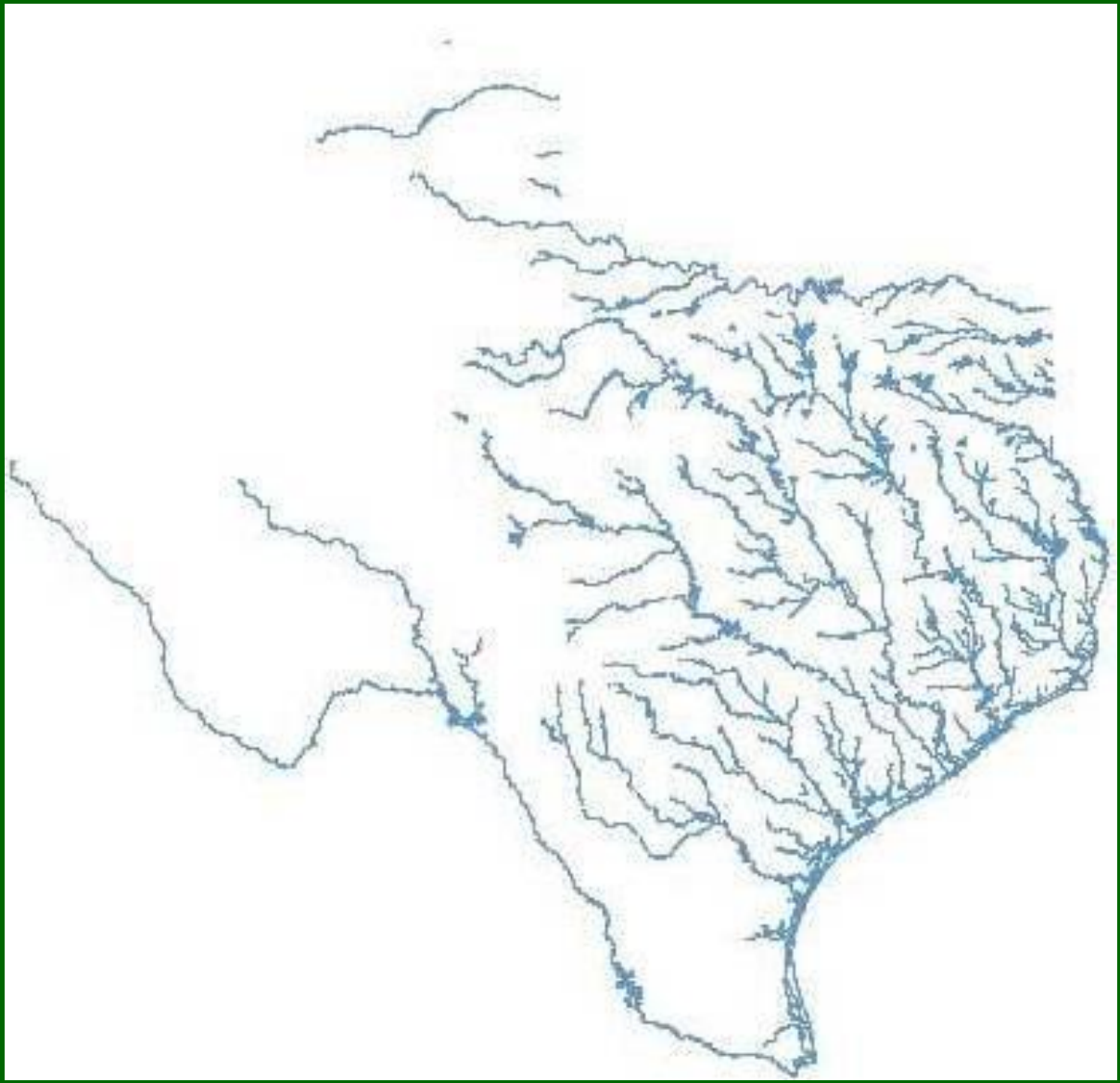
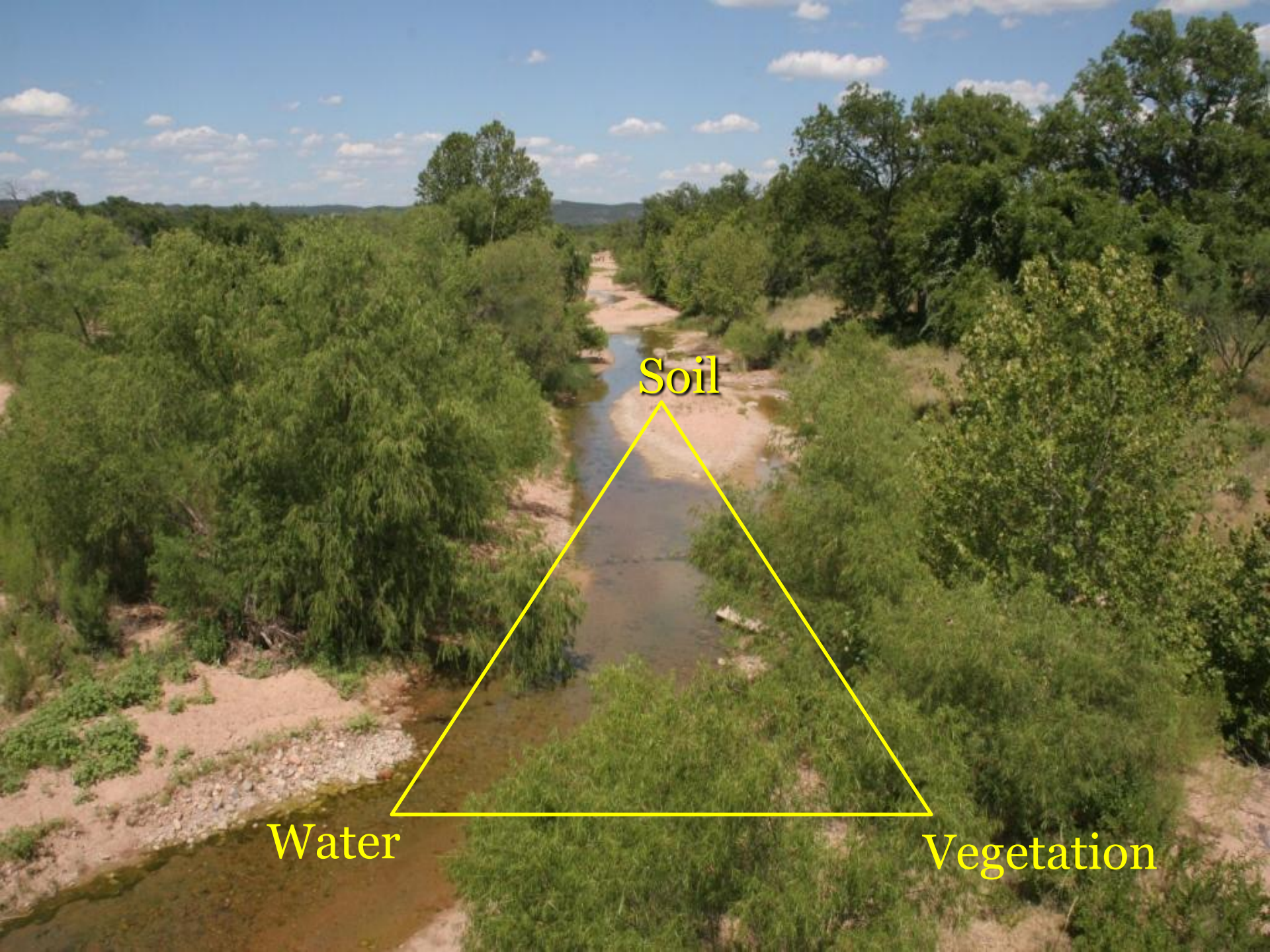
# Understanding Creeks, Rivers, and Riparian Areas

