

# **SOIL AND ATMOSPHERIC CHEMISTRY IN URBAN ATLANTA: FINDINGS FROM THE CSAW (COMMUNITY, SOIL, AIR, AND WATER) NSF RESEARCH EXPERIENCES FOR UNDERGRADUATES SITE**

**Rebecca A. Pickering<sup>1</sup>, Kumar Kartik Amarnath<sup>2</sup>, Alyssa Combs<sup>1</sup>,  
Hannah Kaplan<sup>3</sup>, Maria Christina Martinez<sup>4</sup>, Mary Winsor<sup>1</sup>,  
Christina H. Fuller<sup>5</sup>, Katherine B. Hankins<sup>1</sup>, Timothy L.  
Hawthorne<sup>1</sup> and Daniel M. Deocampo<sup>1</sup>**

**(1) Geosciences, Georgia State University, Atlanta, GA, (2) Biology, DePauw University,  
Greencastle, IN, (3) Earth and Planetary Sciences, Washington University in St. Louis,  
MO, (4) Environmental Science and Policy, Chapman University, Orange, CA, (5)  
Institute of Public Health, Georgia State University, Atlanta, GA**





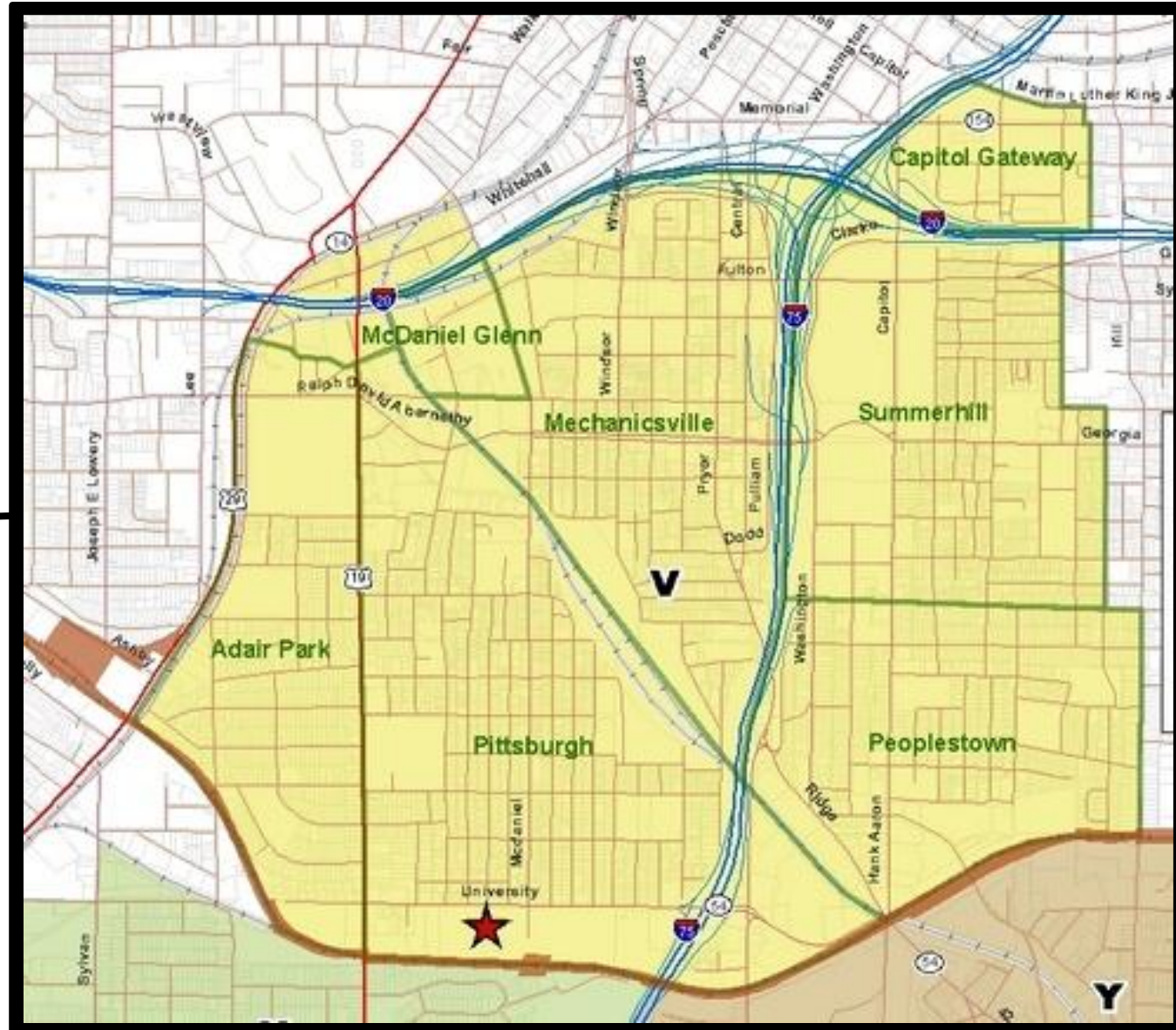
**C**ommunity   **S**oil   **A**ir   **W**ater

