Lower Colorado River Authority (LCRA) of Texas

Full Mitigation Best Practice Story

State-wide, Texas

The State of Texas - How can communities maintain accurate, up-to-date flood hazard data? That is the quest of FEMA and the Lower Colorado River Authority (LCRA) in their Cooperative Technical Partner (CTP) agreement, signed in 1999. Two pilot projects to produce digital maps in Central Texas have demonstrated how the CTP program can help communities without technical expertise to participate in the digital map conversion process.

The LCRA is a conservation and reclamation district created in 1934 by the Texas Legislature to improve the quality of life in the central Texas area. Among other responsibilities, the LCRA manages the lower Colorado River to reduce flood damage and produce water supplies.

Jolted by a number of devastating floods in the 1990s, communities within LCRA's 11-county statutory district have asked for help with their floodplain management responsibilities. The LCRA, FEMA and the U.S. Army Corps of Engineers have responded with several projects to improve flood-hazard information in the river basin. In addition, 28 cities and counties are helping themselves by forming an alliance called the Texas Colorado River Floodplain Coalition that will promote better floodplain management throughout the river basin.

Under the CTP agreement, the LCRA is helping to craft a process for maintaining the currency and accuracy of flood-hazard data. The LCRA and its partners have used cost-effective GIS technology for FEMA Digital Floodplain Insurance Rate Map (DFIRM) production during pilot projects in two communities, Lago Vista and Meadowlakes, located on lakes formed from the lower Colorado River in central Texas.

In the first year of the CTP, the LCRA assessed the mapping needs for Lago Vista and developed a six-panel draft DFIRM. Paper maps were converted into digital flood data. The digital data were fitted onto a new orthophoto base map. The Special Flood Hazard Area (SFHA) was redelineated with updated topographic data. The resulting data was used to produce new preliminary FIRMs.

During both pilot projects, the LCRA has tested FEMA's DFIRM specifications, developed a production process and defined quality assurance/quality control procedures for DFIRM production. The LCRA was able to provide DFIRM base data for the Colorado River's 500-year floodplain corridor based on a recently completed Contour Mapping Project. However, other DFIRM layers come in a variety of formats, projections, datums and accuracy levels. Additional processing in a Geographic Information System (GIS) is required to incorporate the data into a FEMA DFIRM. With the development of cost-effective production strategies to convert the data, minor challenges encountered during the conversion procedures were overcome. This information will assist FEMA in further refining newly developed DFIRM production procedures.

The LCRA, in cooperation with the University of Texas Center for Research in Water Resources (CRWR), invented a DFIRM "quilting" process during the pilot project to include more accurate aerial photos into the Digital Orthophoto Quarter Quadrangle (DOQQ) base maps. This quilting process reduces the file size of the base map data by about 42,000 KB per panel. Quilting substantially reduces FEMA storage requirements for base map data. The creation of additional cost-efficient optimization processes is anticipated as the project is extended to other counties in the basin.

In an extended project, the automated DOQQ quilting process would be used to produce a seamless base map for each county. Base map panels would be enhanced with the new aerial photography and 2-foot contour information from LCRA's Contour Mapping Project. New DFIRMs would be prepared and submitted to FEMA on a county-by-county basis with priority given to those county panels where new engineering data is available along the main stem of the Colorado River.

Political boundaries also would be included as a base map layer. Developing such community political boundaries has proved to be the most complex and time-consuming activity of base map production. As the DFIRM project progresses, the floodplain coalition will help obtain and update the political boundary GIS data layers. Communities will then have the opportunity to play a proactive role in the digital conversion process and to take charge of floodplain mapping in their area.

Activity/Project Location

Geographical Area:	**State-wide**
FEMA Region:	**Region VI**
State:	**Texas**

Key Activity/Project Information

Sector:	**Public**
Hazard Type:	**Flooding**
Activity/Project Type:	**Cooperative Technical Partner Activity; Flood Study Map Rollout/ Map Modernization; Floodplain Management**
Activity/Project Start Date:	**01/1999**
Activity/Project End Date:	**Ongoing**
Funding Source:	**Cooperating Technical Partners (CTP); State sources**
Funding Recipient:	**State Government**
Funding Recipient Name:	**State of Texas**

Activity/Project Economic Analysis

Cost:	**Amount Not Available**
Non FEMA Cost:	

Activity/Project Disaster Information

Mitigation Resulted From Federal Disaster?	**Unknown**
Value Tested By Disaster?	**Unknown**
Repetitive Loss Property?	**Unknown**

Reference URLs

Reference URL 1:	**http://www.fema.gov/plan/prevent/fhm/ctp_main.shtm**
Reference URL 2:	**http://www.txdps.state.tx.us/dem/**

Main Points

- The LCRA is a conservation and reclamation district created by the Texas Legislature in 1934 to improve the quality of life in the central Texas area. Among other responsibilities, the LCRA manages the lower Colorado River to reduce flood damage and produce water supplies.
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