



CALIFORNIA
WATER FIX
RELIABLE. CLEAN. WATER.

DWR - 1025



OPERATIONS



OVERVIEW

- **Real-time operations**
 - Day to day operational decisions
 - Interagency coordination
- **Operationalization of key modeling assumptions**
 - Pulse protection
 - Old and Middle River flow
 - Spring Outflow Target
- **Conceptual operation with 2016 hydrology**



REAL-TIME OPERATIONS

- **Day to day operational decisions**
- **Interagency coordination**
- **Not to be confused with Adaptive Management Program**



DAY TO DAY OPERATIONAL DECISIONS

- **Look ahead and adjust as necessary**
 - Plan for regulatory requirements
 - Adjust operations to the conditions
- **Use tools to help inform decisions**
 - Forecasts of tides, wind, and atmospheric pressure
 - Hydrodynamic and water quality simulations (DSM2)
 - Monitoring of conditions



INTERAGENCY COORDINATION

- **Water Operations Management Team (WOMT)**
 - Decisions involving operations and fishery protection
 - Relies on input from other working groups
- **Smelt Working Group (SWG)**
 - Delta smelt and longfin smelt
- **Delta Operations for Salmonids and Sturgeon (DOSS)**
 - Chinook salmon, steelhead and sturgeon



CONCEPTUAL 2016 CWF H3+ OPERATION

- **Pulse protection operations**
- **Old and Middle River flow objectives (OMR)**
- **Spring Outflow Target**



NORTHERN DIVERSIONS

- **Scheduling daily diversions**
 - Forecasting and monitoring flows and quality
 - Managing to SWRCB standards
 - Maintaining bypass flows
 - Maintaining sweeping velocities
 - Monitoring for and reacting to fish presence

