

Attachment 1-8 CalSim II Assumptions and Real-Time Operations

1 Introduction

The purpose of this attachment is to describe some of the limits of the CalSim II model as it relates to simulating real-time project operations, that is, the daily management of the SWP to a variety of conditions. In addition to the uncertainty inherent in attempting to mimic real-time operations with a model, this section explains that future actual operations of the SWP and CVP, themselves, in the Delta cannot be described with certainty because multiple regulatory conditions govern the operations, calling for potentially different protective actions in any given set of circumstances.

2 Modeling Assumptions

The CalSim II model was used to evaluate the Long Term Operations (LTO) of the SWP. CalSim II simulates the operations of the SWP and CVP over 82 years of hydrology. The model simulates water volumes, flows, and water quality, and does not have the capability to simulate fish or turbidity. However, fish presence and turbidity are the primary factors in determining the OMR (permissible Old and Middle River flow direction and magnitude) which at times (January through mid-June) acts as a constraint on export levels in real-time operations. To represent operations governed by fish presence or other real-time variable, simplifying assumptions are made. As described in Appendix H Attachment 1-4 Scenario Related Changes to CalSim II and DSM2, assumptions were developed using historical data and generalized for application in the model. Generalizing historical data for use in models is a common practice especially with representing fishery-based actions. Some of the assumptions and potential uncertainty in the CalSim II implementation of the fishery protection actions are:

- **Adult LFS entrainment protection** – This action was not modeled in CalSim II due to the lack of data needed to develop a simplifying assumption. However, in reality adult LFS entrainment has the potential to trigger an OMR requirement of ‘no more negative than -5,000 cfs’ as early as December 1.
- **Larval and Juvenile LFS entrainment protection** – This action was not modeled in CalSim II due to the lack of data needed to develop a simplifying assumption. However, it is conceivable that this action could result in a significant range of required OMR. The tools and processes described in Section 3.3.1.2 are new and it is uncertain as to what level of OMR restriction would result from those tools and processes.
- **Onset of OMR** – As described in Appendix H Attachment 1-4 Scenario Related Changes to CalSim II and DSM2, this is modeled as starting as early as December 17 or as late as

January 1 depending on triggering the “First Flush” action. However, past historical data indicates a triggering event would have occurred as early as December 3rd in 2013. It is conceivable that under actual real time operations this action could start as early as December 1 and as late as January 31 as described in Section 3.3.1.1.

- **Turbidity Bridge Avoidance (DS)** – As described in Appendix H Attachment 1-4 Scenario Related Changes to CalSim II and DSM2, this action is modeled as a variable action based a flow surrogate which triggers the turbidity bridge avoidance action. The modeling assumed that when triggered, the action would apply an additional OMR requirement for 5 days at -2,000 cfs. However, historical data indicates that turbidity levels could persist and with protective risk assessments for Delta smelt, could extend additional OMR action well beyond the 5-day period assumed. Turbidity data in some years can persist for multiple months.
- **Larval and Juvenile DS entrainment protection** – This action was not modeled in CalSim II due to the lack of data needed to develop a simplifying assumption, however it is conceivable that this action could result in a significant range of required OMR. The tools and processes described in Section 3.3.1.1 are new and it is uncertain as to what level of OMR restriction would result from those tools and processes.
- **Salmon and Steelhead Salvage Thresholds** – As described in Appendix H Attachment 1-4 Scenario Related Changes to CalSim II and DSM2, this action is modeled as reaching the 50% salvage threshold in March of wet, above normal, below normal, and dry years and extending through April with 95% of salmonids exiting the Delta. The resulting additional OMR requirement for that period is -3,500 cfs. The assumption was developed using a generalization of the historical salvage. In actual real time operations, the salvage can vary. The historical data indicates that this action could occur as early as February, extend through May, and be as low as -2,500 cfs. In addition, if population levels were to increase, it could result in this action triggering more often with the potential for greater OMR restriction.

