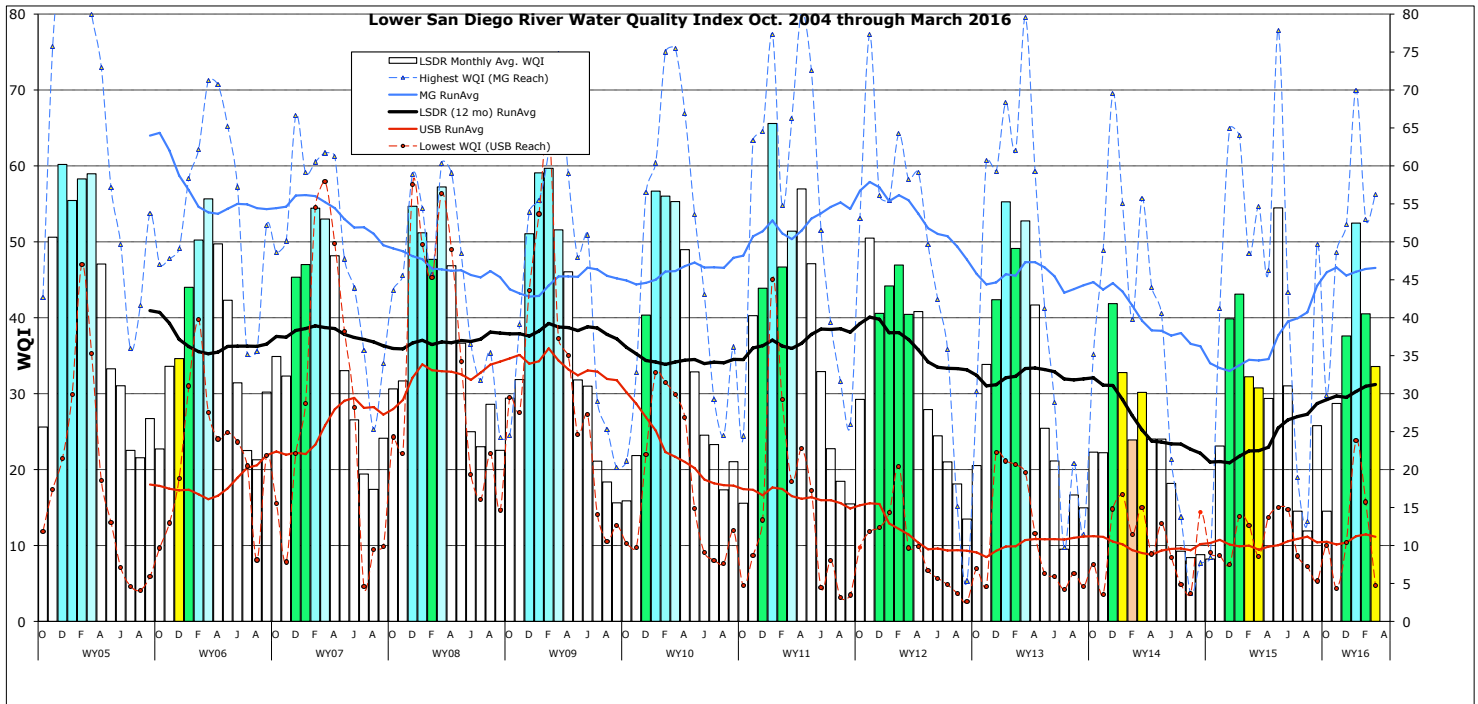


# Monthly WQM Report

## Lower San Diego River - March 2016



## Lower SDR WQ Monitoring Data Summary

**Table 1** presents a summary of water quality data monitored by SDRPF's RiverWatch Team within the Lower San Diego River watershed over the past two months. February and March represent the last two months of the WY16 winter or 'wet' season. This month's water quality index values are down from last month. The results are comparable to March values from last two years (WY15/WY14) and well below those for the previous nine years (WY05-WY13).

<b>Table 1 - March/Feb. 2016 WQM Data Summary</b>							
	West - MV	Mid - MG	East - SB	<b>LSDR</b>	Percent Variance from		
[Sites]	[1-7] Mar/Feb	[8-10] Mar/Feb	[11-15] Mar/Feb	<b>[1-15] Mar/Feb</b>	Last Mo (2/2016)	Last Yr (3/2015)	11-Yr Avg (March)
Temperature, oC	19.3/14.3	17.1/14.2	17.9/15.2	<b>18.3/15.4</b>	19%	-3%	10%
Sp.Cond., mS/cm	1.67/2.18	1.53/1.52	1.68/1.72	<b>1.66/2.00</b>	-17%	-16%	-2%
DO, mg/L	3.98/5.41	8.20/8.82	4.25/5.67	<b>5.11/6.28</b>	-17%	11%	-24%
DO, % of Sat.	44/56	85/85	46/59	<b>55/63</b>			
pH	7.12/8.02	7.74/8.08	7.11/7.92	<b>7.14/8.01</b>	-11%	-9%	-8%
ADF, cfs	12.0/12.0	7.0/6.0	6.0/5.0	<b>8.0/7.0</b>	12%	43%	-47%
WQ Index	32/40	57/53	25/35	<b>34/41</b>	-16%	11%	-30%
Grade(Mar/Feb)	D/C	B/B-	D-D	<b>D/C</b>			
<b>March Grade</b>	Marginal	Good	Marginal	<b>Marginal</b>	<b>Down 7 pts from last mo.</b>		

DO values in red indicate hypoxic (DO <4 mg/L) conditions.

