

ABSTRACT

THESIS: Best Management Practices and Stream Water Quality: Exploring the Use of SWAT in Northeast Indiana

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The U.S. government implemented many incentive programs in the 1980s to encourage farmers to reduce agricultural runoff and erosion through the use of best management practices (BMPs). Remote sensing, GIS, and modeling, have been used to determine the effectiveness of BMPs through comparisons of before and after BMP implementation. The Salamonie watershed in Northeastern Indiana was studied for BMP effectiveness. The study addresses how agricultural practices have changed over a twenty nine year period (1975-2003), and how the implementation of BMPs will decrease the amount of sediment and nutrient load to surface waters. Methods reported on include the use of the Soil and Water Assessment Tool (SWAT) watershed model and how different weather data (precipitation and temperature) greatly affects streamflow predictions, as well as the effects of BMP implementation on sediment loads to surface water. The outcomes of this study provide a viable argument of how BMPs implementation positively affects water quality in the watershed region by effectively reducing sediment loads.