Summer 2012  
Research Experience  
for Undergrads





# Study Area



Neighborhood  
Planning  
Unit V

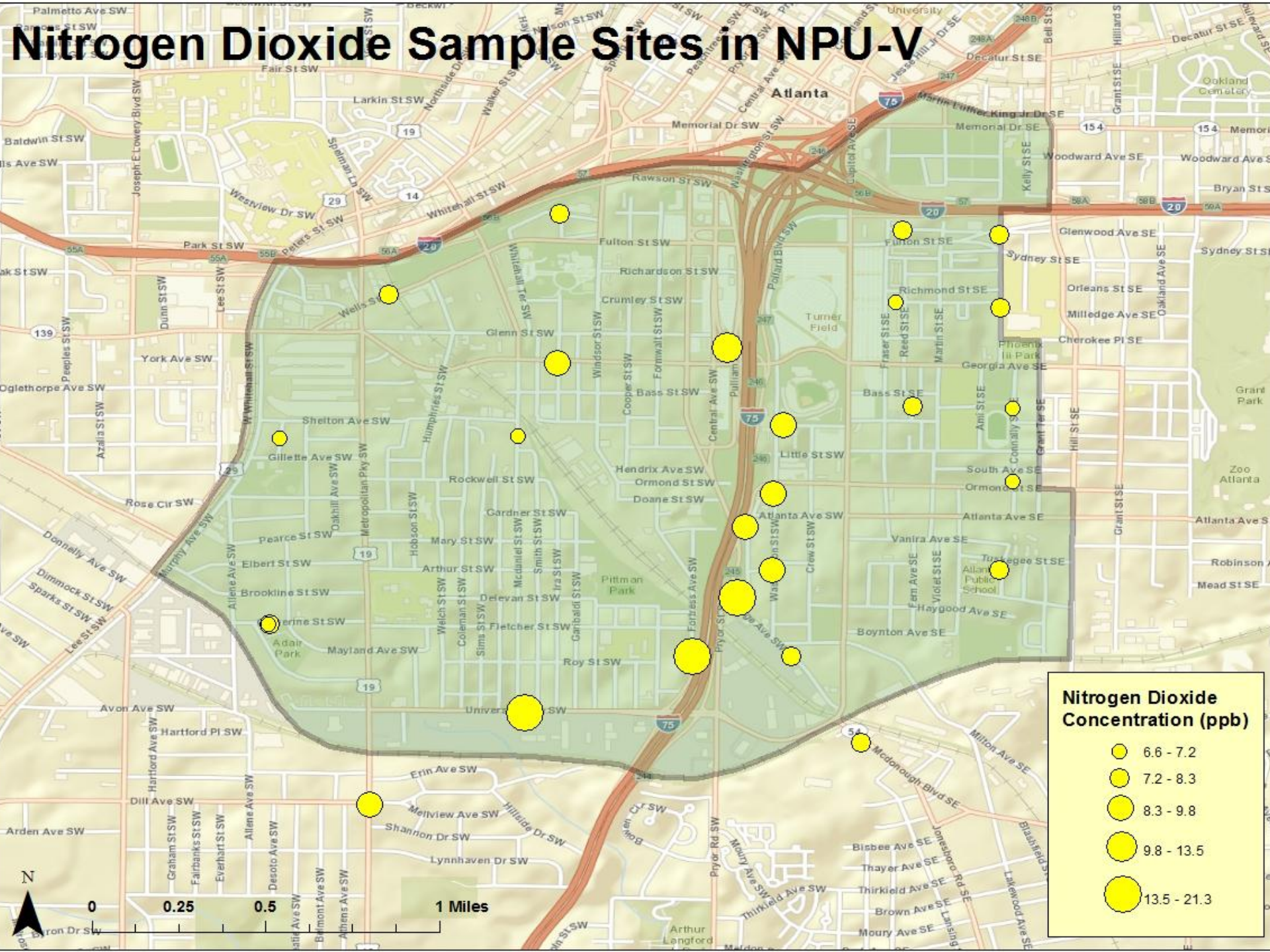


