

## Delaware WRAPS BMP Success Story

### Project: Cedar Tree Revetment & Forest Buffer, Atchison County

Don Falk is an Atchison County producer who owns cropland along Little Grasshopper Creek, which is in a WRAPS high priority area for implementation of cropland BMPs in the Delaware River Watershed. Considerable bank erosion was occurring along a sharp bend in the creek adjoining his crop field (Figure 1). In 2016, he contacted the Delaware River WRAPS for possible assistance.



**Figure 1. Eroding Bank (May 2016)**

The Delaware River WRAPS partnered with the Kansas Forest Service and forestry faculty at Kansas State University to provide technical assistance for the design and installation of a cedar tree revetment (CTR) with willow plantings and a riparian forest buffer. The Delaware WRAPS provided cost-share funding for the project. Average annual soil loss from bank erosion at the project site from 1991-2016 was estimated at 55 tons per year.

The revetment and willow plantings were installed in March of 2017, protecting approximately 380 feet of streambank (Figure 2). The riparian buffer, consisting of oak, sycamore and native grasses, was installed a few weeks later covering approximately .33 acres. Vegetation immediately next to the

cedar tree revetment was also *re*-planted. Normally, *re*-planting means something has gone wrong, but in this case, it means the project is working faster than expected! The cedar tree skeletons caught so much sediment in the first few high flows after installation that the willows were completely silted over (Figure 3). An estimated 158 cubic yards of sediment was trapped from high flows in March & April, with some places having as much as 4 feet of sediment deposited. Willows were replanted, and the new silt bench allowed for planting of additional woody vegetation – i.e. sycamore trees (Figure 4).



**Figure 2. Revetment Installation (March 2017)**

**Figure 3. Sediment Deposition**



**Before CTR Installation**

**After CTR Installation**

The project is serving as a research site for KSU faculty and students involving periodic measurements to assess project impacts on bank erosion and sediment deposition, including the installation of bank pins at the project site and at a control site near the project. Figure 5 shows recent photos of the project site.

**Figure 4. Installed Forest Buffer and Re-planting of Vegetation Behind Revetment (May 2017)**



**Figure 5. Project Site - July 2018**

View Looking Upstream



View Looking Downstream



Buffer Plantings

