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Disaster Management of Flood and Retaintion Techniques

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Abstract: ***The most frequent and destructive type of natural disaster, floods annually have an impact on the lives of tens of millions of people all over the world. Climate change and increased climate variability were predicted to result in more frequent and intense floods in the past. Growing demands for channels are being made in order to reduce severe rural flooding by effecting a significant amount of additional storm runoff. This investigation intends to assess how well a deep channel device proposed for Kolhapur's historic centre will reduce flooding. In order to lessen the devastating effects of floods and regularly make the area more flood-proof, we will lower the flood force at the downstream aspect by providing a suitable channel of a specified sort of size.***

Keywords: River, Flood, Diversion Head, Channel, Rainfall.

I. INTRODUCTION

Flooding is the aim of severe rainfall. Accelerated floor run-off, precipitation that is greater than the capacity of outgoing discharge, and accelerated floor run-off cause the water level to rise, endangering sustainable development by submerging areas and causing debris flows and landslides. Floods have an impact on the environment and civilization through destroying habitats, taking lives, damaging infrastructure, and other factors. Nearly 40 million hectors of land in India are at risk for flooding, and each year, about 8 million hectors of land are inundated. In addition to those, the nation's food security is impacted by floods during the Rabi and Kharif seasons. In India, increased extreme rainfall frequency is reported as a result of the warming climate. Similar to this, the Indian Ocean has been warming recently for a long time. Warming fashion over the Indian Ocean has doubtlessly more desirable moisture deliver leading to rainfall extremes within the channeling begins by way of constructing to do these pre-fabricated sections of metal and urban tube are floated into position and strategically sunk into the ditch.

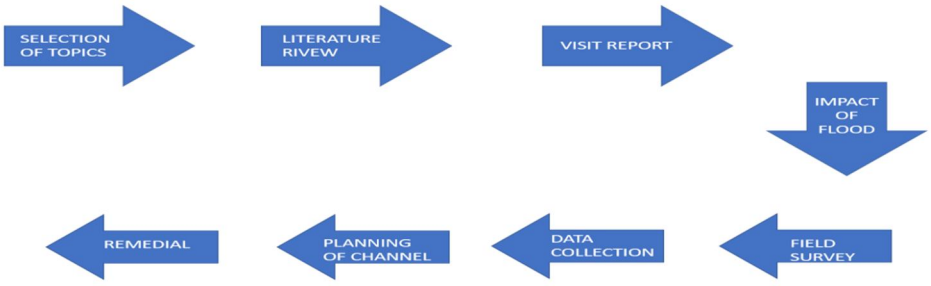
Limitation of the existing system:

1) The segmental technique involves careful architecture of the connections, in which longitudinal results and forces ought to be passed across, and direct contact with water requires a careful water-proofing design across the joints.
2) The embankment channel's impact on the environment.

II. OBJECTIVES

1) In order to avoid loss of life and property due to floods, it is important to research the flood control system.
2) By constructing a diversion canal to divert extra water from a river during periods of catastrophic flooding.
3) To identify methods to mitigate flooding when it occurs.
4) To determine how much water is released from a river into a channel of water

III. METHODOLOGY



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A. Selection of Topics

Herbal screw ups are a main motive of human mortality, purpose harm to personal and public assets, deterioration of human fitness and environmental degradation. Natural catastrophe impact and catastrophe depth are comparable across developed and developing nations, but developed nations have higher catastrophe control and superior disaster warning systems to save you the put up and pre disaster effect as compared to developing international locations.

B. Visit Expert

For getting more clarity and also to understand the path of our project we visited an expert of in this field. Firstly, we visited to location with Dr. Vaishali Ture, Prof. in the department & also visited Prof. S. Kangiri, department of civil engineering, Shree Ramachandra college of engineering Lonikand, Pune.

C. Impact of Flood On The Village

For selection of village, firstly we visited a number of villages also we visit their corresponding authorities for the collection of basic data likewise total area, an agricultural area, residential area, a village after that we collecting the data of Flood impact & also observed that condition of that village after flood.

