

Four Lakes Task Force

Secord Lake Update on Repair & Schedule

February 11, 2021



Four Lakes Task Force



AGENDA

- ❑ Introduction and Welcome – Phil Dast
- ❑ Priority Topics – Dave Kepler
- ❑ Repairs to Restore Legal Lake Levels – Rick Anderson
- ❑ Schedule – Ron Hansen
- ❑ Summary– Dave Kepler



PRIORITY TOPICS

Dave Kepler
President, Four Lakes Task Force



Our Communities Must Be Stewards of the Lakes



We are committed to bringing back Secord Lake. We have a plan that is funded up to the approval of financing for construction.

We will need community support and advocacy to make this plan work.



We are addressing the critical issues to stabilize and secure the dam by this May. This only reduces risk at the lower lake level.

It was wrong for Boyce and others to suggest a few repairs would allow the lake to be filled.



Secord Dam is a high hazard dam. The dam was not healthy before the May 19 flooding and it is unsafe to raise the water levels until the dam is permanently repaired.

Critical Repair Investigation Is Not Completed

- ❑ **Independent Forensic Team Investigation Findings.** FERC staff confirmed the investigation is still in progress. FLTF expects the investigation will be completed in 2021, but neither FERC, the State, nor FLTF have any control over the investigation team. The team is completely independent.

We may have to adjust some engineering, but feel it is an appropriate cost risk to maintain the schedule.





RESTORING LEGAL LAKE LEVELS

Rick Anderson
Lead Dam Safety Engineer, GEI Consultants

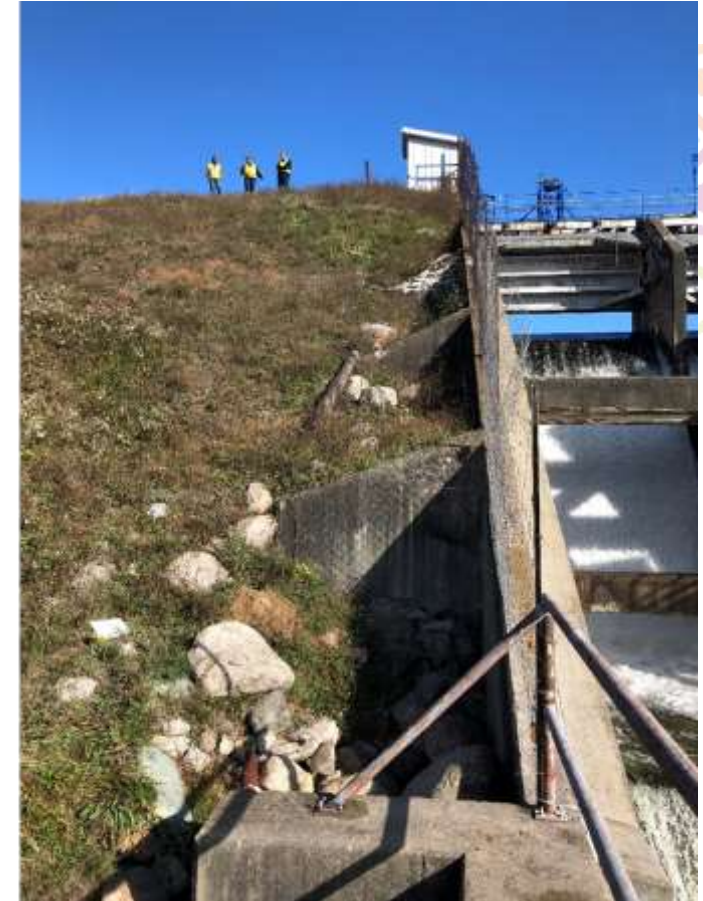
Main Repair Priorities for Secord

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There are several fundamental repair issues that must be addressed before the water level can be raised:

- ❑ Insufficient spill capacity to meet regulatory criteria, including State of Michigan requirements.
- ❑ Inadequate embankment slope stability.
- ❑ Embankments leak excessively and lack internal filters and drains to protect against seepage-induced internal erosion.
- ❑ Inadequate embankment slope armoring to prevent damage from erosion and back cutting during floods.
- ❑ Areas of structurally unsound concrete at spillway and powerhouse needs repair and stabilization.

