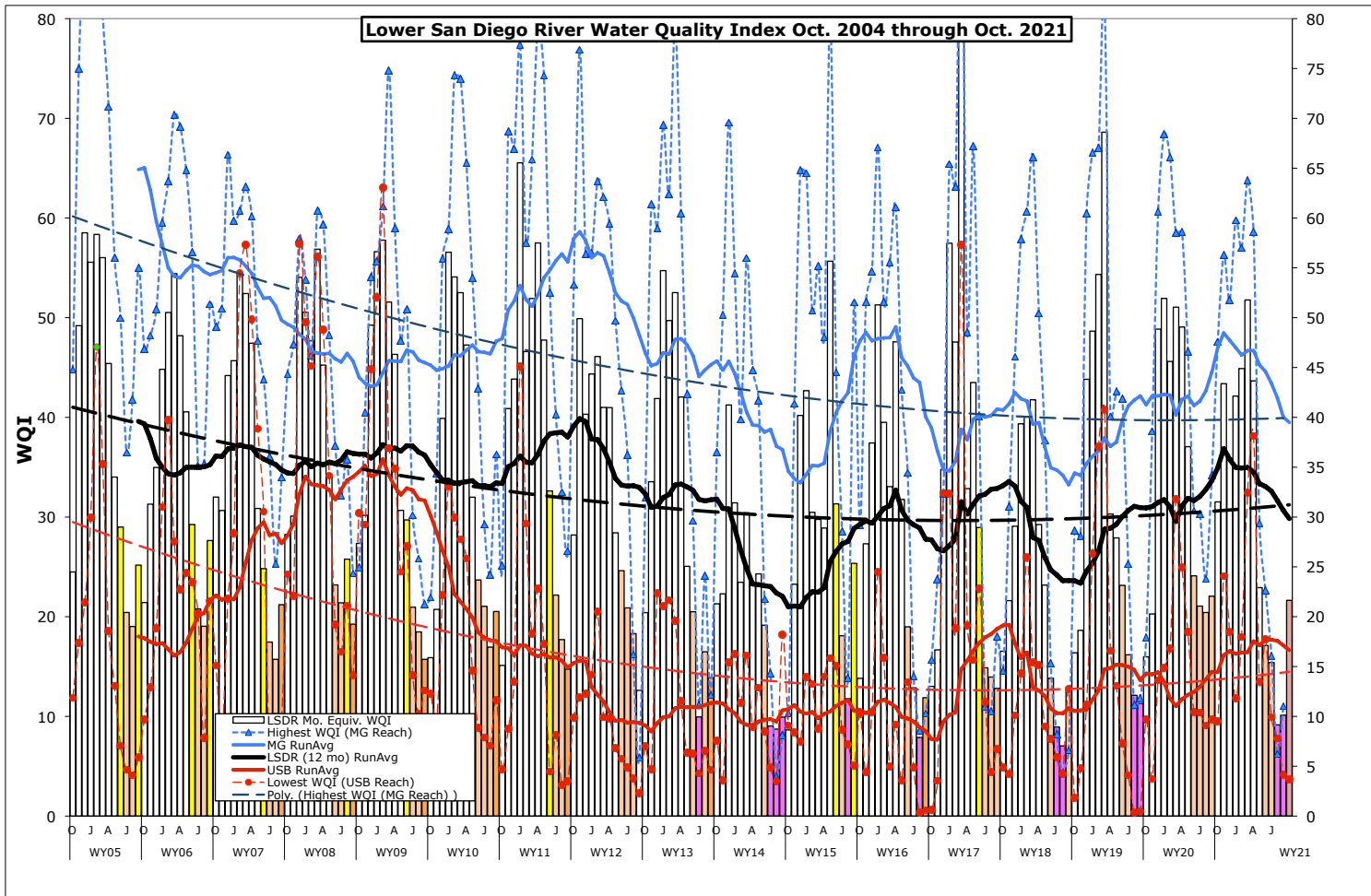


# Monthly WQM Report

## Lower San Diego River - October 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 (Sept/Oct). This month's overall index of 22 is 12 points above last month, ten points less than a year ago and one point greater than the 17-yr average of 21. Overall water quality in the lower San Diego River hydrologic unit (HSU 907.1) increased 9% from last month improving a full grade level from (F) Very Poor to (E) Poor.

