

# Investigating the Diversity of Microbes on the surface of Rocks in the Appomattox River & Buffalo Creek

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Genetics 250

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## Background

- The climate, vegetation and pollutants can cause river quality to be highly variable (Meybeck, 1989).
- Toxic waste and disposal of organic pollutants, such as Phosphorous have been a continuous problem in local farm runoff (Pratt, 2012).
- Pollution can greatly effect the quality of water and consumption for living things. To preserve the importance of life it is good to know about the dangers of pollutions and its effect on the environment.

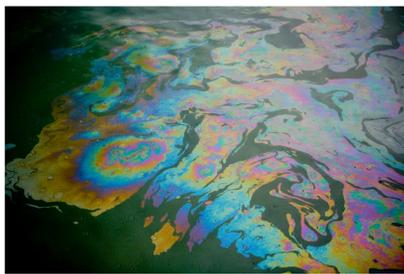


Figure 1. Example of Water pollution

## Specific Aim

- Aimed:** To test the difference of microbial diversity found on a surface from both the Buffalo Creek and Appomattox River.
- Hypothesis:** Buffalo Creek would contain greater pollution thus causing a greater microbial diversity on the sampled surface than the surface from Appomattox river.

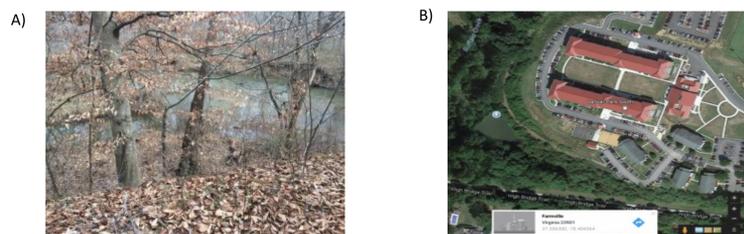


Figure 2 site A. Appomattox River sample site.  
Site B Buffalo Creek sample site.

## Methods

Collect surface samples of different rocks & examine microbial diversity & extract genomic DNA from two bacterial colonies.

Amplify the 16S rRNA gene sequence of the bacteria using PCR (Polymerase chain reaction) and then performing MspI digest.

Sequencing and BLAST (Basic Local Alignment Search Tool) performed on DNA

## Results

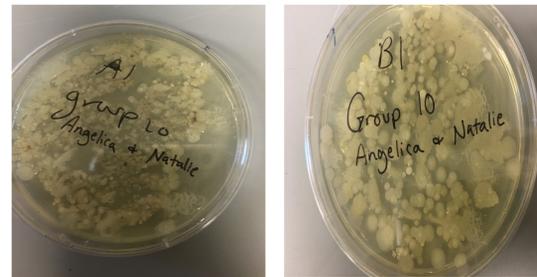


Figure 3. Sites (A) Colonies from Appomattox River. Site (B) Colonies from Buffalo Creek.

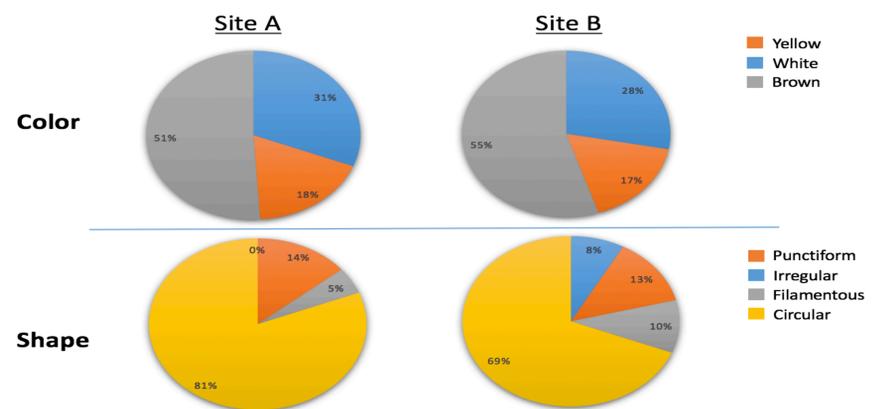


Figure 4. Site (A) The percentage average of both color and shape of colonies from the Appomattox river. Site (B) The percentage average of both color and shape of colonies from the Buffalo creek. An irregular shape was found only in site B and not site A resulting in only a yellow percentage in site B.

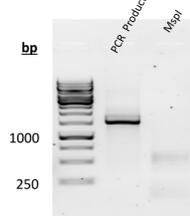


Figure 5. Gel electrophoresis of 16S rRNA PCR Product from the sampled colony. MspI is a restriction enzyme that cuts DNA out 5'- CCGG -3'



Figure 6. High quality chromatogram of DNA sequencing

## Conclusions

- In conclusion there was not any data recognized for 10B, however 10A did manage to get PCR results as shown in Figure 5.
- When observing the plates, 10B showed more diversity of shapes than 10A as shown in figure 3 confirming our hypothesis.

## References

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Meybeck M. Helmer R. 1989. The quality of rivers: From pristine stage to global pollution. *Global and Planetary Change*. 1: 283-309.