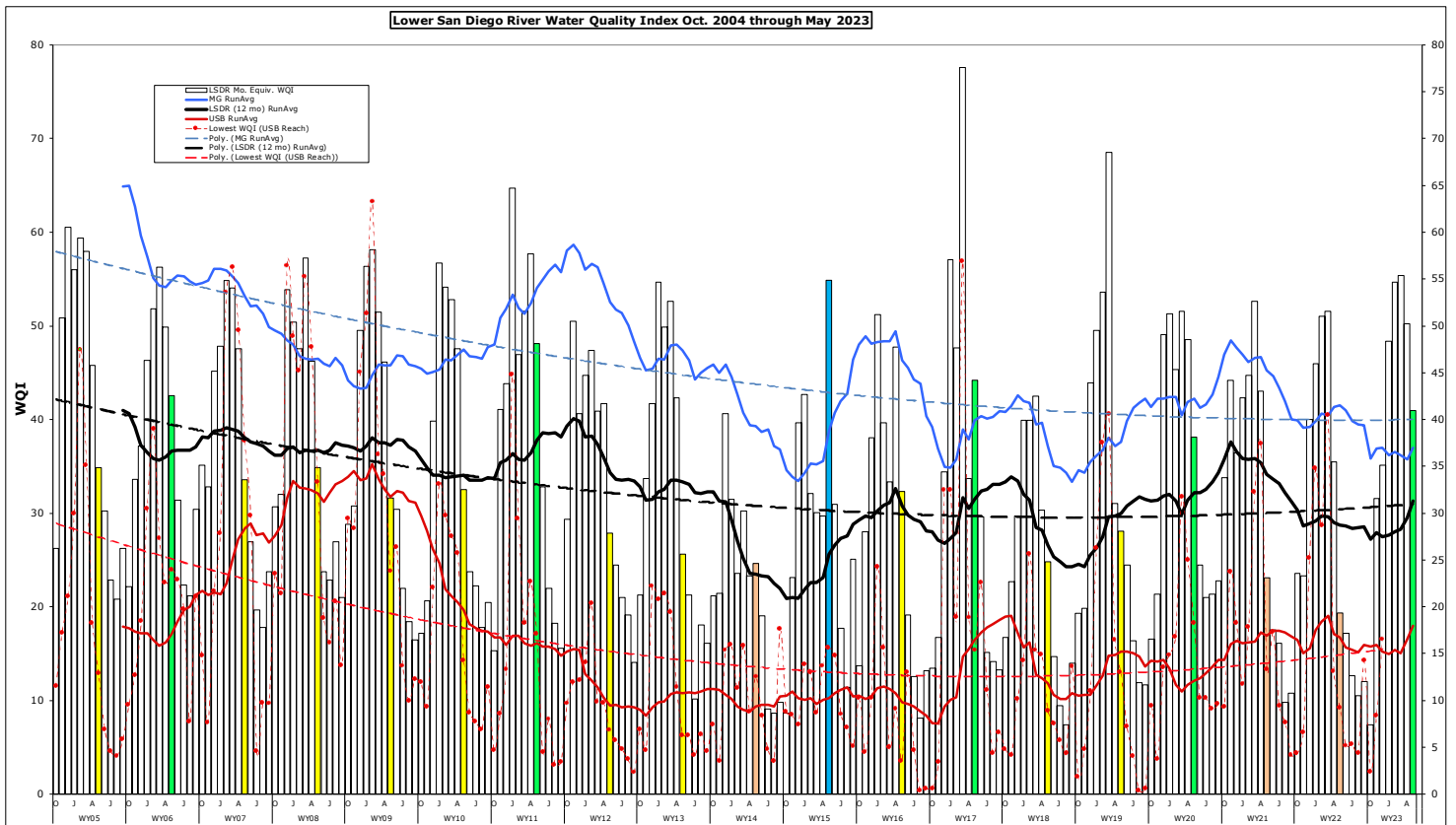


Monthly WQM Report

Lower San Diego River - May 2023



Lower SDR Water Quality Monitoring Data Summary

Table 1 presents a summary of water quality data monitored by the SDRPF RiverWatch Team within the Lower San Diego River (LSDR) watershed over the past two months (May/April) of 2023. This month's overall index is nine points (18%) less than last month. Overall water quality in the LSDR hydrologic unit (HSU 907.1) declined from Good (B-) in April to Fair (C) in May.

