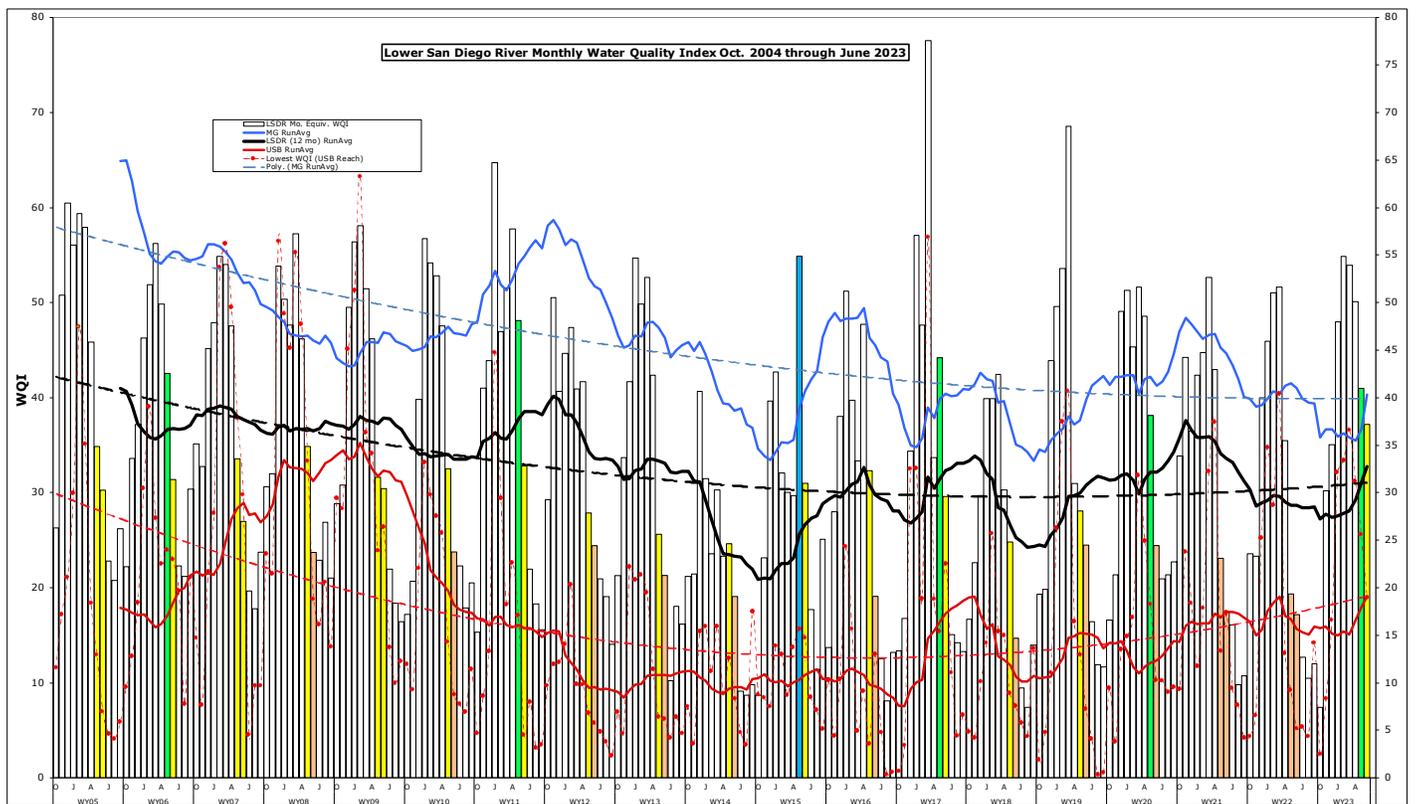


Monthly WQM Report

Lower San Diego River - June 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/June) of 2023. This month's overall index is four points (9%) less than last month. Overall water quality in the LSDR hydrologic unit (HSU 907.1) declined from Fair (C) in May to Marginal (D+) in June.

