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# LTO Action 5

## Cameron Koizumi

Long-Term Operation of the Central Valley Project and State Water Project

# Action 5 Description

- **Remove Fall X2**
- Remove Early Implementation of Delta export reduction
- **Revise Entrainment Management**
- Revise Governance
- Simplify Descriptions
- Adaptive Management - NEPA



# Modeling Assumptions for Comparison

- Action 5 included all HRLs and TUCPs
- All comparisons are to Reclamation's Proposed Action in the 2021 LTO with all HRLs and TUCPs
- Otherwise, same assumptions as Reclamation's 2021 LTO Proposed Action
- Unless otherwise stated, comparison are a long-term average across the 100-year study period



# Fall X2



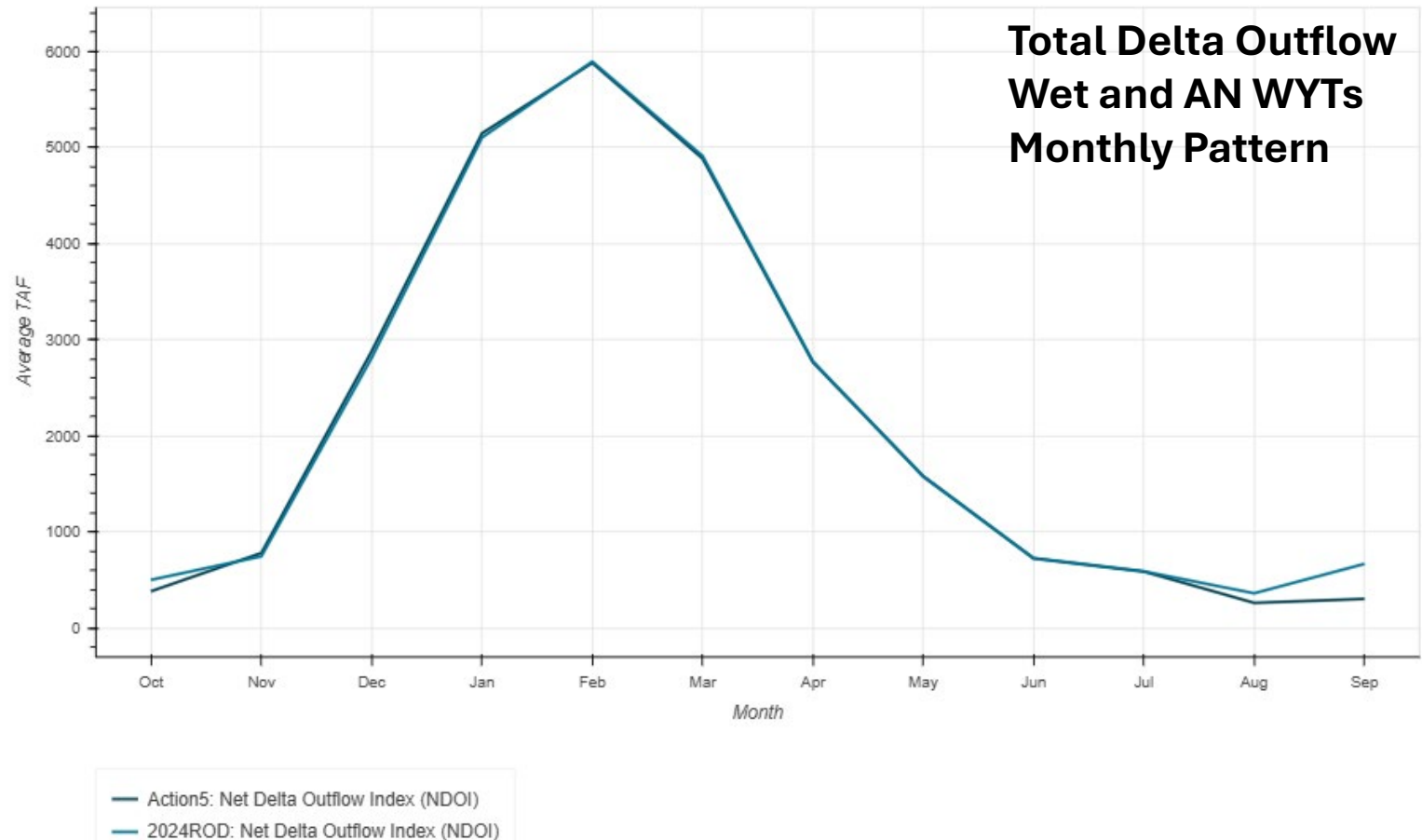
- Originally proposed as an experiment in 2008 FWS Biological Opinion
- 2019 Adjusted to reduce impacts to Shasta cold water pool
- 2024 Proposed Action included Fall X2
- 2024 FWS Biological Opinion:
  - *"Contemporary life cycle modeling supports the hypothesis that high summer outflow can contribute to beneficial effects but does not support the hypothesis that variation in fall outflow does."*
  - *"The Fall X2 action is not anticipated to have observable effects on delta smelt survival"*
- 2025 Rapid Structured Decision-Making for Delta Smelt: Summer-Fall Freshwater Outflow Management