# NO<sub>2</sub> Sampling and Analysis

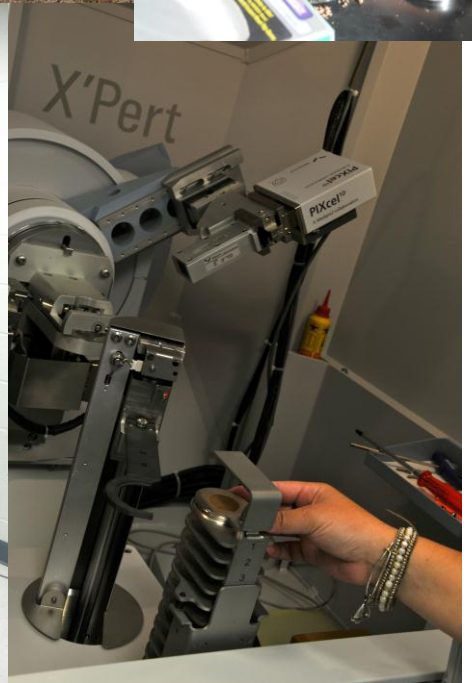




# Nitrogen Dioxide Sample Sites in NPU-V



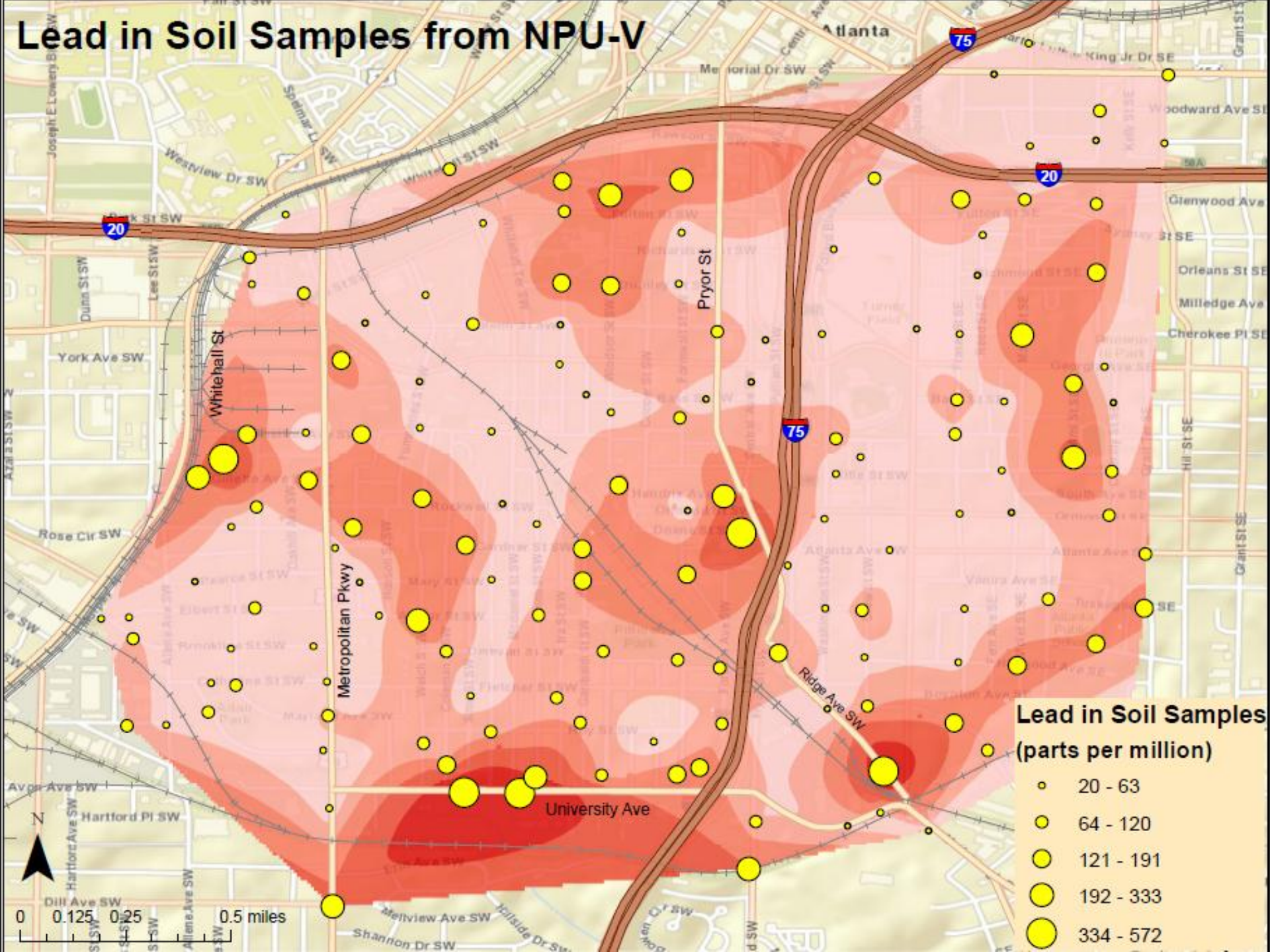




