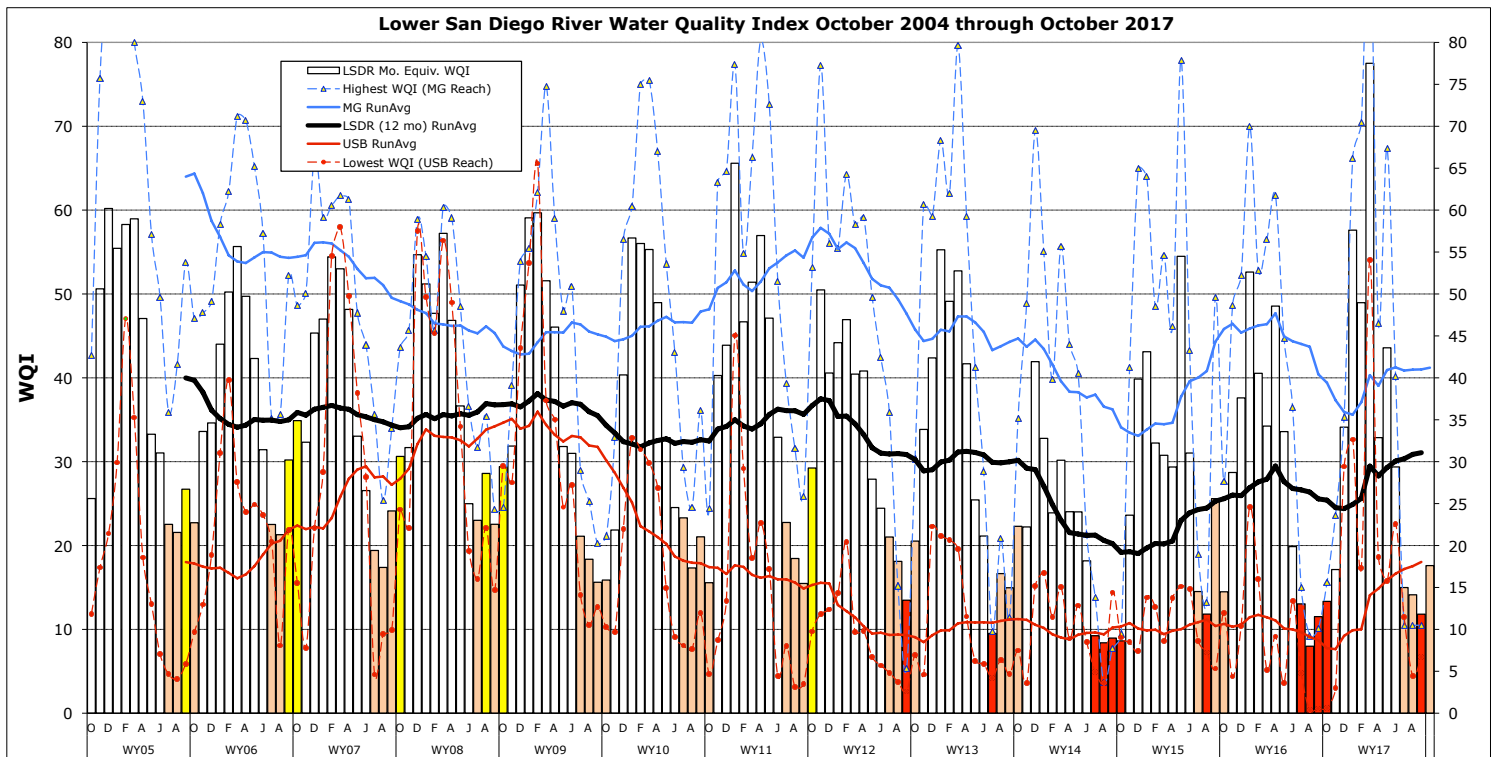


# Monthly WQM Report

## Lower San Diego River - October 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 (September and October) that constitute the last month of summer and first month of fall. The October index is up six points from September, five points above last October and four points below the 13-yr monthly average of 22. Overall this month's water quality of the lower San Diego River hydrologic unit (HSU 907.1) is rated Poor (E).

<b>Table 1 - Sept/Oct 2017 WQM Data Summary</b>							
	West - MV	Mid - MG	East - SB	LSDR	Percent Variance from		
[Sites]	[1-7] Sept/Oct	[8-10] Sept/Oct	[11-15] Sept/Oct	[1-15] Sept/ <b>Oct</b>	Last Mo (9/'17)	Last Yr (10/'16)	13-Yr Avg (Oct.)
Temperature, oC	22.8/19.3	22.4/20.9	21.9/19.6	22.3/ <b>19.6</b>	-13%	11%	5%
Sp.Cond., mS/cm	3.49/3.57	2.41/2.39	2.48/2.40	2.90/ <b>2.93</b>	3%	-4%	6%
DO, mg/L	<b>2.14/3.10</b>	7.14/4.13	<b>2.36/2.89</b>	<b>3.22/3.18</b>	-4%	18%	-20%
DO, % of Sat.	<b>25/34</b>	82/45	<b>27/32</b>	<b>37/35</b>			
pH	7.68/7.68	7.93/7.77	7.67/7.68	7.67/ <b>7.67</b>	0%	0%	1%
30-day ADF, cfs	2.1/2.0	0.9/0.9	0.6/0.6	1.2/ <b>1.2</b>	0%	-12%	-93%
WQ Index	15/20	11/18	9/15	12/ <b>18</b>	49%	32%	-19%
Grade(Sept/Oct.)	E/E	F/E	F/E	F+/ <b>E</b>			
September/ <b>October 2017</b>	<b>Poor/ Poor</b>	<b>VeryPoor/ Poor</b>	<b>VeryPoor/ Poor</b>	<b>VeryPoor Poor</b>	<b>Index up 6 points from last month</b>		

DO values below threshold limits of 4 mg/L and 40%Sat are listed in red.

