

Kinnickinnic River Watershed Restoration Plan Fact Sheet KK-8, Reach 818, Wilson Park Creek

Data resulting from model runs:

Figure	Overall Project Team Assessment	Analysis
Flashiness index	Good to Moderate	The Flashiness Index quantifies the frequency and rapidity of short-term changes in stream flow. The index ranges from 0 to 2, with 0 being constant flow. The flashiness is slightly high at this location.
Dissolved oxygen v. days per year	Very Good	Typically, aquatic communities need 5 mg/l or more of dissolved oxygen to survive. Concentrations at this site consistently exceed this level.
Fecal coliform v. days per year	Variable (some good, some bad)	For recreational uses, lower fecal coliform counts (a measure of bacteria) are better (preferably under 400 counts / 100ml). The counts on majority of the days are either 'below 400' or 'above 5,000'. A potential goal in this case may be to determine the conditions that create the 'above 5,000' days and discourage recreational use on days that meet these conditions. Another goal could be to find ways to decrease fecal coliform loads in order to increase the number of days that are 'below 400'.
Phosphorus v. days per year	Moderate to Poor	Phosphorus is a nutrient that can lead to increased growth of algae. The concentrations on many days are at or below the 0.1 mg/l recommendation. The concentrations exceed 0.5 mg/l on some days.
Suspended solids v. days per year	Good	Suspended solids cause water to become cloudy. This can clog the gills of fish and invertebrates, make feeding difficult, and lead to sediment deposition (poor habitat). The concentrations on most of the days fall below 25 mg/l.
Monthly dissolved oxygen	Very Good	Notice the decline in dissolved oxygen concentrations during the summer. This is normal due to the decreased solubility of oxygen in warmer water.
Monthly fecal coliform	Moderate to Poor	While the ranges of values are fairly consistent throughout the year, note that the median concentrations decline during the summer swimming season. This may be related to the die-off of bacteria due to solar radiation. Also note that the summer accounts for many of the 'below 400' days mentioned above while the winter and early spring have many of the 'above 5,000' days.
Monthly phosphorus	Moderate to Poor	Phosphorus concentrations are more consistent and generally lower during the late spring, summer, and early fall. This may be related in part to uptake by plants during the growing season and the release of phosphorus from sediments and decomposing organic matter. In addition, a large phosphorus load reaches the stream during the winter, perhaps related to upstream de-icing activities at the airport. De-icing chemicals may contain phosphorus compounds that serve as corrosion inhibitors.
Monthly suspended solids	Good	Suspended solids concentrations decline during the winter months. This is probably linked to a number of factors including frozen conditions, decreased construction activities, and low-impact storms (snow doesn't pound the soil like rain).

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Dissolved oxygen by flow	Good	During low flows, the median concentration is lower relative to moist conditions. This is likely due to a combination of water agitation which allows greater diffusion of oxygen into the water (or lack thereof at low flows) and temperatures (low flow conditions are often associated with summer which has higher temperatures and lower oxygen solubility).
Fecal coliform by flow	Poor	Generally, a pollutant that is present at high concentrations during high flows and low concentrations during low flows (fecal coliform, in this case) is attributed primarily to non-point sources. The infrequent sewer overflows (once every 2-5 years) would only contribute during the high flows when substantial non-point loads are already present. Note that during any period with the highest flows, fecal coliform counts exceed the regulatory standard; during moist conditions, fecal coliform counts exceed the standard 75% of the time. During low flows, the standard is met over 75% of the time. During these low flows would be the safest time for recreational uses (boating, wading, swimming).
Phosphorus by flow	Moderate	Concentrations are greatest at high flows, with concentrations exceeding the 0.1 mg/l planning guideline nearly 75% of the time at the highest flows. This suggests that phosphorus inputs are primarily from non-point sources.
Suspended solids by flow	Good	Suspended solids concentrations increase with increased flows. This suggests a prevalence of non-point sources. The concentrations exceed the reference condition predominantly during the high flow condition. These conditions most often occur following large storms or major snow-melt events. The suspended solids may come from runoff that carries a sediment load, from stream bank erosion, or re-suspended stream sediments. Note that this site is located downstream of some concrete-lined reaches within the watershed. As a result, upstream activities such as stream bank erosion and re-suspension of stream sediments likely make less of a contribution to suspended sediment loads at this site compared to sites that are situated downstream of natural reaches that experience these activities.