



## **FLOODS IN MAHAD CITY: THEIR CAUSES AND SOLUTIONS**

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### **Abstract**

*In many parts of the world, floods that invade river plains and costal low lands are very serious natural hazards. Flood prone low areas are often densely populated and form the economic main stay of numerous countries. The food and health situation may be adversely affected by floods, and loss of life and property becomes even more severe where urban and industrialized areas are concerned.*

**Keywords:** *Floods, Causes of floods, solutions*



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### **Introduction:**

Flood events are a part of nature. They have existed and will continue to exist. Society has become more vulnerable to natural hazards. Although floods are natural phenomena, human activities and human interventions into the processes of nature, such as alterations in the drainage patterns from urbanization, agricultural practices and deforestation, have considerably changed the situation in whole river basins. In the same time, exposition to risk and vulnerability in flood-prone area have been growing constantly. The probability of flooding is expected to increase: the earth's climate is changing rapidly. The causes of flood are diversified and vary with the river basin or the region. Local rains following in the flood susceptible areas and their immediate surroundings area first factors.

Flood is a state of high water level along a river channel or on coast that leads to inundation of land which is normally submerged. Flood is an important component of hydrological cycle of a drainage basin. Floods occur in the event of excessive rainfall. It is any relatively high water flow that over tops the natural or artificial banks in any portion of a river or stream when a bank is over the floodplain. Flood is among the most devastating natural hazard in the world, climbing more lives and causing more property damage than any other natural phenomena.

### **Aims and Objectives:**

1. To study flood events in mahad city.
2. To study causes of floods in Mahad city.

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3. To provide suggestions for the flood problems.

### **Database and Methodology**

Database is the systematic representation of the non spatial data collected over the field. The data is categorized in to primary and secondary data.

#### **Primary data comprises of**

- GPS co-ordinates of the HFL markings found at different locations within the study area (buildings, schools, temples, bridge pillars, etc.)
- High Flood Level (HFL) measurement of respective locations with reference to local datum.
- Field photographs for further reference.
- Observations of other flood level markings such as scour lines
- Discussion with locals regarding different flood events, water stagnancy period, etc.

#### **Secondary data includes**

Technical report from Irrigation Department, Census of India 2001, Books, published reports, SOI Topographical Maps.

#### **Study area:**

Mahad is a city and a municipal council in Raigad district in the Indian state of Maharashtra. It is situated about 175 km to the south of Mumbai. It has become the center of attraction because of its beautiful surroundings and pleasant climate. Mahad has a personality of its own due to its mythological, historical, social and cultural importance. The city, vibrant and active on the industrial, political, social and cultural fronts, has influenced the lives of some great personalities. Mahad is considered as Land of Freedom Fighters and many revolutionary freedom moments of India are occurred here. It is famous for the Satyagraha of Dr. Babasaheb Ambedkar for the Dalits at Chavdar Tale. It is also a holy place for Buddhist clan.

Mahad is located on eastern part of Maharashtra state in Konkan physical division. The study area i.e. Mahad tahsil lies between 18<sup>03</sup>' North latitudes and 18<sup>05</sup>' North latitudes and 73<sup>15</sup>' East to 73<sup>25</sup>' East longitudes.

Surrounded by the Sahyadri mountain range, with Savitri and Gandhari rivers flowing through and Shivthar Ghal falls in the vicinity, it is an ideal gateway. The river Savitri rises at an elevation of 1219.14mts (4000foot) in Sahyadri hill ranges and flows westwards for a distance of 14 miles and then takes a wide U turn and flows north wards up

to the confluence with its major tributary ‘Kal’. Then it flows again westward, little downstream of Mahad town river Gandhari joins Savitri. The longest course up to Mahad is that of Kal whose equivalent slop work out of 4.23 m/km. the total catchment area up to Mahad town measures 1032 Sq.kms. comprising three sub-catchments viz. Savitri, Kal and Gandhari.

