

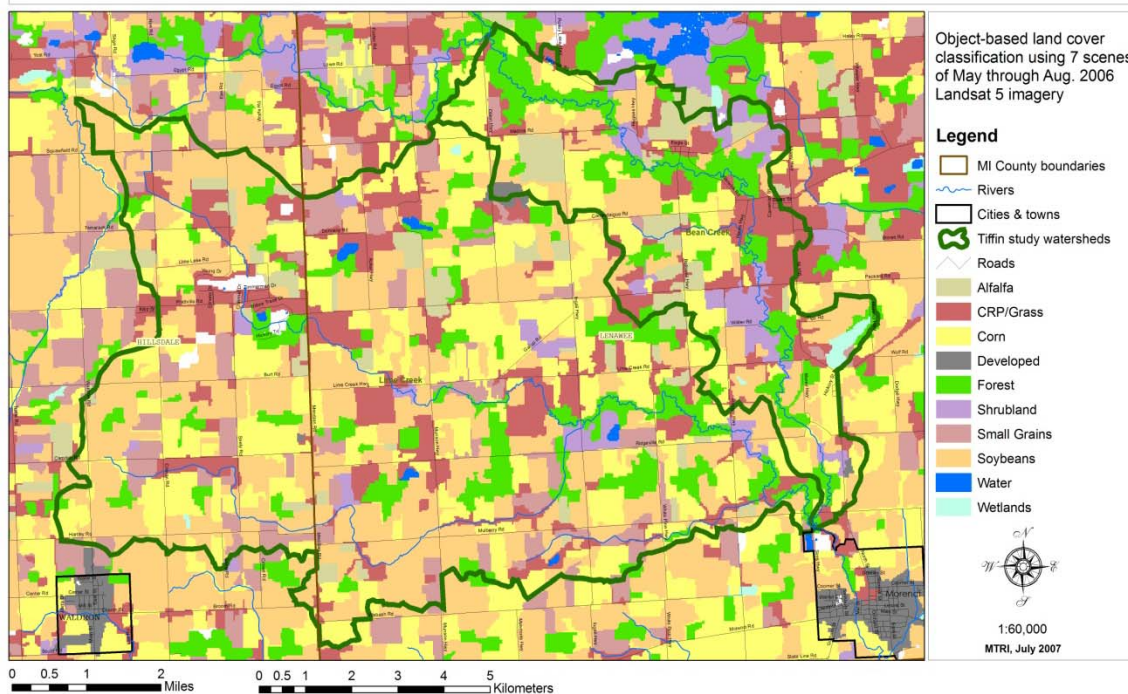
The connection between land use / land cover and water quality in the agricultural Upper Tiffin River watershed of southeastern Michigan

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Bean and Lime Creek 2006 Land Cover Classification



MTRI researchers collected monthly water quality data using a Horiba U-22 probe at 26 locations in the 14,600-ha Upper Tiffin River watershed in southeastern Michigan from April, 2005 to December, 2007. Also profiled were 6 major rainfall storm events and one night event.

We have been analyzing the relationships between these data sets and land use / land cover, as represented by 2005 and 2006 agricultural-focused land cover classifications we created from multi-temporal Landsat imagery using object-based image analysis methods. The most critical variables to characterizing the impacts of storm events on water quality are turbidity, dissolved oxygen (DO), and conductivity.

Over the whole year, corn grain and soybeans generally increase turbidity, while during the spring, greater amounts of corn silage in watersheds are associated with higher turbidity levels. Larger amounts of forest lead to lower turbidity levels, but interestingly, larger amount of wetlands are associated with higher levels of turbidity except during spring storm events. Overall, levels of agricultural land use are closely associated with predicting changes in water quality following storm events.