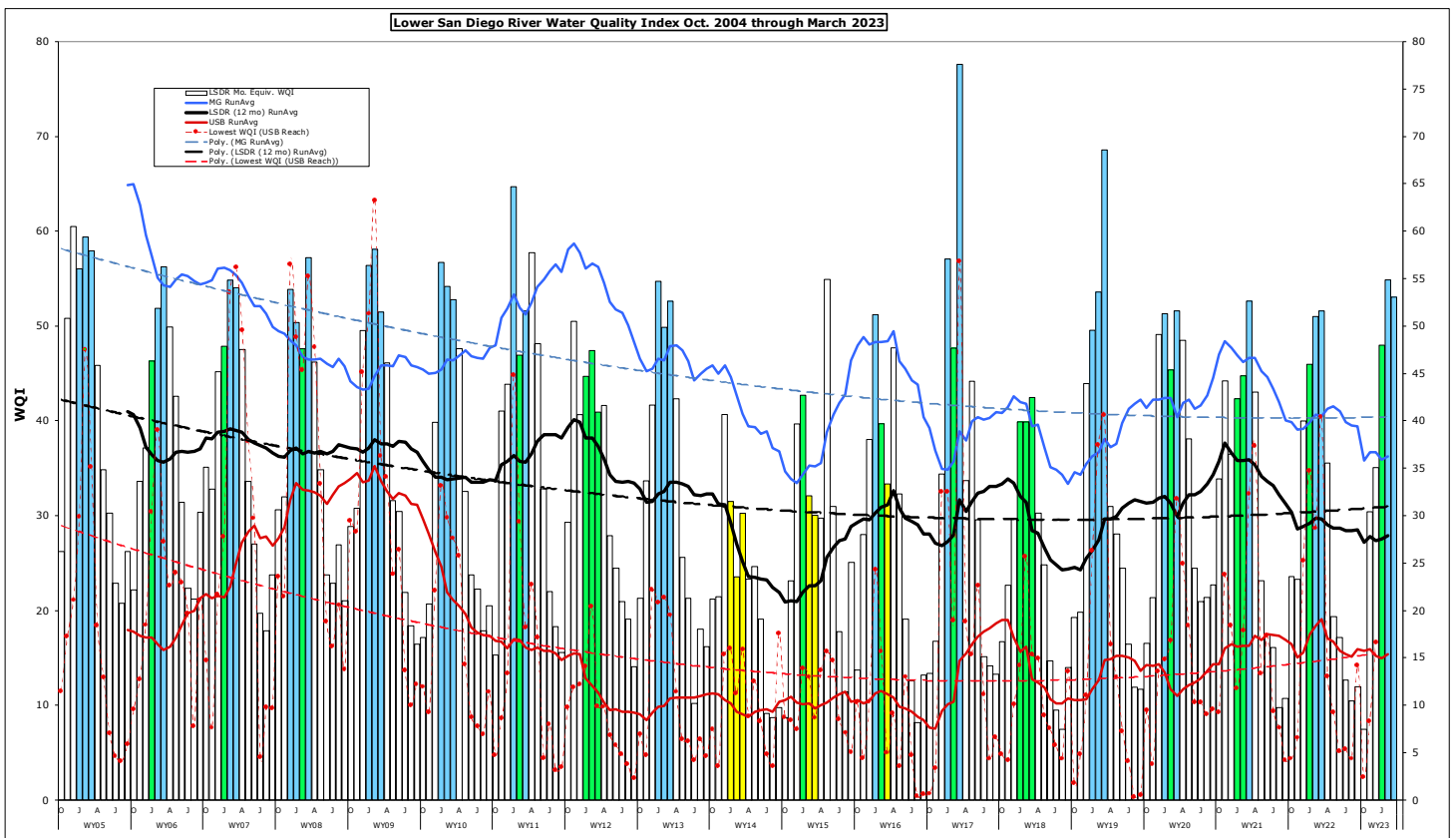


# Monthly WQM Report

## Lower San Diego River - March 2023



## Lower SDRWQ Monitoring Data Summary

**Table 1** presents a summary of water quality data monitored by the SDRPF RiverWatch Team within the Lower San Diego River watershed over the past two months (March/Feb) of 2023. This month's overall index is two points (3%) less than last month. Overall water quality in the lower San Diego River hydrologic unit (HSU 907.1) remained Good (B) for both February and March.

