



URBAN DEVELOPMENT DIRECTORATE (UDD)
GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH

PRESENTATION
ON
Engineering Geological and Geophysical Surveys
Under
Preparation of Development Plan for Meherpur Zilla

PRESENTED BY
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Managing Director



CENTER FOR GEOSERVICES AND RESEARCH

METHODOLOGY

Two types of Investigation need to be performed to accomplish Seismic Hazard Assessment and Liquefaction potential zone identification;

- 1. Engineering Geological Study**
- 2. Geophysical Study**

Area (approx. 600 sq km)	Name of Investigation Methods			
	SPT	PS-logging	MASW	Microtremor
Meherpur Sadar Upazila	17	4	5	5
Mujibnagar Upazila	10	2	3	3
Gangni Upazila	03 (Secondary-28 nos.)	1 (Secondary=6 nos.)	3 (Secondary=5 nos.)	7
Total	30	7	11	15

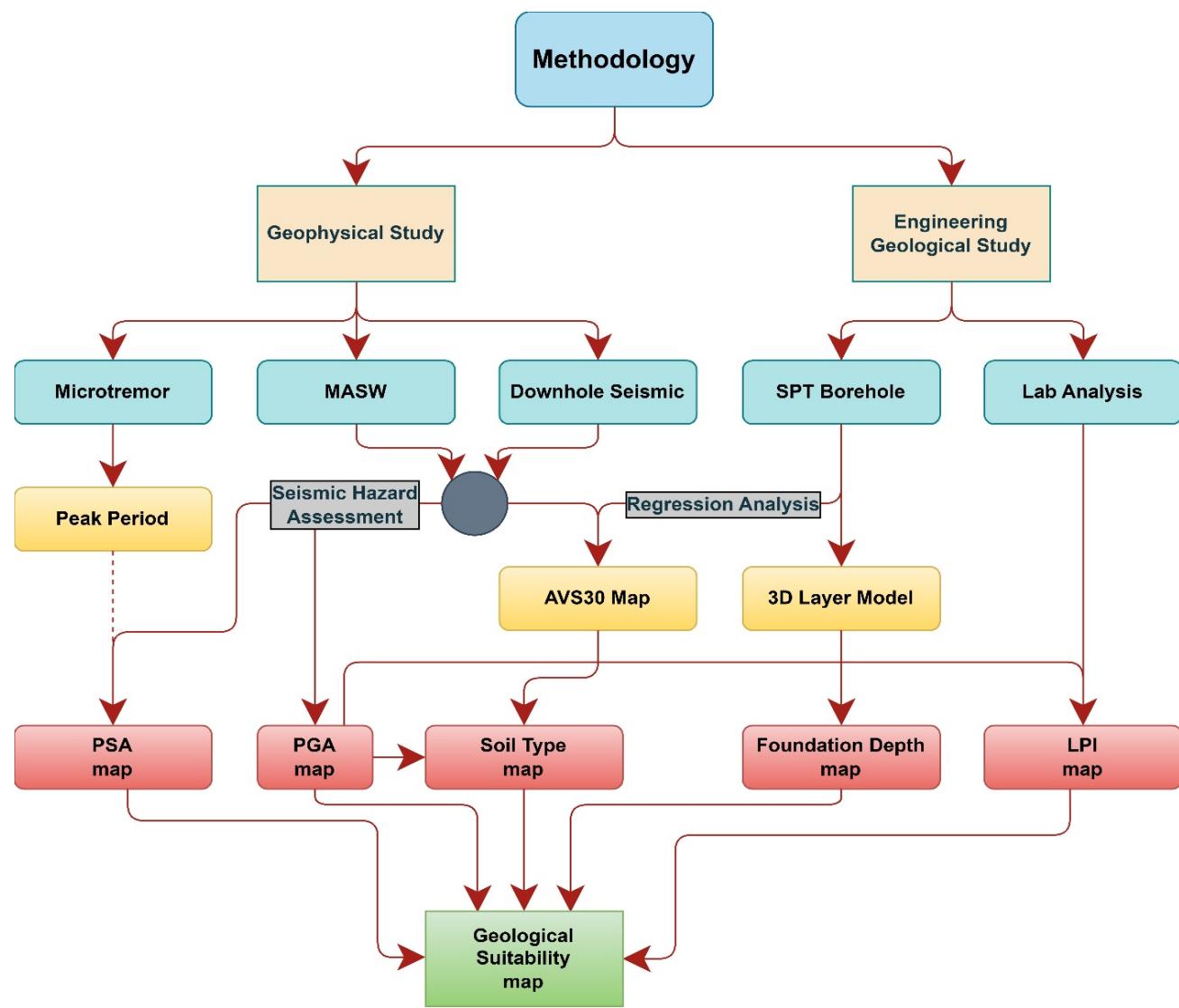
Note:

SPT : Standard Penetration Tests

MASW : Multi-Channel Analysis of Surface Wave

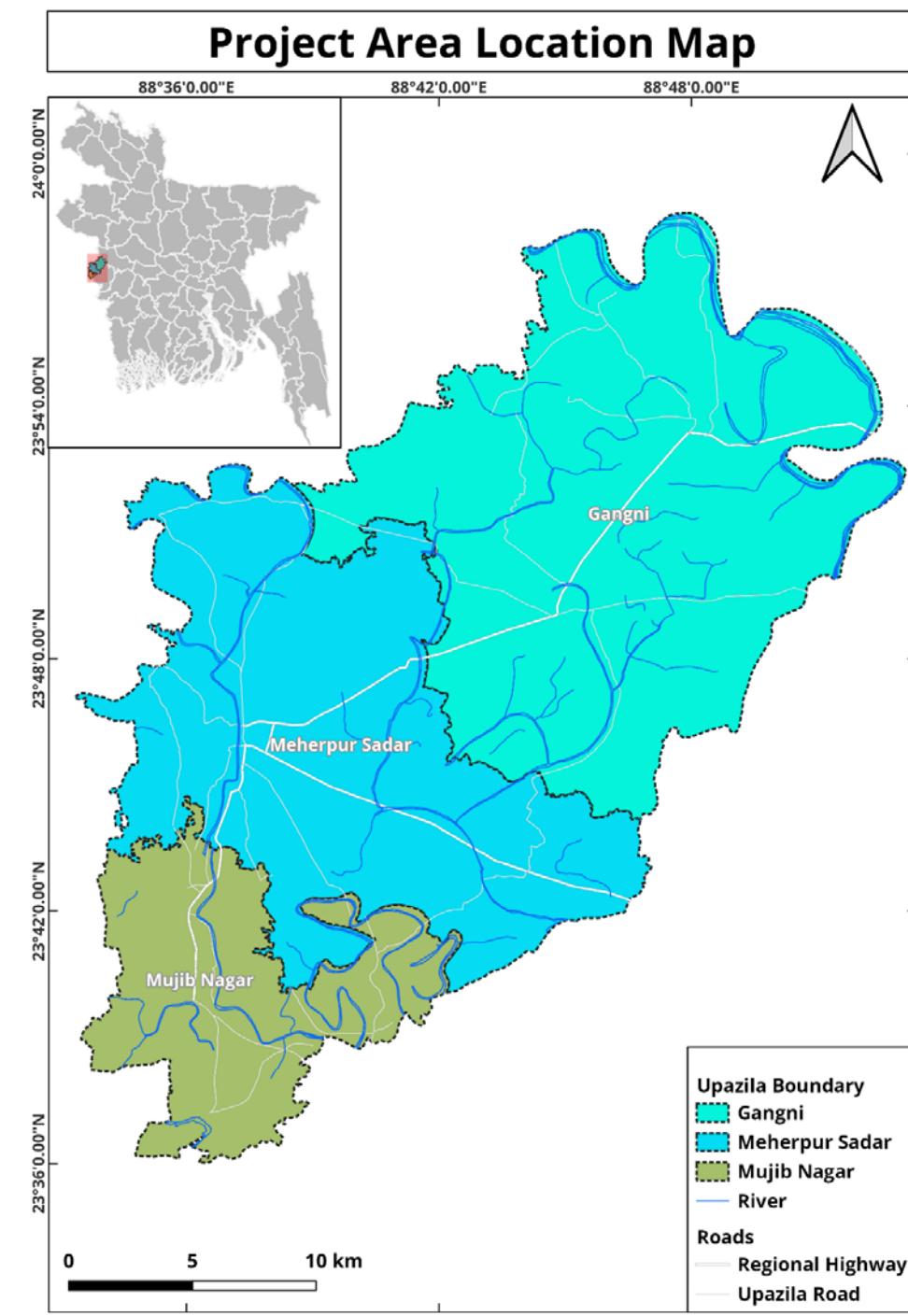
PS logging(Downhole seismic test)

