

BDCP Physical Modeling Update

Summary of Delta Hydrodynamic & Water Quality Results

BDCP Steering Committee

June 17, 2010

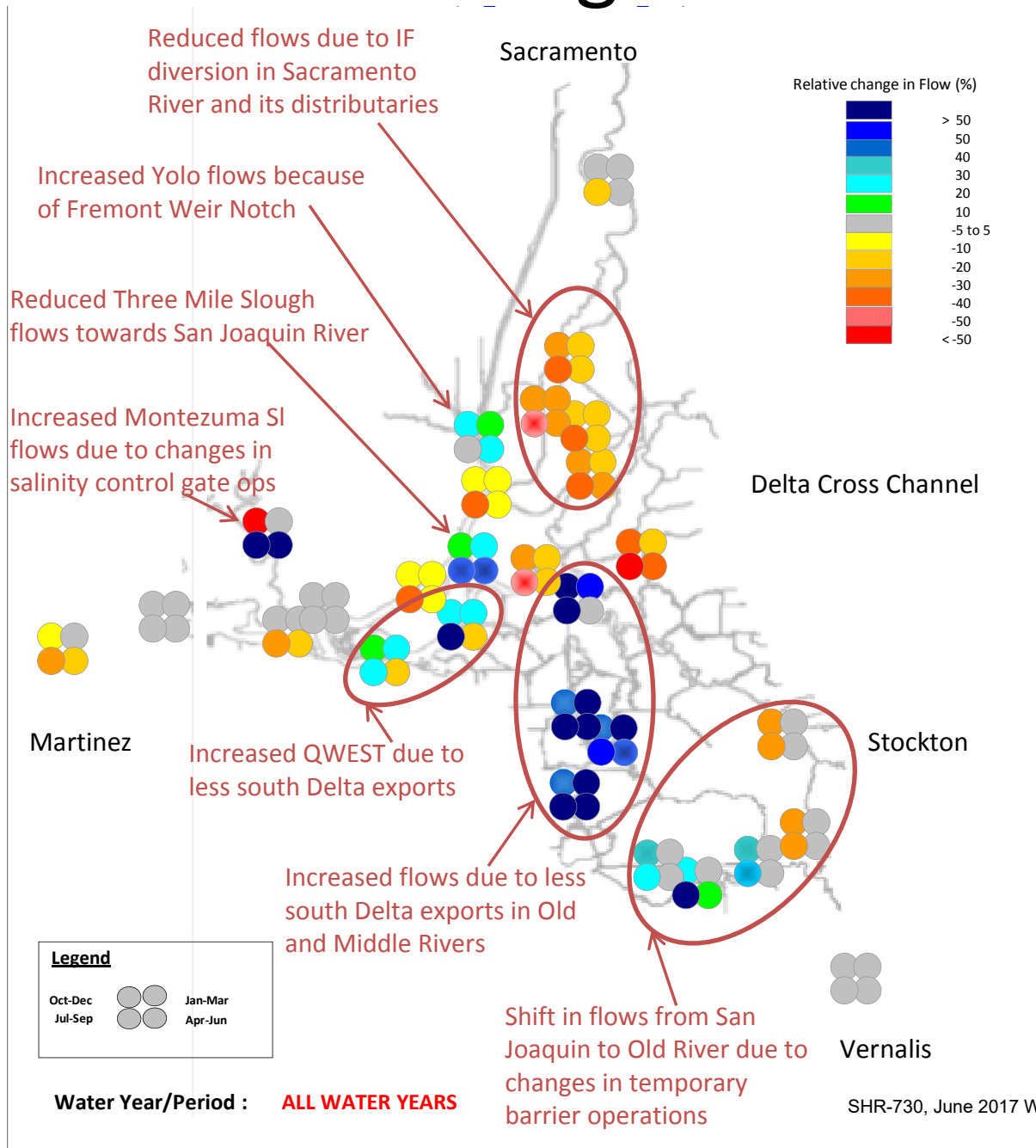
Outline

- Update on physical modeling
- Summary of Delta flow and stage results
- Summary of Delta water quality results
- On-going work and next steps

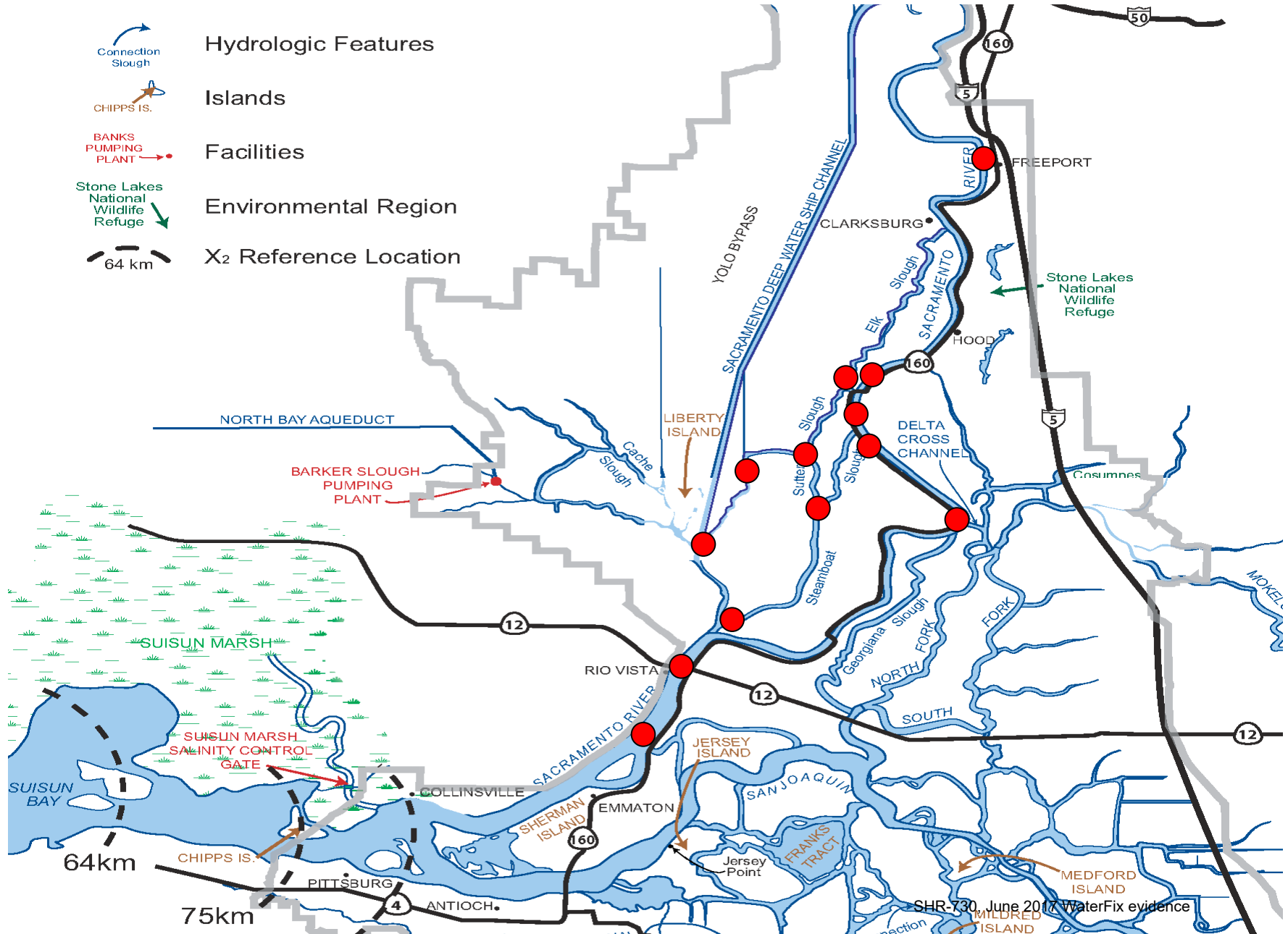
Update on Physical Modeling

- Physical modeling complete to date
 - **VIC:** Climate-driven hydrologic model
 - **UnTRIM:** Sea level rise effects
 - **RMA:** Tidal marsh effects
 - **ANN:** Flow-salinity responses
 - **CALSIM II:** Hydrology & system operations
 - **SRWQM:** Sac R Water Quality Model
 - **DSM2:** Delta hydrodynamics & water quality
 - **DSM2-PTM:** Particle tracking models
- 6 scenarios for CALSIM II, SRWQM, DSM2, and DSM2-PTM models
 1. **NAA:** No Action Alternative with current climate and sea level
 2. **NAA_ELT:** No Action Alternative with 2025 climate and sea level rise
 3. **NAA_LL**T: No Action Alternative with 2060 climate and sea level rise
 4. **PP:** Proposed Project (long-term ops) with current climate, sea level, and restoration
 5. **PP_ELT:** Project with Early Long-Term (2025) climate, sea level rise, and restoration
 6. **PP_LL**T: Project with Early Long-Term (2060) climate, sea level rise, and restoration

