

Upper Mokau & Mangapehi – Quarterly River Monitoring

Sample Collection Days: 22nd and 28th February 2024

Overall, water quality was Good, only dissolved inorganic nitrogen was slightly elevated at one site and water clarity was slightly low at another site.

E. coli concentrations were low at all sites (≤ 140), falling well within recommend health limits for swimming (540). **Nitrate** concentrations were low at all sites and well below ecological toxicity levels (2.4 mg/L). Nitrates were lowest at 13-Mokau R. HWY 4 (0.25 mg/L) and highest at 18-Mangapehi River (0.58 mg/L). **Ammonia** concentrations were very low at all sites (≤ 0.02 mg/L). **Dissolved inorganic nitrogen** concentrations were low at 2 sites (≤ 0.38 mg/L) but slightly elevated at 18-Mangapehi River (0.6 mg/L), potentially promoting excessive growth of algae, aquatic plants and impacting sensitive aquatic species at this site. **Dissolved reactive phosphorus** concentrations were very low at all sites (≤ 0.005 mg/L). Water clarity was excellent at 18-Mangapehi River (2.20 m), good at 13-Mokau River (1.64 m) and low at 14-Mangapehi River (1.48 m), relative to the national bottom line (1.34 m).

Upper Mokau-Mangapehi	Human Contact	Ecosystem Health					
		Water Quality				Sediment	
		Nitrates Toxicity (mg N/L)	Ammonia Toxicity (mg N/L)	Dissolved Inorganic Nitrogen (mg N/L) ²	Dissolved Reactive Phosphorus (mg/L)	Water Clarity (m) ¹	National Bottom Line
Sample Date: 14-May-24 Lab: Analytica	E. coli/100 ml						
13-Mokau R. HWY 4	52	0.25	<0.005	0.25	<0.002	1.64	1.34
14-Mangapehi R. HWY 4	140	0.38	<0.005	0.38	0.003	1.48	1.34
18-Mangapehi R.	100	0.58	0.02	0.60	0.005	2.20	1.34

Attribute Band		
A	Ecosystem Health	Human Contact
B		
C		
D		
E	Human Contact only	

¹Water clarity has been converted from measured turbidity using the formula $\ln(\text{CLAR}) = 1.21 - 0.72 \ln(\text{TURB})$ (Franklin, Booker & Stoffels, 2020).

²Guideline values to assess ecological impacts of nitrogen on freshwater life. Attribute band limits are from the NPS-FM consultation draft (2019)

Mokau River – Summary of water quality collected at 15 sites across the Mokau River catchment May 2024

E. coli and Nutrients (nitrate, ammonia and dissolved reactive phosphorus) were low at most sites. The key contaminant was suspended sediment.

E. coli: 93% of all sites had low concentrations (≤ 240) and 7% (1 site) had elevated concentrations (510). **Nitrate and Ammonia:** 100% of sites were well below toxicity levels. Nitrate range (0.15 – 0.79 mg/L); Ammonia range (<0.005 - 0.02). **Dissolved inorganic nitrogen:** 73% of sites had low concentrations (≤ 0.44 mg/L) and 27% (4 sites) fell above the ecological impact threshold of 0.5 mg/L with the highest concentration being 0.79 mg/L. **Dissolved reactive phosphorus:** 100% of sites had low concentrations (between <0.002 - 0.008 mg/L). **Water clarity:** 60% of sites had good water clarity (A or B band), 20% (3 sites) had reduced water clarity (C band) and the remaining 20% had poor water clarity (D band). Bands for each site relate to the national bottom line (NBL) for water clarity and are dependent on landscape characteristics including geology, climate and elevation. The NBL for Mokau River’s monitoring sites are either 1.34 m or 0.61 m, dependant the local landscape characteristics.