SOIL

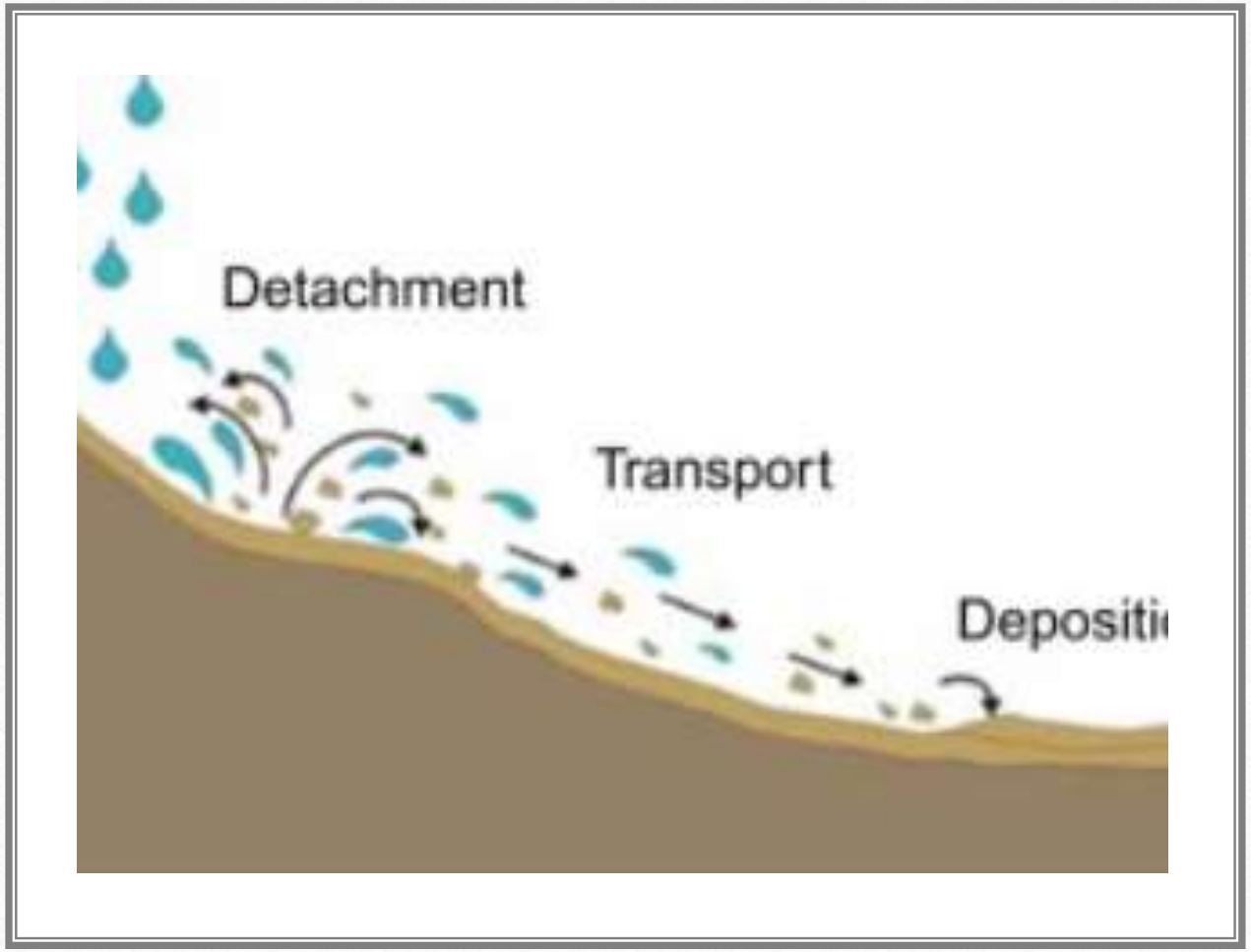
And catchment management plan

The Catchment and Soil Development

- Topography of the catchment modifies soil development in three ways:
  - influences the quantity of precipitation absorbed and retained in the soil, thus affecting moisture retention

The Catchment and Soil Development

- Topography of the catchment modifies soil development in three ways:
  - influences the rate of removal of the soil by erosion
  - directs movement of materials in suspension or solution from one area to another.