# Effect of Fall X2 Removal

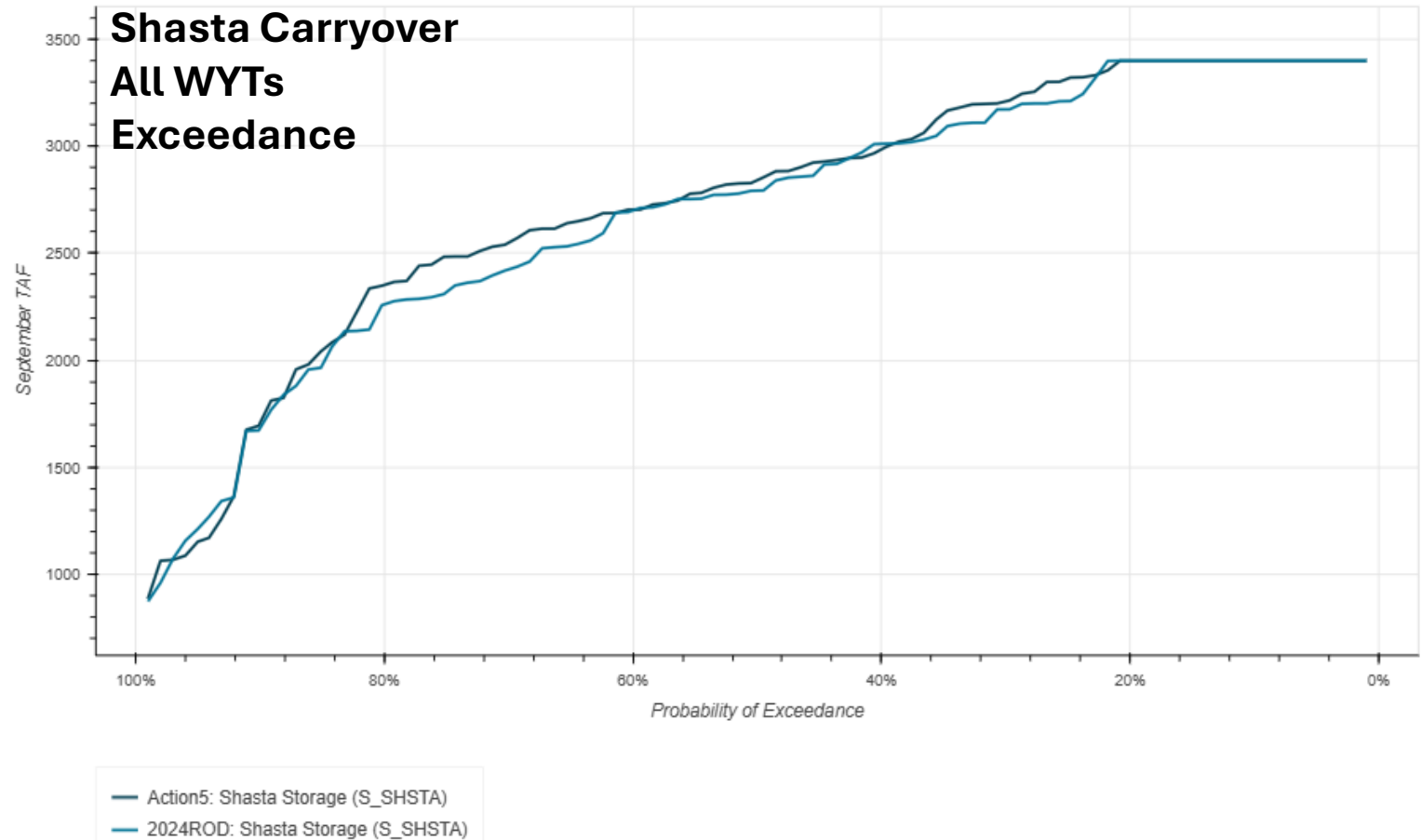
- Fall X2 requires an X2 managed to 80 km in Sep and Oct of Wet and Above Normal (AN) water years
- Direct effect of Fall X2 removal is a reduction in Delta Outflow in Aug – Oct in action years

