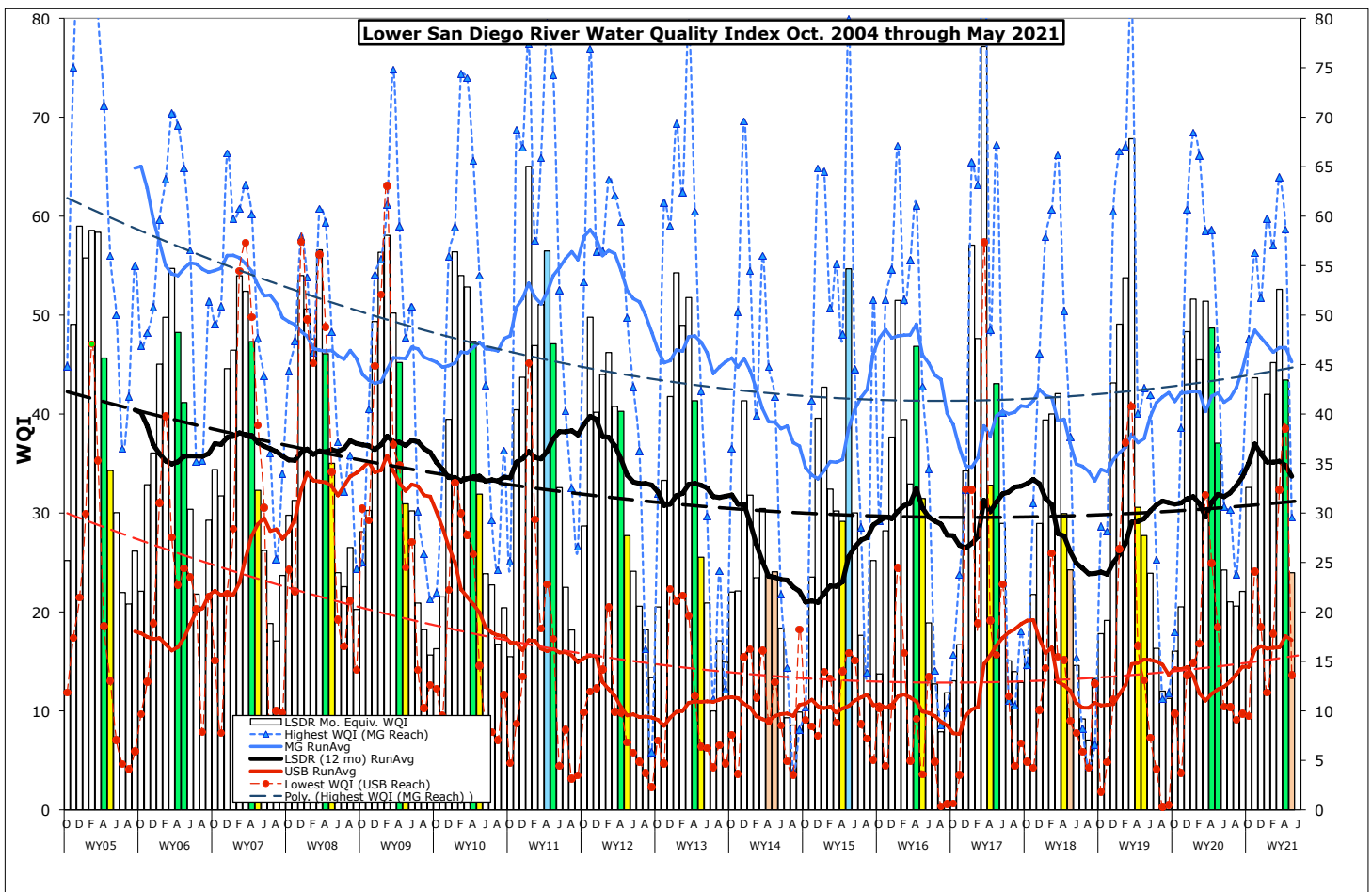


Monthly WQM Report

Lower San Diego River - May 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 (March/April). This month's overall index of 44 is nine points (17%) below last month, five points less than last April and three points above the 17-yr average of 41. Overall water quality in the lower San Diego River hydrologic unit (HSU 907.1) declined over the last month from B- (Good) to C (Fair).

