



Analysis of New York African Burial Ground Soil Samples

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Introduction:

The New York African Burial Ground (NYABG) is the country's oldest and largest burial site of free and enslaved African Americans. In 2019, a non-destructive method (pXRF spectrometry) was used to analyze soil samples from the site for the assessment of trace metal presence. The soil samples of this site provided evidence of the biological and cultural existence of the population buried. The data help us reconstruct the lives of these early Americans in what became New York City.

I was given the opportunity to further research these soil samples using a new approach that would allow us to obtain more quantitative data.

Activities/Methods:

For this project, I first had to weigh and dry the soil samples that I was analyzing. Then, I followed EPA digestion method 200.7 to break down the solid soil samples to be prepared for analysis. To analyze the samples, I used ICP-OES (Inductively Coupled Plasma Optical Emission Spectroscopy). ICP-OES works by exciting atoms using plasma and measuring the light that is emitted. Each element produced unique wavelengths of light so I could determine information about its presence and concentration in samples.

Impact:

The data gained from this project is crucial to understanding more information about the history and experiences of enslaved and freed African Americans of the 17th and 18th century. This project sheds a light on a historically overlooked group of people and provides context for the lives that they led.

Over the course of this project, I have significantly developed my laboratory skills and knowledge about the scientific process. I have now become familiar with complex laboratory equipment and the work necessary to create a successful research project.



Photo of ICP-OES machine actively analyzing the samples.

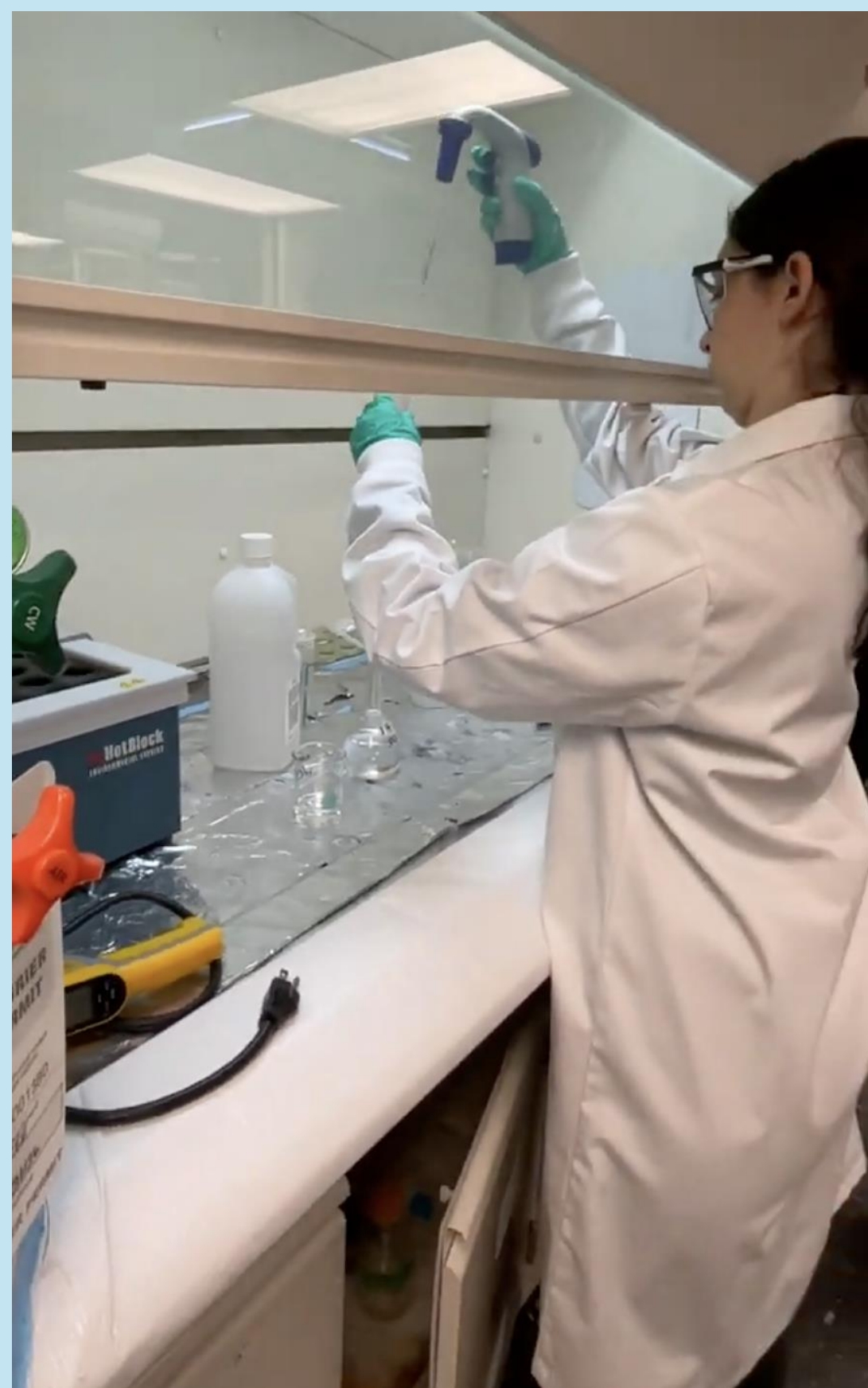


Photo of me preparing the standards for the ICP-OES analysis.



Photo of prepared samples for Hot Block digestion.

Site Information:

Name of Site: Department of Environmental Science and Technology, UMD

Address: 0206 H. J. Patterson Hall College Park, MD 20742-5821

Supervisor: Dr. Candice Duncan

Future Work:

The lab work portion of the project is complete (weighing and drying, sample digestion, ICP-OES, etc.), but the data itself requires further evaluation to draw conclusions. The ICP-OES gives us the concentrations of different trace elements in each of the soil samples. This information will allow us to reconstruct these peoples' lives by learning about their day-to-day activities (e.g. diet). By examining this data, we will uncover new information about the NYABG population and continue to share their stories.

Acknowledgments:

I would like to thank Dr. Candice Duncan for guiding and supporting me through this process and allowing me to continue her work. A big thanks to Brandon Brown for working along side of me to further analyze these samples. And, of course, a special thanks to Dr. Holtz and Dr. Merck for having such an impact on my college experience and for pushing me to achieve amazing things.

