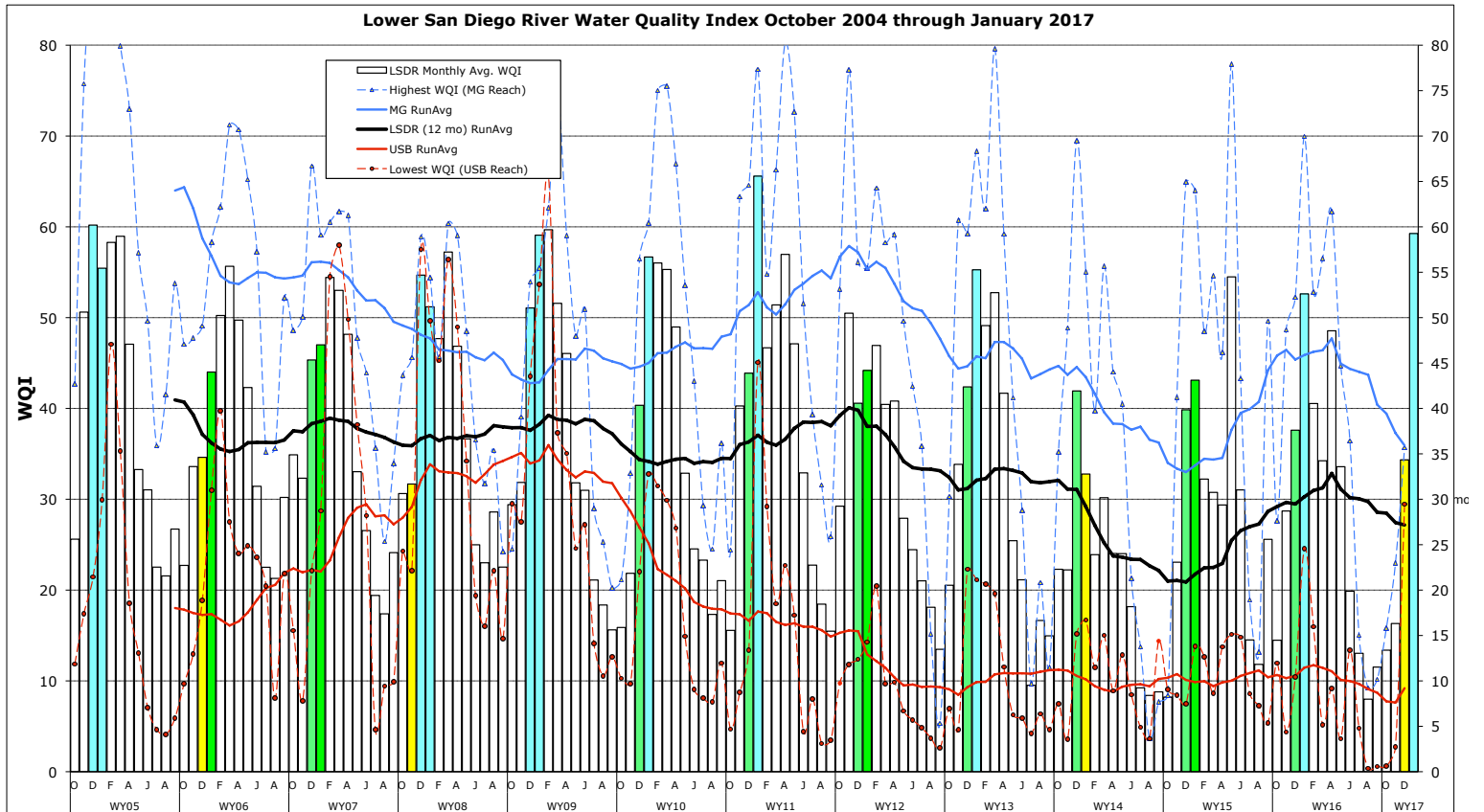


# Monthly WQM Report

## Lower San Diego River - January 2017



## 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. December and January constitute both the first two months of winter and the wet weather season. This month's index value is up 25 points from last month, 6 points higher than last Jan. and 8 points above the 12-yr monthly norm for the river. General water quality of the lower hydrologic unit (HSU 907.1) is Good (B) for all three sections.

