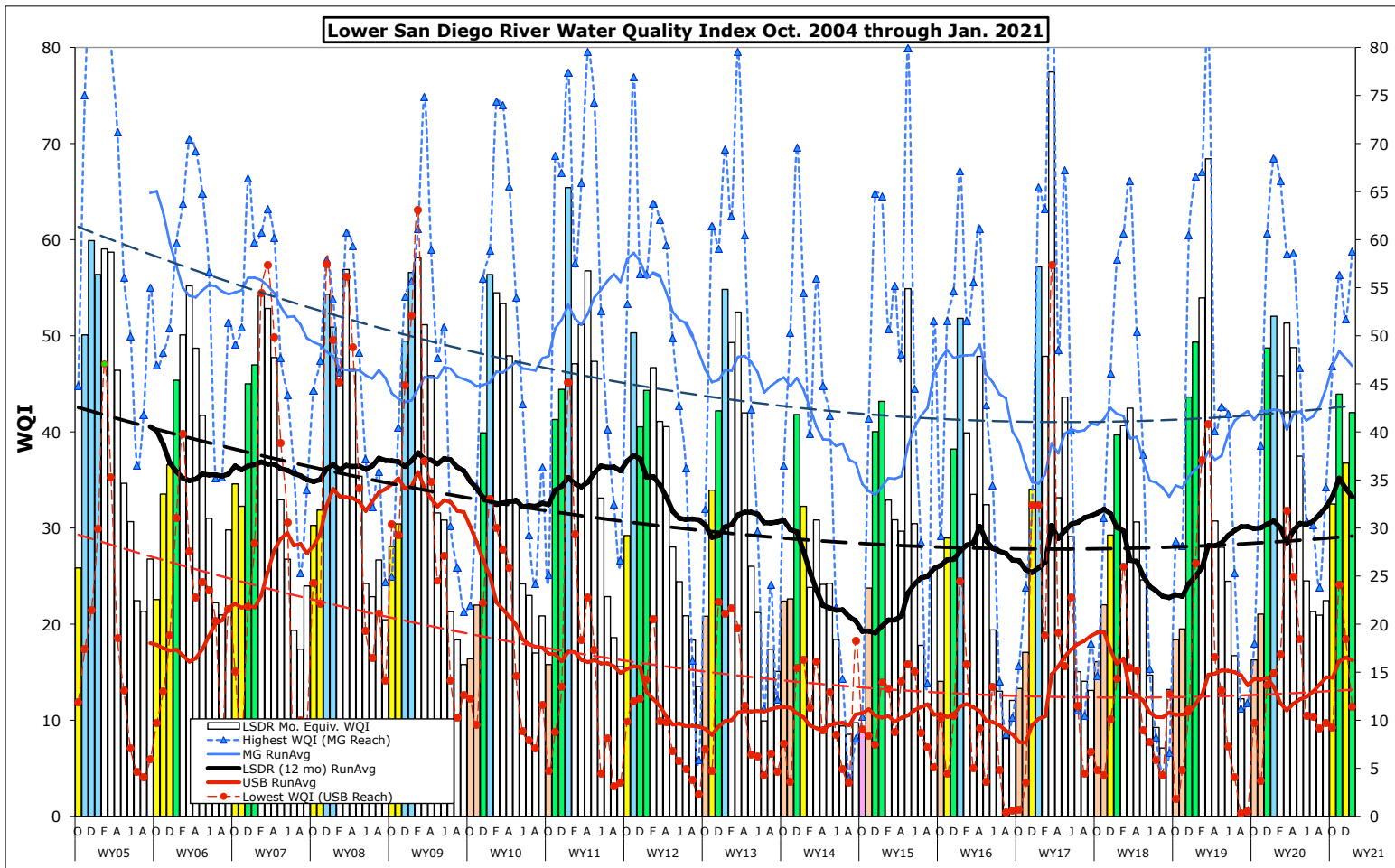


Monthly WQM Report

Lower San Diego River - January 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 (Jan/Dec). This month's overall index of 42 is five points (14%) above last month but six points (-13%) less than the 17-yr monthly average of 48. Overall water quality in the lower San Diego River hydrologic unit (HSU 907.1) improved slightly holding in the range of Fair (C) over the past four weeks.

