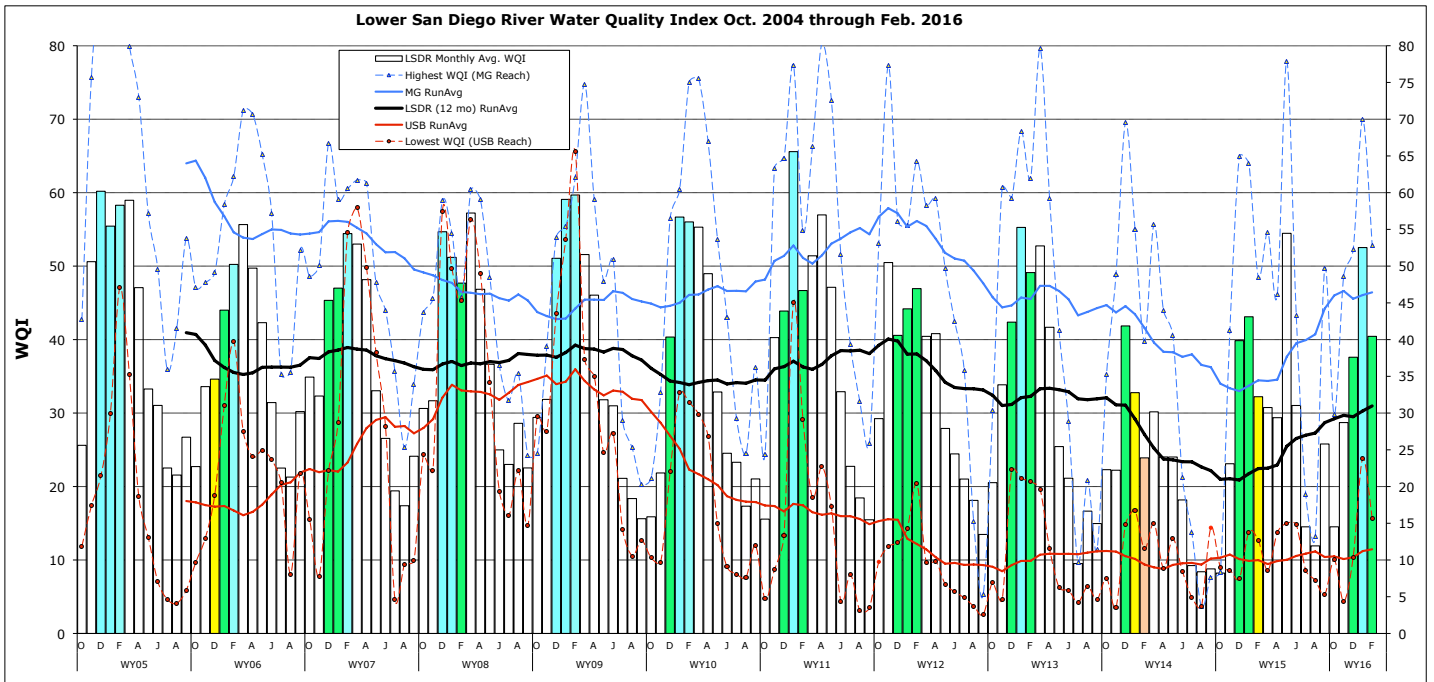


Monthly WQM Report

Lower San Diego River - February 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. January and February represent the second and third months of the WY16 winter or 'wet' season. This month's water quality index values are down from last month for all three segments of the lower river system. The results are about one grade level above Feb. water quality values from last year and WY14, but below those for the previous nine Februarys (WY05-WY13).

