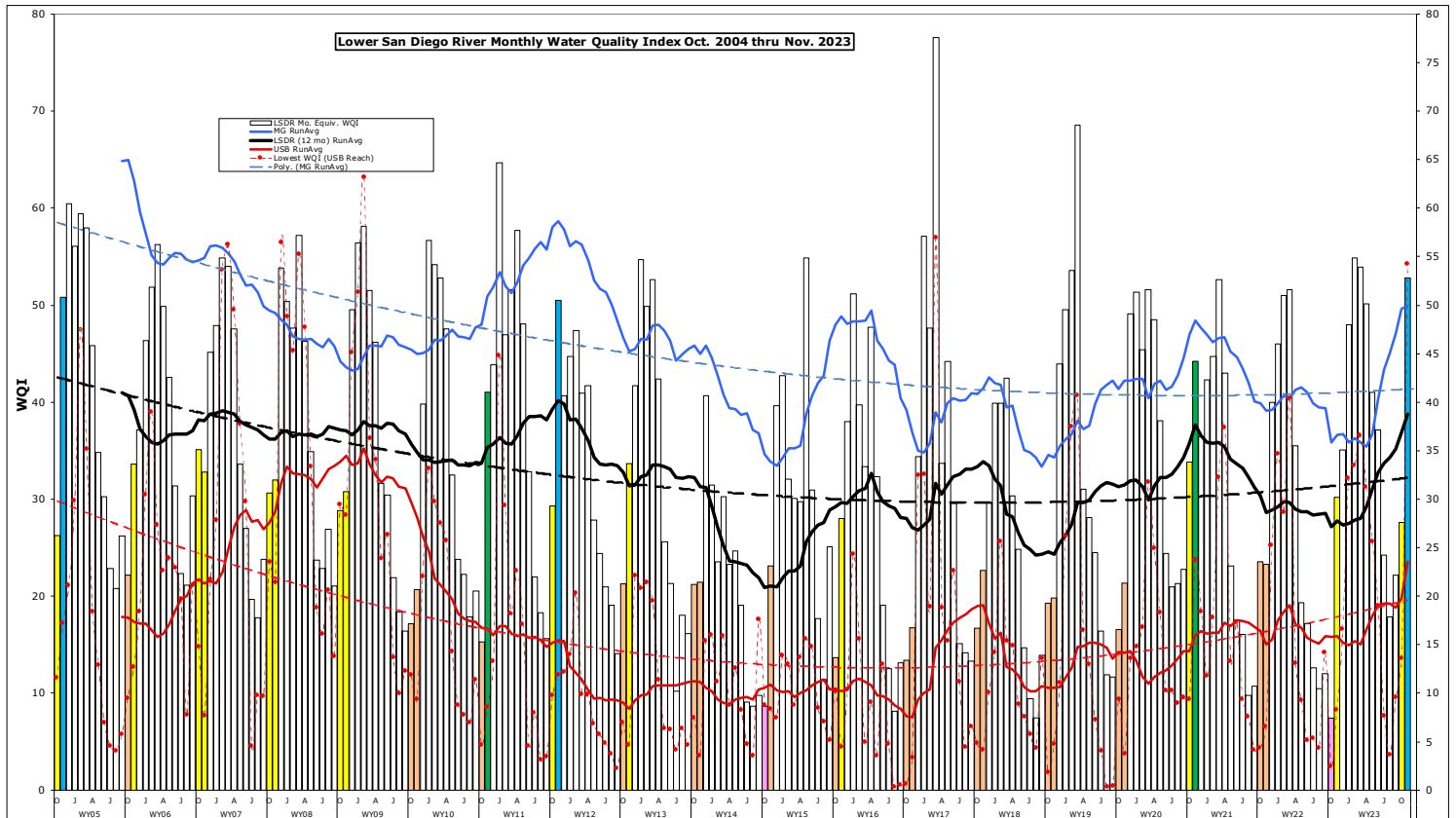


Monthly WQM Report

Lower San Diego River - November 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 last two months (Nov/Oct) of 2023. This month's overall index is 24 points (90%) above last month and 73% above the 20-yr Nov. norm of 30, improving from Marginal (D) to Good (B-).