NRCS

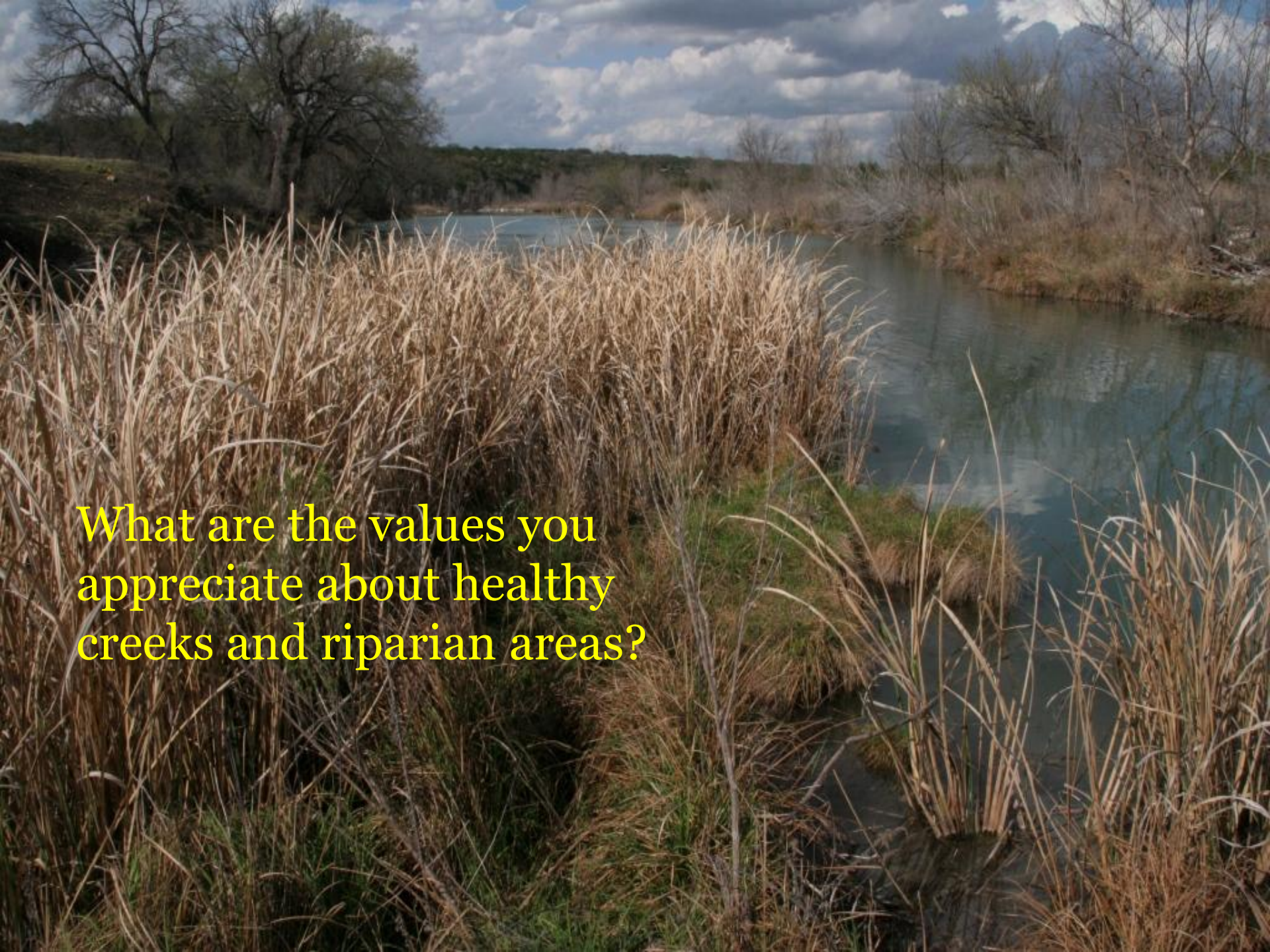
# Texas has some severe water challenges