<b>Table 1 - March/February 2023 WQM Data Summary</b>							
	West - MV	Mid - MG	East - SB	LSDR	Percent Variance from		
[Site #s]	[1-7] Mar/Feb	[8-10] Mar/Feb	[11-15] Mar/Feb	[1-15] Mar/Feb	Last Mo. (2/'23)	Last Yr. (3/'22)	19-yr Avg. (March)
Temperature, oC	14.7/12.2	13.9/9.6	14.3/10.7	14.4/11.0	30%	-9%	-12%
Sp.Cond., mS/cm	0.83/2.94	0.73/1.21	0.59/1.84	0.68/2.23	-69%	-61%	-57%
DO, mg/L	7.99/8.74	10.62/11.6	6.68/8.34	7.94/8.85	-8%	7%	12%
DO, % of Sat.	79/82	99/104	65/76	77/81			
pH	7.73/7.72	7.96/8.14	7.71/7.74	7.72/7.73	0%	1%	0%
3-day ADF, cfs	147/27	263/18	284/17	225/21	958%	1894	560%
WQ Index	57/56	52/71	49/47	53/55	-3%	3%	4%
March/Feb	B/B	B-/B	C+/C	B/B			
March/Feb	Good/ Good	Good / Good	Fair/ Fair	Good/ Good	<b>Index down 2 points from last month</b>		

Negative variance (declines from norms) and DO depletion (DO < 5.0 mg/L or 50% of Sat) expressed in red.

LSDR **water temperatures** rose 30% (3.4 oC) from last month to 12% below the 19-yr norm of 16.3 oC. The overall **specific conductance** of 0.68 mS/cm constitutes a 69% drop from last month and a 57% decrease from the 19-yr March norm of 1.58 mS/cm. The overall **dissolved oxygen** level of 7.94 mg/L (77%Sat.) is 3% below last month, 7% greater than last March and 12% greater than the 19-yr norm of 6.95 mg/L (70%Sat). **Streamflow** over the antecedent 3-day period of 225 cfs is 958% greater than last month and 560% more than the 19-yr March norm of 34 cfs. This month's overall LSDR **water quality index** (WQI) of 53 constitutes a 3% decrease from last month, 3% above last year and 4% greater than the 19-yr March norm of 51 (B-).

Monthly WQI values occurring over the past two years of record for the three main sections of the lower river system, the overall LSDR average, plus 30-day antecedent average daily streamflow (ADF) and total monthly rainfall (MRF) values, are expressed in **Table 2** on the next page.

<b>Table 2 - WQI Values, Average Daily Flow and Monthly Rainfall (Feb.'21 - March'23)</b>							
	Mission Valley	Mission Gorge	Santee Basin	LSDR		ADF,cfs	TMR,F,in
Feb. '21	52 (B-)	57 (B)	35 (D)	45 (C)	WW	35	0.50
<b>March</b>	<b>55 (B)</b>	<b>64 (B)</b>	<b>45 (B)</b>	<b>53 (B-)</b>	<b>WW</b>	<b>28</b>	<b>2.32</b>
April	29 (D)	59 (B)	50 (B-)	43 (C)	T	7.9	0.12
May	25 (D-)	29 (D)	20 (E)	23 (E+)	T	3.7	0.04
June	14 (E)	23 (E+)	19 (E)	17 (E)	DW	1.7	0.002
July	15 (E)	16 (E)	16 (E)	16 (E)	DW	0.8	0.004
Aug.	11 (F+)	6 (F)	10 (F)	10 (F)	DW	0.6	0.22
Sept.	12 (F+)	11 (F+)	10 (F)	11 (F+)	DW	0.6	0.004
Oct.	19 (E)	46 (C)	18 (E)	24(E+)	T	6.4	0.80
Nov.	16 (E)	47 (C)	22 (E)	23 (E+)	T	2.4	0.21
Dec.	35 (D)	53 (B-)	38 (C-)	40 (C)	WW	21	1.10
Jan.'22	44 (C)	68 (B)	38 (C-)	46 (C)	WW	30	1.64
Feb. '22	55 (B)	67 (B)	38 (C-)	51 (B-)	T	7.1	0.22
<b>March</b>	<b>55 (B)</b>	<b>61 (B)</b>	<b>42 (C)</b>	<b>52 (B-)</b>	<b>WW</b>	<b>26</b>	<b>1.04</b>
April	32 (D)	69 (B)	25 (D-)	36 (D)	WW	14	1.01
May	17 (E)	32 (D)	15 (E)	19 (E)	T	4.1	0.03
June	19 (E)	16 (E)	15 (E)	17 (E)	DW	1.1	0.00
July	17 (E)	2 (F-)	12 (F+)	13 (E-)	DW	0.6	0.00
Aug.	15 (E)	2 (F-)	8 (F)	11 (F+)	DW	0.4	0.00
Sept.	8 (F)	11 (F+)	16 (E)	12 (F+)	DW	2.0	0.64
Oct.	8 (F)	3 (F-)	8 (F)	7 (F)	T	0.9	0.03
Nov.	23 (E+)	57 (B)	24 (E+)	30 (D)	WW	15	1.16
Dec.	32 (D)	53 (B-)	30 (D)	35 (D)	WW	12	0.93
Jan. '23	48 (C+)	58 (B)	42 (C)	48 (C+)	WW	188	3.48
Feb. '23	56 (B)	71 (B)	47 (C)	55 (B)	WW	23	2.76
<b>March</b>	<b>57 (B)</b>	<b>52 (B-)</b>	<b>49 (C+)</b>	<b>53 (B)</b>	<b>WW</b>	<b>135</b>	<b>4.86</b>

