

Implementation of a New Probabilistic Stream Monitoring Program in Kansas

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[abstract]

The Bureau of Environmental Field Services at KDHE is responsible for state water quality monitoring. It produces the biennial 305(b) Water Quality Assessment Report and 303(d) Impaired Waters list and supports TMDL planning. The established stream chemistry and biology monitoring programs are predicated on repeat visits to targeted integrator sites, impacted sites, and reference sites. The stream chemistry program monitors 97% of the state's drainage area using integrator sites, and the stream biology program supports and validates chemistry data and also provides finer resolution for impacted areas of the network. However, because of the emphasis on integrator sites representative of sizable watersheds, headwater streams have been less well sampled. The probabilistic stream monitoring program will address this gap. Sample sites (x-sites) were selected from the Kansas Surface Water Register using the spatially balanced random sampling algorithm developed by the US EPA. The initial survey uses an unweighted design, which includes headwater streams in direct proportion to their stream mileage. This program will sample 50 randomly selected sites per year. Candidate sites are subject to exclusion based on non-sampleability (e.g. lack of water) or lack of permission to access. Each x-site is visited once, during the summer low flow season, for collection of macroinvertebrates and physical habitat data. A companion chemistry site is established at a nearby bridge. Water is collected from this site quarterly and analyzed for physicochemical parameters, including nutrients, pesticides, and metals. The chemical, biological, and physical habitat data will be analyzed over a four-year assessment period.

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