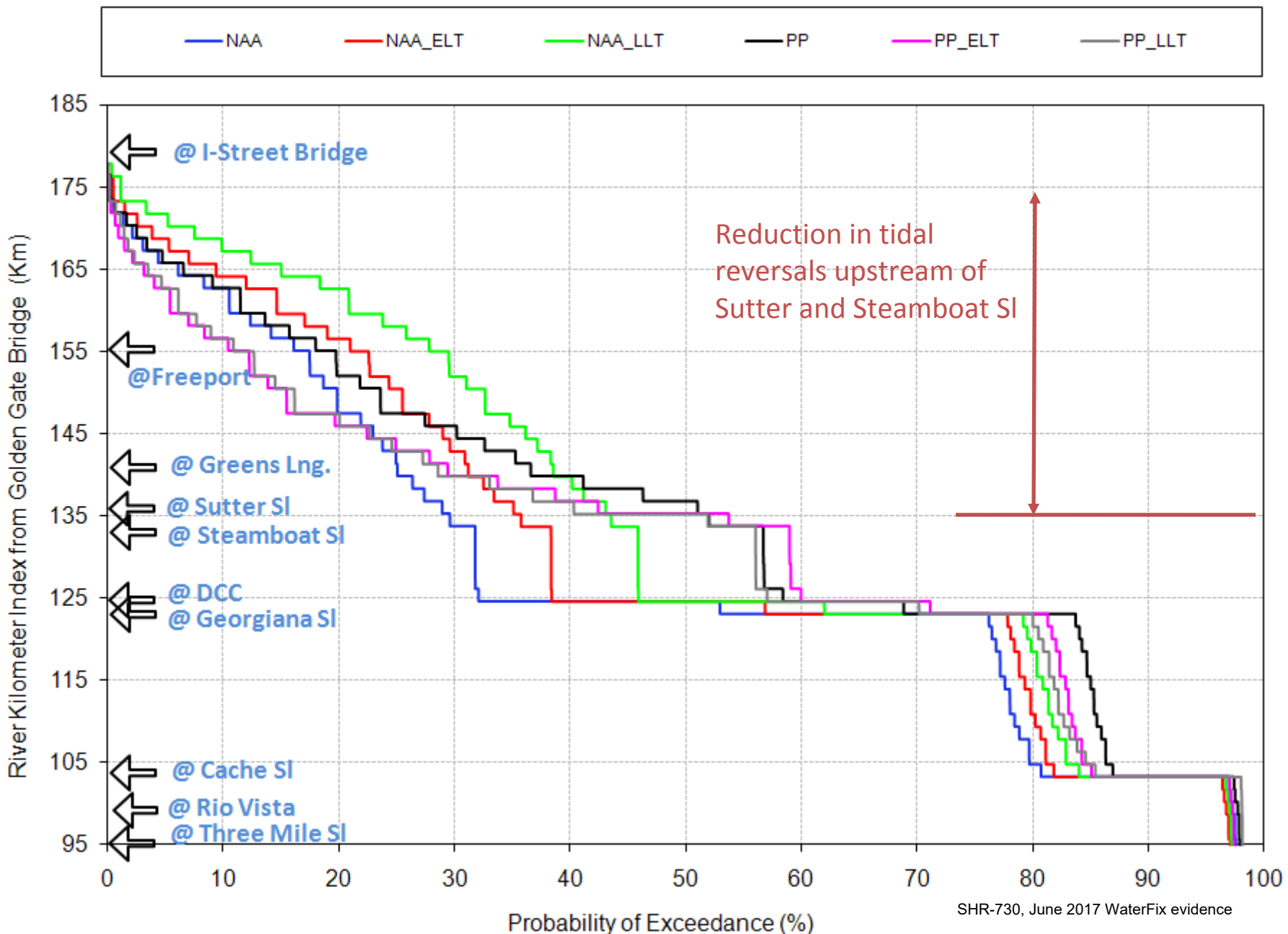
Seasonal Changes in Flow



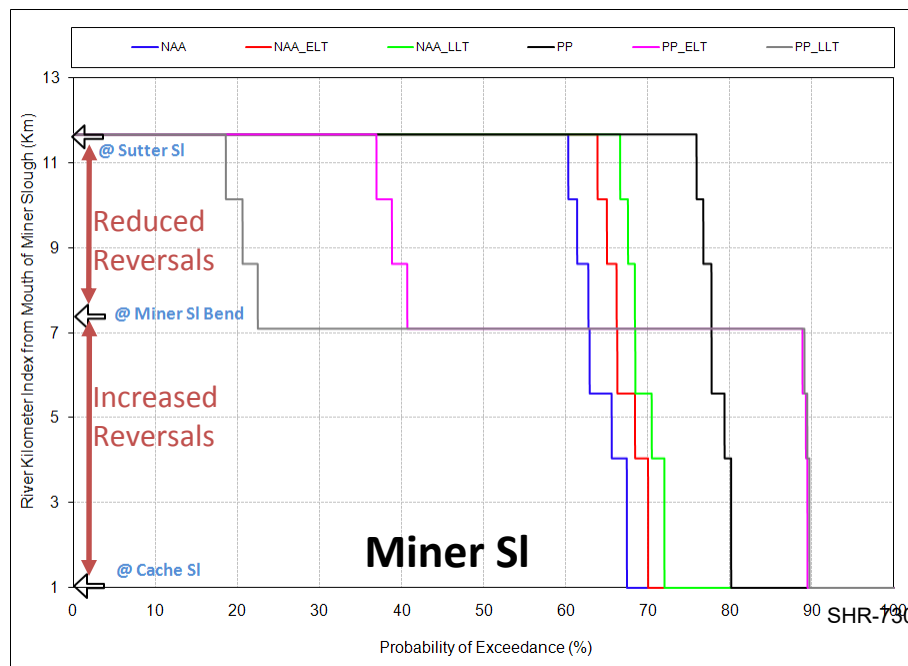
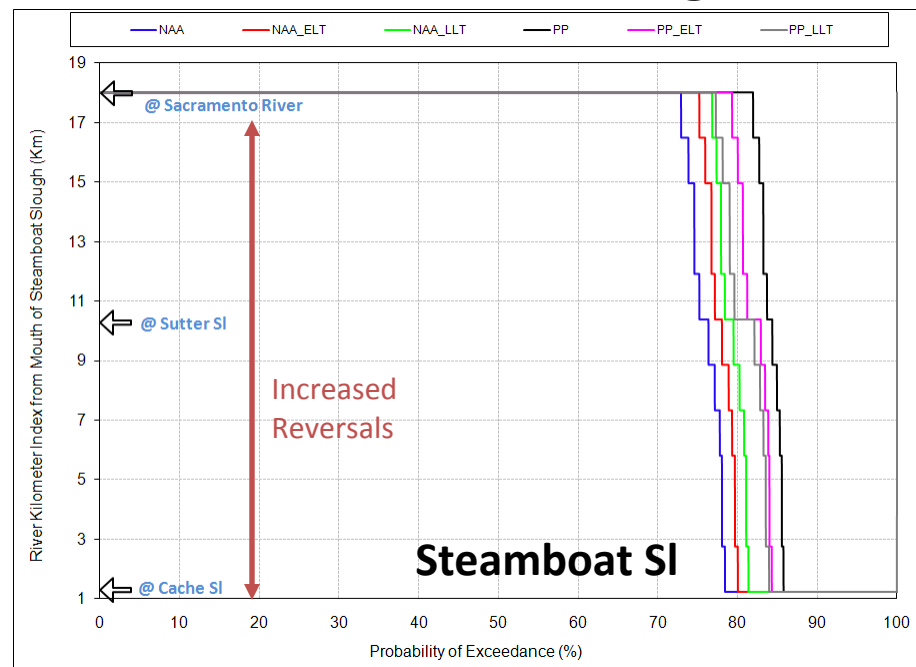
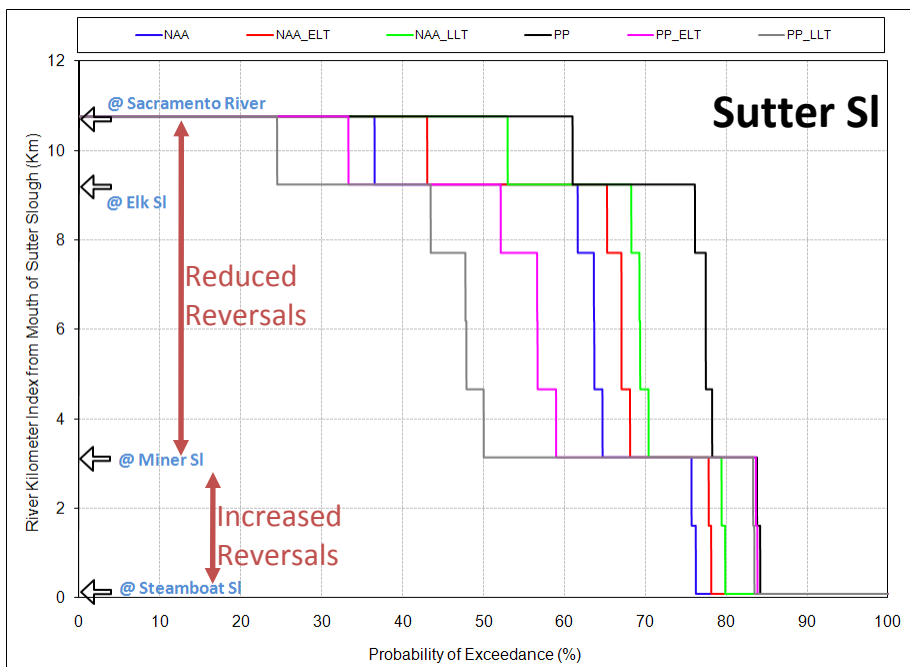
North Delta Locations for Today's Discussion



