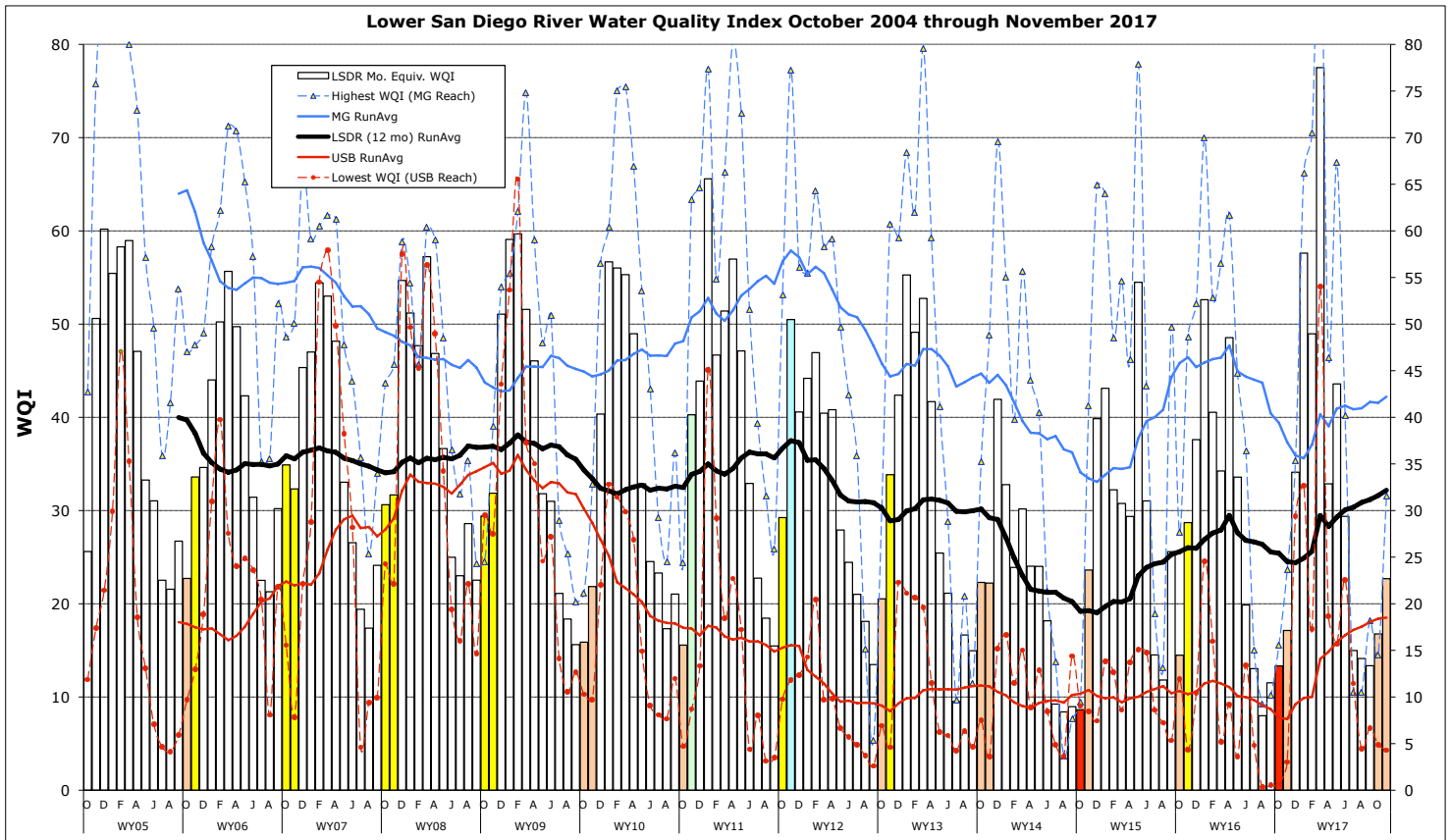


Monthly WQM Report

Lower San Diego River - November 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 (November and October) that constitute the two months of fall. The November index is up six points from October, nine points above last November and nine points below the 13-yr monthly average of 32. Although better than last month, this month's overall water quality in the lower San Diego River hydrologic unit (HSU 907.1) remains Poor.

Table 1 - Nov/Oct 2017 WQM Data Summary							
	West - MV	Mid - MG	East - SB	LSDR	Percent Variance from		
[Sites]	[1-7] Nov/Oct	[8-10] Nov/Oct	[11-15] Nov/Oct	[1-15] Nov/Oct	Last Mo (10/'17)	Last Yr (11/'16)	13-Yr Avg (Nov.)
Temperature, oC	16.7/19.3	18.9/20.9	16.2/19.6	16.9 /19.6	-14%	13%	14%
Sp.Cond., mS/cm	4.64/3.57	3.11/2.39	3.25/2.40	4.01 /2.93	26%	31%	60%
DO, mg/L	4.47/ 3.10	5.73/4.13	3.16 /2.89	4.16 /3.18	26%	18%	-23%
DO, % of Sat.	46/ 34	58/45	33 /32	43 /35			
pH	7.87/7.68	7.89/7.77	7.82/7.68	7.84 /7.67	2%	3%	1%
30-day ADF, cfs	2.0/2.0	0.9/0.9	0.6/0.6	1.2 /1.2	0%	-82%	-86%
WQ Index	26/20	32/15	15/14	23 /17	35%	57%	-29%
Grade(Sept/Oct.)	D-/E	D/E	E/E	E+ /E			
November/ October 2017	Marginal /Poor	Marginal/ Poor	Poor/ Poor	Poor / Poor	Index up 6 points from last month		

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 (-14%) from last month, at 2.0 degrees above last Nov. and the 13-yr monthly norm of 14.9°C. **Specific conductivities** at 4.0 uS/cm rose 26% from last month and are well (60%) above the 13-yr monthly norm of 2.50 mS/cm. The overall **dissolved oxygen** level of 4.16 mg/L up nearly 1.0 mg/L from last month, is 18% above a year ago, but remains more than 1.3 mg/L below the 13-yr monthly norm of 5.6 mg/L. **Streamflow** over the antecedent 30-day period of 1.2 cfs, is the same as last month, at 82% less than a year ago and 86% below the 13-yr norm of 8.7 cfs. This month's LSDR **water quality index** (WQI) of 23(E+) is six points higher than last month, nine points greater than a year ago but still nine points below the 13-yr norm of 32.