1) Narsobawadi
2) Panchganga river
3) Krishna river
4) Ganeshwadi

D. Assessment of Flood Impact

We collect data from government servant Mr. Mahendra Patil sir about number of houses fully obstructed, number of houses averagely obstructed, cow sheds impacted by flood, destroyed cowsheds, number of dead animals affected agricultural area and residential area. And also we visited that impacted area for understanding the actual damage.

Year	No. of Houses	No of Cowsheds	No of Animals
2005-2006	729	420	789
2019-2020	1152	542	752
2021-2022	1137	580	966

Total No. of Houses, Cowsheds, and Animals

Years	Fully obstructed houses	Averagely obstructed	Impacted Cowshed	Destroyed Cowsheds	No. Dead of animals	Impacted area
2005-2006	42	32	290	13	03	425
2019-2020	46	26	385	20	02	325
2021-2022	72	51	340	26	16	210

Assessment of flood impact

E. Field Survey

Regarding scope and average yearly financial loss, floods are considered the worst natural catastrophe. The likelihood of riverine flooding has increased significantly in many regions; it is primarily brought on by rainfall during the summer monsoon season from June to September and occasionally by tidal disturbances, which leads to more calamitous conditions. In fact, nearly one-eighth of the entire geographic area, or 40 million hectares, is at risk for flooding. According to the Impartial Water Commission (2010), riverine floods affect people every year and can cause economic losses of up to 36,004.75 million INR. Numerous factors, such as improper flood risk management practices, erratic weather patterns, and unplanned socioeconomic development, have contributed to the increase in flood damage.

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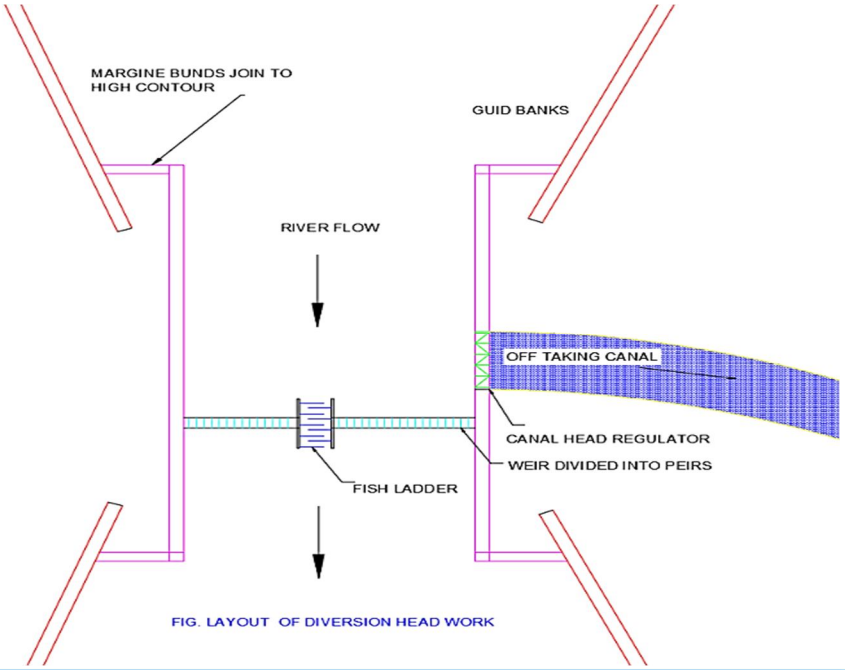