Table 1 - May/June 2023 WQM Data Summary							
	West - MV	Mid - MG	East - SB	LSDR	Percent Variance from		
[Site #s]	[1-7] May/June	[8-10] May/June	[11-15] May/June	[1-15] May/June	Last Mo. (5/'23)	Last Yr. (6/'22)	19-yr Avg. (June)
Temperature, oC	20.1/23.0	18.1/19.6	19.2/20.4	19.4/21.3	10%	-2%	-3%
Sp.Cond., mS/cm	2.43/2.40	1.77/1.29	1.71/1.52	1.92/1.88	-2%	-29%	-25%
DO, mg/L	4.99/4.25	7.82/7.23	4.66/4.95	5.50/5.01	-8%	32%	16%
DO, % of Sat.	56/50	79/78	52/56	60/58			
pH	7.73/7.74	7.98/8.08	7.69/7.53	7.71/7.61	-2%	-0.3%	-1.8%
3-day ADF, cfs	39.7/8.0	38.4/6.4	38.2/6.2	38.7/7.0	-82%	642%	163%
WQ Index	40/33	47/59	39/33	41/37	-9%	117%	47%
May/June	C/D	C+/B	C/D	C/D+			
May/June	Fair/ Marginal	Fair/ Good	Fair/ Marginal	Fair/ Marginal	Index down 4 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 1.9oC (10%) from last month to a level 3% below the 19-yr norm of 21.9oC. The overall **specific conductance** of 1.88 mS/cm constitutes a 2% decrease from last month to 25% below from the 19-yr June norm of 2.52 mS/cm. The overall **dissolved oxygen** level of 5.01 mg/L (56%Sat.) is 8% less than last month, but 32% greater than last June and 16% above the 19-yr norm of 4.32 mg/L (49%Sat). **Streamflow** over the antecedent 3-day period of 7.0 cfs is 82% less than last month but twice the June norm of 2.6 cfs. This month's overall LSDR **water quality index** (WQI) of 37(D+) is 9% below last month, holding 117% above June of last year and 47% greater than the 19-yr June norm of 25 (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 (May,'21 - June,'23)							
	Mission Valley	Mission Gorge	Santee Basin	LSDR		ADF,cfs	TMR,F,in
May	25 (D-)	29 (D)	20 (E)	23 (E+)	T	3.7	0.04
June '21	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	17 (E)	32 (D)	15 (E)	19 (E)	T	4.1	0.03
June'22	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	40 (C)	47 (C+)	39 (C)	41 (C)	T	19	0.05
June'23	33 (D)	59 (B)	33 (D)	37 (D+)	T	18	0.03

The **cover page** of this report presents monthly WQI values and range (high/low) for the Lower San Diego River watershed over nearly 19 years of monitoring. June 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 33; 0.2% above the running average norm of 32.7. This month's index value of 37 is the 7th time over 19 years that the June index has been at a grade level of D (Marginal).

WQI values extending from Oct.'04 through June 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 33 for June is the same as the 19-yr annual norm. The running average low for June of 23 (29% below norm) occurred in 2014. The highest running average WQI for June of 38 (17% 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 entire 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 occurrence upstream. This month's results (color bars w/values in black shown on Chart 5) are less than those from the last two months (Charts 3 & 4). Three out of 16 sites (19%) are graded Good (B) while five (31%) are Fair, four (25%) Marginal and the remaining four Poor (E) or Very Poor (F). The overall value of 37 is the 5th time over the past 19 years the index has ranked Marginal (D). The July index can be expected to further decline due to lower streamflow, higher water temperatures and specific conductivity, combined with continued depletion in dissolved oxygen levels.