| Reduction in Delta Outflow (TAF) |     |
|----------------------------------|-----|
| Month                            |     |
| Aug                              | 100 |
| Sep                              | 364 |
| Oct                              | 118 |



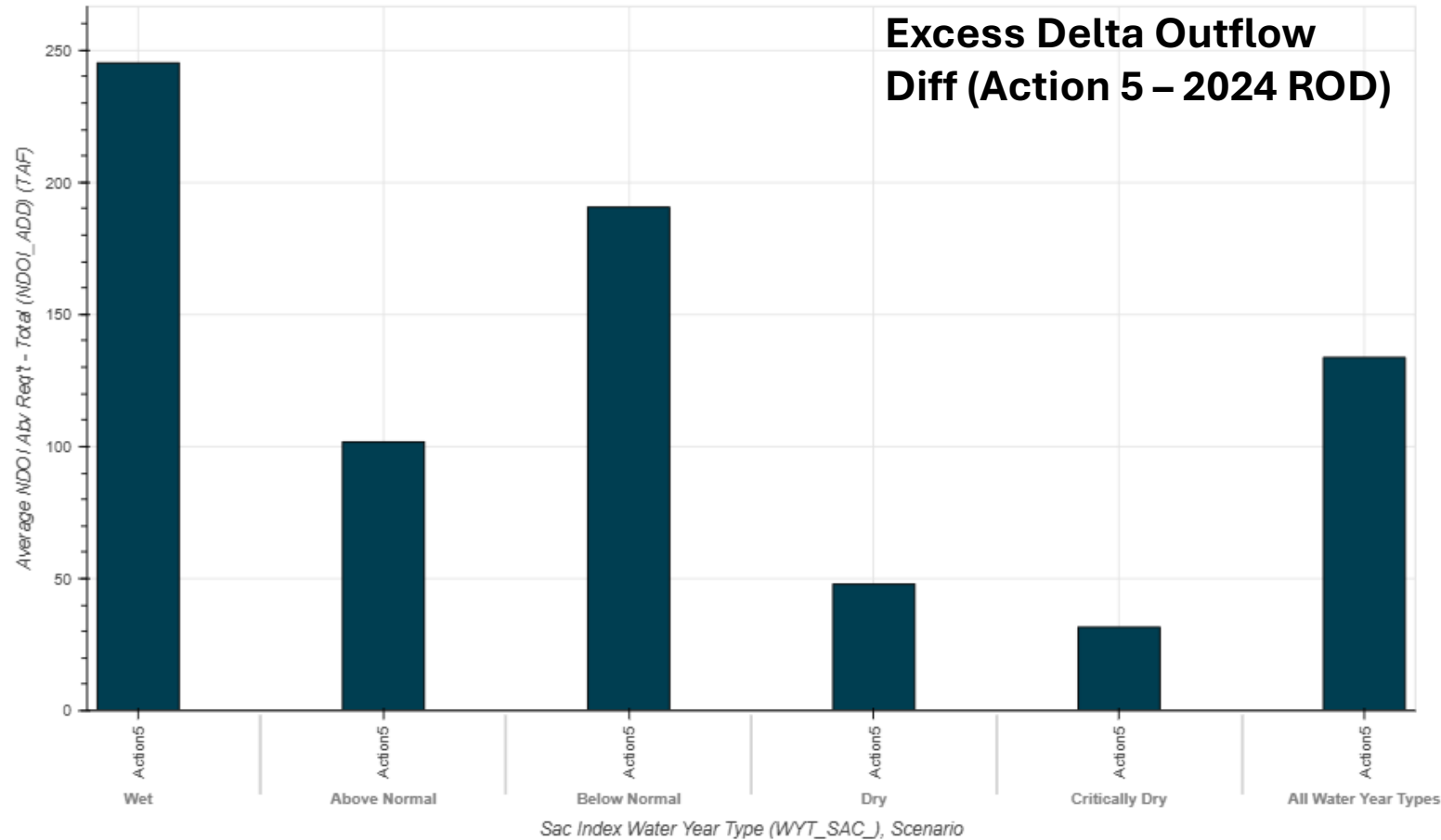