FIG. LAYOUT OF DIVERSION HEAD WORK

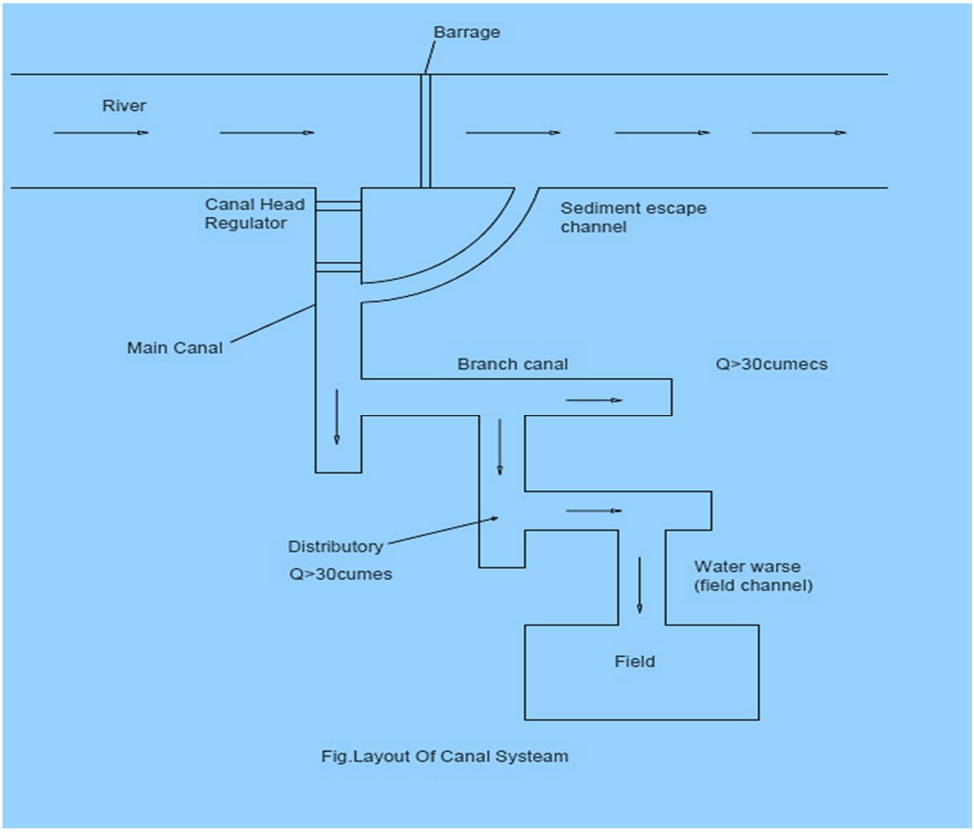


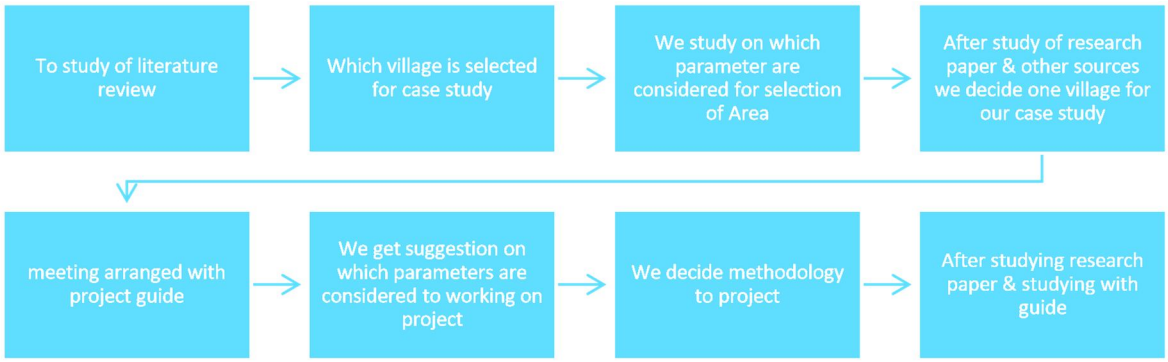
Fig.Layout Of Canal Systeam

F. Reason of Flood

1) *Heavy precipitation:* Rainfall exceedingly at least 15 cm in a single day may exceed the stream's carrying capacity, causing the canal to overflow its regular banks.
2) *Rise in river bed:* The Himalayan streams carry a lot of sediment and sand because of the steep slopes, which is ultimately stored in the catchment area and on the stream bed. The stream's maximum conveying capacity is lowered by siltation.