METHODOLOGY

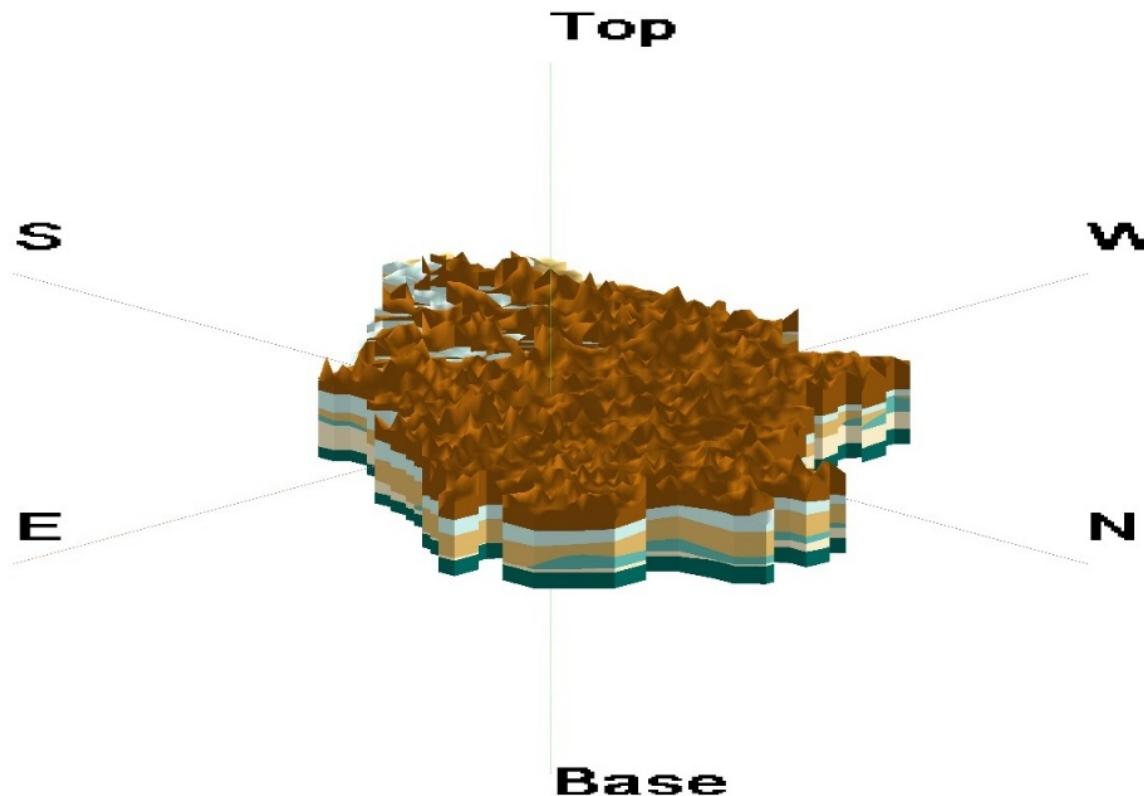


Tests and/or Surveys	Outcome
Standard penetration test (SPT Borehole)	<ul style="list-style-type: none"> Preparation of geological and/or geomorphologic map of the study area. Development of sub-surface lithological 3D model of the study area.
Down-hole seismic (PS logging)	<ul style="list-style-type: none"> Development of engineering geological map based on AVS30 values of the study area. Preparation of soil classification map by using geophysical and geotechnical investigations of the study area.
Multi-channel analysis of surface wave (MASW)	<ul style="list-style-type: none"> Seismic hazard assessment (PGA and SA) map of the project area. Foundation layers delineation and developing engineering properties of the sub-soil. Development of liquefaction potential index (LPI) map. Development of engineering geological suitability map.
Single Microtremor	

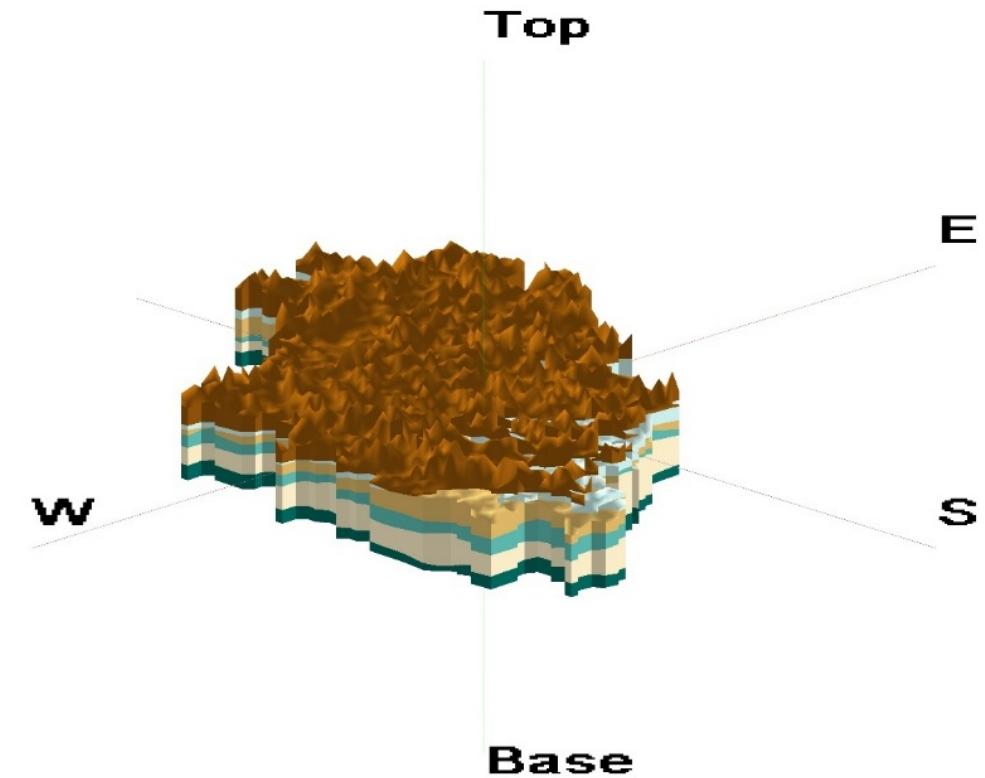
LOCATION

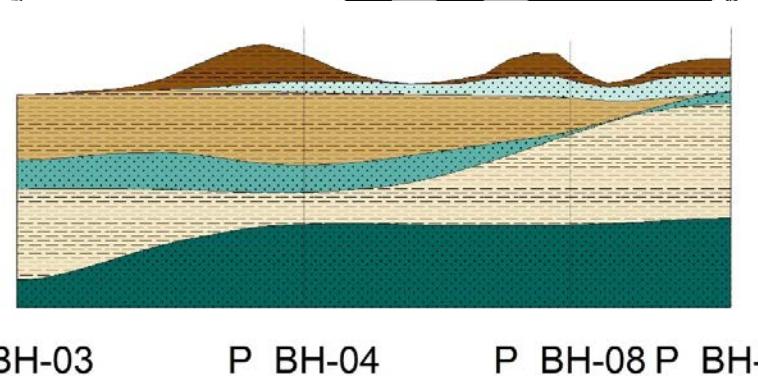
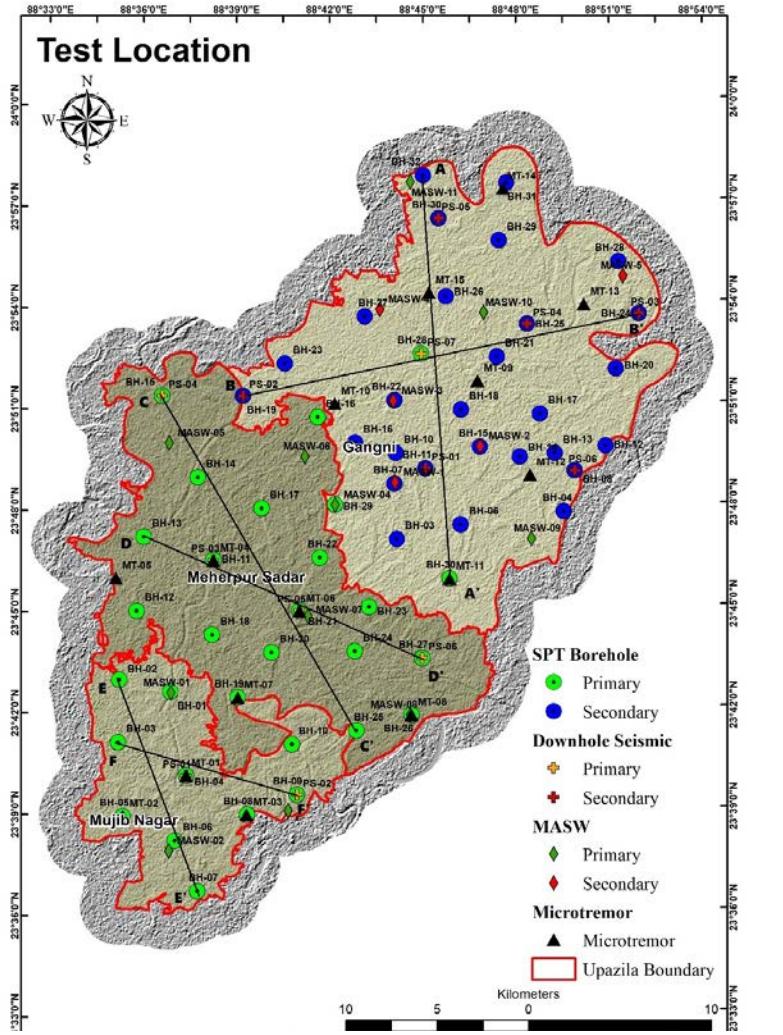


SUBSURFACE LITHOLOGICAL 3D MODEL



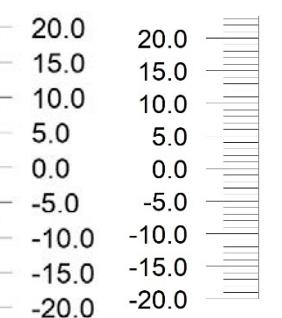
Stratigraphy	
	Layer-1 Brownish Gray Stiff SILT with Little Very Fine Sand
	Layer-2 Brownish Gray to Gray very Loose to loose Very Fine SAND
	Layer-3 Gray Soft to medium stiff Clayey SILT
	Layer-4 Gray Medium Dense very Fine to Fine SAND
	Layer-5 Gray Medium Stiff Clayey SILT
	Layer-6 Gray Dense to very Dense fine to very Fine SAND with Little Silt