# Secondary Effects - Storage

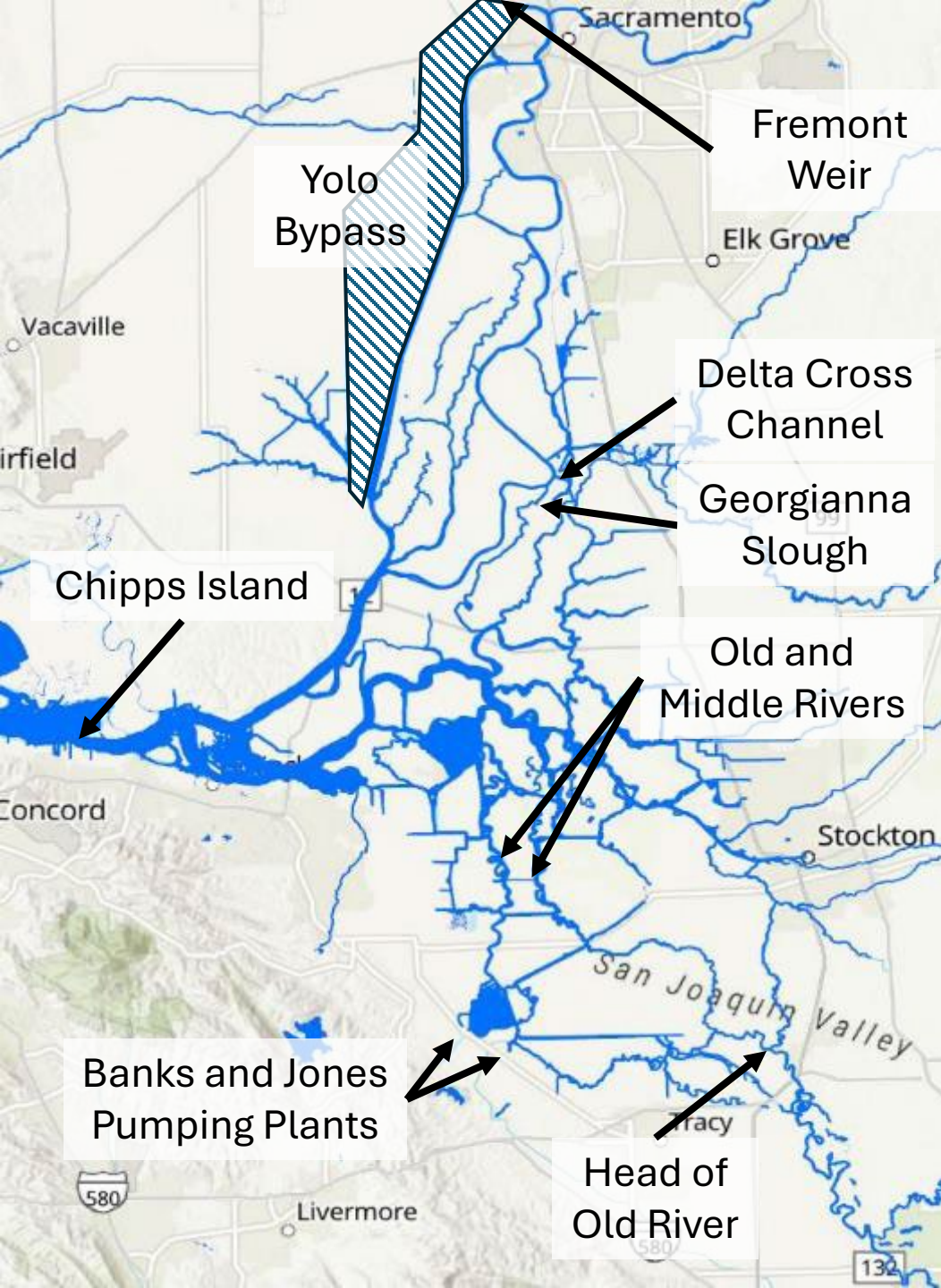
- Less releases for Fall X2 in Wet and AN water years results in increased storage and deliveries
- Increased storage can carry over into the following year
- Benefits toward increased storage disappears quickly during multi-year droughts