Secord Dam falls significantly short of current design standards and cannot safely pass the design flood.



Critical Repair Items (continued)

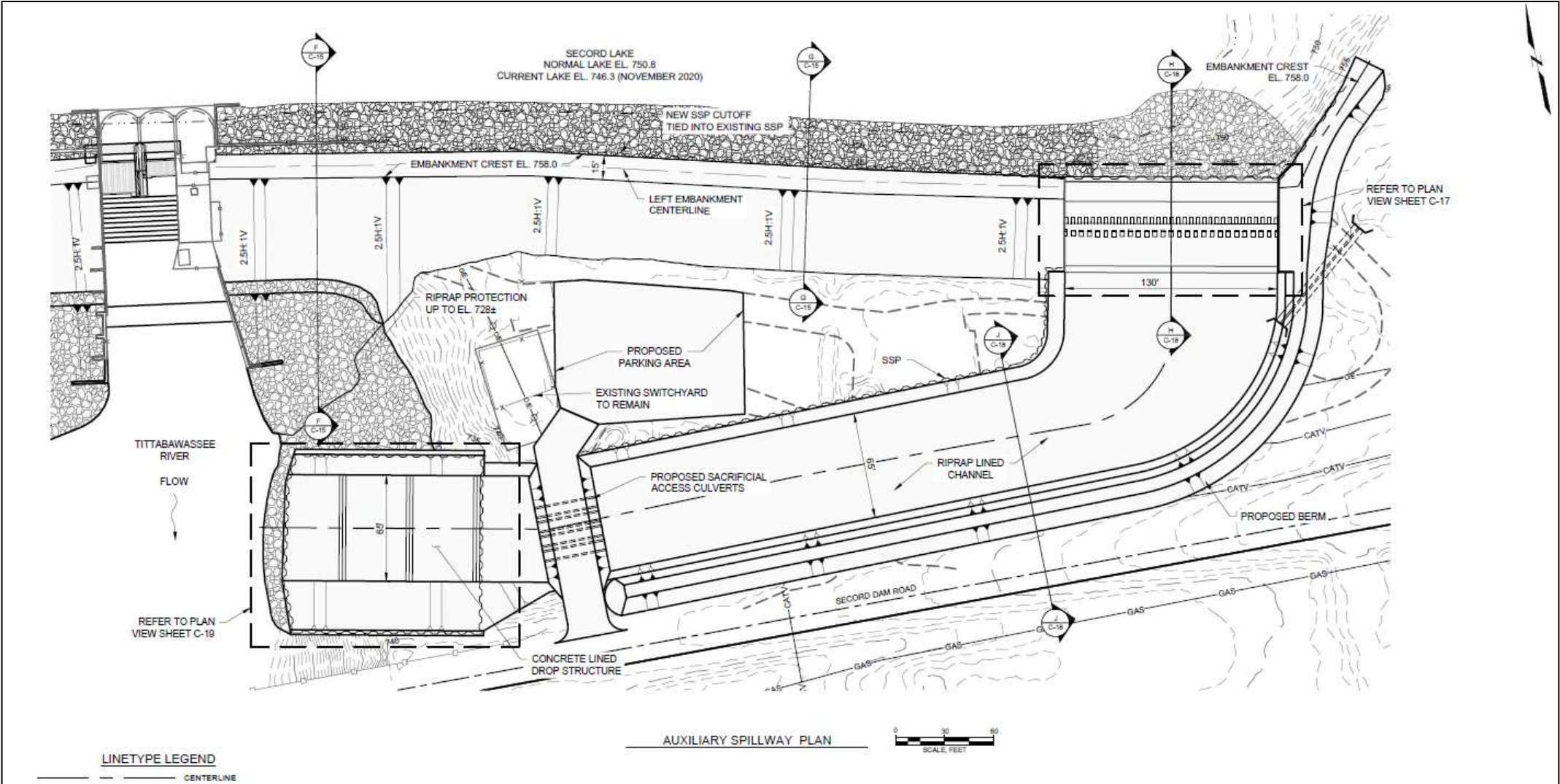
- ❑ **Spillway Adequacy.** Secord is classified a High Hazard dam. The existing spillway capacity is approximately 7,700 cubic feet per second (cfs) before water begins spilling over the east abutment and reservoir rim.
- ❑ According to the latest flood analysis, the capacity needed is at least 21,150 cfs.
 - ❑ ***A risk-based study is not yet completed to determine the final capacity.***
- ❑ These values will likely change based on the probable maximum precipitation (PMP) and updated flood studies currently planned for completion this year.