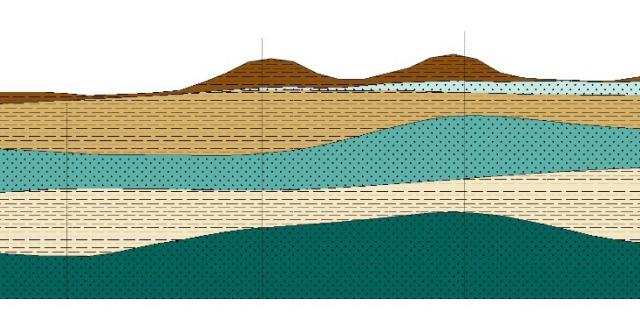


P BH-04

P BH-08 P BH-09



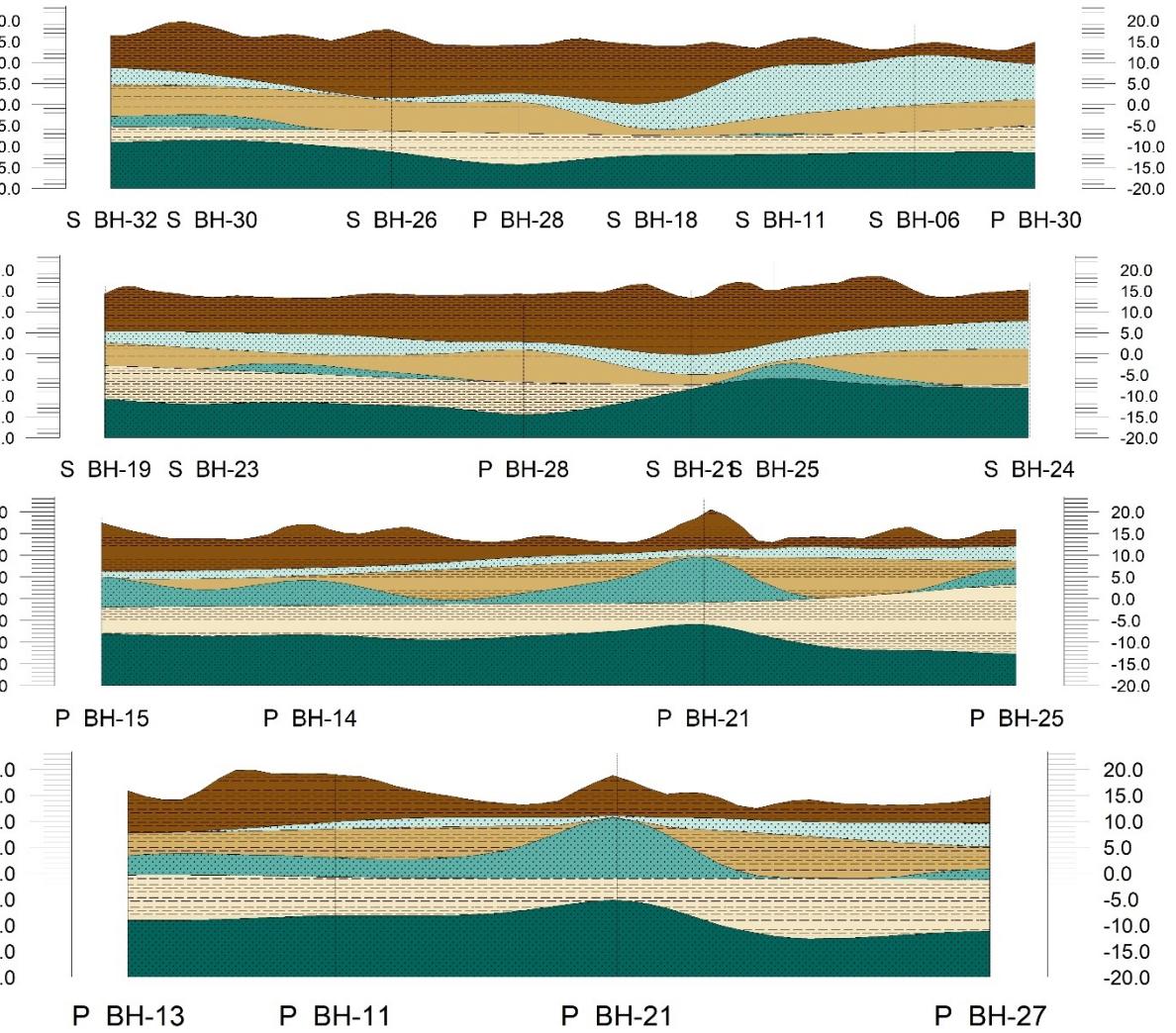
P BH-02



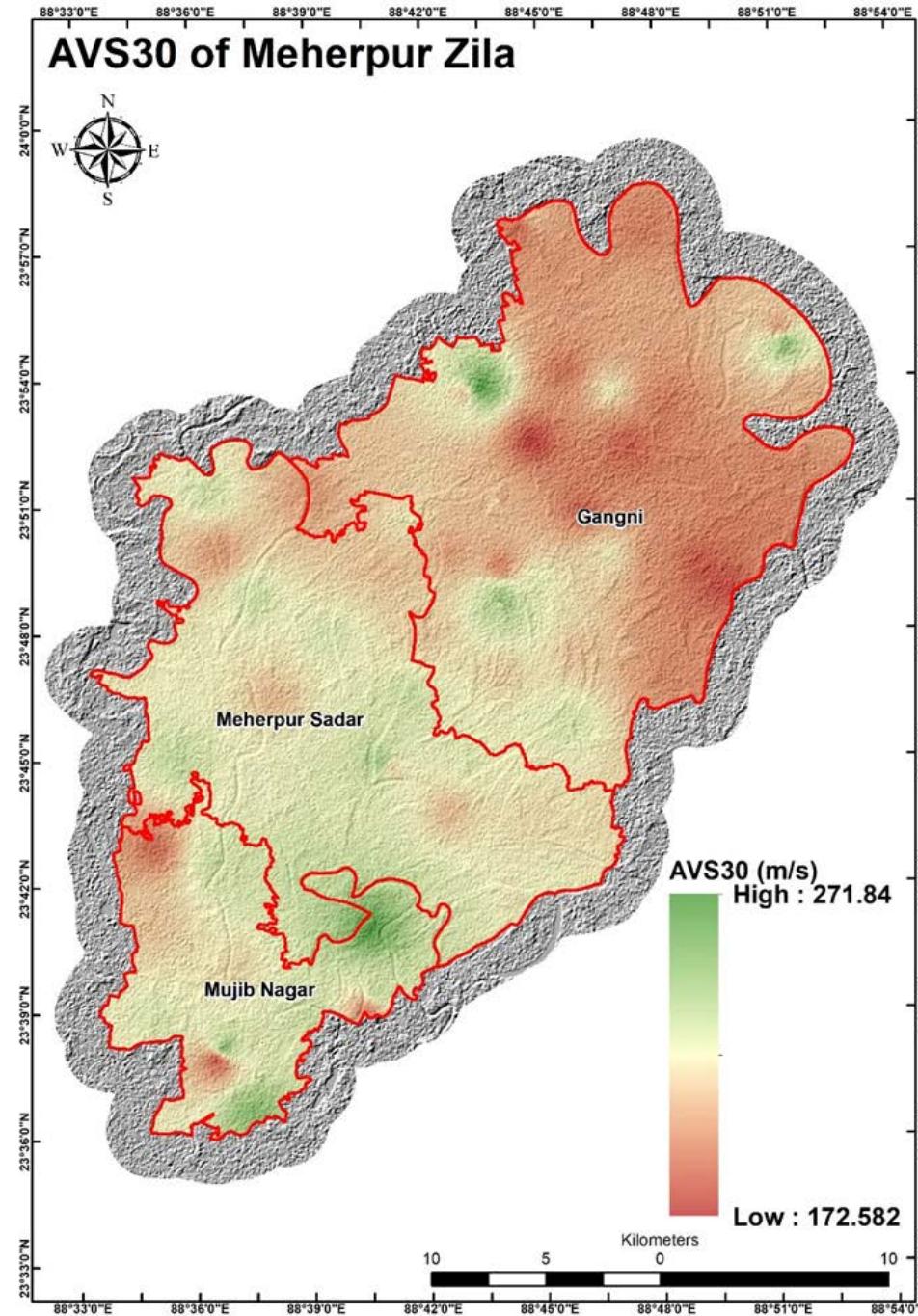
P BH-04

P BH-06

