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The U.S. Air Force Academy (USAFA) was facing \$25M in spillway improvements to Kettle Creek dry dam in order to continue safe operation and pass the inflow design flood (IDF) in accordance with the Colorado Division of Water Resources (DWR) Rules and Regulations for Dam Safety and Construction (Rules). A dam breach flood from the High Hazard structure would be expected to impact I-25 located immediately downstream resulting in a high potential for loss of life per DWR guidelines.

The planned dam safety improvements involved an alternatives analysis of traditional spillway expansion methods, which followed similar approaches used to rehabilitate other dams owned by the USAFA. During the alternatives analysis USAFA and AECOM identified additional approaches involving potential breach or decommissioning of the structure. Kettle Creek dry dam was constructed circa 1958 to provide flood protection for the USAFA Airfield, which was later relocated approximately one mile north of its originally planned location. As a result, the dam currently provides no functional purpose or benefit to the USAFA or other parties.

Following development of alternatives, a cost-benefit analysis was completed considering conceptual level construction cost estimates and various benefit criteria associated with environmental impacts, construction schedules, permitting and regulatory requirements, and risk to downstream life and property. As a result, USAFA and AECOM recommended decommissioning of the structure as a cost-effective approach to meet DWR Rules, reduce the inherent risk associated with the existing High Hazard dam, and likely reduce long-term maintenance costs associated with the structure that currently provides no functional purpose or benefit.

This work provides a case study example to other Dam Safety Officials and Federal Agencies considering a risk based and cost-benefit approach to dam safety improvements. This paper presents the development of the project including the key details considered in the decision to decommission the structure.