<b>Table 1 - January 2017/December 2016 WQM Data Summary</b>							
	West - MV	Mid - MG	East - SB	<b>LSDR</b>	Percent Variance from		
[Sites]	[1-7] Jan/Dec	[8-10] Jan/Dec	[11-15] Jan/Dec	<b>[1-15] Jan/Dec</b>	Last Mo (12/'16)	Last Yr (1/'16)	12-Yr Avg (Jan.)
Temperature, oC	11.1/13.5	10.7/10.7	11.4/13.0	<b>11.1/12.7</b>	-13%	-7%	-3%
Sp.Cond., mS/cm	1.05/1.58	0.68/1.55	0.94/1.62	<b>0.97/1.46</b>	-33%	-32%	-46%
DO, mg/L	9.22/4.36	10.6/5.97	6.97/5.59	<b>8.59/5.08</b>	70%	15%	8%
DO, % of Sat.	85/42	96/54	65/53	<b>79/48</b>			
pH	7.57/7.35	7.77/7.99	7.44/7.87	<b>7.49/7.65</b>	-2%	-3%	-3%
30-day ADF, cfs	238/62	160/43	135/37	<b>178/48</b>	273%	70%	196%
WQ Index	62/30	70/36	51/37	<b>59/34</b>	73%	13%	17%
Grade(Jan/Dec)	B/D	B/D+	B-/D+	<b>B/D</b>			
<b>January 2017</b>	Good	Good	Good	Good	<b>Up 25 pts from last mo.</b>		

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

Overall, LSDR **water temperatures** are down 1.6 degrees Celsius (-13%) from last month, almost a full degree below last Jan. (12°C), and 3 percent below the 12-yr norm of 11.5°C. **Specific Conductivities** dropped considerably (-33%) from last month, last Jan. (-32%) and the 12-yr monthly norm of 1.81 mS/cm by -46%. **Dissolved oxygen** levels are up 70% from last month, to above both last Jan. and the 12-yr monthly norm of 8.06 mg/L. **Streamflow** over the antecedent 30 day period increased over 200 times last month to 70% above Jan. 2016 and 196% above the 12-yr norm of 60 cfs. This month's LSDR **water quality index** (WQI) of 59(B) rose 25 points (73%) from last month's value of 34(D), to 13% above a year ago Jan. of 53 and 17% above the 12-yr January norm of 51 (B-).

Conclusion:

The Lower San Diego River water quality index increased by 25 points, rising from **34 (D Marginal)** to **59 (B Good)** over the past 30 days.

A summary of WQI values occurring over the past two years of record for the three sections of the lower river system as well as the overall LSDR average are listed in **Table 2** along with average daily flow (ADF) and total monthly rainfall (MRF).