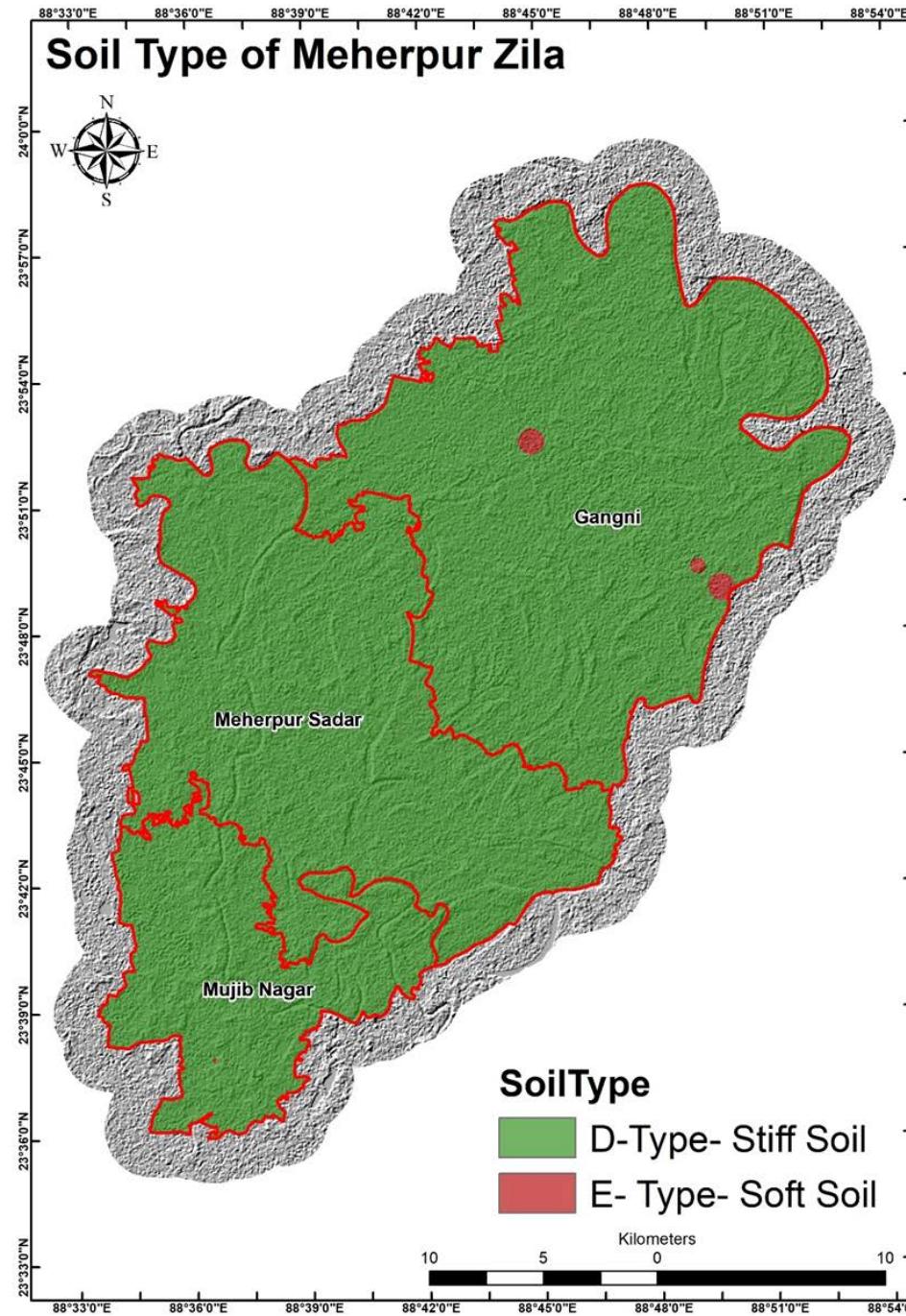
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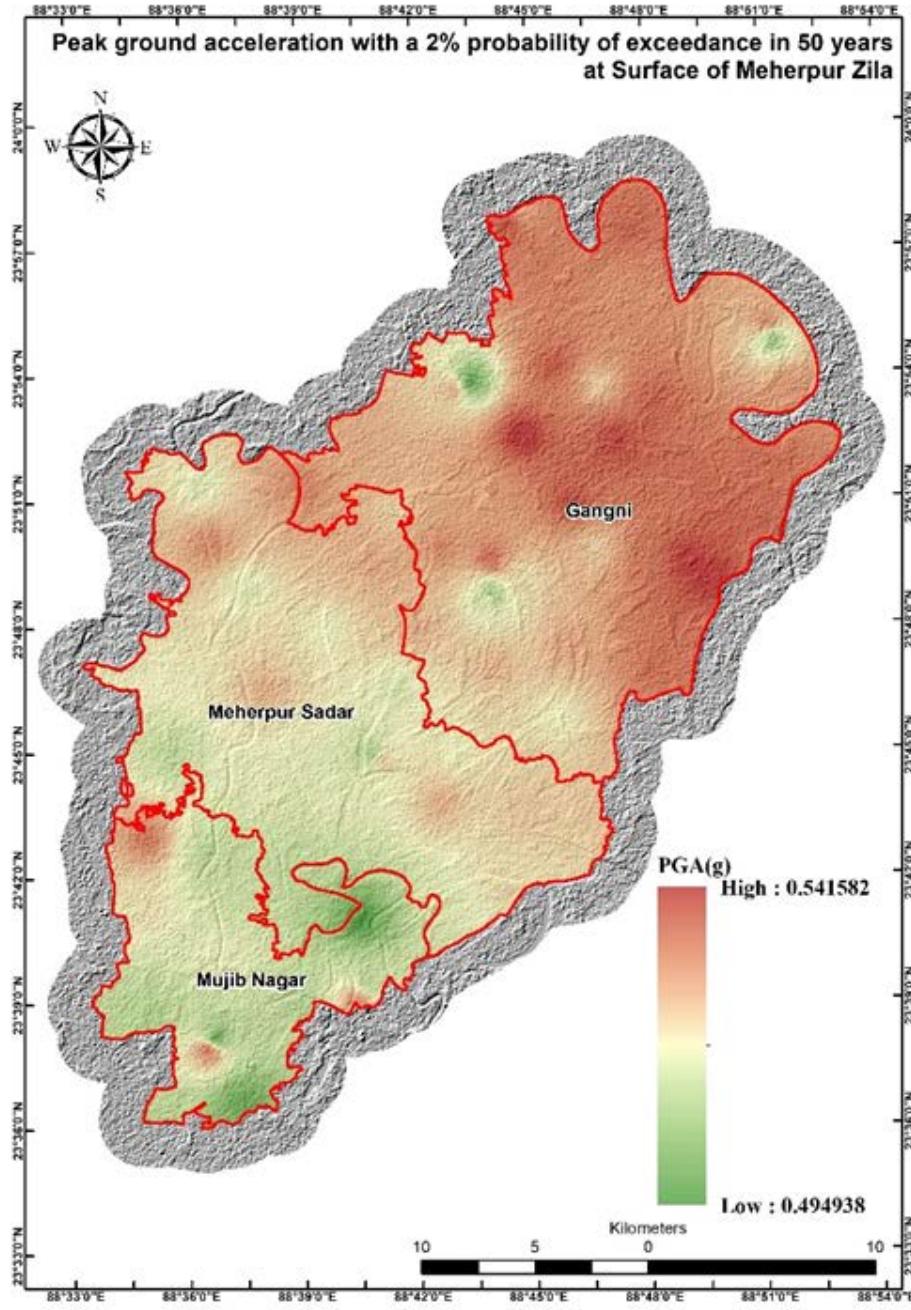
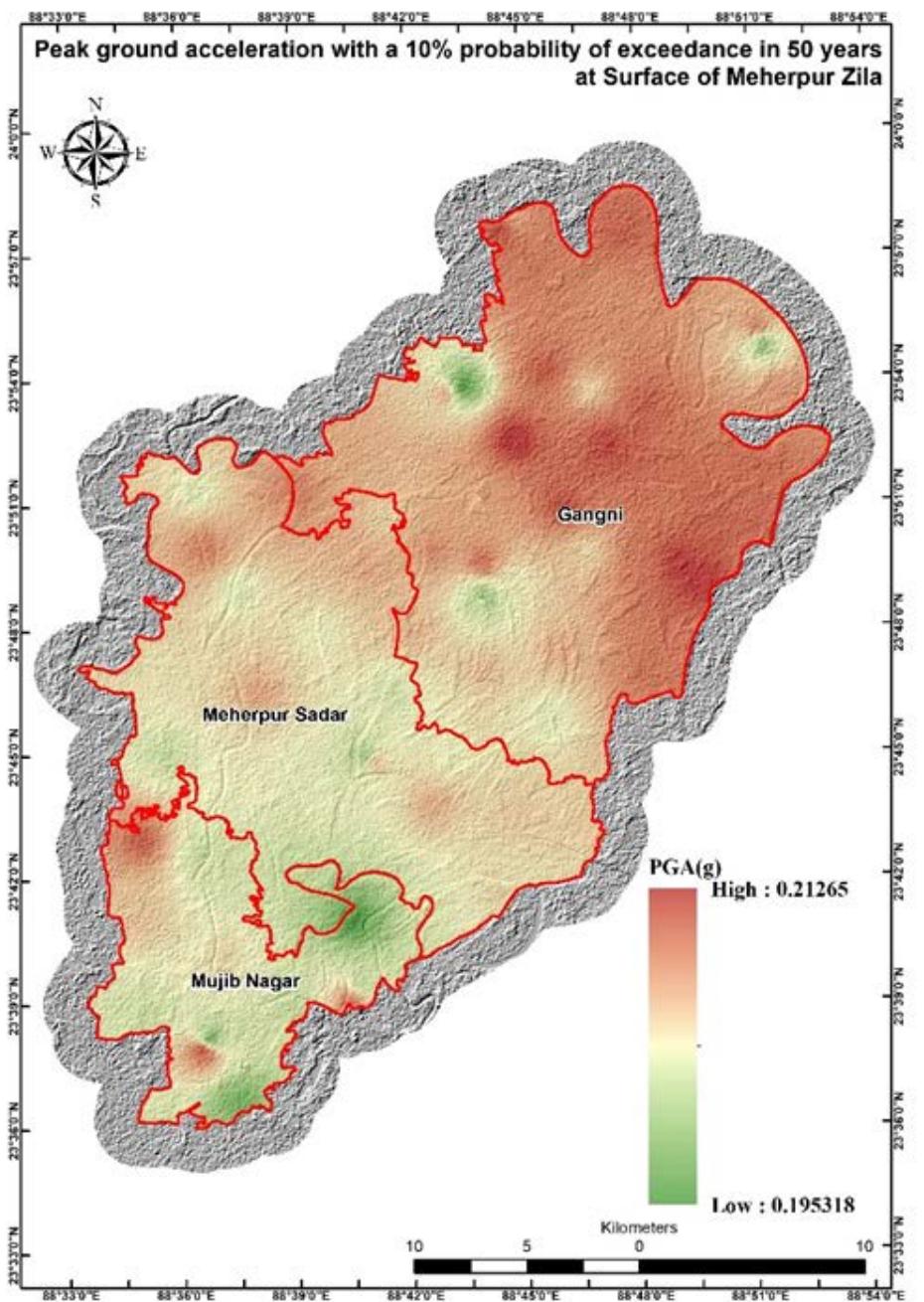
AVS30 MAP



