

## **Modeling Assumptions for Sites Reservoir Intakes (Oct-Jun)**

The following assumptions were developed by CDFW for a modeling exercise to evaluate the ability of Sites Reservoir to operate while ensuring species specific habitat needs and protection are met in the Sacramento River and Delta. It is assumed that these Sacramento River and Net Delta Outflow Index criteria will be met during the specified timeframes prior to and during Sites Reservoir operations. Results from this modeling exercise are intended to support the evaluation of project alternatives and their ability to contribute to ecosystem benefits.

### **Sacramento River Assumptions**

- No pumping at TCCA facility until January
- No pumping until after first initial pulse flow greater than or equal to 15,000 cfs at Wilkins Slough for five consecutive days
- Wilkins Slough bypass flow requirement of 15,000 cfs
- Colusa bypass flow requirement of 29,500 cfs

### **Habitat and Species Protection**

- No pumping at TCCA facility until January
  - The majority of winter-run pass this facility as very small fry.
  - 99% of downstream juvenile winter-run passage is typically completed by the end of December each year (Poytress et al. 2014).
- No pumping until after first initial pulse flow greater than or equal to 15,000 cfs at Wilkins Slough for five consecutive days.
  - The first major pulse flow past Wilkins Slough has been correlated with peak winter-run passage at the Knights Landing rotary screw traps.
  - Substantial increases in cumulative catch of winter-run at Knights Landing have been observed and correspond to a flow threshold of approximately 14,000 cfs at Wilkins Slough (del Rosario et al. 2013).
- 15,000 cfs Wilkins Slough bypass flow requirement.
  - Based on flow survival relationships of juvenile salmonids in the Sacramento River.
  - Increased emigration has also been observed at Knights Landing when flows increase.
- 29,500 cfs Colusa bypass flow requirement.
  - There is substantial benefit to providing floodplain rearing habitat in the Sutter Bypass.
    - This flow rate should provide at 5,000 cfs spill at Tisdale Weir (CDEC data and linear regression analysis of COL and TIS) to provide floodplain rearing habitat in the Sutter Bypass.
  - Based on flow survival relationships of juvenile salmonids in the Sacramento River.

### Net Delta Outflow Index Assumptions

Month	W	AN	BN	D	C
Oct	12,400 (74km)	7,100 (81km)	D-1641	D-1641	D-1641
Nov	12,400 (74km)	7,100 (81km)	D-1641	D-1641	D-1641
Dec	<b>11,400</b>	<b>5,000</b>	D-1641	D-1641	D-1641
Jan	<b>25,000</b>				
Feb	<b>25,000</b>				
Mar	<b>44,500</b>		<b>25,000</b>	<b>11,400</b>	<b>11,400</b>
Apr					
May					
Jun	D-1641 or <b>11,400</b> (74km) <sup>1</sup>	D-1641 or <b>11,400</b> (74km) <sup>1</sup>	D-1641 or <b>11,400</b> (74km) <sup>1</sup>	D-1641	D-1641
<b>Habitat and Species Protection</b>					
D-1641		Existing SWRCB D-1641 requirements			
BiOp RPA		Existing Fall X2 requirements (Delta Smelt) FWS BiOp			
Delta Smelt		Holds LSZ around suitable abiotic habitat for spawning and rearing			
Longfin Smelt		Protects flows for LFS abundance			
Sturgeon		Protects attraction flows			

<sup>1</sup> Whichever flow value is higher