G. Planning of Channel

1) *Area:* The approximate distance of the channel from Narsobawadi to the channel will vary between 10 and 11 km. The canal is located in a region with limited precipitation, making irrigation and drinking water supplies problematic.
2) *Channel Site:* From a distance of 1 km on the downstream side of the reservoir. The first channel will be put in place, and three further channels for water diversion to the west side will be given after every mile. and link up with the specific location 3 kilometers away.
3) *Size And Shape Of The Channel:* The channel has a trapezoidal shape so that we can easily divert the water with the slope on the west of the approximate dimension. The channel will be in ground level.
4) *Control:* We will control it by manual as well as an automatic system. the doors are provided at the opening of the channel.



IV. LITERATURE REVIEW

1) Integrated Flood Management Tools Series No.19, prepared by World Meteorological Organization, Local Flood Based on whether gauge data is gathered manually or automatically, Warning Systems (LFWS) can be split into two fundamental groups. In both situations, the objective is to identify precipitation occurrences that exceed thresholds so that there is sufficient lead time and prior planning to minimize the effects of the subsequent flood. It can be difficult to choose the FWS that will benefit a community the best. The system used will rely on how comfortable and knowledgeable the community is with using current technology.
2) Toward Probabilistic Prediction of Flash Flood Human Impacts (online research paper), published by Galatia Terti,1, Isabelle Ruin, Jonathan J. Gourley. About a calculated and systematic change of events that allows a combination of physical and social components. It leads to a model inference of the apparent man-made disaster situation during a flash flood. To achieve this goal, we apply an arbitrary Backwoods classifier as a component of the agent's marker to examine the probability of an accident event in a given situation. Vehicle-related situations are selected here. This indicates that most deaths from zonal inundation fall into this class. A database of flash flood events with and without human casualties that occurred in the United States from 2001 to 2011 describes the storm event, the spatial distribution of exposed population sensitive characteristics, and the built environment at the county level. Supplemented with other variables.
3) Disaster Management and Preparedness: A Case Study Of University Of Jos Library, The earth where human beings live has experienced various disasters. A disaster can affect buildings such as schools, hospitals, shopping malls, factories, hotels, and places of worship. In most cases, catastrophes are unpredictable and the extent of damage is unpredictable.
4) Flood inundation modelling: A review of methods, recent advances and uncertainty analysis published by,J. Teng A.J. Jakeman b, B.F.W. Croke (Article · April 2017) at:https://www.researchgate.net/publication/316512624 This paper provides an overview of current empirical, hydrodynamic, and simple conceptual models for determining flood inundation. We examine their benefits and limitations, highlight recent advances, and discuss future directions. This is about how vulnerability in this area can be broken down using different methods, showing amazing open doors to better handling it. It's about shining a light on unskilled researchers and keeping crisis response organizations, water asset managers, insurance agents and other decision makers abreast of the latest events.
5) Ben Wisner (2015) in his paper presented the challenges during disaster. There have been key events that have motivated people to seek IDRIM such as the Indian Ocean Tsunami and Haitian earthquake and their aftermaths. New institutions have been created that have the potential to move us toward IDRIM such as UN-ISDR. Finally, a series of concepts have emerged from many reports, evaluations, and research. These ideas are discussed, and the challenge for the next 5-10 years mapped out.

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V. FUTURE SCOPE OF STUDY

Regarding scope and average yearly financial loss, floods are considered the worst natural catastrophe. The likelihood of riverine flooding has increased significantly in many regions; it is primarily brought on by rainfall during the summer monsoon season from June to September and occasionally by tidal disturbances, which leads to more calamitous conditions. In fact, nearly one-eighth of the entire geographic area, or 40 million hectares, is at risk for flooding. According to the Impartial Water Commission (2010), riverine floods affect people every year and can cause economic losses of up to 36,004.75 million INR. Numerous factors, such as improper flood risk management practices, erratic weather patterns, and unplanned socioeconomic development, have contributed to the increase in flood damage.