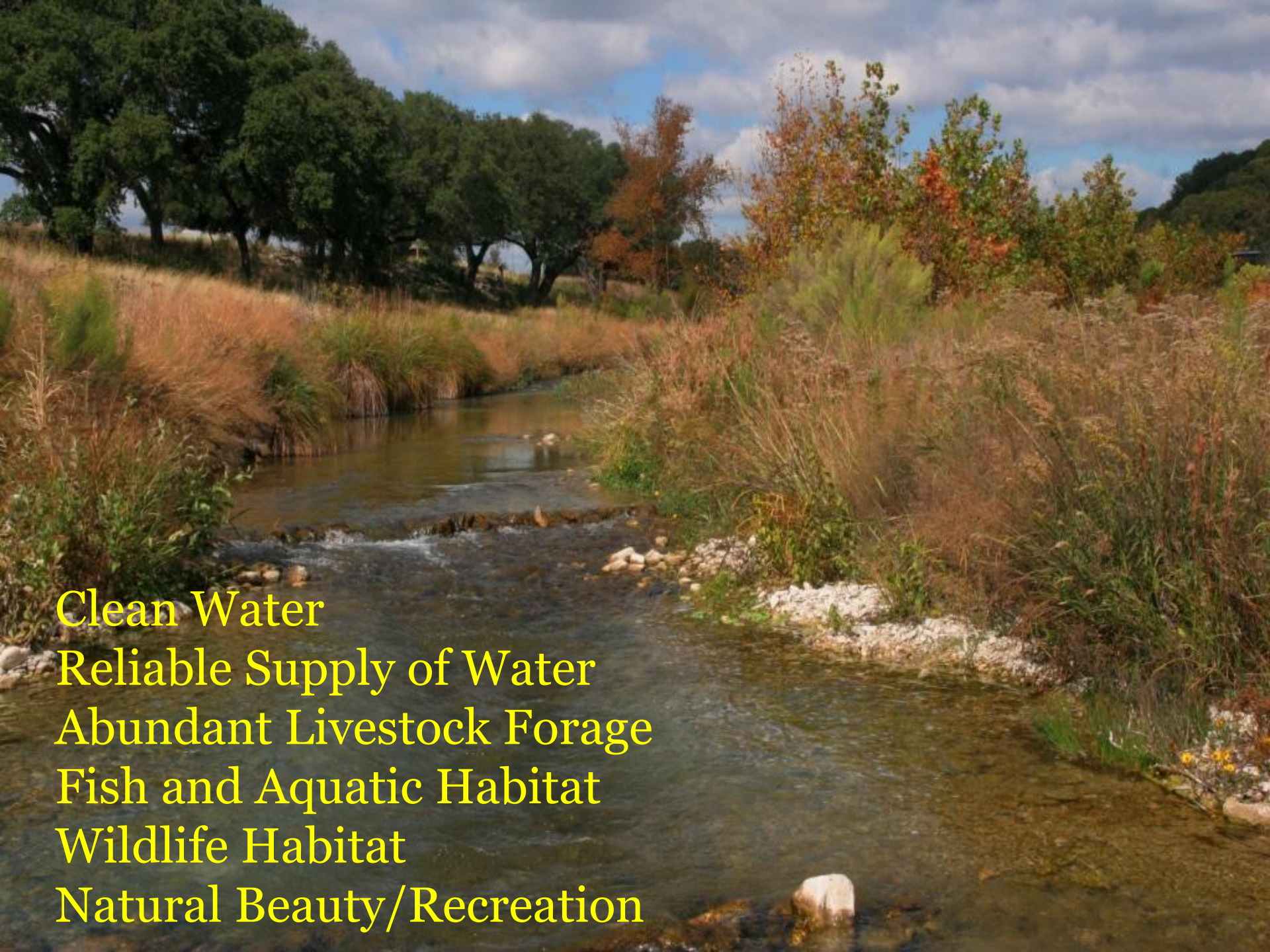


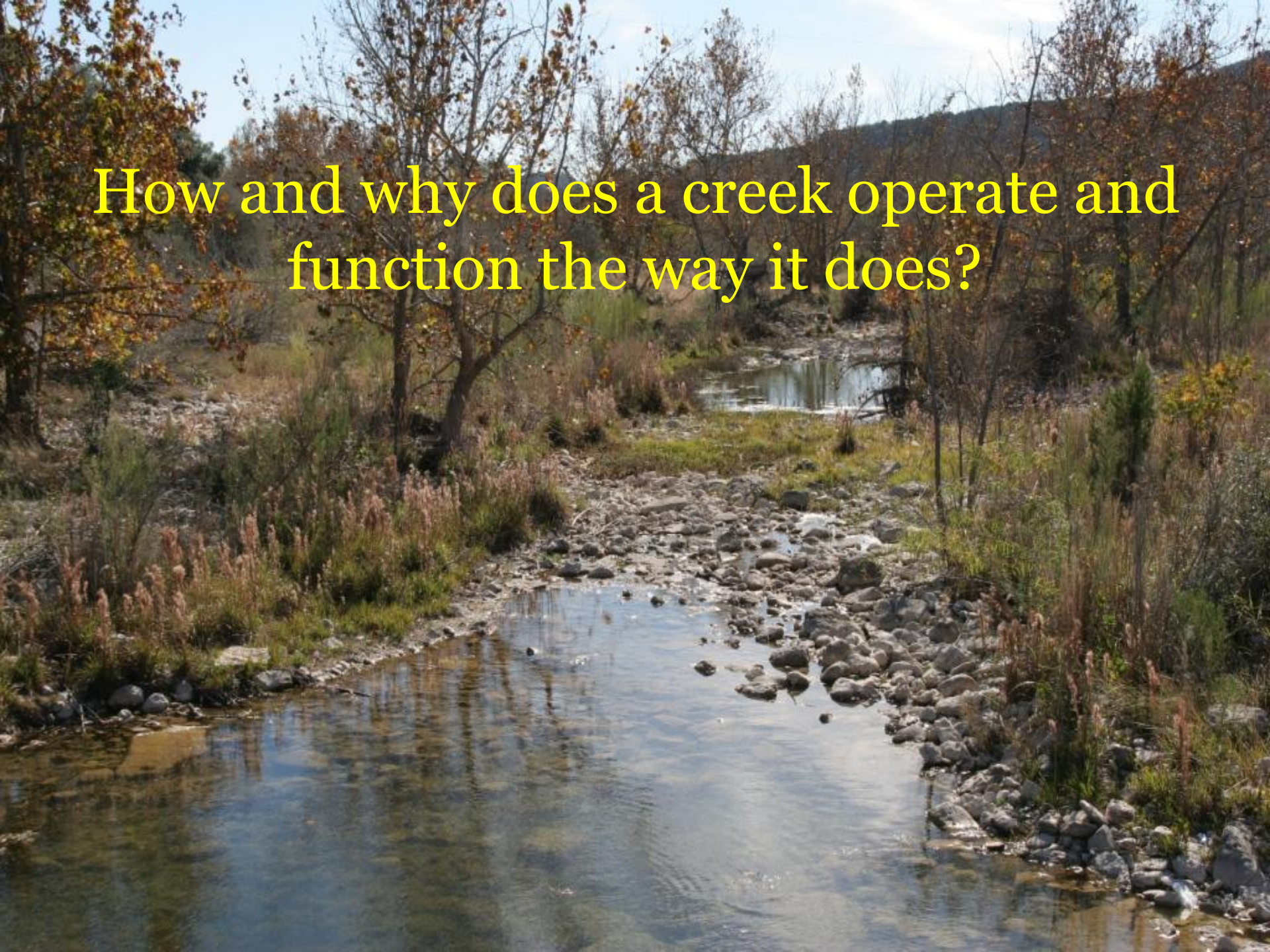
# What is a Riparian Area?


Soil
Water
Vegetation

Soil
Water
Vegetation


What are the values you appreciate about healthy creeks and riparian areas?


Clean Water
Reliable Supply of Water
Abundant Livestock Forage
Fish and Aquatic Habitat
Wildlife Habitat
Natural Beauty/Recreation


How and why does a creek operate and function the way it does?

