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# Impact of Urbanization on Natural Drainage Pattern in District of Larkana, Sindh Pakistan

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**Abstract :** During past few years, several floods have adversely affected the areas along lower Indus River. Besides other climate related anomalies, rapidly increasing urbanization and blockage of natural drains due to siltation or encroachments are two other critical causes that may be responsible for these disasters. Due to flat topography of river Indus plains and blockage of natural waterways, drainage of storm water takes time adversely affecting the crop health and soil properties of the area. Government of Sindh is taking a keen interest in revival of natural drainage network in the province and has initiated this work under Sindh Irrigation and Drainage Authority. In this paper, geospatial techniques are used to analyze landuse/land-cover changes of Larkana district over the past three decades (1980-present) and their impact on natural drainage system. Satellite derived Digital Elevation Model (DEM) and topographic sheets (recent and 1950) are used to delineate natural drainage pattern of the district. The urban landuse map developed in this study is further overlaid on drainage line layer to identify the critical areas where the natural floodwater flows are being inhibited by urbanization. Rainfall and flow data are utilized to identify areas of heavy flow, whereas, satellite data including Landsat 7 and Google Earth are used to map previous floods extent and landuse/cover of the study area. Alternatives to natural drainage systems are also suggested wherever possible. The output maps of natural drainage pattern can be used to develop a decision support system for urban planners, Sindh development authorities and flood mitigation and management agencies.

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