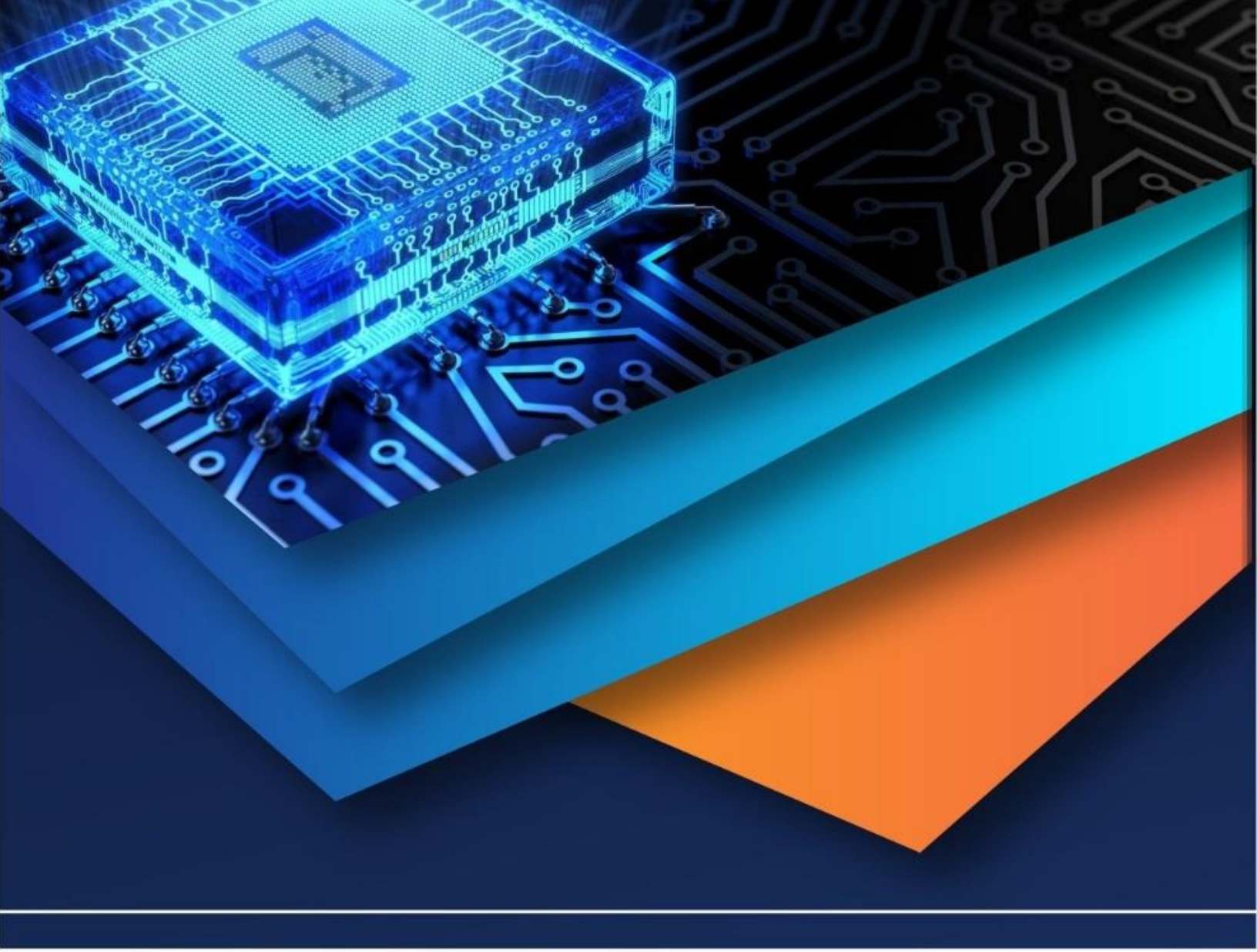
VI. CONCLUSION

1) While we cannot completely control floods, we can lessen their effects by using channels intended for diversion.
2) estimated the effect of flood-risk events in the area on important facilities and infrastructure.
3) prevent the loss of assets and a way of life due to flooding.
4) Modified the strategy to lessen the floodplains' inundation zone

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