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*Escherichia coli* (*E. coli*) is a gut bacterium found in intestinal tracts of warm-blooded animals and pollutes water bodies through fecal contamination. At high concentrations some strains can cause serious illnesses if ingested by individuals. High concentrations of *E. coli* can also indicate the presence of other potentially harmful pathogens. Surface waters can become contaminated via nonpoint sources of runoff from agricultural lands and resident waterfowl population and point sources including leaking sewage infrastructure and combined sewer overflows (CSOs). In freshwaters *E. coli* can live free floating throughout the water column or attached to streambed sediments, and when these sediments are resuspended due to precipitation *E. coli* concentrations increase in the water column. The USEPA has set a maximum safe limit for recreational waters at 235 CFU/100 mL of water for a single sample and a 30-day five-sample mean of 126 CFU/100 mL. We chose seventeen sampling sites to monitor and identify trends and predictors of *E. coli* in Wheeling Creek watershed, in the northern panhandle of West Virginia. We measured water temperature, pH, dissolved oxygen, conductivity, chloride, and turbidity in the field and used an IDEXX system for *E. coli* quantification. Our results indicate that 51% of samples (125 out of 245) have exceeded that single sample safe limit (235 CFU/100ml). *Escherichia coli* concentrations are increasing with increasing urban development and show a positive correlation with turbidity, this could suggest that humans are the primary source of *E. coli* in Wheeling Creek.