- ***It would not be responsible for the Secord Lake Community or FLTF to bring up the lakes before new increased spillway capacity is installed.***
- ***It is very unlikely that regulators would permit such an action.***

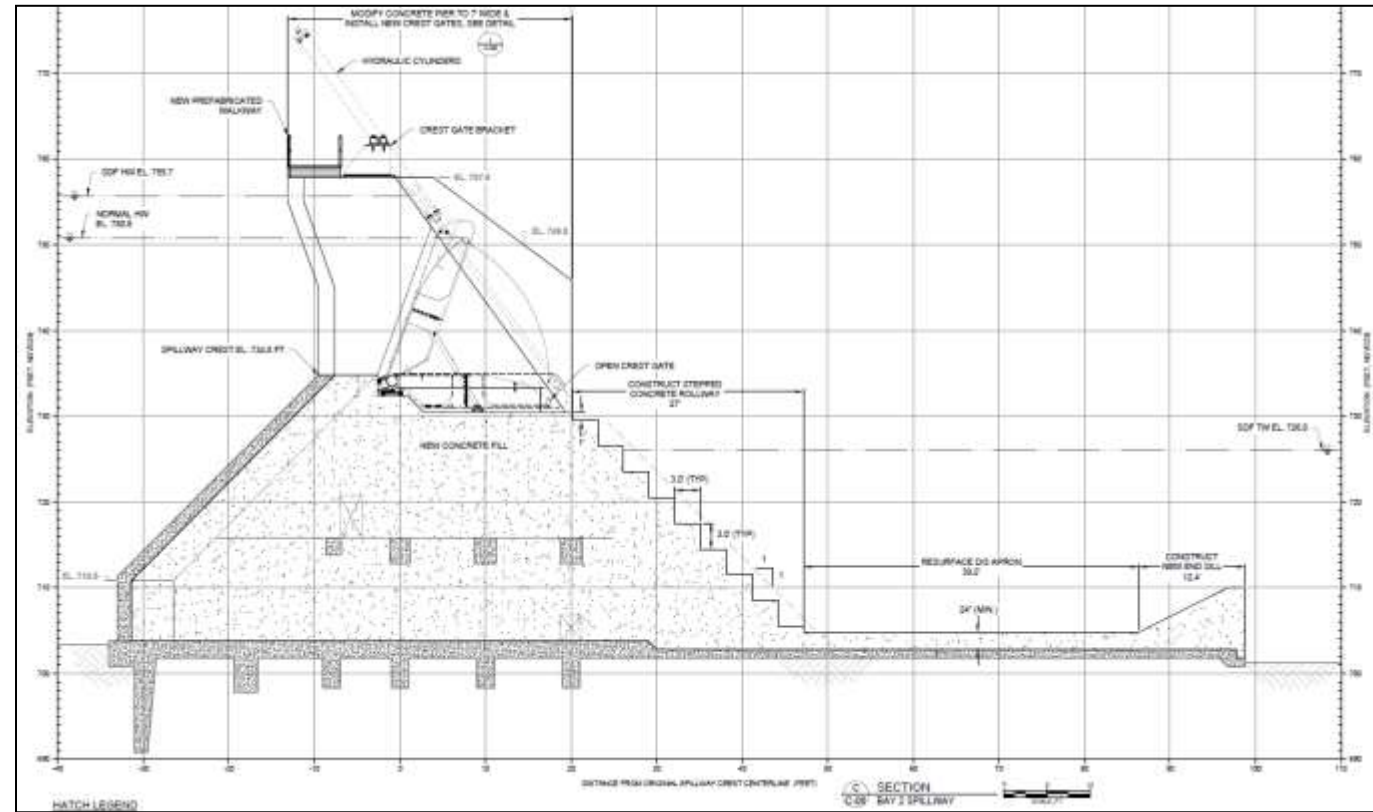
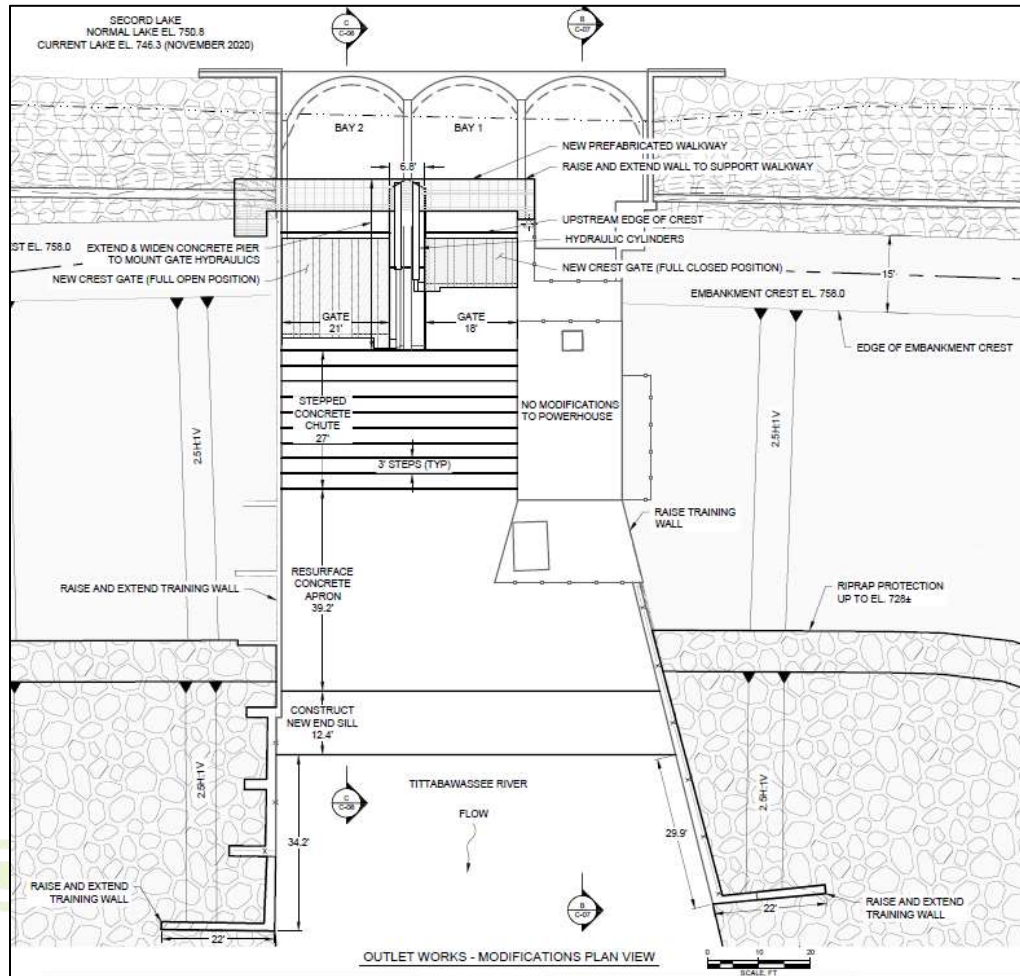
Engineering Requires an “Inflow Design Flood” (IDF)