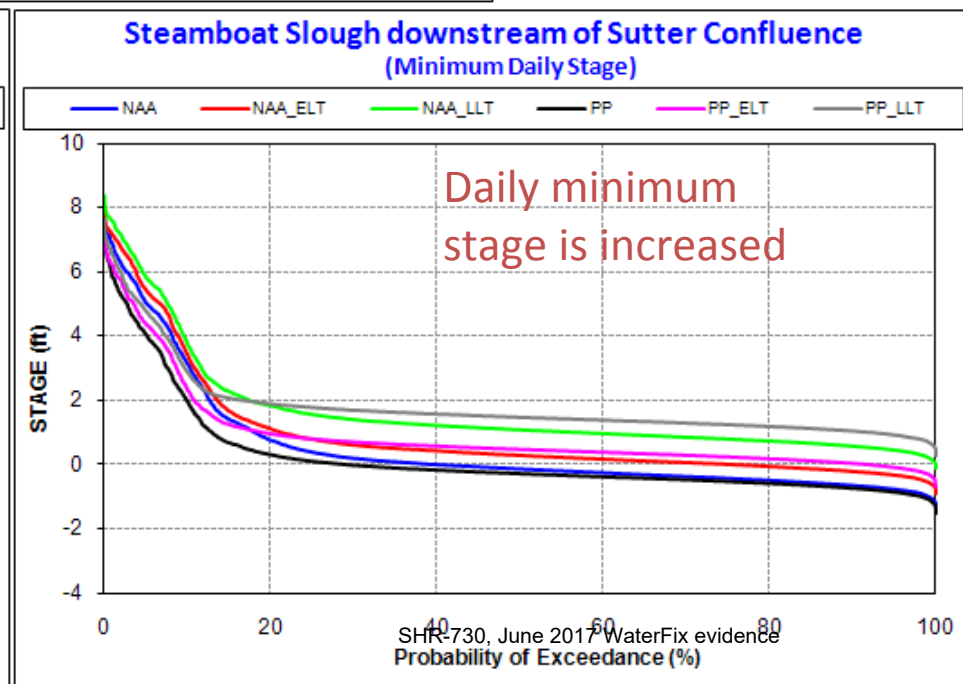
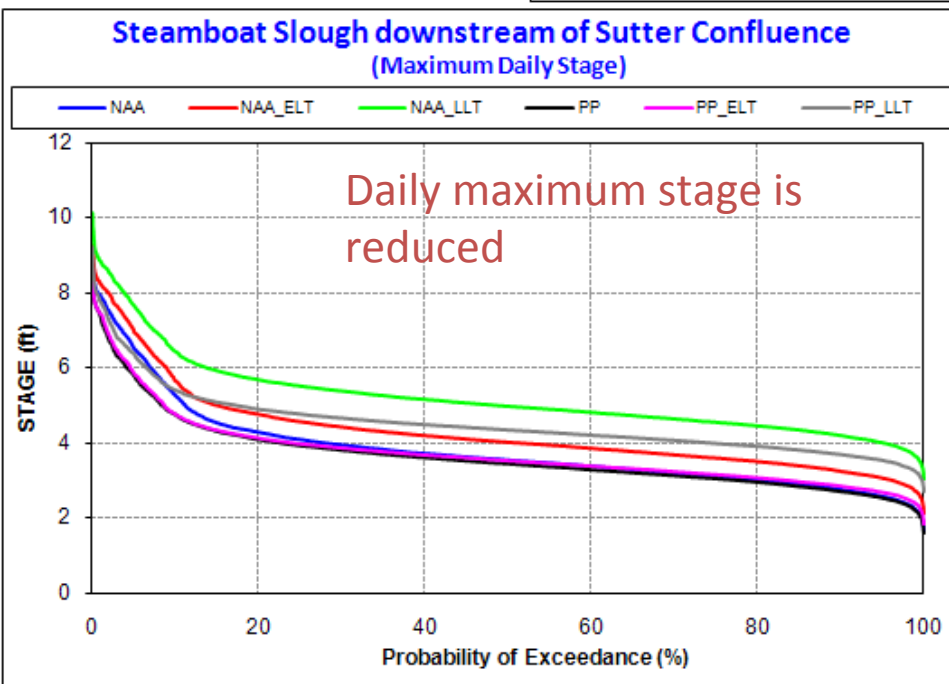
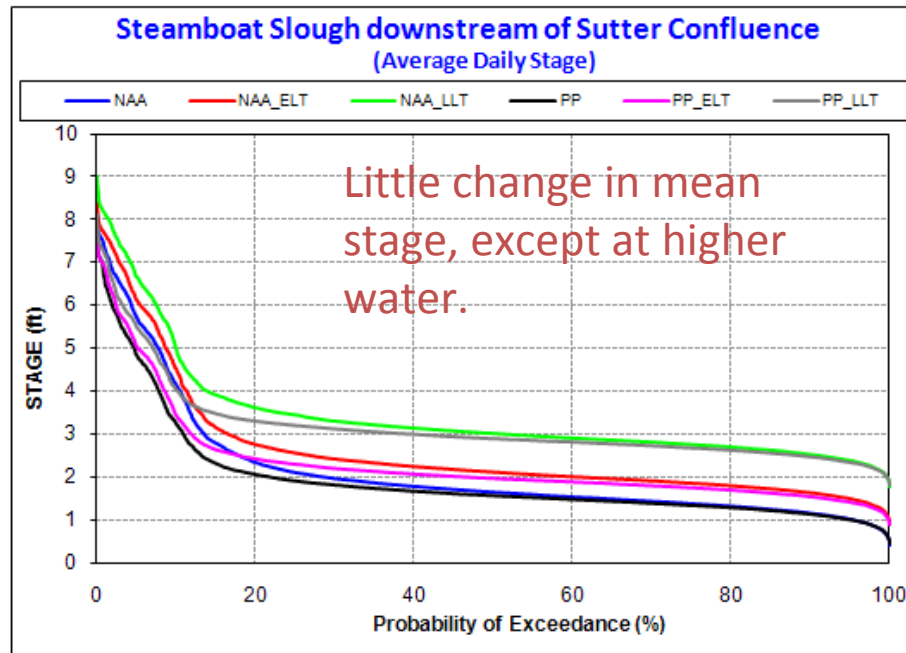
Flow Reversals in Sacramento River



