

Kinnickinnic River Watershed Restoration Plan Fact Sheet

KK-2, Reach 801, South 43rd Street Ditch

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	Good	Typically, aquatic communities need 5 mg/l or more of dissolved oxygen to survive. Concentrations at this site do not fall below this level. While concentrations on several days approach 5 mg/l, the concentration is well above 2 mg/l variance standard for the site.
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 count / 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. As there is a variance that allows the fecal coliform counts to reach 2,000, another potential goal could be to find ways to decrease coliform loading in order to increase the number of days that have fewer than 2,000 counts.
Phosphorus v. days per year	Good	Phosphorus is a nutrient that can lead to increased growth of algae. The concentrations on most of the days are at or below the 0.1 mg/l planning guideline. The concentration of phosphorus does not exceed 0.4 mg/l on any day.
Suspended solids v. days per year	Very Good	Suspended solids cause water to become cloudy and aesthetically unpleasant. They 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 are less than 25 mg/l. The concentrations do not exceed 100 mg/l on any day.
Monthly dissolved oxygen	Moderate	Dissolved oxygen concentrations are highly variable at this site. Winter concentrations decline more than would be expected. This variability suggests that there is substantial organic enrichment and biochemical oxygen demand within the ecosystem. The decline in dissolved oxygen concentrations during the summer is typical due to the decreased solubility of oxygen in warmer water. While the variance standard is not exceeded, the lower concentrations in the winter are an issue.
Monthly fecal coliform	Moderate	While the ranges of values are fairly consistent throughout the year, note that the 75 th percentile concentrations decline during the summer swimming season. This may be related to the die-off of bacteria due to solar radiation. Conditions are particularly poor in March and are likely related to snow melt.
Monthly phosphorus	Moderate	Phosphorus concentrations decline through the late spring, summer, and early fall. This may be related to uptake by plants during the growing season. Concentrations exceed the planning guideline 50% of the time in March. This is likely related to snow melt.
Monthly suspended solids	Very Good	Suspended solids concentrations fall below the reference concentration most of the time. The majority of the higher concentrations are likely related to larger rain or snow melt events that disturb bare soil. With the exception of some enclosed reaches, most of the reaches upstream of this site are natural; sediment could be re-suspending from the stream bed.

Figure	Overall Project Team Assessment	Analysis
Dissolved oxygen by flow	Good	During low flows and dry conditions, dissolved oxygen concentrations are lower than in the other flow conditions. This is likely due to a lack of water agitation (which would allow greater diffusion of oxygen into the water) and high temperatures (low flow conditions are often associated with summer which has higher temperatures and lower oxygen solubility).
Fecal coliform by flow	Moderate to 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 variance standard. During low flows and dry conditions, the standard is met all of the time. During these low flows would be the safest time for recreational uses, likely limited to wading.
Phosphorus by flow	Very Good to Good	Phosphorus concentrations are relatively consistent among all flow conditions; however, concentrations periodically exceed the 0.1 mg/l planning guideline during the highest flows. This suggests the prevalence of non-point loads of phosphorus.
Suspended solids by flow	Good	Suspended solids concentrations increase with increased flows. This suggests a prevalence of non-point sources. Nearly all of the instances when the concentration exceeds the reference condition occur at 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 in areas without a concrete channel.