

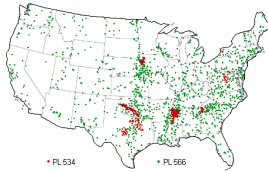


United States Department of Agriculture  
 Natural Resources Conservation Service  
 Agricultural Research Service



**Technology Need Fact Sheet**

USDA ASSISTED FLOOD CONTROL DAMS



# Rehabilitation of Aging Watershed Flood Control Dams

**Summary:** Development and application of appropriate technology will lead to safe, cost-effective rehabilitation of flood control projects built by the USDA. Technology needs include improved methods for evaluation and rehabilitation of aging flood control dams, the development of new and improved tools for analyses of watershed and channel processes, and the development of engineering criteria for improved flood control measures.

**Issue:** The US flood control infrastructure is aging. With the assistance of USDA, local communities have invested \$14 billion in a watershed flood control infrastructure for the protection of lives and property. This infrastructure of over 10,000 structures in 47 states is providing over \$1 billion in benefits each year. Many of the dams are approaching the end of their planned service life and will require rehabilitation to continue to function safely. To ignore these dams will eventually place life and property at risk.



Congress recognized the need for rehabilitation of the nation's watershed flood control dams through the passage of PL-472 in 2000. Activities of the National Research Council and other entities over the past eight years underscore the importance of developing and applying technology that provides adequate flood protection while considering the overall riparian ecosystem.

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**Knowledge Gaps and Technology Needs:** The key areas where additional technical information is needed to support rehabilitation activities are summarized as:

- Technology for predicting performance of dams during extreme hydrologic events.
- Improved means of characterizing reservoir sediment quantity, quality, and distribution.
- Improved tools and guidance documentation for efficient application of current technology at the field level.
- Improved technology and tools for predicting the environmental impacts of dam failure.
- Improved procedures for predicting the response of channel and reservoir systems to change.
- Improved procedures for evaluating the short and long-term impacts of dam removal.

**Related Accomplishments:** Agricultural Research Service (ARS) and the Natural Resources Conservation Service (NRCS) have cooperated in the development and application of design criteria for flood control structures and channel stabilization measures. Over the past 60 years, achievements such as the development of tools to predict upland erosion, sediment delivery, and stream channel stability have contributed to improved reservoir design. ARS has also worked closely with NRCS in the development of design criteria for flood control project components such as spillways and stilling basins that allow the dams to operate effectively. Joint efforts in the area of software development for technology application are continuing to result in improved tools for design and analysis of dams and systems.





Watershed flood control dams and reservoirs have become a part of the nation's landscape. These reservoirs provide attractive recreation sites for fishing, swimming, boating and picnicking, as well as providing flood protection and water supply. Rehabilitation of these dams using current technology will allow them to continue to function effectively into the future.

Appropriate application of conservation measures on the landscape can reduce erosion and extend the useful life of flood control reservoirs. Development and use of improved technology for evaluating the effects of these practices can result in more economical design of both conservation and flood control measures.



Research into the use of vegetation for erosion protection has allowed extensive use of vegetated earth emergency spillways on flood control dams. When suitable, these spillways offer both aesthetic and economic advantages over conventional structural spillways.

Increased development around reservoirs changes the upstream hydrology and the downstream floodplain, increasing dam safety concerns during major floods. More efficient and cost effective measures are needed to safely handle the flood flows



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