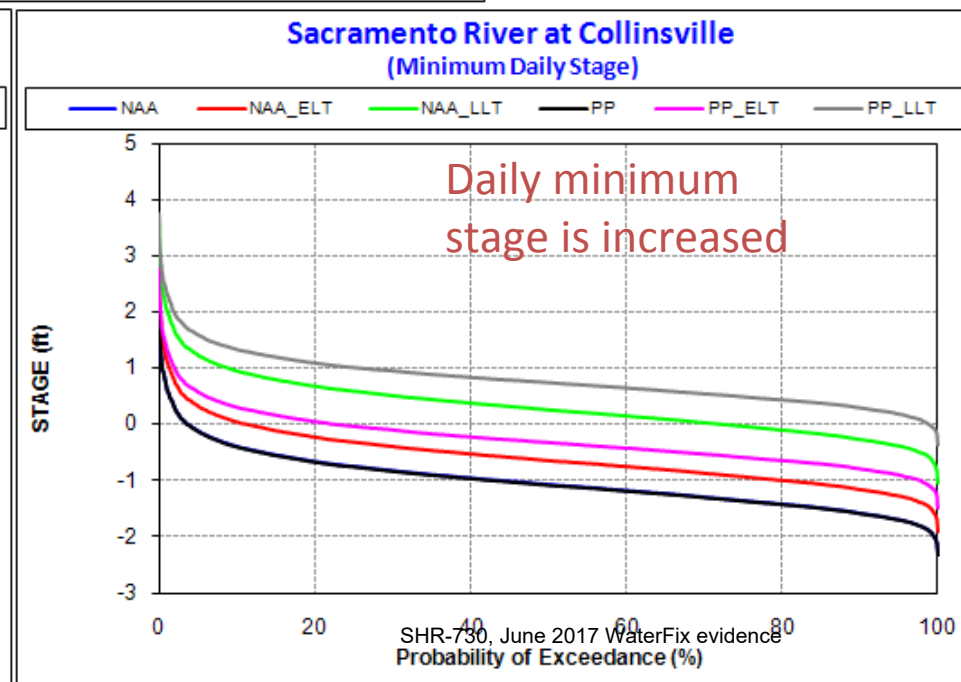
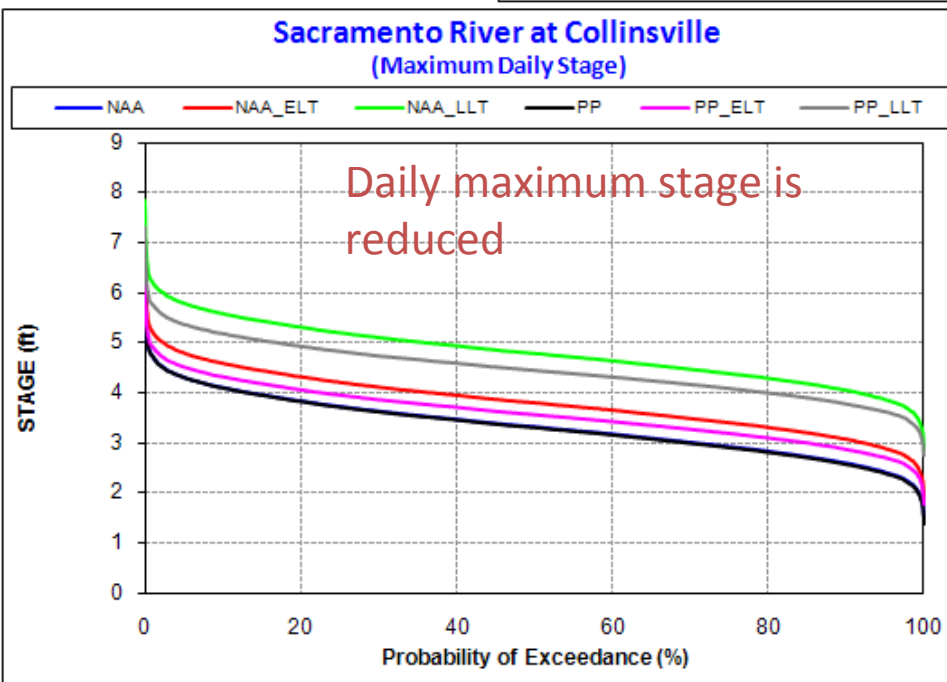
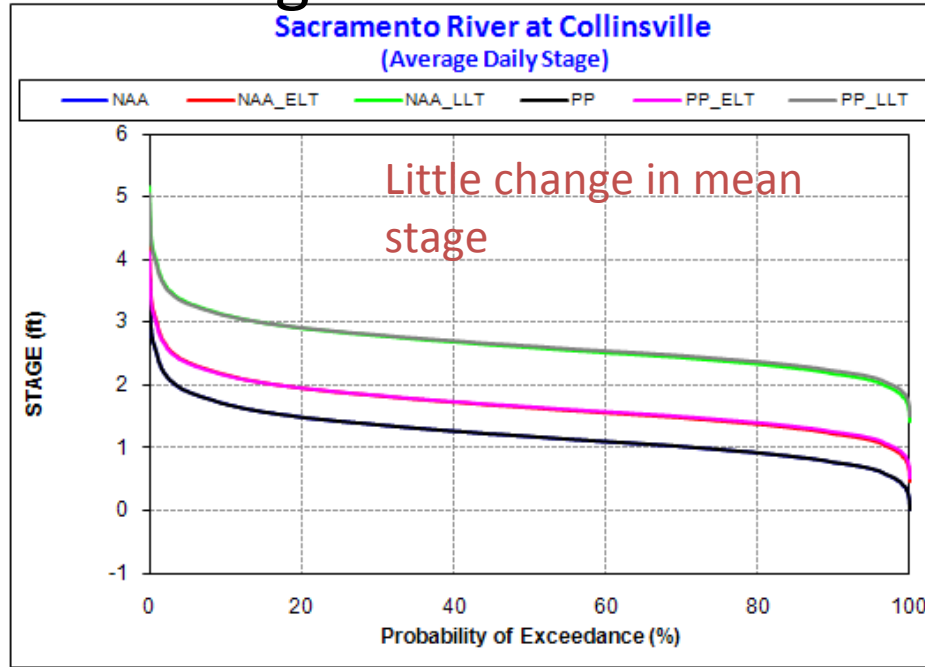
Flow Reversals in Sutter, Steamboat and Miner Sloughs



