STOCKTON LAKE WATER SUPPLY STORAGE REALLOCATION FEASIBILITY STUDY AND INTEGRATED ENVIRONMENTAL ASSESSMENT, STOCKTON, MISSOURI



SWMO Water Conference
Date: 28 SEP 2026

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AGENDA

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- Authority
- Recap of timeline / Key activities in 2025 and 2026
- Summary of Stockton Lake Reallocation Recommended Plan
- Summary of Needs Analysis and Plan Formulation
- Reservoir Operations
- Path Forward

LEGISLATIVE AUTHORITY

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Water Supply Act of 1958, Section 301 (a) and (e)



SEC. 301. [43 USC 390b]
Section (a)---AUTHORITY PROVIDING ABILITY TO CONDUCT A REALLOCATION STUDY
Section (e)—OUTLINES LEVEL OF APPROVAL

Section (a) establishes Congressional policy recognizing "the primary responsibilities of the States and local interests in developing water supplies . . . and that the Federal Government should participate and cooperate with States and local interests in developing such water supplies in connection with" operation of multipurpose federal projects.

"(e) Modifications of a reservoir project heretofore authorized, surveyed, planned, or constructed to include storage as provided in subsection (b), which would *seriously affect the purposes for which the project was authorized, surveyed, planned, or constructed, or which would involve major structural or operational changes shall be made only upon the approval of Congress as now provided by law.*"

- Assistant Secretary of the Army for Civil Works (ASA(CW)) has authority to approve/deny reallocation study.

WATER RESOURCES DEVELOPMENT ACT (WRDA) 2024 SUMMARY

SECTION 1322. Stockton Lake, Missouri

(a)(4) The first cost for Storage Space No. 1 shall be the updated cost of storage as of fiscal year 2010.

(a)(7) The Commission may elect to pay for any portion of Storage No. 2, at the same price, on the same schedule, and under the same terms as the payment for Storage Space No. 1…..

(a)(8) All costs associated with implementing the recommendation described in the Memorandum of the Director of Civil Works to raise the level of the multipurpose pool shall be paid at the Federal Expense.

(b) CREDIT TO THE HYDROPOWER PURPOSE

2025-2026 KEY ACTIVITIES

- Jan 2025: Deputy ASA(CW) approves the Stockton Lake Water Supply Storage Reallocation Feasibility Study and Integrated Environmental Assessment
- Mar 2025: COL Niewhoner signs the Finding of No Significant Impact (FONSI)
- Jan 2026 thru Apr 2026: Coordination of Water Supply Agreement, including the WRDA 2024 language
- May 2026: Agreement executed
- June 2026: Initial payment received

WHERE WE'VE BEEN

- **2007—2014:** Waiting for Funding / Demand and Supply Studies conducted
- **2015—2017:** Study initiation / Plan Formulation
- **2018:** Needs Analysis Endorsed by the Water Supply Reallocation Center of Expertise / Dam Safety Evaluation Initiated / Alternatives Milestone Meeting
- **2019:** Presented to the Dam Safety Oversight Group; Dam Safety Classification Rating Changed
- **2020:** Tentatively Selected Plan Meeting / Report sent out for Public Review / Review by other subject matter experts in the Corps and HQUSACE Policy Review / SWPA Requests additional review
- **2021:** Outside review conducted with SWPA in general for methodology used; 2nd Dam Safety Risk Assessment begins with new H&H data
- **2022:** Presented to Dam Safety Oversight Group; Dam Safety Classification Rating Changed / Agency Decision Milestone Meeting / Final Report Package submitted to HQUSACE
- **2023:** Additional comments pertaining to Reservoir Simulation (HEC-ResSim) model were addressed; Final Report Package resubmitted to HQUSACE
- **2024:** Final comments were addressed, and necessary revisions were submitted in March 2024 / Officially transmitted to HQUSACE in June 2024 / Director's Memo signed Sept 2024
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BLUF: RECOMMENDED PLAN

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Alternative 7—Water supply requestor is Southwest Missouri Water	Est. Yield
Reallocate 43,970 AF from Multi-purpose pool / 49,140 AF from flood pool (1.9 ft pool raise) = 93,110	39 MGD

Summary of Effects

- **Dam Safety:** No additional incremental risk due to a pool raise. DSAC 4 rating.
- **Flood Risk Management:** Minor changes do occur for within channel, non-damaging flows based on the 91-year continuous period of analysis with HEC-ResSim.
- **Hydropower:** Less than a 2% change in energy and capacity values to the Federal Osage System (Stockton and Truman). Comments from SWPA were addressed to the extent possible.
- **Recreation:** The lake is projected to spend more time around elevation 867.0 feet NGVD 29 and additional days during the recreation season between 868 and 868.9 feet NGVD 29.
- **Fish and Wildlife:** No significant effect; mitigation will be done to alleviate the projected loss in operability at Missouri Department of Conservation's Aldrich refuge.
- **Cultural Resources:** Programmatic Agreement signed in May 2021. Additional survey work and mitigation to identified sites between the elevations of 868 and 868.9 feet NGVD 29 will be completed when funding is received.
- **Real Estate:** No impact.

