

Never Too “Dam” Old: 80 years of Dam Research by the Agricultural Research Service in Support of the USDA Small Watershed Program and Dam Rehabilitation

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The Watershed Rehabilitation Amendments to the Watershed Protection and Flood Prevention Act (Public Law 83-566) was passed by Congress in 2000. For twenty years, this act has authorized the USDA-Natural Resources Conservation Service (NRCS) to provide technical and financial assistance for addressing aging watershed dams constructed under the USDA Small Watershed Program. Nearly 12,000 dams have been constructed under the original authorizations of the USDA Small Watershed Program. These dams are typically constructed of earthen materials and range in height from 9.1 m to 30 m (30 ft to 100 ft). Throughout its 80-year history, the Agricultural Research Service (ARS) Hydraulic Engineering Research Unit (HERU) in Stillwater, Oklahoma has cooperated with and provided scientific support to the NRCS by developing design guides and tools for the construction of these dams. This scientific backing has not wavered in the 70+ years of the USDA Small Watershed Program. Today, research is focused in supporting the rehabilitation and upgrade of these dams through the development of design guides and tools including design aids for roller compacted concrete (RCC) stepped spillway for protection of the downstream slope should water spill over the top of the dam and the software, Windows Dam Analysis Modules (WinDAM), for predicting earthen dam erosion due to overtopping or internal erosion of the dam. In addition, scientific expertise is still available to NRCS engineers, federal and state collaborators (e.g. U.S. Bureau of Reclamation, U.S. Army Corps of Engineers, U.S. Forest Service, state dam safety offices), academic researchers, and consulting engineers worldwide as it relates to these aging dams or dams that use ARS technology. The objective of this presentation is to document the 80 years of research provided by the ARS HERU scientists with a greater focus on more recent research accomplishments since the passage of the Watershed Rehabilitation Amendments of 2000.