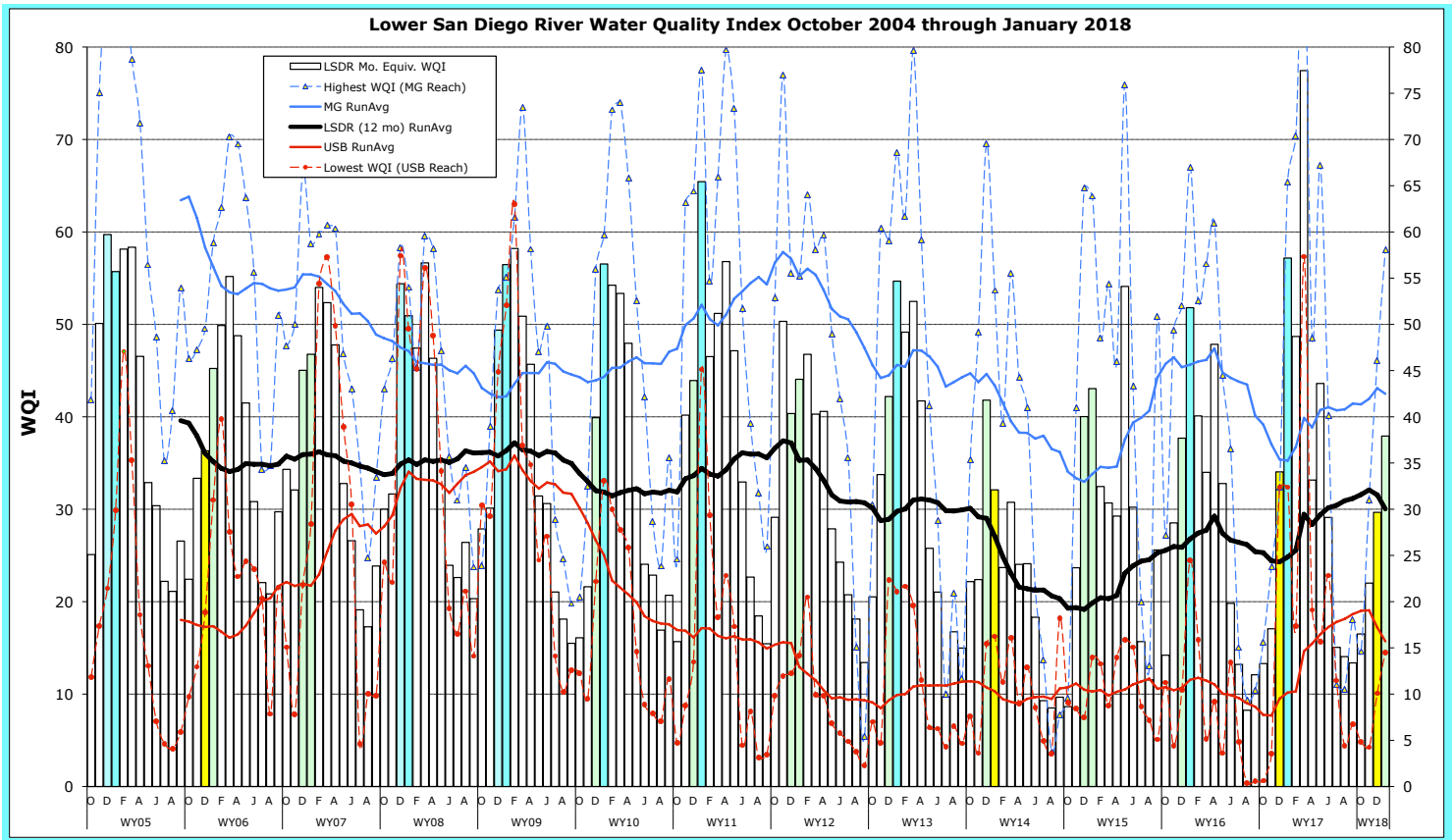


Monthly WQM Report

Lower San Diego River - January 2018



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 (Dec. 2017 and Jan. 2018) that constitute the first two months of winter. The January index rose eight points from last month, at three points below last year and 14 points below the 13-yr monthly average of 44. This month's overall water quality in the lower San Diego River hydrologic unit (HSU 907.1) is graded at C (Fair).