The **cover page** of this report presents monthly WQI values and range (high/low) for the Lower San Diego River watershed over 18 plus years of monitoring. Jan., Feb. and March values for each year are expressed as color-shaded bars; **blue (50 or >) B-Good**, **green (38-49) C-Fair**, yellow (25-37) D-Marginal, **brown (13-24) E-Poor**, and **pink (12 or <) F-Very Poor**. Running average index values for the LSDR (reach-weighted averages of all sites) are shown as a heavy black line. Running averages for the consistently highest (best) quality section of the river (Mission Gorge) are shown as a blue line while the consistently lowest (poorest) reach (Upper Santee Basin) is expressed in **red**. The generally downward slope in index values, represented by dashed trendlines, are attributable to depleted DO levels extending throughout protracted low-flow periods of the year. The dashed lines present a negative slope (decline) of 0.8 points per annum in index value over the complete monitoring period. The irregular solid black line (12-month running average index), generally increasing since reaching a low of 21 in late 2014, is currently at 28; 16% below the running average norm of 32.7. This month's index value of 50 is the 14th time over the last 18+ years (74%) that the March index has a grade level of Good (B).

WQI values extending from Oct.'04 through this month are presented in **Chart 1** (next page) together with 12-mo. running averages for each of the five reaches of the lower river system and overall (i.e., LSDR). The current running average WQI of 28 is five points below the to-date LSDR weighted average value of 33. The running average low for March of 23 (31% below norm) occurred in 2015. The highest running March average WQI of 38 (15% above norm) occurred in 2007.

Monthly and 12-mo. running average WQI values for the 'poorest' (Upper Santee Basin) and 'best' (Mission Gorge) reaches of the lower watershed are presented in **Chart 2**. Although water quality has improved somewhat within the upper-most reach in recent years, resurgent invasive aquatic vegetation and subsequent decomposition acting in conjunction with below average streamflow and accrual of benthic organic matter, especially in the deeper ponded portions of the river, are considered the principal causes of poor water quality. The greatest downward trend (**red-dashed line**) over time is associated with the poorest quality reach (Upper Santee Basin) encompassing Mast Park(#13E) and Magnolia Ave.(#14) monitoring sites. The Mission Gorge (**blue line**) section continues to demonstrate the least decline in index values over the monitoring period. The poorest quality Mission Valley site is at the outlet from Kaiser Ponds (Site 6) at the San Diego Mission Rd. crossing. The poorest Santee Basin site is at the Mast Park East ponds (Site 13E)

Spatial WQI values determined over the last three months, shown in **Charts 3, 4 and 5** on page 6, are expressed in order of location upstream. This month's results (color bars w/values in black shown on Chart 5) are about the same as those from last month (Chart 4). Ten out of 16 sites (63%) are graded Good (B) while four more are Fair (C). Two sites are rated Marginal (D) and none Poor (E). The overall water quality index of 50 represents the 14th time over the past 19 years the value has been in the Good (B) range. The April index is expected to decline based on less flow, increasing temperatures and conductivities and lower dissolved oxygen levels.

