

Brule River nr Hovland, MN61
STATION ID: H01-022-001
NWS ID: BRLM5
USGS ID: 04011000
EQuIS ID: S000-251

LOCATION:

Lat: 47.818603°	UTMX: 720690.8	Township: Unknown township					
Long: -90.051693°	UTMY: 5300348.4	PLS:	TWP	RNG	SEC	Q	QQ
			62	3E	27	SW	SE

County: Cook

Drainage area (acres): 168,960

Driving directions: From Grand Marais, MN, travel north on MN61 for 14 miles. The station will be on the right after the Manitow Trail (CR59). Gage is located on east side of bridge downstream left bank.

Cooperation: Minnesota Pollution Control Agency (MPCA) and Minnesota Department of Natural Resources (MNDNR).

History: MPCA milestone site for stage only started in 2002. Permanent long term gage was installed on the downstream side of the bridge by MNDNR on 08/07/13 for the MPCA Watershed Pollutant Load Monitoring Network (WPLMN). The MNDNR started collecting regular open water flows starting in the spring of 2014. A weather station upgrade was done on 09/28/16 by MNDNR.

GAGE: A Design Analysis H-350XL data logger is housed in a 30" x 30" x 9" elevated stainless steel enclosure. A Campbell Scientific radar sensor is mounted on the downstream side of the bridge. A solar panel and Vaisala WXT-520 multi-parameter weather sensor are attached to side of shelter on a 10' mast. A Campbell pyranometer and , and a Texas Electronics tipping rain bucket are installed on a separate posts away from the gage house. The equipment is powered by a 12V battery charged by a 1.2-amp solar panel through a SunSaver power regulator. Data is collected at 15-minute intervals and transmitted hourly through an H-222 GOES transmitter at 300 baud within a 10 second window. The H-222 clock is synced to GMT, and the datalogger clock is set to CST (6 hour offset).

GOES ID:	D5556216	Random Channel:	124
Primary Channel:	34	Azimuth:	232
Transmit Time (GMT):	00:52:20	Elevation:	24

CHANNEL AND CONTROL: Riffle control 100 ft. downstream of the bridge and channel control at higher stages.

DISCHARGE MEASUREMENTS:

Low flow: Wading 65 ft. downstream of the bridge or tagline just downstream of the bridge.

High flow: Bridge measurement off the downstream side of the bridge.

Diversions, Impoundments, Additional flow inputs: None.

REFERENCE MARKS:

B.M. 1: MNDOT Geodetic disk ID 1602B 2007, located on the downstream (south), left bank bridge abutment.
 Elevation: 48.96 ft. assumed datum (633.696 ft. NAVD88, MNDOT Geodetic Data Sheet.)

R.M. 1: Chiseled square (spray painted dot small crack in bridge) located on bottom bevel of concrete rail on the downstream (south) side of the bridge 64 ft from left bridge abutment near the wire weight.
 Elevation: 50.00 ft. assumed datum. Surveyed on 09/08/22 by MNDNR.

R.M. 2: Wire weight checkbar on the downstream (south) side of the bridge 51 ft from left bank bridge abutment.
 Elevation: 49.27 ft. assumed datum. Surveyed on 09/08/22 by MNDNR.

R.M. 3: Head of spike in balsam tree about 8 ft. from the end of guardrail that is 20 ft. from the pavement on the downstream right bank.
 Elevation: 39.205 ft. assumed datum. Surveyed on 09/08/22 by MNDNR.

Primary Reference: R.M. 2 (49.27 ft. assumed datum)

Gage zero: 584.736 ft. NAVD88