3 Potential Differences Between SWP LTO and CVP LTO Criteria

The modeling completed for this CEQA/CESA process assumes that the SWP and CVP operate to consistent regulatory criteria, i.e., the resulting OMR would be the same requirement for the SWP as for the CVP. The modeling assumes the Projects jointly operate to consistent criteria and split responsibilities for Delta inflows and opportunities for Delta export based on the provisions in the COA. As described below, however, there is the potential for the SWP to have more restrictive criteria than the CVP, where the OMR requirement could potentially vary by 3,000 cfs, with the SWP subject to -2,000 cfs and CVP subject to -5,000 cfs OMR flows. If the SWP were required to meet a different regulatory requirement than the CVP, as a result of

additional DFW oversight for CESA purposes, the SWP will meet its proportion of the OMR requirement.

As described in Project Description, there are differences in the federal LTO and state LTO processes that could result in different operating criteria between the SWP and CVP. There are several areas within the Federal LTO and State LTO where criteria could deviate, making the SWP be required to operate to a different criterion than the CVP. Different operating criteria could occur under at least ~~two~~three situations: 1) Longfin Smelt action, ~~and~~ 2) risk assessments for off-ramping additional OMR criteria, and 3) export operations for Spring Maintenance Flows.

3.1 Longfin Smelt Actions

Longfin Smelt (LFS) are a state listed species and are protected by state law, however they are not federally listed and therefore not covered by the federal endangered species act. The State LTO includes specific actions for the protection of longfin that can begin as early as December 1 and includes entrainment protections for Adult LFS, and Larval and Juvenile LFS. These actions could potentially require SWP to operate to criteria that are in addition to the requirements incumbent on the CVP. Specifically, LFS actions that could require OMR requirements different from the CVP requirements include:

- **Adult LFS entrainment protection** – This can begin as early as December 1 based on salvage of longfin at SWP and CVP export facilities. There is a potential for this action to occur before the Delta smelt “First Flush” action. If triggered before the “First Flush”, the Adult LFS protection would require an OMR less negative than -5,000 cfs for the SWP. At the same time, the CVP would be operating without any OMR requirement.
- **Larval and Juvenile LFS protection** – This can begin as early as January and would likely coincide with an OMR requirement for other species through the federal LTO with a standard OMR requirement of -5,000 cfs. However, there is a potential for significant differences in the required OMR. An appropriate action is dependent on real-time monitoring, simulation models, and coordination and concurrence with CDFW. A final OMR determination from a real-time assessment could easily be close to -2,000 cfs (i.e. considerably more restrictive for SWP). If situationally the CVP concluded that storm flexibility were available, the SWP could be required to operate to an OMR that is even more than 3,000 cfs more positive (effectively more restrictive to exports) than the CVP requirement.

3.2 Potential for different Risk Assessments and determination of species protection

After the onset of OMR management, there are several prescriptive actions that can trigger additional OMR restrictions based on real-time data. These additional restrictions can require the SWP and CVP to manage to OMR no more negative than -2,000 cfs. However, if DWR and Reclamation determine that the additional actions are no longer warranted for species

protection, through an assessment of conditions and risk to species, then the additional restrictions may be lifted. However, CDFW may object to DWR's assessment and planned operations, in which case SWP may be required to operate to a more restrictive OMR than the CVP, and as described above, SWP will meet its proportional share. It is reasonable to assume that there will be situations where the federal and state assessments differ, but too speculative for modeling purposes.

The following species protections allow the projects to evaluate risk to species and potentially offramp from a specific measure if the risk is low enough. If CDFW disagrees with DWR's assessment, CDFW can ultimately require SWP to manage to a different criterion than the CVP.

