

# KEYSTONE DAM SAFETY MODIFICATION STUDY PUBLIC WORKSHOP

U.S. Army Corps of Engineers: Tulsa District

**March 13th and 14th, 2024 - 4:00pm to 7:00pm**  
Keystone State Park Community Center  
1926 S Highway 151, Sand Springs, OK 74063



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US Army Corps  
of Engineers®

**30-Day Public Comment Period**  
March 6, 2024 – April 5, 2024

# WELCOME

Please review the information boards in the room.

U.S. Army Corps of Engineers team members will be available to answer or discuss any questions or concerns you may have.





# NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)



## NEPA GUIDES THE IMPACT ANALYSIS

National Environmental Policy Act (NEPA) is a federal law that requires agencies to evaluate the potential environmental effects of proposed projects, and to inform and involve the public in the decision-making process.

An Environmental Assessment (EA) includes sections describing:

- Purpose and Need
- Existing Conditions
- Alternatives
- Environmental Effects
- Direct Effects
- Indirect Effects
- Cumulative Effects

## IMPACT ANALYSIS CRITERIA

USACE has identified a broad spectrum of general and project-specific criteria to analyze impacts of the action alternatives, including:

- NEPA
- Council on Environmental Quality Regulation
- USACE Engineering Regulation 200-2-2
- Environmental Laws and the associated Implementing Regulations and Guidance
- National Historic Preservation Act (Section 106)
- Public Comments

## WHAT IS THE PURPOSE OF THIS INFORMATION MEETING?

NEPA is a public process designed to solicit public and agency comments regarding issues that an environmental document should consider.

### **This Information Meeting aims to:**

- Share information
- Seek input
- Define how you can be involved

### **This is an opportunity for the public to participate and provide comments on:**

- Proposed Project and Report
- Potential Impacts
- Any concerns or questions

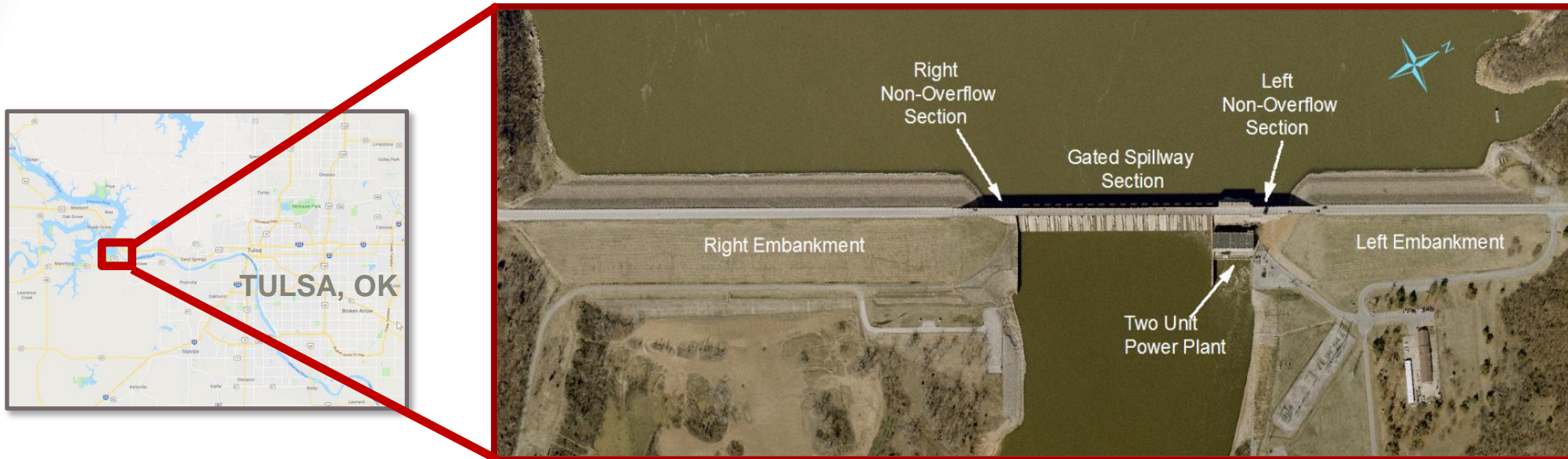


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# KEYSTONE DAM HISTORY AND FEATURES

Keystone Dam reduces flood risk for thousands of people including numerous residential, commercial, and industrial buildings and public infrastructure.