<b>Table 1 - Sept/Oct. 2021 WQM Data Summary</b>							
	West - MV	Mid - MG	East - SB	LSDR	Percent Variance from		
[Site #s]	[1-7] Sept/Oct	[8-10] Sept/Oct	[11-15] Sept/Oct	[1-15] Sept/Oct	Last Mo (9/'21)	Last Yr (10/'20)	17-yr Avg (Oct.)
Temperature, oC	22.0/17.4	18.5/16.0	20.0/16.5	20.5/16.7	-19%	0%	-10%
Sp.Cond., mS/cm	3.61/2.02	2.40/2.37	2.51/2.32	3.12/2.43	-22%	-15%	-16%
DO, mg/L	2.34/2.88	3.42/5.48	2.51/3.41	2.59/3.55	30%	-36%	-12%
DO, % of Sat.	27/30	38/56	29/35	30/37			
pH	7.61/7.88	8.01/7.75	7.94/8.02	7.81/7.96	2%	2%	3%
3-day ADF, cfs	0.8/2.6	0.3/1.3	0.3/1.1	0.5/1.7	250%	-44%	-9%
WQ Index	12/19	11/41	9/16	10/22	114%	-31%	5%
Sept/Oct Grade	F+/E	F/C	F/E	F/E			
Sept 2021/ Oct. 2021	VeryPoor/ <b>Poor</b>	VeryPoor/ <b>Fair</b>	VeryPoor <b>Poor</b>	VeryPoor <b>Poor</b>	<b>Index up 12 points 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 3.8 degrees (19%) from last month to 10% below the 17-yr monthly norm of 18.5 oC. Overall **specific conductance** of 2.41 mS/cm constitutes an 22% decrease from last month to 15% below a year ago and 16% less than the 17-yr monthly norm of 2.89 mS/cm. The overall **dissolved oxygen** level of 3.55 mg/L (37%Sat.) is 30% higher than last month, but 36% less than a year ago and 12% below the 17-yr norm of 4.05 mg/L (42%Sat). **Streamflow** over the antecedent 3-day period of 1.7 cfs is 250% greater than last month, 44% below a year ago, and 9% under the 17-yr norm of 1.8 cfs. This month's overall LSDR **water quality index** (WQI) of 22 increased 114% over last month, to 31% less than last Oct. and 5% above the 17-yr monthly norm of 21.

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

	Mission Valley	Mission Gorge	Santee Basin	LSDR		ADF,cfs	TMR,F,in
Sept '19	15 (E)	12 (F+)	8 (F)	11 (F+)	DW	1.2	0.03
<b>Oct '19</b>	<b>18 (E)</b>	<b>18 (E)</b>	<b>15 (E)</b>	<b>16 (E)</b>	<b>DW</b>	<b>0.9</b>	<b>0.00</b>
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
Sept '20	21 (E)	34 (D)	19 (E)	22 (E)	DW	1.3	0.00
<b>Oct.'20</b>	<b>32 (D)</b>	<b>48 (C)</b>	<b>26 (D-)</b>	<b>33 (D)</b>	<b>t</b>	<b>2.4</b>	<b>0.21</b>
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)	15 (E)	DW	0.8	0.004
Aug. '21	11 (F)	6 (F)	10 (F+)	9 (F)	DW	0.6	0.224
Sept '21	12 (F+)	11 (F)	9 (F)	10 (F+)	DW	0.6	0.004
<b>Oct. '21</b>	<b>19 (E)</b>	<b>41 (C)</b>	<b>16 (E)</b>	<b>22 (E)</b>	<b>t</b>	<b>7.4</b>	<b>0.80</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 22 is the 9th time the Oct. index has been in the Poor (E) water quality range. The overall LSDR October index reached a low of 9 in 2015.

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 30 is 8 percent below the 17-yr to-date LSDR weighted average value of 32.3. The running average Oct. low of 21 (35% below the current norm) occurred in 2014. The highest running average WQI for the month of 40 (23% above norm) occurred in 2011. The fact the river has experienced well below average rainfall (and runoff) during the past 18 months suggests a slow recovery over the next for the first few months of the new water year.

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. Oct. results (color bars w/values in black shown on Chart 5) are well above those from last month (Chart 4) and August (Chart 3). Three out of 15 sites this month are graded Very Poor (F), 6 of 15 Poor (E). 4 Marginal (D) and 2 Fair (C). This month's index values (solid colored columns) although greater than last month (red dashed line) remain below a year ago (dashed bars). The 17-yr running averages are shown as a solid black line. The overall water quality index for October of 22 is the fifth time in the last seven years that the value has been in the Poor (E) range (13-24).

(10/19/21 jck)

