

# C O N T E N T S

## PREFACE :

- List of Tables
- List of Figures
- List of Photographs

## Introduction :

- A. The Problems
- B. The Study Area
- C. Methodology

## Chapter I : Physical Background of the Study Area

- A. Geology
- B. Topography
- C. Climate
- D. Soil
- E. Natural Vegetation
- F. Conclusions, References .

## Chapter II : Geomorphology of the Basin .

### Introduction

- A. Slope Analysis
- B. Relative Relief
- C. Drainage Density
- D. Morphometric Analysis of the Third Order Basin
  - i) Descriptive Statistic of the Morphometric Properties
    - a) Measures of Central Tendency
    - b) Normality of the Morphometric Data.
    - c) Regional Comparison
  - ii) Pair-wise Relationships among the Morphometric Variables
    - a) Correlation Analysis
    - b) Linear Regression Analysis

**iii) Multiple Relations among Morphometric Parameters**

- a) Sets of Inter-correlated Variables
- b) Multiple Regression and Partial Correlation Analysis

**E. Conclusions**

**References**

**Chapter III : Soil Classification of the Basin**

4c

**Introduction**

**A. Soil Classification**

- a) Entisols
- b) Inceptisols
- c) Ultisols

**B. Conclusions**

**References**

**Chapter IV : Pedo-geomorphic Relation within the Basin**

**Introduction**

**A. Pair-wise Relationship among the Morphometric Parameters**

- i) Correlation Analysis
- ii) Linear Regression Analysis

**B. Multiple Relations among Pedo-geomorphic Variables.**

- i) Sets of Inter-correlated variables
- ii) Slope, soil properties and Infiltration Relationship

**C. Pedo-geomorphic Relationships in different Environmental Set-up.**

- i) Pedo-geomorphic Relation in different Geological Set-up
- ii) Pedo-geomorphic Properties and Altitudes.
- iii) Slope Gradient and Pedo-geomorphic properties

**D. Conclusions**

**References**

## **Chapter V : Soil Loss by Water Erosion**

### **Introduction**

- A. Methodology**
- B. Rain-Erosivity**
- C. Soil - Erodibility**
- D. Topographic Factors**
- E. Biological Factors**
- F. The Potential Soil-Loss by Water Erosion**
- G. The Predicted Soil-Loss by Water Erosion**
- H. Proposed Conservation Plan for the Study Area.**
- I. Conclusions**

### **References**

## **Chapter VI : Landslides**

04

### **Introduction**

#### **A. Major Types of Slope Failures**

- i) Creep**
- ii) Slump**
- iii) Soil slip**
- iv) Debris slide**
- v) Mud-Rock Flow**

#### **B. Landslide Prone Areas**

#### **C. Case Studies of Selected Landslide**

##### **I. The Seventeenth Mile Basti Landslide**

##### **a) Factors of Slope**

##### **Instability**

- i) Geological Factors**
- ii) Pedological Factors**
- iii) Changes in the Vegetation cover**
- iv) Effect of Rainfall, Run-off and Infiltration**
- v) Effect of Human**

##### **Inference**

##### **vi) Morphology of the Landslide**

B

## II. The Tindharia Landslide

### a) Factors of Slope Instability

- i) Geological Factors
- ii) Pedological Factors
- iii) Changes in the Vegetation cover
- iv) Effect of Human Interference
- v) Effect of Rainfall, Run-off and Infiltration
- vi) Morphology of the Landslide

### D. Corrective Measures for the Stabilization and Prevention of Landslides and Landslide-Prone Areas.

- i) Treatment of Slope Conformation
- ii) Maintenance of proper drainage
- iii) Retaining Walls and Similar Structure
- iv) Stabilization of Landslide by Afforestation
- v) Restriction to Settlements

### E. Conclusions

#### References

## Chapter VII : Effects of Soil Erosion and Landslides in the Fluvial Processes of the River

15

### Introduction

#### A. Study of Cross-Sections

- i) Characteristics of the Cross-Profiles for the year 1985-87.
- ii) Progressive Changes in the Cross-Sectional Area
- iii) Progressive Changes in Wetted Perimeter
- iv) Progressive Changes in Hydraulic Radii
- v) Progressive Changes in Channel Width.
- vi) Progressive Changes in Channel Depth.

#### B. Study of Discharges

- i) Stage-Discharge Relation .
- ii) Hydrograph Analysis
- iii) Progressive Changes in Discharges

**C. Suspended Sediment Analysis**

- 1) Nature and Distribution of Suspended Sediment
- ii) Progressive Changes in Suspended Sediment

**D. Conclusions****References****VIII : The Water Resources of the Basin**

132

**Introduction**

- A. Study of Rainfall and Run-off
- B. Rainfall & Run-off Correlation
- C. Study of Evaporation
- D. Estimation of Water Resource of the Basin
  - i) The Monsoon Water Resource
  - ii) The Total Water Resource
  - iii) Actual Water Resource of the Basin.

**E. Conclusions****References****Chapter IX : Land Capability Assessment****Introduction**

- A. Land Capability Classes and Sub-Classes
- B. Conclusions

**References****Abstract****Bibliography****Appendix****List of Topo-sheets .**