## Keystone Dam Background:

- Authorized by Congress in the Flood Control Act of May 17, 1950
- Construction began in January 1957
- Placed in operation in September 1964
- Flood release of record: October 21, 1986
- Originally designed for a maximum discharge of 939,000 cfs

## Authorized purposes established by Congressional Legislation:

- |                         |                     |
|-------------------------|---------------------|
| • Flood Risk Management | • Navigation        |
| • Water Supply          | • Recreation        |
| • Hydroelectric Power   | • Fish and Wildlife |





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# KEYSTONE DAM SAFETY MODIFICATION STUDY

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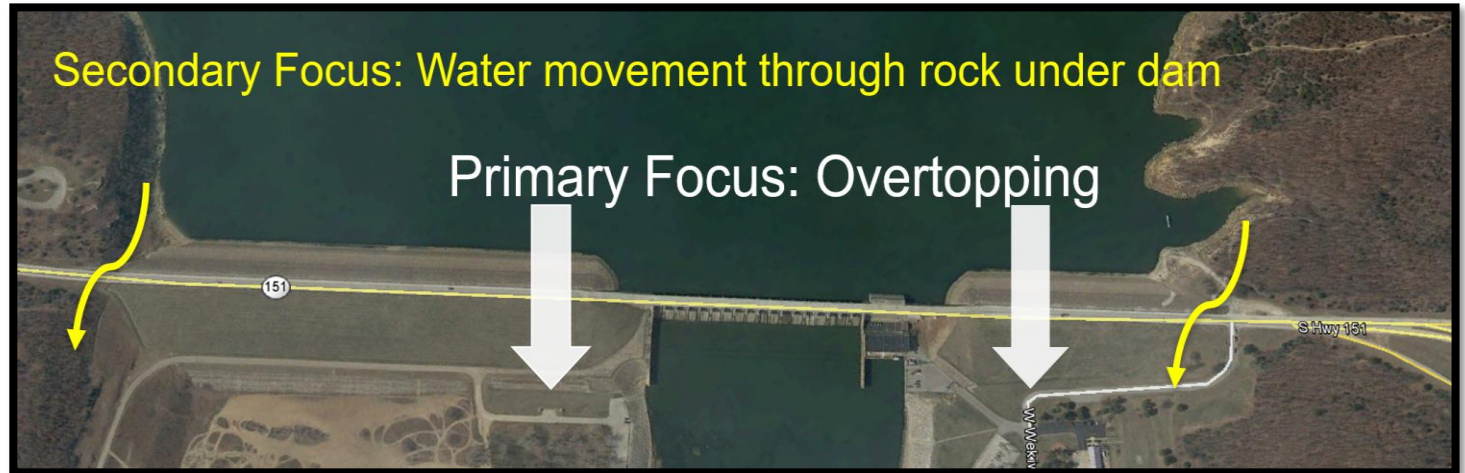


## Primary Focus:

Assessments by the U.S. Army Corps of Engineers determined potential risks associated with embankment overtopping or failure of the stilling basin during extreme flood events at Keystone Dam.

## Secondary Focus:

Though much less likely, there are potential risks associated with water moving through the rock beneath the dam.



## Future Without Project:

- The Tulsa metro area (pop:~1 million) and adjacent communities are the immediate impact area
  - Population projections for the area are expected to increase over the next 50 years
- Increased risk for property, human life, and public safety
- Loss of infrastructure such as major highways and local roads in the event of a dam failure
- Adverse impacts to environmental and cultural resources downstream

# ALTERNATIVES CONSIDERED

The final array of Risk Management Plans (RMPs) considered:

- RMP 5a – Dam Raise with Stilling Basin Modification
- RMP 5c – Dam Raise with Stilling Basin Modification and Erosion Control Wall
- RMP 6e – New Gated Spillway with Stilling Basin Modifications
- RMP 6g – New Labyrinth Spillway with Stilling Basin Modifications
- RMP 7 – New Gated Spillway and Decommission Existing Spillway and Stilling Basin
- RMP 9 – No Action

Nine additional alternatives (RMPs 5b, 6a-d, 6f, and 6h-j) were also evaluated but were eliminated based on cost, environmental impacts, effectiveness, and other considerations during initial phases of analysis.