No Serious Effects to Authorized Purposes

SUMMARY OF NEEDS ANALYSIS AND PLAN FORMULATION

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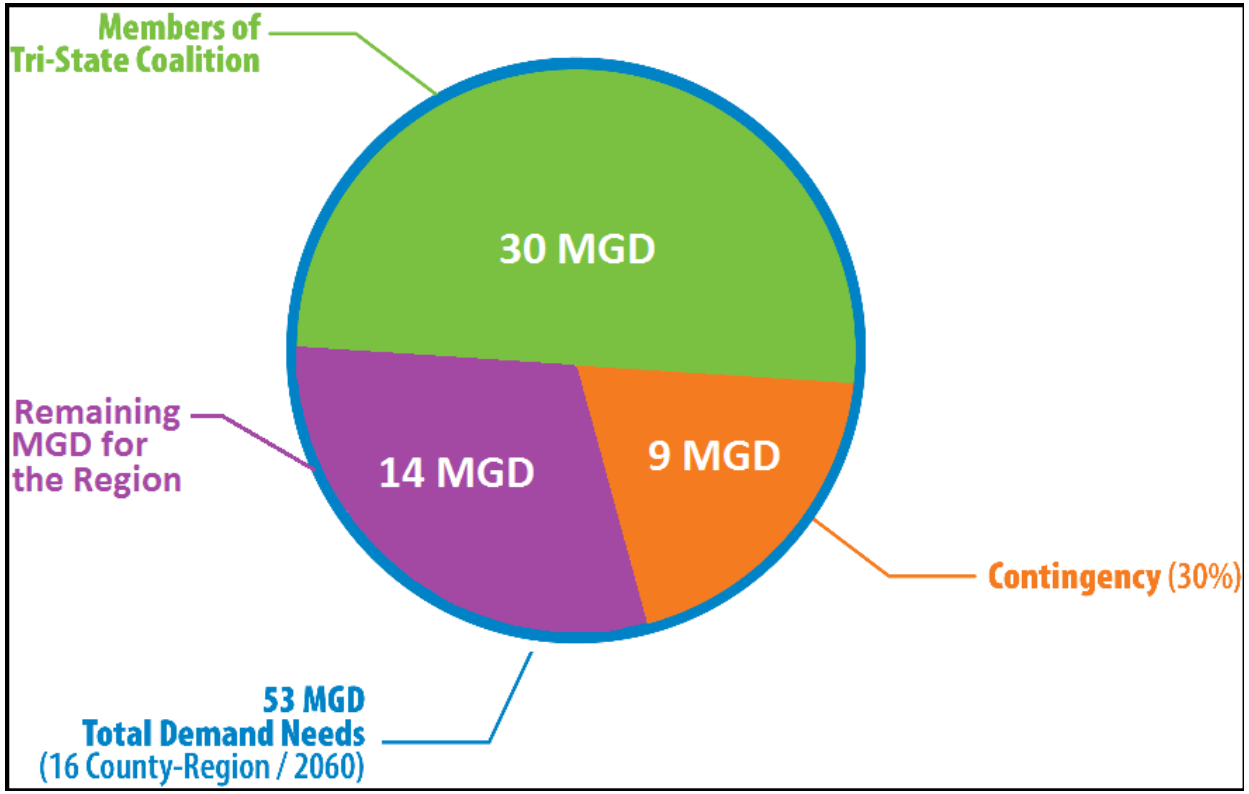
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SUMMARY OF NEEDS TO 2073

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Scenario 5 – Drought condition which combines drought surface water flows and withdrawals with adjusted USGS groundwater models based on withdrawals made in the 2006 drought. Assumes that 32 mgd can be withdrawn from the Ozark Aquifer for Greene County.



- The project delivery team (PDT) (including input from Tri-State and MDNR) evaluated 39 MGD as the target demand:
  - To provide enough water for the membership; and
  - To provide enough water for the membership with some growth contingency
  - Evaluate impact considering the existing 50,000 acre-feet of storage that CU has under contract

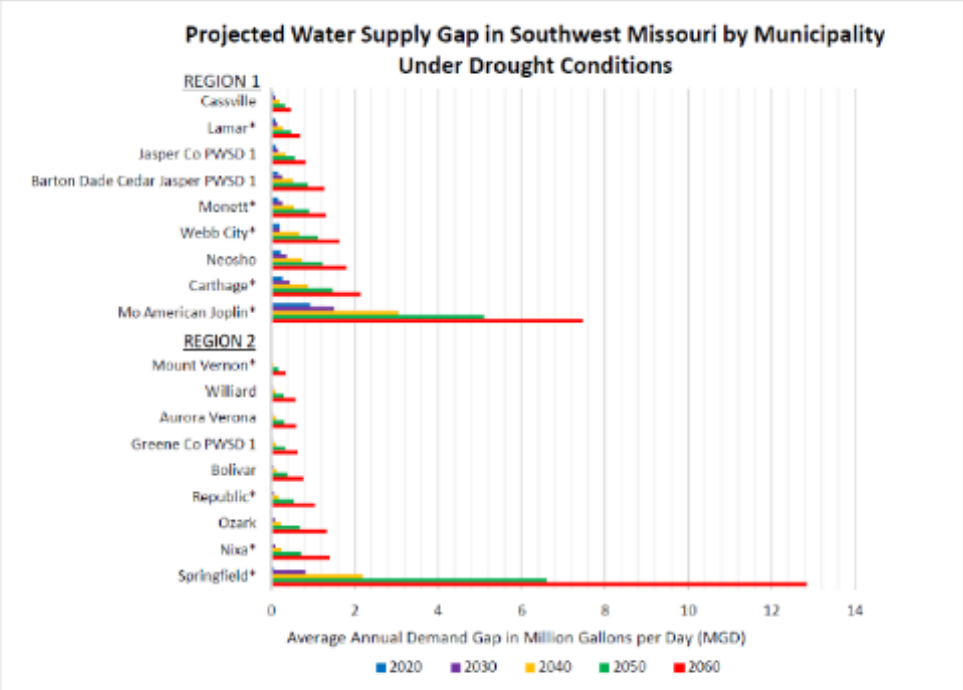
PROBLEMS

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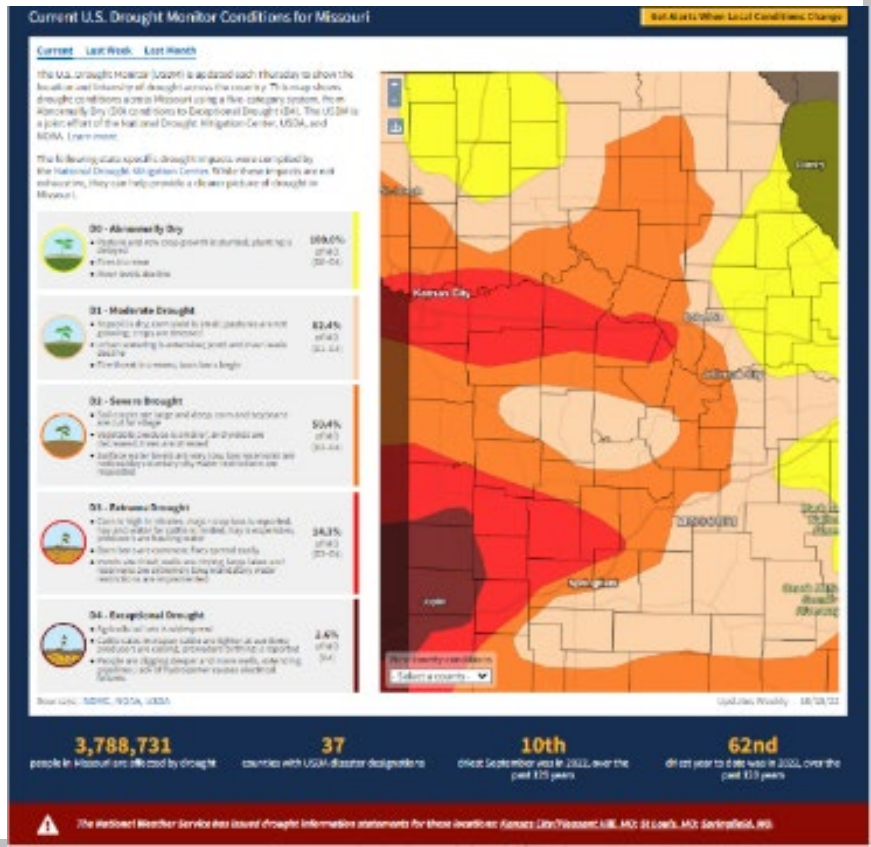
Population growth continues in the Southwest Missouri region and future water demand versus available water supply will leave a gap in availability

