

Lower San Joaquin River - EC Water Quality Objective & Performance Goal (Preferred Alternatives)

June 26, 2015

After consideration of a broad spectrum of alternative water quality objectives (WQOs) and implementation actions, the following preferred alternatives for an electrical conductivity (EC) WQO and an EC Performance Goal are being recommended by the Lower San Joaquin River Committee (LSJRC). The purpose of this document is to provide guidance and recommendations to Regional Board staff as they develop the subsequent Staff Report and Basin Plan Amendment language.

Chapter III (Water Quality Objectives) of the Basin Plan

The Preferred Alternative for the EC WQO, which would be incorporated into Chapter III of the Basin Plan, is as follows:

Electrical Conductivity (EC) in the Lower San Joaquin River (Reach 83), as measured at Crows Landing, is 1550 $\mu\text{mhos/cm}$ as a 30-day running average, except during an *Extended Dry Period*^{1,2}.

Extended Dry Period is defined as follows:

The State Water Resources Control Board's (SWRCB's) San Joaquin Valley "60-20-20" Water Year Hydrologic classification^{1,2} shall be assigned the following indicator values:

- Wet – 5
- Above Normal – 4
- Below Normal – 3
- Dry – 2
- Critically Dry – 1

The indicator values will be used to determine when an Extended Dry Period is in effect:

- An Extended Dry Period shall begin when the sum of the current year's 60-20-20 indicator value and the previous two year's 60-20-20 indicator values total six (6) or less.
- An Extended Dry Period shall be deemed to exist for one **water year** (12 months) following a period with an indicator value total of six (6) or less.

²During an Extended Dry Period (defined above), the following factors shall be taken into consideration to ensure that the beneficial uses are protected in Reach 83 of the LSR (as measured at Crows Landing):

- To protect the designated potential MUN beneficial use, EC WQO shall be 2200 $\mu\text{mhos/cm}$ as the average of the previous four (4) month quarterly averages.
- To protect the AGR beneficial use, EC in the Lower San Joaquin River (Reach 83 shall be **2240** $\mu\text{mhos/cm}$ as a 30-day running average.

Commented [KA1]: It would be good to identify a reference for the classification system. I have two footnotes below – one from the Basin Plan which refers to the Bay-Delta Plan and one from D1641. Perhaps the Regional Board can provide some direction regarding which reference is best.

Commented [KA2]: Jim Brownell to define

Commented [AL3]: This is based Hoffman modelling for 80% yield with almonds. The committee still needs to weigh in on the options for a WQO to protect AGR during the Extended Dry Period.

Chapter IV (Implementation) of Basin Plan

¹ The calculation method for the 60-20-20 Water Year Hydrologic Classification is set forth in Figure 2 of the Water Right Decision 1641, March 2000.

² The water year classification will be established using the best available estimate of the 60-20-20 San Joaquin Valley water year hydrologic classification (as defined in Footnote 13 for Table 3 in the State Water Resources Control Board's State Water Resources Control Board's Revised Water Right Decision 1641, March 2000) at the 75% exceedance level using data from the Department of Water Resources Bulletin 120 series.

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The Preferred Alternative for the implementation of the EC Performance Goal³ for the Lower San Joaquin River (Reach 83), which would be incorporated into Chapter IV of the Basin Plan, is as follows:

Water Year Type	Irrigation Season		Non-irrigation Season
	March – June	July - October	November - February
Wet	1350 (Performance Goal)		1550 (WQO)
Above Normal	1350 (Performance Goal)		1550 (WQO)
Below Normal	1350 (Performance Goal)	1550 (WQO)	
Dry	1350 (Performance Goal)	1550 (WQO)	
Critical	1550 (WQO)		

EC WQO of 1550 µmhos/cm with a seasonal EC Performance Goal of 1350 µmhos/cm. Both the EC WQO and EC Performance Goal are as measured at Crows Landing and are 30-day running averages. The WQO and Performance Goal would apply as indicated above, except during an *Extended Dry Period*^{1,2}

Extended Dry Period is defined as follows:

The SWRCB's San Joaquin Valley "60-20-20" Water Year Hydrologic classification shall be assigned the following indicator values:

- Wet – 5
- Above Normal – 4
- Below Normal – 3
- Dry – 2
- Critically Dry – 1

The indicator values will be used to determine when an Extended Dry Period is in effect:

- An Extended Dry Period shall begin when the sum of the current year's 60-20-20 indicator value and the previous two year's 60-20-20 indicator values total six (6) or less.
- An Extended Dry Period shall be deemed to exist for one **water year** (12 months) following a period with an indicator value total of six (6) or less.

