## **Appendix 5A-3 DSM2 Model Assumptions Callouts**

## 1 Introduction

The assumptions for all Sites model simulations are summarized in Appendix 5A Attachment 1 Model Assumptions.

## 1.1 DSM2 Modeling Assumptions Callouts

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

- No Action Alternative 011221
- Alternative 1A 011221
- Alternative 1B 011221
- Alternative 2 011221
- Alternative 3 020121

	No Action Alternative (NAA)				Alternative 3 (ALT 3)
Period of simulation	82 years (1922- 2003) <sup>a</sup>	Same as NAA	Same as NAA	Same as NAA	Same as NAA
BOUNDARY CONDITIONS					
Boundary flows	output (alternatives	from CalSim II output (alternatives provide different			

	No Action Alternative (NAA)	Alternative 1A (ALT 1A)	Alternative 1B (ALT 1B)	Alternative 2 (ALT 2)	Alternative 3 (ALT 3)
Ag flows (DICU)		Same as NAA	Same as NAA	Same as NAA	Same as NAA

	No Action Alternative (NAA)		Alternative 1B (ALT 1B)		Alternative 3 (ALT 3)
Martinez stage	15-minute adjusted astronomical tide with 15 cm sea level rise <sup>a</sup>		Same as NAA	Same as NAA	Same as NAA
Vernalis EC	from CalSim II	_	<u> </u>	from CalSim II	Monthly time series from CalSim II output <sup>d</sup>
Agricultural Return EC	Municipal Water Quality Investigation Program analysis	Same as NAA	Same as NAA	Same as NAA	Same as NAA

	No Action Alternative (NAA)			[	Alternative 3 (ALT 3)
Martinez EC	Outflow from CalSim output & G-	Outflow from CalSim output & G-	Outflow from CalSim output & G-	Outflow from	Monthly net Delta Outflow from CalSim output & G- model <sup>f</sup>
FACILITIES Freeport Regional Water Project	,	Monthly output from CalSim II			Monthly output from CalSim II
Delta Cross Channel	of number of days open from CalSim II	Monthly time series of number of days open from CalSim II output			
Stockton Delta Water Supply Project		Monthly output from CalSim II	•		Monthly output from CalSim II
Barker Slough Pumping Plant	under Fairfield,		Same as ALT 1A	Same as ALT 1A	Same as ALT 1A
Franks Tract Program	None	None	None	None	None

	No Action Alternative (NAA)	Alternative 1A (ALT 1A)	Alternative 1B (ALT 1B)	Alternative 2 (ALT 2)	Alternative 3 (ALT 3)
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	Same as NAA	Same as NAA	Same as NAA	Same as NAA
Clifton Court Forebay	Priority 3, gate operations synchronized with incoming tide to minimize impacts to low water levels in nearby channels	Same as NAA	Same as NAA	Same as NAA	Same as NAA

Appendix 5A Appendix 5A-3 DSM2 Model Assumptions Callouts

	No Action Alternative (NAA)	Alternative 1A (ALT 1A)	Alternative 1B (ALT 1B)	Alternative 2 (ALT 2)	Alternative 3 (ALT 3)
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 NAA	Same as NAA	Same as NAA	Same as NAA