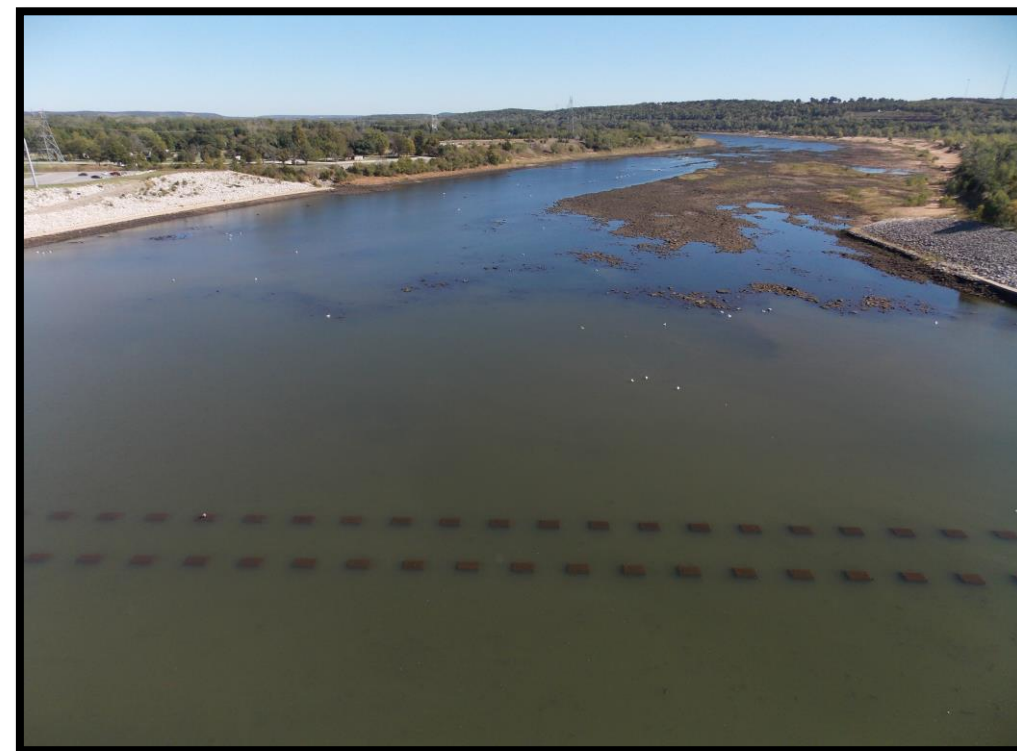


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# POTENTIAL IMPACTS & CONSIDERATIONS



- Life safety & risk management
  - Upstream pool elevation (during extreme flood events)
  - Downstream releases (during extreme flood events)
  - No changes to operation of the dam
  - Flood risk management benefits of the dam will remain the same
- Infrastructure
  - Highway 151 runs across the top of dam
  - Hydropower units in the dam
  - Temporary recreational impacts
- Natural environment
  - Fish, wildlife, and their habitat
  - Threatened & endangered species
- Cultural resources
  - Known resources
  - Potential for new discoveries
  - Keystone Dam is eligible for listing in the National Register of Historic Places
- Public comments
- Constructability & costs







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# TENTATIVELY SELECTED PLAN

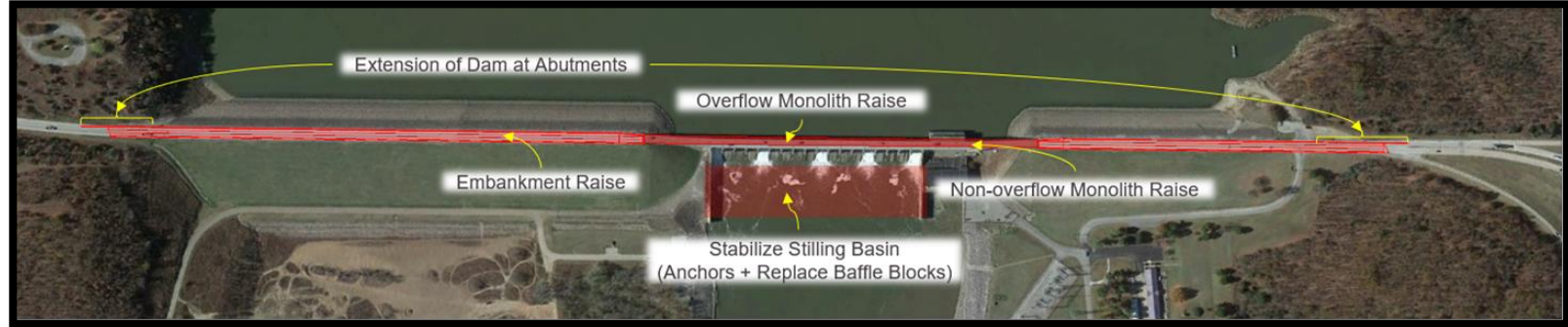
## RMP5A - DAM RAISE WITH STILLING BASIN MODIFICATION