<b>Table 2 - WQI Values, Average Daily Flow and Monthly Rainfall (Jan. 2015 - Jan. 2017)</b>							
	Mission Valley	Mission Gorge	Santee Basin	LSDR		ADF, cfs	MRF, in
Jan.'15	37(D+)	64(B)	39(C-)	43(C)		10.3	0.38
Feb.	28(D)	48(C+)	29(D)	32(D)		6.1	0.18
March	24(E+)	55(B)	26(D-)	31(D)		14.6	0.93
April	24(E+)	46(C)	27(D-)	29(D)	DW	2.2	0.02
May	55(B)	78(A-)	41(C)	54(B)		13.3	2.4
June	26(D-)	43(C)	31(D)	31(D)	DW	2.1	0.01
July	12(F)	19(E)	15(E)	15(E)		14.9	1.71
Aug	8(F)	13(E-)	15(E)	12(F+)	DW	1.4	0.00
Sept	8(F)	50(B-)	32(D)	26(D-)		6.0	1.25
Oct	5(F)	28(D)	17(E)	14(E)		4.2	0.42
Nov	28(D)	49(C+)	20(E)	29(D)		8.9	1.53
Dec.	40(C)	52(B)	29(D)	38(C-)		13.2	0.45
Jan.'16	54(B)	70(B)	42(C)	52(B)	WW	90	3.21
Feb.	40(C)	53(B)	35(D)	40(C)		8.9	0.05
March	32(D)	57(B)	25(D-)	34(D)		13.9	0.72
April	63(B)	62(B)	30(D)	49(C+)		11.9	0.55
May	38(C)	45(C)	26(D-)	34(D)		5.6	0.43
June	14(E)	36(D)	18(E)	20(E)	DW	0.9	0.02
July	14(E)	15(E)	12(F+)	13(E-)	DW	0.5	0.00
Aug	10(F)	9(F)	6(F)	8(F)	DW	0.4	0.00
Sept	12(F+)	10(F)	12(F+)	12(F+)	DW	1.9	0.32
Oct	13(E-)	16(E)	13(E-)	13(E-)	DW	1.3	0.07
Nov.	16 (E)	23(E)	14(E)	16(E)		5.9	0.61
Dec.	27(D)	36(D)	37(D+)	35(D)	WW	48	4.22
Jan. '17	62(B)	70(B)	51(B-)	59(B)	WW	178	3.01

WQI values are expected to remain elevated at most monitoring sites over the next month.

The **cover page** chart presents monthly WQI values and their range (high-low) for the Lower San Diego River determined over the past 12+ years of RiverWatch monitoring. The December and January values for each of the last 12 years are expressed as color-shaded bars. Running average index values for LSDR (for 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/poorest reach (Upper Santee Basin) are shown in red. This month's value of 59 is the 2nd highest recorded over the past 12 years for the month of January. The high volume of runoff over the last several weeks has resulted in a significant flushing of the river system.

Monthly WQI values extending from Oct. 2004 through Jan. 2017 are presented in **Chart 1** (next page) together with 12-month running averages (trend-lines) for each of the five individual reaches and overall (i.e., for the LSDR). The current overall running average WQI for the LSDR of **28** is still 16% below the 12-yr annual norm of 34. A year ago (Jan. 2016) the running average WQI was several points higher (31) at only 9% below the annual norm. The running average index in the Upper Santee Basin segment remains Poor (<13) although improving. Hydraulic flushing of Mast Park and upstream ponds of low DO backwaters over the past several weeks is expected to result in considerably better water quality throughout the next several months.

Monthly and 12-mo. running average WQI values for the poorest section (Upper Santee Basin) and best Mission Gorge reach (Sites 8-10) are presented in **Chart 2** (also on next page). Water quality at Sites 13 and 14 have noticeably improved over the past month. Excessive growth of the invasive aquatic plant, floating primrose-willow (*Ludwigia hexapetala*) observed throughout many of the slower-moving reaches of the river, considered a major contributor of recurrent dissolved oxygen deficits ( $DO < 4.0$  mg/L) and resultant very low water quality index values during the dry-weather period of this and prior years has been greatly reduced by recent storm water flows.

Spatial WQI results for the past three months of monitoring are shown in **Charts 3, 4 and 5** on page 6. WQI values (color bars w/index values in black) have increased at all sites throughout the watershed, most significantly over the last month. Only two of the 15 sites, Mast Park and Cottonwood at RCP are found in the Marginal (D) range (25-37) this month while two others, Mission Trails at Jackson and Forester Creek at Prospect, are in the Very Good(A) with indexes greater than 75. The 11 remaining sites present January indexes between 50 and 74, all in the Good (B) range.

