

**Menomonee River Watershed Restoration Plan Fact Sheet**  
**MN-14, Reach 905, Underwood Creek**

Data resulting from model runs:

<b>Figure</b>	<b>Overall Project Team Assessment</b>	<b>Analysis</b>
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 to Moderate	Typically, aquatic communities need 5 mg/l or more of dissolved oxygen to survive. Concentrations at this site fall below this level occasionally, but never fall below the 2 mg/l variance standard.
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. As there is a variance that allows the fecal coliform to reach 2,000 counts, another goal could be to reduce fecal coliform loads 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. Throughout the year, the phosphorus concentration does not exceed 0.35 mg/l on any day
Suspended solids v. days per year	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 are less than 25 mg/l on most of the days, but the concentrations exceed 100 mg/l on some of the days.
Monthly dissolved oxygen	Good to Moderate	While it is natural for dissolved oxygen concentrations to decline during warmer months, the concentrations decline sporadically in March and during the summer and early winter – this is unusual. The low concentrations in March may be related to pollutants and biochemical oxygen demand in the runoff associated with snow melt.
Monthly fecal coliform	Moderate	While the ranges of values are fairly consistent throughout the year, notice that the 75 <sup>th</sup> percentile value declines substantially in the summer and early fall. This may be related to the die-off of bacteria. Bacteria are most prevalent in the winter and conditions are particularly poor in March. This is most likely related to snow melt.
Monthly phosphorus	Good to Moderate	Phosphorus concentrations are greatest in March and are likely related to snow-melt. Concentrations then decline during the summer and early fall. This could be related to uptake by plants during the growing season.
Monthly suspended solids	Good	Suspended solids concentrations are 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.

Figure	Overall Project Team Assessment	Analysis
Dissolved oxygen by flow	Good	Note that dissolved oxygen concentrations decline at low flows. This is likely due to a combination of decreased water agitation and higher temperatures (low flow conditions are often associated with the warm summer months).
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 sources are already present. Note that during any period with the highest flows, fecal coliform counts exceed the variance standard. During moist conditions, fecal coliform exceeds the standard 50% of the time. During low flows and dry conditions, the standard is met nearly all of the time. During these low flows would be the safest time for recreational uses (boating, wading, swimming), although the amount of water in the stream may limit recreational use to wading.
Phosphorus by flow	Good to Moderate	Concentrations of phosphorus are highest at high flows, with concentrations exceeding the 0.1 mg/l planning guideline over 50% of the time at the highest flows. This suggests the prevalence of non-point loads of phosphorus. The similarities between the phosphorus and suspended solids data suggest that the phosphorus may be associated with suspended sediment.
Suspended solids by flow	Good	The concentrations of suspended solids increase with increased flows, suggesting contributions from non-point sources. 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.