



Minnesota
Pollution
Control
Agency

Guide to Interpreting Transparency Readings

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Tracking water transparency is like monitoring your blood pressure - it can serve as a basic indicator of stream health. In general, low transparency reflects excessive sediment or other suspended material (e.g. algae) in the water. The following categories provide a benchmark for comparison to Citizen Stream-Monitoring Program transparency readings. These categories relate primarily to materials suspended in the water. **Clear** water does not necessarily equate with **clean** water, but in many cases clarity is an indicator that overall stream condition is good. Water quality can also be affected by pollutants such as mercury or fecal coliform bacteria, which can be found in clear water. Changes to the physical structure of streams such as stream bank stability and fish habitat can also degrade overall stream quality.

< 20 cm – Poor Transparency

Transparencies in this range are most likely to occur with:

- Rainfall or snow-melt generated surface runoff from streets and other "hard" surfaces; urban and agricultural land experiencing soil erosion. Depending on the size of the stream or river, such runoff may impact downstream transparency for hours, or even days, after rain storms or snow-melt.
- Turbulent or high-flow conditions that erode banks or "stir up" the bottom. Because these conditions are related to snow-melt or rain storms, it can be difficult to separate these "internal effects" from external watershed runoff.

Transparencies in this range exceed the State of Minnesota water quality standard for turbidity (murkiness or cloudiness). Because transparency values reliably predict turbidity (e.g. low transparency = high turbidity), they are used to assess for turbidity

impairment. For more information on this subject, see *Using Transparency Tube and Total Suspended Solids*

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Data to Assess Stream Turbidity on the Web at
<http://www.pca.state.mn.us/water/csmreports.html#forms>

20 cm - 40 cm – Fair Transparency

Streams, ditches, and rivers with relatively good overall water quality could have transparencies in this range during high flows that occur with spring runoff or significant rainstorms.

Under lower flow conditions in small streams and rivers, transparencies in this range may indicate water quality problems. During lower flows in large rivers, transparencies in this range may reflect high levels of free-floating algae in the water, or fine sediments that remain in suspension for a long time.

41 cm - 60 cm – Good Transparency

Streams, ditches, and rivers with transparencies in this range most of the time - even during spring runoff and after significant rainstorms - likely have very good overall water quality.

Streams with consistently good transparency may have significant groundwater influence (i.e. SE MN trout streams), or flow through watersheds dominated by year round grass or forest cover.

>60 cm – Excellent Transparency

Streams and rivers with transparencies in this range likely have excellent water quality. It is important to continue monitoring. Continued monitoring documents background water clarity, in case transparency decreases after changes to condition of the watershed, or the introduction of a new pollutant.