- **Turbidity Bridge Avoidance** – Requires the Projects to manage to an OMR of -2,000 cfs when the turbidity at CDEC station OBI becomes greater than 12 NTU. However, there are conditions (e.g. bad data, localized event, or inability to control bridge formation) where the Projects could identify a “false” turbidity bridge avoidance event or determine a more appropriate OMR level that would continue to be protective and based on real-time data. The offramp could result in an OMR requirement no more negative than -5,000 cfs. CDFW can object to the Projects conclusions and require DWR to operate to as restrictive as -2,000 cfs OMR. Therefore, the difference between the CVP and SWP criteria could be up to 3,000 cfs, where SWP could be required to meet -2,000 cfs OMR with the CVP allowed to meet -5,000 cfs OMR. Under this condition SWP would meet its proportional share.
- **Larval and Juvenile Delta Smelt Protection** – Requires the Projects to determine a protective OMR for the protection of larval and juvenile Delta smelt. An entrainment assessment for Delta Smelt will occur on or after March 15 when Q-west is negative and larval and juveniles Delta smelt are detected in the OMR corridor. A protective OMR is to be determined by the Projects using the best available models and science. This protective action is open to many possible ways to determine a what an appropriate OMR level should be and therefore has the potential to result in different criteria. However, determining a reasonable range would be too speculative.
- **Cumulative Loss Thresholds** – Designed to meter the long-term salvage by applying a total salvage limit on the next 4 and 10 years of operations. If salvage levels reach those thresholds, then the Projects will coordinate on future actions to limit take. Though this should be a cooperative process, there is some potential for differences in strategy that may result in different criteria. However, determining a reasonable range would be too speculative.
- **Single-Year Loss Thresholds** – A prescriptive OMR requirement based on the salvage of listed species. Additional OMR criteria is imposed when the SWP and CVP reach 50% and 75% of the loss threshold. These thresholds represent an additional OMR requirement of -3,500 cfs and -2,500 cfs respectively. Once a threshold is reached, that OMR

restriction would remain in effect until the end of the season. The Projects can, through a risk assessment, determine an OMR restriction that is still protective to the species. CDFW has the ability to object to DWR's risk assessment and require SWP to continue with an additional OMR requirement defined by the salvage loss threshold. At most, this could require SWP to operate to an OMR requirement of -2,500 cfs, with the CVP operating to -5,000 cfs. This is a potential difference that could have SWP operating to a 2,500 cfs more restrictive OMR requirement.

- **OMR Flexibility During Excess Flow Conditions** – Allow for the Projects to operate to more negative OMR when risk to listed species is low. There are many conditions that have to be met before the projects can flex the OMR to something more negative than -5,000 cfs including insuring that no other OMR action has been triggered, as well as evaluating if OMR flexing would exacerbate the need for additional OMR requirements in the near future. In this aspect there is again the potential for the CVP and SWP to each be left operating to a different standard, the potential range of which is speculative.

3.3 Spring Maintenance Flows under Revised Alternative 2b

Revised Alternative 2b includes SWP export operations that would continue to provide Spring Maintenance Flows as they occur under the 2008/2009 BiOps, or as a mechanism to develop water for redeployment at a later time. It is expected that CVP would not operate to the same criteria as the SWP during this period and that was reflected in the modeling analysis for Revised Alternative 2b.

3.4 Conclusions

As explained above, the CalSim II model does not—and cannot—represent real-time operations perfectly. CalSim II incorporates assumptions to provide for general operating conditions, but actual operations can vary and the general operating conditions do not represent extreme possibilities associated with fishery-based regulatory criteria.

Additionally, several conditions could require the CVP and the SWP to operate to different regulatory requirements associated with additional CDFW authority over SWP operations. However, it is—In the event that the SWP is required to operate to different criteria, then the SWP will operate the proportionate share of that criteria. It is expected that the SWP and CVP will likely operate to different criteria during the Spring Maintenance Flow period, but other divergences in operating criteria are too speculative to assume ~~such conditions~~ in the modeling analysis.

Despite CalSim II's limitations, CalSim II offers the best tool available to simulate SWP and CVP potential operational alternatives over a range of hydrologic conditions. Comparison of analysis of different operational regimes (including regulatory conditions) allows reasonable inference of how differently the projects might perform under the differing conditions.

Attachment 1-9 Example of Proportionate Share - SWP Proportionate Share

As described in various locations in the DEIR (e.g., FEIR Part 3, Revised Chapter 5.3.1.1, Collaborative Real-time Risk Assessment) there are conditions under which ESA and CESA flow objectives could be different and the SWP and CVP would be operating to different requirements. The SWP would be obligated to meet both ESA and CESA requirements and under conditions where there are divergent objectives, SWP would operate to its proportionate share of the more restrictive of the two objectives. The proportionate share of the SWP would be based on the proportionate share of responsibility as described in COA.

