Benefit Calculation, Monetization, and Resiliency Tab

Attachment 4: Existing Mitigation and Compliance

For each net public benefit claimed, where applicable, identify any existing environmental mitigation or compliance obligations that are accounted for in each net public benefit as of the date of the CalSim-II model product in section 6004(a)(1).

- *Applicants that use the CalSim-II and DSM2 models to analyze their projects can indicate "within models" for any existing environmental mitigation and compliance obligations contained in those models.*
- *If applicable to their claimed net public benefit such projects shall also list and account for the non-flow related mitigation and compliance obligations of the State Water Project and Central Valley Project.*

WSIP Application Instructions, March 2017

Table of Contents

Acronyms and Abbreviations

CDFW	California Department of Fish and Wildlife
cfs	cubic feet per second
NMFS	National Marine Fisheries Service
RBPP	Red Bluff Pumping Plant

Introduction

This attachment describes how existing environmental mitigation and compliance obligations were handled in the WSIP application for Sites Reservoir.

All modeling for current, 2030, and 2070 with-project and without-project conditions presented in this application used the CalSim-II and DSM2 model products provided by the Commission for the WSIP application. The Sites Project does not modify, or in any other manner change the existing environmental mitigation and compliance obligations included within in these models.

Net public benefits were monetized for the following purposes:

- Ecosystem enhancement
- Recreation
- Flood Damage Reduction

Costs for all mitigation actions (flow-related and non-flow related obligations) identified in the draft environmental document, are included in the Basis of Estimate Report (see Sites_A8 Estimate under the BENEFIT CALCULATION, MONETIZATION, AND RESILIENCY TAB). The Mitigation Monitoring Plan is Appendix 1A in the Draft EIR/EIS (Posted at http://sitesproject.org/information/DraftEIR-EIS).

There are no additional mitigation or compliance obligations for recreation and flood control benefits. Potential ecological impacts are addressed through both operational constraints and mitigation actions. These are further elaborated on below.

Operations to Avoid and Mitigate Ecosystem Impacts

The proposed operation of the Sites Project incorporates additional mitigation and operational constraints to flexibly to adapt to a range of hydrologic conditions, to minimize impacts to prior right holders and the environment, to address various future uncertainties, and to allow for consideration of a range of future water management actions. The proposed operations include compliance with existing criteria and the addition of constraints that are not included in existing regulations. The proposed operational scenario incorporates three primary components:

1. Operating criteria for diversion of water when all other regulatory criteria are met (including diversion rate, duration of the diversion, the season of diversion and the water year type of the diversion) from the Sacramento River to fill the Sites Reservoir
2. Operating criteria for timing and rate of releases of water to achieve the primary objectives of the Project (and associated benefits) in specific year types (such as drought or driest periods) and other hydrologic conditions
3. Project cooperative operations with the CVP and SWP operations and facilities

The proposed Sites Reservoir would be filled through the diversion of Sacramento River water that originates from unregulated tributaries to the Sacramento River downstream from Keswick Dam. Sacramento River water would be diverted at the existing Hamilton City and Red Bluff diversion locations. Sacramento River water would also be diverted via a new Delevan intake and pipeline. Flows available for diversion are considered river flows in addition to those required to meet the following:

- Senior downstream water rights, existing CVP and SWP and other water rights diversions including SWP Article 21 (interruptible supply), and other more senior flow priorities (diversions associated with Freeport Regional Water Project and Los Vaqueros Reservoir)

- Existing regulatory requirements including State Water Resources Control Board D-1641, VPIA 3406(b)(2), the 2008 U.S. Fish and Wildlife Service biological opinion, and the 2009 National Marine Fisheries Service biological opinion and other instream flow requirements
- Flow conditions needed to maintain and protect anadromous fish survival and Delta water quality

Sacramento River flow diversions to Sites Reservoir would only take place when flow monitoring indicates that bypass flows are present in the river because of storm event flows. Several existing and additional proposed bypass flow criteria were assumed at specified locations, as part of the Project. These flow criteria are designed to make certain that available water would be diverted into Sites Reservoir to maintain and protect existing downstream water uses and environmental resources, as follows.

