

Integrated Watershed Management

(An approach towards sustainable livelihood and soil & water conservation)

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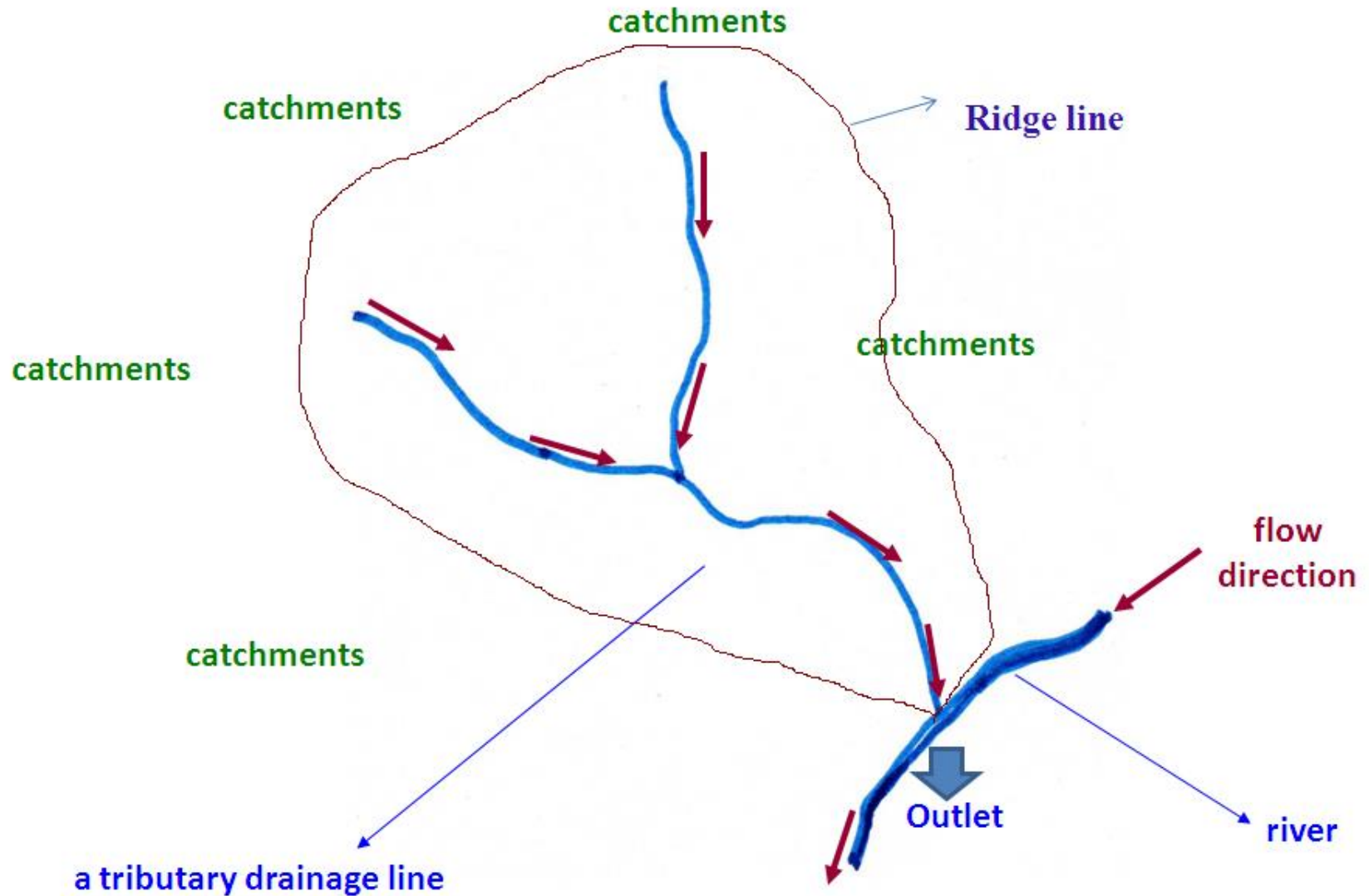
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Watershed?



- ➔ 'Is the drainage area' that contributes run-off water to a drainage course or water body
- ➔ Is a piece of land/ geo-hydrological unit which contributes its runoff to a common outlet
- ➔ Is a hydrological unit in which water from all parts of it passes through a common point known as 'outlet'.