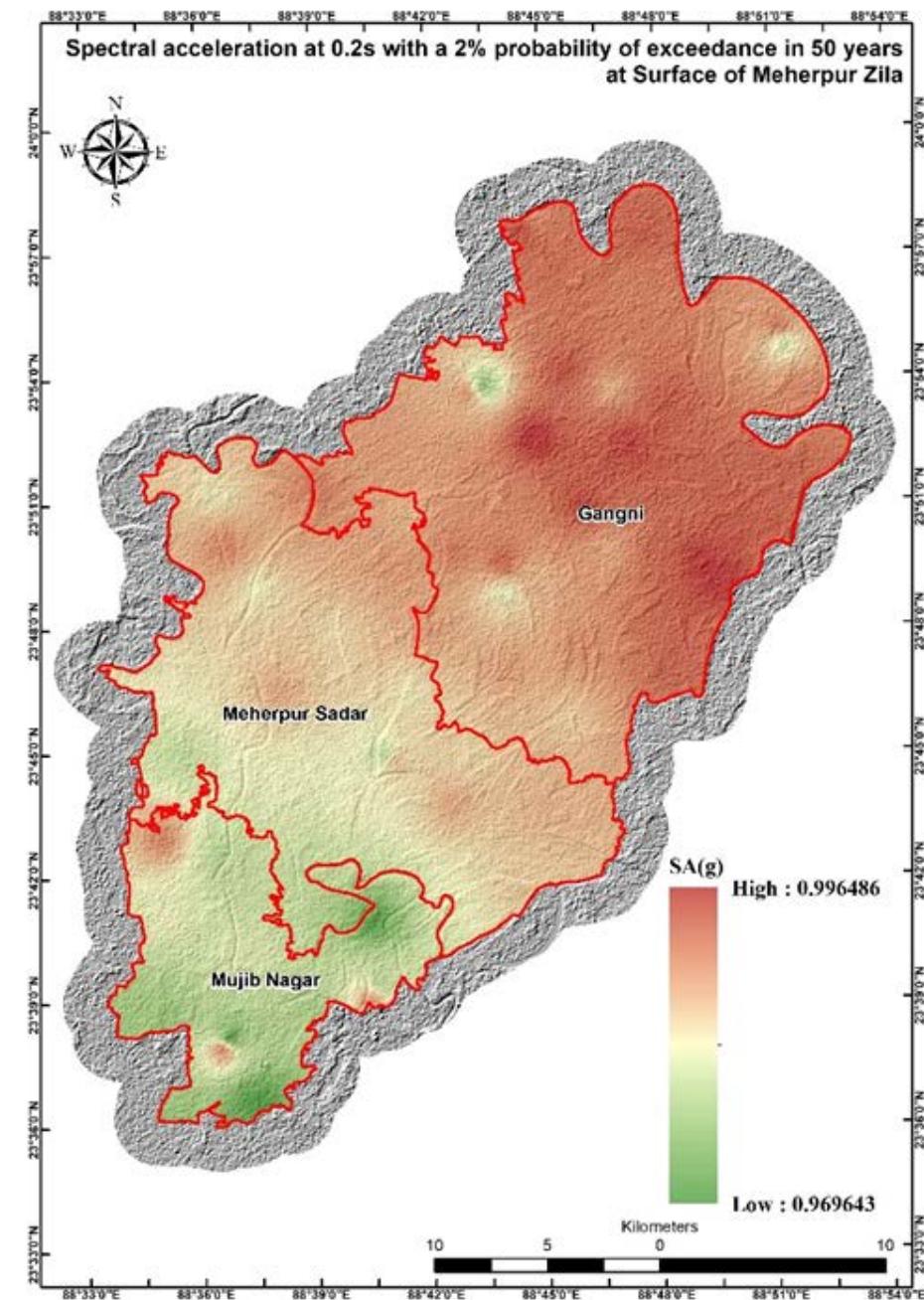
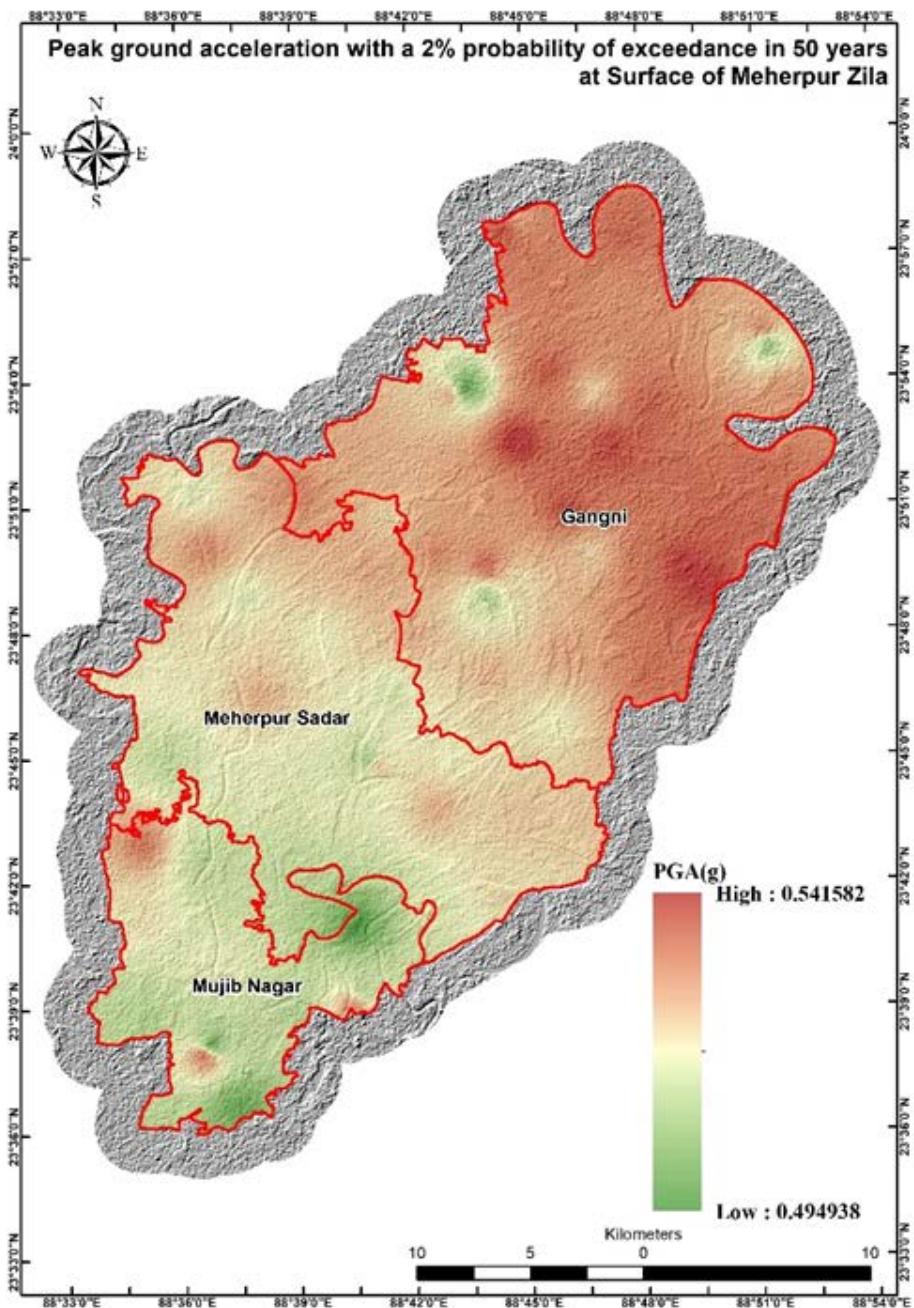
SOIL TYPE MAP