- Springfield, Missouri and areas around Springfield are one of the fastest growing areas of Missouri
- Joplin, Missouri is the other major population center with needs



*Current Member of the Tri-State Water Coalition
[1]Source: Southwest Missouri Water Resources Study, Phase I and Phase II Reports, results as of August 2017, CDM Smith
[2]Region 3: Assuming Branson's supply from Lake Taneycomo continues, there is no gap. If this supply is unavailable, a gap of 0.5 million gallons per day (mgd) would be experienced in 2020, growing to 9.5 mgd in 2060
[3]Region 4: There is no predicted gap

Snapshot of communities in 2018 and the projected gap in 10-year increments; the regional coalition needs to plan now and have the infrastructure in place before the next major drought occurs.



https://www.drought.gov/states/missouri

PROJECT PURPOSE / OBJECTIVES

OBJECTIVES:

- Reduce, to the extent practicable, water supply shortages in the Southwest Missouri region forecasted for M&I water users over the 50-year period of analysis to 2073
- Improve the reliability of water supply during drought conditions over the 50-year period of analysis to 2073 for the 16-county area of Southwest Missouri
- Minimize effects on authorized purposes at Stockton Lake and Dam and maintain lake operating levels as close as possible to base condition over a 50-year period of analysis to 2073

*Tri-State Water Resource Coalition is rebranding to Southwest Missouri Water; they represent a 16-county region in southwest Missouri

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INITIAL ARRAY / ALTERNATIVES CARRIED FORWARD

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Array of Alternatives	Screened or Carried Forward
Alternative 1 – Federal No Action Plan(No change in reservoir operations)	**Carried forward**
Alternative 2 – Non-Federal No Action Plan, Construction of New Reservoir	**Screened**
Alternative 3 – Increased Conservation	**Screened**
Alternative 4 – Additional Groundwater Wells	**Screened**
Alternative 5 – Reallocation from Multipurpose Pool @ Stockton	**Carried Forward**
Alternative 6 – Reallocation from Flood Pool @ Stockton	**Screened**
Alternative 7 – Reallocation from the Flood Pool and Multipurpose Pool @ Stockton	**Recommended Plan**
Alternative 8 – Reallocation from the Inactive Pool @ Stockton	**Screened**
Alternative 9 – Water Importation—Importing water to the region from w/in MO or from a neighboring state (KS, OK, or AR)	**Screened**
Alternative 10 – Local River or Stream Withdrawal	**Screened**
Alternative 11 – Pomme de Terre Lake Reallocation	**Screened**
Alternative 12 – Table Rock Lake Reallocation	**Screened**

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RECOMMENDED PLAN

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Alternative	Est. Yield
Alternative 7: Reallocate 43,970 acre-feet (AF) from MP / 49,140 AF from FP (1.9 ft pool raise) = 93,110 AF	39 MGD

Modeling Objective:

- Develop alternatives sufficient to meet a new water supply request.
- Supplying 39 MGD daily demand through the 1950's drought of record defines the storage amount required.
- Evaluate the effects of meeting this new water supply requirement.
  - Non-Federal No Action (Build a new Reservoir to yield 39 MGD)