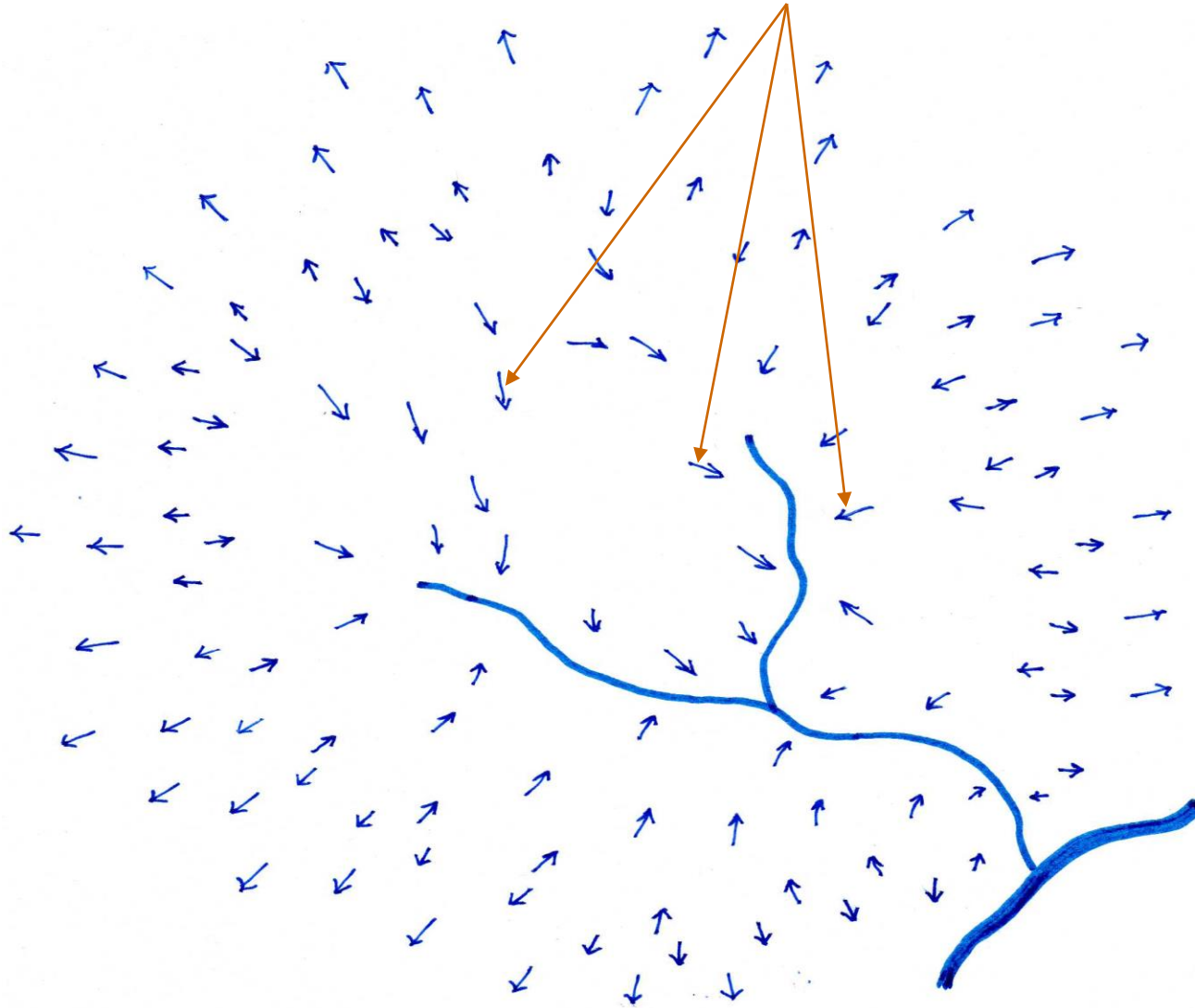
Watershed - Concept



Schematic showing a Drainage basin

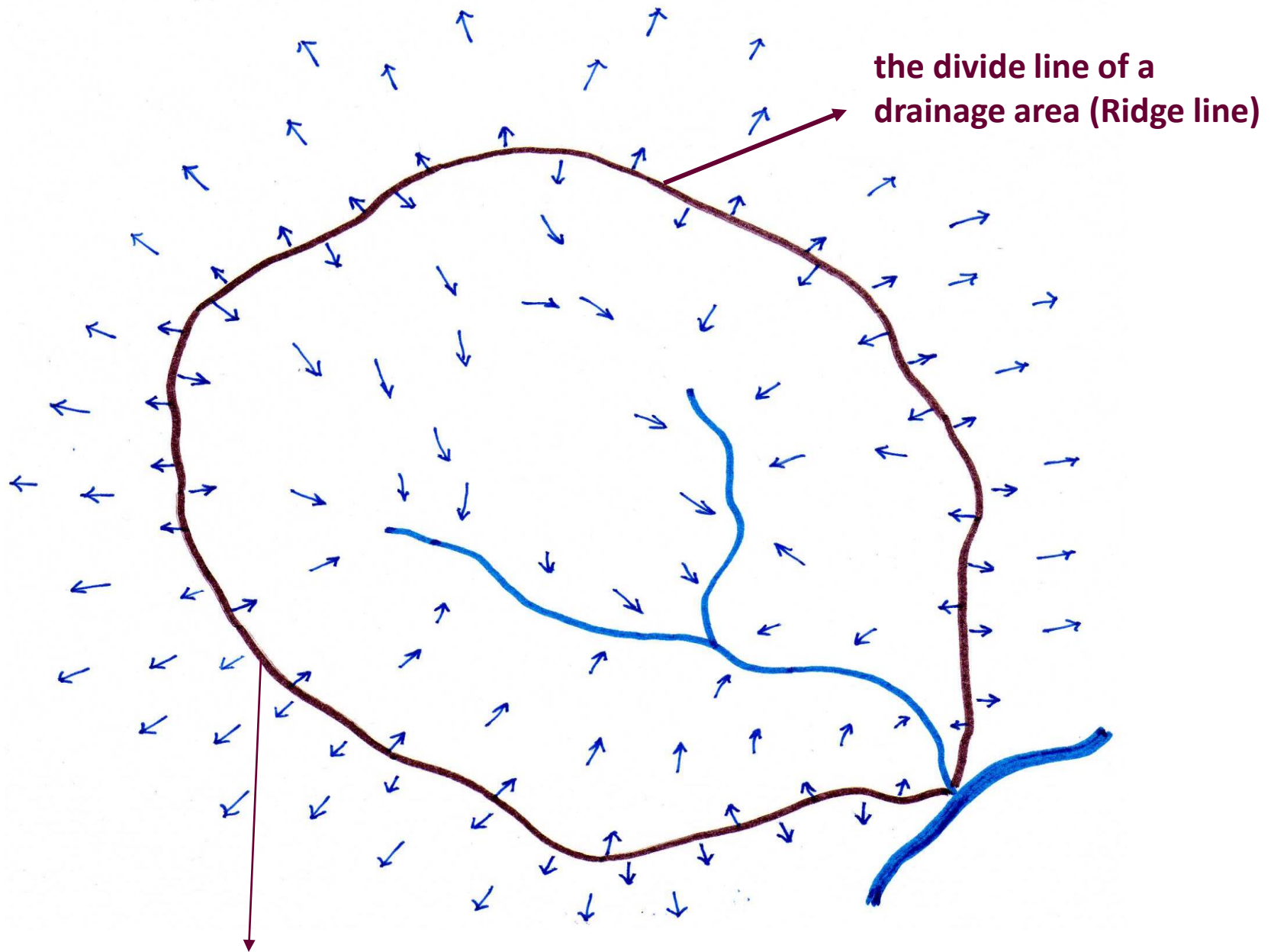
Watershed – Concept (Contd..)

an imaginary line dividing the flow directions is passing through these points



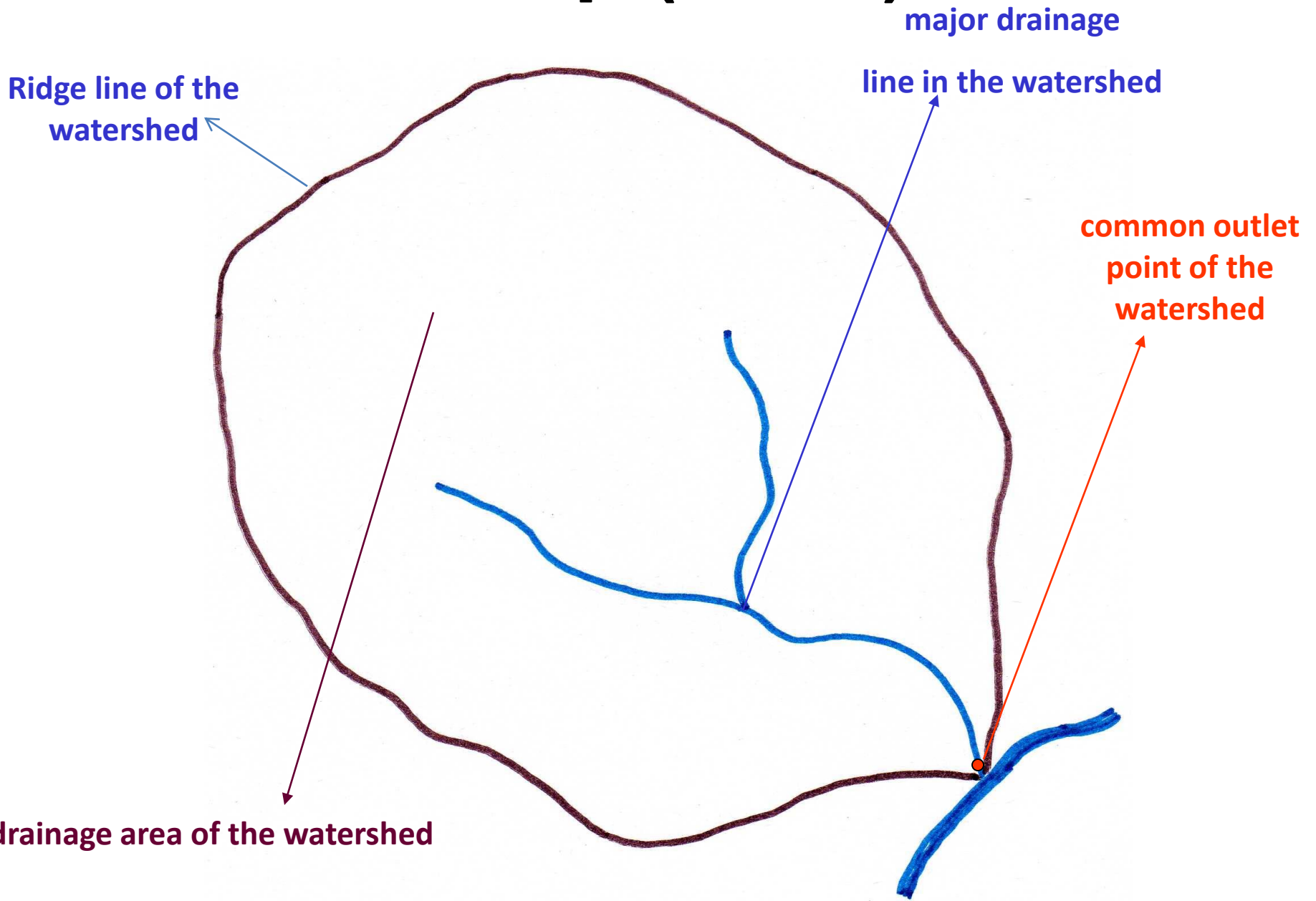
Drainage map of the area

Watershed - Concept (Contd..)



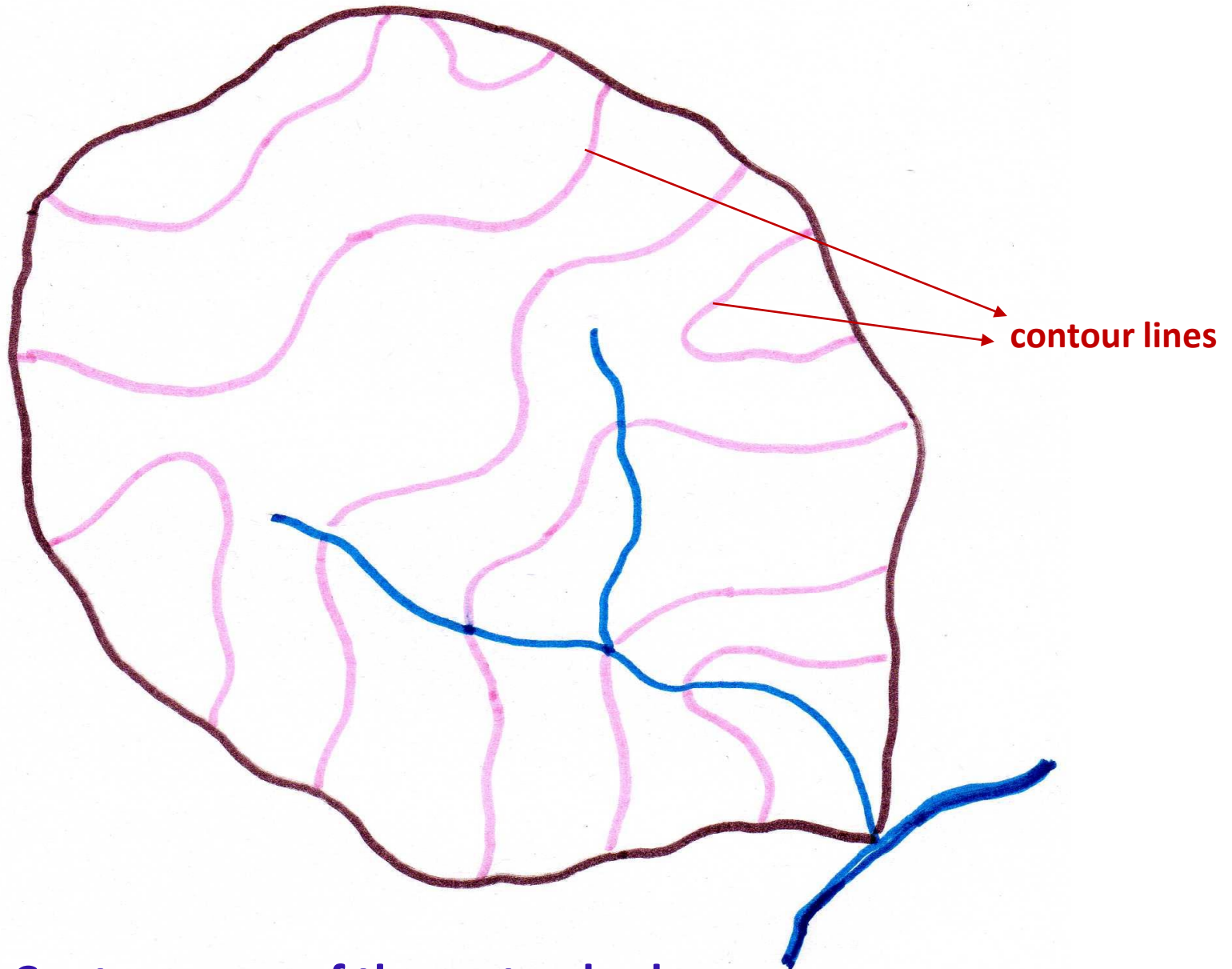
this line bounds the watershed area of the shown drainage line

Watershed – Concept (Contd..)



