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The assessment of risk associated with potential modes of levee failure is key to preserving the physical, social, economic, and environmental assets a levee is intended to protect. A levee risk management program should utilize level of detail and analyses representative of the scale of the system and importance of the protected assets. Comprehensive programs have been well established for large critical levee systems, however, a less resource intensive program is acceptable for smaller levee systems.

The National Park Service (NPS) has inherited or constructed smaller levee systems where risk of failure is not well understood. Based on their risk-based dam safety program, NPS is prototyping a levee risk management program to evaluate levee conditions and determine action based on risk of levee failure. The program is being piloted at seven sites.

When developing the program, many components typically used to evaluate risk were scaled back. First, a field examination was conducted and documented by a checklist form developed for smaller levee systems. Then, approaches taken for determining potential seismic and hydrologic loading on levees were adjusted. Hydrologic analysis ranged from simple two-dimensional modeling to review of previous hydrology and hydraulics studies.

Once levee conditions were evaluated, a system to qualitatively estimate risk associated with potential modes of levee failure was developed. A risk estimation workshop was conducted with expert elicitation. The results of this effort will allow NPS to take actions at the higher risk levees and inform the development of new NPS levee safety policy and guidelines.