# Secondary Effects – Excess Delta Outflow

- Some benefit from Fall X2 removal in storage is later spilled
- Removal of Fall X2 changes what is excess in Wet and AN water years





# Entrainment Management

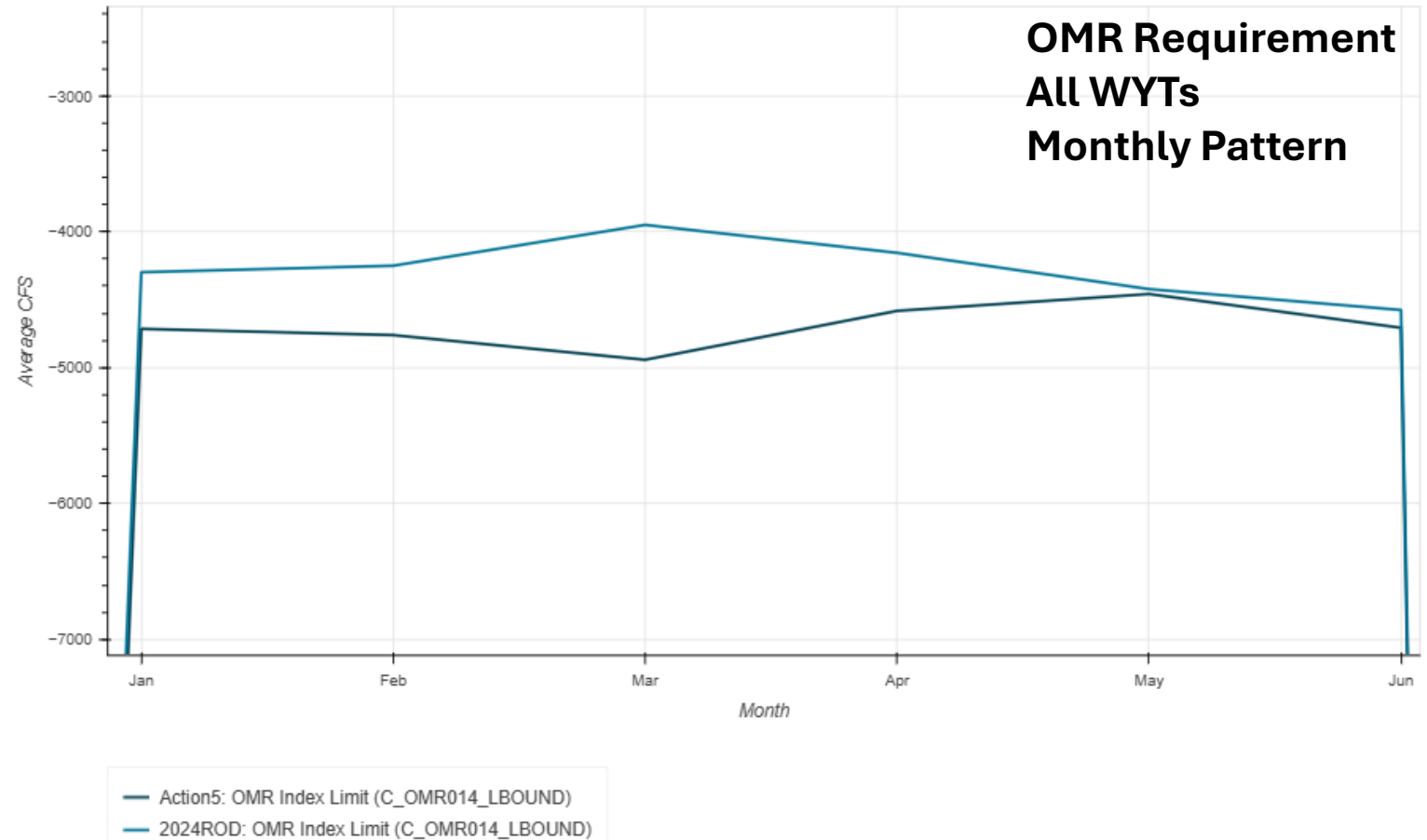
- Smelt Real-Time Actions:
  - Changes to triggers for actions which results in changes to Combined Coverage Tables in CalSim
  - Juvenile Delta Smelt action modeled as an extension to Turbidity Bridge Avoidance through the OMR Management Season
  - High-Flow Off-ramp triggers replaced by Jersey Point Flow (JPF) > 0 CFS
- Salmonid Real-Time Actions:
  - Change to Annual Trajectory and Survival which results in changes to Combined Coverage Tables in CalSim
  - Removal of Weekly Distributed Loss Thresholds
- Stormflex:
  - Removal of the X2 trigger condition
  - Qwest > 1,500 CFS trigger condition replaced with JPF > 1,500 CFS
  - OMR Requirement relaxed to  $OMR \geq -6,500$  cfs



