

US EPA ARCHIVE DOCUMENT

# Four Way Farms: Manure Management Success

Wisconsin Dept. Natural Resources  
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In 1998, the Kohlsville River, a tributary to the East Branch of the Rock River in Washington County, Wisconsin, was placed on the state's Clean Water Act Section 303(d) list of Impaired Waters due to sediment and nutrients in overland runoff. Diffuse sources of pollution were impairing the water's in-stream habitat. While these sources were known to be agricultural, the significant step of pinpointing and eliminating these pollutants was yet to come.

In 2002, Washington County staff identified a severe barnyard runoff problem near the river, which was experiencing algae blooms, turbidity, and dissolved oxygen problems. Wisconsin Department of Natural Resources (WDNR) staff began monitoring the river. When county staff noticed significant compaction and trampling of stream bank along the river and its tributary, they began collecting continuous meter data from the stream, one below the barnyard and one above. The results illustrated that the barnyard runoff was indeed posing a water quality problem. The following year, in 2003, county staff applied for and received a Targeted Runoff Management (TRM) grant which funded work with landowners to put in place best management practices that resolved the severe algae problems encountered in the stream.

Stream recovery work involved relocating two separate animal feedlots that had direct discharges and unlimited livestock access to the stream. Both animal herds were relocated into one new free stall building along with the construction of a manure storage facility for these animals. The feedlots that the animals were moved from now contain a permanent deed restriction for livestock and the pasture area along the stream is also permanently protected to serve as riparian buffers.

Water quality biologists and county conservationists collected fish data, aquatic macroinvertebrate data, and continuous meter data for temperature and dissolved oxygen both above and one below the site. Typically, continuous data collection devices were on site for 5 day intervals, every other week from May till October. Prior to the animals being removed from this site in December 2005, fish and water chemistry data indicated impairment on the waterbody. Today, the amount of algae that accumulates on the sondes no longer compares to what it was.

Through the Targeted Runoff project, a conservation plan was developed on all the land the farmer owns and operates controlling soil loss to tolerable levels. In addition, the landowner attended a Washington County sponsored Farmer Education and Certification Nutrient Management Workshop. At this workshop, the farm owner learned how to apply manure in an environmentally sound manner and balance manure applications with crop demand as well as how to take credits for the nutrients either fixed by alfalfa/soybean legumes or applied in manure.

As a result of attending the workshop, the farm owner became his own certified nutrient management planner with the ability to write and follow a nutrient management plan written for his farming operation only. In 2003, the landowners took an active role in the implementation of this plan and as a result, they have accomplished the following:

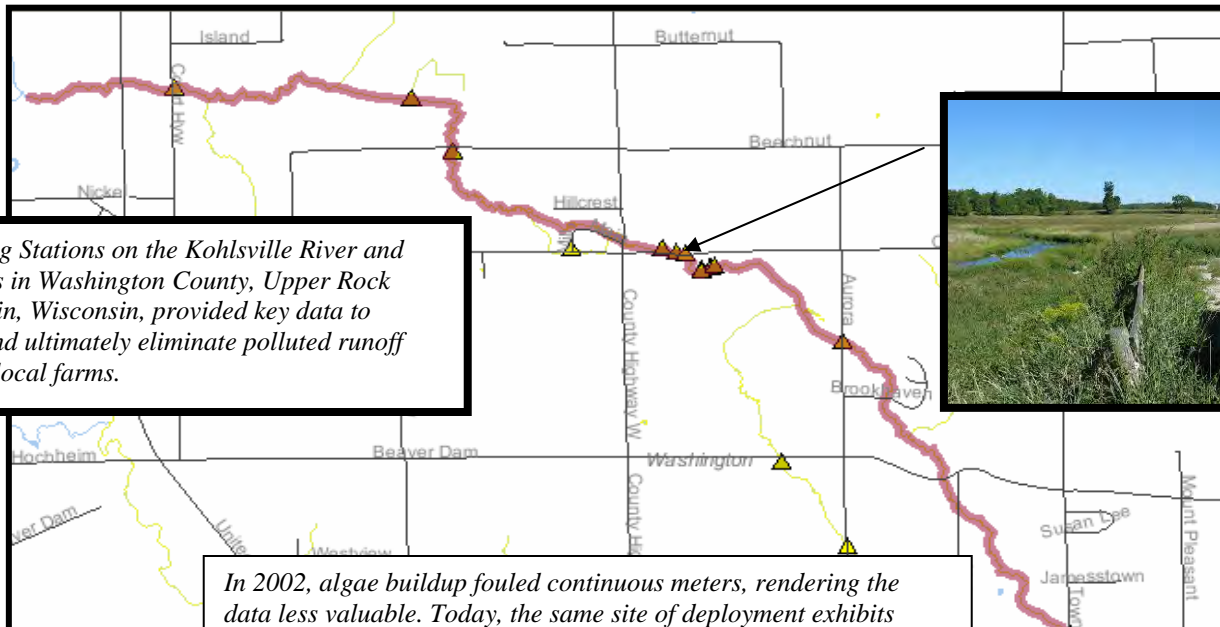
- Due to high soil fertility levels, sludge will no longer be applied to their farmland.
- Animal manure from the dairy operation is being applied to more acres in a year, decreasing the potential for environmental loading due to high soil fertility levels.
- Manure is fully credited for nutrients.
- Manure is applied with a focus on crop phosphorus needs, with supplemental nitrogen applied to those fields not receiving the crop's nitrogen need from manure.
- Starter application has been decreased by 50%, from 200 lbs/acre to 100 lbs/acre.
- Legume nitrogen is fully credited toward corn's nitrogen needs.
- Nitrogen is applied to corn during the appropriate time of the year, with no fall or winter application of commercial nitrogen.

Each year brings new challenges to the implementation of Four Way Farm's nutrient management plan, but each year these challenges are fully addressed with one eye on environment health and one eye on crop health. Manure is applied in an environmentally sound manner and now that sludge is no longer applied, soil fertility levels will not exceed what is needed for maximum quality and quantity of forages and grains.



This project eventually led to improvement of water quality, restoration of 1800 feet of riparian buffers, and the landowners gained valuable skills which not only helped remediate the problem, but will prevent future problems from agricultural runoff for generations to come.

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2002



2006

*Monitoring Stations on the Kohlsville River and tributaries in Washington County, Upper Rock River Basin, Wisconsin, provided key data to identify and ultimately eliminate polluted runoff from two local farms.*

*In 2002, algae buildup fouled continuous meters, rendering the data less valuable. Today, the same site of deployment exhibits clear water and much improved water quality results!*

