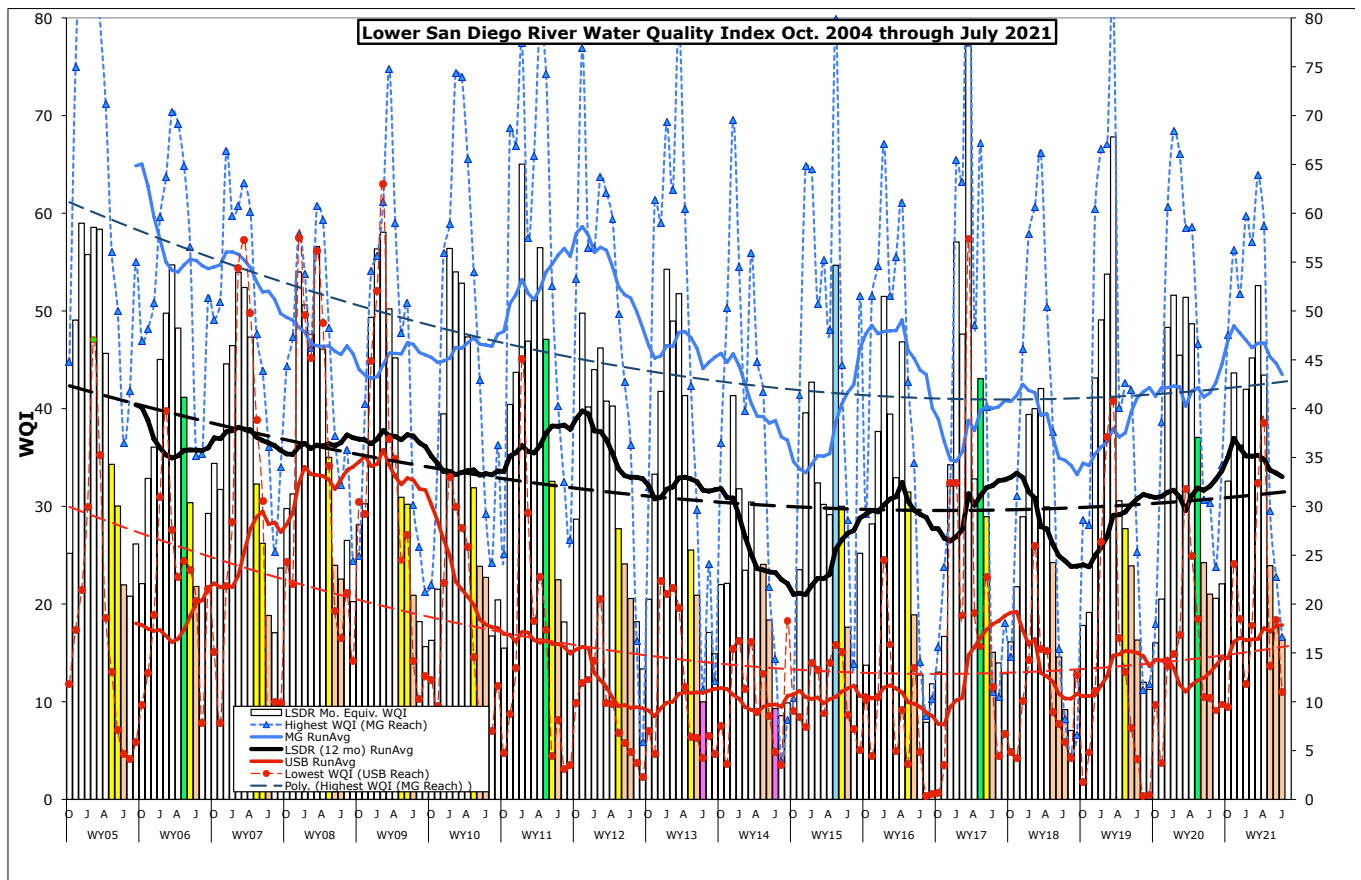


Monthly WQM Report

Lower San Diego River - July 2021



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 subbasin over the past two months (July/June). This month's overall index of 16 is two points below last month, five points less than last July and two points below the 17-yr average of 18. Overall water quality in the lower San Diego River hydrologic unit (HSU 907.1) declined from last month by 7 percent remaining in the E (Poor) grade level.