{6/27/23 jck}

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

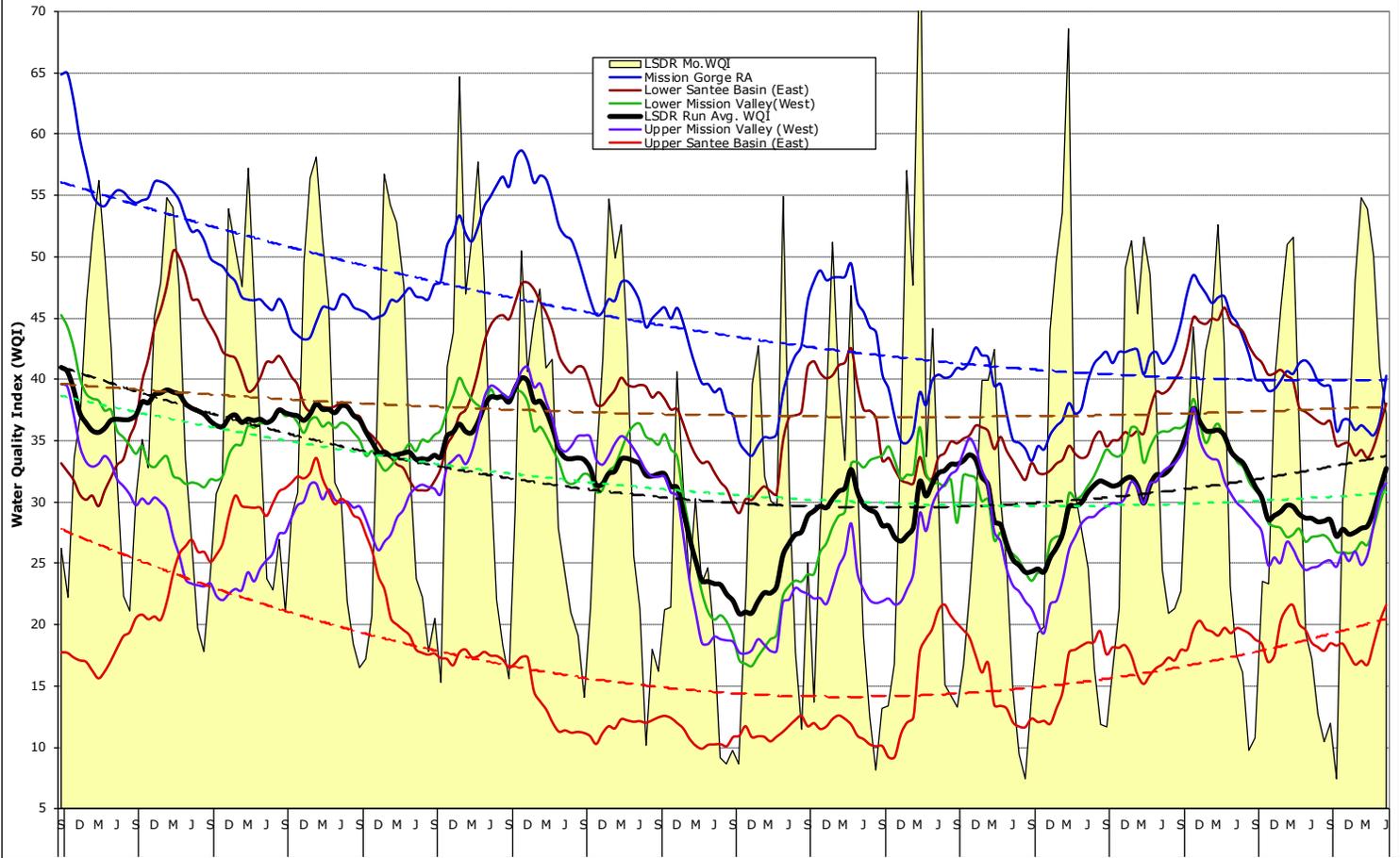


Chart 2 - Mast Park East (Site 13E) and Mission Gorge (Sites 8-10) Monthly WQI, 12-mo Running Averages and 18+yr Trendlines

