ArcGIS Case Study of the "Great St. Patrick's Day Flood of 1936" in Pittsburgh, PA

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Background

Downtown Pittsburgh, Pennsylvania is situated on the confluence of the Allegheny and Monongahela Rivers where the Ohio River is formed. Due to its unique location between the three rivers the city is prone to flooding. The worst recorded flooding event in the city's history occurred on Tuesday, March 17, 1936. It is commonly known as the "Great St. Patrick's Day Flood of 1936."

Objectives

- Several different flood stages in the downtown Pittsburgh Area will be modeled using ArcGIS software.
- We aim to compare the 30' flood stage results with historical records that document the extent of the 1936 flood in Pittsburgh in order to qualitatively assess the accuracy of our flood model.

http://www.brooklineconnection.com/history/Facts/Flood1936.html

Figure 1. View from Mt. Washington showing the early stages of the flooding

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Figure 2. Water levels crested at 46 ft. (30 ft. above normal water level). Many streets in Pittsburgh's Golden Triangle were submerged by 15 ft. of water.

Conclusions

- Eyewitness accounts indicate that the flooding extended from the Point to approximately Grant Street.
- Our model produced results that closely parallel what was actually seen.
- Modeled flood waters cover the Golden Triangle from the Point to Smithfield Street (two blocks below Grant Street).

References

1. "A Guide to Flood Stages in Pittsburgh." The University of Pittsburgh. http://www.lc.pitt.edu/DistilledLandcPDF/06.5_Floodstage.pdf
2. "The Historic St. Patrick's Day Flood of 1936: Two Eyewitness Accounts." The Pittsburgh Post-Gazette. March 17, 2011. http://www.post-gazette.com

Source of Datasets Used to Create Maps.

1. PASDA. Pennsylvania Spatial Data Access. http://www.pasda.psu.edu/uci/DataSummary.aspx?dataset=1244
2. Allegheny County Open GIS Data http://openac-alcogis.opendata.arcgis.com/datasets?q=facilities

Modeling Results