- ❑ **The FERC flood requirements were prescriptive and based on rain studies from 1993.** With the recent 2017 and 2020 rains, FLTF is redoing flood studies to ensure the dam design is risk-based and considers regional rain and flood studies.
- ❑ **Spillway capacity is based on an Inflow Design Flood that requires these steps:**
 1. Site-specific Regional Probable Maximum Precipitation (PMP) studies which are underway. The PMP study will inform flood studies that are in final development.
 2. Inundation mapping for a range of frequency of flows from the 100-year flood to the Probable Maximum Flood (PMP)
 3. Identify potential failure modes for each dam over the range of flood flows
 4. Quantify the Consequence of Failure Analysis for each failure mode flow
- ❑ **The IDF is established by applying risk-based decision-making criteria to the above**
 - ❑ FLTF process aligns with FEMA guidelines
 - ❑ The Michigan Dam Safety Task Force is recommending the guidelines for Michigan dams

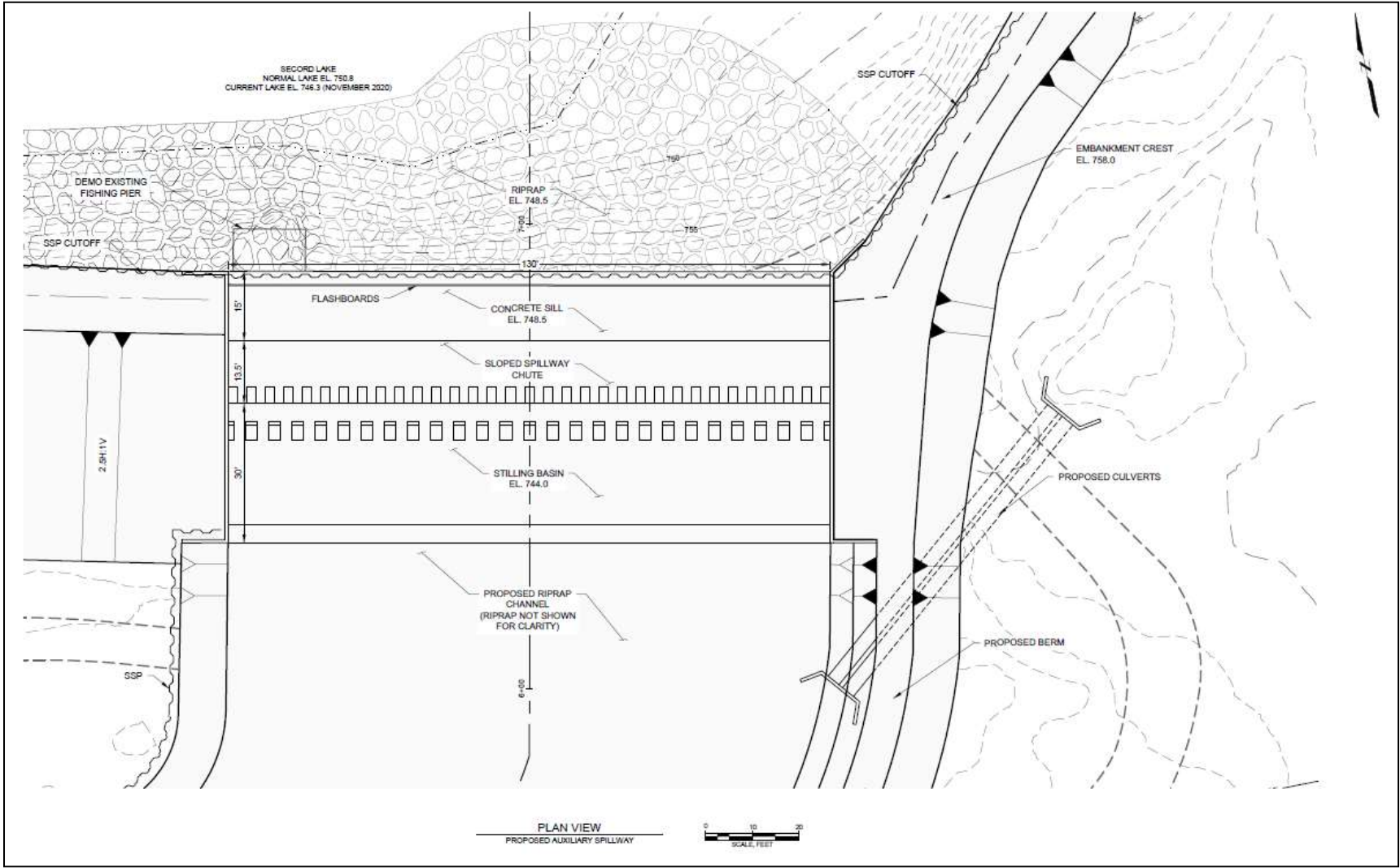
Secord Dam – Proposed Repair Plan View



Proposed Gated Spillway Modifications



Proposed New Auxiliary Spillway



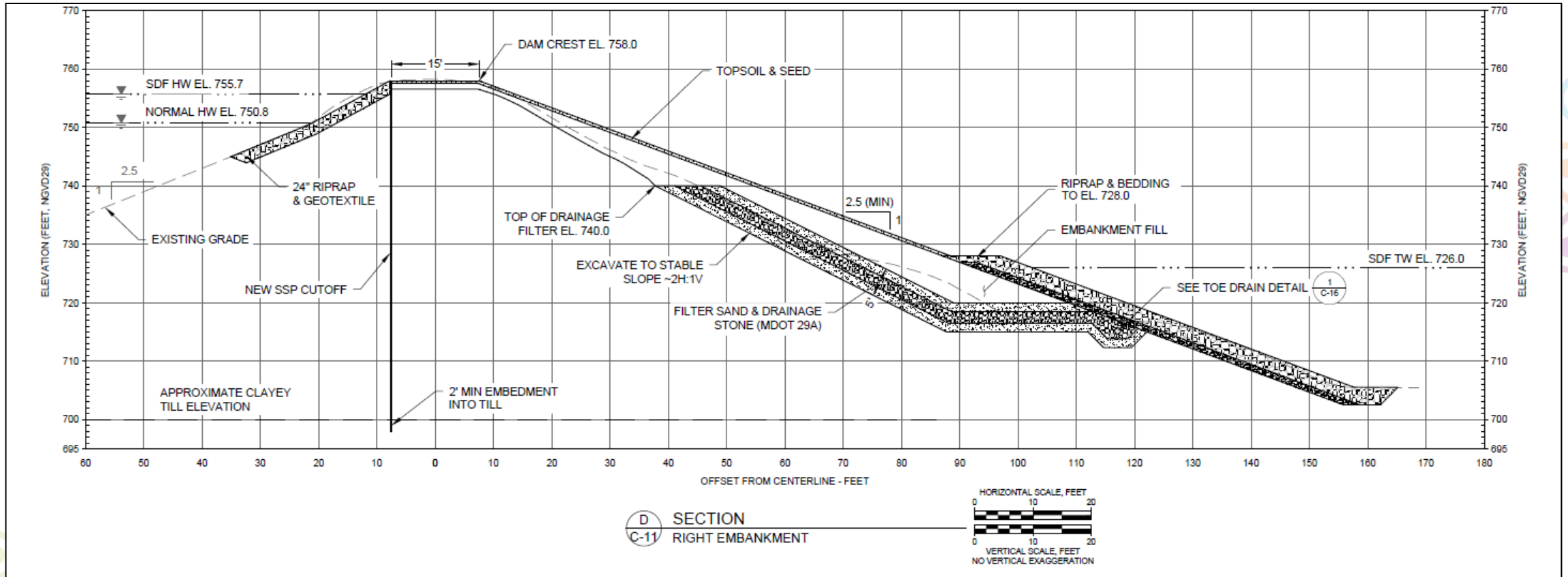
Critical Repair Items

- ❑ **Water Retaining Structures** - The earthen embankments are of similar design to the Edenville embankment, which failed during the May 2020 flood event.
- ❑ Embankment slope are steep and don't meet stability criteria.
- ❑ Embankments also leak excessively. No seepage cutoff and no internal filter zones to protect against seepage-induced internal erosion.
- ❑ Total spillway capacity is significantly lacking.
- ❑ A July 21, 2020 FERC letter identifies concerns with embankment seepage, sloughing and the functionality of the drainage system.



