

Whitefish Pilot

GAUGE IMPORTANT FOR MONITORING WATER DEPTH

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A staff gauge is essentially a long ruler that is secured to a solid structure in a lake or stream to read water depth. Staff gauges are most commonly used in streams as an indirect method for estimating stream flow. By collecting flow data in the same section of stream where a staff gauge is placed, one can identify a relationship between stream depth and stream flow. With this relationship known, one can then estimate flow from stream depth without the need for ongoing stream flow measurements, which takes time and requires either wading the stream or using equipment from a bridge above the stream. Periodically, gauges need to be recalibrated against measured flows because streambeds change over time and therefore so does the relationship between water level and flow.

Choosing a location for a stream gauge can be tricky. The gauge cannot be too near the stream bank or it might be dry in the summer months. Conversely, it can't be too near the middle of the stream or it might be washed away with high winter flows. It must not be placed in slow moving waters as sediment might accumulate around its base, but not in water that is too fast moving as it may prove too difficult to read. The downstream side of mid-stream bridge pilings often offers a good location. When a structure is not readily available in a convenient location, a structure must be designed to hold the gauge. This is often achieved by attaching the gauge to a metal pipe or staff and pounding it into the stream bed. The pipes typically have multiple holes drilled in them to reduce the strain of water pressing against them.

The Whitefish Lake Institute has staff gauges in all six Whitefish Lake tributary streams: Beaver Creek, Hellroaring Creek, Lazy Creek, Smith Creek, Swift Creek, Viking Creek, and one in Whitefish Lake. The Whitefish Lake gauge can be seen from the grassy area on the lake side of The Lodge at Whitefish Lake. We also have gauges in Cow Creek, Haskill Creek, and Walker Creek, and we have data logging equipment in all of these streams, collecting ongoing temperature and water level data which are calibrated by the actual measurement of stream flows. A hydrograph is used to show the rate of flow (or discharge) expressed in cubic meters or cubic feet per second (cms or cfs) versus time at a specific point in a stream. The "peak" is the highest point on the hydrograph when the rate of flow is greatest. Higher elevation mainstem streams such as Swift, Hellroaring, and Haskill reach their peak in late May to early June. Lowland streams such as Lazy, Viking and Cow reach their peak in April.

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