Processes of Soil Erosion by Water

- Detachment of soil particles from the soil mass.
- Transportation of the detached particles down the slope by floating, rolling or dragging.
- Deposition of the transported soil particles at some place lower in elevation or in depressions on the soil surface.

Effects of Man's Activities on the Soil Environment

- Agricultural
  - Slope wise cultivation
  - Bush burning
  - Over grazing
  - Over cropping
  - Crop residue harvesting

Effects of Man's Activities on the Soil Environment

- Urbanization
- Deforestation
- Mining activities

SOIL SURVEY

Soil survey, or more properly, soil resource inventory, is the process of determining the pattern of the soil cover, characterizing it, and presenting it in understandable and interpretable form to various consumers.

SOIL SURVEY

- A soil survey results in the preparation of a soil map and an accompanying soil report.
- It is a scientific report that presents the inventory of the soils found in an area, their geographic distribution and their chemical and physical characteristics in relation to terrain, land use, vegetation characteristics and climate.

Benefits of Soil Surveys

- Land evaluation and land use planning at various levels,
  - Land capability Assessments
  - Land Suitability Assessments

Benefits of Soil Surveys

- Site specific introduction of new crops,
- Development of improved management practices
- Establishment of soil data bank for environmental monitoring and management

Benefits of Soil Surveys

- Design of soil and water conservation for land reclamation projects,
- Assessment of soil production potentials,
- Lay-out of irrigation and drainage schemes

Benefits of Soil Surveys

- Determination of levels of inputs for the intensification of agriculture,
- Feasibility study for agriculture development programmes
- Construction of infrastructures,

Soil Conservation

The conservation of soil implies utilization with out depletion or deterioration so as to make possible a continuous high level of crop production while improving or sustaining environmental quality.

Soil Conservation

A combination of all management and land use methods that safeguard the soil against depletion or deterioration caused by nature and or humans.

