



INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

CASE STUDY ON CATCHMENT AREA OF CHINAV RIVER (KISHTWAR, J&K)

¹Sandeep Singh, ²Suman, ³Navdeep Rathore, ⁴Feroz Ahmad, ⁵Hrithik Gupta, ⁶Abhishek Sharma, ⁷Dr. Omprakash Netula, ⁸Sumit Saini, ⁹Ashish Broida.

¹²³⁴⁵⁶B.Tech, ⁷Professor & HOD, ⁸Assistant Professor, ⁹Assistant professor,
Department of Civil Engineering
Jaipur Engineering College and Research Centre, Jaipur, India.

Abstract:-Human demand of timber is increasing day by day. Consequently, thousands of trees are to be cut for construction of road and buildings every year which makes the land barren. Consequently the area becomes eroded. Over the last few decades the deforestation is the major cause to loss the land and scouring. Cutting of trees are more hazard for soil in the vicinity of area and processing methods, which have put environmental and health hazards on the landscape. The test results revealed that rock materials can be used to block the holes of the river bank. protect the environment from the harmful effects of dumping rocks and plant more and more trees.

Keyword:-catchment area, plantation, shotcreting, geotextile synthetic bags, groynes and breastwall construction.

1.0 INTRODUCTION

Catchment area and Aquifer mapping studies have been carried out on the Kishtwar Plateau of Kishtwar District that lies in Jammu Province, J&K State with an objective to identify and map the aquifers at micro level, quantify the availability of ground water resource and suggest Aquifer Management Plan to address the basic ground water related issues in the area. Aquifer Mapping study involves integration and analysis of multi-disciplinary scientific aspects including geological, hydrogeological, geophysical, hydrological and hydro-chemical.

These studies help to characterize the quantity, quality and ground water movement in the aquifers and devise their optimal management plans. The representative area of the study was in the State of Jammu & Kashmir, forming part of Kishtwar Window spread over an area of 20 Sq. Km. The study area includes the plateau part on which Kishtwar Town is located. The report on "Aquifer Mapping & Management Plan of Kishtwar Plateau of Kishtwar District. J&K" elaborates the outcome of the Aquifer Mapping Study, in particular, the vertical and lateral extent of the aquifer units, their characteristics and response of the aquifer units to different stress conditions and their redressal through appropriate management plans.

Various water stress mitigation options by integrating technical and scientific measures are also recommended for sustainable ground water development and management in the area. The untiring efforts put forth by a team of Scientists of North Western Himalayan Region, Jammu namely Shri Vinod Sharma, Shri K. P. Singh and Smt. Priya Kanwar, in bringing this report are duly appreciated, as this report would not have seen the light of the day without their hard work and dedication.

2. RESEARCH METHODOLOGY

The characteristics of the soil is sandy and silty clay soil, the representative soil and sandy soil dust samples were collected from gulabgarh and the surrounding areas where scouring unit is located.

We have divided some method to prevent scouring effects listed below: -

Plantation

Breast wall and retaining wall construction where required.

Groynes and spur construction.

Shotcreting method with steel bars.

Geotextile bags.

Stone pitching, brick pitching and boulder pitching

Guide banks.

2.0 Soil

Aim: - To prevent the loss of soil by scouring from particular area.

Apparatus and Materials: -Stones and cement, steel bars, plants shrubs and herbs geotextile bags.

Theory: - Soil is the natural medium that is composed of weathered mineral materials, organic material, air, and water. Soil is combination of solid and water and air. Soil are classification on the basis of particle size. Clay is type of soil and clay particle's size is less than 2 microns.

2.1 Plantation

Plants help to reduce the scouring of river because its root takes a great depth of earth and hold the soil strongly.

Binding soil to sloping land with their roots. Willows are planted at the eage of stream and rivers to stem the erosion of the banks.

2.2 Breast wall and Retaining wall.

It is a structure used for retaining the soil and it is constructed at the required place.

2.3 Groynes and spur.

These are the structures constructed on the curve of a river to prevent the soil erosion and guide the flow of water.

2.4 Shotcreting.

It is a process of placing concrete to achieve high strengths and low permeability. conveyed through a hose and pneumatically projected at high velocity onto a receiving surface.

2.5 Geotextile bags.

These are the smaller containers manufactured from water permeable, sand tight geotextile of 0.3 to 10m³ in volume.

These bags can be install submerged, possible application are dune.

Among various uses these bags are used in drainage, landscaping, and filtration where they help allow water to escape .

2.6 Stone pitching, brick pitching and boulder pitching.

These are the protector of scouring bank

In this construction bamboo and timber piles of length 3m are driven at 15cm center to center along a line about 1m away from the toe of the embankment and cement concrete of thickness 15cm is laid over a brick or stone embankment.

