Rebecca Martin, "Methods for analyzing Stream Temperature and the Thermal Effects of Rain Gardens."

Nutrients and other pollutants in urban stormwater runoff cause damage to the ecological health of watersheds. Furthermore, uncontrolled stormwater can affect the temperature of receiving water bodies. Water temperature is a complex stream parameter influenced by weather, hydrologic, and anthropogenic sources. Distinguishing fluctuations in stream temperature from seasonal variations and stream heating processes to isolate anthropogenic sources of pollution, specifically stormwater, is challenging. Rain gardens are a commonly used stormwater control measure that can improve stormwater quality. This research is focused on the construction of a proposed rain garden near the Naylor's Run, a tributary to the Cobb's Creek in Pennsylvania. The focus area drains approximately 1900-acres of developed land and is being monitored at three locations for existing conditions of stream temperature. Methods are presented to develop a baseline in stream temperature at the Naylor's Run. By establishing a baseline, the effectiveness of a rain garden at reducing thermal pollution can be evaluated with a focus on the development of better design standards in water quality measures.