

Abstract

Two transient pollution events were monitored in a pastoral stream in southwestern Kenya to evaluate their relative contribution to diffuse pollution. Peak loads of pollutants during storm-induced transients were within 3-4 orders of magnitude higher than the short-lived (30-60 minutes) diurnal episodes provoked by in-stream activities of people and livestock. Transient yields were striking during storm-induced events; 778,000, 8,400, 550 and 100 kg day⁻¹ for suspended solids, BOD(5), total P and total N, respectively, compared to wet weather base flow (150, 30, 0.8 and 1.4 kg day⁻¹), for the same parameters, respectively). Two forms of concentration-discharge relationships were observed: increases in concentration for turbidity, suspended solids, BOD(5), total P and the faecal indicator bacteria at the peak of the stream hydrograph, and concurrent decreases in concentration for conductivity and total N. Following each storm-induced transient event, a marked improvement in water quality was observed within 48-72 hrs of the receding limb of the stream hydrograph before the next base low was established. It was concluded that storm-induced transients are exceedingly important for the mobilization of pollutants from diffuse sources but both transient events affect stream-channel processes, especially water quality, with the possibility of attendant consequences on the health of riparian inhabitants.