Overall, LSDR **water temperatures** are down 2.7°C (-13%) from last month, at 2.0 degrees above last Oct. and 0.8 of a degree above the 13-yr monthly norm of 18.8°C. **Specific conductivities** rose 3% from last month and are slightly above the 13-yr monthly norm of 2.80 mS/cm. The overall **dissolved oxygen** level of 3.18 mg/L is down 4% from last month, is 18% above last Oct. but remains 20 percent below the 13-yr monthly norm of 4.10 mg/L. **Streamflow** over the antecedent 30-day period of 1.2 cfs, is the same as last month, but is 12% less than a year ago and 93% below the 13-yr norm of 16 cfs. This month's LSDR **water quality index** (WQI) of 18(E) is six points higher than last month, five points greater than a year ago but still four points below the 13-yr norm of 22.

Conclusion:

The overall LSDR water quality index is **Poor**, rising six points from **12 (Very Poor) to 18 (E)** over the past 30 days.

A summary of monthly WQI values occurring over the past two years of record for the three sections of the lower San Diego River system as well as the overall average are listed in **Table 2** along with average daily 30-day antecedent flow (ADF) and total monthly rainfall (MRF).

<b>Table 2 - WQI Values, Average Daily Flow and Monthly Rainfall (Oct. 2015 - Oct. 2017)</b>							
	Mission Valley	Mission Gorge	Santee Basin	LSDR		ADF, cfs	MRF, in
Oct. '15	5(F)	28(D)	17(E)	14(E-)		4.9	0.42
Nov	28(D)	49(C+)	20(E)	29(D)		7.8	1.53
Dec.	40(C)	52(B)	29(D)	38(C-)		7.5	0.45
Jan.'16	54(B)	70(B)	42(C)	53(B)	WW	92.7	3.21
Feb.	40(C)	53(B)	35(D)	41(C)		12.3	0.05
March	32(D)	57(B)	25(D-)	34(D)		14.0	0.72
April	63(B)	62(B)	30(D)	49(C+)		11.5	0.55
May	38(C)	45(C)	26(D-)	34(D)		5.8	0.43
June	14(E-)	36(D)	18(E)	20(E)	DW	1.2	0.02
July	14(E-)	15(E)	12(F+)	13(E-)	DW	0.6	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	0.4	0.32
Oct	13(E-)	16(E)	14(E-)	13(E-)	DW	1.1	0.07
Nov.	17(E)	24(E)	15(E-)	14(E)		1.3	0.61
Dec.	30(D)	35(D)	37(D+)	33(D)	WW	87	4.22
Jan. '17	61(B)	66(B)	49(C+)	56(B)	WW	105	3.01
Feb.	46(C)	70(B)	39(D+)	44(C)	WW	93	3.14
March	82(A)	95(A+)	64(B)	76(A-)	WW	23	0.07
April	31(D)	46(C)	29(D)	31(D)		6.3	0.02
May	43(C)	67(B)	33(D)	40(C)		6.9	0.92
June	22(E)	40(C)	31(D)	27(D-)		2.0	0.00
July	17(E)	10(F)	15(E-)	15(E-)	DW	1.0	0.00
Aug	18(E)	10(F)	12(F+)	14(E-)	DW	1.1	0.00
Sept'17	15(E)	11(F)	9(F)	12(F+)	DW	1.2	0.08
<b>Oct. '17</b>	<b>20(E)</b>	<b>18(E)</b>	<b>15(E)</b>	<b>18(E)</b>	DW	1.2	0.01

The **cover page** chart presents monthly WQI values and their range (high-low) for the Lower San Diego River as determined over the past 13 years of RiverWatch monitoring. July through October values (the driest weather months) for each year are expressed as color-shaded bars. Running average index values for LSDR (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 overall strong upward trend in the index over the first half of the water year has, with dry-weather, now leveled off or 'plateaued'. Base flow from groundwater return, excess irrigation and coolant system water, via tributary drains and small creek beds, constitute the principal sources of dry-weather stream flow.

Monthly WQI values extending from Oct. 2004 through Oct. 2017 are presented in **Chart 1** (next page) together with 13-month running averages (trend-lines) for each of the five principal reaches of the river and overall (i.e., for Lower SDR). The current running average WQI for the LSDR of 33 is 1.2% above the 13-yr norm. In comparison, a year ago (Oct. 2016) the running average WQI was 29 (12% below the 13-yr norm).

Monthly and 12-mo. running average WQI values for the poorest reach (Upper Santee Basin) and best Mission Gorge section are presented in **Chart 2** also on next page. Although water quality improved to some extent in the Upper Santee Basin over the first six months of this year, resurgent growth and decay of invasive aquatic plants such as primrose-willow (*Ludwigia hexapetala*) in conjunction with minimal streamflow are considered primary causes of poor water quality.

Spatial WQI results by site for the past three months of monitoring are shown on **Charts 3, 4 and 5** on page 6. September WQI values (color bars w/index values in black) improved from August and last month at nearly all sites. During September of this year 87 percent (13 of 15) of the sites were in the Poor (E) or Very Poor (F) range (WQI>24) while the remaining two sites were rated Marginal (D). This month, 67 percent (10 of 15 sites monitored) were Poor (5) or Very Poor (5) while 4 were found Marginal and one Fair.

In summary, the overall water quality index for the lower river watershed area is slowly improving and is expected to reach a Marginal grade (25-37) over the next month at most monitoring sites based on improved dissolved oxygen levels and streamflow in conjunction with declining specific conductivities and water temperatures.

jck (10/23/2017)

