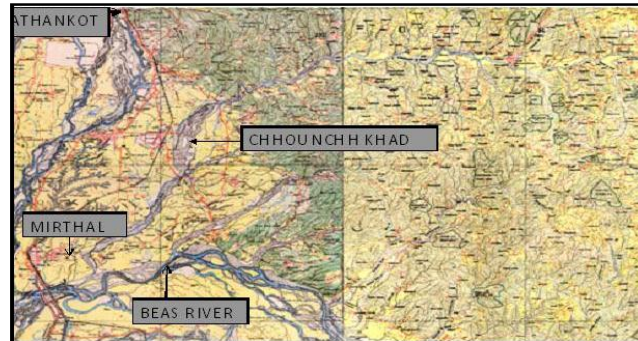


FLOOD PROTECTION MEASURES FOR CHHOUNCHH KHAD, H.P.

BACKGROUND

The Chhouchh Khad, a major tributary of Beas, originates from Dhaneti village near Raja ka Talab, Tehsil Nurpur, after traversing the entire mountainous valley of Kangra district and joins the River Beas near Mirthal in Himachal Pradesh. The catchment of Chhouchh Khad is categorised under the zone 7 of western Himalayas. Flash floods of shorter duration are very common in the region. During the floods, valuable agricultural land is either washed away or rendered unproductive due to sediment deposition. Floods also cause extensive damage to the civil installations, properties and livestock.



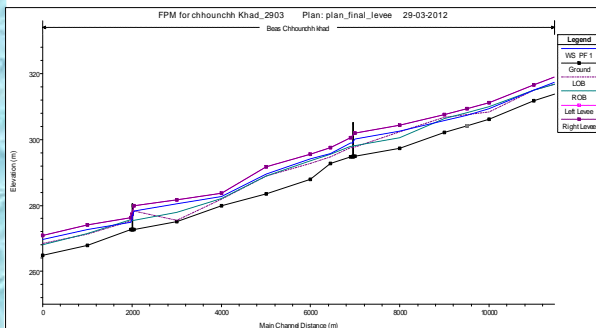
Location plan of Chhouchh khad

OBJECTIVES

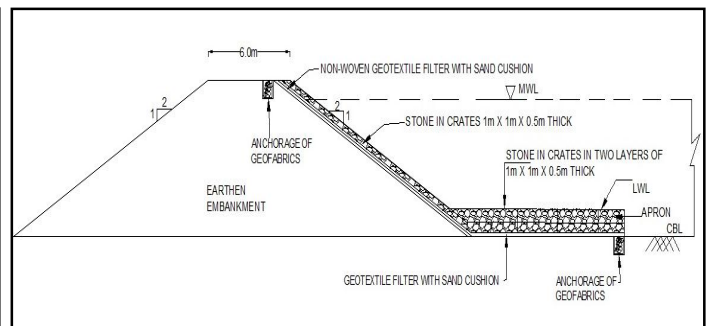
- Designing suitable protection measures for the Chhouchh Khad, which is an un-gauged river originating from an un-gauged catchment

STUDIES CONDUCTED

- Extraction of catchment area details from Digital Elevation Model (DEM) data of Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER) using Arc-GIS software.
- Derivation of design flood from Synthetic Unit Hydrograph (SUH) generated using CWC method of hydrometeorologically homogeneous catchments.
- Estimation of water surface profiles, velocity profiles and other hydraulic parameters using 1-D numerical model HEC-RAS.
- The design of protection works in the form of stones in crates alongwith launching apron and geofabric filter.



Water surface profiles with levees for a reach from 0 to 12000 m



Design of embankment protection

SIGNIFICANCE OF THE STUDIES

The studies conducted helped in designing suitable flood protection works for the Chhouchh Khad.