Water quality index values can be expected to continue to remain high over the next month at most monitoring sites assuming little decline in dissolved oxygen levels and minor changes in Specific Conductivity and water temperatures. Dissolved oxygen concentrations are likely to remain considerably above hypoxic limits ( $< 4$  mg/L) until well into the dry-weather period. Overall LSDR water quality is expected to remain in the Good (B) range, throughout the next several months assuming normal area rainfall and river runoff. Potential for further flooding of the river valley floor from future storms, should such events occur over the next several months is fairly high now that grounds are near saturation.

jck (1/30/2017)

Chart 1 - LSDR WQI Trendlines by River Reach (Sept. 2005 thru Jan. 2017)

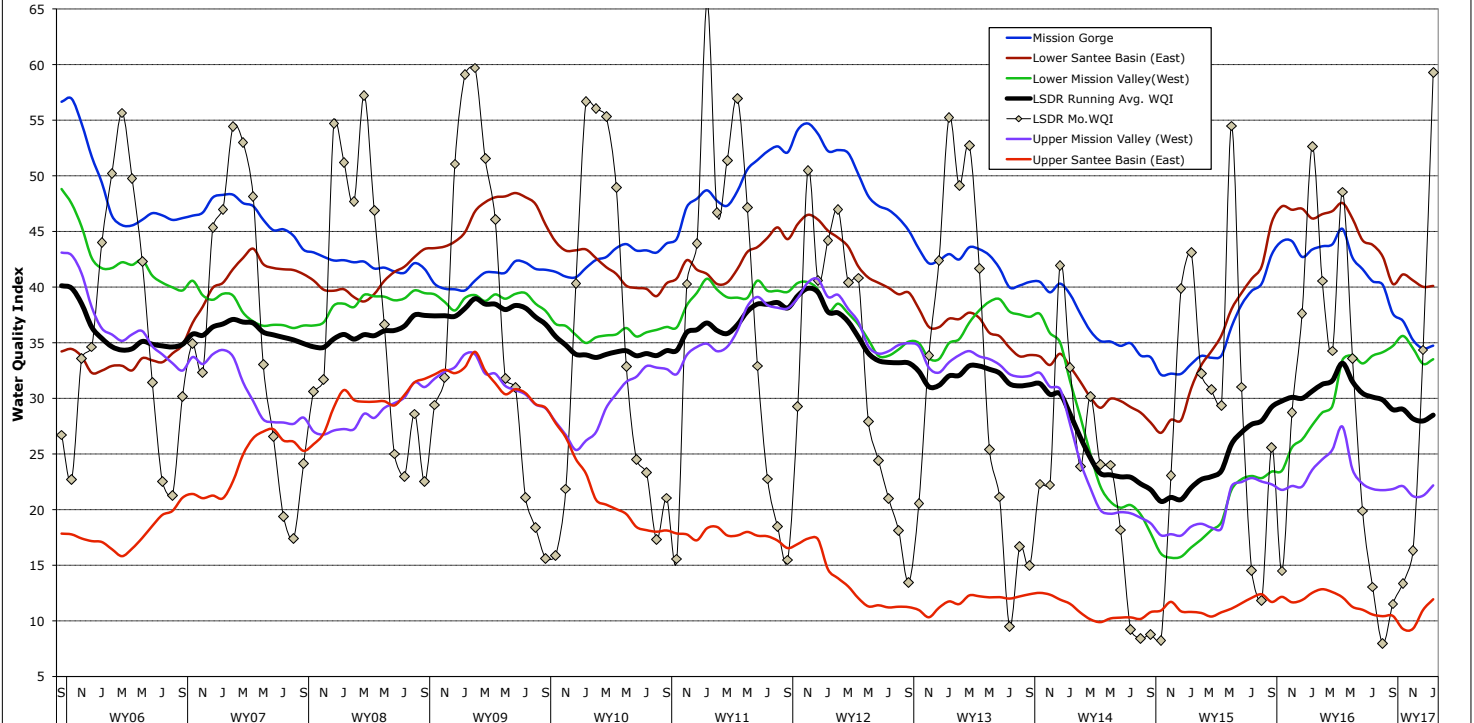


Chart 2 - Mast Park (Site 13) and Mission Gorge (Sites 8-10) Monthly and 12-mo Running Average WQI

