



## 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 (Sept/Aug). This month's overall index of 11 is one point above last month, 11 points less than a year ago, and six points below the 17-yr average of 17. Overall water quality in the lower San Diego River hydrologic unit (HSU 907.1) increased by one point (9%) from last month remaining in the Very Poor grade level.

<b>Table 1 - Sept/ Aug 2021 WQM Data Summary</b>							
	West - MV	Mid - MG	East - SB	LSDR	Percent Variance from		
[Site #s]	[1-7] Sept/Aug	[8-10] Sept/Aug	[11-15] Sept/Aug	[1-15] Sept/Aug	Last Mo (8/'21)	Last Yr (9/'20)	17-yr Avg (Sept)
Temperature, oC	22.0/23.3	18.5/22.8	18.8/22.8	20.0/22.9	-13%	-9%	-7%
Sp.Cond., mS/cm	3.61/4.15	2.40/2.32	2.51/2.43	3.12/3.08	1%	11%	3%
DO, mg/L	2.34/2.01	3.42/2.73	2.51/2.74	2.59/2.44	6%	-36%	-25%
DO, % of Sat.	27/24	38/32	29/34	30/30			
pH	7.61/7.79	8.01/7.87	7.94/7.98	7.81/7.90	-1%	-4%	1%
3-day ADF, cfs	0.8/0.9	0.3/0.4	0.2/0.3	0.4/0.5	-20%	-63%	-70%
WQ Index	12/11	10/6	9/11	11/10	9%	-52%	-39%
<b>Sept/Aug Grade</b>	<b>F+/F+</b>	<b>F/F</b>	<b>F/F+</b>	<b>F+/F</b>			
Sept 2021/ Aug. 2021	VeryPoor/ VeryPoor	VeryPoor/ Very Poor	VeryPoor VeryPoor	VeryPoor VeryPoor	<b>Index up 1 point overall from last month</b>		

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

LSDR **water temperatures** declined 2.9 degrees (13%) from last month to 7% below the 17-yr monthly norm of 21.4 oC. Overall **specific conductance** of 3.04 mS/cm constitutes a 1% increase from last month to 11% above a year ago and 3% greater than the 17-yr monthly norm of 3.04 mS/cm. The overall **dissolved oxygen** level of 2.59 mg/L (30%Sat.) is 6% over last month, but 36% less than a year ago and 25% lower than the 17-yr norm of 3.52 mg/L (39%Sat). **Streamflow** over the antecedent 3-day period of 0.4 cfs is 20% less than last month, 63% below a year ago and 70% under the 17-yr norm of 1.5 cfs. This month's overall LSDR **water quality index** (WQI) rose one point (9%) from last month, remaining 52% below a year ago and 39% less than the 17-yr September norm of 17.

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 (Aug. '19 - Sept. '21)**

	Mission Valley	Mission Gorge	Santee Basin	LSDR		ADF,cfs	TMR,F,in
Aug. '19	16 (E)	11 (F)	9 (F)	12 (F+)	dw	0.9	0.02
<b>Sept '19</b>	<b>15 (E)</b>	<b>12 (F+)</b>	<b>8 (F)</b>	<b>11 (F+)</b>	<b>DW</b>	<b>1.2</b>	<b>0.03</b>
Oct	18 (E)	18 (E)	15 (E)	16 (E)	DW	0.9	0.00
Nov.	20 (E)	39 (C)	14 (E)	21 (E)	t	36	0.52
Dec.	60 (B)	61 (B)	31 (D)	48 (C+)	WW	79	3.51
JAN '20	62 (B)	68 (B)	34 (D)	52 (B-)	WW	18	2.90
Feb.	47 (C)	66 (B)	35 (D)	45 (C)	t	10.2	0.38
March	52 (B-)	58 (B)	46 (C)	51 (B-)	WW	48	1.97
April	47 (C)	59 (B)	45 (C)	49 (C+)	WW	181	3.58
May	38 (C-)	47 (C)	37 (D+)	37 (D+)	t	13	0.06
June	25 (D-)	31 (D)	21 (E)	24 (E+)	t	5.7	0.02
July '20	18 (E)	30 (D)	21 (E)	21 (E)	DW	2.1	0.001
Aug.'20	23 (E)	24(E+)	18 (E)	21 (E)	DW	1.3	0.00
<b>Sept '20</b>	<b>21 (E)</b>	<b>34 (D)</b>	<b>19 (E)</b>	<b>22 (E)</b>	<b>DW</b>	<b>1.3</b>	<b>0.00</b>
Oct	32 (D)	48 (C)	26 (D-)	33 (D)	t	2.4	0.21
Nov.	45 (C)	56 (B)	37 (D+)	44 (C)	t	7.6	0.11
Dec.	34 (D)	52 (B)	32 (D)	36 (D+)	t	2.9	0.06
JAN '21	46 (C)	60 (B)	30 (D)	42 (C)	WW	10.2	1.10
Feb.	52 (B-)	57 (B)	35 (D)	45 (C)	WW	35	0.50
March	55 (B)	64 (B)	45 (B)	53 (B-)	WW	28	2.32
April	29 (D)	59 (B)	51 (B-)	43 (C)	t	7.9	0.12
May	25 (D-)	29 (D)	20 (E)	24 (E+)	t	3.7	0.04
June	14 (E)	23 (E+)	19 (E)	17 (E)	DW	1.7	0.002
July '21	15 (E)	16 (E)	17 (E)	16 (E)	DW	0.8	0.004
Aug. '21	11 (F)	6 (F)	11 (F+)	10 (F)	DW	0.6	0.001
<b>Sept '21</b>	<b>12 (F+)</b>	<b>10 (F)</b>	<b>9 (F)</b>	<b>11 (F+)</b>	<b>DW</b>	<b>0.6</b>	<b>0.002</b>

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. September, the fourth/last 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 trendlines, from WY05 through WY17, are attributed to depleted DO levels extending throughout protracted low-flow periods of the 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 of 11 is the 7th time the Sept. index has been in the Very Poor (F) water quality range. The overall LSDR index reached a low of seven three years ago in Sept. 2018.

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 31 is four percent below the 17-yr to-date LSDR weighted average value of 32.5. The running average Sept. low of 22 (32% below the current norm) occurred in 2014. The highest running average WQI for the month of 40 (24% above norm) occurred in 2005. The fact the river has experienced well below average rainfall (and runoff) during the past year means WY21 also presents well 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 very low dry-weather flows and accrual of organic deposits in ponded portions are principal causes of poor water quality. The greatest downward trend (red-dashed line) is associated with the poorest reach (Upper Santee Basin) encompassing Mast Park East and West (13E&W) and Magnolia Ave.(14) monitoring sites. Mission Gorge (blue line) continues to demonstrate the least decline in index values over the entire monitoring period.

Spatial WQI values determined over the past three months in order of occurrence upstream are shown in **Charts 3, 4 and 5** on page 6. Sept. results (color bars w/values in black shown on Chart 5) are slightly above those from last month (Chart 4) but lower than in July (Chart 3). Eight out of 14 sites this month are graded Very Poor (F) while the remaining six are Poor (E). This month's index values (solid colored columns) are also significantly less than a year ago (9/'20 and the 17-yr running average (solid black line). The overall water quality index value of 11 is the fourth time in the last seven years that the index has been in the Very Poor (F) range. Absent rainfall and an increase in streamflow, next month's index is not expected to show significant change.

(9/22/21 jck)