Table 1 - May/April 2021 WQM Data Summary							
	West - MV	Mid - MG	East - SB	LSDR	Percent Variance from		
[Site #s]	[1-7] May/Aprl	[8-10] May/Aprl	[11-15] May/Aprl	[1-15] May/April	Last Mo (4'21)	Last Yr (5'20)	17-yr Avg (May)
Temperature, oC	20.3/18.6	18.0/16.1	18.4/15.7	19.1/17.3	10%	-3%	-5%
Sp.Cond., mS/cm	3.09/2.66	1.97/1.63	2.05/1.95	2.47/2.16	14%	48%	9%
DO, mg/L	3.46/3.78	8.49/5.43	3.70/7.33	4.47/5.61	-2%	-11%	-14%
DO, % of Sat.	39/41	86/56	40/77	48/59			
pH	7.80/7.70	7.78/7.94	7.87/7.92	7.84/7.83	0%	0%	2%
3-day ADF, cfs	3.2/8.3	2.9/5.0	2.8/4.6	3.8/6.0	-50%	-73%	-58%
WQ Index	26/29	30/59	20/51	24/43	-45%	-35%	-29%
May/April Grade	D-/D	D/B	E/B	E+/C			
May/ April 2021	Marginal/ Marginal	Marginal/ Good	Poor/ Good	Poor/ Fair	Index DOWN 21 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 1.8 degrees (10%) from last month to 3% below last May and 4.5% below the 17-yr May norm of 20oC. Overall **specific conductance** of 2.47 mS/cm constitutes a 14% increase from last month to 48% above a year ago and 9% above the 17-yr monthly norm of 2.26 mS/cm. The overall **dissolved oxygen** level of 4.02 mg/L (44%Sat.) is 35% less than last month, 20% below a year ago and 22% under the 17-yr May norm of 5.12 mg/L (56%Sat). **Streamflow** over the antecedent 3-day period of 3.0 cfs is 50% less than than last month, 73% below a year ago and 58% under the 17-yr norm of 8 cfs. This month's overall LSDR **water quality index** (WQI) is 21 points (45%) less than last month, 13 points (35%) below a year ago and 10 points below the 17-yr May norm of 34.

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, together with 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 (April '19 - May '21)							
	Mission Valley	Mission Gorge	Santee Basin	LSDR		ADF,cfs	TMR,F,in
April	33 (D)	40 (C)	24 (E+)	31 (D)	t	9.5	0.46
May	28 (D)	43 (C)	21 (E)	28 (D)	t	10	0.51
June	21 (E)	42 (C)	20 (E)	24 (E+)	t	8.6	0.38
July	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)	ww	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+)	dw	6.5	0.02
July	18 (E)	30 (D)	21 (E)	21 (E)	DW	2.6	0.00
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	26 (D-)	30 (D)	20 (E)	24 (E+)	t	3.8	0.04

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. May, the second month of spring, 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 line represents 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 34. This month's overall index of 25 is the 10th time in 17 years that the May value has been in the Marginal (D) water quality index range.

Monthly WQI values from Oct. '04 through May '21 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 current running average WQI of 34 is 4% above the to-date LSDR weighted average 17-yr index. The May running average low of 23 (28% below the current norm) occurred in 2014. The highest running average WQI for May of 37 (15% above norm) occurred in 2011. The fact the river has experienced well below average rainfall and runoff during the past nine months indicates WY21 will result in a below average overall water quality index value.

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 uppermost reach over the last two years, resurgent invasive aquatic plants and subsequent organic decay such as floating primrose-willow (*Ludwigia peploides*) in conjunction with minimal dry weather flows and accrual of benthic deposits in ponded portions 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) shows the least decline in water quality index values over the 17-year monitoring period.

Spatial WQI values by monitoring site over the past three months are shown in **Charts 3, 4 and 5** on page 6. May results (color bars w/values in black shown on Chart 5) are significantly below those from last month (Chart 4) and those in March (Chart 3). Eight of 15 sites (53%) are rated Fair (C)-to-Marginal (D), while the remaining seven (47%) are Poor (E)-to-Very Poor (F) this month. Last month only 14% were Poor-to-Very Poor and 29% were Good (B). As shown in Chart 5, this month's index values (solid colored columns) are, in general, well below a year ago (5/'20 dashed columns), last month (dashed red line) and the 17-yr running average (solid black line), especially in the west. The overall marginal water quality rating of 25 (D-), is nine points (26%) below the 17-year norm for May of 34 (Fair). (5/24/21 rev JCK)