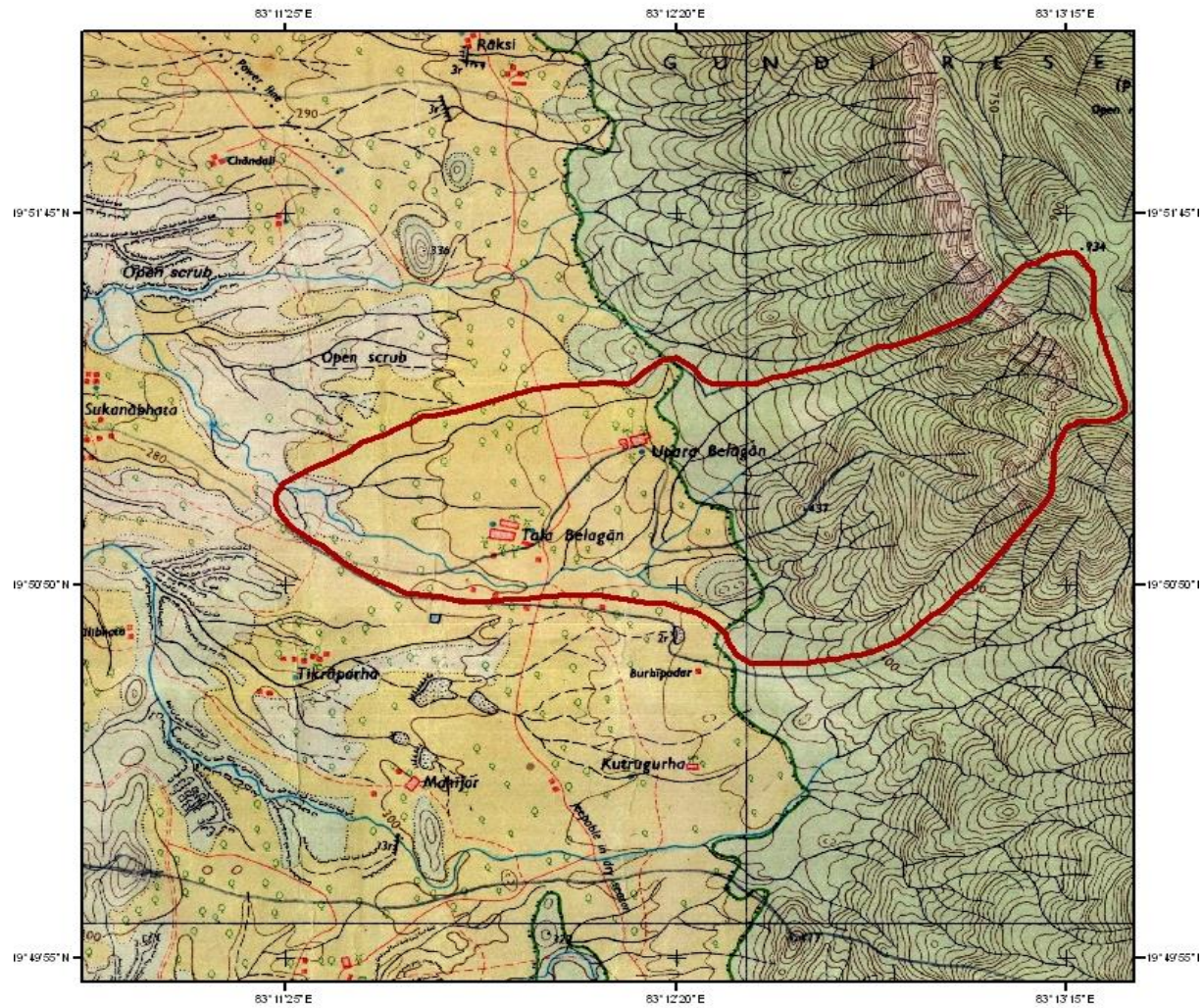
Schematic showing watershed components

Watershed – Concept (Contd..)



Contour map of the watershed

Watershed – Concept (Contd..)



 Watershed Boundary

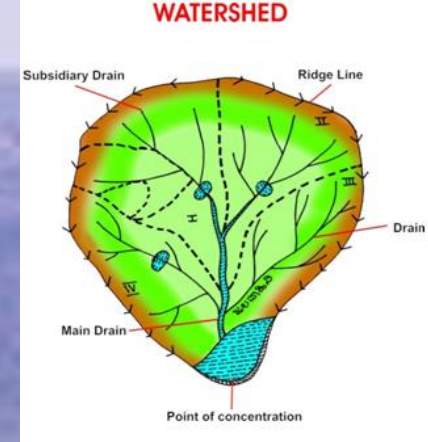
Watershed delineated over SOI Toposheet

Watershed – Concept (Contd..)

Ridge Line



Drainage line



WATERSHED

OUT LET

Watershed as it appears in real field

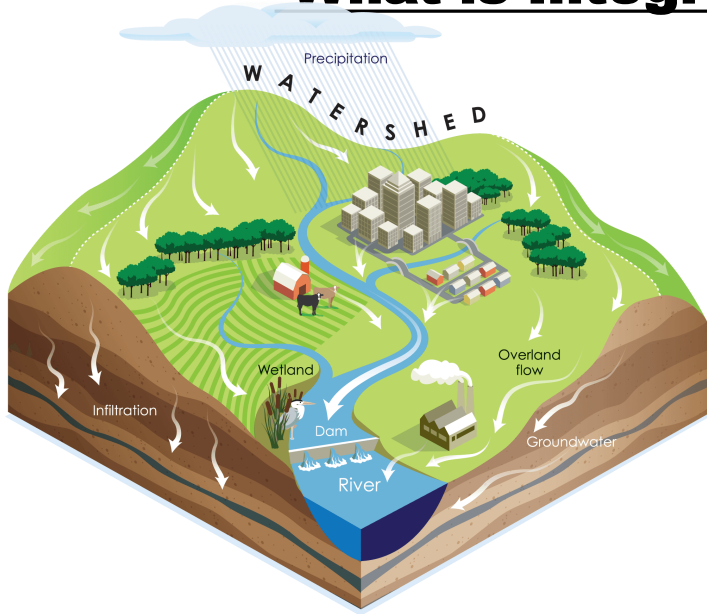
Why Watershed?

- Uneven rainfall
- Eroded land-
- Degradation of forest / depletion of vegetation in arable and non-arable land
- Poor soil depth,
- Increase in land slope increases the velocity of runoff and soil carrying capacity
- Low productivity >> Food insecurity
- Poor management of land

Watershed Objectives

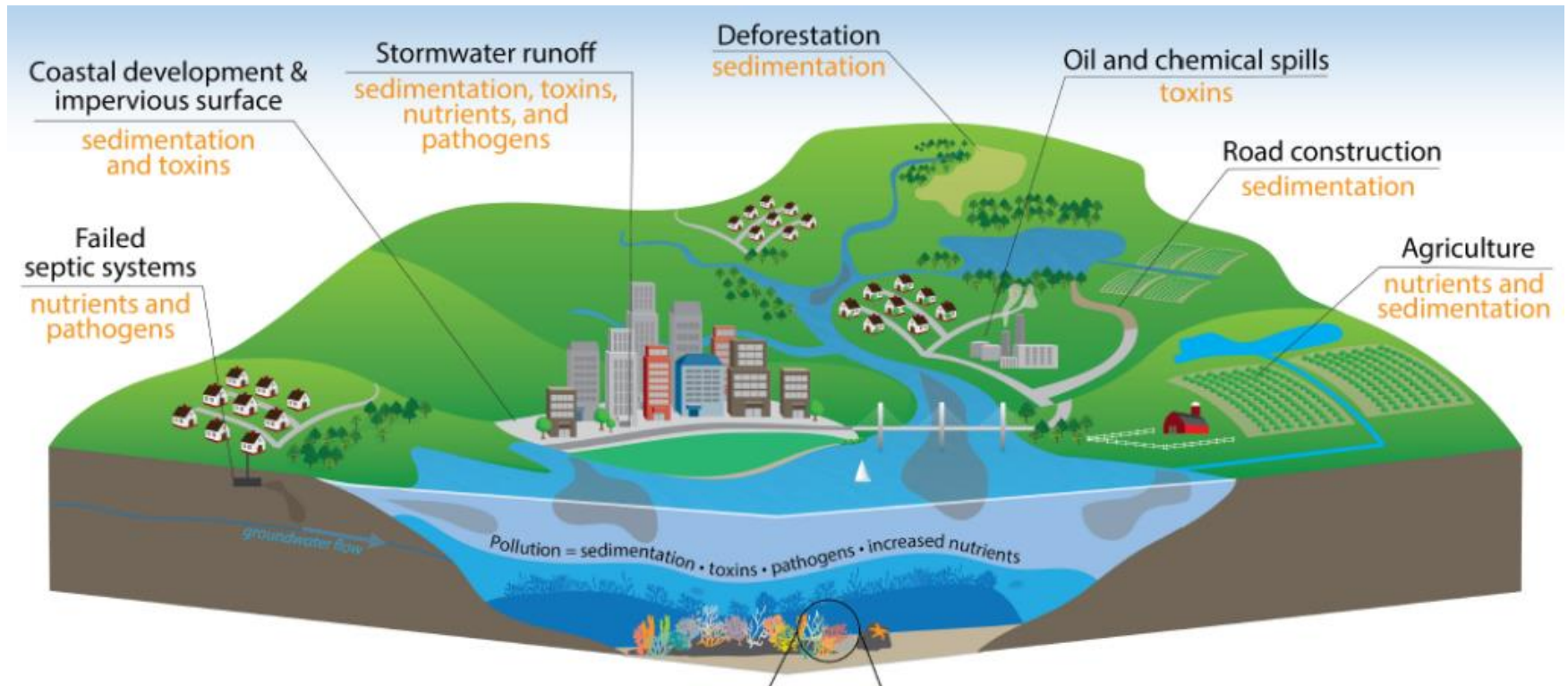
- Increase in production & productivity
- Restore ecological balance
- Employment generation
- Livelihood growth

What is Integrated Watershed Management?