- ***Geotechnical investigations and structural analyses are required to address these concerns.***
- ***Until these issues are addressed, the ability of the embankments to safely withstand another flood event is uncertain – at best.***

Embankment Stabilization



Coffer Dams (Temporary Dams)

Could we use a coffer dam or temporary dam to bring back the water while final repairs are being made?

A coffer dam, which is a temporary structure, is generally used to isolate a portion of the structure to enable repair in the dry. It does not have the functionality or durability of a permanent dam and would be an unjustified use of funding since it does not address the major dam safety issue of insufficient spillway capacity to meet State or Federal dam safety standards.





SCHEDULES AND TIMING

Ron Hansen
Engineer for FLTF, Spicer Group, Inc



Schedule Considerations and Constraints



We all have a duty of care to keep people safe. The Edenville Dam failed. Secord lake cannot come up until the dam is repaired to current standards.



Final construction timeline is dependent on receiving regulatory permits, financing approval, and establishment of the assessment rolls.




Part 307, and other Michigan statutes dictate the process. We are running parallel paths to get to the start of construction.



Engineering Design Phase


Engineering is more than just design and building of a dam. There is significant modeling, environmental impact study and permitting required.



- Flood Study
- PMP and PMF Study
- IDF Finalization
- Surveying and Easements
- Inspections
- Soil Borings
- Embankment Analysis
- Spillway and Gate Analysis
- Contractor Pre-qualifications
- Environmental Analysis
- Wetlands, Streams,
Floodplains, Mussels, Ecosystem,
Recreation

- Final Design Engineering
- Geotechnical
- Structural
- Hydraulics
- Environmental
- Transportation
- Drainage
- Electrical
- Mechanical
- Soil Erosion
- Landscape/Restoration

- EGLE Approval
- USDA Financing Approval
- Local Approval
- Contract Documents
- Specifications
- Bidding
- Computation of Cost
- Notice to Proceed