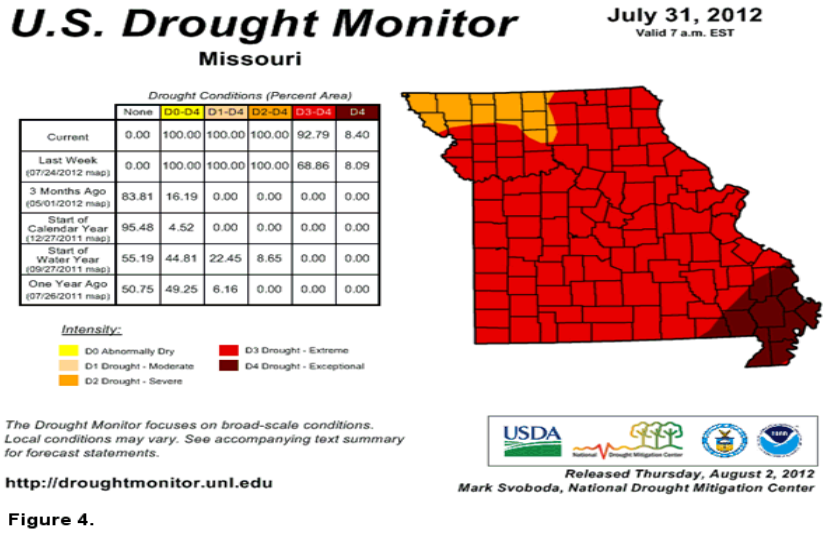


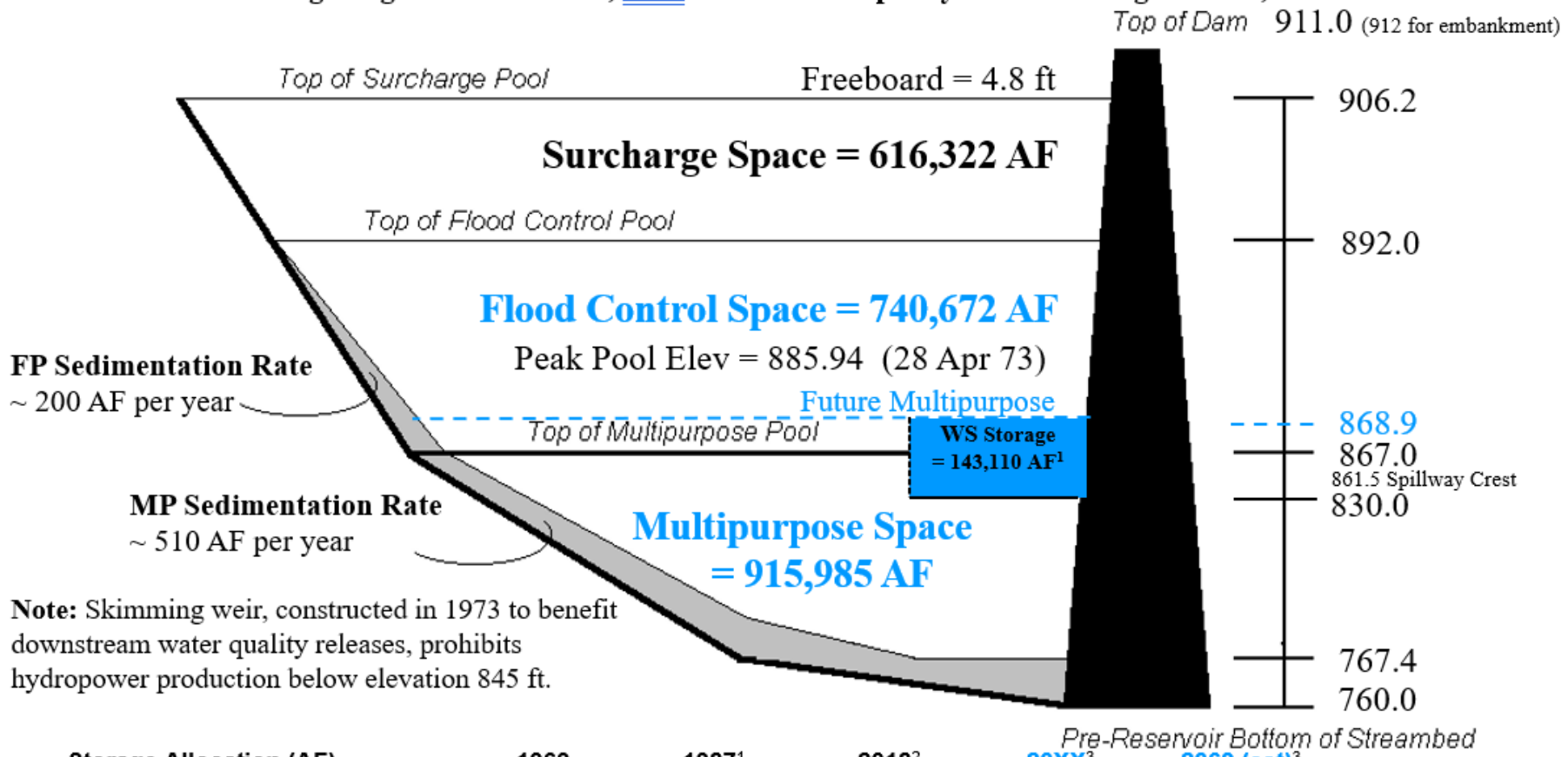
Figure 4.

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Stockton Lake Storage Allocations

Future Conditions with Pool Raise

Storage Began December 12, 1969 Current Capacity Table Use Began Jan 1, 2020



Note: Skimming weir, constructed in 1973 to benefit downstream water quality releases, prohibits hydropower production below elevation 845 ft.

Storage Allocation (AF)	1969	1987[1]	2018[2]	20XX[3]	2069 (est)[3]
Flood Control	**779,550**	**776,066**	**789,814**	**740,672**	**740,672**
Multipurpose	**887,109**	**874,887**	**866,842**	**915,985**	**887,000**
Power (elev 845 – MP)	(451,773)	(448,311)	(445,731)	(494,874)	(484,200)
Storage (elev 830 – 845)	(206,167)	(204,257)	(199,844)	(199,844)	(192,800)
< elev 830, MP Sed Reserve	(229,169)	(222,319)	(221,267)	(221,267)	(210,000)

[1] Water Supply storage can be utilized from elevation 830 ft and above. 50,000 AF of MP space reallocated to water supply in 1993. All contracted to Springfield, all in service as of 2013. Proposed 143,110 AF of Water Supply storage concurrent with 1.9 ft raise in MP to elevation 868.9 ft.