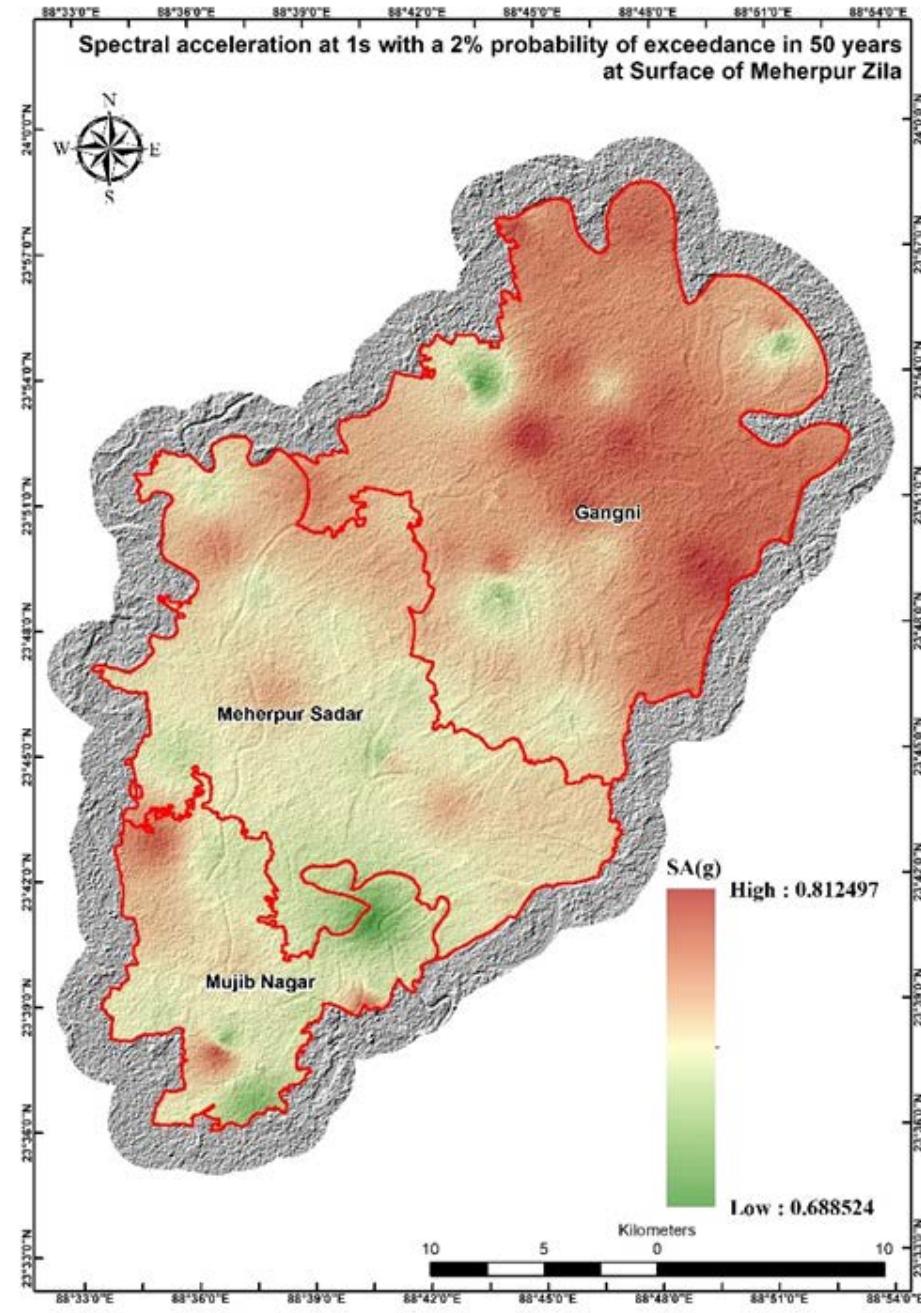
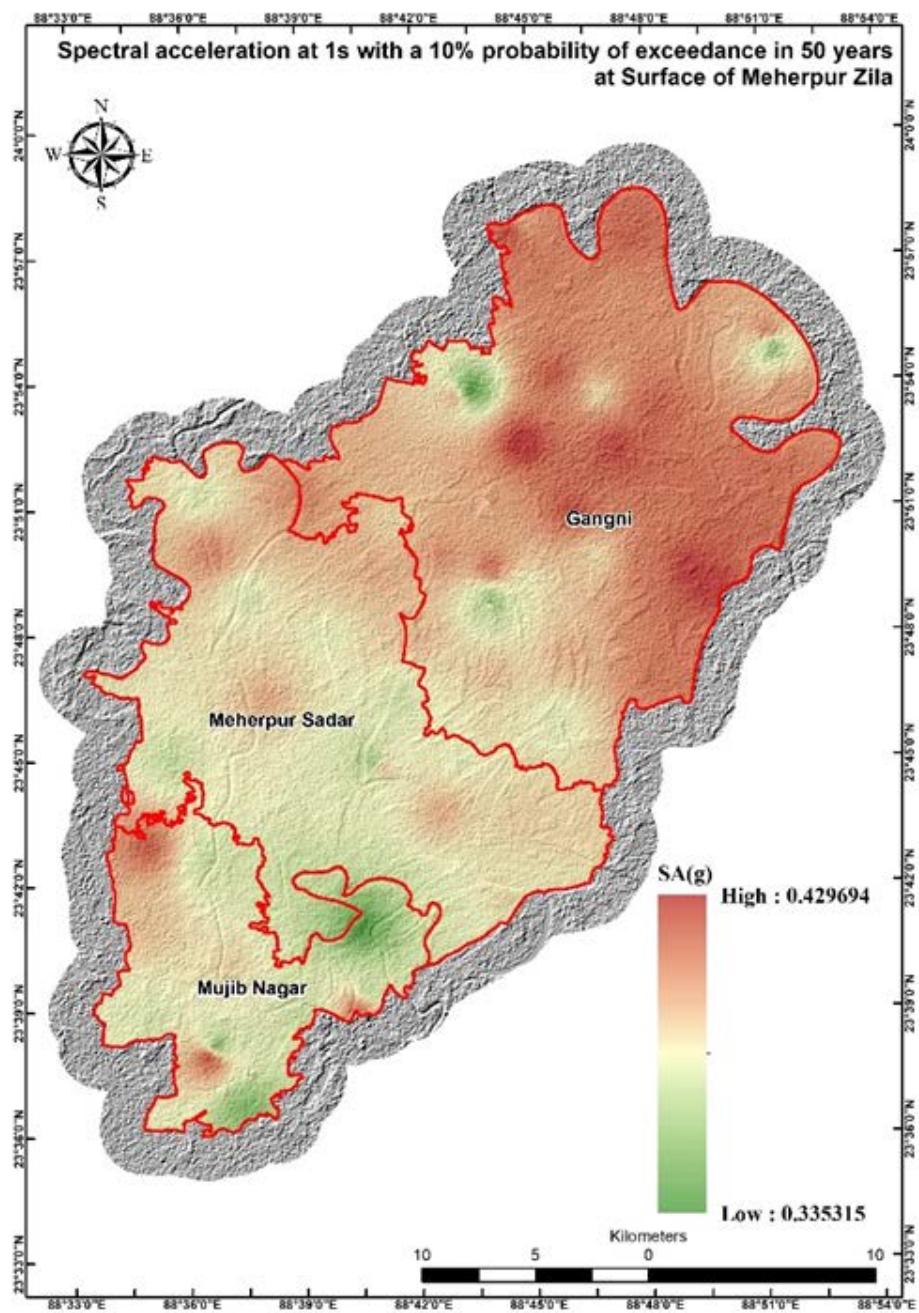
PGA MAP