Watershed is a geo-hydrological unit draining at a common point by a system of streams.

Watershed management is **proper use of land and water resources** for optimum production with **minimum hazard to natural resources**.





WS Management Strategies & Responses to Problems

- **Watershed management involves:**
 - Nonstructural (**vegetation management**) practices
 - Structural (**engineering**) practices
- **Tools of WS management**
 - Soil conservation practices
 - Land use planning
 - Building dams
 - Agroforestry practices
 - Protected reserves
 - Timber harvesting
 - Construction regulation
- The common denominator or integrating factor is water

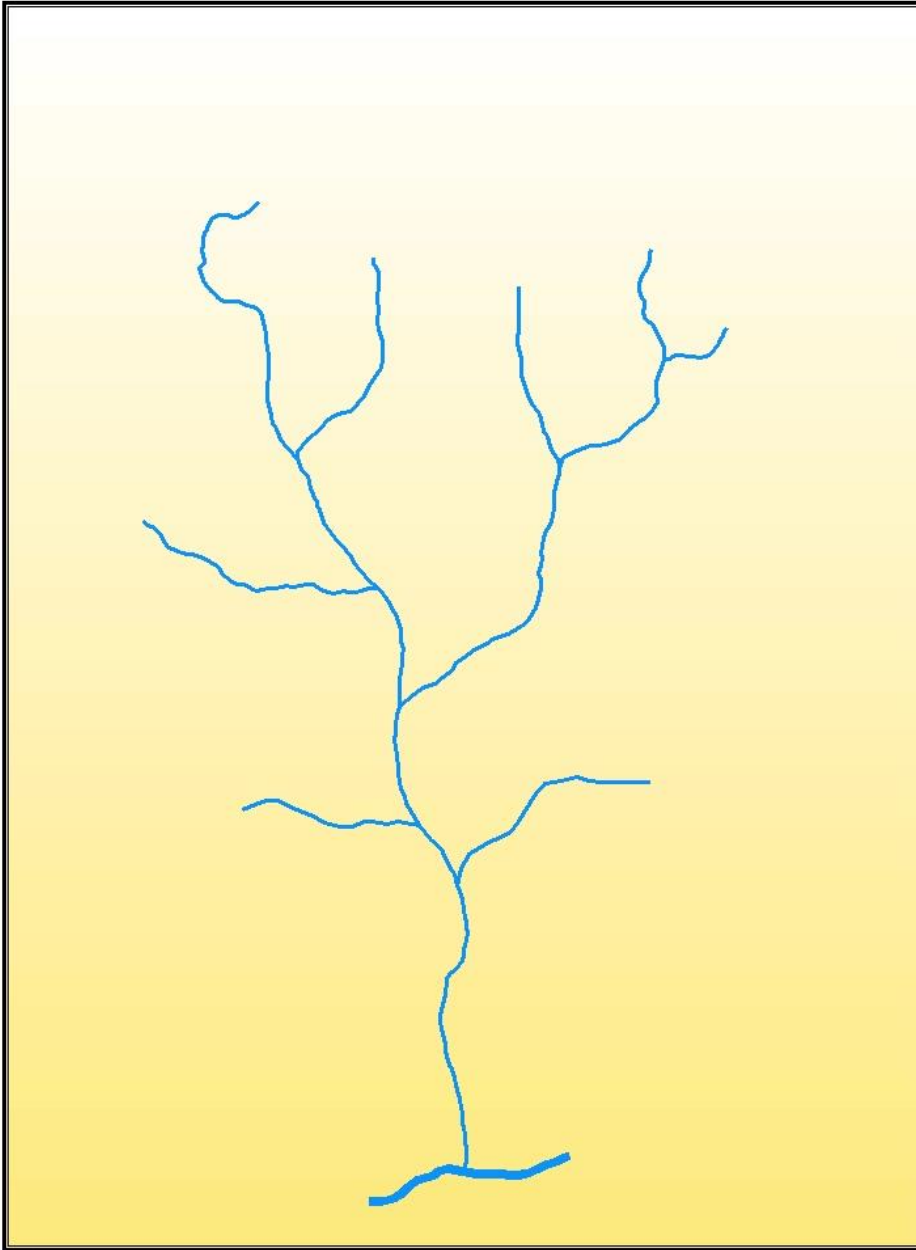
BENEFITS OF WATERSHED MANAGEMENT

The treatment benefits of the watershed are:

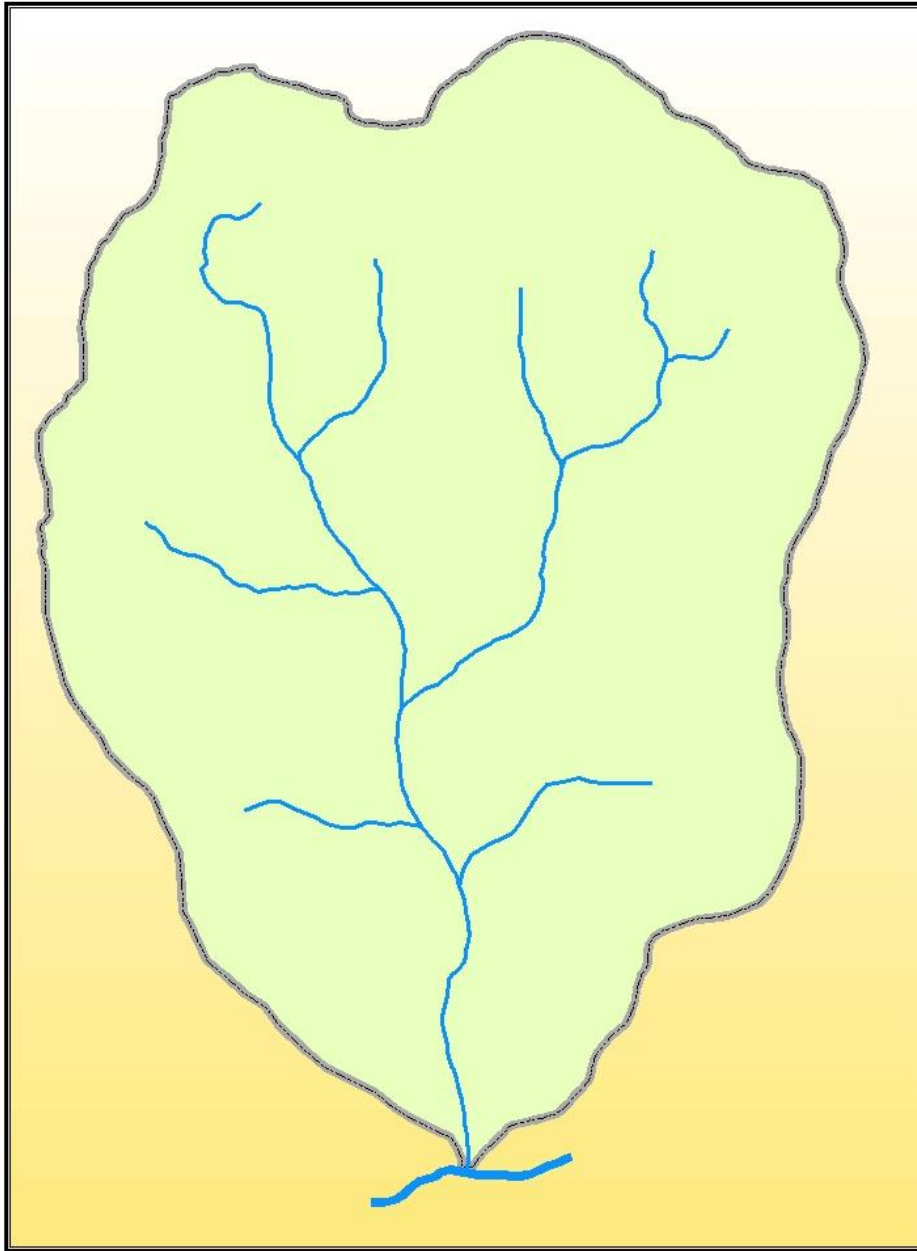
- ✓ **Water conservation;**
- ✓ **Ground water recharge;**
- ✓ **Drought mitigation;**
- ✓ **Flood moderation;**
- ✓ **Agricultural production and food security;**
- ✓ **Rural employment;**
- ✓ **Augmentation of rural livelihoods;**
- ✓ **Eco-ecological growth;**
- ✓ **Agro-eco systems;**
- ✓ **Regeneration of environment;**
- ✓ **Safe guard of nature and many more!!**