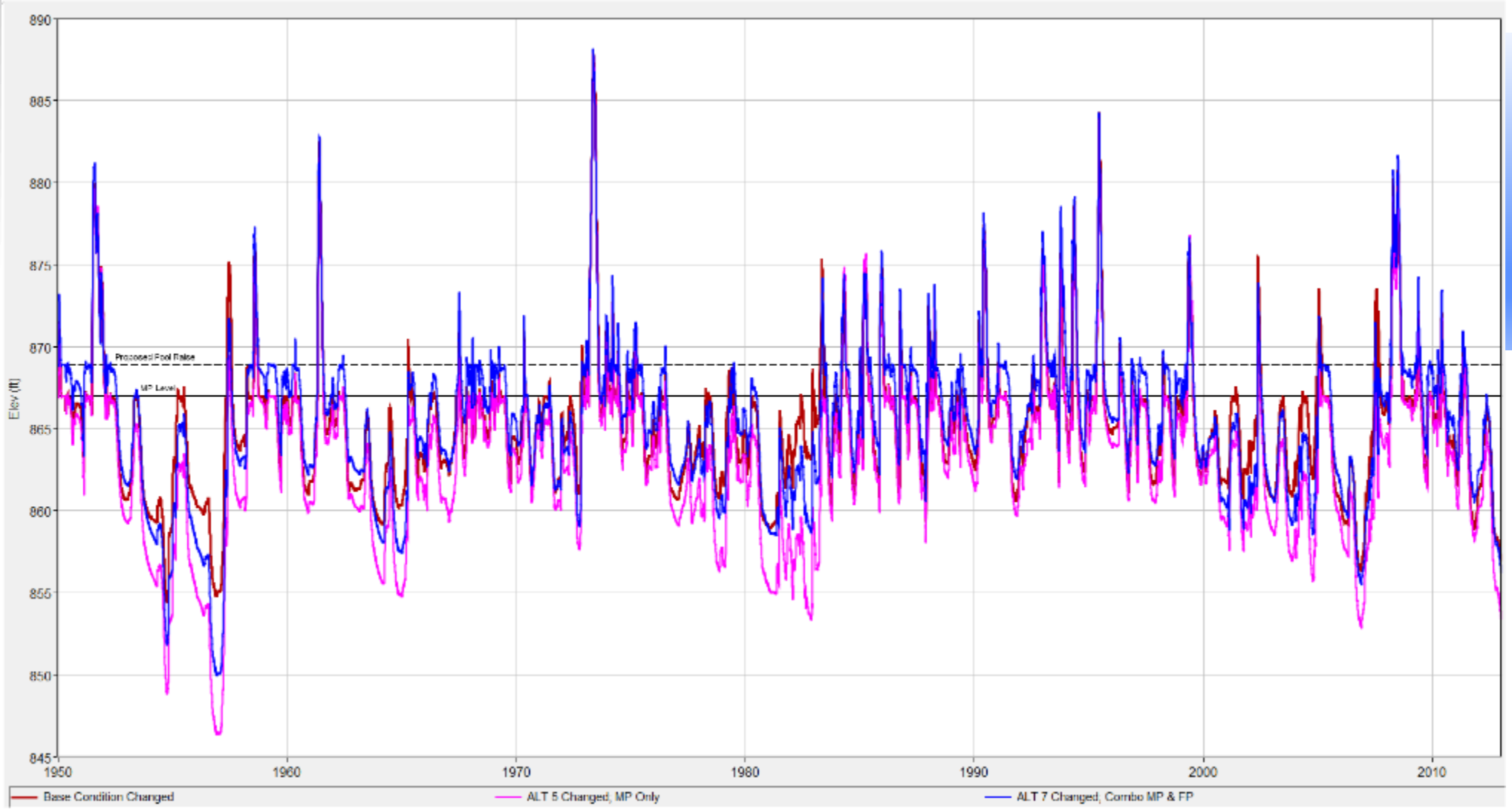
[2] 2009 bathymetry/2018 LiDAR [3] Future MP level Not to scale

*20XX will be updated when the storage is officially reallocated.

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HEC-RESSIM OUTPUT--ALTERNATIVE COMPARISON FOR REPORT AND EVALUATION OF IMPACTS TO AUTHORIZED PURPOSES

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Alternative 7, the Recommended Plan (blue line), minimizes lake draw-down impacts during drought.

Red Line = Base Condition; Pink Line = Alternative 5, Reallocation from MP Pool 88,980; Blue Line = Alternative 7, Reallocation from the FP and MP Pool 93,110 (49,140 AF FP/ 43,970 AF MP)

LAKE ELEVATION COMPARISONS

Comparisons of lake elevations:

- During the Recreation season (Apr-Oct): The lake is expected to spend fewer days at low elevations and 64 MORE days at a mid-normal elevation; 5 more days at a high-normal elevation; and 1 additional day at a high elevation.

- Over the course of an entire year the lake is expected to spend fewer days at lower elevations and 50 MORE days at a mid-normal elevation; 3 more days at a high-normal elevation; and 2 additional days at a high elevation.

Lake Condition	**Elevation (ft)**
High	>=871
Normal	865-870.9
High Normal	*869-870.9*
Mid Normal	*867-868.9*
Low Normal	*865-866.9*
Low	863-864.9
Very Low	<863

ECONOMIC SUMMARY (TEST OF FINANCIAL FEASIBILITY) & COST APPORTIONMENT

COST OF STORAGE AS PRESENTED IN THE REALLOCATION REPORT

Costs (FY2024)	Total Costs	Costs as a Percent of Usable Storage (6.49%)
Joint-use project cost (The cost as if we were constructing the reservoir in FY24)	$696,244,800	$45,164,000
Annualized user payment based on % of usable storage		$2,546,577
Estimated annual O&M (based on actual FY2023 O&M expenditures)	$2,145,000	$140,000
Estimated RR&R (based on actual FY2023 RR&R expenditures)	$0	$0
Total Annual Repayment		**$2,686,600**

Annualized over 30-years at the FY24 Water Supply Interest Rate of 4.125%

Costs updated per WRDA 2024, Sect. 1322

Updated to Oct. 2009, FY10 price level	Total costs	Costs as a Percent of Usable Storage (6.32%)
Joint use project cost (The cost as if we were constructing the reservoir in FY10)	$423,835,200	**$26,808,000**

REVIEW OF RESERVOIR OPERATIONS

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STOCKTON RESERVOIR

MANAGED WITHIN GREATER OSAGE RIVER BASIN

Approximately 15,000 square miles over two states

Reservoirs in Kansas:

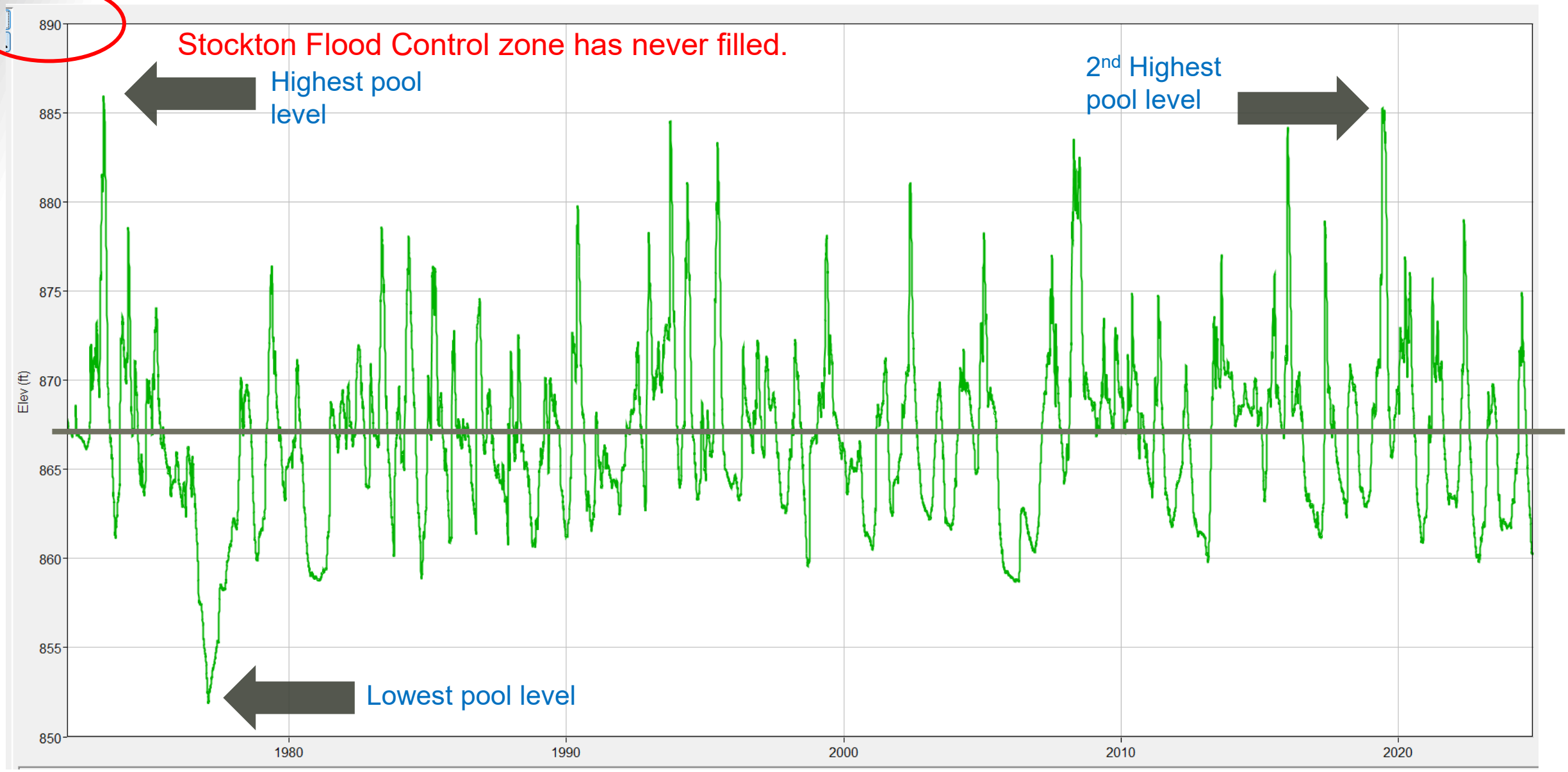
- Melvern (USACE)
- Pomona (USACE)
- Hillsdale (USACE)

Reservoirs in Missouri:

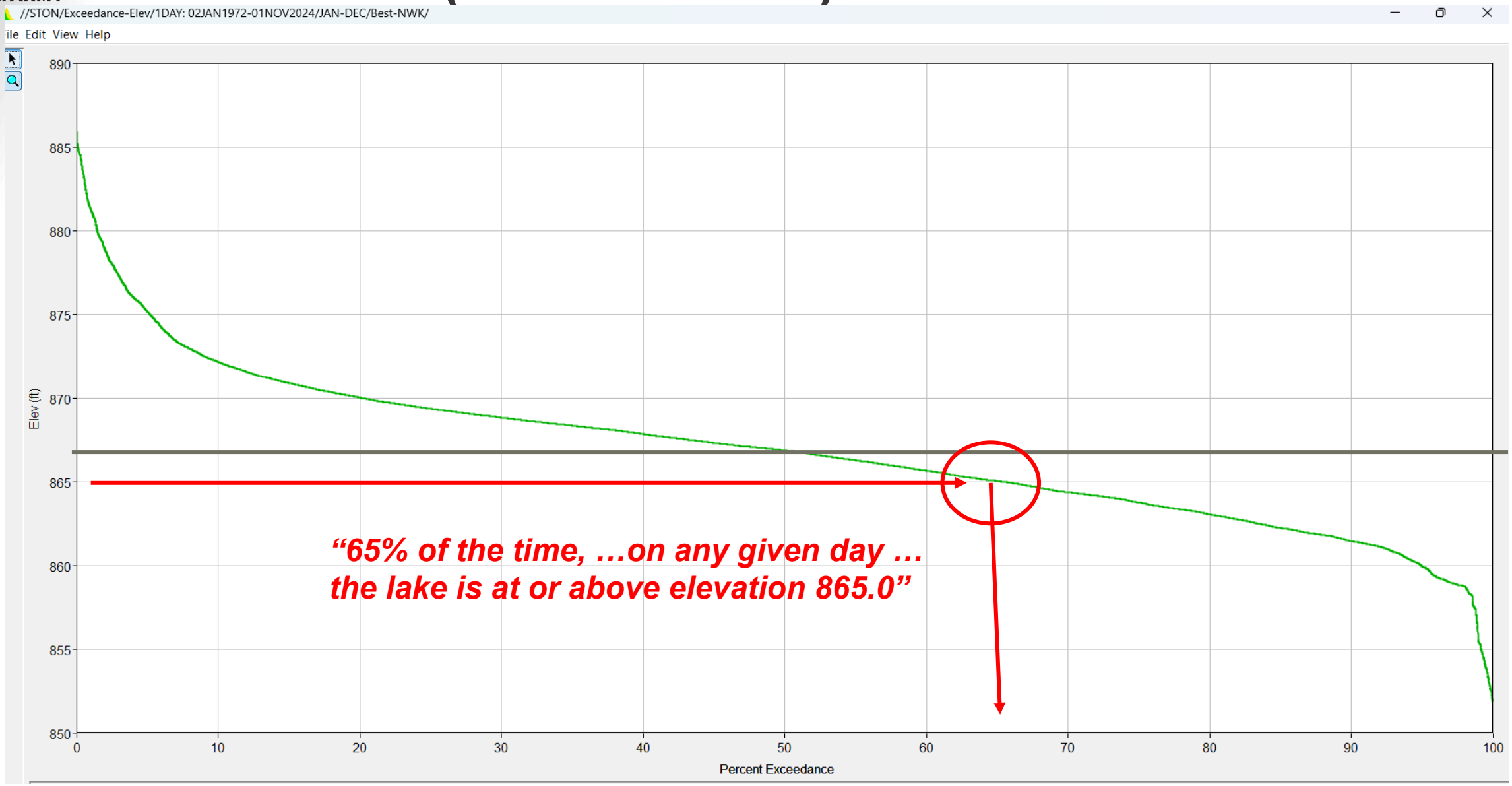
- **Stockton (USACE)**
- Pomme De Terre (USACE)
- Harry S. Truman USACE)
- *Lake of the Ozarks (Ameren UE)*



STOCKTON RESERVOIR (1970 TO 2024)