- A bypass flow of 3,250 cfs downstream from Red Bluff Diversion Dam must be present to maintain lows in the upper Sacramento River that are required in State Water Resources Control Board WR 90-5 to prevent dewatering salmonid redds and maintain water temperatures. Diversions at RBPP for filling Sites Reservoir would only be allowed when flows in the river are above the 3,250 cfs bypass flow criteria.
- Diversions at the Hamilton City intake for Glenn-Colusa Canal currently require a bypass flow of 4,000 cfs to prevent fish entrainment. Diversions at RBPP and Glenn-Colusa Canal intake for filling Sites Reservoir would only be allowed when flows in the river are above the 4,000-cfs bypass flow requirement downstream from Hamilton City.
- Diversions for filling Sites Reservoir would only be allowed when flows below Wilkins Slough were above 5,000 cfs, given the current minimum flow requirements. Wilkins Slough Navigation Control Point minimum flows currently range from 3,250 to 5,000 cfs, depending on hydrologic conditions.
- Diversions for filling Sites Reservoir would only be allowed when a Sacramento River flow of 15,000 cfs is present at Freeport in January; 13,000 cfs in December and February through June; and 11,000 cfs in all other months. This flow threshold protects and maintains existing downstream water uses and water quality in the Delta.

This operating strategy greatly reduces the impact associated with diversions.

To further address the potential for impacts to anadromous fish migration and impacts resulting from fish exposure to the proposed diversion facilities, the Project shall establish and fund an ongoing juvenile salmon trapping program and data collection network to collect real-time data to inform the operation of Sites diversions on behalf of minimizing potential fish impacts. The program shall be developed in coordination with CDFW and NMFS, and designed to augment and draw from other ongoing fish and environmental data collection efforts in the Sacramento River. The data collection and monitoring program is intended to inform the ongoing refinement of fish protection operations.

Based on proposed ongoing monitoring for fish presence, the Project shall protect naturally occurring, storm-induced pulse flows in the Sacramento River from October through May to minimize mortality of out-migrating juvenile winter-, spring-, fall- and late fall-run Chinook salmon, and steelhead. Fish protection shall be accomplished by managing diversions at the three Project diversion points during those pulse flow events that stimulate an important spike in juvenile salmon out-migration.

When a pulse in flow is followed by a rapid increase in juvenile salmon downstream migration, as detected by the monitoring program, the Sites Project will do the following:

- Manage diversions to limit potential impacts to juvenile salmon in the Sacramento River. The allowable level of diversion will be determined based on the results of fish monitoring and flow

conditions, and different diversion rates may be assigned to operations during daylight and nighttime hours.

- The above limitations will apply to each diversion, and operations at each facility will be managed independently to fine-tune fish protection, to the extent possible. The limitations on diversion will remain in effect until real-time monitoring associated with that facility indicates that the out-migration pulse in juvenile salmon has past.

Pulse flows during periods of peak out-migration are expected to provide flow continuity between the upper and lower Sacramento River that will help support fish migration. It is recognized that research regarding the benefits of pulse flows is ongoing, and results of the Project monitoring program as well as further research and adaptive management will be needed to refine the pulse flow protection strategy.

This measure is expected to reduce potential mortality of juvenile salmon from the Sites Project during their peak out-migration periods by accomplishing the following: (1) minimizing the effects on fish exposed to the diversion facilities, (2) minimizing diversion-related effects on survival, and (3) minimizing reductions in migration travel time.

For impact analysis and simulation modeling purposes, pulse flow events are assumed to be initiated when the 3-day trailing average Bend Bridge flow exceeds 15,000 cfs. Such an event would be considered a "qualified" event limiting diversion if the pulse flow was greater than 15,000 cfs for 7 to 10 days. A pulse flow event would be considered terminated under the following conditions: (1) the 3-day trailing average flow remained greater than 15,000 cfs for 7 to 10 days after initiation (constituting a qualified pulse event), or (2) the 3-day trailing average flow dropped below 15,000 cfs before reaching the 7-day duration (not a qualified event). Up to one qualified pulse event would be recognized in each month during the pulse protection period to minimize potential impacts on fish migration. Diversions to Sites Reservoir storage would be restricted under the following conditions: (1) pulse conditions exist at Bend Bridge, and a qualified pulse event has not already occurred within the given month, and (2) Bend Bridge flows were less than 25,000 cfs during the pulse event (flows above 25,000 cfs are considered to provide lesser benefits to fish migration).