2.7 Guide banks

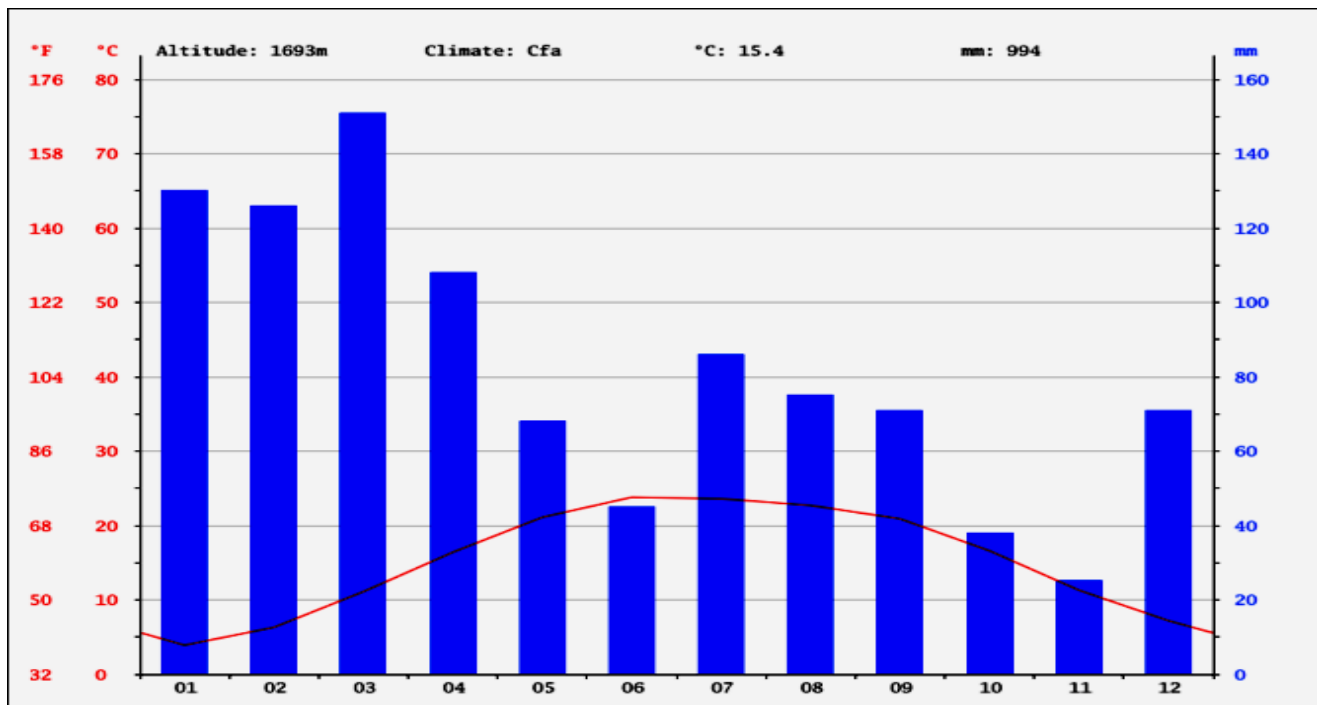
These are the structure constructed to guide the river flow of water.

3. RESULTS AND DISCUSSION

1. Catchment area and Aquifer mapping studies have been carried out on the Kishtwar Plateau of Kishtwar District that lies in Jammu Province, J&K State with an objective to identify and map the aquifers at micro level, quantify the availability of ground water resource and suggest Aquifer Management Plan to address the basic ground water related issues in the area. Aquifer Mapping study involves integration and analysis of multi-disciplinary scientific aspects including geological, hydrogeological, geophysical, hydrological and hydro- chemical.

2. These studies help to characterize the quantity, quality and ground water movement in the aquifers and devise their optimal management plans. The representative area of the study was in the State of Jammu & Kashmir, forming part of Kishtwar Window spread over an area of 20 Sq. Km. The study area includes the plateau part on which Kishtwar Town is located laborates the outcome of the Aquifer Mapping Study, in particular, the vertical and lateral extent of the aquifer units, their characteristics and response of the aquifer units to different stress conditions and their redressal through appropriate management plans.

3. Various water stress mitigation options by integrating technical and scientific measures are also recommended for sustainable ground water development and management in the area. The untiring efforts put forth by a team of Scientists of North Western Himalayan Region.



REFERENCES

- [1]. LI Baoqiang Tianjin university ,Research and application of large geotextile bags for the construction of river bank.
- [2]. BD Fahey,M Marden,CJ Phillips(Journal of hydrology,27-38,2003.Plantation more trees and plants for preventing the scouring.
- [3]. YM Yang,ZC Zheng,TX Li on his research paper he explained planting orchard,tea plantation depends on soil condition.
- [4]. A Contantini,RJ Loch soil research ,site preparation practises used during establishmentof second rotation pinuse plantation on the effected side of lowlands.1287-1302,2002.
- [5] C Li,Gregor Fischer,Michael Lepech shotcreting is now acceptable and as a reliable,economical,and efficient concrete construction method around the world.