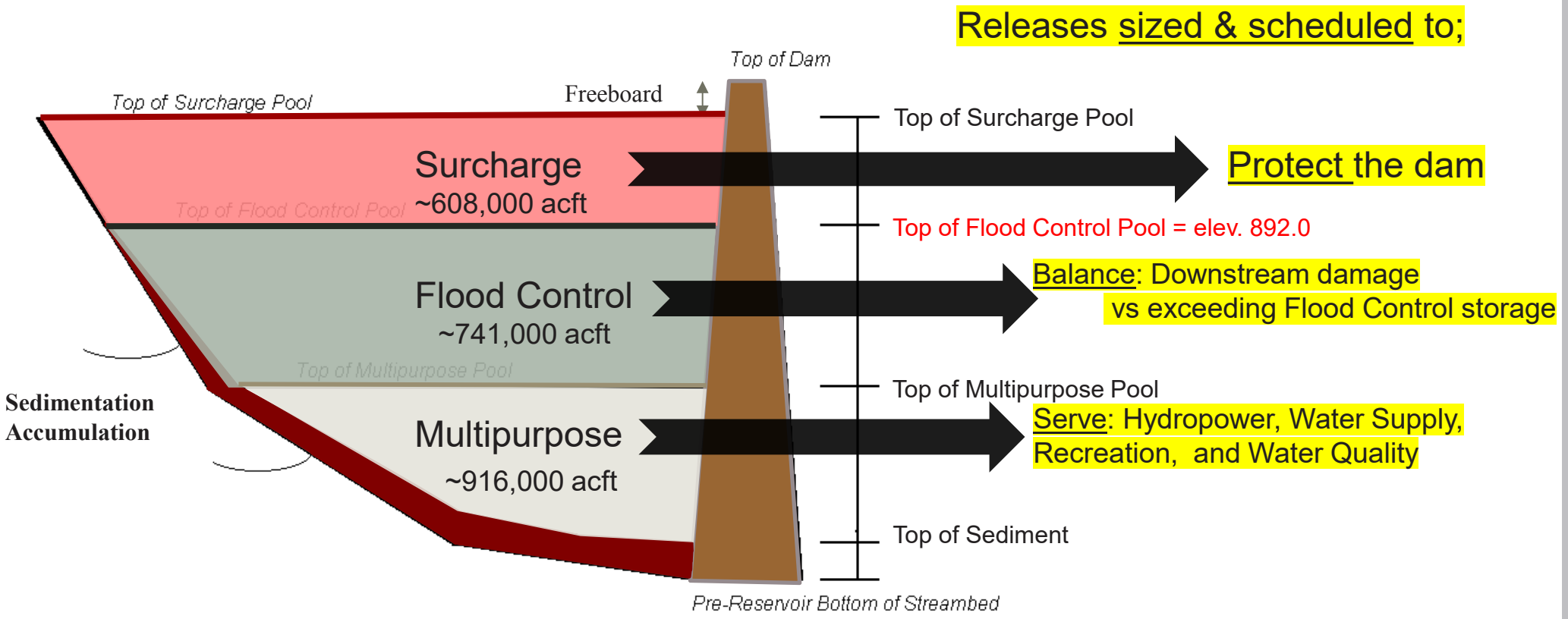


PERCENTAGE OF DAYS AT/ABOVE ELEVATION (1970 TO 2024)



Releases from Stockton; Rules & Limitations

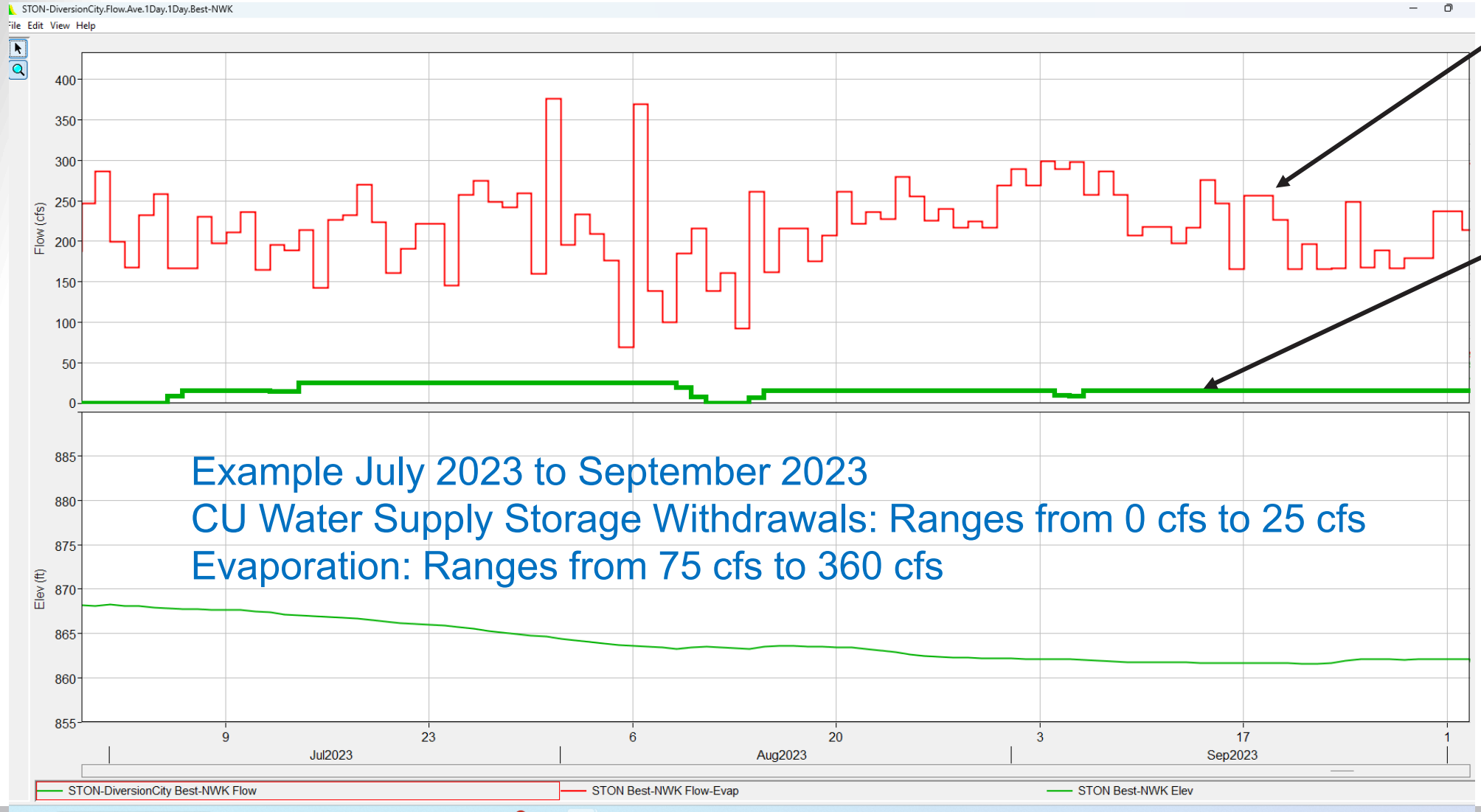
Rules governing releases are DIFFERENT for each of 3 zones