## Identify the Components of a Creek / River

- Channel / Banks
- Floodplain
- Sediment
- Base flow
- Flood flow
- Water table
- Vegetation
- Large wood
- Organic debris

## The Dynamics and Processes that occur

- Erosion / Deposition
- Bankfull discharge
- Sinuosity
- Width : Depth Ratio
- Gradient
- Recruitment
- Root density
- Channel stability
- Plant succession

# What is a Properly Functioning Riparian Area?

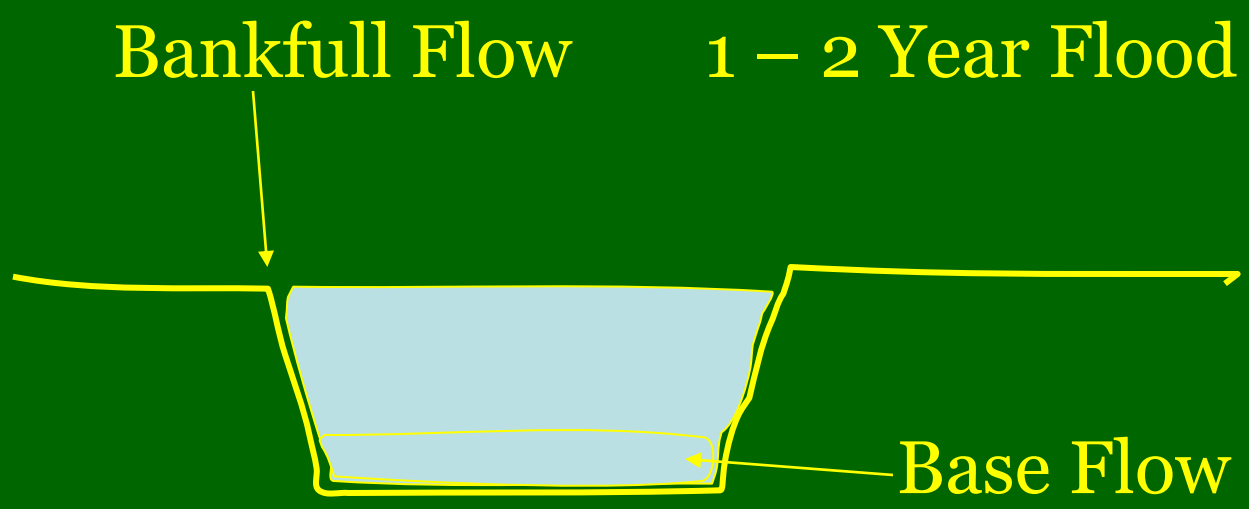
# Properly Functioning Riparian Area

Adequate vegetation, landform or large woody material to:

- Dissipate stream energy
- Stabilize banks
- Reduce erosion
- Trap sediment
- Build / enlarge floodplain
- Store water
- Floodwater retention
- Groundwater recharge
- Sustain baseflow

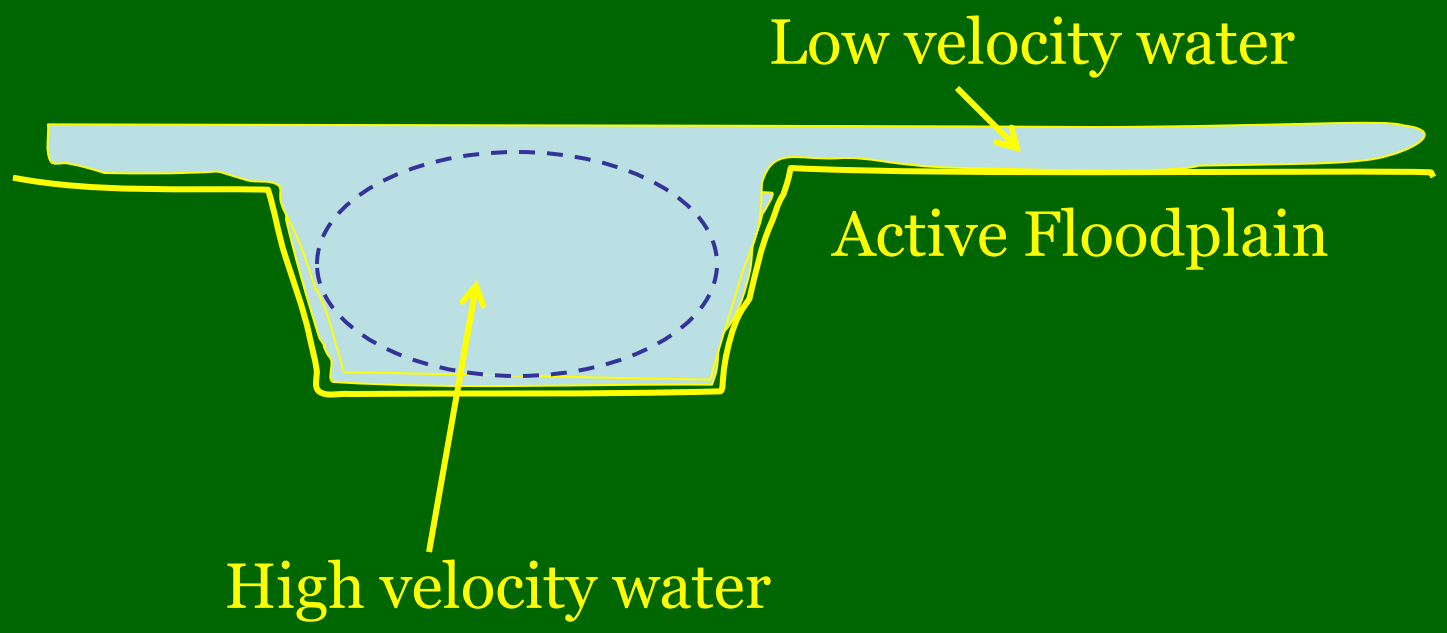
- Water quality
- Water quantity
- Forage
- Aquatic habitat
- Wildlife habitat
- Recreational value
- Aesthetic beauty

Physical Function → Values


Bankfull Flow
1 – 2 Year Flood
Base Flow

Lesson 1:

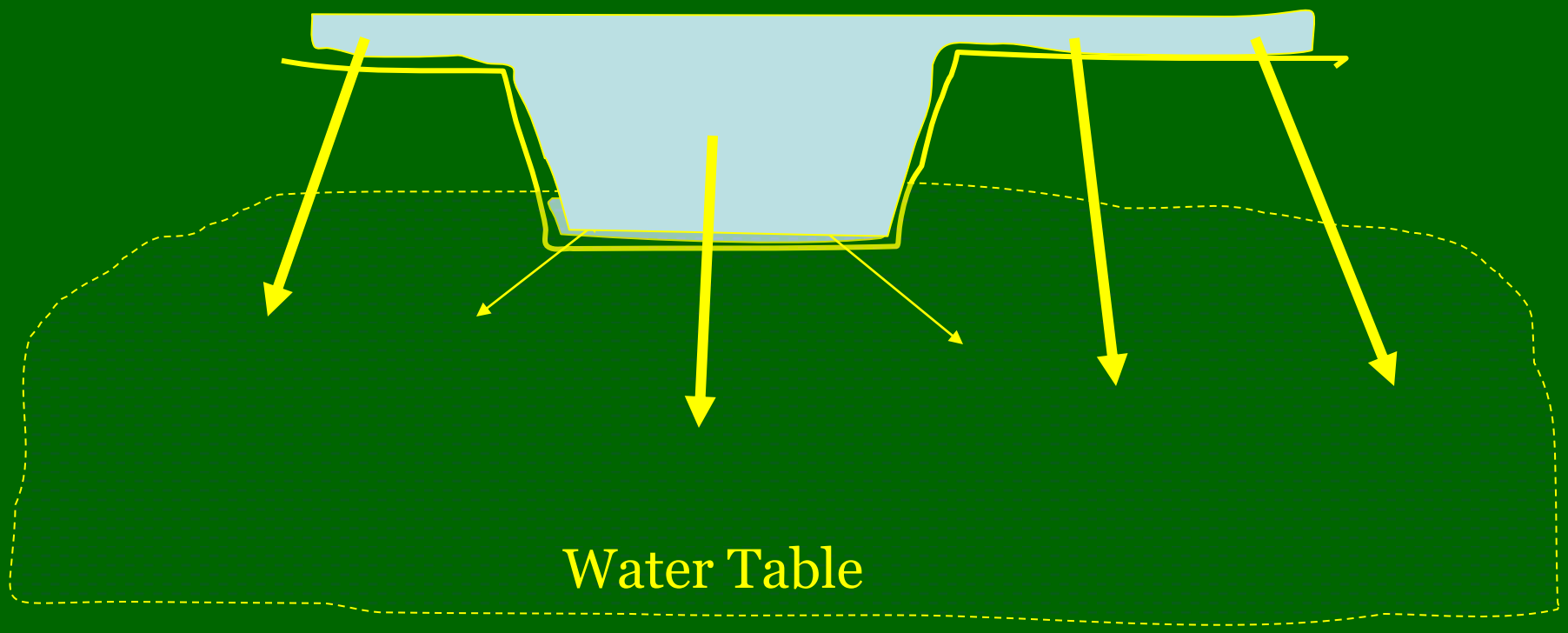
Floodplains Dissipate Energy and Trap Sediment