{3/31/23 jck}

Chart 1 - LSDR Monthly WQI, Running Averages and Trendlines by River Reach (Sept. 2005 thru March 2023)

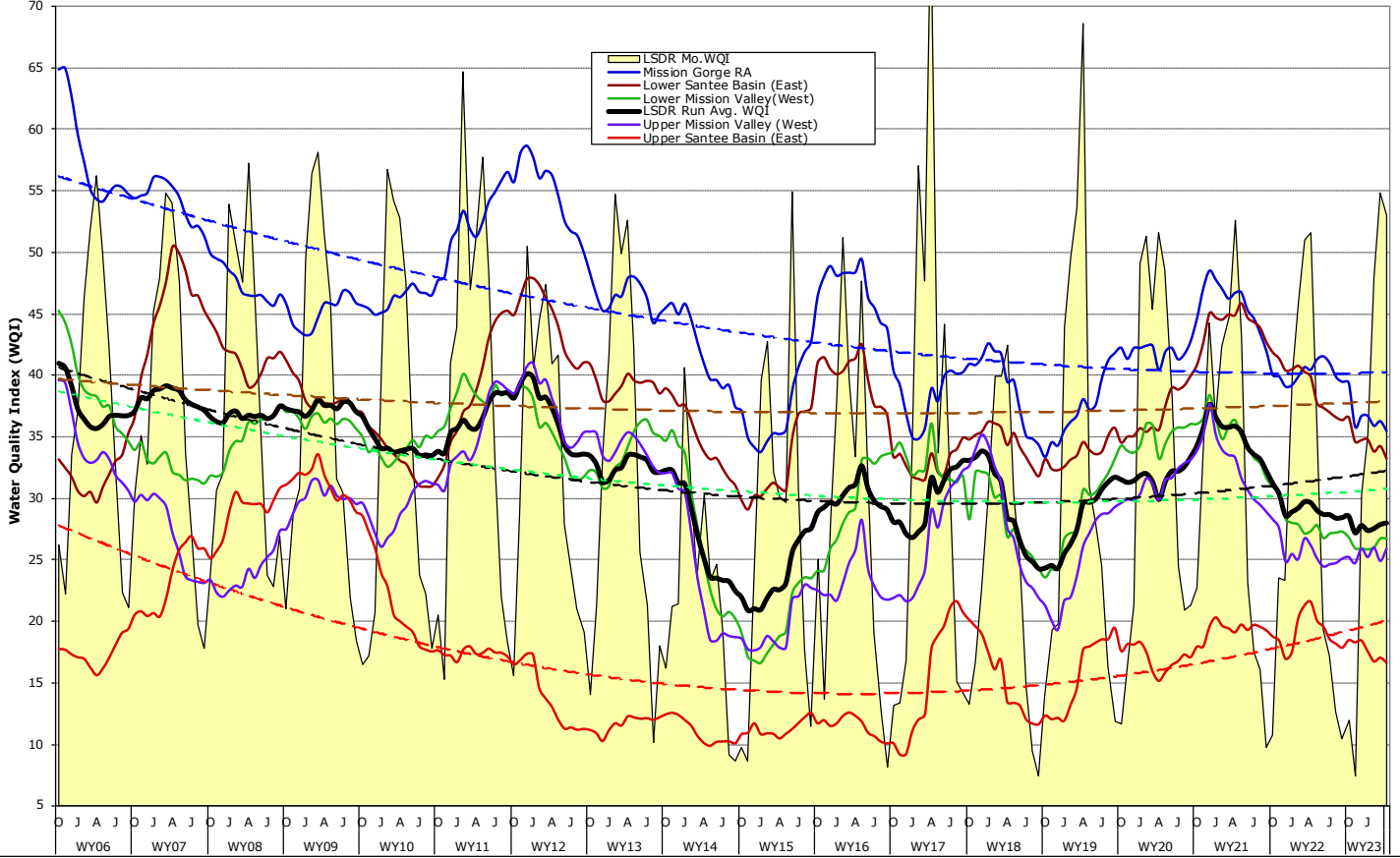


Chart 2 - Mast Park East (Site 13E) and Mission Gorge (Sites 8-10) Monthly WQI, 12-mo Running Averages and 18-yr Trendlines