Conclusion:

The overall LSDR water quality index remains **Poor**, although rising six points from **17 (Poor) to 23 (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).

Table 2 - WQI Values, Average Daily Flow and Monthly Rainfall (Nov. 2015 - Nov. 2017)							
	Mission Valley	Mission Gorge	Santee Basin	LSDR		ADF, cfs	MRF, in
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
Oct. '17	20(E)	15(E)	14(E)	17(E)	DW	1.2	0.01
Nov.'17	26(D)	32(D)	15(E)	23(E+)	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. October and November values (the autumn 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 upward trend in the index over the last seven months has remained steady. 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 Nov. 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 34 is 3% above the 13-yr norm. In comparison, a year ago (Nov. 2016) the running average WQI was 25 (22% 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 also presented in **Chart 2** on next page. Although water quality has improved to some extent in the Upper Santee Basin over the last year, resurgent growth and decay of invasive aquatic plants such as primrose-willow (*Ludwigia hexapetala*) in conjunction with low 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. November WQI values (color bars w/index values in black) have improved from last month and September at nearly all sites. In 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). Last month 67% (10 of 15) were in the Poor or Very Poor (E or F) category while the remaining 5 sites (33%) were rated Marginal (D). This month, only 50 percent (7 of 14 sites monitored) were Poor (5@E) or Very Poor (2@F) while the other 50% were found Marginal (5@D) or Fair (2@C).

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

jck (11/20/2017)

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

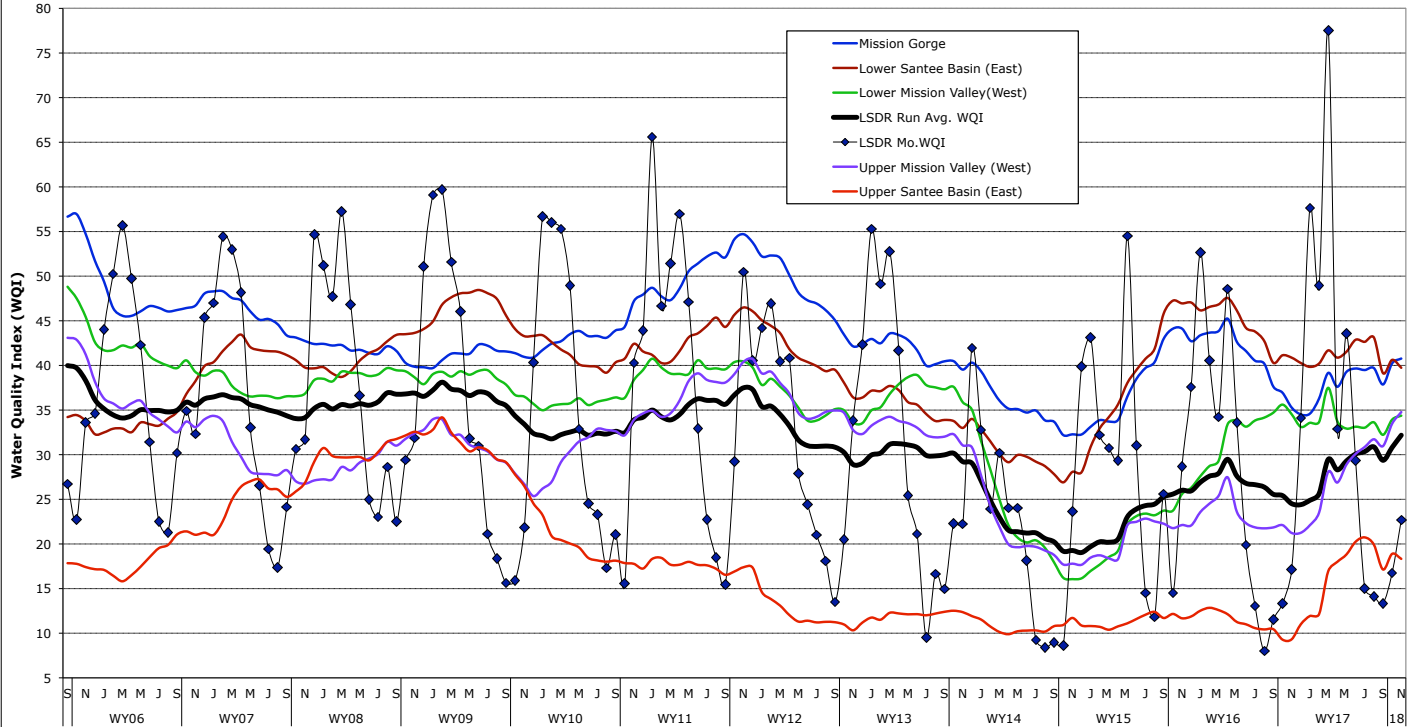


Chart 2 - Mast Park (Site 13) and Mission Gorge (Sites 8-10) Monthly and 12-mo Running Average WQI