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### The features of the selected alternative include:

- A. Modify existing service spillway
  - Raise existing spillway bridge
  - Construct hydraulic baffle to protect existing spillway gates
  - Raise concrete dam
- B. Construct embankment raise
  - Earthen/parapet wall combination
  - Dam will be raised a total of ~11 feet
- C. Construct temporary cofferdam
  - Stilling basin divider walls and cofferdam will be used to create a dry working area below the dam
  - Dam will be operated using 12 of 18 gates during construction
  - Cofferdams are designed to wash out in the event the use of all 18 gates is necessary
- D. Modify existing spillway stilling basin
  - Anchor the right stilling basin training wall
  - Install stilling basin slab overlay and anchor slabs to the underlying rock
  - Replace existing baffle blocks and strengthen end sill



Components of Tentatively Selected Plan



Temporary Bridge and Cofferdam Locations

Total time to complete construction will be approximately 8-11 years.





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# ENVIRONMENTAL IMPACTS

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- Negligible impacts to vegetation from construction
  - Staging, laydown, and haul routes are expected to avoid Crosstimbers habitat
  - Upon project completion, if not originally utilized, road bases will be removed and vegetation reestablished
- Minimal shrub and tree removal
  - Will occur outside of nesting season for migratory and non-migratory birds
  - Survey for active nests if tree removal is proposed during nesting season
- Minimal effects to wildlife
  - Noise from construction would affect small mammals, birds, amphibians, and reptiles to surrounding area
  - May cause displacement of some species to surrounding areas
- Impact avoidance and mitigation measures to reduce impacts to wildlife
- No permanent adverse impacts to wildlife populations are anticipated



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# CULTURAL IMPACTS

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- Construction would have negligible adverse impacts to cultural resources
- Area of potential effect (APE) has previously undergone significant disturbance during the dam's original construction
- Proposed dam alterations would not alter the characteristics of Keystone Dam that qualify it for inclusion in the National Register of Historic Places
- Consultation with federally recognized tribes and other stakeholders is ongoing
  - A programmatic agreement among the USACE, the Advisory Council on Historic Places, the Muscogee (Creek) Nation, the Oklahoma State Historic Preservation Officer, the Osage Nation, and the Oklahoma Archaeological Survey has been developed to identify, evaluate, and resolve adverse effects to historic properties prior to construction
- The finalized APE will undergo intensive cultural resources survey. Impacts to historic properties will be avoided, minimized, and mitigated in accordance with the programmatic agreement



# INFRASTRUCTURE IMPACTS



## Utilities

- No impacts to the switchyard, overhead powerlines, or telecommunications lines
- The telecommunications and power lines that cross the dam may be adjusted with the dam raise

## Land Use

- White Water ORV Park and Brush Creek Park would be closed for duration of construction
- Parking and access to the trailhead of the Two Rivers Trail may also be impacted
- Keystone Lake State Park would have altered access routes during construction

## Hydropower

- No adverse impacts to hydropower are anticipated

## Water Management

- Does not change existing water level management for routine or flood operation of the dam
- No change to conservation or flood pool elevations