**Some of the important
conservation measures in
a watershed**

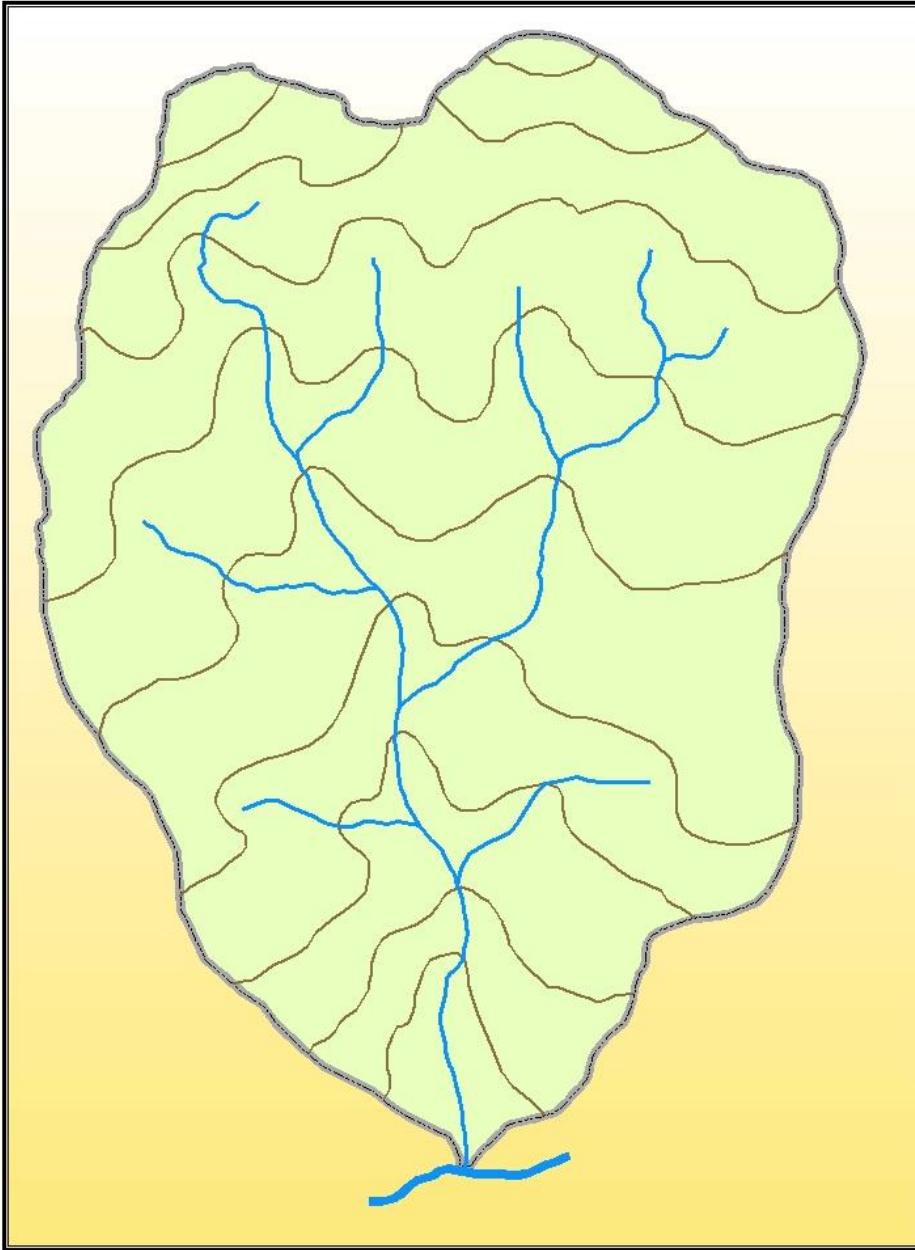
STREAM



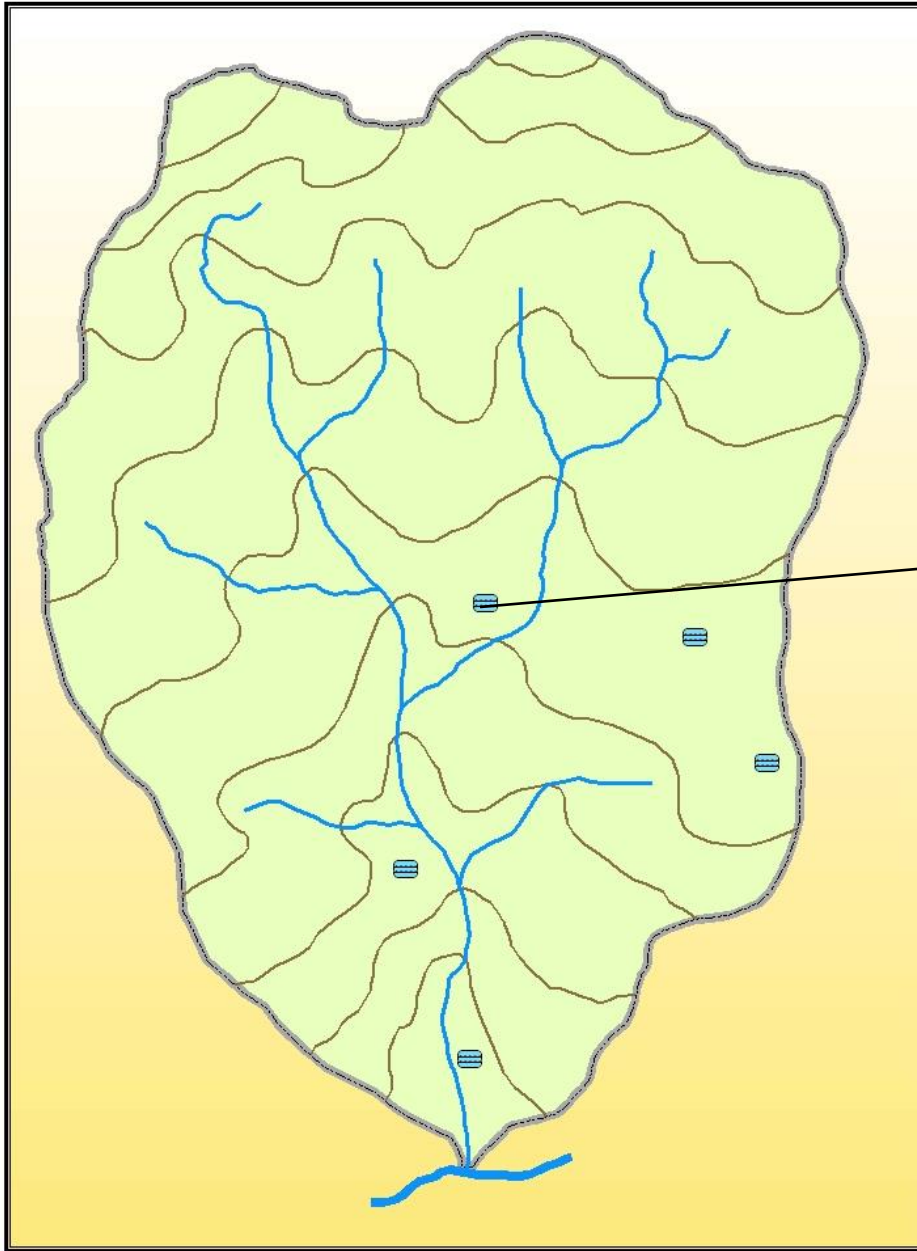
WATERSHED DELINATION



