

Attachment 3: DSM2 Model Assumptions Callouts

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4A-3.1 Introduction

The assumptions for all model simulations in this study are summarized in Attachment 1.

4A-3.2 DSM2 Modeling Assumptions Callouts

The following matrix summarizes the assumptions used for the DSM2 models:

- Baseline Conditions (BC)
- Proposed Project (PP)

| | Baseline Conditions (BC) | Proposed Project (PP) |
|-------------------------------------|--|-----------------------|
| Period of simulation | 100 years (1922–2021) ¹ | Same as BC |
| BOUNDARY CONDITIONS | | |
| Boundary flows | Monthly time series from CalSim 3 output (at Sacramento River, East Side Streams, San Joaquin River, as well as Delta exports and diversions) ² | Same as BC |
| Ag flows (DICU) | 2020 Level, DWR Bulletin 160-98 ³ | Same as BC |
| Martinez stage | 15-minute adjusted astronomical tide ¹ | Same as BC |
| Vernalis EC | Monthly time series from CalSim 3 output ⁴ | Same as BC |
| Agricultural Return EC | Municipal Water Quality Investigation Program analysis | Same as BC |
| Martinez EC | Monthly net Delta Outflow from CalSim output & G-model ⁵ | Same as BC |
| FACILITIES | | |
| Freeport Regional Water Project | Monthly output from CalSim 3 | Same as BC |
| DCC | Monthly time series of number of days open from CalSim 3 output ⁷ | Same as BC |
| Stockton Delta Water Supply Project | Monthly output from CalSim 3 | Same as BC |
| Delta Habitat Improvements | None | Same as BC |
| Veale Tract Drainage Relocation | The Veale Tract Water Quality Improvement Project, funded by CALFED, relocates the agricultural drainage outlet was relocated from Rock Slough channel to the southern end of Veale Tract, on Indian Slough ⁶ | Same as BC |

| | Baseline Conditions (BC) | Proposed Project (PP) |
|---|--|------------------------------|
| Clifton Court Forebay | Priority 3, gate operations synchronized with incoming tide to minimize impacts to low water levels in nearby channels | Same as BC |
| Contra Costa Water District Delta Intakes | Rock Slough Pumping Plant, Old River at Highway 4 Intake and Alternate Improvement Project Intake on Victoria Canal | Same as BC |
| South Delta barriers | Temporary Barriers Project operated based on San Joaquin River flow time series from CalSim II output; HORB is not installed; Agricultural barriers on Old and Middle Rivers are assumed to be installed starting from May 16 and on Grant Line Canal from June 1; All three barriers are allowed to be operated until November 30; May 16 to May 31; the tidal gates are assumed to be tied open for the barriers on Old and Middle Rivers. | Same as BC |
| Antioch Water Works | Monthly output from CalSim 3 | Same as BC |
| Suisun Marsh Salinity Control Gates | Gate operations are based on monthly output from CalSim 3. ⁸ Gates open when upstream water level is 0.3 foot above downstream water level. Gates close when current is less than -0.1 foot per second. | Same as BC |

Notes:

¹ Adjusted astronomical tide for use in DSM2 planning studies has been developed by DWR's Modeling Support Office. This tide is based on a more extensive observed dataset and covers the entire 100-year period of record.

² Although monthly CalSim output was used as the DSM2-HYDRO input, the Sacramento and San Joaquin rivers were interpolated to daily values in order to smooth the transition at the month transitions. DSM2 then uses the daily flow values along with a 15-minute adjusted astronomical tide to simulate effect of the spring and neap tides.

³ The Delta Channel Depletion (DCD) model is used to calculate diversions and return flows for all Delta islands based on the level of development assumed. The projected 2020 land-use assumptions are found in Bulletin 160-98.

⁴ CalSim 3 calculates monthly EC for the San Joaquin River, which are then represented at a daily interval. Daily EC timeseries data are constant across each month. Fixed concentrations of 150, 175, and 125 $\mu\text{mhos/cm}$ were assumed for the Sacramento River, Yolo Bypass, and eastside streams, respectively.

⁵ Net Delta outflow based on the CalSim 3 flows was used with an updated G-model to calculate Martinez EC.

⁶ Information was obtained based on the information from the draft final "Delta Region Drinking Water Quality Management Plan" dated June 2005 prepared under the CALFED Water Quality Program and a presentation by David Briggs at SWRCB public workshop for periodic review. The presentation "Compliance location at Contra Costa Canal at Pumping Plant #1 - Addressing Local Degradation" notes that the Veale Tract drainage relocation project will be operational in June 2005. The DICU drainage currently simulated at node 204 is moved to node 202 in DSM2.

⁷ CalSim 3 calculates number of days DCC gates are open in a given month. For implementation in DSM2, it is assumed the number of days open are the first series of days in that month. For example, if CalSim 3 output indicates DCC gates are open for 5 days in a given month, DCC gates will be open for the first five days of that month in DSM2.

⁸ CalSim 3 determines the months during which Suisun Marsh Salinity Control Gates (SMSCG) operate to meet D-1641 water quality compliance in Montezuma Slough, or for Summer/Fall Delta Actions under the Baseline Conditions or the Proposed Project.