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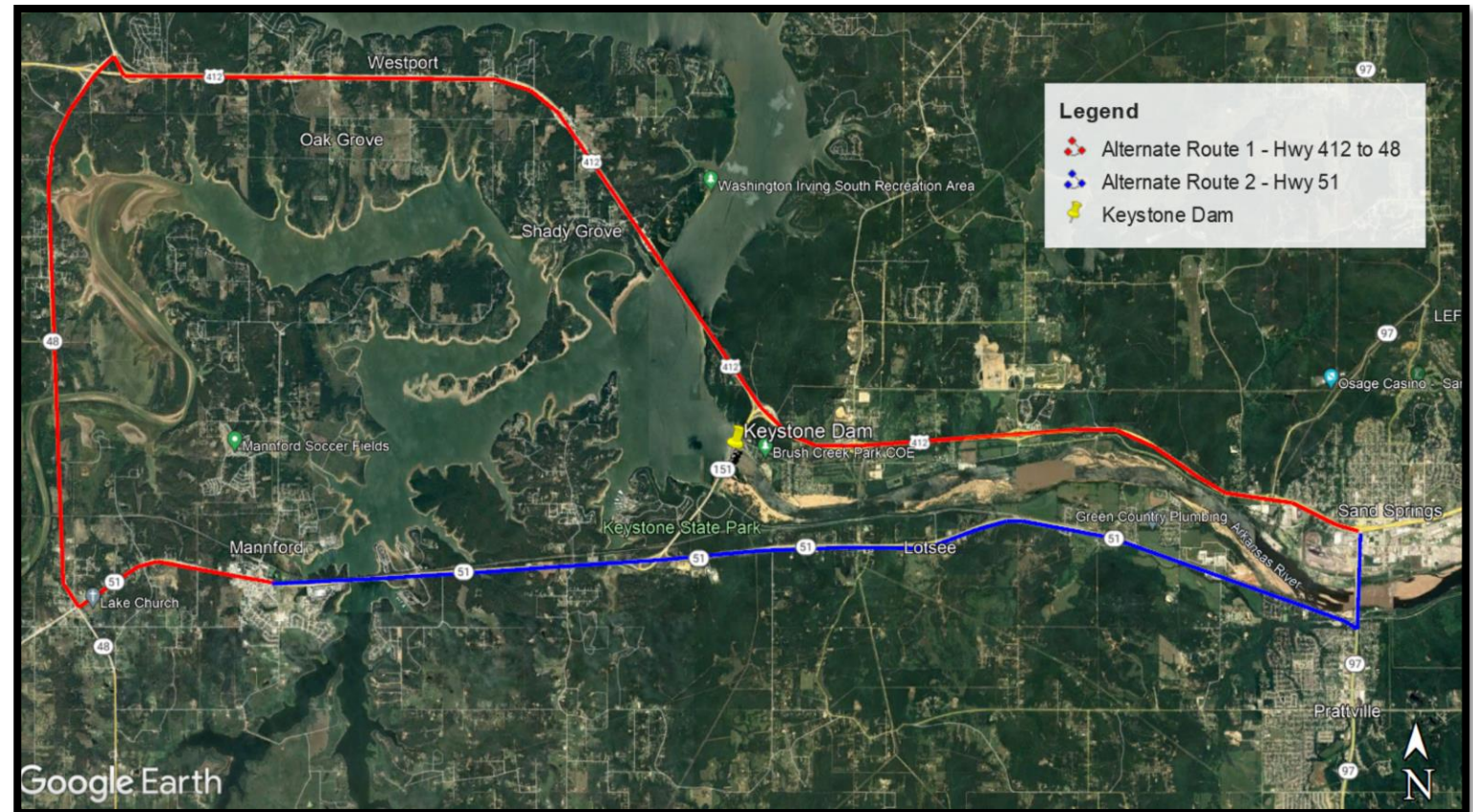


# TRAFFIC IMPACTS

- Long-term moderate adverse impacts to transportation due to the expected closure of HWY 151 for ~3 years
  - Increased time and distance traveled, altered service routes
  - Wilson Avenue (State Highway [SH] 97) in Sand Springs, OK, and SH 48 near Mannford, OK may be used as alternate routes

## TRAFFIC IMPACT MITIGATION

- Advanced notification for road closure timing
  - Allows for bus routes, emergency services, and commuters to plan in advance for closures
- Detour signage to help navigate detour routes