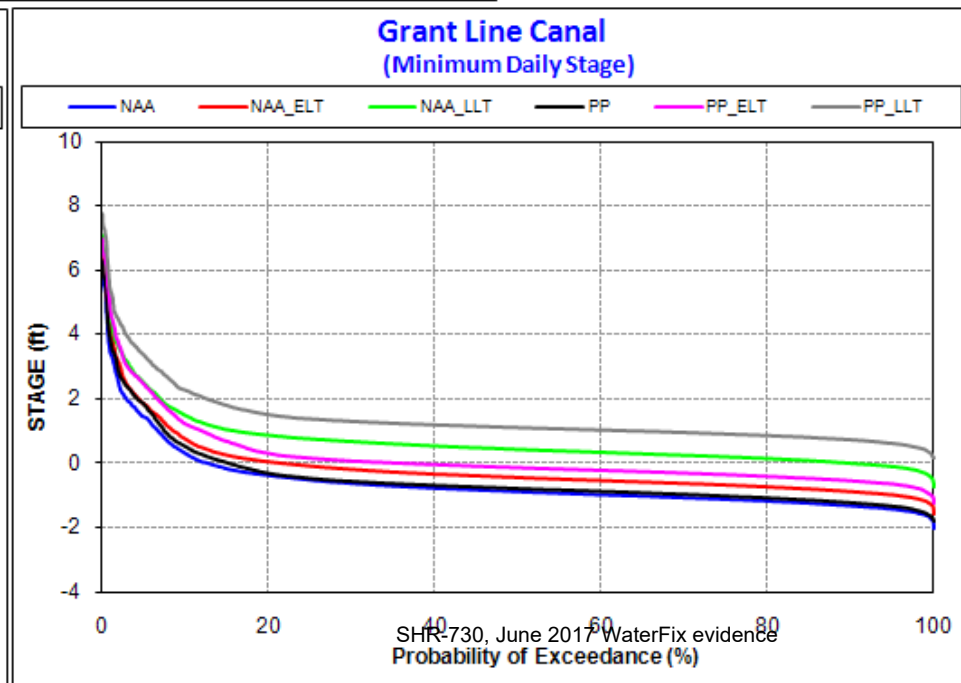
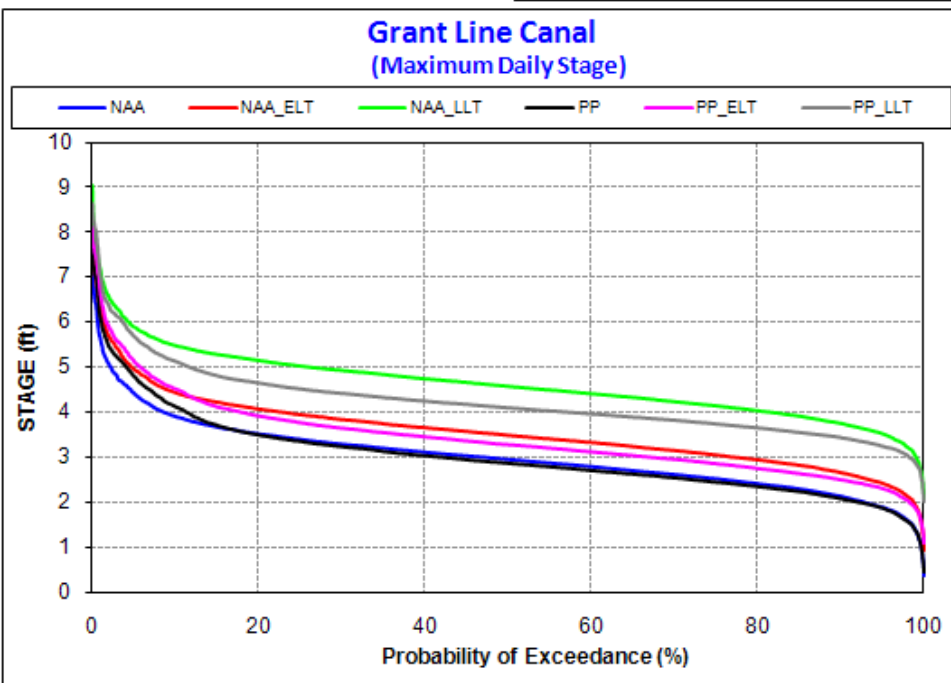
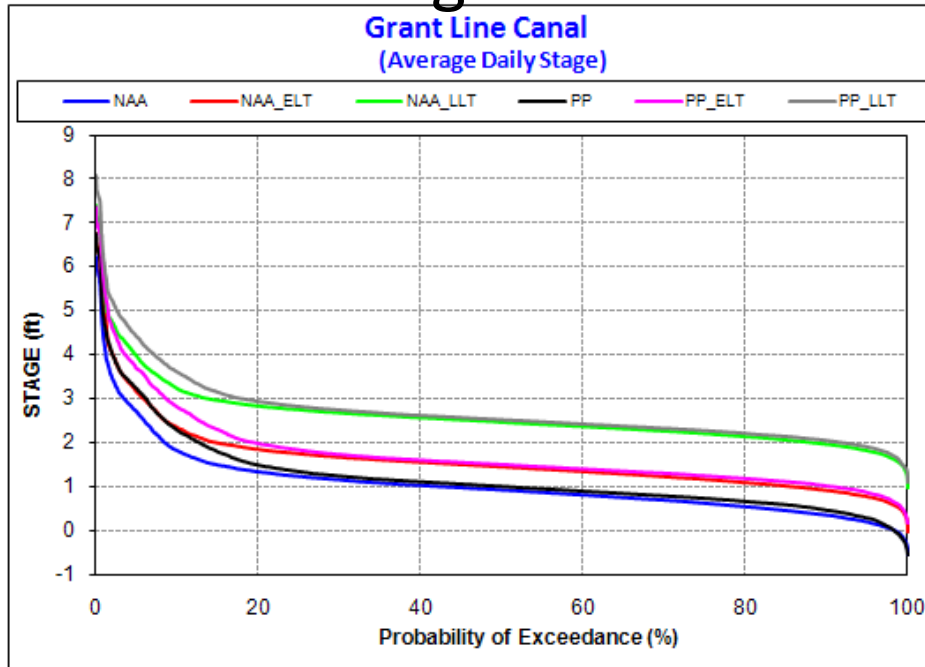
Water Level Changes in North Delta



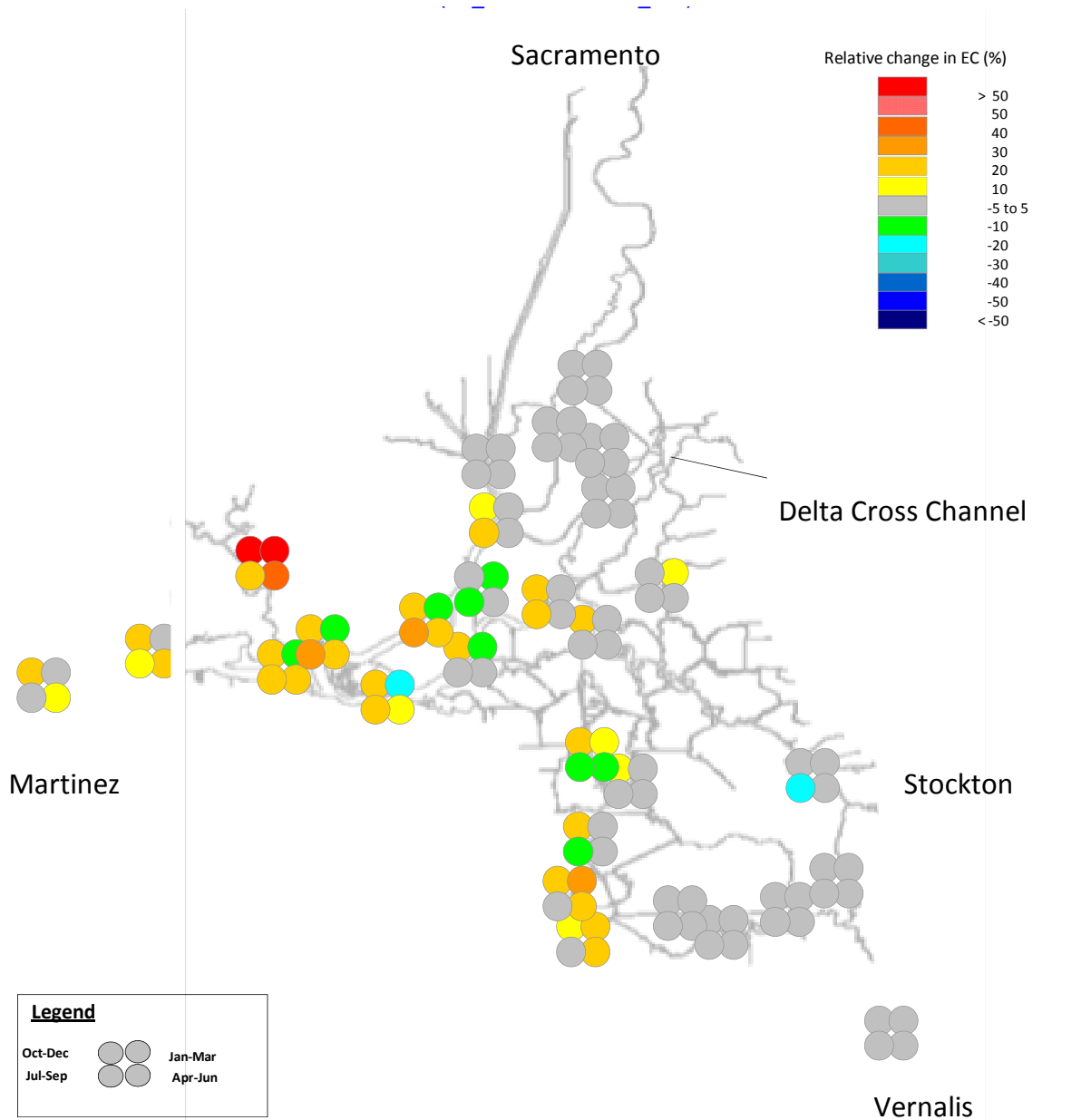
Water Level Changes in West and Central Delta