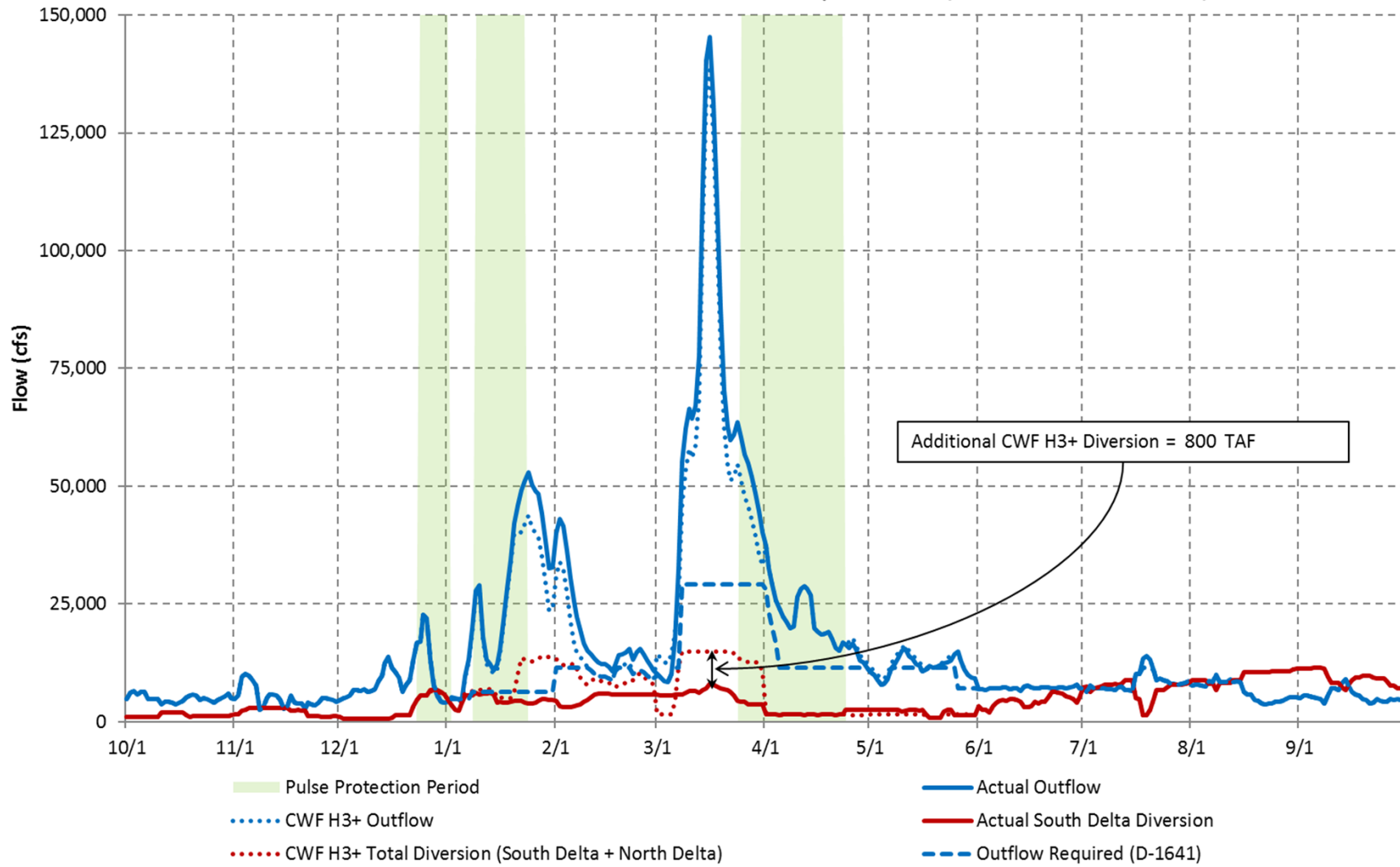


PULSE PROTECTION

- **Pulse protection operation**
 - Limit northern diversions during salmon out migration
- **Initial criteria for Pulse Protection operations**
 - Knights Landing Catch Index (KLCI) ≥ 5 fish
 - Northern diversions ≤ 900 cfs (300 cfs per intake)
 - Continue low-level pumping until:
 - KLCI < 5 fish for 5 consecutive days
 - Bypass flows exceed 35,000 cfs



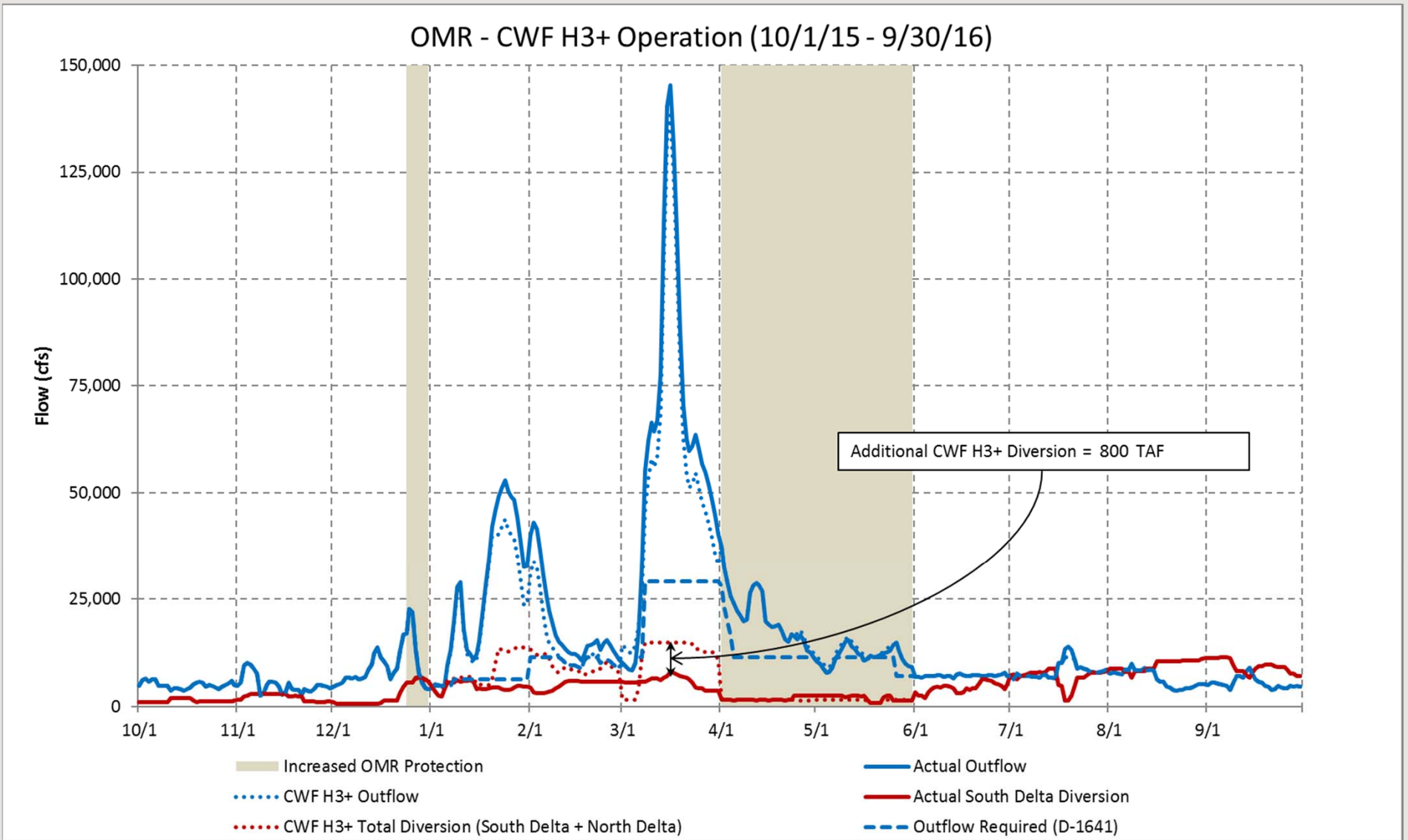
Unlimited Pulse Protection - CWF H3+ Operation (10/1/15 - 9/30/16)





