

Proposed Equipment Installation South Fork Crow River near Lester Prairie, CR-9 (bridge 43524)

Following are details regarding a proposed river monitoring station to be located on the South Fork Crow River near Lester Prairie, MN. The station is to be installed at the CR-9 crossing at bridge #43524, located approximately 0.3 mile south of the intersection of CR-23 and CR-9. The equipment is to be used by the Minnesota Department of Natural Resources, the Minnesota Pollution Control Agency, and/or the National Weather Service for flood warning and long-term water quantity and quality data collection.

The monitoring station will continuously log the stage of the river and precipitation. The data will be transmitted real-time to the DNR's website and publically available for download and use in a wide range of studies such as flood forecasting and monitoring, load calculations, long-term flow trend analysis, etc.

An example photo of the proposed equipment installation is attached. The proposed monitoring station will consist of a 3' x 3' steel box mounted on two 2" galvanized pipes. The 2" pipes will be driven approximately 4 feet below ground using a soil auger. One pipe will extend about 8-10 feet high and will be used to mount a solar panel and rain gauge. A 12 volt marine battery continuously charged by the solar panel will power the equipment.

The provisional location of the new equipment cabinet is shown on the attached sketch. The cabinet will be on the east side of CR-9, no less than 30 feet from the centerline. It will be installed at least 5 ft east of the guardrail.

Equipment in the steel box will include a data logger and small air pressure tank. The air pressure tank has tubing that will run inside conduit from the equipment cabinet into the river. The data logger continually measures the pressure it takes to push an air bubble through the tubing and into the water and converts that pressure to a water level.

The pressurized air tubing will be enclosed in flexible steel conduit underground between the enclosure and the water. The conduit will be buried in a hand-dug trench down the river bank. In the water, the tubing will run in 1" galvanized steel pipe. The end of the pipe would be attached to posts pounded into the channel.

A 1' x 1' locking metal box containing a weighted wire used for manual stage measurements would be mounted on the outside of the eastern concrete barrier. The wire weight will be attached using a maximum of four standard 3/8" concrete anchors. Concrete penetrations will be to a maximum depth of 2" to avoid contact with any rebar. The wire weight box will be installed below the upper edge of the concrete barrier. Each concrete penetration will be sealed with silicone caulk to prevent moisture from entering.

The DNR will visit the site every 30-40 days to maintain and calibrate the equipment. The river level will be manually measured using the weighted wire box and compared to that measured by the data logger.

The DNR will be responsible for moving or removing the equipment if requested by McLeod County for bridge maintenance or any other reason.

During installation, the DNR will temporarily park a truck on the west side of MN-6 near the bridge. Traffic control will be set up in accordance with the MNDOT *Temporary Traffic Control Zone Layouts Field Manual*. The vehicle will run with flashing lights. A safety sign and cones will be placed a distance from the work to alert oncoming motorists. Traffic will not be blocked or re-routed. The installation is expected to take approximately 4 hours and will be finished on the same day as the start.

The bank on which the cabinet and air line are installed, and the side of the bridge that the weighted wire box is attached may change based on stream conditions, vegetative cover, sunlight penetration, and other factors. Site meetings prior to installation could be arranged with McLeod County representatives if requested.