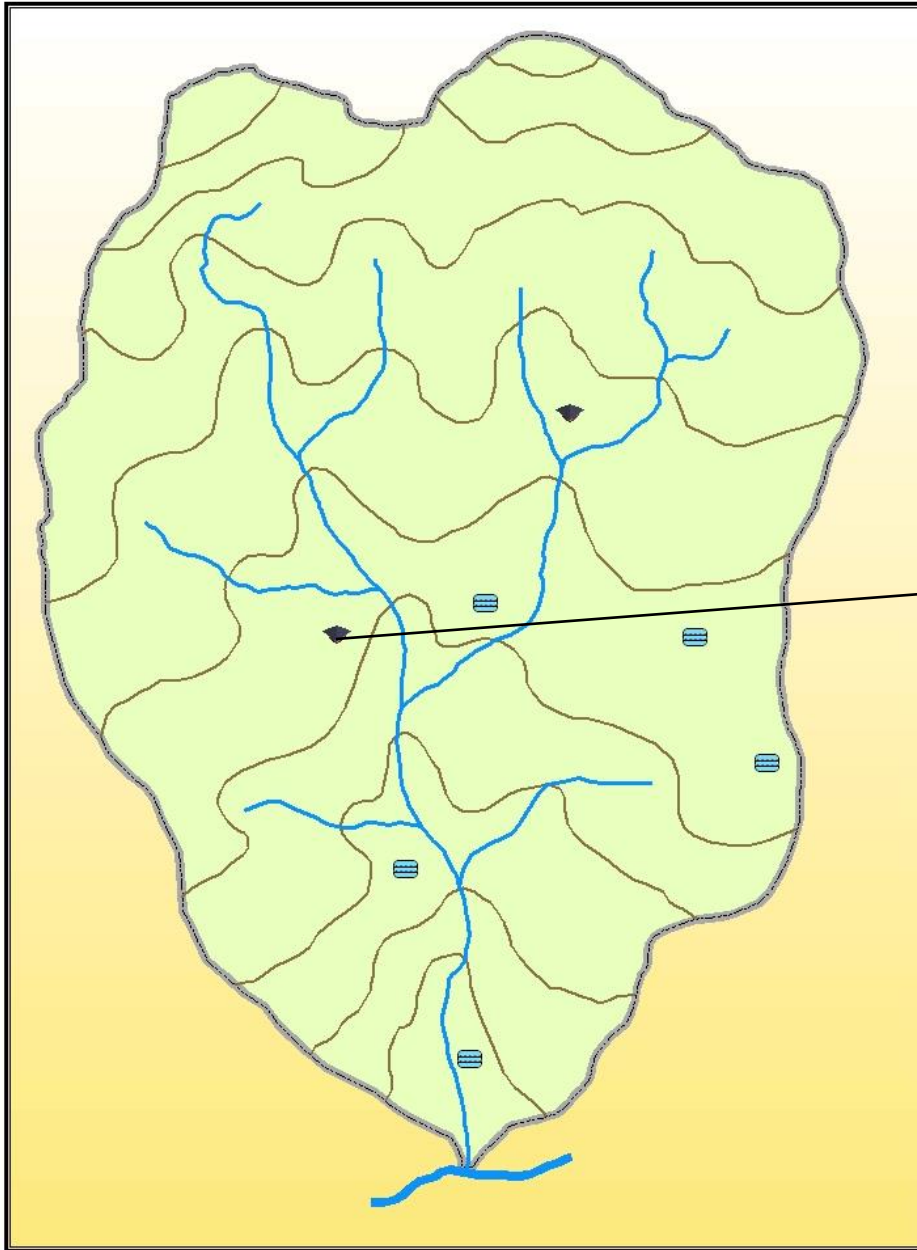
CONTOURS



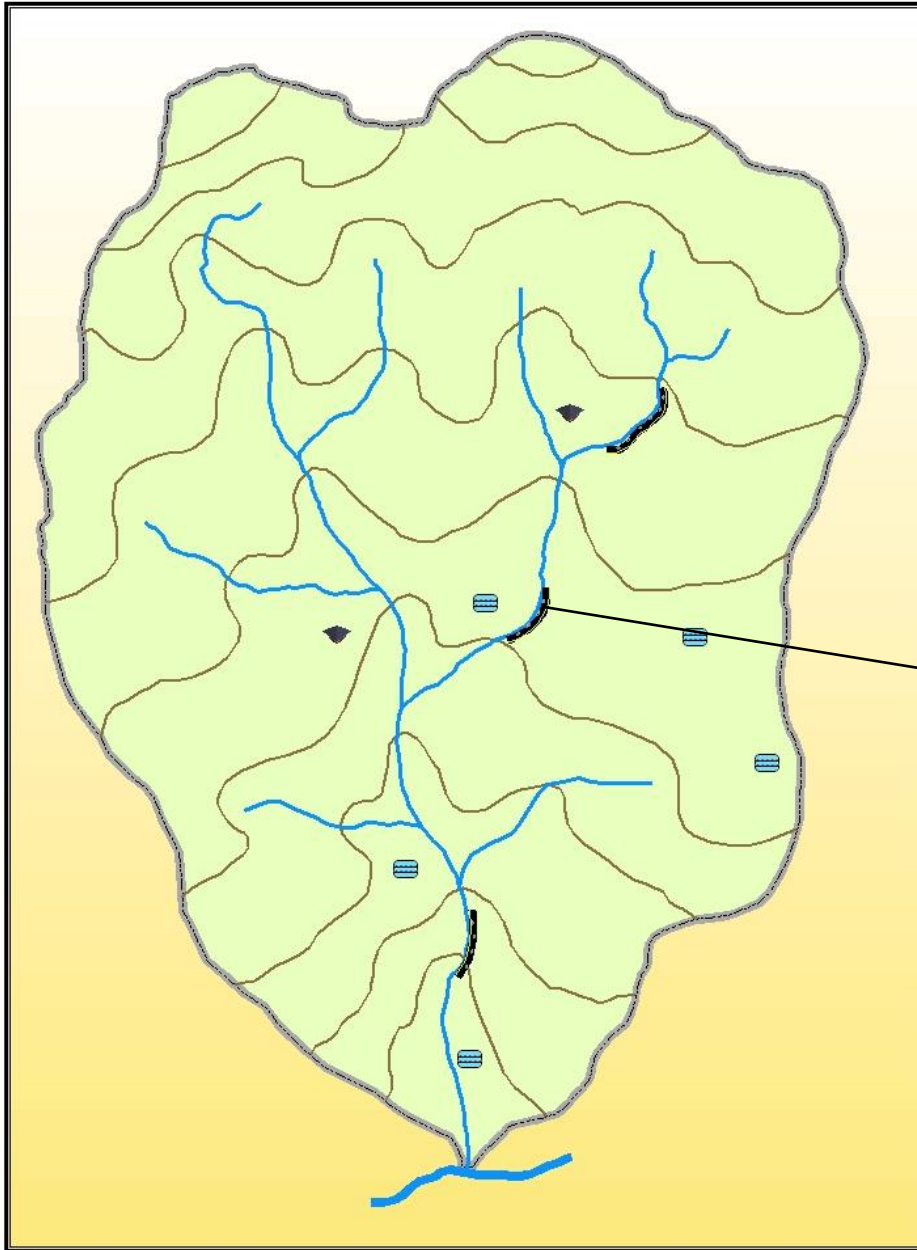
PONDS



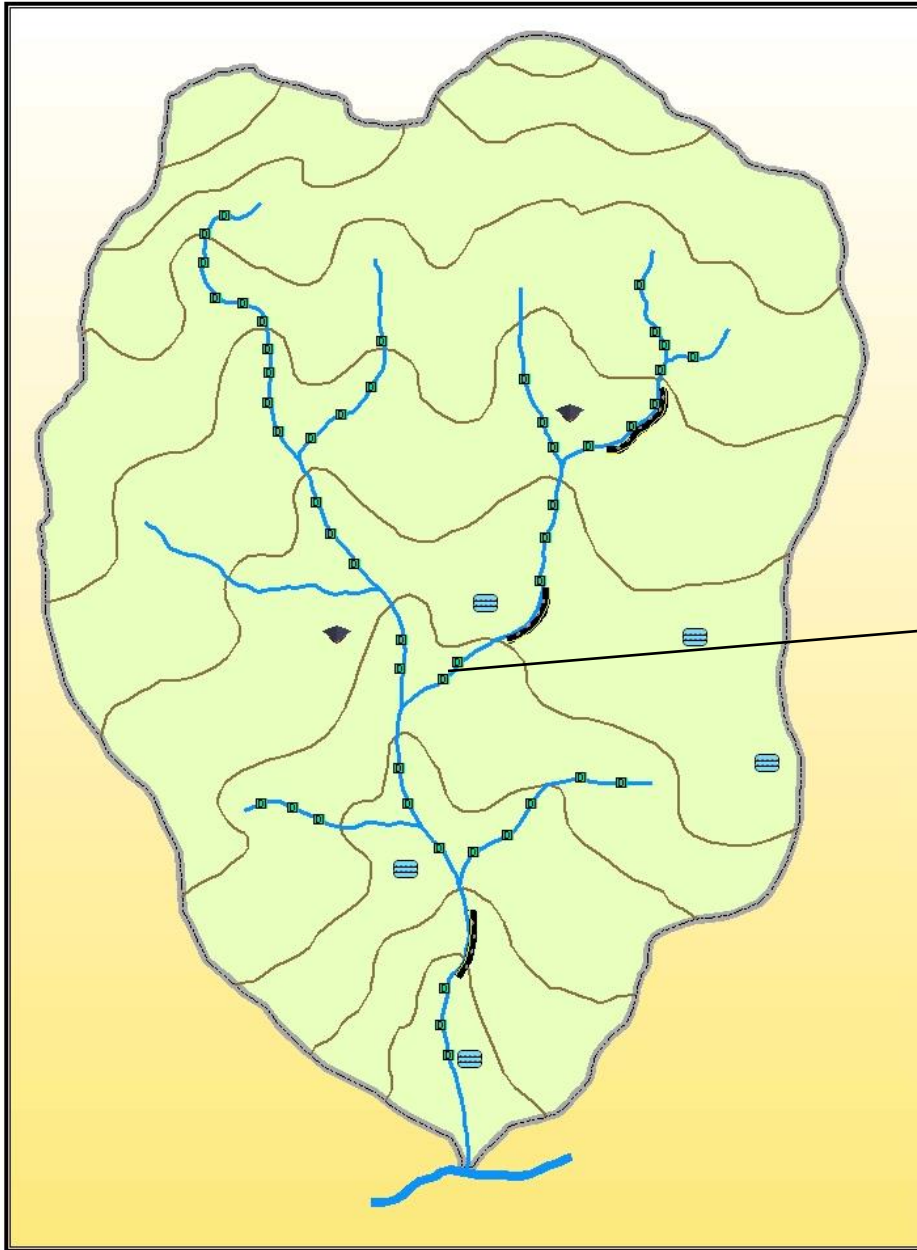
WATER HARVESTING STRUCTURES



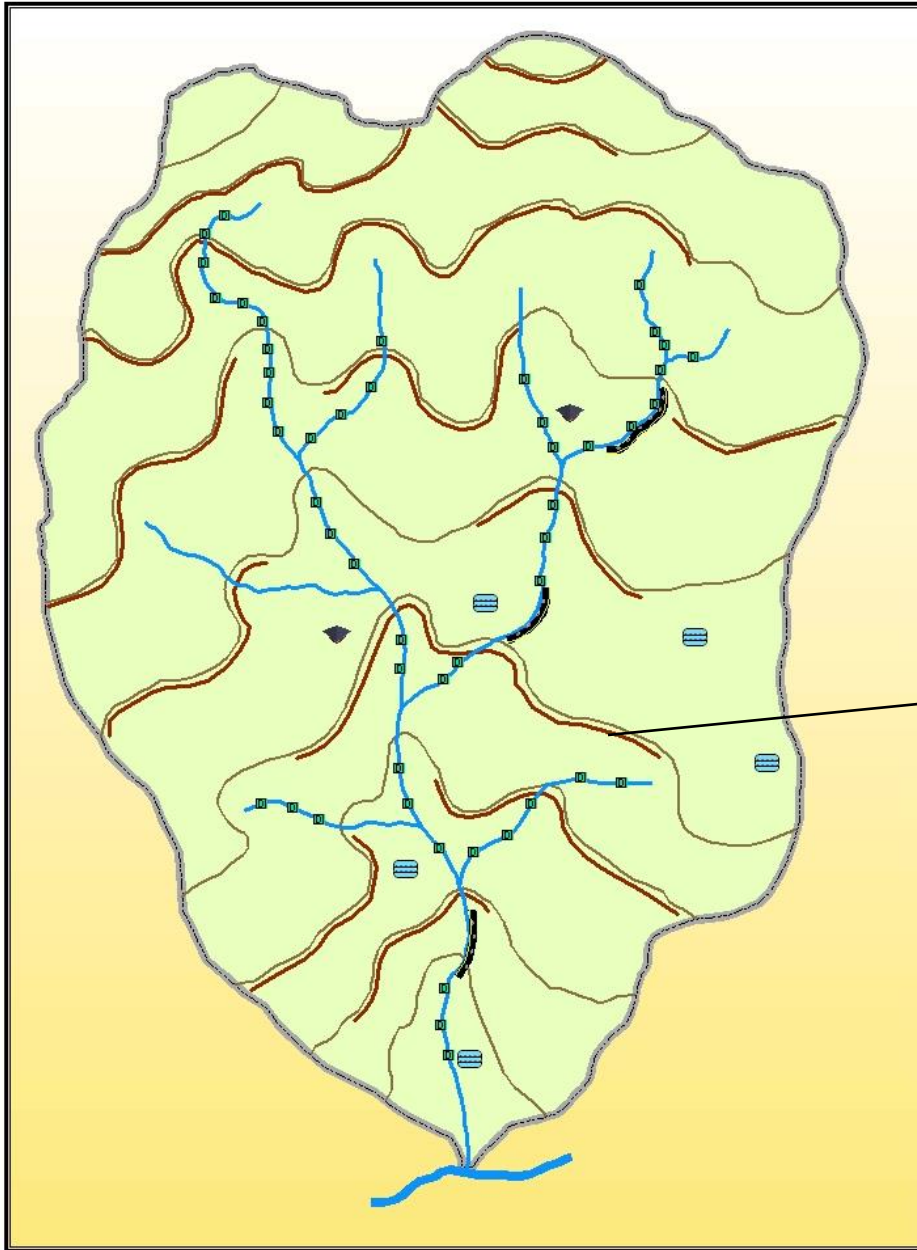