Table 1 - July/June 2021 WQM Data Summary							
	West - MV	Mid - MG	East - SB	LSDR	Percent Variance from		
[Site #s]	[1-7] July/June	[8-10] July/June	[11-15] July/June	[1-15] July/June	Last Mo (6/'21)	Last Yr (7/'20)	17-yr Avg (July)
Temperature, oC	25.3/22.7	23.0/23.1	22.5/21.5	23.6/22.3	6%	-3%	2%
Sp.Cond., mS/cm	3.61/3.43	2.18/2.08	2.43/2.22	2.93/2.72	8%	11%	4%
DO, mg/L	3.29/2.40	5.28/5.26	3.55/4.16	3.75/3.54	8%	-5%	8%
DO, % of Sat.	39/28	62/60	43/48	45/41			
pH	7.65/7.69	7.94/7.76	7.84/7.76	7.75/7.72	0%	-2%	1%
3-day ADF, cfs	0.9/1.2	1.1/1.6	1.1/1.6	1.0/1.5	-19%	-50%	-54%
WQ Index	16/14	17/24	18/20	16/18	-7%	-22%	-7%
July/June Grade	E/E	E/E+	E/E	E/E			
July/ June 2021	Poor/ Poor	Poor/ Poor	Poor/ Poor	Poor/ Poor	Index down 2 points overall from last month		

Negative variance (declines from norms) and DO depletion (DO < 5.0 mg/L or 55% of Sat) expressed in red.

LSDR **water temperatures** rose 1.3 degrees (6%) from last month to 2% above the 17-yr monthly norm of 23.1 oC. Overall **specific conductance** of 2.93 mS/cm constitutes an 8% increase from last month to 1% above a year ago and 4% above the 17-yr monthly norm of 2.82 mS/cm. The overall **dissolved oxygen** level of 3.75 mg/L (45%Sat.) is 8% more than last month, 5% below a year ago and 8% above the 17-yr norm of 3.54 mg/L (41%Sat). **Streamflow** over the antecedent 3-day period of 1.0 cfs is 19% less than last month, 50% below a year ago and 54% under the 17-yr norm of 2.9 cfs. This month's overall LSDR **water quality index** (WQI) is down two points (-7%) from last month, 22% below a year ago and 7% less than the 17-yr July norm of 18.

Monthly WQI values occurring over the past 26 months of record for the three main sections of the lower river system, the overall LSDR average, plus the 30-day antecedent average streamflow (ADF) and monthly rainfall (MRF) values, are expressed in **Table 2** on the next page.