Overall, LSDR **water temperatures** are up 2.9 degrees Celsius (19%) from last month, slightly below (-3%) last March at 1.7 degrees (10%) above the 11-yr monthly norm. **Specific conductivities** are down (-17%) from last month and last March at -2% below the 11-yr monthly norm. **Dissolved oxygen** levels are down 17% from last month at 24% below the 11-yr monthly norm but 11% above last March. **Streamflows** are up 12% from last month at 43% above last March but still below (-47%) the 11-yr. monthly norm. This month's LSDR **water quality index** (WQI) of 34(D) is 7 points (-16%) below last month's value of 41(C) and 30% below the 11-yr norm but 11% higher than a year ago in March. Conclusion:

The LSDR water quality index declined 7 points from **41 to 34**, dropping from Fair (C) to Marginal (D) over the past 30 days.

A summary of WQI values occurring over the past two years of record for the three main sections of the lower river system are listed in **Table 2** along with average daily flow and total monthly rainfall.

	Mission Valley	Mission Gorge	Santee Basin	LSDR		ADF, cfs	Rf, in
March	20(E)	56(B)	27(D)	30(D)	WW	21.2	1.32
April	19(E)	44(C)	19(E)	24(E+)		5.9	0.4
May	16(E)	41(C)	24(E+)	24(E+)	DW	1.4	0.01
June	17(E)	21(E)	18(E)	18(E)	DW	0.7	0.0
July	8(F)	14(E)	8(F)	9(F)	DW	0.6	0.0
Aug	11(F)	4(F)	8(F)	8(F)	DW	0.7	0.01
Sept	5(F)	8(F)	13(E-)	9(F)	DW	1.2	0.05
Oct	7(F)	8(F)	9(F)	8(F)	DW	0.4	0.01
Nov	12(F+)	41(C)	24(E+)	23(E)		3.2	0.37
Dec '14	35(D)	65(B)	32(D)	40(C)	WW	34.6	4.5
Jan.'15	37(D+)	64(B)	39(C-)	43(C)		10.8	0.38
Feb. '15	28(D)	48(C+)	29(D)	32(D)		6.4	0.18
March	24(E+)	55(B)	26(D-)	31(D)		14.4	0.93
April	24(E+)	46(C)	27(D-)	29(D)	DW	2.3	0.02
May	55(B)	78(A-)	41(C)	54(B)	rs	14	2.4
June	26(D-)	43(C)	31(D)	31(D)	DW	2.2	0.01
July	12(F)	19(E)	15(E)	15(E)	rs	20.2	1.71
Aug	8(F)	13(E-)	15(E)	12(F+)	DW	1.6	0.0
Sept	8(F)	50(B-)	32(D)	26(D-)	rs	6.5	1.25
Oct	5(F)	30(D)	17(E)	15(E)		4.8	0.42
Nov	28(D)	49(C+)	20(E)	29(D)	rs	9.9	1.53
Dec. '15	40(C)	52(B)	29(D)	38(C-)		14.0	0.45
Jan.'16	54(B)	70(B)	42(C)	53(B)	WW	90.0	3.21
Feb.'16	40(C)	53(B)	35(D)	41(C)		10.0	0.05
March	32(D)	57(B)	25(D-)	34(D)		18.0	0.72

WQI values are expected to decline at most monitoring sites over the next 30 days unless there is well above normal precipitation.

The **cover page** chart presents monthly WQI values and range (high-low) for the Lower San Diego River determined over the past 139 months of monitoring. Winter season (Dec. - March) values for each of the past 12 water years are shown as colored-shaded bars. Running average index

values for LSDR (flow-weighted for all 15 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/poorest reach (Upper Santee Basin) are shown in red. This month's values are up from last month (Feb.) and slightly above the previous two year's monthly results. Depending on the amount of rainfall received over the next 30 days; WY16 wet/winter period will remain below normal in terms of water quality.

Monthly WQI values extending from Oct. 2005 through March 2016 are presented in **Chart 1** (next page) together with trend-lines (12-month running averages) for each of the five individual reaches and overall (LSDR). The current overall running average WQI for the LSDR of **31** remains 10% below the 11-yr norm of **34.3**. Although there was measurable improvement in water quality for several reaches of the lower watershed during Jan. and Feb, very poor-to-marginal water quality conditions persist in the upper reaches of both the Santee and Mission Valley segments.

Monthly and 12-mo. running average WQI values for the poorest site (13-Mast Park) and best Mission Gorge reach (Sites 8-10) are presented in **Chart 2** (also on next page). Water quality at Sites 13 and 14 are Very Poor (F). Excessive growth of the invasive non-native aquatic plant, floating primrose-willow (*Ludwigia peploides*) observed throughout much of the slower-moving reaches of the river, is considered a principal contributor of recurrent dissolved oxygen deficits (DO < 4.0 mg/L) and resultant low water quality index values over the past four and a half years of drought.

Spatial WQI results for the last two months of monitoring are shown in **Charts 3 and 4** on page 6. WQI values (color bars w/index values in black) have changed most noticeably in the Mission Gorge and Lower Santee Basin reaches. The percentage of sites in the Poor-to-Very Poor range (E/F) remained at 20% (3 of 15) over the past two months. Of the remaining sites; the intermediate quality range (Fair-C and Marginal-D) sites increased from 53% (8 sites) in Feb. to 67% (10 sites) in March. The number of sites in the Good-to-Very Good (A/B) range declined from four (27%) in Feb. to two (13%) in March.

Water quality index values can be expected to further decline over the next month at many monitoring sites should streamflow remain below seasonal norms. However, should above normal rainfall occur during the next 30-days, April water quality monitoring results for the Lower San Diego River could show some improvement.

JCK (3/23/2016)