RETAINING WALL



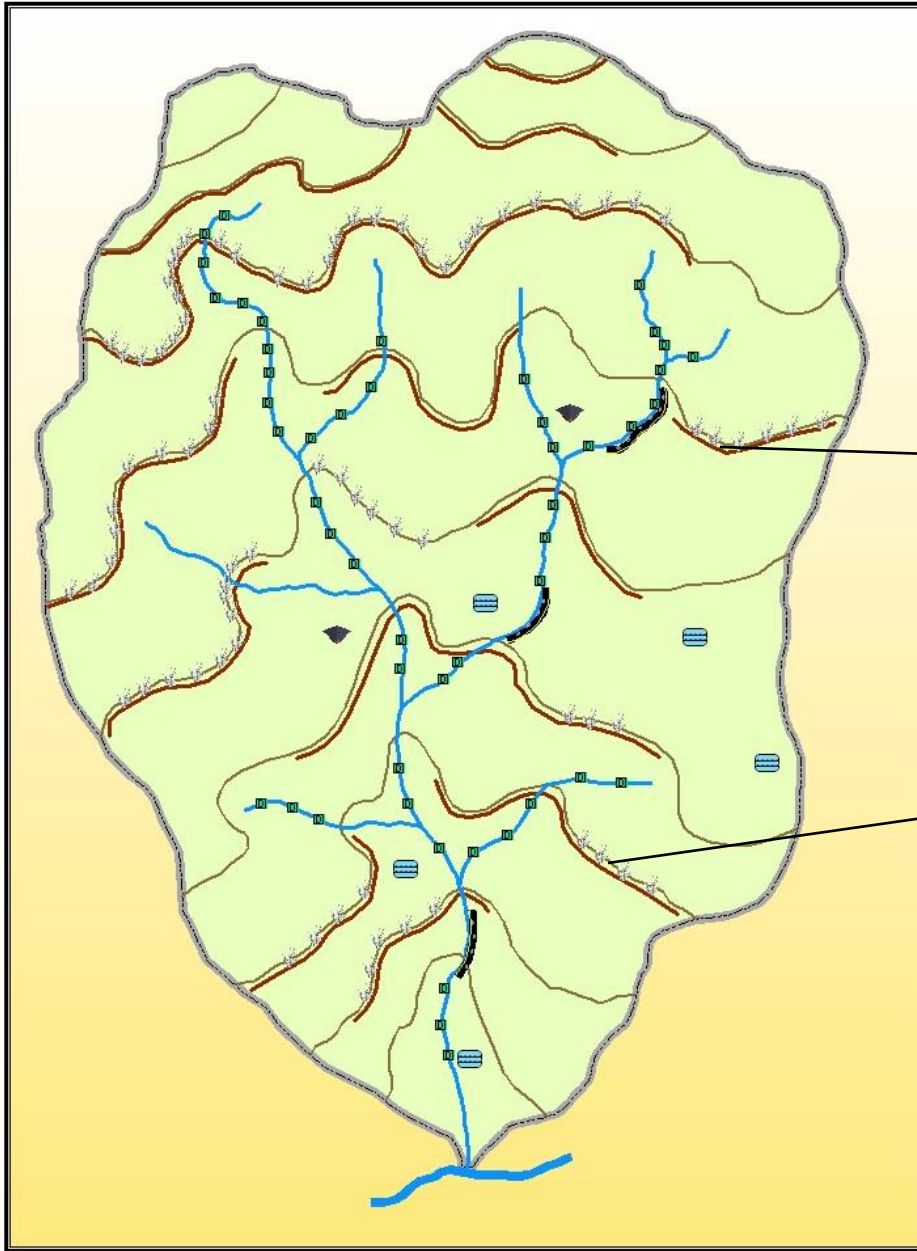
CHECK DAMS



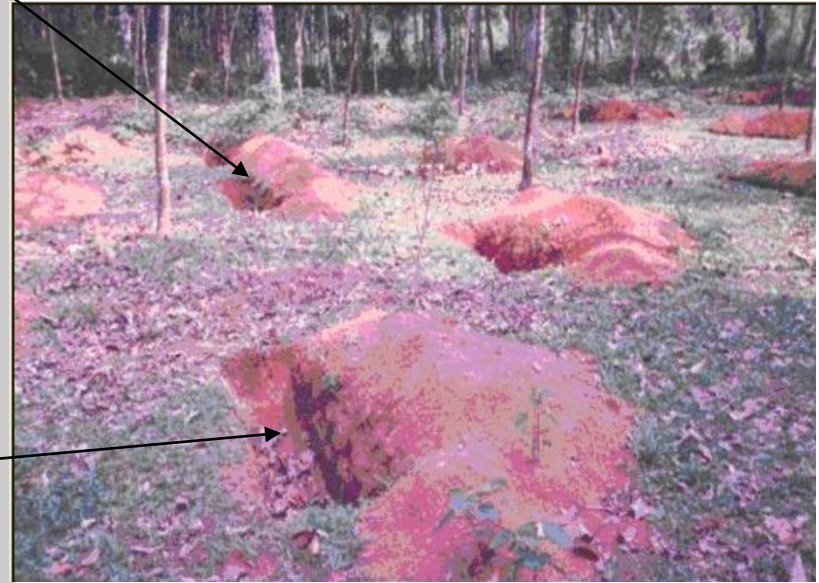
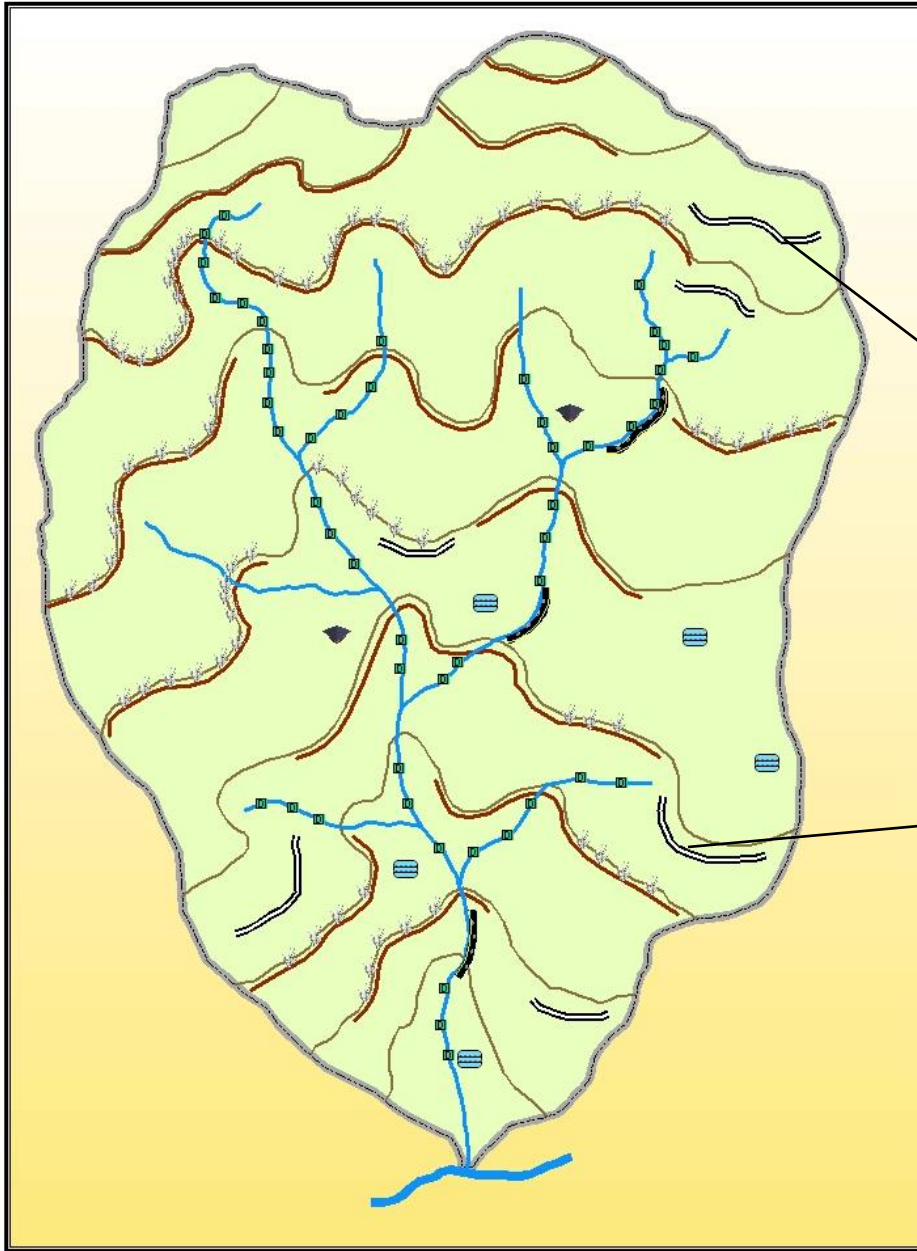
CONTOUR BUNDS