Table 2 - WQI Values, Average Daily Flow and Monthly Rainfall (June '19 - July '21)							
	Mission Valley	Mission Gorge	Santee Basin	LSDR		ADF,cfs	TMR,F,in
June	21 (E)	42 (C)	20 (E)	24 (E+)	t	8.6	0.38
July '19	17 (E)	25 (D-)	13 (E-)	16 (E)	dw	1.6	0.01
Aug.	16 (E)	11 (F)	9 (F)	12 (F+)	dw	0.8	0.02
Sept	15 (E)	12 (F+)	8 (F)	11 (F+)	DW	1.0	0.03
Oct	18 (E)	18 (E)	15 (E)	16 (E)	DW	1.0	0.00
Nov.	20 (E)	39 (C)	14 (E)	21 (E)	t	3.2	0.52
Dec.	60 (B)	61 (B)	31 (D)	48 (C+)	WW	65	3.51
JAN '20	62 (B)	68 (B)	34 (D)	52 (B-)	WW	45	2.90
Feb.	47 (C)	66 (B)	35 (D)	45 (C)	t	10	0.38
March	52 (B-)	58 (B)	46 (C)	51 (B-)	WW	38	1.97
April	47 (C)	59 (B)	45 (C)	49 (C+)	WW	167	3.58
May	38 (C-)	47 (C)	37 (D+)	37 (D+)	t	20	0.06
June	25 (D-)	31 (D)	21 (E)	24 (E+)	t	6.5	0.02
July '20	18 (E)	30 (D)	21 (E)	21 (E)	DW	2.6	0.001
Aug	23 (E)	24 (E+)	18 (E)	21 (E)	DW	1.1	0.00
Sept	21 (E)	34 (D)	19 (E)	22 (E)	DW	1.1	0.00
Oct	32 (D)	47 (C)	26 (D-)	32 (D)	t	2.3	0.21
Nov.	45 (C)	56 (B)	37 (D+)	44 (C)	t	7.2	0.11
Dec.	34 (D)	52 (B)	32 (D)	36 (D+)	t	3.0	0.06
JAN '21	46 (C)	60 (B)	29 (D)	42 (C)	WW	8.8	1.10
Feb.	52 (B-)	57 (B)	35 (D)	45 (C)	WW	32	0.50
March	55 (B)	64 (B)	45 (B)	53 (B-)	WW	31	2.32
April	29 (D)	59 (B)	51 (B-)	44 (C)	t	8.6	0.12
May	25 (D-)	30 (D)	20 (E)	24 (E+)	t	3.8	0.04
June	14 (E)	23 (E+)	19 (E)	18 (E)	DW	1.8	0.002
July '21	16 (E)	17 (E)	18 (E)	16 (E)	DW	0.8	0.004

The **cover page** chart presents monthly WQI values and their range (high/low) for the Lower San Diego River watershed as determined over the past 17 years of monitoring. July, second month of summer, 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 LSDR (weighted averages of all sites) are shown as a heavy black line. Running averages for the consistently highest (best) quality section (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 the dashed trend lines, from WY05 through WY17 are attributed to depleted DO levels extending throughout protracted low-flow periods of each water year at multiple sites throughout the subbasin. The dashed lines present an overall negative slope of -0.71 points per annum in index value over the entire monitoring period. The irregular solid black line (12-month running average index value), generally rising since reaching a low of 21 in Dec. 2014, is currently at 33. This month's overall index value is the 8th time over the past decade the index has been in the Poor (E) water quality range. The index reached the Very Poor (F) category (pink) in July of 2013 and 2014.

WQI values extending from Oct. '04 through the current 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 overall current running average WQI of 33 is one percent above the 17-yr to-date LSDR weighted average value. The running average July low of 23 (29% below the current norm) occurred in 2014. The highest running average WQI for June of 38 (17% above norm) occurred in 2011. The fact the river has experienced well below rainfall and runoff during the last ten months means WY21 will end with below average water quality index values.

Monthly and 12-mo. running average WQI values for the "poorest" (Upper Santee Basin) and "best" (Mission Gorge) reaches of the lower river system are presented in **Chart 2**. Although water quality improved somewhat within the upper reach over the last several years, resurgent invasive aquatic plants and subsequent decay in conjunction with minimal dry weather flows and accrual of organic deposits in ponded portions are primary causes of poor water quality. The greatest downward trend (red-dashed line) is associated with the poorest reach (Upper Santee Basin) encompassing monitoring sites 13E & 13W (Mast Park East and West) and 14 (Magnolia Ave. bridge). Mission Gorge (blue line) continues to demonstrate the least decline in index values over the entire 17 year monitoring period.

Spatial WQI values over the past three months in order of occurrence upstream are shown in **Charts 3, 4 and 5** on page 6. July results (color bars w/values in black shown on Chart 5) are below those both from last month (Chart 4) and April (Chart 3). Three sites (4, 10 & 11) remain Marginal (D) while the remaining 11 are Poor (E) or Very Poor (F). As shown in Chart 5, this month's index values (solid colored columns) are also generally below a year ago (7/'20 and the 17-yr running average (solid back line). The overall Poor (E) water quality rating of 17, is one index point below the 17-yr July norm of 18.

(7/19/21 - JCK)