For example, the Old and Middle River (OMR) flow objective is a joint regulatory criterion that the CVP and SWP meet through combined export reductions. The 2018 COA addendum provides SWP with 40% of the available exports under any regulatory export constraint, such as the OMR flow objective. If the CESA OMR objective were to be more export restrictive, the SWP would operate as though the CVP were also operating to the same objective. As described in Revised Chapter 5.3 of the DEIR, DWR would pursue agreements with other water users (including Reclamation) or pursue a 1707 permit with the SWRCB to protect the SWP share of water from other diversions. In addition, DWR would assume unused capacity in DWR facilities for use by other water users would only be available when CESA objectives were fully met. This limitation on use of unused capacity would include, but not limited to, Banks Pumping Plant, the California Aqueduct, and the SWP share of San Luis Reservoir.

Actual operations of the SWP under different regulatory objectives than the CVP would be dependent on the conditions at that time. Following are three examples that illustrate the most probable operating conditions that are expected with different ESA and CESA regulatory objectives.

1 Attachment 1-9 Examples

The purpose of this attachment is to expand on some of the concepts described in the FEIR. The following sections include:

- Options on how the 100 TAF may be deployed or carried over to a following year
- The flexibility of the Spring Maintenance Flows and how it can be used to develop a block of water up to 150 TAF
- An indication of the risk of spill for water that is deferred to a following year
- Examples of how the SWP Proportionate Share would be determined

2 100 TAF Summer Block (Wet & AN)

As described in Section 5.3.3 of the FEIR, Revised Alternative 2b provides a 100 TAF block of water in Wet and Above Normal years and managed through the AMP. This block of water is made available through a dedication of SWP supply in the year that the block of water is initially made available.

Deployment method:

- Balanced conditions – Dedicate 100 TAF of Oroville storage releases to Delta outflow rather than planned discretionary exports.
- Excess conditions – Demonstrate the release of 100 TAF more releases from Lake Oroville’s than planned.

Option 1 (Default Application): Deploy water in August of wet and above normal years – target X2 < 80 KM. Remainder deployed in same year for other smelt resiliency strategy action within reasonable operations

Option 2: Carryover Oroville storage to following year, but subject to spill and conditioned on the water year being anything except critical as determined by the SVI. Where CDFW after consultation with DWR would determine whether to risk the carryover option.

100 TAF Use in a following year:

- **Non-discretionary use:** Enhanced winter/spring flows if spilled
- **Discretionary use:** Enhanced spring/summer/fall action in immediately following year (except critical years) including SMSCG up to 60 days in immediately following dry year

3 150 TAF Block (Spring Maintenance Flow Flex)

Spring Maintenance Flows provide flows similar to the 2009 NMFS BiOp in April and May, however through the AMP and as directed by CDFW, these flows may be used to develop a block of water for later use. If exercised, water would be made available through increase in exports above the SWP share of SJR IE (as defined in the NMFS 09 BiOp). Where the final block will be determined by summing the difference between actual SWP exports and the SWP share of SJR IE (excluding when outflow > 44,500 cfs).

Option 1 (Default Application): SWP will not export beyond its share of the SJR IE (as defined in NMFS ’09 BiOp) excluding periods when outflow > 44,500 cfs.

Option 2: Attempt to develop block of water for deferred deployment in following summer/fall or the following year if not critical. This option will be dependent on the ability to 1) develop water through an increase in exports as compared to the 2009 NMFS BiOp, and 2) have operational flexibility in the summer/fall to re-deploy or exchange with storage in Oroville. Therefore, this option would not be available in all years.

Example 1 – Development of 150 TAF (over 150 TAF cap with water supply generated for SWP):**Option 1**

- SJR = 6,000 cfs & SJE IE total SWP/CVP allowable export = 1,500 cfs
- SWP share of SJR IE = 1,500 cfs x 40% = 600 cfs

Option 2

- OMR objective = -3500 cfs
- Total SWP/CVP allowable export under OMR = 5700 cfs
- SWP Export under OMR = 5700 cfs x 40% = 2,280 cfs, 1,680 cfs above SJR IE (3.3 TAF/day)
- Total additional SWP exported volume after 61 days = 3.3 TAF x 61 = 200 TAF
- Total deferred for environmental purposes = 150 TAF

Example 2 – Development of 150 TAF (flow split between spring protection and deferred for later deployment):**Option 1**