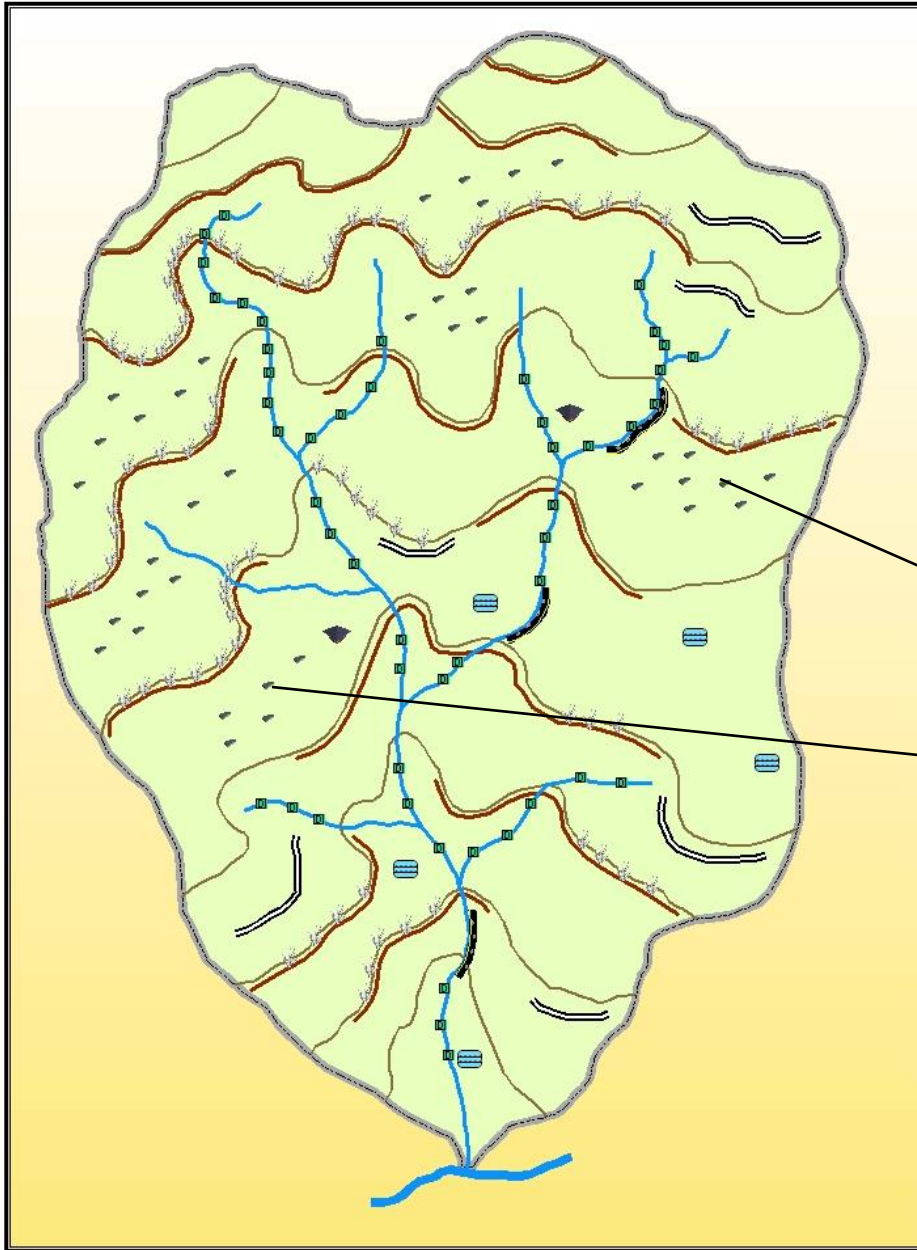
AGROSTOLOGY



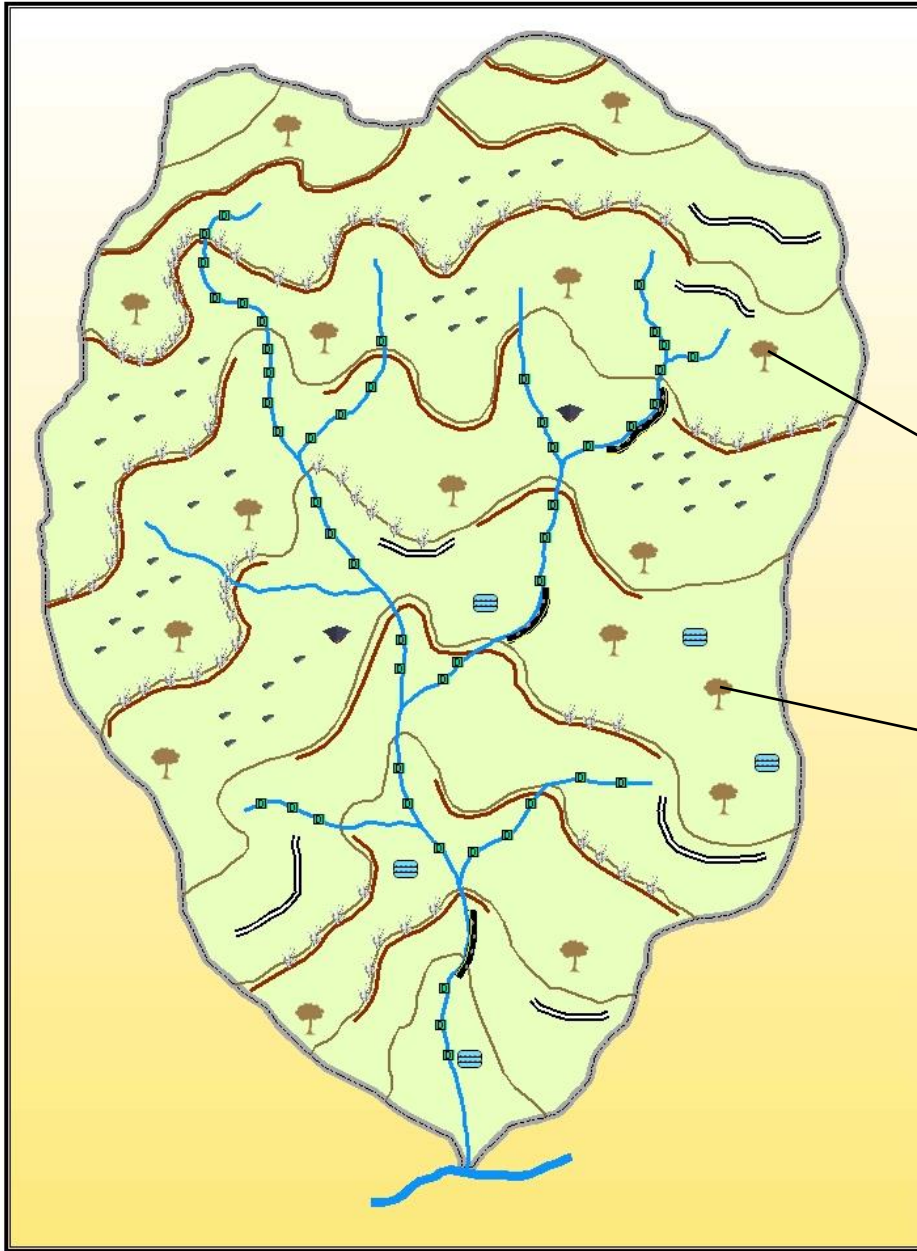
CONTOUR TRENCHES



MOISTURE CONSERVATION PITS



AGRO FORESTRY

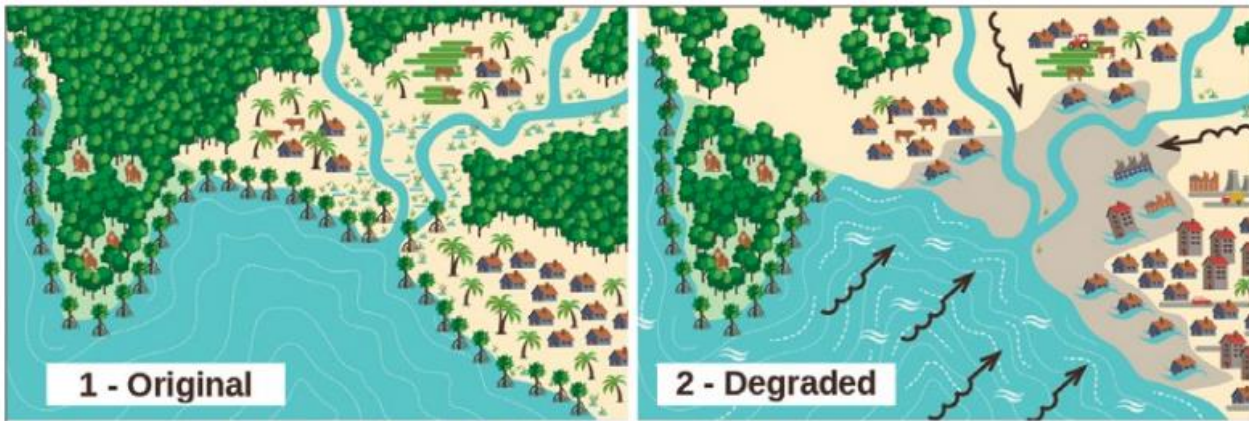








Natural Infrastructure for Water Management

Investing in nature for multiple objectives



*Hybrid solutions that contain built elements that interact with natural features and seek to enhance their water related ecosystem services.



-  Protected Area
-  Flooded Area
-  Floodwall
-  Increased Pressure
-  Restored mangroves
-  Restored forest



Thanking you