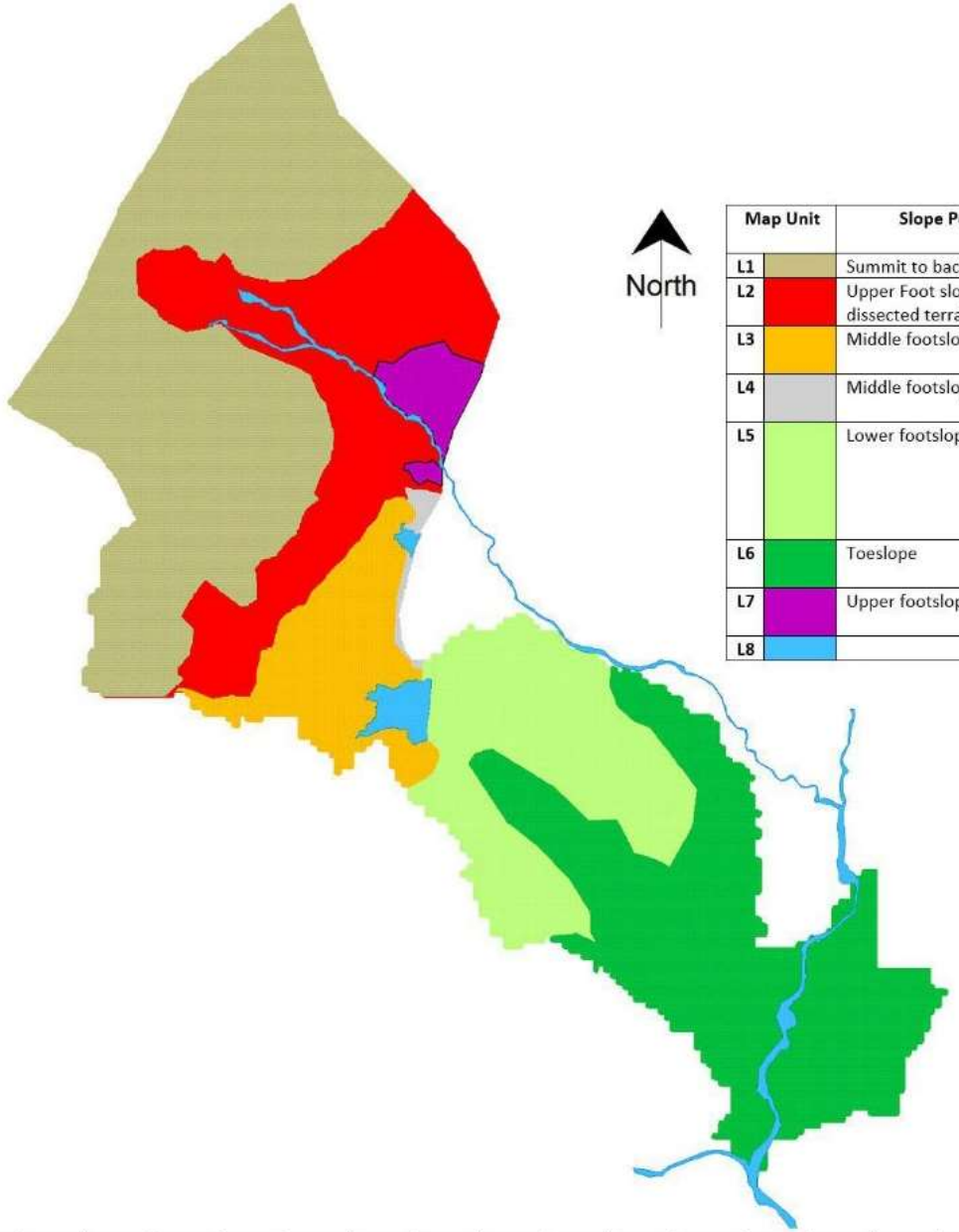
Benefits of Soil Conservation

- Prevention of soil erosion on agricultural and urban land areas.
- Conservation of soil nutrients on farmlands
- In low rainfall areas, conservation increases retention of soil moisture while dams are also built for irrigation purposes.

Benefits of Soil Conservation

- In high rainfall areas, conservation helps to prevent water logging through efficient design of drainage systems.
- In lowlands, coastal areas and palaces close to rivers; conservation helps to prevent the flooding of agricultural and urban lands.
- Conservation also enhances or conserves soil physical properties such as texture, structure, bulk-density, and infiltration rate.