Table 1 - Jan 2021/Dec. 2020 WQM Data Summary							
	West - MV	Mid - MG	East - SB	LSDR	Percent Variance from		
[Site #s]	[1-7] Jan/Dec	[8-10] Jan/Dec	[11-15] Jan/Dec	[1-15] Jan/Dec	Last Mo (12'20)	Last Yr (1'20)	17-yr Avg (Jan.)
Temperature, oC	12.5/12.0	9.1/8.4	10.7/10.3	11.1/10.6	9%	-6%	-6%
Sp.Cond., mS/cm	2.16/3.42	1.75/2.00	1.85/2.07	1.96/2.55	-23%	12%	15%
DO, mg/L	7.52/6.48	10.60/9.60	5.24/6.85	7.21/7.03	2%	-7%	-7%
DO, % of Sat.	71/61	96/87	47/62	66/65			
pH	7.81/8.08	7.53/8.30	7.88/8.25	7.85/8.18	-4%	1%	2%
3-day ADF, cfs	6.2/2.4	6.3/4.2	6.3/4.4	6.3/3.6	73%	-60%	-78%
WQ Index	47/35	59/52	29/32	42/37	14%	-19%	-13%
Jan/Dec Grade	C/D	B/B-	D/D+	C/D+			
Jan '21/ Dec '20	Fair/ Marginal	Good/ Good	Marginal/ Marginal	Fair/ Marginal	Index UP 5 points overall from last month		

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

LSDR **water temperatures** increased 0.5 degrees (9%) from last month to -6% below both a year ago and the 17-yr Jan. norm of 11.8 oC. Overall **specific conductivity** of 1.96 mS/cm constitutes a 23% decline from last month to 12% above last Jan. and 15% above the 17-yr monthly norm of 1.70 mS/cm. The overall **dissolved oxygen** level of 7.21 mg/L (66%Sat.) is 2% above last month, - but slightly less (-7%) than a year ago and the 17-yr Jan. norm of 7.83 mg/L (71%Sat). **Streamflow** over the antecedent 3-day period of 6.3 cfs is 73% greater than last month but 60% less than a year ago and 75% less than the 17-yr norm. This month's LSDR **water quality index** (WQI) is five points greater than last month, but ten points (-19%) below a year ago and six points (-13%) less than the 17-yr Jan. norm of 48.

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

Table 2 - WQI Values, Average Daily Flow and Monthly Rainfall (Dec'18 - Jan'21)							
	Mission Valley	Mission Gorge	Santee Basin	LSDR		ADF, cfs	MRf, in
Dec.	54 (B)	61 (B)	25 (D-)	44 (C)	WW	48	3.02
JAN '19	47 (C)	66 (B)	43 (C)	49 (C+)	WW	39	2.80
Feb.	51 (B-)	67 (B)	51 (B-)	54 (B)	WW	179	2.98
Mar.	76 (A-)	82 (A)	55 (B)	68 (B)	WW	25	1.28
April	33 (D)	40 (C)	24 (E+)	31 (D)	t	8.6	0.46
May	28 (D)	43 (C)	21 (E)	28 (D)	t	14	0.51
June	21 (E)	42 (C)	20 (E)	24 (E+)	t	4.3	0.38
July	17 (E)	25 (D-)	13 (E-)	17 (E)	DW	1.2	0.01
Aug.	16 (E)	11 (F)	9 (F)	12 (F+)	DW	0.9	0.02
Sept	15 (E)	12 (F+)	8 (F)	11 (F+)	DW	1.2	0.03
Oct	18 (E)	18 (E)	15 (E)	16 (E)	DW	0.9	0.00
Nov.'19	20 (E)	39 (C)	14 (E)	21 (E)	t	37	0.52
Dec.	60 (B)	61 (B)	31 (D)	49 (C+)	WW	78	3.51
JAN '20	62 (B)	68 (B)	34 (D)	52 (B-)	WW	18	2.90
Feb.	47 (C)	66 (B)	35 (D)	46 (C)	ww	10	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)	34 (D)	37 (D+)	t	13	0.06
June	23 (E)	35 (D)	23 (E)	26 (D-)	dw	5.7	0.02
July	18 (E)	30 (D)	20 (E)	21 (E)	DW	2.1	0.00
Aug	23 (E)	24 (E+)	19 (E)	21 (E)	DW	1.3	0.00
Sept	21 (E)	34 (D)	19 (E)	22 (E)	DW	1.3	0.00
Oct	32 (D)	47 (C)	26 (D-)	32 (D)	t	2.3	0.21
Nov.'20	46 (C)	57 (B)	40 (C)	46 (C)	t	7.2	0.17
Dec.	35 (D)	52 (B)	32 (D)	37 (D+)	t	7.9	0.08
JAN 21	47 (C)	59 (B)	29 (D)	42 (C)	ww	7.1	0.56

