Innovation in Clean Water Practices and Technology

March 2017 Snapshots

The agricultural landscape throughout much of Minnesota is dotted with surface intakes that are essential for efficient crop production, especially in the prairie pothole region. These intakes play an important role in agricultural production by taking ponded surface water and runoff in depressional sites and removing the water from the fields through a subsurface tile drainage system. However, these surface intakes also provide a direct pathway for the movement of sediment and associated pollutants to surface waters.

Technological advances have found ways to help balance agricultural production with conservation, and over the years intakes have improved so that they reduce the amount of pollutants that enter waters. The Minnesota Agricultural Best Management Practices (BMP) handbook recommends that rock inlets, rather than perforated tile intakes, be the preferred choice for farmland applications but they are more expensive than a tile intake and require more maintenance. A very recent, not yet published study from the University of Illinois Agricultural and Biological Engineering Department tested three new types of surface intakes, along with the traditional "Hickenbottom" intake. The study looked at their flow capacities, plugging potential, and effectiveness in reducing sediment transport.

Surface inlets evaluated in this study. From left to right: (1) Ag-Solutions® QuickDrain® low profile inlet (QD), (2) AgriDrain® wick inlet (AD), (3) Hickenbottom® standard inlet (HB), and (4) Ag-Solutions® standard inlet (AS).

Tile intakes are often installed as part of erosion control systems including water and sediment control basins and terraces. These alternative style intakes are being considered, and installed, as yet another way of reducing sediment delivery to our lakes, rivers and wetlands. The Minnesota Department of Ag Water Quality Certification Program is providing many of these to producers in southern Minnesota and asking them to use them as a condition of their certification where open tile intakes are in their crop fields.

With additional testing and anecdotal knowledge, it is hoped these alternative intakes can be part of the solution to reducing sediment delivery to our 10,000 lakes, countless wetlands, and many streams and rivers in the very near future.