# Effects of Entrainment Management Changes

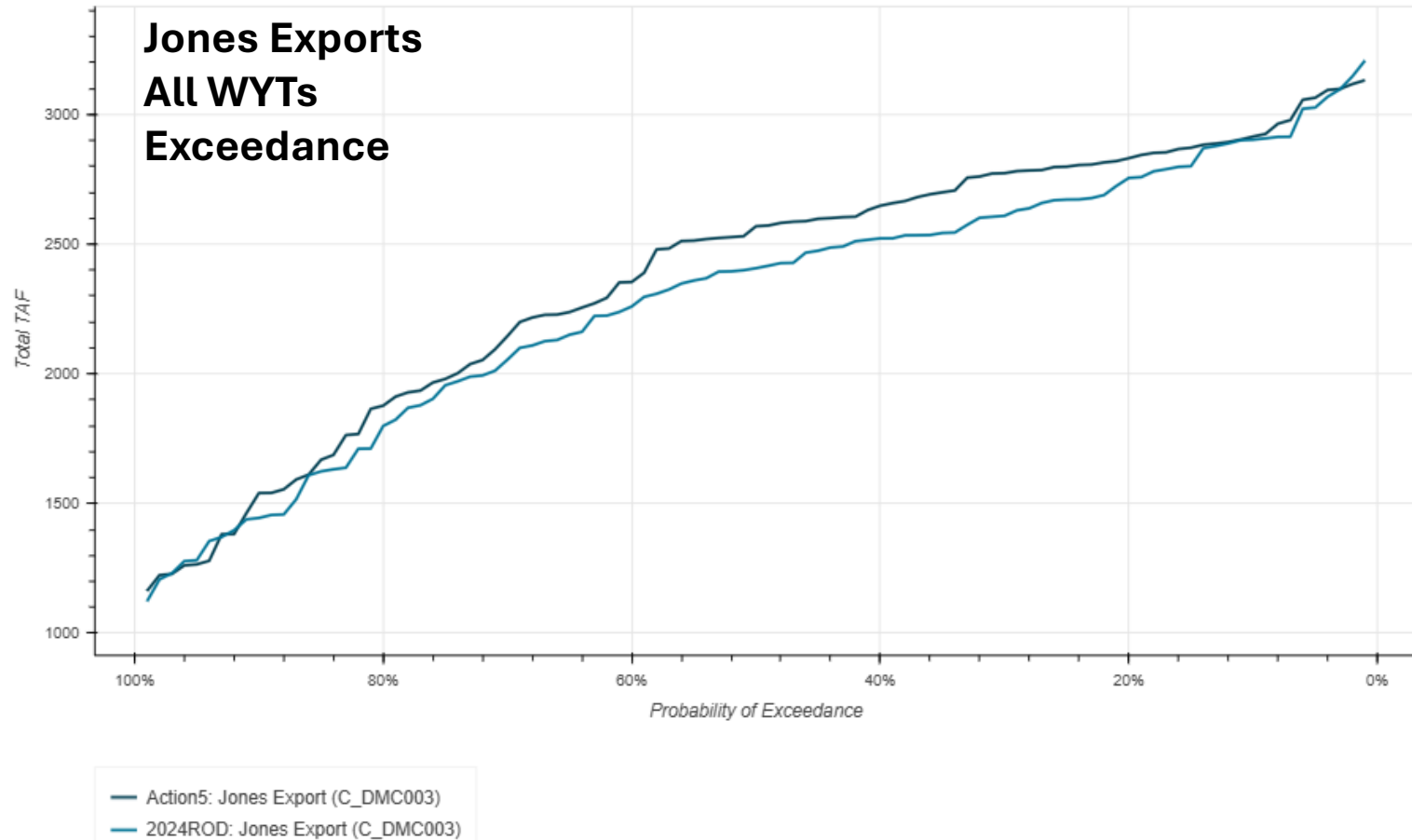
- OMR Requirement relaxed across all months during OMR Managements season

| Month | Reduction in OMR Requirement (CFS) |
|-------|------------------------------------|
| Jan   | 417                                |
| Feb   | 511                                |
| Mar   | 992                                |
| Apr   | 427                                |
| May   | 36                                 |
| Jun   | 131                                |