Table 1 - Jan./Feb. 2016 WQM Data Summary							
	West - MV	Mid - MG	East - SB	LSDR	Percent Variance from		
[Sites]	[1-7] Jan/Feb	[8-10] Jan/Feb	[11-15] Jan/Feb	[1-15] Jan/Feb	Last Mo (1/2016)	Last Yr (2/2015)	11-Yr Avg (Feb.)
Temperature, oC	12.0/14.3	11.5/14.2	11.7/15.2	12.0/15.4	28%	-5%	13%
Sp.Cond., mS/cm	1.51/2.18	0.87/1.52	1.32/1.72	1.46/2.00	37%	-14%	17%
DO, mg/L	7.35/5.41	10.37/8.82	6.35/5.67	7.84/6.28	-20%	23%	-15%
DO, % of Sat.	70/56	96/85	60/59	74/63			
pH	7.66/8.02	7.69/8.08	7.79/7.92	7.72/8.01	4%	0%	3%
ADF, cfs	25.0/12.0	23.0/6.0	23.0/5.0	24.0/8.0	-68%	15%	-85%
WQ Index	54/40	70/53	42/35	53/40	-23%	25%	-15%
Grade(Jan/Feb)	B/C	B/B-	C/D	B/C			
February WQI	Fair	Good	Marginal	Fair	Down 13 pts from last mo.		

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

Overall, LSDR **water temperatures** are up 3.4 degrees Celsius (28%) from last month but slightly below (-5%) last Feb. at 13% above the 11-yr Feb. norm of 11.6°C. **Specific conductivities** are also up (+37%) from last month and the 11-yr monthly norm (by 17%), but less than (-14%) from last Feb. **Dissolved oxygen** levels are down 20% from last month at 15% below the 11-yr Feb. norm although above (23%) last February. **Streamflows** are down 68% from last month at -85% of the 11-yr. monthly norm. This month's LSDR **water quality index** (WQI) of 40(C) is 13 points below last month's value of 53(B) which is 25% higher than a year ago but -15% below than the 11-yr February norm. Conclusion:

The LSDR water quality index declined 13 points from **53 to 40**, falling a full grade level from B (Good) to C (Fair) over the past month of record low monthly rainfall.

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.

Table 2 - WQI Values, Average Daily Flow and Monthly Rainfall (Feb. 2014 - Feb. 2016)							
	Mission Valley	Mission Gorge	Santee Basin	LSDR		ADF, cfs	Rf, in
Feb. 2014	21(E)	40(C)	19(E)	24(E+)	WW	7.5	1.0
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. 2015	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. 2016	40(C)	53(B)	35(C)	40(C)	DW	11.0	0.05

WQI values are expected to remain relatively constant at most monitoring sites over the next 30 days contingent on rainfall.

The **cover page** chart presents monthly WQI values and range (high-low) for the Lower San Diego River determined over the past 138 months of monitoring. December, January and February 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 in blue line while the consistently lowest/poorest reach (Upper Santee Basin) are shown in red. This month's values are down from last month (Jan.) but above the previous two year's Feb. results. Depending on the amount of rainfall received over the next 30 days; the WY16 wet/winter period is headed toward below normal water quality.

Monthly WQI values extending from Oct. 2005 through Feb. 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 11% below the 11-yr norm of **34.3**. Although there has been measurable improvement in water quality in many reaches of the lower watershed over the past several months, poor to marginal water quality conditions persist in several reaches of the lower watershed (e.g., Upper Santee and Mission Valley sites).

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

Spatial WQI results over the past 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) increased from 7% (1 in 15) in Jan. to 20% (3 of 15) this month. Of the remaining sites; 53% are in the intermediate quality range (Fair-C and Marginal-D) compared to 20% last month and 47% a year ago, while 27% (4 of 15) were found in the Good(B) range compared to 20% (3 sites) a year ago. Last month (Jan.) 11 out of 15 sites (73%) were found to be B or better.

Water quality index values can be expected to improve over the next month at many monitoring sites should streamflow return to seasonal norms under anticipated El Nino-related storm events/wet-weather patterns. Should well-below normal rainfall persist over the next 30-days, however, March monitoring results could show further declines in overall Lower San Diego River water quality.

JCK (2/25/2016)