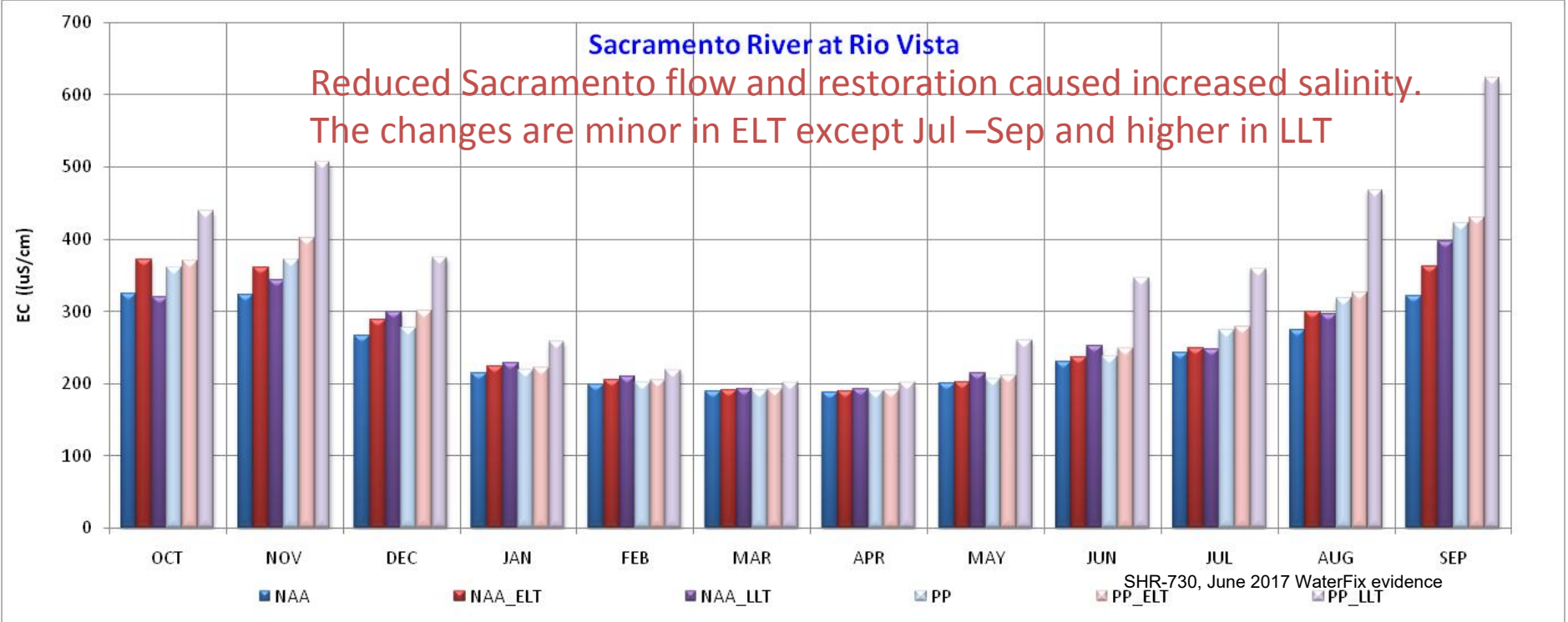
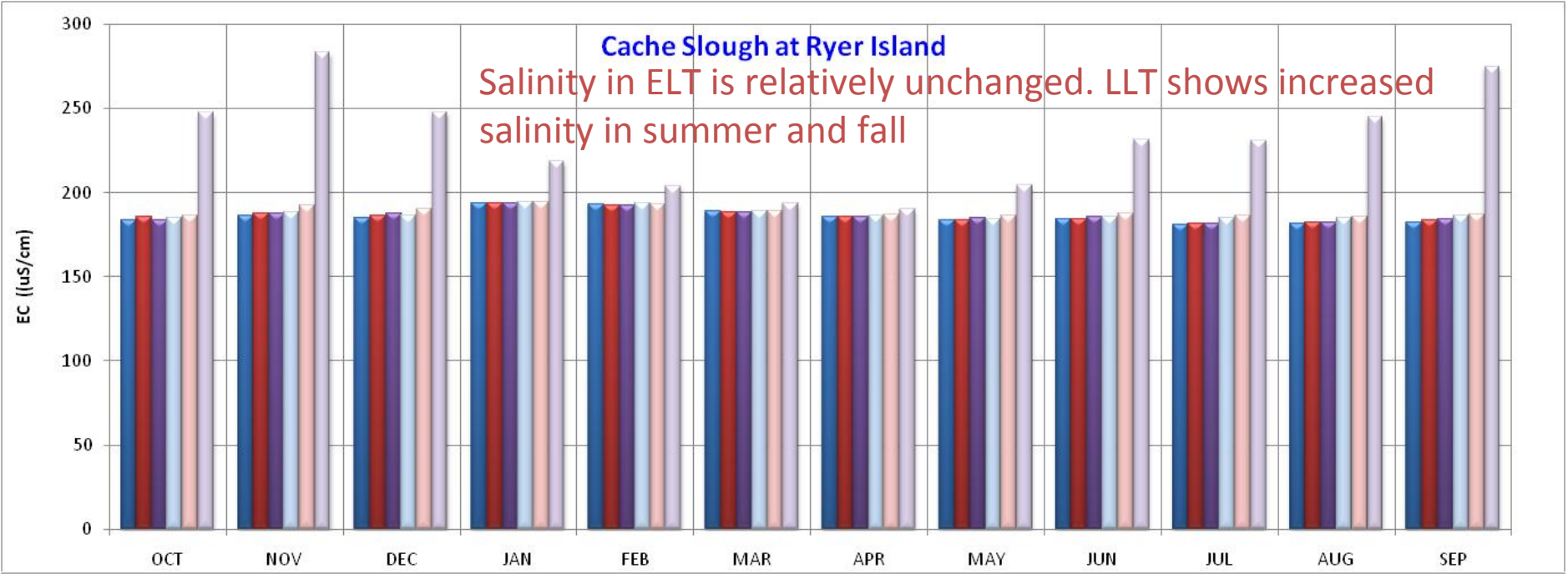
Water Level Changes in South Delta