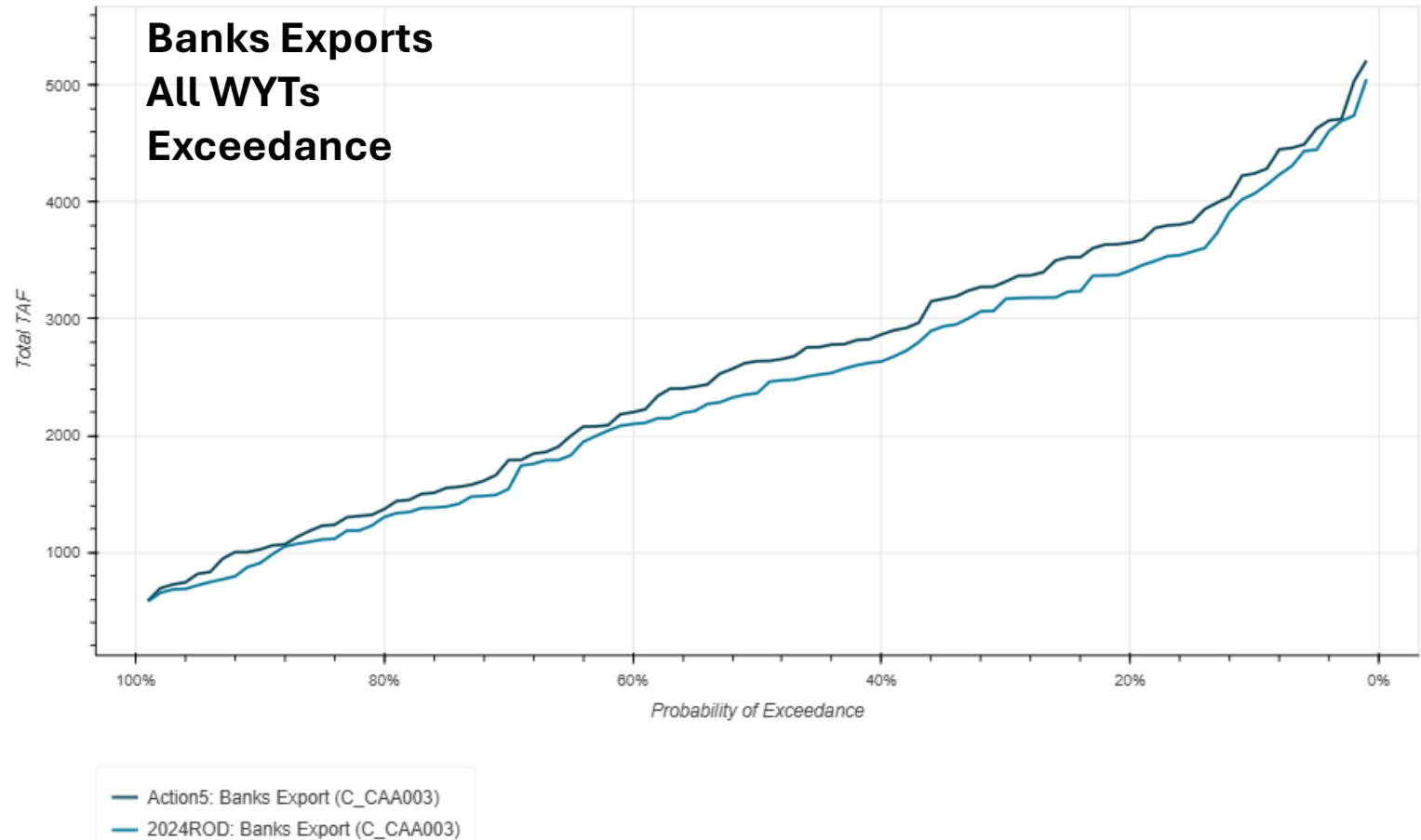
# Secondary Effects – Jones Exports

- Increased export capacity captures more Excess Delta Outflow and takes advantage of benefits from Fall X2 removal
- Jones Exports increase by 85 TAF
- CVP SOD Deliveries increase by 95 TAF



