

FRANCIS E. WALTER DAM & RESERVOIR RE-EVALUATION STUDY STAKEHOLDER STUDY STATUS UPDATE



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Date:04/10/2024



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MEETING AGENDA

- **Background/History**
- **Study Updates**
- **Study Alternatives**
- **Schedule**
- **Study Tasks**
- **Conclusion/Open Discussion**



F.E. WALTER DAM PROJECT HISTORY

- Construction authorized in 1946 Flood Control Act, completed in 1961, through FY22 the Dam has prevented more than \$338 million in flood damages
- 1985 General Design Memorandum recommended 30-foot dam elevation increase to provide storage for low flow augmentation. Cost was prohibitive for implementation.
- Recreation authorized in 1988 Water Resource Development Act
- 2005-Present operational changes to enhance recreation
- 2007 Water Resource Development Act directed USACE enter into a Temporary Emergency Drought Storage Agreement with DRBC during a declared drought
- 2009/2014 Water Quality Modeling - tower modifications and increased pool depths showed operational flexibility as it relates to downstream temperatures



STUDY AUTHORIZATION

Section 216 of the Flood Control Act of 1970

*"The Secretary of the Army, acting through the Chief of Engineers, is authorized to review the operation of projects the construction of which has been completed and which were constructed by the Corps of Engineers in the interest of navigation, flood control, water supply, and related purposes, when found advisable due to **significantly changed physical or economic conditions**, and to report thereon to Congress with **recommendations** on the advisability of modifying the structures or their operation, and for improving the quality of the environment **in the overall public interest.**"*



FEASIBILITY STUDY ASSUMPTIONS

- Purpose - Determine if structural or operational modifications can be implemented without impacting authorized flood risk management and recreation purposes.
- Probable Maximum Flood elevation analysis determined dam sufficiently designed for flood risk management but there is no storage allocated for other project purposes.
- Increasing dam elevation and modification of infrastructure is cost prohibitive and has potentially significant negative environmental effects.
- Current operations plan at 1370-foot storage pool does not allow for sufficient low flow augmentation per the non-federal sponsors.
- Dam partially grouted to address seepage issues. Additional structural upgrades may be needed for temporary increased storage levels.



FEASIBILITY STUDY TIMELINE

- Initial Appraisal Report completed in 2015.
- FY19 Received Federal New Start Study Funding (50/50 cost share)
- Feasibility Cost Sharing Agreement executed on Sep 25, 2019. DRBC \$25k + IKS (\$378k), NYC to provide remaining cost share.
- Study Scoping Oct/Nov 2019, Charette Dec 2019, Public Workshop January 2020
- May 2020 - Alternatives Milestone Meeting
- February 2021 - Study rescoping based on potential impacts of increased storage
- March 2021 - PA Senate Hearing Testimony
- September 30, 2021 - Initial Policy Exception Request Package Submittal
- January 13, 2023 - Exemption Package submittal including updated scoping
- November 2, 2023 - Office of the Assistant Secretary of the Army (CW) approval of Exemption Request



STUDY STATUS – COMPLETED/ONGOING

- Existing Conditions
(Agency Scoping, USFWS PAR 9/15/23)
- Probable Maximum Flood
- Data Collection
- Study Risk Identification
- Initial Alternatives Screening
- Reservoir FRM Modeling
- Water Quality Modeling (Dissolved Oxygen Focus)
- Non-Structural Analysis



WATER QUALITY MODELING



- Confidently predict expected changes in water quality (reservoir and Lehigh R.) with different operating scenarios
- Identify and consider potential for negative water quality and biological impacts
- Operate to avoid and minimize impacts when feasible



WATER QUALITY MODELING

Initial Scenario Runs

Scenario A- 1392' drought storage with recreational plan in place. No new selective withdrawal tower

Scenario B- 1392' drought storage with recreational plan in place. New selective withdrawal tower

Scenario C- 1392' drought storage with recreational plan in place. New selective withdrawal tower. Revision of Scenario B with increased upper portal sizing to allow greater volume of withdrawal from those portals in Spring. Conservation of colder water.

DRAFT- Observations of Dissolved Oxygen

Critical habitat volume refers to the portion of the reservoir with DO levels below 1 mg/L (anoxic).

Draft results show that withdrawal operations in scenarios B and C result in a significant expansion of the anoxic volume in the reservoir.

The modeling suggests that selective withdrawal operations proposed in scenarios B and C are not effective means for reducing bottom anoxic conditions during the later summer and earlier fall seasons. Despite changes in selective withdrawal strategies, the fundamental factors driving oxygen depletion continue to pose challenges.



STUDY ALTERNATIVES

Alt 1 – No Action/FWOP

Alt 2 – Increased Storage with Structural Modifications*

~~Alt 3 – Raise Dam (consider multiple elevations) with Tower Replacement*~~

~~Alt 4 – Modify Existing Tower for Selective Withdrawal*~~

Alt 5 – Operational Changes to Alter Releases*

~~Alt 6 – Build or Raise Levees, Add Dikes*~~

~~Alt 7 – Non-structural Downstream Flood Improvements*~~

~~Alt 8 – Combination Alt 2-7*~~

*** – Recreational Enhancements to be considered within all actionable alternatives**



INCREASED STORAGE ASSUMPTIONS

- Water would not remain at EL 1392' permanently, only during declared drought emergency for up to two consecutive years.
- Water level would fluctuate to a max of EL 1392'. Target higher water level in late summer/fall period when significant drought conditions have occurred historically.
- Project to maintain current flood protection.
- Recreation release plan may be beneficial during periods of drought (increased downstream flows).
- Current recreation and spawning habitat plans will remain in place in year 1 of declared drought with further assessment for extended drought years.
- Increased long-term storage impacts may require an Environmental Impact Statement (EIS).

SMART Feasibility Study Process: FE Walter Study





FEASIBILITY ANALYSIS- TASKS PROPOSED

- Geotechnical investigation and analysis
- Environmental/cultural investigations
- Environmental impact significance determination (EA/EIS)
- Water quality modeling
- H&H modeling
- Non-structural analysis
- Life loss modeling
- Risk Management Center Review and Risk Assessment



QUESTIONS/DISCUSSION