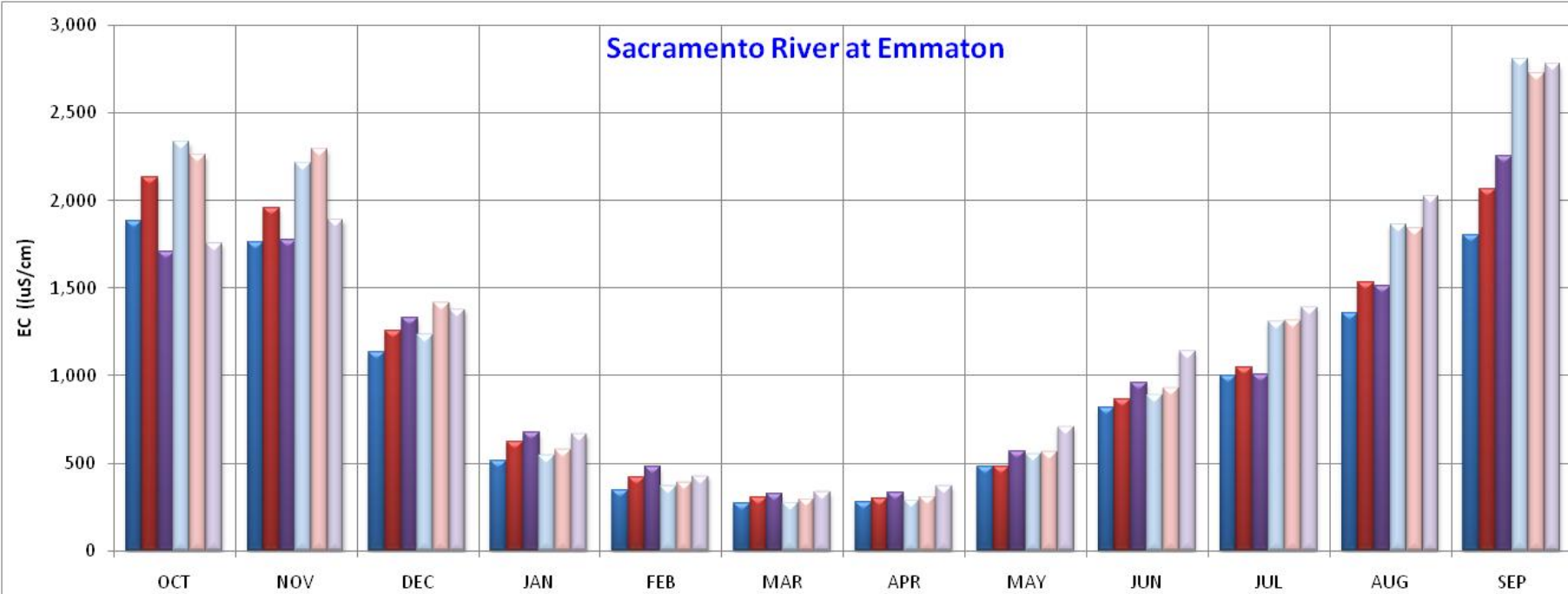
Seasonal Changes in EC



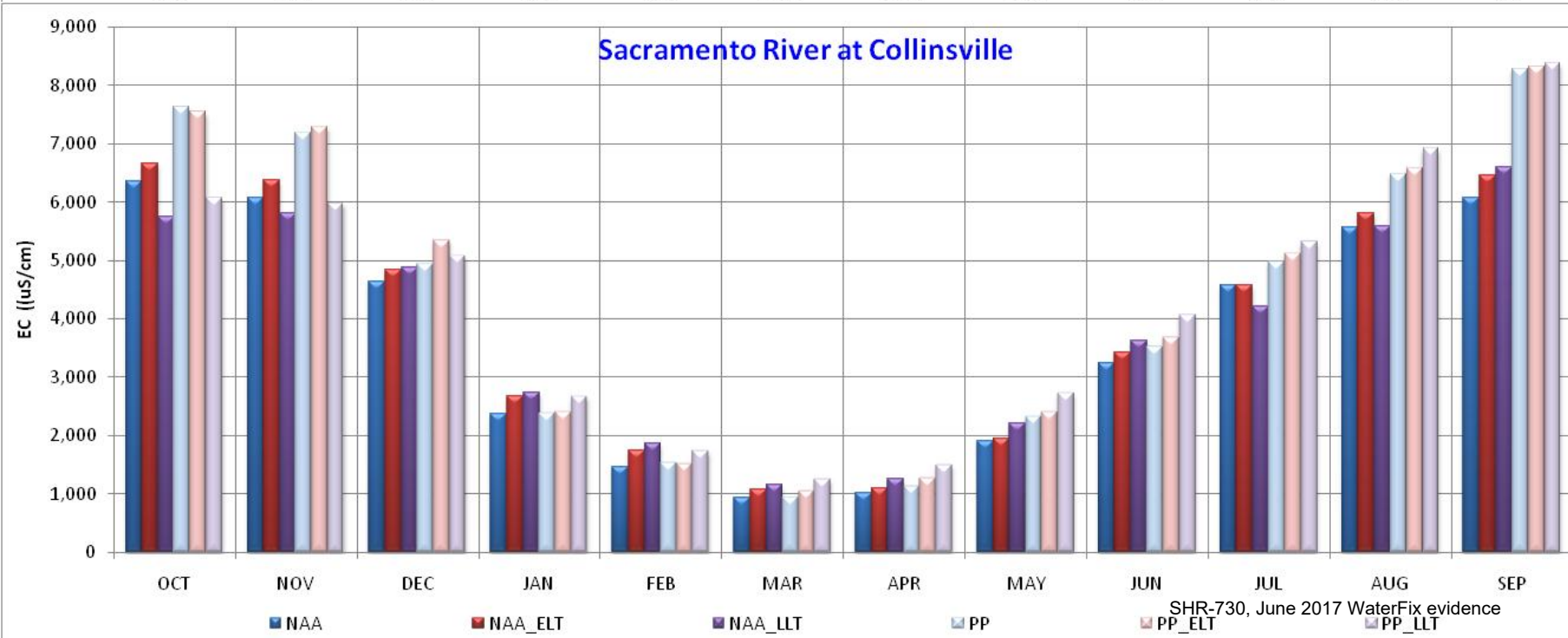
Water Year/Period : **ALL WATER YEARS**



Sacramento River at Emmaton

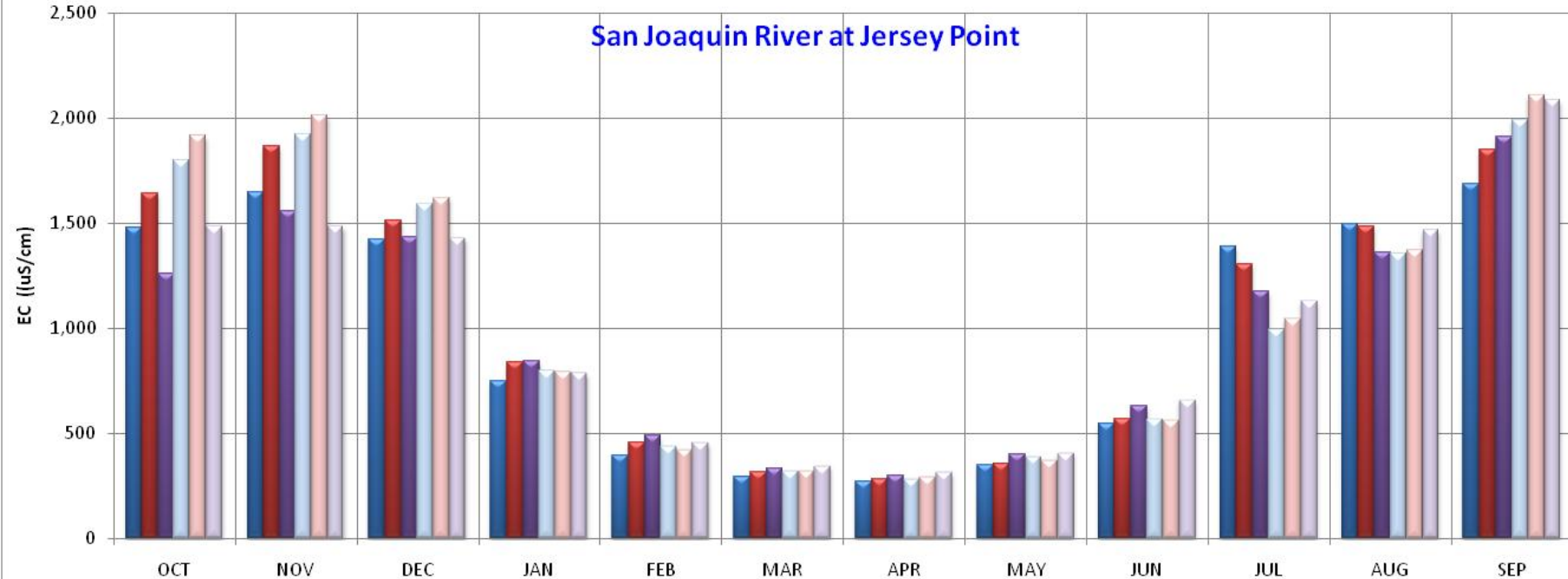


Sacramento River at Collinsville

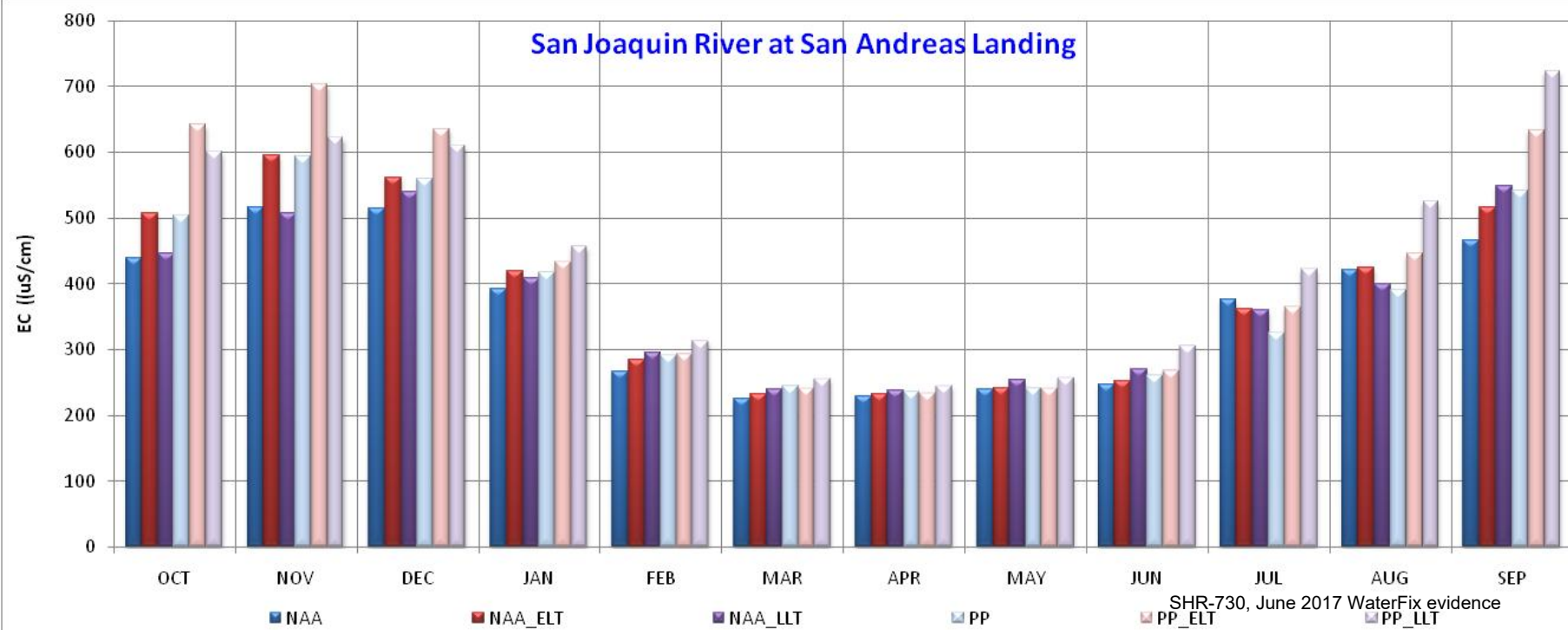


SHR-730, June 2017 WaterFix evidence

San Joaquin River at Jersey Point

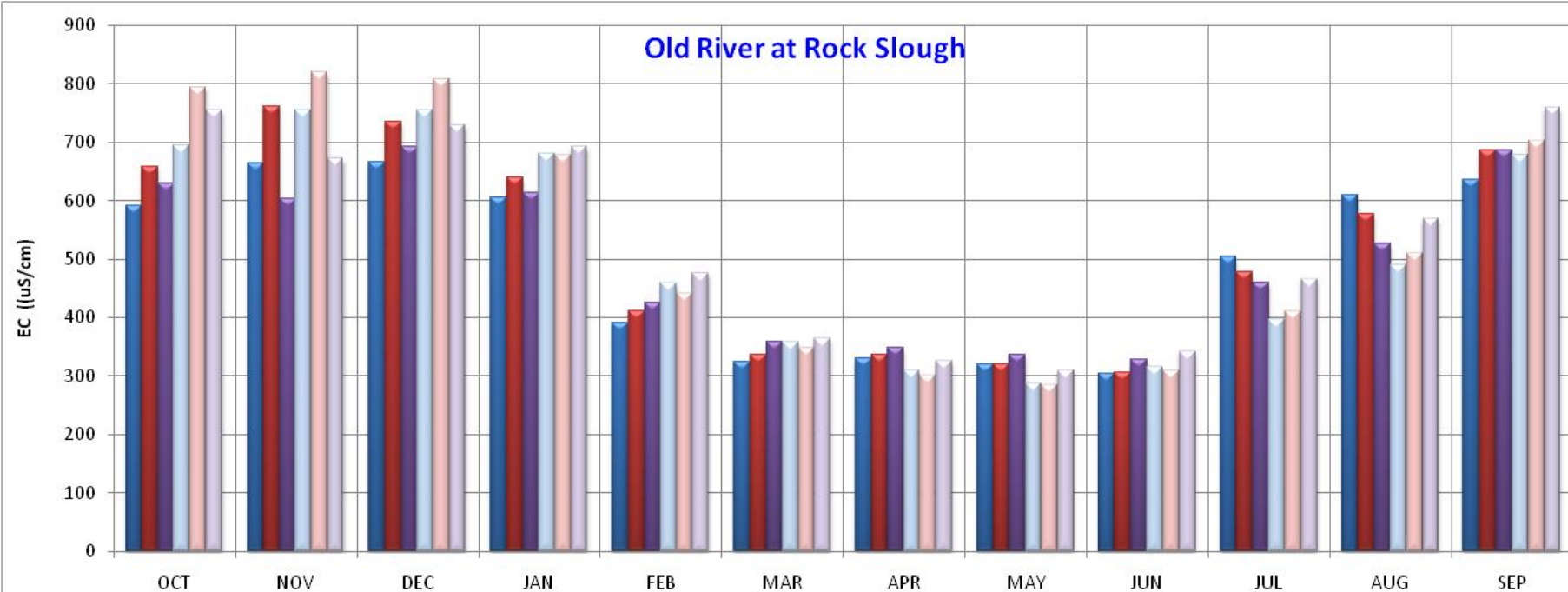


San Joaquin River at San Andreas Landing

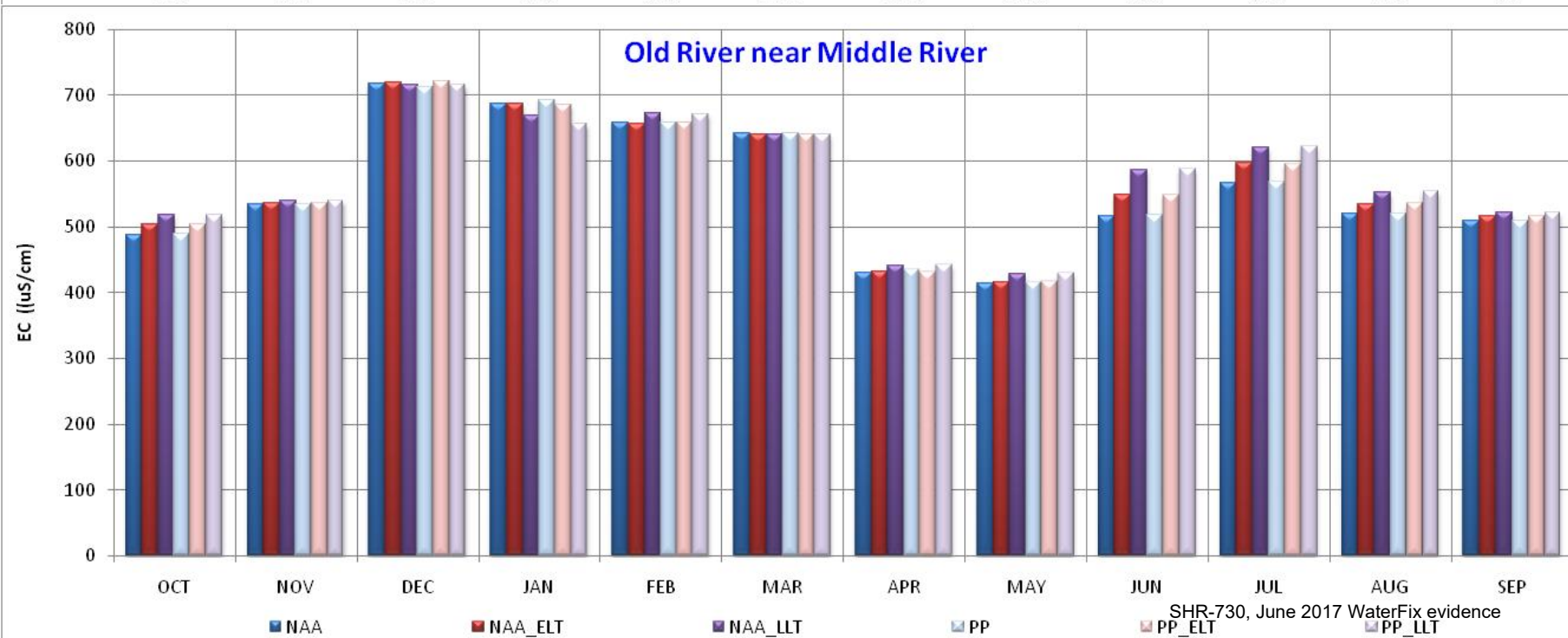


SHR-730, June 2017 WaterFix evidence

Old River at Rock Slough



Old River near Middle River



Key Findings Comparing Proposed Project to No Action at Early- and Long-Term

- Channel Flows
 - Net flows reduced in north and central Delta due to north delta diversion
 - OMR and QWEST increased due to reduced south Delta exports
 - Restoration allows more periods with unidirectional flows or reduced occurrence of reversals in the north Delta
- Stage
 - Mean water levels reduced in the north Delta near proposed diversion and remain fairly unchanged rest of the Delta
 - Tidal range decreased by 1 to 2 ft in portions of the Delta – mainly caused by the restoration

Key Findings Comparing PP to NAA at ELT and LLT

- Salinity
 - No significant change upstream of Rio Vista and in southern Delta
 - Slight increases in Old and Middle River and central Delta due to changes in contribution of the Sacramento (less) and San Joaquin
 - Salinity increases in the west Delta due to the increased tidal excursion and reduction in Sacramento River flow

On-going Work and Next Steps for Physical Modeling Team

- Supporting teams conducting effects analysis
- Completed analytical range sensitivity studies
- Completing climate sensitivity studies
- Conducting special studies
 - North delta intake and conveyance sizing sensitivity
 - North delta intake location sensitivity
 - North delta bypasses evaluation summary
 - Delta levee failure and sea level rise
 - San Joaquin inflow sensitivity
 - Old River corridor integration