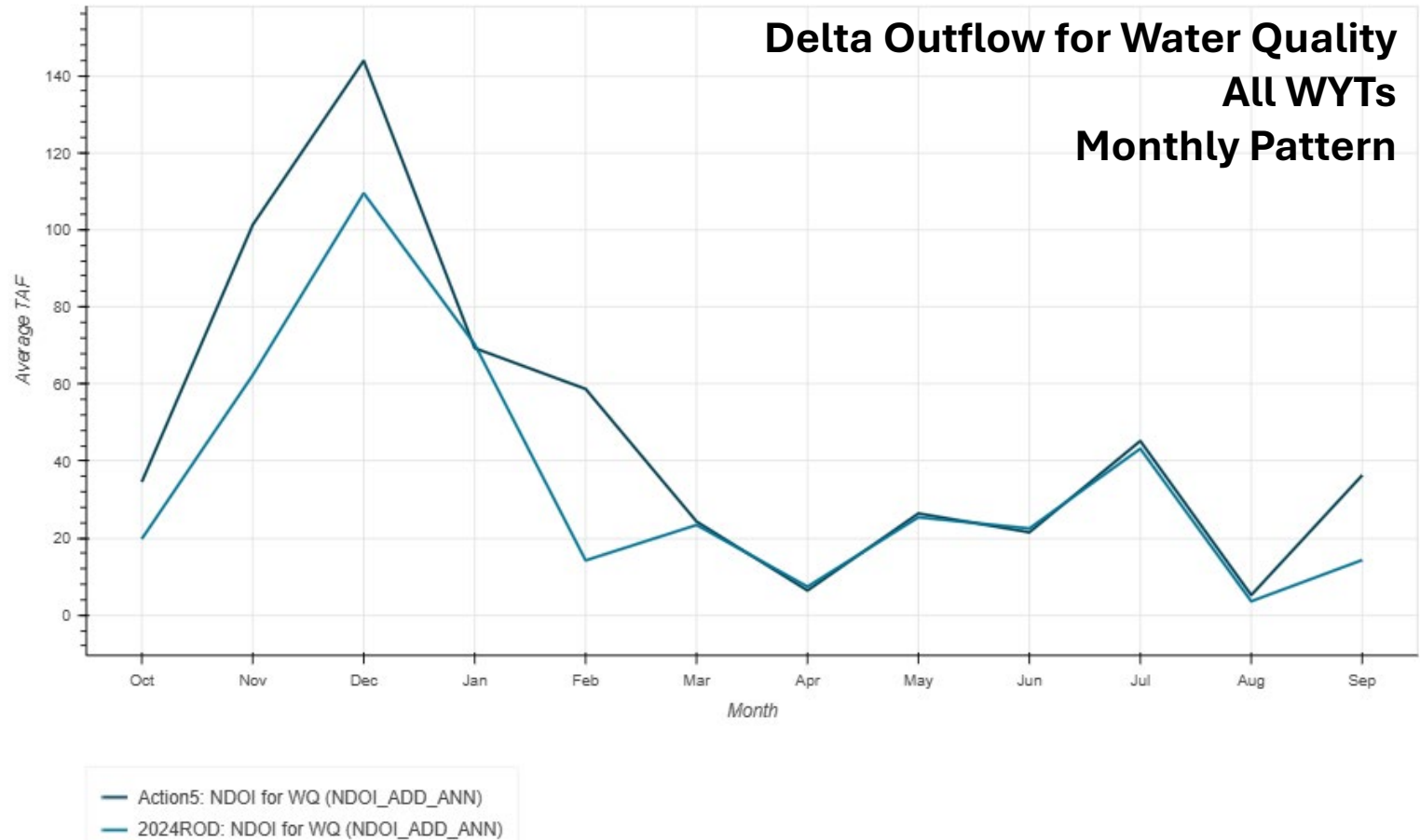
# Secondary Effects – Banks Exports

- Banks has more export capacity than Jones and results in a larger increase to SWP deliveries
- Banks Exports increase by 170 TAF
- SWP Table A Deliveries increase by 159 TAF



# Secondary Effects – Delta Water Quality

- Increased Delta pumping degrades Delta Water Quality
- An additional 156 TAF towards Delta Outflow to meet Delta Water Quality





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