Floodplain

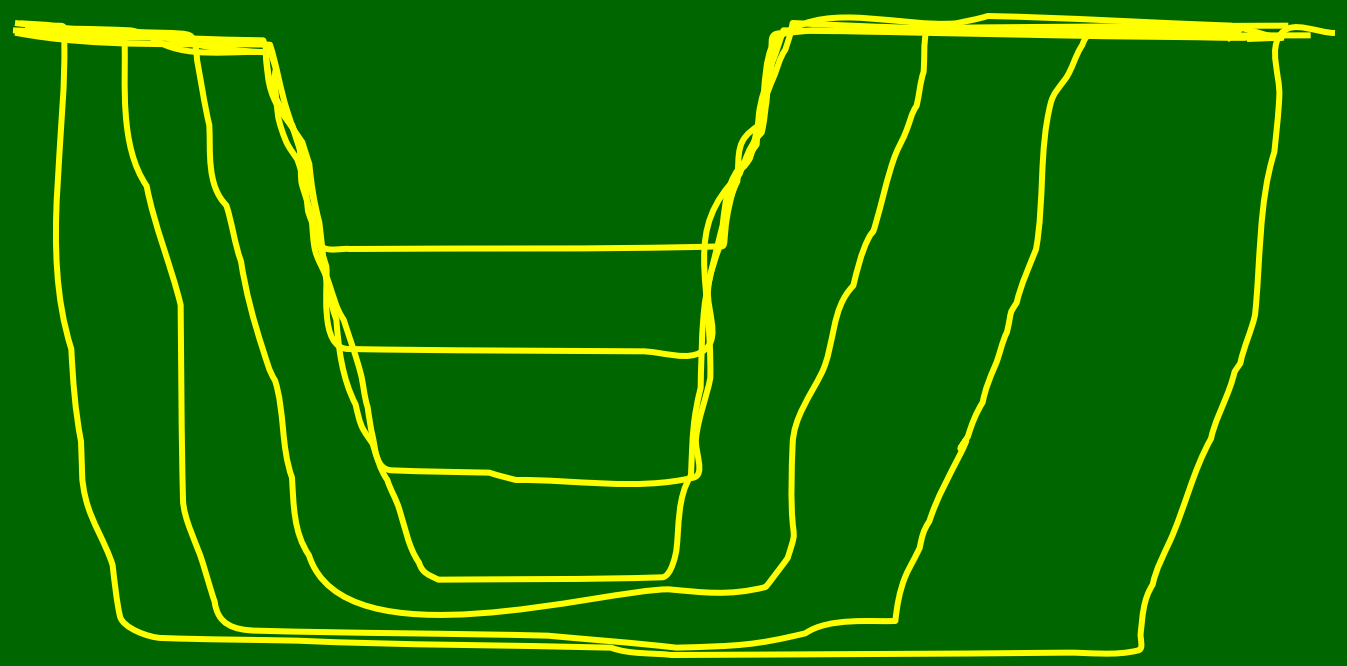
Lesson 2:

Flooding Recharges Water Tables

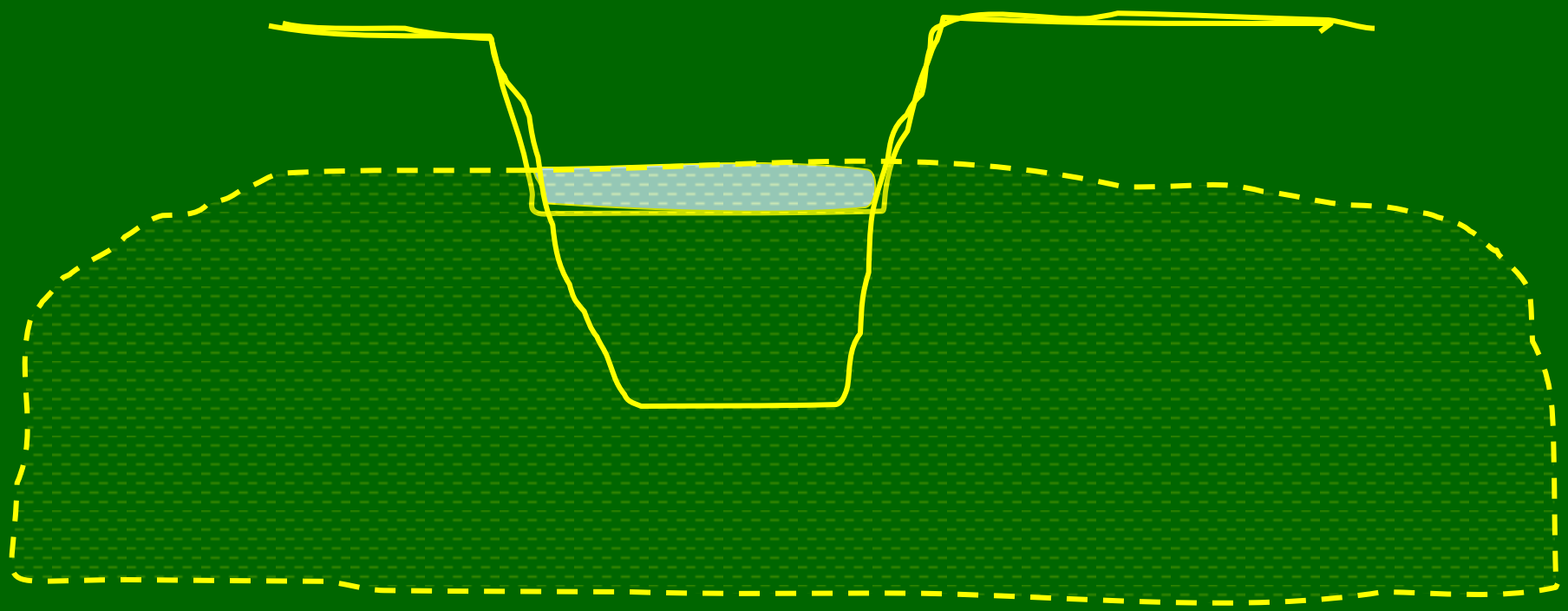


# Lesson 3:

# Excessive Erosion Enlarges the Channel

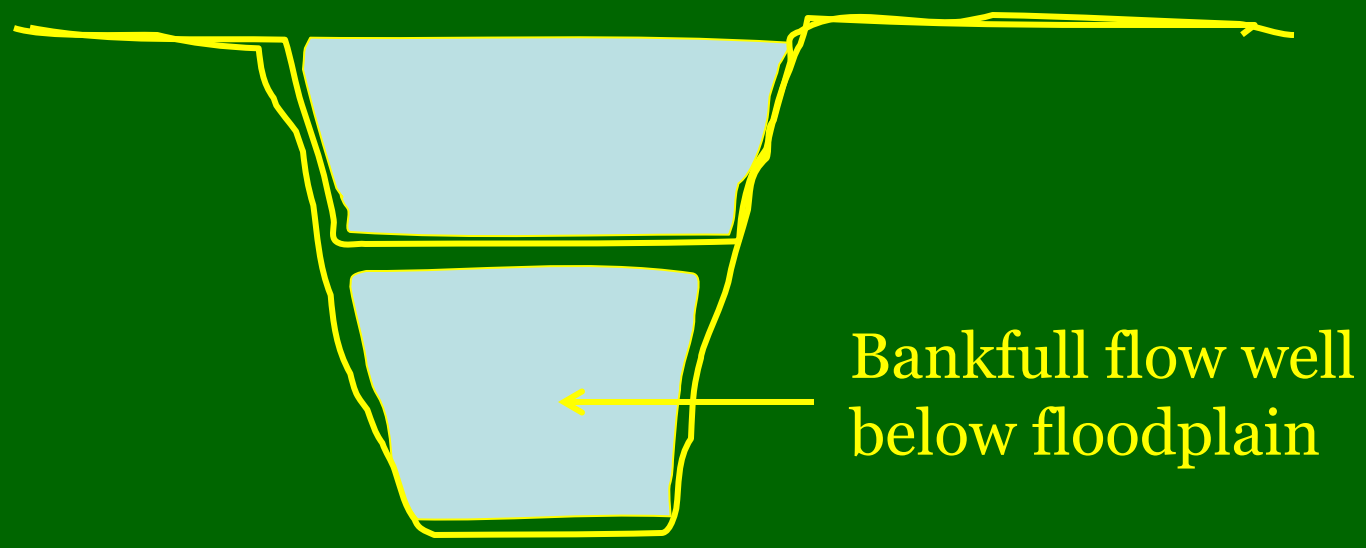


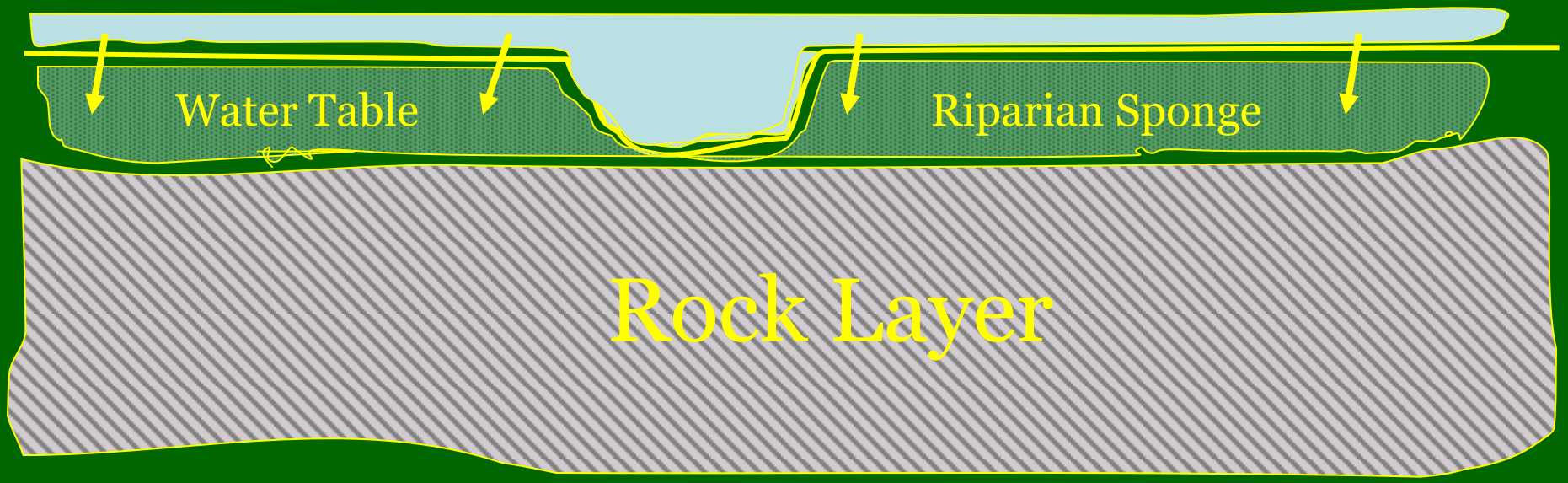
# Lesson 4:
# Down-cutting Drains the Water Table



# Lesson 5:

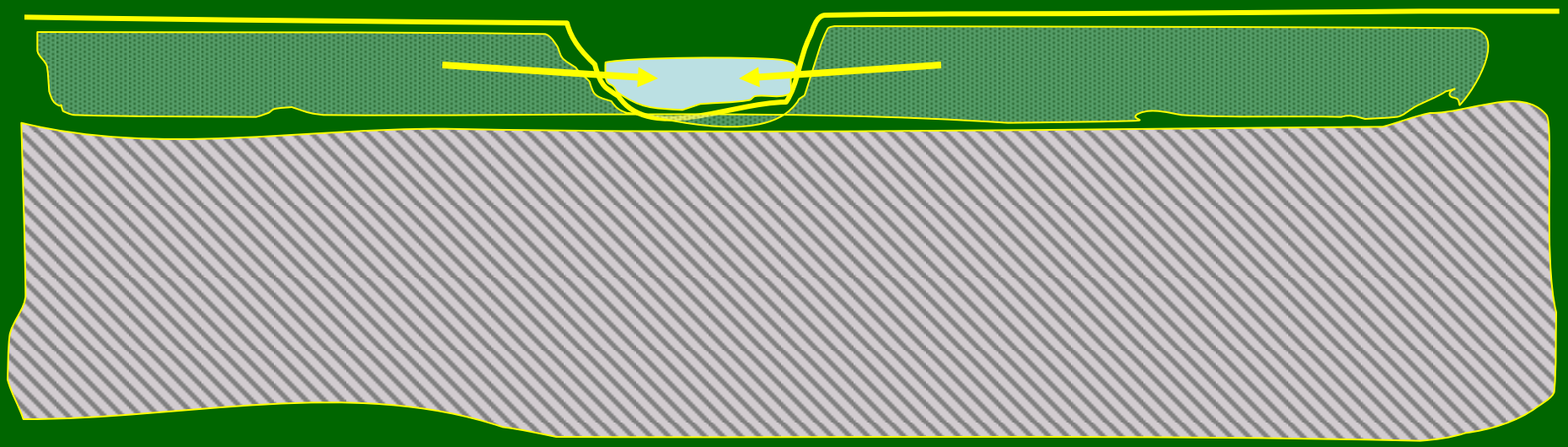
## Down-cutting: Loose Access to Floodplain

