Background

Plaster Creek is one of the most polluted watersheds in the state of Michigan. Due to high \textit{E. coli} levels, the Michigan Department of Environmental Quality found the stream unfit for full body contact in 2002 and identified several areas unsafe for partial body contact in 2001 and 2005. The watershed includes varied patterns of land use including urban and suburban development, commercial, industrial, and agricultural areas. We hypothesized different land uses could have drastically different contributions to the poor quality of the creek. As such, this project was designed to identify the tributaries contributing the highest levels of \textit{E. coli} into Plaster Creek. This information could be used to decide the best management practices for these geographic areas.

Methods

Initially, we identified the major tributaries of Plaster Creek. By testing the waters of these feeder streams, we are identifying the waters that introduce the most \textit{E. coli} into Plaster Creek. Further, considering the land use surrounding the tributaries allows us to see how the land use in those areas affects the health of the creek. To test for \textit{E. coli}, we went to the confluence of each tributary with the creek and pulled water samples from both the main channel of the creek as well as the tributary upstream of the confluence for comparison. We took these samples into the lab and plated them in petri dishes. Later, we would come back and count the colonies of \textit{E. coli} on each plate. Once all these numbers were in hand, we could compare each tributary to find the most influential of the watershed.

Conclusions

Results so far have shown that the headwaters region of the watershed (located south of Grand Rapids in the Dutton/Caledonia area) appears to be the heaviest \textit{E. coli} contributor to the watershed.

Personal Reflection

This project has taught us the value community and engagement. Our sampling region includes large portions of privately owned land. This means that the quality of the creek directly relates to the ways in which private owners are managing their property. As much as we would love to clean the creek ourselves, a great deal of the restorative effort lies in the hands of the residents. As such, we’ve learned that research means little without engagement through education and working as a collective to solve this problem and care for our piece of the earth.