Musselshell Watershed Coalition

Salinity Meter End of Season Assessment: February 2026

In February of 2026, a drift test was conducted on all five conductivity sensors to assess meter agreement over a range of salinities. This test was conducted by Gabrielle Jawer and Emma Sweet at Marsh Lab in Bozeman, MT. All five meters were placed in a single bucket of tap water, and slugs of salt water were added to the bucket as stated in the SOP. After each addition of salt water, specific conductivity was measured periodically to assess meter agreement over the range of salinities observed during the monitoring season.

The relative percent difference (RPD) for LMCD1, LMCD3, and LMCD4 fell within the acceptable range of 0 to 5 percent. However, the ProPlus meter and LMCD2 observed several RPD values greater than 5%, before any salt water was added.

Time (min)	LMCD 1		LMCD 2		LMCD 3		LMCD 4		ProPlus		Avg.	Notes
	SC (uS/cm)	RPD	SC (uS/cm)	RPD	SC (uS/cm)	RPD	SC (uS/cm)	RPD	SC (uS/cm)	RPD		
0	219.3	0.56%	234	7.30%	221.3	1.48%	217.6	-0.22%	198.2	-9.12%	218.1	Place probes in tub of water. (1/2 full 5 gallon bucket, about 9L water)
2	219.9	0.20%	235.2	7.17%	221.5	0.93%	218.5	-0.44%	202.2	-7.86%	219.5	
4	220.5	0.36%	235.3	7.10%	221.6	0.86%	219.1	-0.27%	202	-8.06%	219.7	
6	220.5	0.50%	234.3	6.79%	221.6	1.00%	219.2	-0.09%	201.4	-8.20%	219.4	
8	220.3	0.65%	232	5.99%	221.6	1.24%	219.2	0.15%	201.3	-8.03%	218.9	
10	220.3	0.81%	230.3	5.39%	221.6	1.41%	219.2	0.31%	201.2	-7.93%	218.5	First round of salt. 1L water with 0.5 teaspoon salt.
12	395.1	-0.71%	399.5	0.40%	398.9	0.25%	396.1	-0.46%	400	0.52%	397.9	
14	395.1	-0.97%	399.8	0.21%	399	0.01%	395.9	-0.77%	405	1.51%	399.0	
16	395	-0.98%	399.8	0.22%	399.3	0.10%	396.1	-0.71%	404.4	1.37%	398.9	Second round of salt. 1L water with 1.5 teaspoon salt.
18	938	-0.32%	941	0.00%	943	0.21%	935	-0.64%	948	0.74%	941.0	
20	937	-0.38%	941	0.04%	943	0.26%	934	-0.70%	948	0.79%	940.6	
22	937	-0.38%	941	0.04%	942	0.15%	935	-0.60%	948	0.79%	940.8	Third round of salt. 1L water with 1.5 tsp salt.
24	2583	-0.82%	2604	-0.02%	2605	0.02%	2589	-0.59%	2641	1.41%	2604.4	
26	2581	-0.83%	2603	0.02%	2601	-0.06%	2586	-0.64%	2642	1.51%	2602.6	
28	2580	-0.88%	2603	0.00%	2601	-0.08%	2588	-0.58%	2643	1.54%	2603.0	
30	2581	-0.85%	2602	-0.05%	2601	-0.08%	2589	-0.55%	2643	1.53%	2603.2	Fourth round of salt. 1L water with 1.5 tsp salt.
32	2876	-0.68%	2894	-0.06%	2883	-0.44%	2889	-0.23%	2937	1.42%	2895.8	
34	2876	-0.66%	2893	-0.08%	2883	-0.42%	2888	-0.25%	2936	1.41%	2895.2	
36	2876	-0.67%	2893	-0.08%	2883	-0.43%	2888	-0.26%	2937	1.44%	2895.4	Fifth round of salt. 1L water with 1.5 tsp salt.
38	3332	-0.65%	3334	-0.59%	3353	-0.02%	3354	0.01%	3396	1.26%	3353.8	
40	3330	-0.71%	3333	-0.62%	3354	0.01%	3356	0.07%	3396	1.26%	3353.8	
42	3328	-0.76%	3333	-0.61%	3355	0.05%	3355	0.05%	3396	1.27%	3353.4	

Then, each conductivity sensor was placed in a 1413µS conductivity standard to test reading accuracy before and after cleaning the meter electrodes. RPDs between pre- and post-cleaning were less than 5% for LCMD1, LCMD2, LCDM3, LMCD4, and the ProPlus meter. All meters read less than the 1413 µS conductivity standard prior to cleaning. After cleaning, only the LMCD2 meter read less than or equal to the 1413 µS conductivity standard. All meters read within 5% of the calibration solution after cleaning, and LCDM 2, LCDM 3, and LCDM 4 read within 1%.

		LMCD 1			LMCD 2			LMCD 3			LMCD 4			ProPlus		
		Time (min)	SC (uS/cm)	Temp (C)	Time (min)	SC (uS/cm)	Temp (C)	Time (min)	SC (uS/cm)	Temp (C)	Time (min)	SC (uS/cm)	Temp (C)	Time (min)	SC (uS/cm)	Temp (C)
Year: 2026	Pre-cleaning	0	1389	19.3	0	1385	18.8	0	1388	19.2	0	1397	18.9	0	1354	19.3
		2	1388	19.3	2	1397	18.9	2	1402	19.0	2	1401	19	2	1386	19.2
		4	1388	19.3	4	1397	19.0	4	1404	19.1	4	1404	19.1	4	1390	19.2
		6	1391	19.4	6	1397	19.0	6	1404	19.1	6	1405	19.1	6	1391	19.2
		8	1390	19.4	8	1396	19.0	8	1404	19.2	8	1405	19.1	8	1392	19.3
		10	1390	19.5	10	1396	19.1	10	1403	19.2	10	1406	19.2	10	1393	19.3
	Post-cleaning	0	1420	18.8	0	1400	18.9	0	1434	18.9	0	1485	18.9	0	1549	18.6
		2	1422	18.8	2	1404	18.9	2	1453	18.9	2	1388	18.9	2	1500	18.7
		4	1423	18.8	4	1405	18.9	4	1421	18.9	4	1400	18.9	4	1453	18.7
		6	1426	18.8	6	1406	18.9	6	1422	18.9	6	1401	18.9	6	1455	18.7
		8	1427	18.9	8	1406	18.9	8	1423	19.0	8	1403	18.9	8	1457	18.7
		10	1428	18.9	10	1406	18.9	10	1423	19.0	10	1404	18.9	10	1457	18.7
	RPD (pre vs post clean)		-2.7%			-0.7%			-1.3%			0.1%			-4.6%	
	RPD (post clean reading vs 1413 solution)		1.1%			-0.5%			0.7%			-0.6%			3.1%	

In summary, LMCD1, LMCD2, LMCD 3, LMCD 4, and the ProPlus likely experienced less than 3% error during the 2025 field season. The difference among these meters at the end of the season was less than 3% across salinity levels and the difference from the calibration solution was less than 4%.