- SJR = 6,000 cfs & SJE IE total SWP/CVP allowable export = 1,500 cfs
- SWP share of SJR IE = 1,500 cfs x 40% = 600 cfs

Option 2

- OMR objective = -3500 cfs
- Total SWP/CVP allowable export under OMR = 5700 cfs
- SWP Export under OMR = 5700 cfs x 40% = 2,280 cfs, 1,680 cfs above SJR IE (3.3 TAF/day)
- Total SWP export reduction for partial Spring Maintenance Flows after 16 days = 3.3 TAF x 16 = 50 TAF
- Total additional SWP exported volume after 45 days = 3.3 TAF x 45 days = 150 TAF
- Total Spring Maintenance Flows = 50 TAF
- Total deferred for environmental purposes = 150 TAF

Example 3 – Development of 150 TAF (short of 150 TAF cap):**Option 1**

- SJR = 6,000 cfs & SJE IE total SWP/CVP allowable export = 1,500 cfs

- SWP share of SJR IE = 1,500 cfs x 40% = 600 cfs

Option 2

- OMR objective = -2000 cfs
- Total SWP/CVP allowable export under OMR = 4,200 cfs
- SWP Export under OMR = 4,200 cfs x 40% = 1,680 cfs, 1,080 cfs above SJR IE (2.1 TAF/day)
- Total additional SWP exported volume after 61 days = 2.1 TAF x 61 = 130 TAF
- Total deferred for environmental purposes = 130 TAF

Example 4– Development of 150 TAF (Demand Limited):

Option 1

- SJR = 16,000 cfs & SJE IE total SWP/CVP allowable export = 4,000 cfs
- SWP share of SJR IE = 4,000 cfs x 40% = 1600 cfs

Option 2

- OMR objective = -5,000 cfs
- Total SWP/CVP export = 12,000 cfs
- SWP Allowable Export under OMR = 12,000 cfs - Jones PP (4,000) = 8,000 cfs, but demand suppressed and export only 600 cfs, 0 cfs above SJR IE (0 TAF/day)
- Total additional SWP exported volume after 61 days = 0 TAF x 61 = 0 TAF
- Total deferred for environmental purposes = 0 TAF

The developed water would initially reside in San Luis Reservoir. In order to carryover water in Oroville, Oroville releases and exports would be reduced by the amount of developed water to enable exchange of stored water from San Luis Reservoir to Lake Oroville by end of September of the same year.

There would likely be no opportunity to re-deploy or exchange spring maintenance water to Oroville in Dry and Critical years, therefore it I assumed that the blocks of spring maintenance water would not be developed in those year types.

Water developed in other year types could be carried over in Lake Oroville to the following year but would be subject to spill and conditioned on the following year not being critical as determined by the SVI.

Use of deferred block of up to 150 TAF:

- Non-discretionary use: Enhanced winter/spring flows if spilled

- Discretionary use: Deployment of flows in the summer/fall of the same year that the water is developed or in the spring/summer/fall in the following year (except critical years) including SMSCG up to 60 days if the following year is dry.

4 Risk of Spill

The development and carryover of the Spring Maintenance Flows up to 150 TAF and the carryover of the wet and above normal 100 TAF would be at the discretion of CDFW and subject to spill to account for the deployment of these blocks of water. The risk of spill in a given year or potential discretion of deploying in a following year would need to be evaluated on a year to year basis to inform decisions on managing these blocks of water.

It is not possible to forecast the upcoming water year type with any great certainty in advance of actual observed precipitation and as historical hydrologic conditions have demonstrated, the hydrology in California is quite variable from year to year. However, we can look at the past to get an indication of future performance. Table 1 shows the water year type breakdown for the period that CalSim simulates (1922 to 2003). The table shows the breakdown of water year types following wet, above normal, and below normal water year types. For example, there were a total of 26 Wet years in the period analyzed and 5 (19%) of those Wet years were followed by a Dry year.

