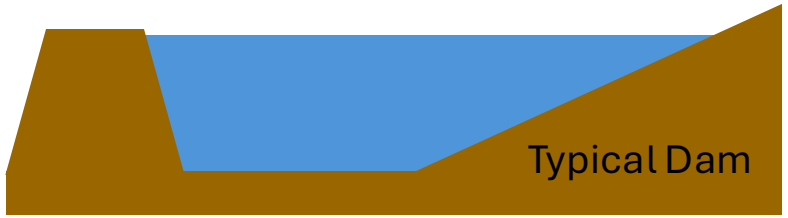
“Dry” Dams for Flood Storage

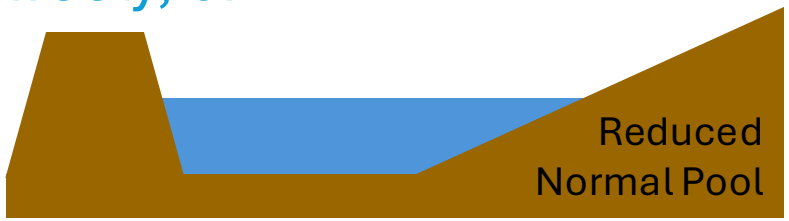
What is a “dry” dam?

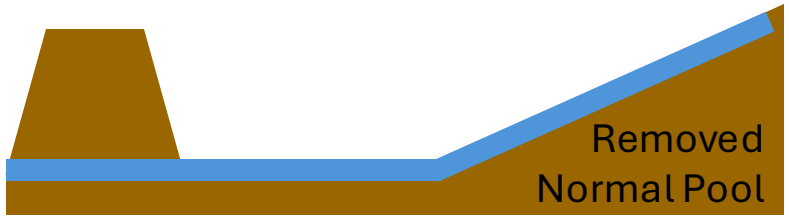
- Existing impoundment with a dam where there may be an opportunity to modify the normal pool to create more detention storage
- Reconfigure dam structure(s) to:

    (1) remove normal pool to allow stream to flow freely, or

    (2) reduce normal pool







“Dry” Dams for Flood Storage: Example

Woody Branch Dam is a 43-foot-tall dry dam in southwest Dallas, TX which does not permanently hold water.

Source: Texas Dam Safety Program

“Dry” Dams for Flood Storage

The Concept:

- Existing dams may provide opportunities for flood mitigation
- Most lakes in NC are manmade
- These features could potentially be modified, where feasible, to increase detention storage during flooding events

- **Potential dam project types:**
  - **Modification (retrofit, repair, rehab)**
  - **Removal**
  - **New construction**
  - **Emphasis on existing dams**

“Dry” Dams for Flood Storage

What Data are Readily Available?

- NC Dam Inventory[1] includes over 7,000 dams
- Readily available data on:
    - Dam classification
    - Storage capacity
    - Dam dimensions
    - Dam condition

[1] NC Dam Safety: https://www.deq.nc.gov/about/divisions/energy-mineral-and-land-resources/dam-safety

“Dry” Dams for Flood Storage

High Level Cost Analysis

- Developing generic cost ranges considering:
    - Historical cost data
    - Typical cost categories of investment
    - Benefit-Cost Analysis (BCA)

“Dry” Dams for Flood Storage

Proposed Methodology & Next Steps

- Identify existing dams in state inventory
- Screen out unsuitable dams (e.g., energy sector/FERC)
- Estimate potential flood storage capacity
- Based on target flood reduction needs
    - Dams must be upstream of known flooding areas
- Education and permitting investigation to identify hurdles
- Order-of-magnitude cost estimation

Additional Slides (If Needed)

“Dry” Dams for Flood Storage

Questions and Considerations

- Data accuracy and gaps in state inventory
- Owner/community acceptance (i.e., will reducing lake size be supported if it means more capacity for flood control?)
- Must consider potential impacts on aquatic and terrestrial species and habitat
- Cost (outreach within AECOM and across municipal and state agencies may provide some relevant cost data for dam rehabilitation projects)
- Could dams that are already hydraulically controlled (e.g., USACE dams – Jordan Lake, Falls Lake, etc.) be further optimized?
- FERC regulated dams may not be flexible in their operations

“Dry” Dams for Flood Storage

Potential Next Steps

- Collaborate with Blueprint partners
- Refine approach for evaluating dams for potential flood mitigation benefits
- Develop automated methodology for filling in data gaps
- Test methodology for pilot area(s) and continue refining
- Document methodology and work with programming team to incorporate into tool
- Mine for cost data toward developing a rough order-of-magnitude “cost per acre-feet of storage”