



# Keeping our Streams Connected

## Culverts and Stream Health

While driving down the road, it's easy to overlook how many culverts are in our county. Culverts are used not only for stream crossings but also to pass water between wetland areas and ditches. The placement and sizing of culverts can have a big impact on water resources. Culverts that are too small can speed up the flow of water, making it difficult or impossible for fish and bugs to move up or downstream, which can lead to a stream becoming impaired. They also contribute to sediment pollution by causing erosion. That's why the county is working towards replacing old, undersized culverts with fish friendly options.

### Reduced Maintenance Cost

Although a larger culvert has a higher price tag initially, there will be a savings in the long run. The cost of replacing a culvert or lost road bed materials can be very expensive, especially as we are seeing more frequent high rain fall events. We must also consider the impact to local residents and businesses when a road has to be closed until repairs can be completed.



**Improved Safety** - Culverts that fail during storm events present a safety hazard. Drivers may be unaware of a washed out road and many flood deaths occur because people attempt to cross a flooded roadway. When roads are closed due to flood events, it can take much longer for emergency personal to assist with medical and fire emergencies.

**Water Quality** - When culverts fail or streams and rivers wash out a road, several tons of road material are washed down stream. This material not only becomes a major source of sediment throughout the watershed but also covers up stream and wetland plants. Valuable wetlands and wildlife habitat may be lost. Properly sized culverts help us keep the road and road materials where it's supposed to be....on the road!

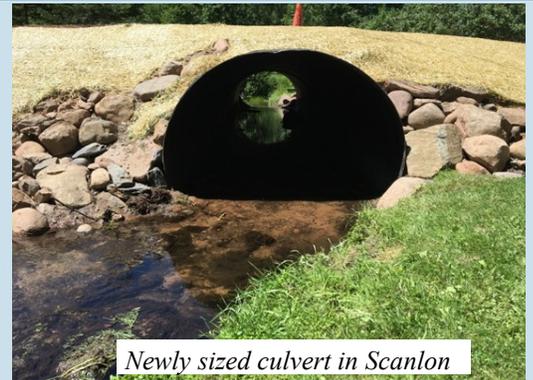
### Did You Know?

This culvert on CSAH 13 has washed out 3 of the last 5 years! After the 2018 flood, the 30" pipe was replaced with a 72" Pipe Arch Culvert with a natural bottom. At the same time, 5 truck loads of road material and gravel were removed from the stream and adjacent wetland. The cost of replacing the undersized culvert with an appropriate sized culvert cost \$3800 less than repairing damage from the flood.



## What makes a culvert fish friendly?

A fish friendly culvert is sized to be as wide as the stream during a storm event. This size is known as bank-full width. These culverts tend to be many times wider than the culverts they replace and during “normal” or “low flow” may seem very large indeed! But, sizing in this manner slows the water down and ensures that high flow water, debris and organisms can pass under the road.



Bed material in the culvert helps reduce the energy of the water, reduces the wear on the culvert bottom, maintains the culvert elevations, and provides wildlife habitat. In some cases, a flood plain culvert that only flows during very high water may be added, so the stream will have access to the floodplain during a flood event. The bottom line is that a fish friendly culvert will look similar to the stream as it passes under the road.

*Scanlon public works supervisor holding a rescued trout during construction.*

## ***Carlton SWCD and Carlton County Transportation Department Culvert Focused Partnership for Efficiency and Resiliency***

In 2016, Carlton SWCD applied for a grant to fund a culvert inventory. The SWCD was interested in culverts due to the role culverts play in water quality, especially in the more challenging red-clay areas. Past inventories, although useful in many ways, were flawed because they were immediately out of date as soon as they were completed. We wanted an inventory that would stay relevant, but in order to do that, we needed the support and buy-in of the road authority. That is how this partnership was started. The Transportation Department saw the value in an online inventory to help prioritize projects.

In 2017, the Carlton County Transportation Department and Carlton SWCD piloted a culvert inventory on all county maintained roads. The goal of this project was to evaluate the location, condition and biological/water quality impact of every culvert.



In 2018, the inventory was used after a 500 year flood washed away many culverts in the southern portion of the county. Pre-storm measurements were used to replace culverts that better matched the stream where possible. It was noted that culverts sized to the stream survived the flood with little damage and prevented the waters from overtopping the road. This saved money in costly repairs and allowed county residents to continue using the roads after the flood.