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. January, the first month of the second quarter of the water year values for each year are expressed as color-shaded bars; blue-B (50 or >) Good, green-C (38-49) Fair, yellow-D (25-37) Marginal, brown-E (13-24) Poor and pink-F (12 or <) Very Poor. Running average index values for LSDR (flow-weighted averages of all sites) are shown as a heavy black line. Monthly values for the consistently highest/best quality reach (Mission Gorge) are shown as a blue line while the consistently lowest/or poorest reach (Upper Santee Basin) are shown in red. The downward slope in index, represented by the smooth dashed black line, from WY05 through WY17 can be attributed to deeply depleted dissolved oxygen levels extending throughout protracted low-flow periods of the water year. The dashed line represents an overall negative slope of -0.625% per annum in index value over the monitoring period. The irregular solid black line (12-month running average index value), generally rising since reaching a low of 19 in Oct. 2014, is currently at 36. This month's index of 42 (green) is the 11th time in 17 years that the Jan. value has been in the C (Fair) range.

Monthly WQI values from Oct. '04 through Jan.'21 are presented in **Chart 1** (next page) together with 12-mo. running averages for each of the five principal reaches of the lower river system and overall (i.e., LSDR). The current running average WQI of 37 is 10% above the to-date LSDR flow-weighted average index; running at a level last experienced in late 2011. The running average Jan. low of 19 (39% below the current norm) occurred in 2015. The highest running average WQI of 39 (23% above the norm) occurred in 2005. The fact that the river has not yet experienced significant rainfall and stormflow during the first four months of the water year suggests that WY21 may result in near normal 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 are presented in **Chart 2**. Although water quality improved within the Upper Santee Basin over the past year, resurgent aquatic growth and subsequent decay of invasive plants such as floating primrose-willow (*Ludwigia peploides*) in conjunction with below average dry weather flow and increased benthos are primary causes of sustained poor water quality within the upper portions of both the Santee Basin and Mission Valley sections of the river. The greatest downward trend (red-dashed line) is associated with the poorest reach (Upper Santee Basin) encompassing monitoring sites 13 (Mast Park East) and 14 (Magnolia Ave.). Mission Gorge (blue line) present the least decline over time in water quality index values.

Spatial WQI values by monitoring site over the past three months are shown in **Charts 3, 4 and 5** on page 6. January results (color bars w/values in black shown on Chart 5) are above those from last month (Chart 4) and comparable to those in Nov. (Chart 3). Five of 15 sites were rated Good (B) and six Fair (C) in January whereas only two were Good (blue) and five Fair (green) last month. Site grades in Jan are near those monitored in Nov. As shown in Chart 5, this month's index values (solid colored columns) are, in general, similar to a year ago (Jan. 2020, dashed colored columns), above last month (dashed red line) and slightly less than the 17-yr Jan. norms (solid black line). The overall rating of 42 (C) constitutes a Fair valuation that is six index points (-13%) below the 17-year norm for the first month of the calendar year. (jck 1/20/21)