Table 1 - Nov./Oct. 2023 WQM Data Summary							
	West - MV	Mid - MG	East - SB	LSDR	Percent Variance from		
[Site #s]	[1-7] Nov/Oct	[8-10] Nov/Oct	[11-15] Nov/Oct	[1-15] Nov/Oct	Last Mo. (10/'23)	Last Yr. (11/'22)	20-yr Avg. (Nov)
Temperature, oC	14.4/21.5	14.4/18.1	15.5/19.8	14.8/20.1	-26%	20%	0%
Sp.Cond., mS/cm	1.27/2.83	0.74/1.09	0.92/1.51	1.00/2.13	-53%	-57%	-62%
DO, mg/L	6.62/4.27	7.63/5.54	5.81/3.46	6.61/4.14	50%	33%	24%
DO, % of Sat.	65/50	74/59	59/38	65/46			
pH	7.65/7.68	-/8.09	-/7.58	7.65/7.62	0.5%	-1.3%	-0.9%
3-day ADF, cfs	52/7.5	50/4.2	49/3.6	50.8/4.9	860%	960%	860%
WQ Index	49/31	59/34	51/21	52/28	90%	74%	73%
Sept/Oct.	C+/D	B/D	B-/E	B-/D			
Sept/Oct.	Fair/ Marginal	Good/ Marginal	Good/ Poor	Good/ Marginal	Index up 24 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** dropped 5.3 oC (-26%) from last month matching the 20-yr norm of 14.8oC. The overall **specific conductance** of 1.00 mS/cm constitutes a 53% decrease from last month reaching -62% below from the 20-yr norm of 2.65 mS/cm. The overall **dissolved oxygen** level of 6.61 mg/L (65%Sat.) is 50% higher than last month, 33% above last Nov. and 24% more than the 20-yr norm of 5.36 mg/L (52%Sat). **Streamflow** over the antecedent 3-day period of 50.8 cfs is eight times more than last month, nearly ten times a year ago and eight times the Nov. norm. This month's overall LSDR **water quality index** (WQI) of 52(B-) is 90% greater than last month, and 74% above both a year ago and the 20-yr norm of 30(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 (Oct.'21 - Nov.'23)							
	Mission Valley	Mission Gorge	Santee Basin	LSDR		ADF,cfs	TMR,F,in
Oct.'21	19 (E)	46 (C)	18 (E)	24(E+)	T	6.4	0.80
Nov.'21	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	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. '22	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	0.54
May	40 (C)	47 (C+)	39 (C)	41 (C)	T	19	0.12
June	33 (D)	59 (B)	33 (D)	37 (D+)	T	18	0.03
July	19 (E)	39 (C-)	23 (E)	24 (E+)	DW	4.9	0.00
Aug	20 (E)	22 (E)	15 (E)	18 (E)	DW	3.1	0.10
Sept	17 (E)	35 (D)	22 (E)	22 (E)	T	26	1.75
Oct.	31(D)	34 (D)	21 (E)	28 (D)	DW	4.9	0.01
Nov '23	49 (C+)	59 (B)	51 (B-)	52 (B-)	ww	32	0.60

The **cover page** of this report presents monthly WQI values and range (high/low) for the Lower San Diego River watershed over the past 20 years. Each year's Oct. and Nov. values are expressed as color-shaded bars; **blue (50 or >) A-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 (distance 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 dashed lines represent overall (20-yr) trends. This month's value of 52 is only the 3rd time the index has reached a grade level of B (Good) in November. The previous were WY05 and WY12.

WQI values extending from Sept.'04 thru Nov.'23 are presented in **Chart 1** (next page) together with 12-mo. running averages for each of the five reaches of the lower river as well as overall (i.e., LSDR). The current WQI of 39 is 18% above the 20-yr norm of 32.8. The running average low for Nov. of 21 (36% below norm) occurred in 2014. The highest running average WQI for this month of 40 (22% above norm) occurred in 2011. The greatest improvement in water quality this month occurred within the Upper Santee Basin reach at monitoring sites 13E and 14.

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 measurably improved during 2023, resurgent growth of invasive aquatics and subsequent decomposition with associated accrual of organics, especially in ponded portions of the river, are considered a primary cause of sub-par water quality. The greatest downward trend (**red-dashed line**) over time is associated with the poorest quality reach (Upper Santee Basin) encompassing Mast Park East (#13E), also referred to as 'Walmart Pond', and Magnolia Ave.(#14) sites. The Mission Gorge (**blue line**) section from Old Mission Dam through Mission Trails continues to demonstrate the least decline in values over the entire monitoring period. The poorest quality Mission Valley site is at the outlet from Kaiser Ponds (Site 6) at San Diego Mission Rd. bridge. The poorest Santee Basin site (13E) is Mast Park East (aka, Walmart Pond).

Spatial WQI values determined over the last three months expressed in order of occurrence upstream are shown in **Charts 3, 4 and 5** on page 6. This month's results (color bars w/values in black shown on Chart 5) are well above those from the previous months shown on Charts 3 & 4. This month 10 out of 16 sites (63%) are graded B(Good), three C(Fair) and only two D(Marginal). Last month only two weew Fair, nine Marginal(D) and five Poor(E) or Very Poor(F). The majority of sites were found Poor (E) in September. The current index values for all 16 sites are well above index values for last Nov. and also exceed the 20-yr Nov. site norms. The greatest rise in index values are associated with the two Upper Santee Basin sites.