Table 1 - May/April 2023 WQM Data Summary							
	West - MV	Mid - MG	East - SB	LSDR	Percent Variance from		
[Site #s]	[1-7] May/Aprl	[8-10] May/Aprl	[11-15] May/Aprl	[1-15] May/Aprl	Last Mo. (4/'23)	Last Yr. (5/'22)	19-yr Avg. (MAY)
Temperature, oC	20.1/17.6	18.1/15.1	19.2/15.9	19.4/16.4	18%	-1%	-3%
Sp.Cond., mS/cm	2.43/1.86	1.77/1.20	1.71/1.43	1.92/1.59	21%	-14%	-13%
DO, mg/L	4.99/6.33	7.82/8.93	4.66/6.38	5.50/6.56	-14%	47%	10%
DO, % of Sat.	56/67	79/88	52/66	60/68			
pH	7.73/7.70	7.98/8.08	7.69/7.71	7.71/7.71	-0%	3%	-0%
3-day ADF, cfs	39.7/38.6	42.9/20.2	43.4/16.9	41.8/26.3	59%	264%	366%
WQ Index	40/52	47/65	40/43	41/50	-18%	112%	21%
May/April	C/B-	C+/B	C/C	C/B-			
May/April	Fair/Good	Fair/Good	Fair/Fair	Fair/Good	Index down 9 points from last month		

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

LSDR **water temperatures** rose 3.0 oC (18%) from last month to a level 3% below the 19-yr norm of 19.9oC. The overall **specific conductance** of 1.92 mS/cm constitutes a 21% increase from last month to 13% below from the 19-yr May norm of 2.21 mS/cm. The overall **dissolved oxygen** level of 5.50 mg/L (60%Sat.) is 14% less than last month, but 47% greater than last May and 10% greater than the 19-yr norm of 5.01 mg/L (55%Sat). **Streamflow** over the antecedent 3-day period of 41.8 cfs is 59% less than last month but three times the May norm of 9 cfs. This month's overall LSDR **water quality index** (WQI) of 41(C) is 18% below last month, holding 112% above May last year and 21% greater than the 19-yr May norm of 34 (D).

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.

Table 2 - WQI Values, Average Daily Flow and Monthly Rainfall (April,'21 - May,'23)							
	Mission Valley	Mission Gorge	Santee Basin	LSDR		ADF,cfs	TMR,F,in
April	29 (D)	59 (B)	50 (B-)	43 (C)	T	7.9	0.12
May'21	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.	55 (B)	67 (B)	38 (C-)	51 (B-)	T	7.1	0.22
March	55 (B)	61 (B)	42 (C)	52 (B-)	WW	26	1.04
April	32 (D)	69 (B)	25 (D-)	36 (D)	WW	14	1.01
May'22	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)	10 (F)	DW	0.4	0.00
Sept.	8 (F)	11 (F+)	16 (E)	12 (F+)	DW	2.0	0.64
Oct.	9 (F)	3 (F-)	7 (F)	7 (F)	T	0.9	0.03
Nov.	25 (D-)	59 (B)	24 (E+)	32 (D)	WW	17	1.16
Dec.	32 (D)	53 (B-)	30 (D)	35 (D)	WW	18	0.93
Jan. '23	49 (C+)	58 (B)	42 (C)	48 (C+)	WW	190	3.48
Feb.	56 (B)	71 (B)	47 (C)	55 (B)	WW	36	2.76
March	58 (B)	57 (B)	52 (B-)	55 (B)	WW	132	4.86
April	52 (B-)	65 (B)	43 (C)	50 (B-)	WW	77	0.55
May'23	40 (Cc)	47 (C+)	40 (Cc)	41 (Cc)	T	19	0.05

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. May 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 shown 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 entire monitoring period. The irregular solid black line (12-month running average index), generally increasing since a low of 21 in late 2014, is currently at 31; only 4% below the running average norm of 32.7. This month's index value of 41 is the 5th time over 19 years that the May index has maintained a grade level of C (Fair).

WQI values extending from Oct.'04 through May are presented in **Chart 1** (next page) together with 12-mo. running averages for each of the five reaches of the lower watershed and overall (i.e., LSDR). The current running average WQI of 31 is 2 points below the to-date LSDR weighted average value of 33. The running average low for May of 24 (23% below norm) occurred in 2014. The highest running average WQI for May of 38 (16% above norm) occurred in 2011.