Table 1 - Jan. 2018/Dec. 2017 WQM Data Summary							
	West - MV	Mid - MG	East - SB	LSDR	Percent Variance from		
[Sites]	[1-7] Jan/Dec	[8-10] Jan/Dec	[11-15] Jan/Dec	[1-15] Jan/Dec	Last Mo (12/'17)	Last Yr (1/'17)	13-Yr Avg (Jan.)
Temperature, oC	13.8/11.7	17.4/14.7	14.4/11.2	14.7/12.0	22%	32%	28%
Sp.Cond., mS/cm	1.68/3.68	1.44/2.60	1.75/2.42	1.80/3.07	-42%	85%	3%
DO, mg/L	5.69/5.83	8.86/7.78	4.23/5.31	5.72/5.88	0%	-30%	-27%
DO, % of Sat.	55/53	82/70	41/49	55/54			
pH	7.58/7.91	7.91/8.30	7.92/8.14	7.78/8.05	-3%	5%	5%
3-day ADF, cfs	12.1/1.6	13.3/2.7	13.4/2.8	12.9/2.3	450%	-88%	-45%
WQ Index	41/26	58/46	24/25	38/30	28%	-31%	-25%
Grade(Sept/Oct.)	C/D-	B/C	E+/D-	C/D			
January 2018/ December 2017	Fair/ Marginal	Good/ Fair	Poor/ Marginal	Fair/ Marginal	Index up 8 points from last month		

DO values below a threshold limit of 4 mg/L or 40 %Sat are listed in red.

Overall, LSDR **water temperatures** rose considerably by 2.7°C (22%) from last month to 32% above last Jan. and 28% above a 13-yr monthly norm of 11.5°C. **Specific conductivity** of 1.80 uS/cm is down 42% from last month but 85% above last year's Jan. low of 0.97 uS/cm at a level just 3% above the 13-yr monthly norm of 1.74 mS/cm. The overall **dissolved oxygen** level of 5.72 mg/L is roughly the same as last month, at 30% below a year ago and 27% under the 13-yr monthly norm of 8.13 mg/L. **Streamflow** over the antecedent 3-day period of 12.1 cfs, rose 450% from last month, but remains 88% below one year ago and 45% below the 13-yr norm of 23 cfs. This month's overall LSDR **water quality index** (WQI) of 38 (C/Fair) is 8 points higher than last month, but 17 points below a year ago and 13 points (-25%) below the 13-yr norm of 51.

Conclusion:

The overall LSDR water quality index rose by 28%, increasing 8 points from **30 (D/Marginal)** to **38 (C/Fair)** over the last 30 days.

A summary of monthly WQI values occurring over the past two years of RiverWatch 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 (Jan. 2016 - Jan. 2018)							
	Mission Valley	Mission Gorge	Santee Basin	LSDR		ADF, cfs	MRF, in
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.'16	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	1.0	0.00
Sept'17	15(E)	11(F)	9(F)	12(F+)	DW	0.9	0.08
Oct. '17	20(E)	15(E)	14(E)	17(E)	DW	1.4	0.01
Nov.'17	25(D-)	31(D)	15(E)	22(E)	DW	1.4	0.01
Dec.'17	26(D-)	46(C)	25(D-)	30(D)	DW	2.1	0.03
Jan.'18	41(C)	58(B)	24(E+)	38(C)	WW	43	1.74

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. Dec. 2017 and Jan. 2018 values (first two months of the winter season) 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 past year has begun a slight decline primarily because oxygen levels remain considerably below winter averages at many sites.

Monthly WQI values extending from Oct. 2004 through Jan. 2018 are presented in **Chart 1** (next page) together with 12-mo. 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 31 is only 4% below the 13-yr norm. In comparison, a year ago (Jan. 2017), the running average WQI was 15% below the 13-yr norm of 33 at 28. A Jan. running average low of 21 (36% below the annual norm) occurred in 2015.

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 improved to an extent in the Upper Santee Basin over the past year, resurgent growth and decay of invasive aquatic vegetation such as primrose-willow (*Ludwigia hexapetala*) in conjunction with low streamflow and pervasive algal blooms are considered primary causes of continued 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. January WQI values (color bars w/index values in black) have improved from last month and the previous month at most sites. In mid-November 50% (7 of 14) were in the Poor (E) or Very Poor (F) while the remaining seven (5 Marginal and 2 Fair) were in the 'Intermediate' range. Last month, only 33 percent (5 of 15 sites monitored) were in the Poor (4) or Very Poor (1) range (WQI<25) while the remaining 67% (10 sites) were Marginal (6) or Fair (4) within the Intermediate range. This month only two sites (13%) remained in the Poor-to-Very Poor range while three (20%) were Good (WQI>50). Ten of the 15 sites (67%) remain in the Intermediate (5-Fair and 5-Marginal) range.

In summary, the overall water quality index for the lower SDR watershed continues to improve if slowly, a pattern that is expected to continue over the next several months of wet weather at most monitoring sites based on greater streamflow and improved dissolved oxygen levels.

JCK: (1/22/18)

