

# Wisner Road Stabilization

## City of Kirtland

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In 2017, the City of Kirtland was awarded an Ohio EPA Section 319(h) grant to stabilize a section of streambank along the East Branch of the Chagrin River. Located adjacent to Wisner Road, the project utilized bioengineering methods to stabilize 425 linear feet of streambank. The restoration is designed to reestablish equilibrium conditions that efficiently transport water and sediment, while providing enhanced ecological value, restored in-stream habitat, and improved site aesthetics. This was achieved with a combination of in-stream structures and bioengineered bank treatments that replicate the natural processes to regain channel stability and restore the lost functions and values of a robust stream system.

The approach relied on rebuilding the toe of slope and grading eroded banks back to a stable angle of repose. Streambanks were strengthened with the use of composite revetment, a layered bioengineered bank treatment of rock, jute blanket, soil, and live woody cuttings. The composite revetment was constructed in combination with two rock riffles to strategically direct flow and establish stable meander geometry. These structures act as a catalyst for deep center channel development, provide a localized reduction in shear stress, and lead to the development of stable streambanks, pool/riffle habitat, diverse bed forms and in-stream habitat. They regulate the transport and sorting of sediment, and narrow and deepen the channel over time.

Along a downstream meander bend, a flood “bench” was constructed along the toe of slope, using a combination of materials salvaged on-site. These materials include on-site rock and riprap, stream gravel, large timber, and woody debris to create a natural toe-of-slope treatment, called toewood revetment. Toewood revetment mimics the natural recovery processes in riverine systems and provides prime resting and feeding habitat for small fish, amphibians, and macroinvertebrates. Harvested logs, limbs and rootwads were designed and installed in a “criss-crossed” or “woven” pattern, anchored with boulders and cobble ballast, and backfilled with branch packing and native gravel. The project construction was completed in June of 2020.



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