	No Action Alternative (NAA)	Alternative 1A (ALT 1A)		Alternative 2 (ALT 2)	Alternative 3 (ALT 3)
South Delta	Temporary Barriers	Temporary Barriers	Temporary Barriers	Temporary Barriers	Temporary Barriers
barriers	Project operated	Project operated	1	Project operated	Project operated
	based on San	based on San	based on San	based on San	based on San
	Joaquin River flow	Joaquin River flow	Joaquin River flow	Joaquin River flow	Joaquin River flow
	time series from	time series from	time series from	time series from	time series from
	CalSim II output;	CalSim II output;	CalSim II output;	CalSim II output;	CalSim II output;
	Head of Old River	Head of Old River	Head of Old River	Head of Old River	Head of Old River
	Barrier (HORB) is	Barrier (HORB) is	Barrier (HORB) is	Barrier (HORB) is	Barrier (HORB) is
	not installed;	not installed;	not installed;	not installed;	not installed;
	Agricultural barriers	Agricultural barriers	Agricultural barriers	Agricultural barriers	Agricultural barriers
	on Old and Middle	on Old and Middle	on Old and Middle	on Old and Middle	on Old and Middle
	Rivers are assumed	Rivers are assumed	Rivers are assumed	Rivers are assumed	Rivers are assumed
	to be installed	to be installed	to be installed	to be installed	to be installed
	starting from May	starting from May	starting from May	starting from May	starting from May
	16 and on Grant	16 and on Grant	16 and on Grant	16 and on Grant	16 and on Grant
	Line Canal from	Line Canal from	Line Canal from	Line Canal from	Line Canal from
	June 1; All three	June 1; All three	June 1; All three	June 1; All three	June 1; All three
	barriers are allowed	barriers are allowed	barriers are allowed	barriers are allowed	barriers are allowed
	to be operated until	to be operated until	to be operated until	to be operated until	to be operated until
	November 30; May	November 30; May	November 30; May	November 30; May	November 30; May
	16 to May 31; the	16 to May 31; the	16 to May 31; the	16 to May 31; the	16 to May 31; the
	tidal gates are	tidal gates are	tidal gates are	tidal gates are	tidal gates are
	assumed to be tied	assumed to be tied	assumed to be tied	assumed to be tied	assumed to be tied
	open for the	open for the	open for the	open for the	open for the
	barriers on Old and	barriers on Old and	barriers on Old and	barriers on Old and	barriers on Old and
	Middle Rivers <sup>i</sup> .	Middle Rivers <sup>i</sup> .	Middle Rivers <sup>i</sup> .	Middle Rivers <sup>i</sup> .	Middle Rivers <sup>i</sup> .

No Action Alternative (NAA)				Alternative 3 (ALT 3)
, ,	' '	' '	'	Monthly output from CalSim II

Suisun Marsh	Monthly output				
Salinity Control	'	from CalSim II;			from CalSim II;
Gates	operate (1) to meet	·	•	•	
Gates	•	· ·	•	-	SWRCB D-1641
	'	water quality	' '	' '	water quality
					standards in
	_				Montezuma Slough
	,	, ,	, ,	, ,	during salinity
	control season	control season			control season
	October through				
	May; (2) for the				
	2019 BiOps				
	Summer/Fall Delta				
	Smelt Habitat				
	Action for up to 60				
	days in June				
	through October of				
	Below Normal,				
	Above Normal and				
	Wet years; and (3)				
	for the 2020 SWP				
	ITP Delta Smelt				
	Summer/Fall	Summer/Fall	Summer/Fall	Summer/Fall	Summer/Fall
	Habitat Action for				
	up to 60 days in				
	June through	June through	, ,	, ·	June through
	October of Dry	October of Dry			October of Dry
	years	years	=	_	years

## Notes:

- An adjusted astronomical tide for use in DSM2 planning studies has been developed by DWR's Bay Delta Office Modeling Support Branch Delta Modeling Section in cooperation with the Common Assumptions workgroup. This tide is based on a more extensive observed dataset and covers the entire 82-year period of record. Martinez stage boundary condition is augmented by 15 cm based on equations used for Bay-Delta Conservation Plan to simulate expected sea level rise in 2030.
- b 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 from high to low and low to high flows. DSM2 then uses the daily flow values along with a 15-minute adjusted astronomical tide to simulate effect of the spring and neap tides.
- <sup>c</sup> The Delta Island Consumptive Use (DICU) 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.
- d CalSim II calculates monthly EC for the San Joaquin River, which was then converted to daily EC using the monthly EC and flow for the San Joaquin River. Fixed concentrations of 150, 175, and 125 μmhos/cm were assumed for the Sacramento River, Yolo Bypass, and eastside streams, respectively.
- <sup>e</sup> Net Delta outflow based on the CalSim II flows was used with an updated G-model to calculate Martinez EC. Under changed climate conditions Martinez EC is modified to account for the sea level rise at early (15 cm) and late (45 cm) long-term phases (Year 2060).
- 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.
- <sup>9</sup> Based on the FWS Delta Smelt BO Action 5 and the project description provided in the page 119.
- h Based on the FWS Delta Smelt BO Action 5, Head of Old River Barrier (HORB) is assumed to be not installed in April or May; therefore HORB is only installed in the Fall as shown.