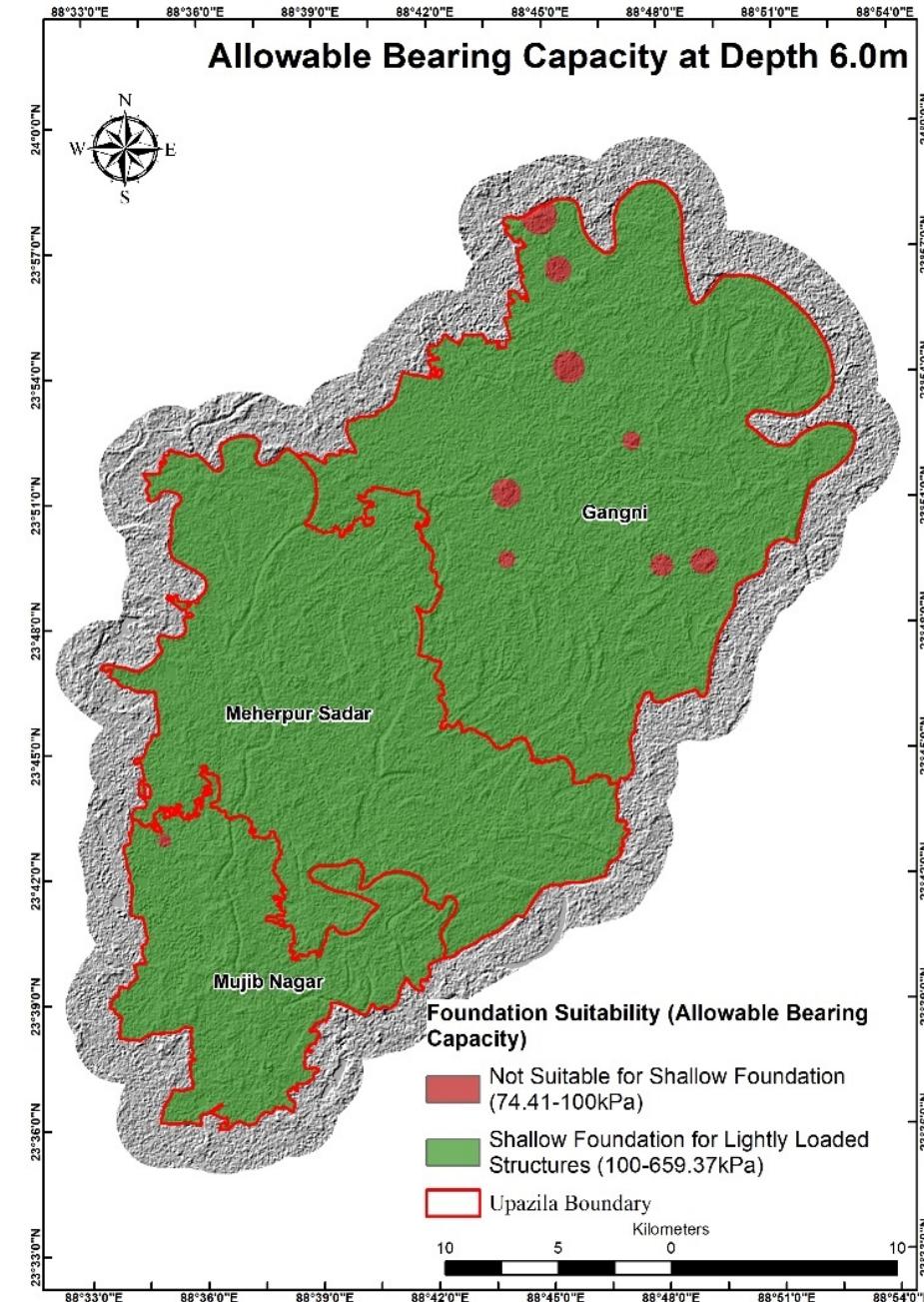
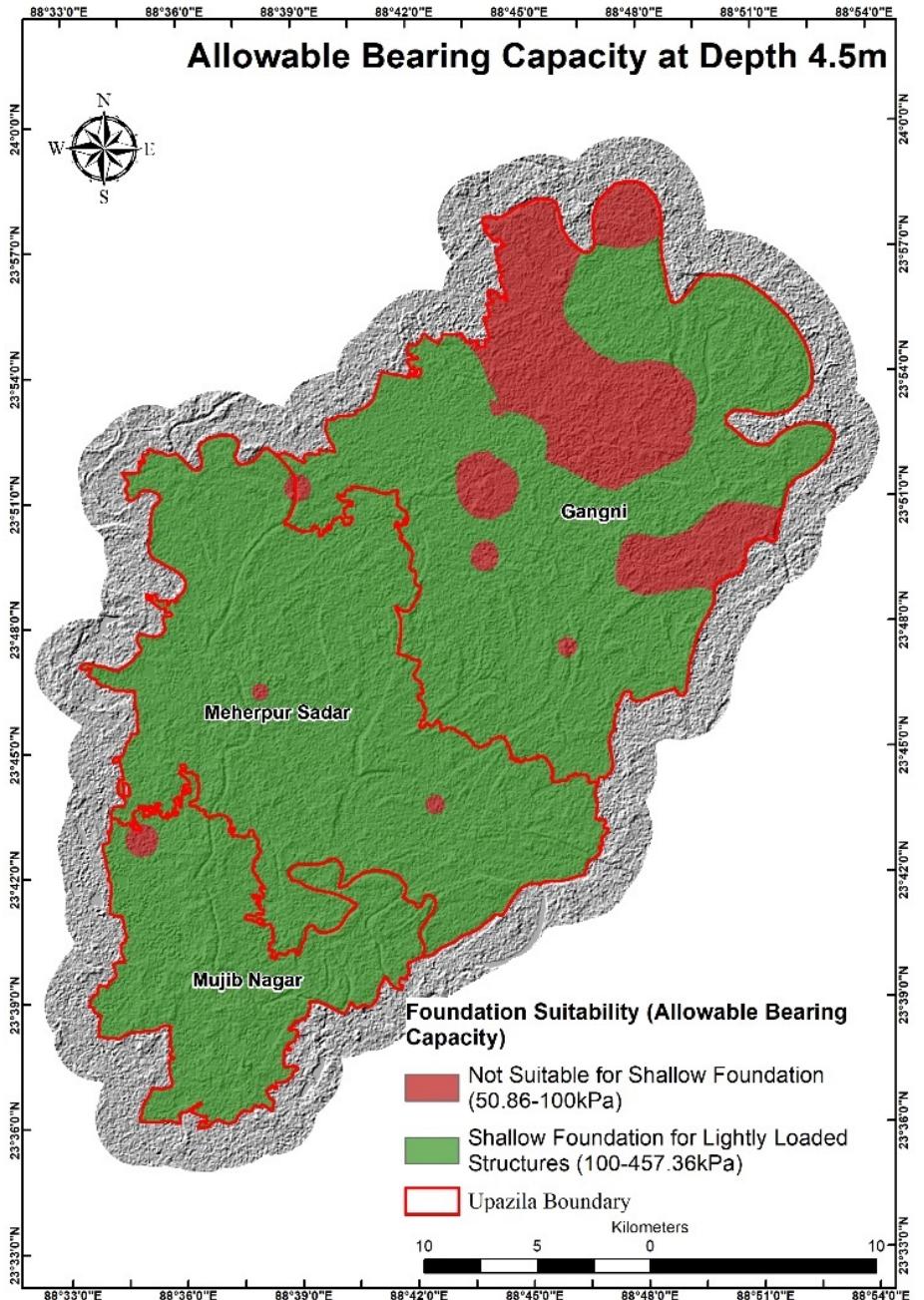
SHORT PERIOD PSA MAP



