

City of McKinney Overcomes Challenges of Rehabilitating Flood Control Dams in an Urban Area

There are challenges in rehabilitating any Natural Resources Conservation Service (NRCS) assisted flood control dam, but there are even more challenges in an urban area like McKinney, Texas. Michael Hebert, Assistant City Engineer for the City of McKinney has dealt with these challenges as the City and their partners have rehabilitated eight dams inside the city limits since 2004 and currently have another rehabilitation project under design.



Some of the dams in the urban area were constructed in the 1950s in what at the time were rural areas and they were not designed for the additional water runoff created by the construction of homes, businesses and roads. Some were also built as low hazard dams and when areas downstream were developed into houses and businesses it required the dams to be reclassified as high hazard due to the possible loss of life if the dam failed. This meant the dams did not meet current safety standards.

The City values the dams for their flood and sediment control and wanted to upgrade them to current dam safety standards and to maintain their benefits. But rehabilitating dams often means raising the top of dam elevation and widening the auxiliary earthen spillway. This presents a challenge when houses and businesses have been constructed upstream close to the existing flood pool area. Raising the height of the dam could flood those structures upstream, so it has taken a different design strategy to rehabilitate the dams. These strategies include installing roller compacted or articulated concrete block auxiliary spillways, which are much more expensive than the earthen spillways. Property is also more expensive in urban areas, so obtaining easements and land for expansion of the project cost more than in a rural area. "These three factors of limited expansion area, additional construction costs and high land costs are the biggest challenges we face in rehabilitating urban dams," said Michael Hebert.



The City of McKinney has utilized the NRCS Rehabilitation Program which provides 65 percent cost share on rehabilitating dams, but the city has also partnered with others such as the Texas State Soil and Water Conservation Board and local developers for financial assistance. Since the development of subdivisions upstream of the dams creates more water runoff and sediment, the city asked developers to assist in the rehabilitation costs. All developers in the drainage basins have been willing to participate in the projects.

“The dams not only provide the benefits of flood and sediment control, but homeowners say they have increased the value of their property and they see the lakes as a real asset to their neighborhoods,” said Hebert. “The rehabilitation projects have certainly been a challenge, but the City Council and other partners believe the benefits of the dams outweigh the obstacles,” said Hebert.

A video with an interview with Michael Hebert and other details about the City of McKinney’s rehabilitation projects is available for viewing on the National Watershed Coalition Webpage: www.watershedcoalition.org under the videos tab, entitled: Meeting the Challenges of Operating and Rehabilitating Flood Control Dams in an Urban Area.

Other examples of watershed projects and Watershed Program activities can also be found on the webpage including fact sheets, videos and other publications.

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