Using HAZUS-MH and GIS to Measure Mitigation Successes

Red River Flood

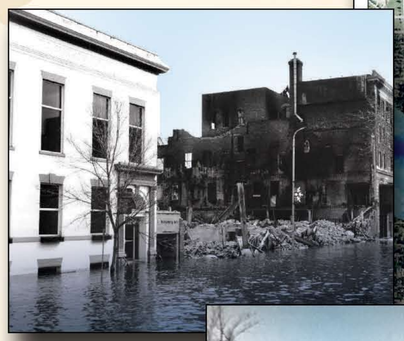
April 2007 marks the ten-year anniversary of the Grand Forks Red River Flood Disaster that caused $3.7 billion in total losses in North Dakota. In 2006, a severe flood of the same river matched the 1997 flood heights but resulted in only $6.5 million in total losses. The reduction in total losses resulted from a partnership between FEMA, North Dakota, and localities that was created following the 1997 disaster to reduce future flood losses through mitigation projects and studies.

After the 2006 flood, FEMA's Mitigation Directorate conducted a study that included field data collection and analysis of the performance of acquisition projects in five counties—Richland, Grand Forks, Cass (City of Fargo), Traill and Pembina—along the Red River. The depth of flooding was determined using high resolution DEM data, the 100-year base flood elevation, and high water marks on FEMA mitigation projects affected by the 2006 event. The potential losses avoided were measured using HAZUS-MH flood model depth-loss relationships. The data allowed for an estimate of losses avoided for the 2006 event, as well as potential assessments based on a repeat of the 1997 Red River Flood Disaster and/or probabilistic flood events.

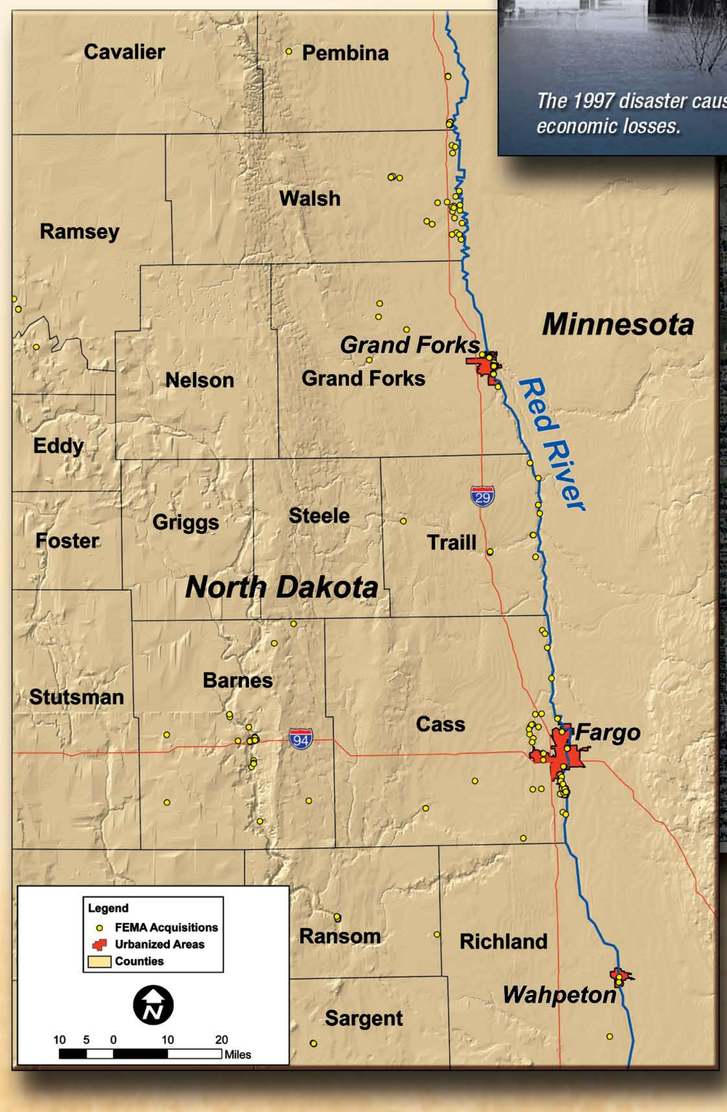
Demonstrating the cost-effectiveness of mitigation in reducing flood losses is critical to the continued success of FEMA mitigation programs.

To view flood maps at the FEMA Flood Map Store:
www.store.msc.fema.gov

To learn about HAZUS-MH, a loss estimation software:
www.fema.gov/plan/prevent/hazus/index.shtm



The 1997 disaster caused $3.7 billion in economic losses.



When the Red River of the North flooded again in 2006, losses to North Dakota communities were about $7 million. The investment in acquisition projects in Grand Forks paid for itself in just one flood event – the 2006 flood.

DATA SOURCES: Vicinity Map: Hillshade created by URS from USGS 1:250,000-scale DEM data. Acquisitions from FEMA. Other basemap features from ESRI, 2007.

Grand Forks Map: Acquisitions and flood depths from FEMA. Aerial photography from USDA NAIP, 2004.

FEMA