



Water Resources ♦ Flood Control ♦ Water Rights

M E M O R A N D U M

DATE: September 26, 2022
TO: Melinda Terry, Manager – North Delta Water Agency
FROM: Anne Williams & Yuen Lenh
SUBJECT: 2021 Water Quality Contract Exceedances

During 2021, there were four incidents when the salinity levels at monitoring locations exceeded the criteria established in the Attachment A graphs of North Delta Water Agency's (NDWA) 1981 Contract (Contract) with the Department of Water Resources (DWR). Of these four incidents, one occurred at the Sacramento River at Rio Vista (RVB) station on June 28th through July 8th. The remaining three incidents occurred at the Sacramento River at Three Mile Slough (TMS) station: June 28th through July 13th, October 8th through October 27th, and December 9th through December 16th. This memorandum summarizes these incidents including communications with and any responses or actions by DWR to address the exceedances. Attached to this memorandum are plots showing the 14-day running average of the mean daily electrical conductivity (EC) levels at the RVB and TMS stations during 2021.

Contract Water Quality Compliance Criteria

There are seven stations with salinity criteria under the Contract, and the criteria are determined based on the exceedance forecasts for the Four River Index as published in DWR's Bulletin 120. Compliance is based on the 14-day running average of the mean daily EC¹. MBK monitors the water quality at each of the stations and notifies DWR when water quality is trending towards the Contract criteria. As established by the graphs in Attachment A of the Contract for certain date ranges, the applicable criteria values during the periods of exceedance are summarized in the following table. These criteria are based on the May 1, 2021² Bulletin 120 50% exceedance forecast for the Four River Basin Index of 6.73 MAF.

¹ Daily EC levels may exceed the established criteria without being considered an exceedance of the Contract criteria.

² The criteria for April 1, 2021 through April 30, 2021 was based on the April 1, 2021 Bulletin 120 50% exceedance forecast for the Four River Basin Index of 7.99 MAF.

Station	WQ Criteria Date Range	WQ Criteria
RVB	4/1 – 8/15	0.87 mS/cm
TMS	5/1 – 8/22	2.77 mS/cm
	8/23 – 12/31	2.80 mS/cm

The Contract criteria at RVB for April 1, 2021 through August 15, 2021 was 0.87 mS/cm. The 14-day mean EC exceeded this criteria on June 28th and remained above the standard for 11 days. The mean daily EC during this time peaked at 0.98 mS/cm on July 1st. This is the first exceedance of the Contract criteria at RVB since the Contract was in place.

The Contract criteria at TMS for the period May 1, 2021 through August 22, 2021 was 2.77 mS/cm. The 14-day mean EC exceeded this standard on June 28th and remained above the standard for 16 days. The mean daily EC during this time peaked at 3.18 mS/cm on July 3rd.

For the period August 23, 2021 through December 31, 2021, the Contract criteria at TMS was 2.80 mS/cm. The 14-day mean EC exceeded this standard on October 8th and remained above the criteria for 20 days. The peak mean daily EC during this period was 3.27 mS/cm. The 14-day mean EC exceeded this standard again on December 9th and remained above the criteria for 8 days. The peak mean daily EC during this period was 3.16 mS/cm.

Station	WQ Criteria Date Range	WQ Criteria	Period of Exceedance
RVB	4/1 – 8/15	0.87 mS/cm	6/28 – 7/8
TMS	5/1 – 8/22	2.77 mS/cm	6/28 – 7/13
	8/23 – 12/31	2.80 mS/cm	10/8 – 10/27
			12/9 – 12/16

DWR Communications and Compliance Actions

During drought conditions, MBK has regularly scheduled coordination calls with DWR staff. These calls occur at least monthly and more frequently when needed. DWR staff typically provides an update on current State Water Project (SWP) operations and near-term changes in operations. MBK typically describes current water quality conditions within NDWA at the seven monitoring stations specified in the Contract and any observations from landowners on current irrigation/farming practices. DWR staff have been very responsive to questions that arise during the meetings and provide necessary follow-up as applicable after the meetings.