HWY 151 Closure Alternative Routes

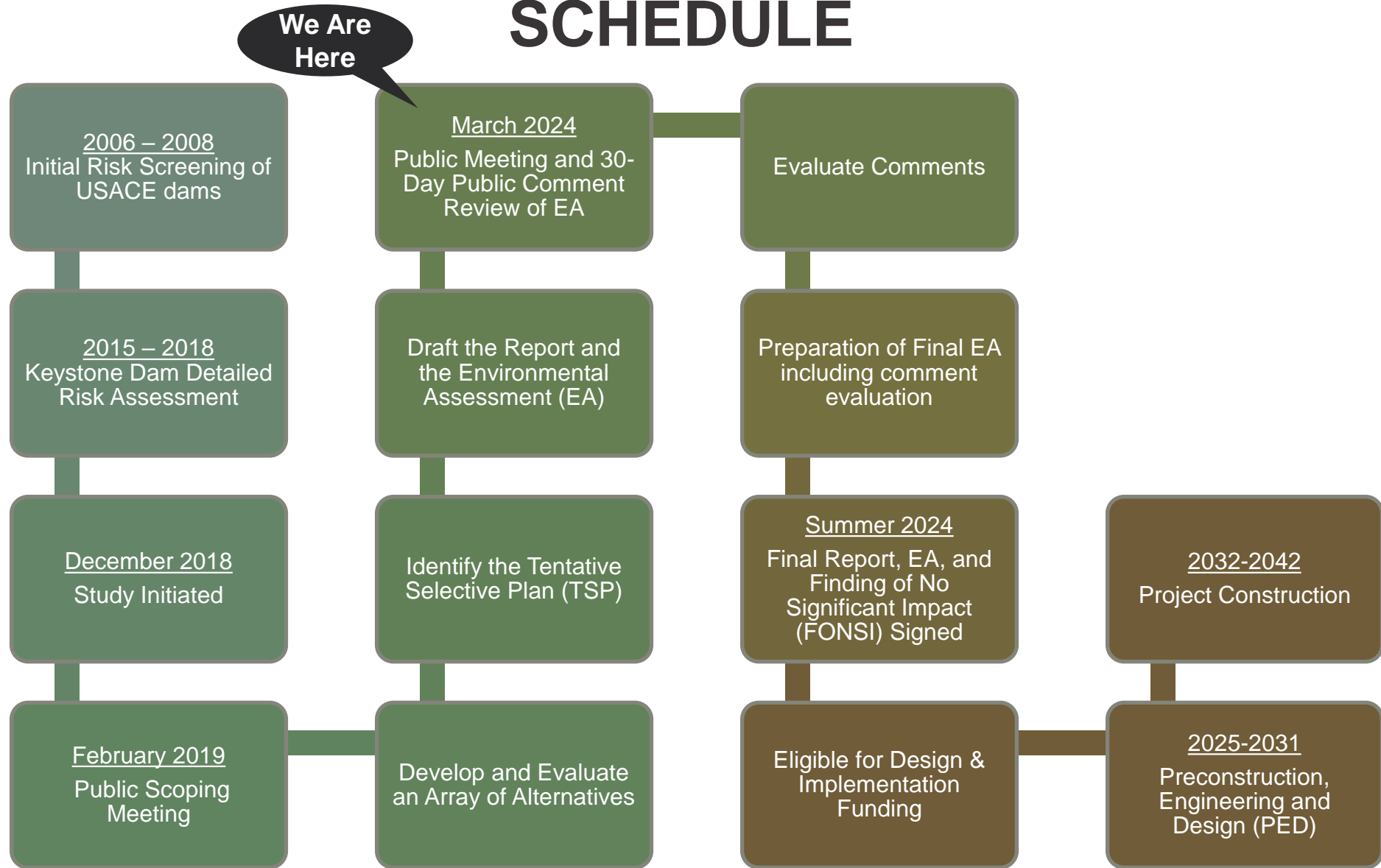


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## SCHEDULE

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# HOW CAN YOU PARTICIPATE?

Submit comments between March 6 & April 5, 2024

## 3 Options to Submit Your Written Comments:

1. Drop your comments in the comment box at public workshops
2. Email to:           Keystone-DSMS@usace.army.mil
3. Mail to:            U.S. Army Corps of Engineers, Tulsa District  
                            ATTN: RPEC-Keystone DSMS  
                            2488 E 81st St., Tulsa, OK 74137

Comments must be submitted in writing and postmarked by April 5, 2024 or they will not be considered

Information can be reviewed at:

<https://www.swt.usace.army.mil/Missions/Civil-Works/Keystone-Dam-Safety-Modification-Study>