**Location Map of study area:**

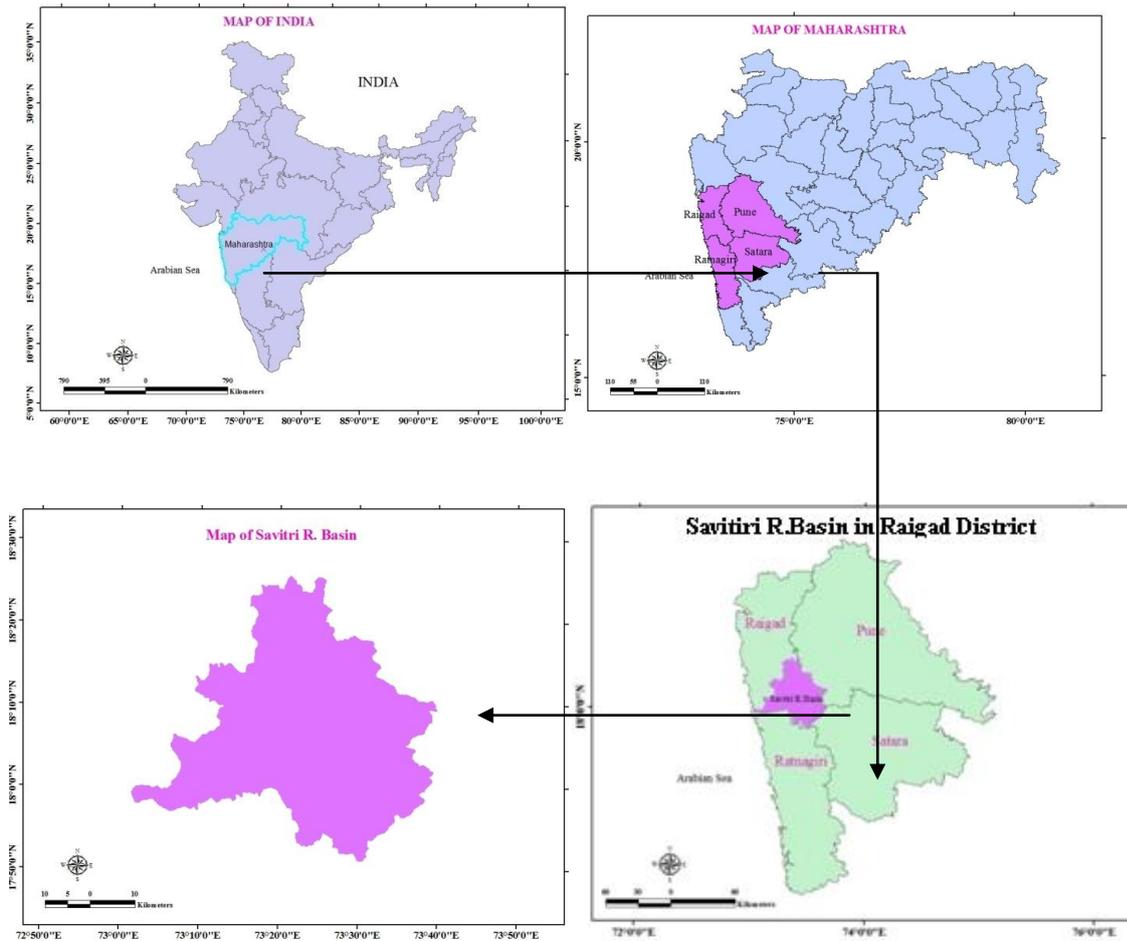


Fig 1.1 Location Map of study area

**Causes of Floods in Mahad City:**

- Konkan Railway constructed a railway bridge near Dasgaon across river channel. For that purpose they constructed embankment. Presence of embankment across the river channel has caused impounding of river water upstream to bridge. Because this water is retained and spread over the river bank.
- It is suggest that islands present in upstream and downstream of Savitri and Gandhari River should be removed, so that this is two tributaries will have significant river channel that will accumulated the flood water.

- Tidal effect also affected the water level.
- The physiographic condition also be effected the flood water.
- Urbanization also influenced the increasing the water level in the river channel. A sand excavation is the best example.

### **Solutions:**

Solutions that may help for future flood event are as follows-

- Demarcation of area liable to floods by preparation of detailed contour plans of such areas to a large scale (preferably 1:15,000) showing contours at a suitable interval.
- Delineation different flood zones of different capacity.
- It is suggested that islands present in upstream and downstream of Savitri and Gandhari River should be removed, so that these two tributaries will have significant river channel that will accommodate the flood water.
- The buildings should be located in such a fashion that they are above the levels corresponding to 1 in 100-year flood or maximum observed levels. They should be above the levels corresponding to a 50-year rainfall and likely submergence due to drainage congestion.
- In areas liable to floods, all the buildings should preferably be double/multiple stored.
- It is also suggested that the possibilities of protecting/ relocation/ exchanging the sites of vital installations like electricity sub stations/ power houses, telephone exchanges etc. should be seriously examined so that they should be safe from possible flood damage.
- Flood Forecasting and flood Warning system must be allocated/ developed in the river channel area which would helpful in the flood period.

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