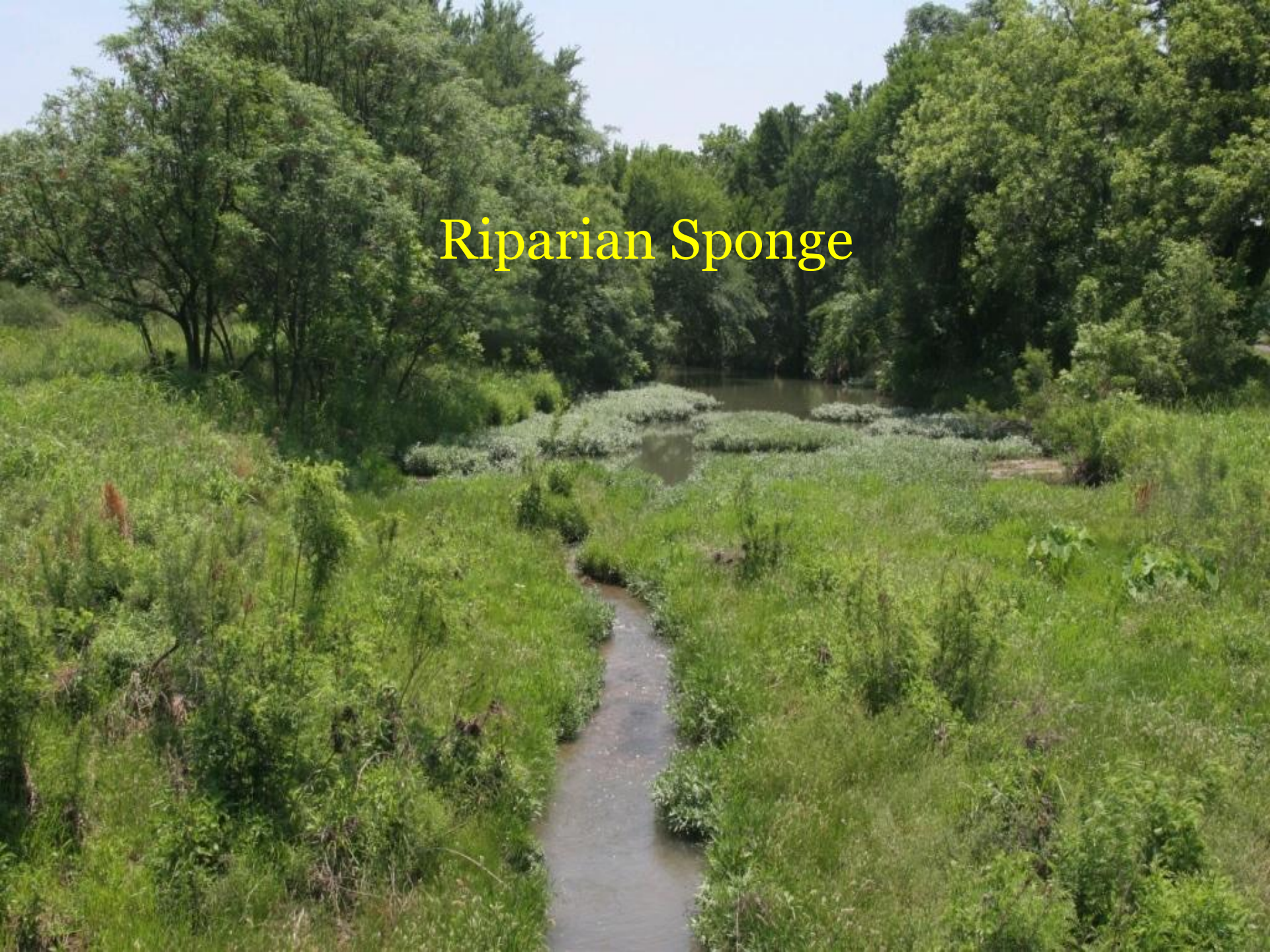



Water Table
Riparian Sponge
Rock Layer

# Lesson 6:

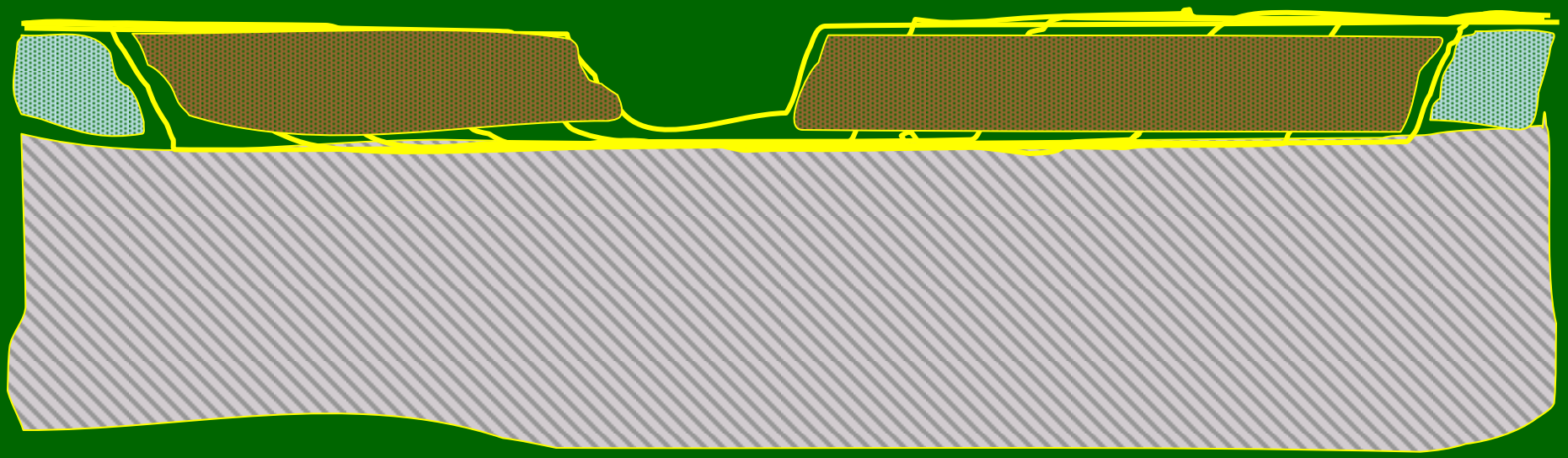
# The Water Table Sustains Base Flow




Riparian Sponge

# Lesson 7:

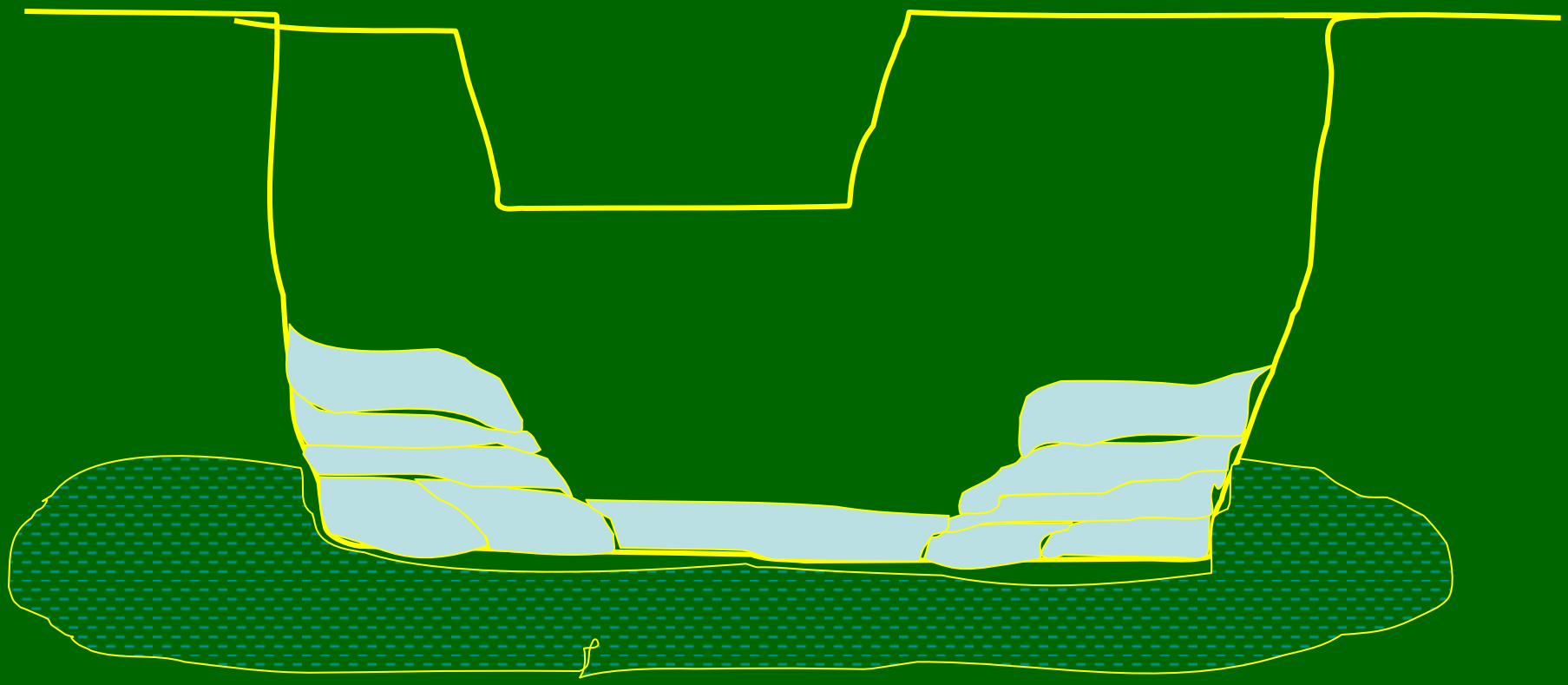
# Channel Widening Reduces the Riparian Sponge



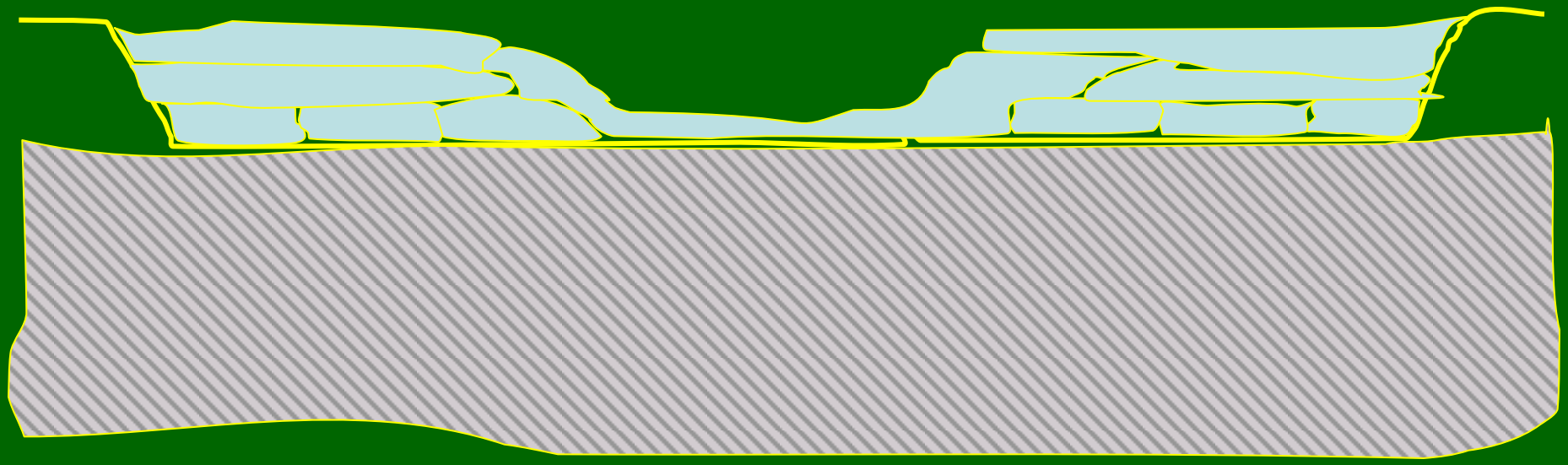
# Lesson 8:

# Overly Wide Channels Reduce Sediment Transport Ability

# Lesson 9:
# Degraded and eroded channels can be restored



Natural Channel Restoration



Vegetation is the Key to
Healthy / Functional Creeks
and Riparian Areas

The Role of Riparian Vegetation:
Dissipate Energy
Reduce Erosion
Trap Sediment
Help Create / Enlarge Riparian Sponge
Slow Down the Water

Flooding is Essential

# The Watershed Connection

Hills to Bays