Table 1: Frequency of water year type following wet, above normal, and below normal years (Tables 1a through 1c)

Table 24a: Frequency of water year type following wet years

<u>Water Year Type</u>	<u>Total Number of Years</u>	<u>Years Following Wet (yrs)</u>	<u>Years Following Wet (%)</u>
<u>Wet</u>	<u>26</u>	<u>12</u>	<u>46%</u>
<u>Above Normal</u>	<u>12</u>	<u>4</u>	<u>15%</u>
<u>Below Normal</u>	<u>14</u>	<u>4</u>	<u>15%</u>
<u>Dry</u>	<u>18</u>	<u>5</u>	<u>19%</u>
<u>Critical</u>	<u>12</u>	<u>1</u>	<u>4%</u>

Table 34b: Frequency of water year type following above normal years

<u>Water Year Type</u>	<u>Total Number of Years</u>	<u>Years Following Above Normal (yrs)</u>	<u>Years Following Above Normal (%)</u>
<u>Wet</u>	<u>26</u>	<u>4</u>	<u>36%</u>
<u>Above Normal</u>	<u>12</u>	<u>0</u>	<u>0%</u>
<u>Below Normal</u>	<u>14</u>	<u>2</u>	<u>18%</u>
<u>Dry</u>	<u>18</u>	<u>3</u>	<u>27%</u>
<u>Critical</u>	<u>12</u>	<u>2</u>	<u>18%</u>

Table 41c: Frequency of water year type following below normal years

<u>Water Year Type</u>	<u>Total Number of Years</u>	<u>Years Following Below Normal (yrs)</u>	<u>Years Following Below Normal (%)</u>
<u>Wet</u>	<u>26</u>	<u>4</u>	<u>29%</u>
<u>Above Normal</u>	<u>12</u>	<u>3</u>	<u>21%</u>
<u>Below Normal</u>	<u>14</u>	<u>3</u>	<u>21%</u>
<u>Dry</u>	<u>18</u>	<u>3</u>	<u>21%</u>
<u>Critical</u>	<u>12</u>	<u>1</u>	<u>7%</u>

Further looking at those years following wet, above normal, and below normal we can determine the frequency that water will remain available for discretionary deployment the following year. Using the CalSim Alternative 2b as the basis for analysis, the frequency of water blocks could remain in storage without spilling was determined. Table 2 shows the frequency of water remaining available for deployment the following year if the carryover option was exercised. The table indicates that if the following year were wet or above normal then that water would likely spill and not be available for discretionary action. However, if the following year were below normal or dry then water would likely remain in storage for discretionary deployment in those years.

Table 52: Frequency of discretionary deployment of water block the following year (Tables 2a through 2c)**Table 2a: Frequency of discretionary deployment of water block the following year for years following Wet Year**

<u>Water Year Type</u>	<u>Total (Years)</u>	<u>Discretionary Deployment (yrs)</u>	<u>Discretionary Deployment (%)</u>
<u>Wet</u>	<u>12</u>	<u>0</u>	<u>0%</u>
<u>Above Normal</u>	<u>4</u>	<u>0</u>	<u>0%</u>
<u>Below Normal</u>	<u>4</u>	<u>2</u>	<u>50%</u>
<u>Dry</u>	<u>5</u>	<u>5</u>	<u>100%</u>
<u>Critical</u>	<u>1</u>	<u>0</u>	<u>0%</u>
<u>Total</u>	<u>26</u>	<u>7</u>	<u>27%</u>

Table 2b: Frequency of discretionary deployment of water block the following year for years following Above Normal Year

<u>Water Year Type</u>	<u>Total (Years)</u>	<u>Discretionary Deployment (yrs)</u>	<u>Discretionary Deployment (%)</u>
<u>Wet</u>	<u>4</u>	<u>0</u>	<u>0%</u>
<u>Above Normal</u>	<u>0</u>	<u>0</u>	<u>0%</u>
<u>Below Normal</u>	<u>2</u>	<u>2</u>	<u>100%</u>
<u>Dry</u>	<u>3</u>	<u>3</u>	<u>100%</u>
<u>Critical</u>	<u>2</u>	<u>0</u>	<u>0%</u>
<u>Total</u>	<u>11</u>	<u>5</u>	<u>45%</u>

Table 2c: Frequency of discretionary deployment of water block the following year for years following Below Normal Year