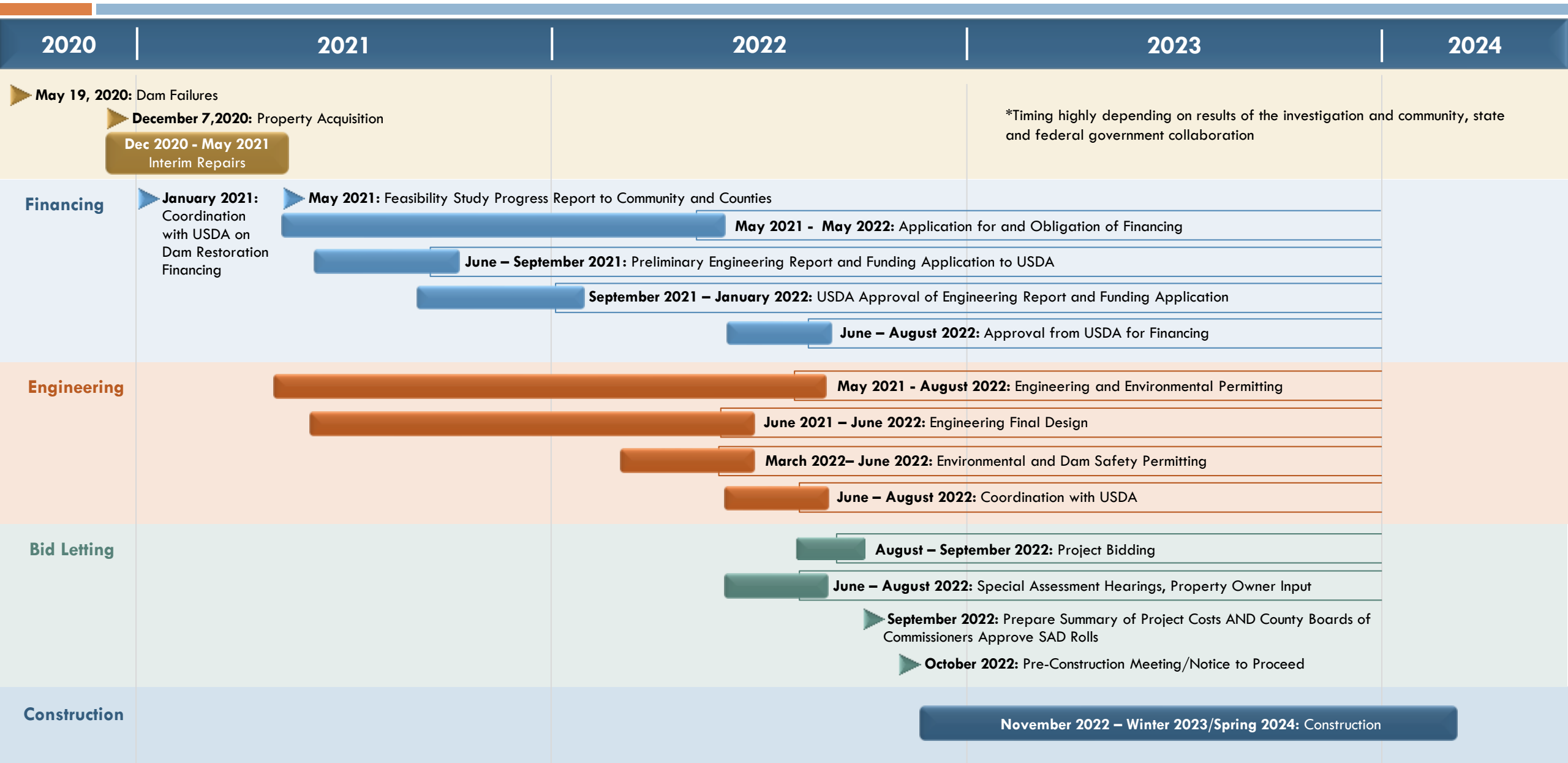


Before Construction May Begin We Need:

- ❑ Independent forensic investigation report
- ❑ Engineering
 - ❑ Preliminary engineering reports
 - ❑ Inflow Design Flood needs to be established
 - ❑ Final design and construction plans
- ❑ Submittal and Approval for USDA funding approval
- ❑ Environmental Studies and EGLE Permitting
- ❑ Bid letting and Computation of costs
- ❑ Special assessment hearings and appeals
- ❑ Approval of special assessment roll by county



Secord Lake Recovery and Restoration Plan* (Expedited Project Timeline)



*Timing highly depending on results of the investigation and community, state and federal government collaboration

Financing

Engineering

Bid Letting

Construction



SUMMARY

Dave Kepler
President, Four Lakes Task Force



Other Considerations

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- **Secord and Smallwood lakes levels to be raised before Sanford and Wixom**
 - ▣ These two dams are getting all the priority and funds needed to restore the lakes
- **FLTF has funds budgeted to the approval of financing for construction**
 - ▣ While new grants may offset assessments, we won't hold up the plans while we wait
- **Special Assessment District is legal and "Part 307" is the legal process for funding**
 - ▣ The costs that were presented in December will not be updated until the May report
 - ▣ The SAD website will be updated this month & webinar in March will provide more detail
- **Hydropower will not reduce the assessments in the next decade**
 - ▣ And would add significant time to bring the lake back up
- **There will be significant effort to manage Secord over the next 3 years**
 - ▣ Operations and Construction Report
 - ▣ Bottomland protection and weed control



Closing Thoughts

- ❑ **Secord Dam needs significant repair.**
 - ❑ Capacity has been a long-standing issue at Secord
 - ❑ It is unfortunate that Boyce and others misled the community last year, and FERC's lack of action until December 9th created a false expectation
- ❑ **We understand the urgency to restore the lake levels for the lake property owners, the local businesses and the county. But ...**
 - ❑ The dam has to be up to standards and in compliance
 - ❑ The repairs, permitting and financing are significant
- ❑ **We are committed to bring back Secord Lake**
 - ❑ It is easier for government agencies; if we just give up
 - ❑ It will take community advocacy to keep this timeline



The Q&A session is now open.
Post your questions in the chat feature.



THANK
YOU

- ❑ See website for future meetings
- ❑ Sign up for weekly updates at bit.ly/FLTF-subs
- ❑ Send questions to info@fourlakestaskforce.org