OLD AND MIDDLE RIVER FLOW

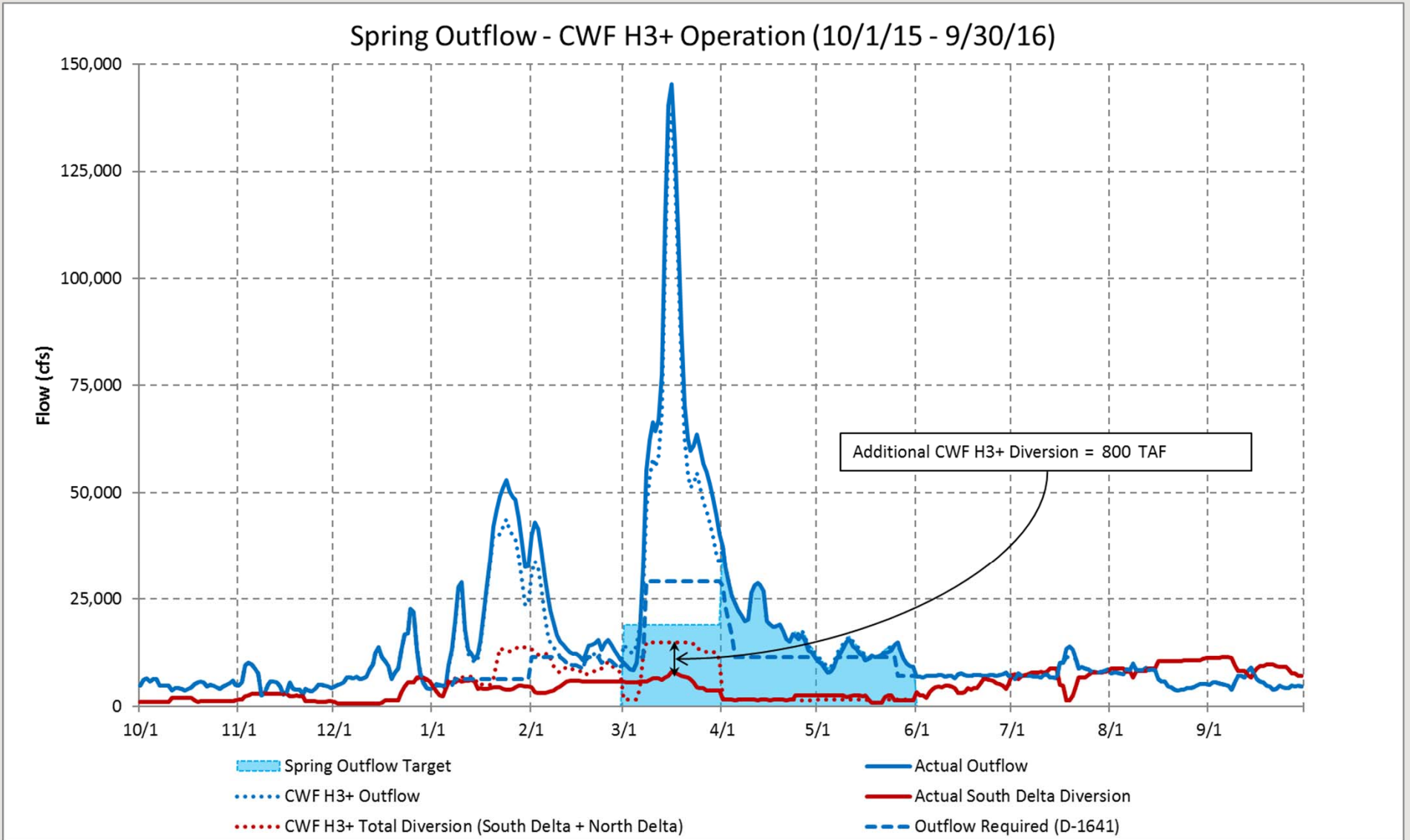
- **OMR**
 - Measure of upstream flow toward the southern diversions
 - January to June criteria ranges -1,250 to -5,000 cfs
 - Met by adjusting southern diversions
- **Initial additional OMR flow criteria**
 - OMR during pulse protection operations (-5,000 cfs)
 - OMR in April and May based on San Joaquin flow





SPRING OUTFLOW TARGET

- **Spring outflow target**
 - Maintain March to May average Delta outflow
- **Initial spring outflow target operating criteria**
 - March based on forecast of Eight River Index
 - April and May based on San Joaquin River
 - Export constraint
 - Total of all diversions lowered to as much as 1,500 cfs
 - Constraint lifted when outflow exceeds 44,500 cfs





CONCLUSION

- **Proposed CWF H3+ criteria**
 - Real-time operations
 - Day to day operational decisions
 - Interagency coordination
 - **Are Implementable**