

### 6.4.3

## 3D Visualization for Transportation Network in Flood Region

### Presenter

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Transportation networks in a two-dimensional (2D) plane are limited to the basic attributes of topological distance and shape.

LiDAR datasets are used for 3D transportation network information to create by the GIS application.

The data extraction is processed in ArcMap® Spatial Analyst. The detailed procedure is explained with a case study. The study region in Fargo-Moorhead is selected since the International Water Institute developed the LiDAR data in the Red River Basin of 300,000 square-miles with USGS, Corps of Engineers, NDDOT, and MnDOT. The study region includes the bridges over the Red River and the intersection of two interstate highways of I-29 and I-94. Then, the 3D transportation network is used for estimating the flooding over the roads.

The research shows that the 3D TN provides detail and accurate information for TN planning and operations.