

Otter Tail River at Breckenridge, CSAH16
STATION ID: H56-105-001
NWS ID: BROM5
USGS ID: 05046502
EQuIS ID: S002-000

LOCATION:

Lat: 46.27448510°	UTMX: 224180.3	Township: Breckenridge			
Long: -96.57991910°	UTMY: 5130776.4	PLS:	TWP	RNG	SEC
			132	47W	4
					Q
					QQ
					SE
					NW

County: Wilkin
Drainage area (acres): 1,220,996

Driving directions: *From the east:* Head west on MN210 toward Breckenridge. Turn left onto CSAH16, which is 0.5mi before US75 (MN9 will go off to the north). Follow CSAH16 for 0.6mi to the site.

Cooperation: Minnesota Pollution Control Agency (MPCA), Minnesota Department of Natural Resources (MNDNR), International Water Institute (IWI)

History: Station was existing USGS site, Otter Tail River at 11th St in Breckenridge. MNDNR had established a flood warning gage upstream on 6/25/1998, H56066001 Otter Tail River nr Foxhome, CR19. On 9/10/2009 the gage was moved downstream to current location to be part of the Clean Water Legacy gage network.

GAGE: A Design Analysis H-350XL pressure sensor/datalogger and H-355 Gas Purge System are housed in a 2' x 1.5' x 6' Hoffman look-in type shelter. A solar panel, rain gage, GOES antenna, and GOES GPS are connected to a vertical mast attached to the enclosure. A water temperature sensor is attached to the orifice line. The equipment is powered by a 12V deep cycle marine battery charged by a 1.2-amp solar panel through a SunSaver power regulator. Data is collected at 15-minute intervals and sent 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:	5531F714	Random Channel:	119
Primary Channel:	79	Azimuth:	156
Transmit Time:	00:12:50	Elevation:	32

CHANNEL AND CONTROL: Channel control at most stages; diversion stage control ~12.18 ft assumed datum.

DISCHARGE MEASUREMENTS:

- High flow:** Measurement off downstream (west) side of bridge.
- Low flow:** Measurement off downstream (west) side of bridge or tagline measurement ~50 ft upstream (east) of bridge during extreme low flow situations when sandbar becomes exposed on the downstream side of bridge.
- Ice:** Section by section ice measurements ~75 ft upstream (east) of the bridge.

Diversions, Impoundments, Additional flow inputs: Flood control diversion located ~200 ft downstream (northwest) of bridge. Note: The operation of Orwell dam, located ~22 miles upstream, may influence water levels at this station.

REFERENCE MARKS:

- B.M. 1:** Brass disk in southeast bridge abutment; stamped elevation of 966.73 ft. (disk # "Foss A21")
 Elevation: 23.74 ft assumed datum (966.73 ft NGVD29; 967.48 ft NAVD88, surveyed by MNDNR survey crew on 2/27/2014)
- R.M. 1:** Wire-weight checkbar on upstream (east) side of bridge.
 Elevation: 26.98 ft assumed datum (969.97 ft NGVD29). Surveyed by MNDNR on 12/8/2020.
- R.M. 2:** Lower beveled edge of chiseled square 2 ft N of 9th bridge rail post from S end of bridge, on upstream (E) side.
 Elevation: 25.62 ft assumed datum (968.61 ft NGVD29). Surveyed by MNDNR on 12/8/2020.
- R.M. 3:** Spike in large tree ~30 ft east (upstream) of gage house. Established by MNDNR on 11/17/2015.
 Elevation: 16.99 ft assumed datum (959.98 ft NGVD29). Surveyed by MNDNR on 12/8/2020.

Primary Reference: R.M. 1 (26.98 ft assumed datum)
Gage zero: 942.99 ft NGVD29