As conditions change or questions come up between the regular coordination calls, MBK typically calls or emails Ian Uecker, the Manager of DWR's Delta Compliance and Modeling Section within the State Water Project Operations Control Office. Specific communication with DWR relative to Contract criteria exceedances during 2021 is summarized below.

Exceedances at RVB (6/28 – 7/8) and TMS (6/28 – 7/13)

On June 28, 2021, MBK contacted DWR staff (Mr. Uecker) regarding rising salinity levels at both RVB and TMS. Replying shortly after, DWR explained that to prevent prolonged exceedances, releases were increased from Oroville and Shasta a few days prior, SWP and Central Valley Project (CVP) exports were low, and that the U. S. Bureau of Reclamation (USBR) planned to close Delta Cross Channel gates that same day. As salinity levels continued to exceed the Contract criteria, MBK continued discussions with DWR. On July 6th, DWR indicated that recent spring tides were approximately ½ foot higher than forecasted which contributed to salinity levels remaining higher than expected. DWR also noted that releases from Shasta were being increased which was expected to help improve water quality in the Delta. Conditions at RVB improved and the criteria was met again beginning on July 9, 2021. By July 13th, conditions at TMS were improving due to the actions taken and current tidal conditions, and DWR reported that there would be no changes to current operations in the near future, with exports remaining at minimums, releases at Oroville and Shasta remaining steady, and the Delta Cross Channel gates remaining open.

Exceedance at TMS (10/8 – 10/27)

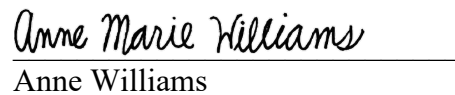
On October 5, 2021, MBK contacted DWR staff regarding rising salinity levels at TMS. DWR staff responded via email later that day to identify anticipated improvements to water quality due to actions by the CVP, including recent closure of the Delta Cross Channel gates and potential reduction in CVP exports. DWR staff indicated no changes in SWP operations were being considered at this time as SWP exports were already at minimum levels. Further, staff indicated Lake Oroville had lost power generation due to its extremely low water levels, thus additional releases from Oroville to support water quality improvement were not being considered. Despite the operational changes by the CVP, the 14-day running average of mean daily EC at TMS exceeded the Contract criteria for a period of 20 days, from October 8th through October 27th. On October 11th, DWR staff contacted MBK via email to acknowledge the Contract criteria exceedance and to explain that a strong spring tide had pushed substantial salts into the interior Delta, causing the increase in salinity levels. DWR also identified that the SWP had cut exports and the CVP was continuing to close Delta Cross Channel gates on weekdays, actions which DWR was hopeful would result in water quality improvement at TMS. Upon seeing continued exceedances, MBK followed up again with DWR on October 18th. DWR responded on October 19th that the CVP had cut exports to a single unit and that Delta Cross Channel gates were continuing to be closed on weekdays. DWR was hopeful that storm runoff

would help Freeport flows and consequently improve water quality. On October 28th, increased Delta inflow due to storm events brought EC levels at TMS back below the Contract criteria.

Exceedance at TMS (12/9 – 12/16)

The 14-day running average of mean daily EC at TMS exceeded the Contract criteria for a period of 8 days, from December 9th through December 16th. On December 13th, MBK received an email from DWR staff acknowledging the exceedance at TMS and listing several factors that were expected to result in a short-lived exceedance. DWR explained that the SWP and CVP exports were at minimums, the Delta Cross Channel gate had been and would remain closed, tides had receded, and storm runoff in the Sacramento River watershed had been increasing. On December 17th, increased Delta inflow due to storm events brought EC levels at TMS down below the Contract criteria.


