GIS based sewerage design decision system (SDDS):
A case study of model town Lahore

Sajid Rashid Ahmad[1]; Sana Khushi[1]; Tanzeel ul Rehman[2] and Asad Ullah Khan Ghalib[2]
[1]Institute of geology, University of the Punjab, Lahore, Pakistan
[2]Urban sector Service and planning unit, Lahore, Pakistan
sana.khushi@yahoo.com

Abstract

Sewerage network is the most efficient, economic, and the safe way to transport the industrial, domestic waste water .The drainage pipes installed are of limited size and the excessive rainwater and routine household waste water passes through it. In the absence of a proper sewerage system, residents of different localities are forced to drain sewerage on streets .In planning of the sewerage system most of the decisions are spatially dependent on right of way consideration and gravity of the water flow. GIS is the tool used to analyze the area topography, surface features, and the street networks, delineate the sub watersheds and to locate the manholes and sewerage network line length. This paper presents prove of concept how GIS is used in designing sewer network considering DEM, topography, streets and house parcel information. Sewerage design decision system (SDDS) is capable to generate network keeping in view the population of selected area, water flow accumulation, diameter of pipe line, distance between manholes and length of sewerage and turns into network. SDDS is a Predominantly GIS based sewerage system in Pakistan that efficiently create manholes at specific intervals, Create sewer lines between manholes and efficiently perform Hydraulics calculations .It designs the complete sewerage network with minimum human force. GIS Based sewerage design decision system (SDDS) is used to analyze and manage the major resource of the city. Model Town, Lahore, was as case study to compare existing networks and redesign the sewer network. Study proves that the SDDS is used for better decision making, estimation, monitoring of the waste water sewerage. The end result of this research is a very effective comprehensive GIS based sewerage Network Desktop Application designed for the identification of the disposal points. SDDS will maintain capacity of water, fulfill the sanitation authority requirements and give the outlook of well managed drainage system.