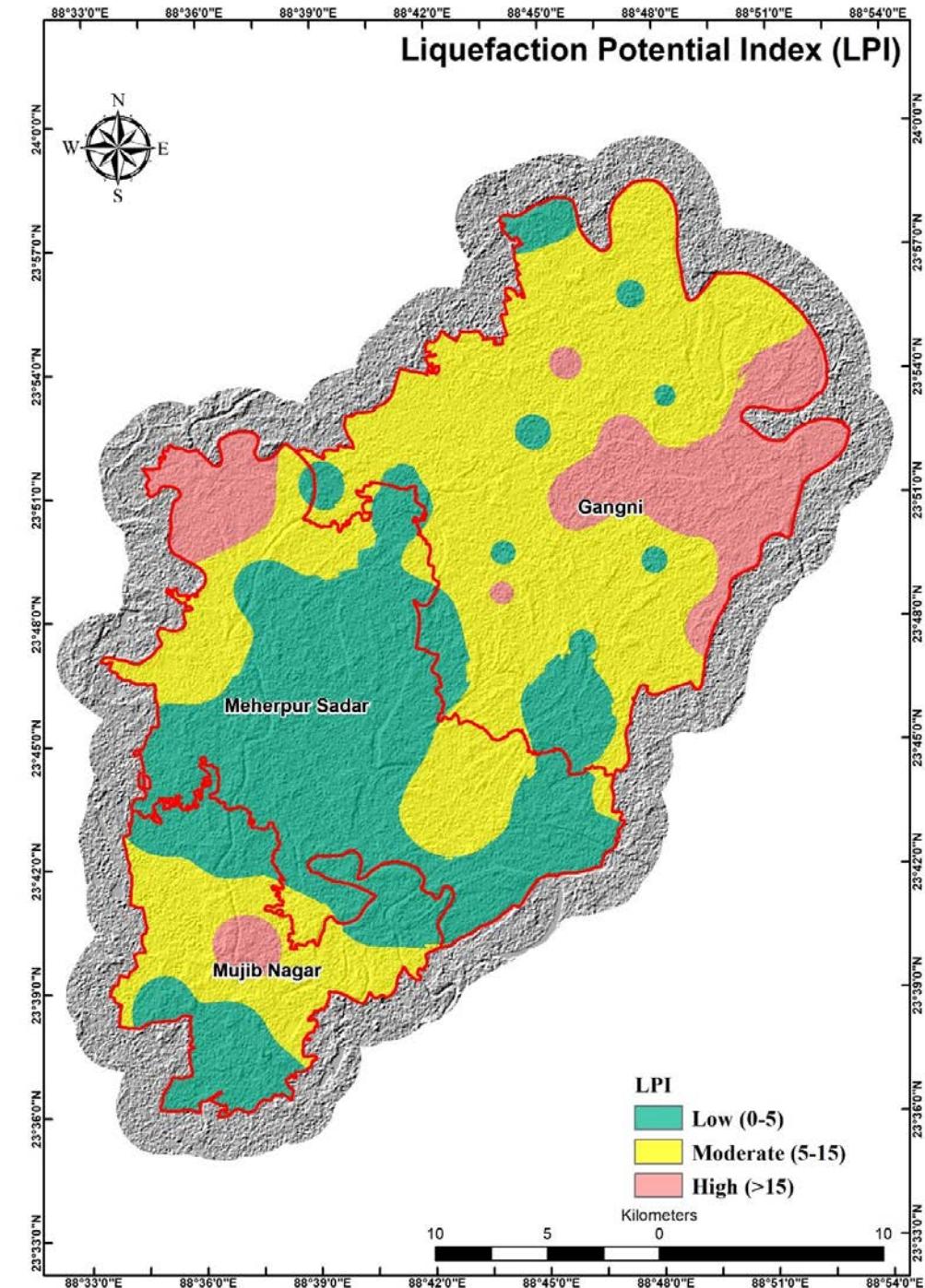
LONG PERIOD PSA MAP



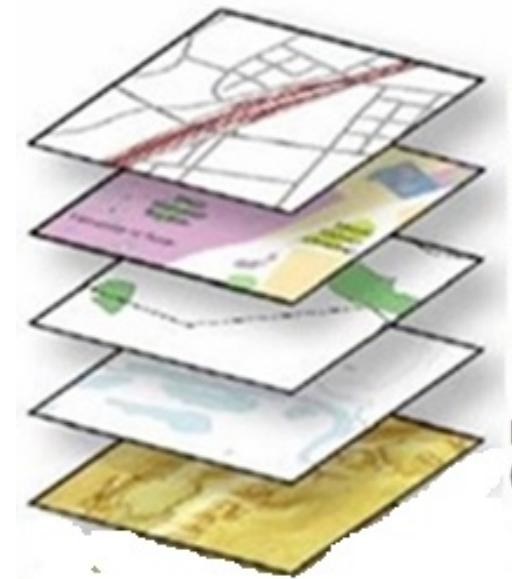
ALLOWABLE BEARING CAPACITY



LIQUEFACTION POTENTIAL INDEX (LPI) MAP



ENGINEERING SUITABILITY MAP



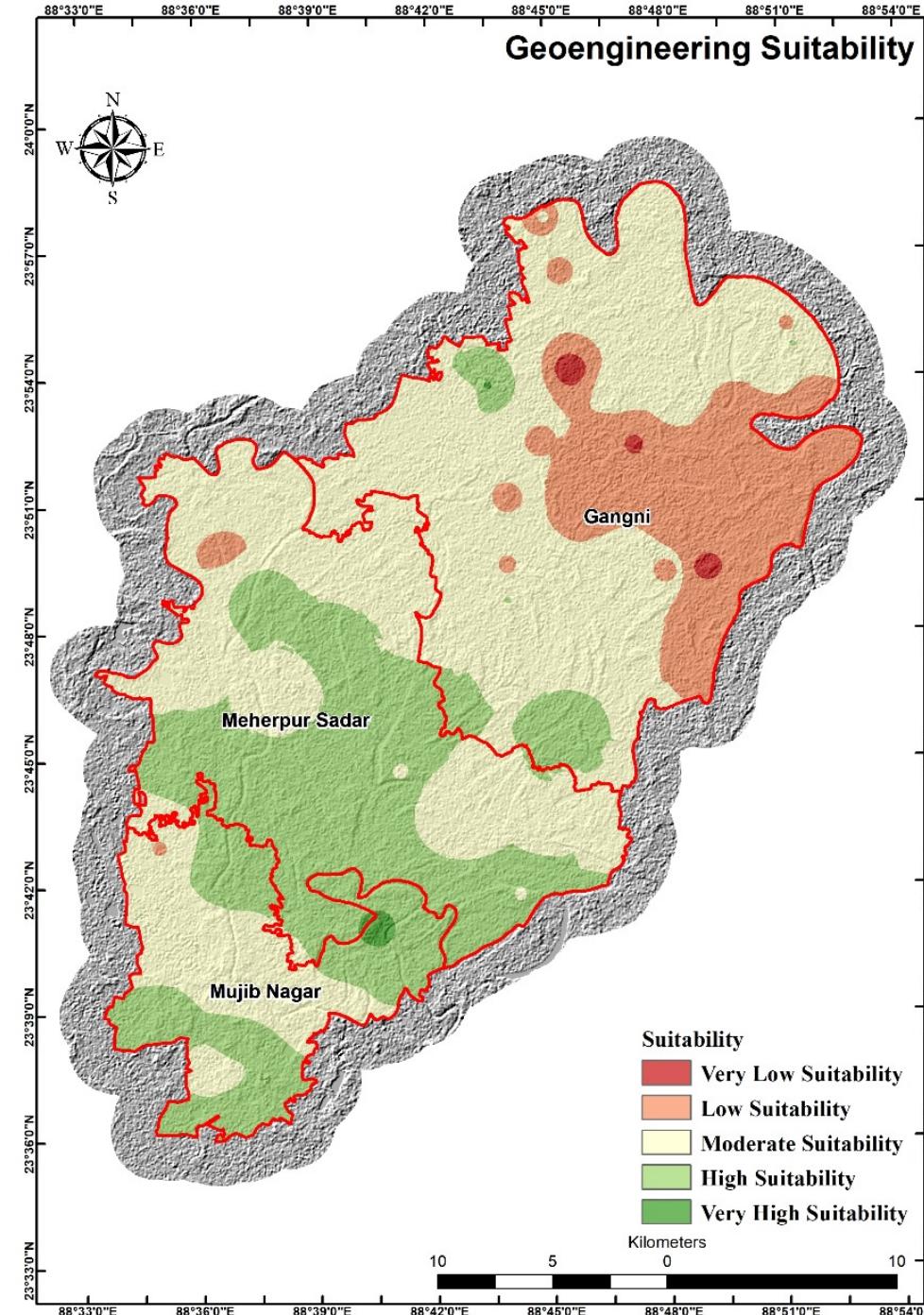
Roads and Boundaries

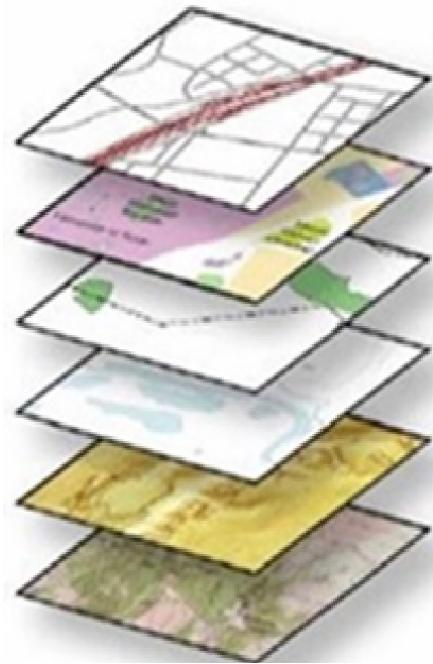
Engineering geological
map (Vs 30)

PGA and SA maps

Foundation depth

Liquefaction potential index
(LPI)





Roads and Boundaries

Engineering geological map (Vs 30)

PGA map

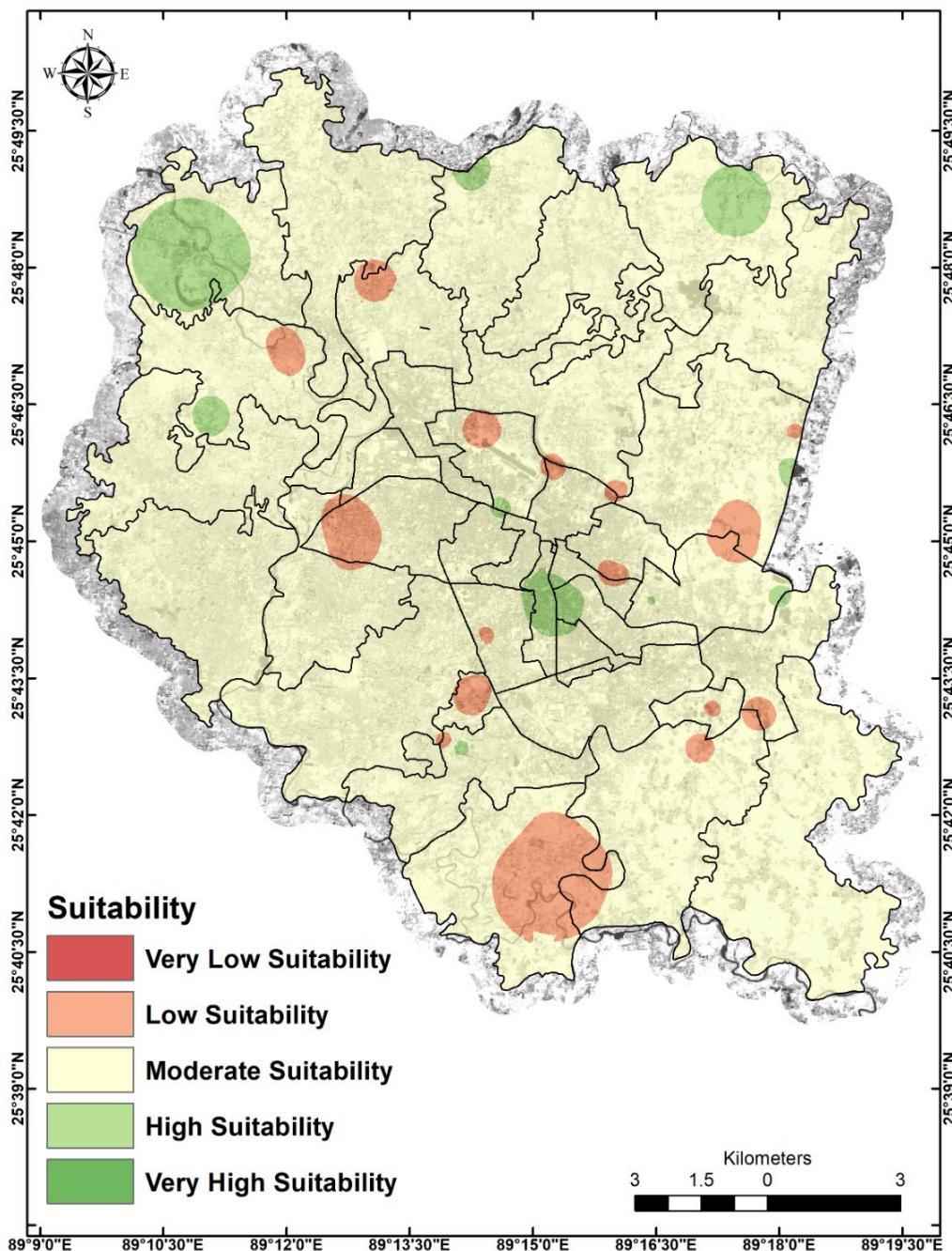
SA map

Foundation depth

Liquefaction potential index (LPI)



Geoengineering Suitability of Rangpur City Corporation



THANK YOU ALL