<u>Water Year Type</u>	<u>Total (Years)</u>	<u>Discretionary Deployment (yrs)</u>	<u>Discretionary Deployment (%)</u>
<u>Wet</u>	<u>4</u>	<u>0</u>	<u>0%</u>
<u>Above Normal</u>	<u>3</u>	<u>0</u>	<u>0%</u>
<u>Below Normal</u>	<u>3</u>	<u>3</u>	<u>100%</u>
<u>Dry</u>	<u>3</u>	<u>3</u>	<u>100%</u>
<u>Critical</u>	<u>1</u>	<u>0</u>	<u>0%</u>
<u>Total</u>	<u>14</u>	<u>6</u>	<u>43%</u>

1 SWP Proportionate Share

As described in Section 3.2 of the FEIR, there are conditions under which ESA and CESA flow objectives could be different and the SWP and CVP would be operating to different requirements. The SWP would be obligated to meet both ESA and CESA requirements and under conditions where there are divergent objectives, SWP would operate to its proportionate share of the more restrictive of the two objectives. The proportionate share of the SWP would be based on the proportionate share of responsibility as described in COA.

For example, OMR is a joint regulatory criterion where the CVP and SWP meet this through combined export reductions. The 2018 COA addendum provides SWP with 40% of the available exports under an OMR constraint. If the CESA objective were to be more export restrictive, the SWP would operate as though the CVP were also operating to the same objective. As described in Section 5.3, DWR would pursue agreements with other water users (including Reclamation) or pursue a 1707 permit with the SWRCB to protect the SWP share of water from other diversions. In addition, DWR would assume unused capacity for use by other water users would only be available when CESA objectives were fully met. This limitation on use of unused capacity would include, but not limited to, Banks Pumping Plant, the California Aqueduct, and the SWP share of San Luis Reservoir.

Actual operations of the SWP under different regulatory objectives than the CVP would be dependent on the conditions at that time. Following are three examples that illustrate the most probable operating conditions that are expected with different ESA and CESA regulatory objectives.

Example 1: CVP operating with DCI and constrained by OMR (Unilateral SWP action enough to comply)

- ESA OMR = - 5,000 cfs
 - SJR OMR contribution = 5,000 cfs (total allowed export = 10,000 cfs)

- CVP = 4,200 cfs (less than 60% X 10,000 because Jones/DMC/DCI at full capacity)
- SWP = 5,800 cfs (SWP proportionate share 40% X 10,000 + unused CVP capacity)
- CESA OMR = - 2,500 cfs
 - SJR OMR contribution = 5,000 cfs (total allowed export = 7,500 cfs)
 - CVP = 4,200 cfs (still full capacity)
 - SWP = 3,000 cfs (SWP proportionate share 40% X 7,500 + unused CVP capacity)
- Final OMR = - 2,500 cfs

Example 2: CVP operating with DCI and constrained by OMR (CVP constrained from using SWP facilities)

- ESA OMR = -5,000 cfs
 - SJR OMR contribution = 2,000 cfs (total allowed export = 7,000 cfs)
 - CVP = 4,200 cfs
 - SWP = 2,800 cfs
- CESA OMR = -2,500 cfs
 - SJR OMR contribution = 2,000 cfs (total allowed export = 4,500 cfs)
 - CVP = 3,500 cfs (CVP loses DCI usage)
 - SWP = 1,800 cfs (SWP proportionate share 40% of available export under OMR=2,500 cfs)
- Final OMR = -3,300 cfs

Example 3: CVP operating without DCI and constrained by OMR (No additional constraints on CVP possible)

- ESA OMR = -5,000 cfs
 - SJR OMR contribution = 500 cfs (total allowed export = 5,500 cfs)
 - CVP = 3,300 cfs
 - SWP = 2,200 cfs
- CESA OMR = -2,500 cfs
 - SJR OMR cont = 500 cfs (total allowed export = 3,000 cfs)
 - CVP = 3,300 cfs (CVP continues to operate at previous level)
 - SWP = 1,200 cfs (SWP proportionate share 40% of available export under OMR=2,500 cfs)
- Final OMR = -4,000 cfs

These examples are simplified representations of the calculation of OMR and are only for illustrating how SWP proportionate share would be determined. Actual allowable export would be determined using the OMR Index described in Section 3.3.1 which includes additional parameters.

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