During an Extended Dry Period (defined above), the following factors shall be taken into consideration to ensure that the beneficial uses are protected in Reach 83 of the LSR (as measured at Crows Landing):

- To protect the designated potential MUN beneficial use, EC WQO shall be 2200 µmhos/cm as the average of the previous four (4) quarter averages.
- To protect the AGR beneficial use, EC in the Lower San Joaquin River (Reach 83) shall be 2240 µmhos/cm as a 30-day running average.

Commented [AL4]: See note on first page

Supplemental Information

³ The Performance Goal will be used to measure progress towards achievement of EC levels during certain water types and times of year that are of higher quality than the current EC WQO for Reach 83 of the LSJR.

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Establishment of 1350 $\mu\text{mhos/cm}$ as the Performance Goal

A Performance Goal of 1350 $\mu\text{mhos/cm}$ is recommended to be established throughout the irrigation season during specific water year types. This value was established as a Performance Goal because:

- The WARMF modelling of the Planned Bundle indicates that, after full implementation of the key actions underway within the LSJR Basin, the ambient water quality within Reach 83 of the LSJR will not exceed an EC value of 1350 $\mu\text{mhos/cm}$. However, due to model uncertainty, the WQO was set at 1550 $\mu\text{S/cm}$ which is the value that is protective of the most sensitive crop based on Hoffman modeling results.
- Agricultural supply water at 1350 $\mu\text{mhos/cm}$ would provide a higher level of protection during irrigation season by increasing crop yield above 95 percent, based on Hoffman modeling results.
- It would help maintain the soil salinity balance by flushing the salt accumulated during Extended Dry Periods below the soil root zone .

Effective Date for the EC WQO and EC Performance Goal

The proposed EC WQO and Performance Goal should take effect on January 1, 2020, to allow for full implementation of Grasslands Bypass project and other planned actions affecting salinity levels in Reach 83.

Evaluation of the EC Performance Goal and Basin Plan Re-Opener

A re-opener should be established in the Basin Plan ten (10) years after adoption of the amendment to consider an EC value of less than 1550 $\mu\text{mhos/cm}$ as the numeric WQO in Reach 83. As part of the evaluation, the historic EC data should be evaluated to determine if the planned actions assumed for the Planned Bundle modeling have resulted in ambient river EC water quality less than 1550 $\mu\text{mhos/cm}$. Based on findings from the evaluation, the Central Valley Water Board may consider the following actions: 1) Initiating a basin plan amendment effort to establish a new EC WQO, or 2) Maintaining the current EC WQO with no further planned evaluation, or 3) Scheduling a future evaluation to allow for additional data collection and analysis.

Salinity Management Plan

- The Basin Plan should include language in the implementation section that would emphasize the intent to attain the 1350 $\mu\text{mhos/cm}$ EC Performance Goal through implementation of currently planned salinity management actions such as, full implementation of the Grassland Bypass Project. If the planned salinity management actions do not result in the attainment of the EC Performance Goal as expected, Regional Water Board staff will evaluate why the EC Performance Goal was not achieved. Such evaluation may include requesting reports from dischargers in reach 83, soliciting input from interested parties, or other appropriate actions. The Salt and Boron TMDL for the San Joaquin River, adopted in 2006, resulted in the establishment of a Real Time Management effort for salinity management in the Reach 83 watershed to meet current EC WQOs at Vernalis. Stakeholders involved in the Real Time

Commented [D5]: The salinity management group was originally considered as a vehicle to help interpret a narrative extended drought period water quality objective as well as to provide guidance for relaxing the 1550 EC objective in the winter month to provide greater ability to move salts out of the basin during times that would not impact beneficial uses. If these two actions are not required the group has no role and should not be included in the Basin Plan. Reference to the Vernalis Realtime Group could be helpful to document the role the group could play in future salinity actions if necessary.

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Management effort could provide information to the Regional Board staff to help evaluate the ability to meet the EC Performance Goal.