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 growth of invasive aquatics and subsequent decomposition with below average streamflow and accrual of organics, especially in the deeper ponded portions of the river, are considered 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 from Old Mission Dam through Mission Trails continues to demonstrate the least decline in index values over the full monitoring period. The poorest quality Mission Valley site is at the outlet from Kaiser Ponds (Site 6) below San Diego Mission Rd. bridge. The poorest Santee Basin site (13E) is Mast Park East (Walmart Ponds).

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 less than those from last month (Chart 4). Two out of 16 sites (13%) are graded Good (B) while eight (50%) are Fair, four (25%) Marginal and the remaining two rated Poor (E). The overall value of 41 is the 5th time over the past 19 years the index has ranked Fair (C). The June index can be expected to further decline due to less streamflow and rising water temperature occurring in conjunction with lower dissolved oxygen and increasing specific conductivity levels.

{5/22/23 jck}

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

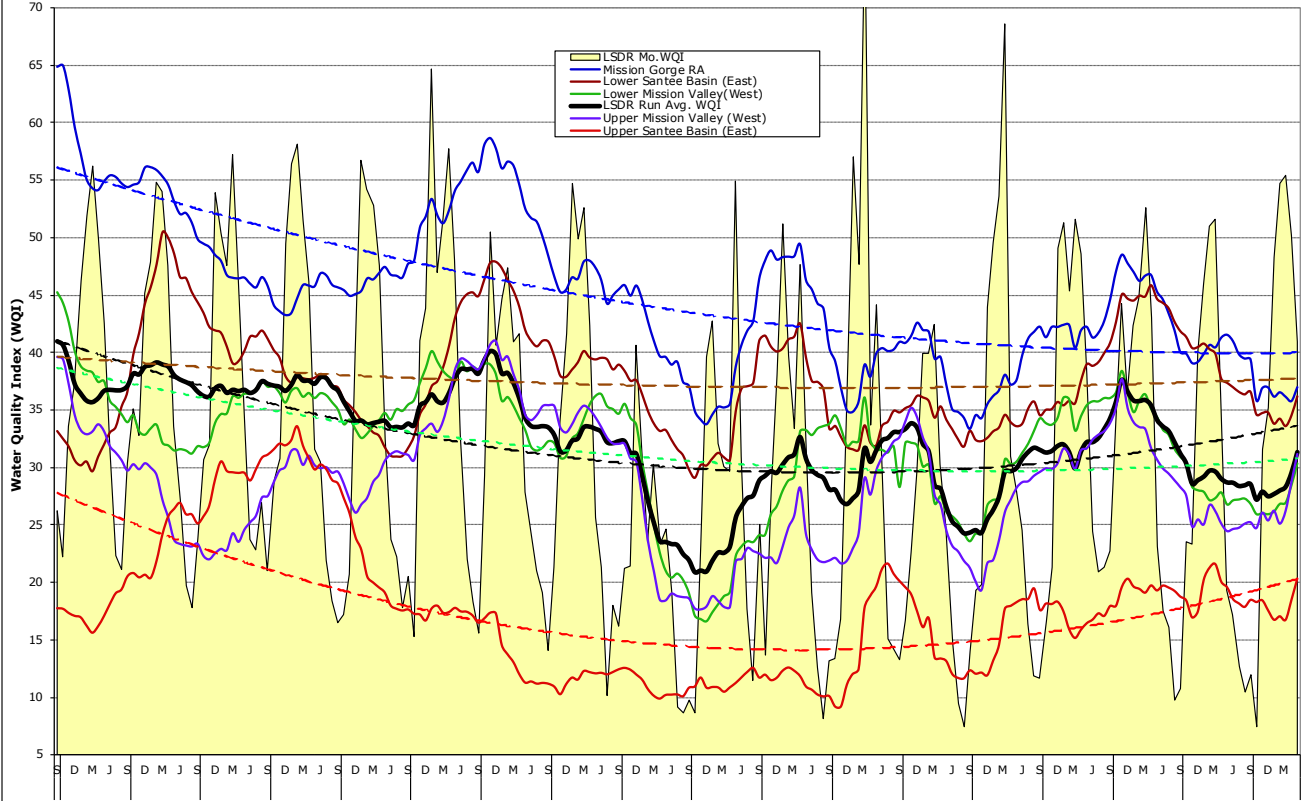


Chart 2 - Mast Park East (Site 13E) and Mission Gorge (Sites 8&10) Monthly WQI, 12-mo Running Averages and 18-yr Trendlines

