Upper Mangaokewa – Quarterly River Monitoring

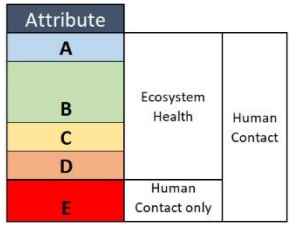
Sample Collection Day: 12th September 2023

Overall, water quality was poor at most sites except for site 46-Waiteti stream-Upper, which had good water quality. Poor water quality was associated with elevated concentrations of E. coli, nitrogen and suspended sediment.

E. coli concentrations were very low at 46-Waiteti Stream-Upper (52) and were elevated at all other sites (≥ 280). **Nitrate** concentrations were below toxicity levels at all sites but exceeded regional PC1 targets (0.525 mg/L) at 3 out of 4 sites (between 0.54 – 0.87 mg/L). Nitrate concentrations were lowest at 46-Waiteti Stream-Upper (0.17 mg/L) and highest at 5-Mangawhauwhi Stream (0.87 mg/L). **Ammonia** concentrations exceeded PC1 targets (0.005 mg/L) at all sites (between 0.009 – 0.03 mg/L). Ammonia concentrations were lowest at 4-Mangaokewa stream-viaduct and 46-Waiteti stream-upper and highest at 6-Waiteti Stream-viaduct (0.03 mg/L). Three out of four sites had a **dissolved inorganic nitrogen** concentration exceeding 0.5 mg/L, potentially impacting the health of the river. **Dissolved reactive phosphorus** concentrations were low at all sites (≤ 0.008 mg/L). **Water clarity** was poor at all sites (between 0.69 m - 1.47 m), relative to the national bottom line (1.34 m).

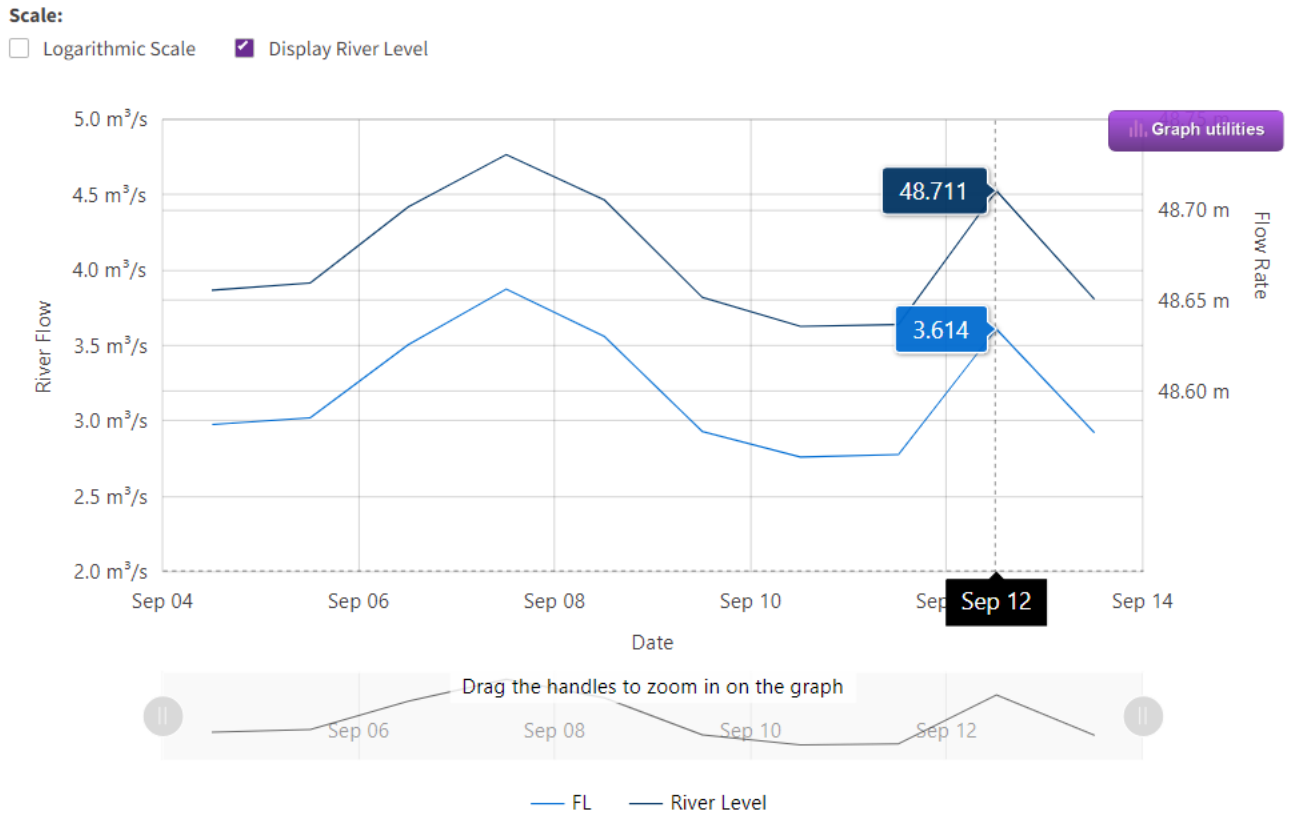
Upper Mangaokewa[1]	Human Contact	Ecosystem Health					
		Water Quality				Sediment	
Sample Dates: 12-Sep-23 Lab: Analytica	E. coli/100 ml	Nitrates (mg N/L)	Ammonia (mg N/L)	Dissolved Inorganic Nitrogen (mg N/L)[3]	Dissolved Reactive Phosphorus (mg/L)	Water Clarity (m)[2]	National Bottom Line
4-Mangaokewa Stm (viaduct)	750	0.57	0.009	0.58	0.008	0.89	1.34
5-Mangawhauwhi Stm 071	280	0.87	0.02	0.89	0.003	1.00	1.34
6-Waiteti Stm (viaduct)	420	0.54	0.03	0.57	0.007	0.69	1.34
46-Waiteti stream (Upper)	52	0.17	0.009	0.18	0.006	1.47	1.34

[1]Assessed against Short-term PC1 targets & NPS-FM National Bottom Lines - where the most stringent measures apply.
[2]Water clarity has been converted from measured turbidity using the formular ln(CLAR) = 1.21 – 0.72 ln(TURB) (Franklin, Booker & Stoffels, 2020).
[3]Guideline values to assess ecological impacts of nitrogen on freshwater life. Attribute band limits are from the NPS-FM consultation draft (2019)



Prepared by Freshwater Ecologist Merrin Whatley (PhD)

Mangaokewa Stm - Te Kuiti Pumping Station - River flow



Data source: Waikato Regional Council [envirohub website] for environmental data.

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