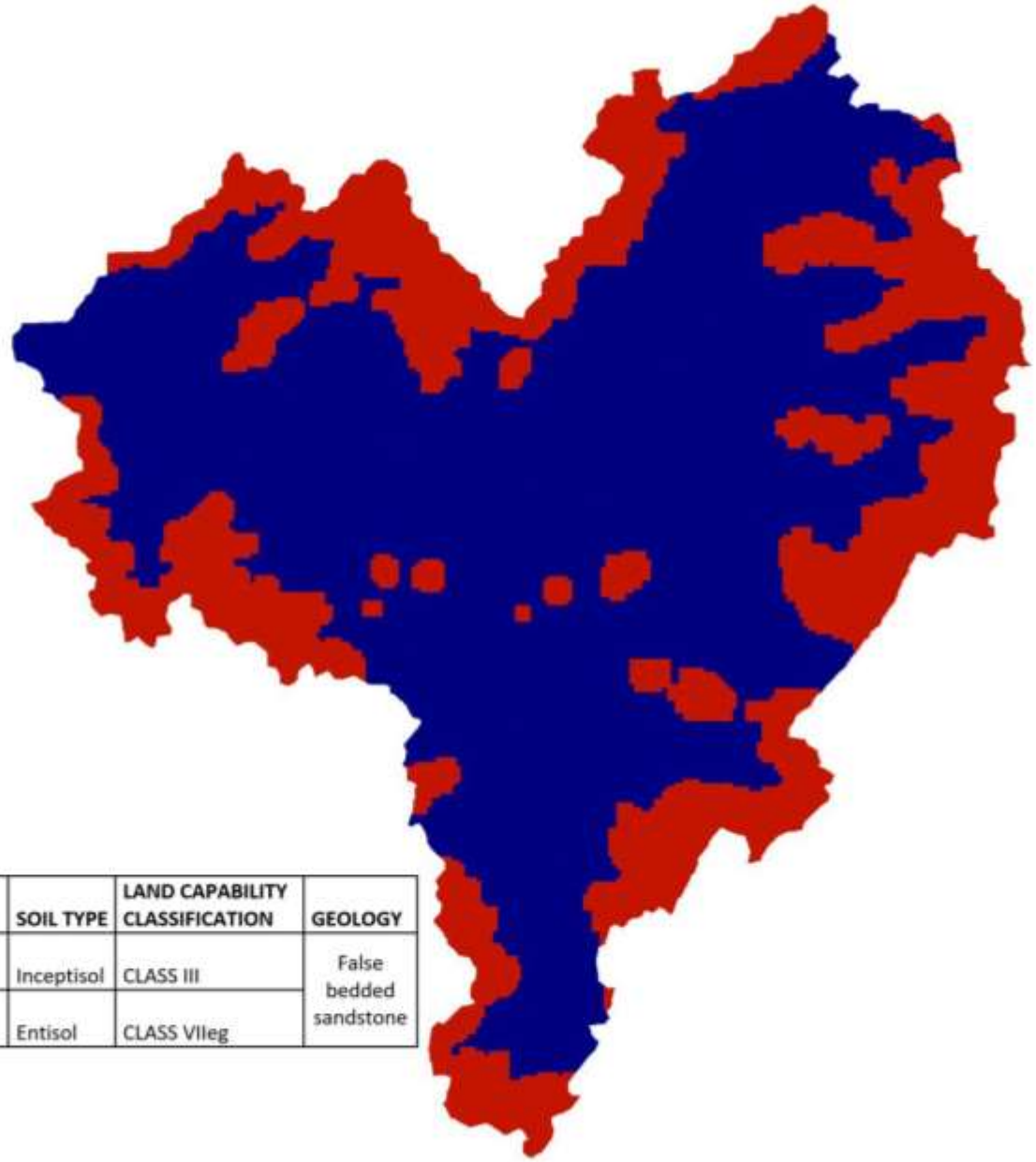
Case Study: One



Map Unit Description

Map Unit	Slope Position	Soil type/Geology	Land Capability Classification	Land use
L1	Summit to backslope (hills)	Basement complex rocks	VIII	Savanna vegetation
L2	Upper Foot slope with dissected terrain	Entisols derived from porphyroblastic gneiss	IVes	Agricultural area, mainly mono and mixed cropping systems involving maize, sorghum and cowpea, groundnut, bambaranut intercrop
L3	Middle footslope	Entisols derived from rhyolitic rocks	Ives	
L4	Middle footslope	Alluvial soils and flood plain	IVw	
L5	Lower footslope	Inceptisols derived from porphyroblastic gneiss and Entisols mainly around rhyolitic rock extrusions	IIIe	
L6	Toeslope	Inceptisols derived from porphyroblastic gneiss	IIIe	
L7	Upper footslope	Entisols derived from porphyroblastic gneiss	IIIe	Agrarian area with 15 to 35% built-up area
L8				Dams, rivers or streams

Case Study: Two



MAP UNIT	LANDUSE	SLOPE POSITION	SOIL TYPE	LAND CAPABILITY CLASSIFICATION	GEOLOGY
O1	Farming activities	Footslope	Inceptisol	CLASS III	False bedded sandstone
O2	Natural vegetation	Summit to backslope	Entisol	CLASS VIIeg	

THANK YOU

FOR LISTENING