

Dr. Elizabeth Myers Toman, Visiting Assistant Professor in the School of Environment and Natural Resources at The Ohio State University together with Dr. Jiyoung Lee progressed in completing an Ohio Water Resources Center project via joined Office of Energy and Environment at OSU subaward. The overall objective of their project titled “**Surface water quality and ecosystem health with shale energy development**” is to characterize the impacts of increased road usage due to natural gas expansion in rural areas on surface waters and ecosystem health.

Beginning in June 2014, equipment that continuously measures and records water quality parameters including temperature, dissolved oxygen, conductivity, pH, and turbidity was installed in streams at the mouth of three small watersheds. Water samples were taken on a monthly basis and analyzed for Total Suspended Solids (TSS) and microbial communities.



Elizabeth Toman's student collecting water samples

Analysis of the data collected has led to the development of a stage to discharge relationship for the streams. Furthermore, we determined a relationship between turbidity and TSS and a positive correlation between stream turbidity and *E. coli* cell counts in the studied streams. These findings provide a foundation for future work at this site regarding water quality, microbial communities and land use. In addition, the results from this research, in conjunction with research at the study location on sediment runoff from road segments, will contribute to the understanding of the quantity of sediment within the stream network that originated from the road surface.

In summary we strive to enhance our understanding of the relationship between suspended sediment concentration and volume of sediment produced by the watershed to the volume of sediment that could be contributed to the streams by the existing road network.

Researcher Profile: Dr. Elizabeth Myers Toman’s research interests lie in the broad areas of forestry, hydrology, and transportation. More specifically she is interested in what occurs when and where these spheres meet. She studies the influence of land management activities such as road construction and use, forest harvesting or vegetation removal, and oil and gas exploration, on stream water quality.



Runoff from the road surface during a natural rain event at the study location.