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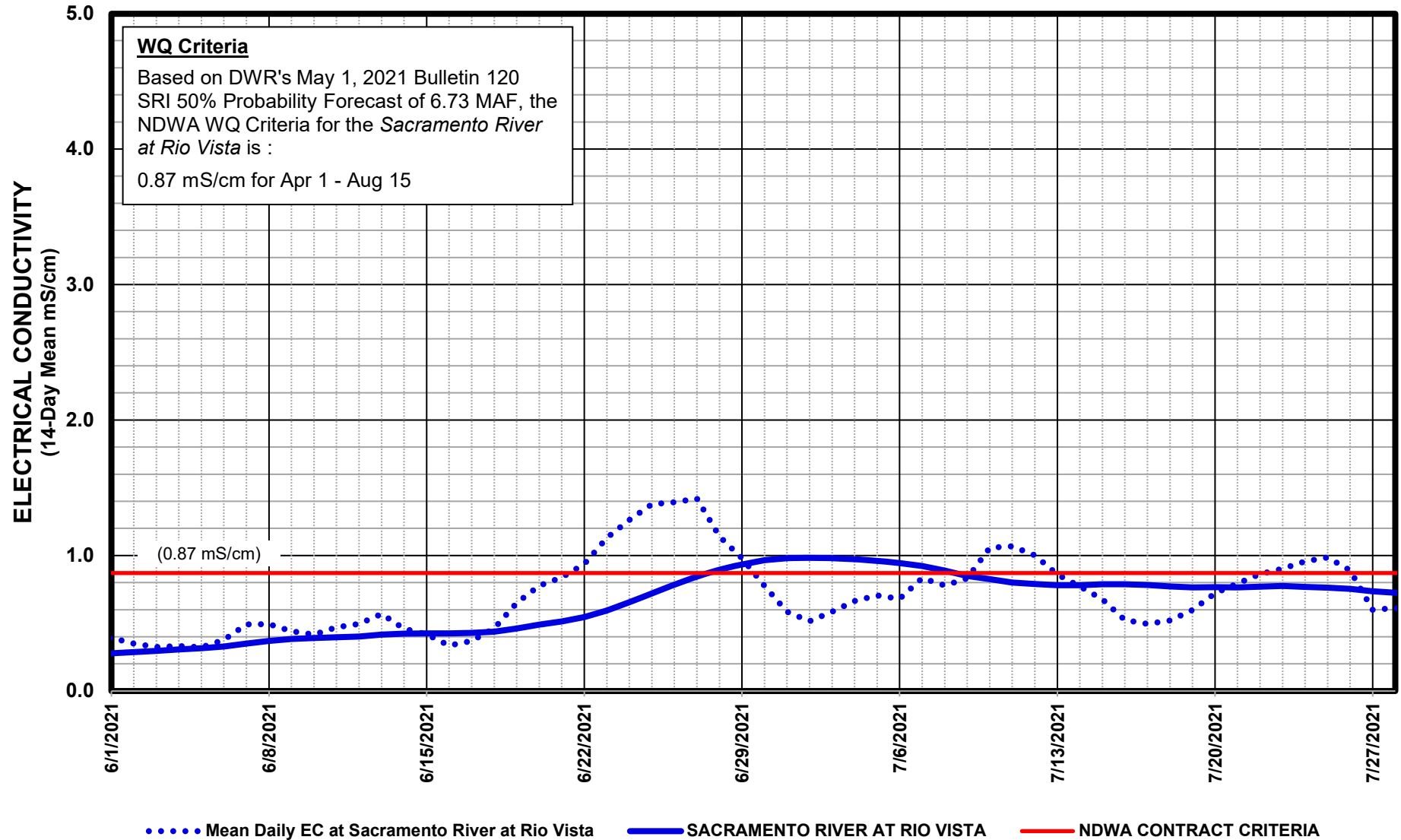
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Attachments:

Water Quality Plots

NORTH DELTA WATER AGENCY SACRAMENTO RIVER AT RIO VISTA 14-DAY MEAN ELECTRICAL CONDUCTIVITY



NORTH DELTA WATER AGENCY SACRAMENTO RIVER AT THREE-MILE SLOUGH ELECTRICAL CONDUCTIVITY