Flood Control Storage– USACE requirement and priority, coordinate with SWPA to generate electricity instead of opening the gates (preferred method for evacuating water)

Multipurpose Storage Used or Released–SWPA generates to meet market demand for electricity, CU withdrawals water, and water quality (low flow “spill” (40 cfs) when not generating)

COMPARING RELEASES: EVAPORATION AND WATER SUPPLY



Evaporation (Red Line)

CU Water Supply Withdrawals (Green Line)

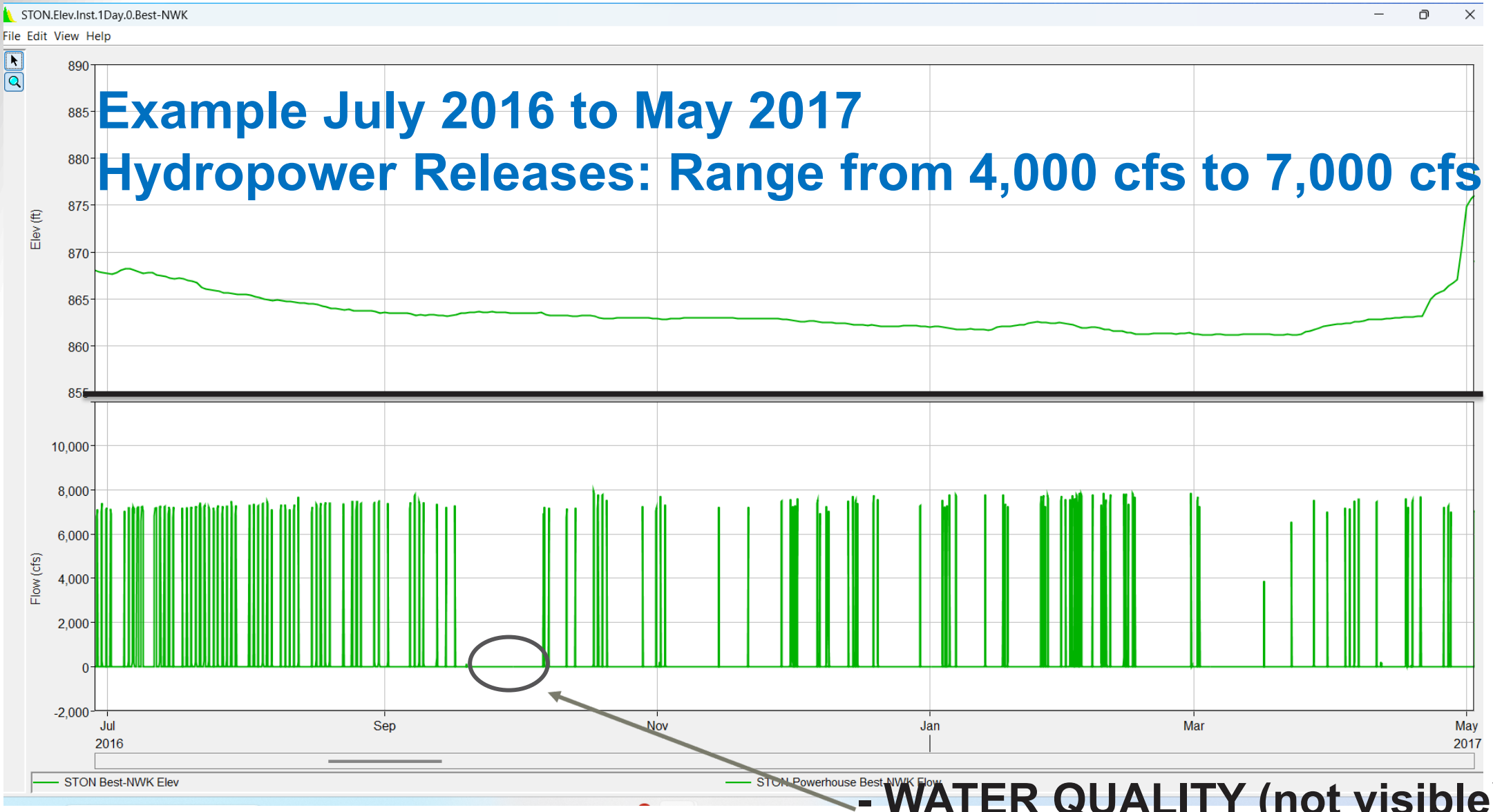
Example July 2023 to September 2023

CU Water Supply Storage Withdrawals: Ranges from 0 cfs to 25 cfs

Evaporation: Ranges from 75 cfs to 360 cfs

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COMPARING RELEASES: HYDROPOWER RELEASES



- WATER QUALITY (not visible) = 40 cfs

PATH FORWARD

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PAST ACTIVITIES / PATH FORWARD

ACTIVITY	ESTIMATED TIMEFRAME
Director's Memo Endorsing the Recommended Plan	23-SEP-2024 (Actual)
Transmitted to the Assistant Secretary of the Army for Civil Works (ASA(CW))	30-SEP -2024
PM Briefs the ASA(CW) Staff	02-OCT-2024
Deputy ASA(CW) Reviews Package and Approves the Water Supply Storage Reallocation Study	17-Jan-2025
NWK Commander signs the FONSI	13-Mar-2025
Drafting Water Supply Storage Agreement	UNDERWAY

Mitigation activities (cultural and wetland) will also need to be completed

Planning Assistance to States "New Start" in the queue: The 2010 Needs Analysis will need to be updated to account for 2020 Census data and updated projections to re-evaluate if there are needs remaining for the 16-county region.

QUESTIONS

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