Next month's index is expected to rise further due to enhanced streamflow, low water temperatures, reduced Specific Conductance and elevated DO levels. Similarly, overall water quality is expected to continue improving in the lower river watershed throughout the first half of WY24. The controlled release of storage water from El Cajon Reservoir to the San Diego River over the past few months has also resulted in a significant positive impact on resultant water quality in comparison to years of well below average streamflow.

11/19/23 (JCK)

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

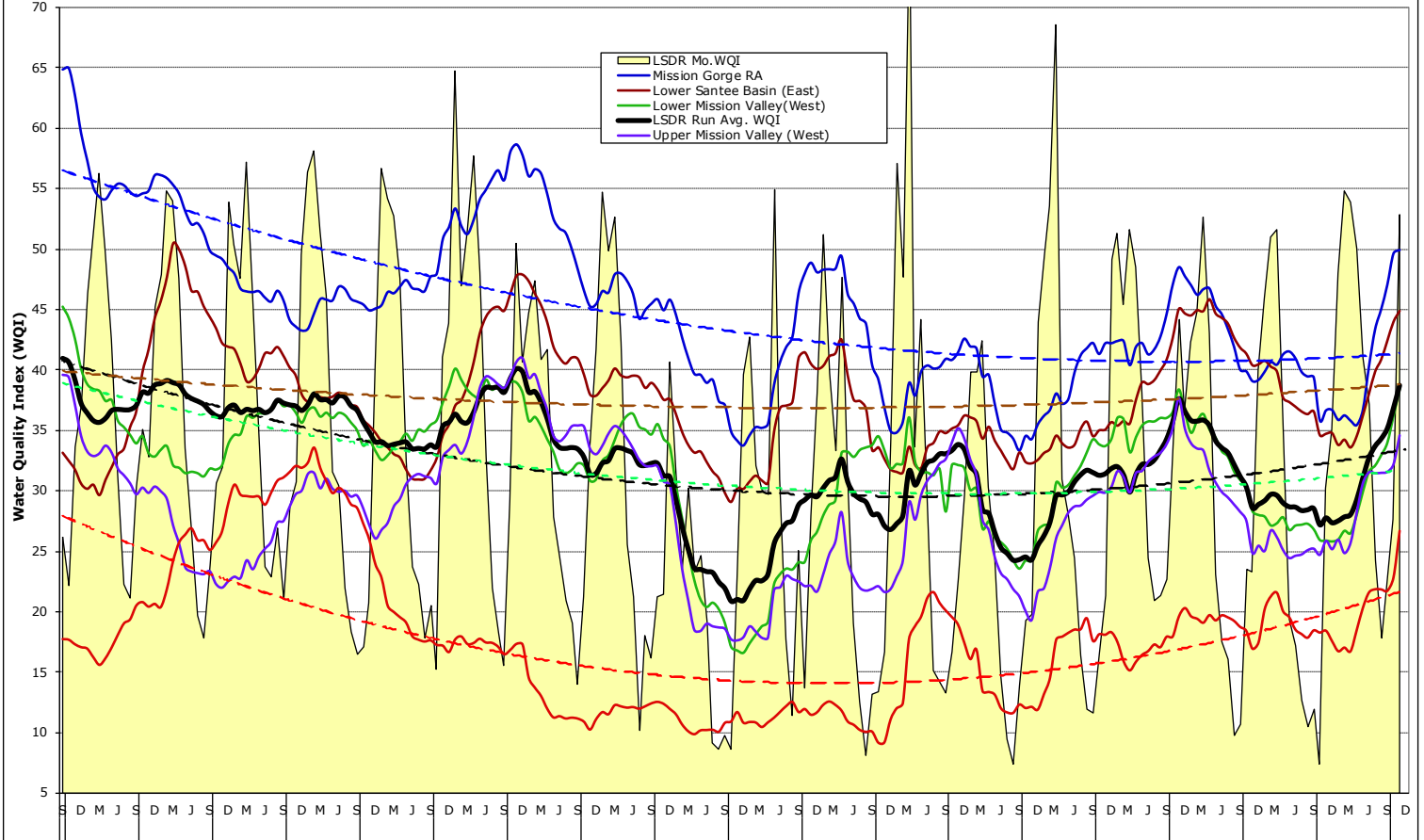


Chart 2 - Mast Park East (Site 13E) and Mission Gorge (Sites 8-10) Monthly WQI, 12-mo Running Averages and 20-yr Trendlines