Pb Sampling and Analysis

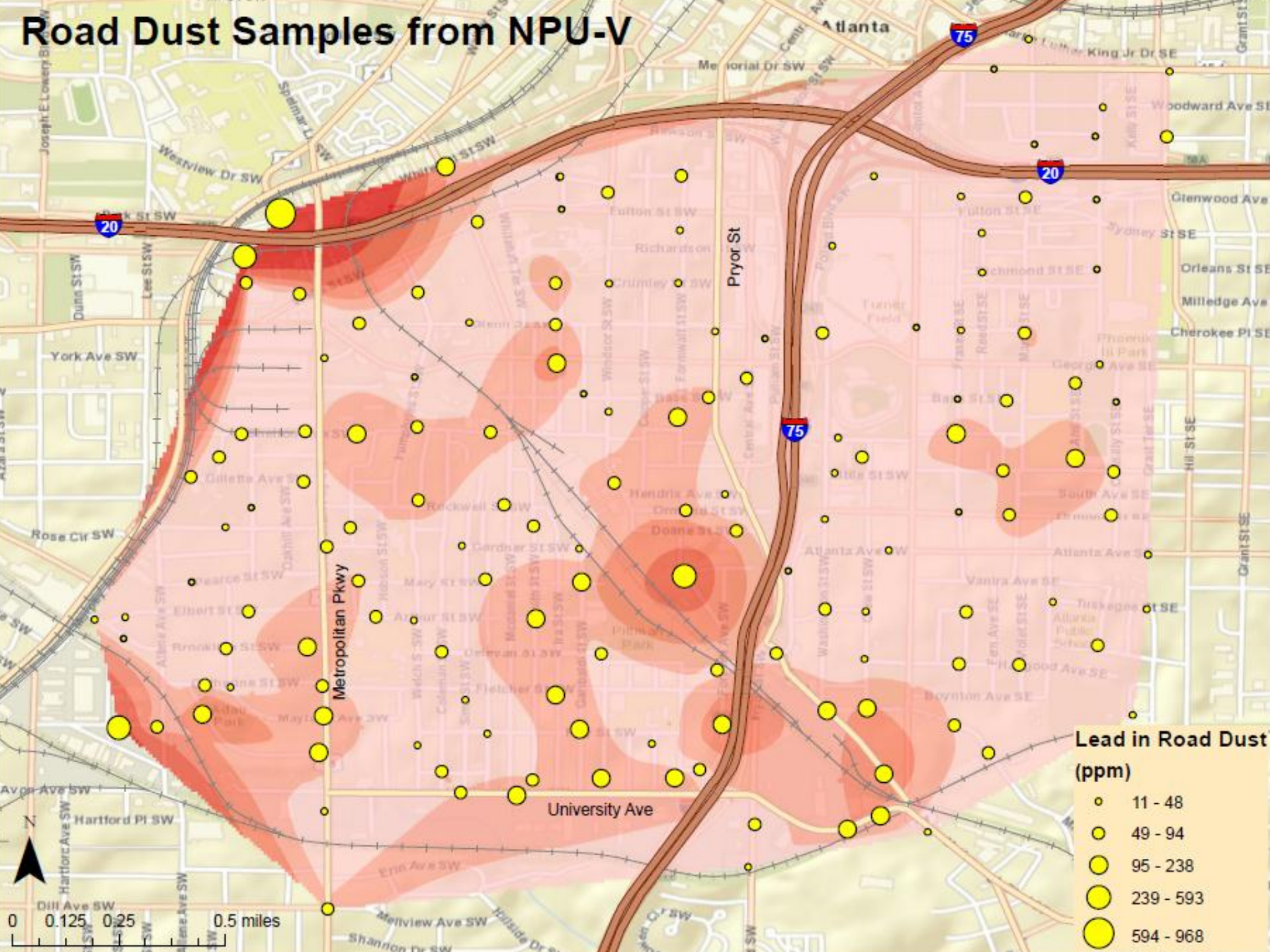


# Lead in Soil Samples from NPU-V





# Road Dust Samples from NPU-V

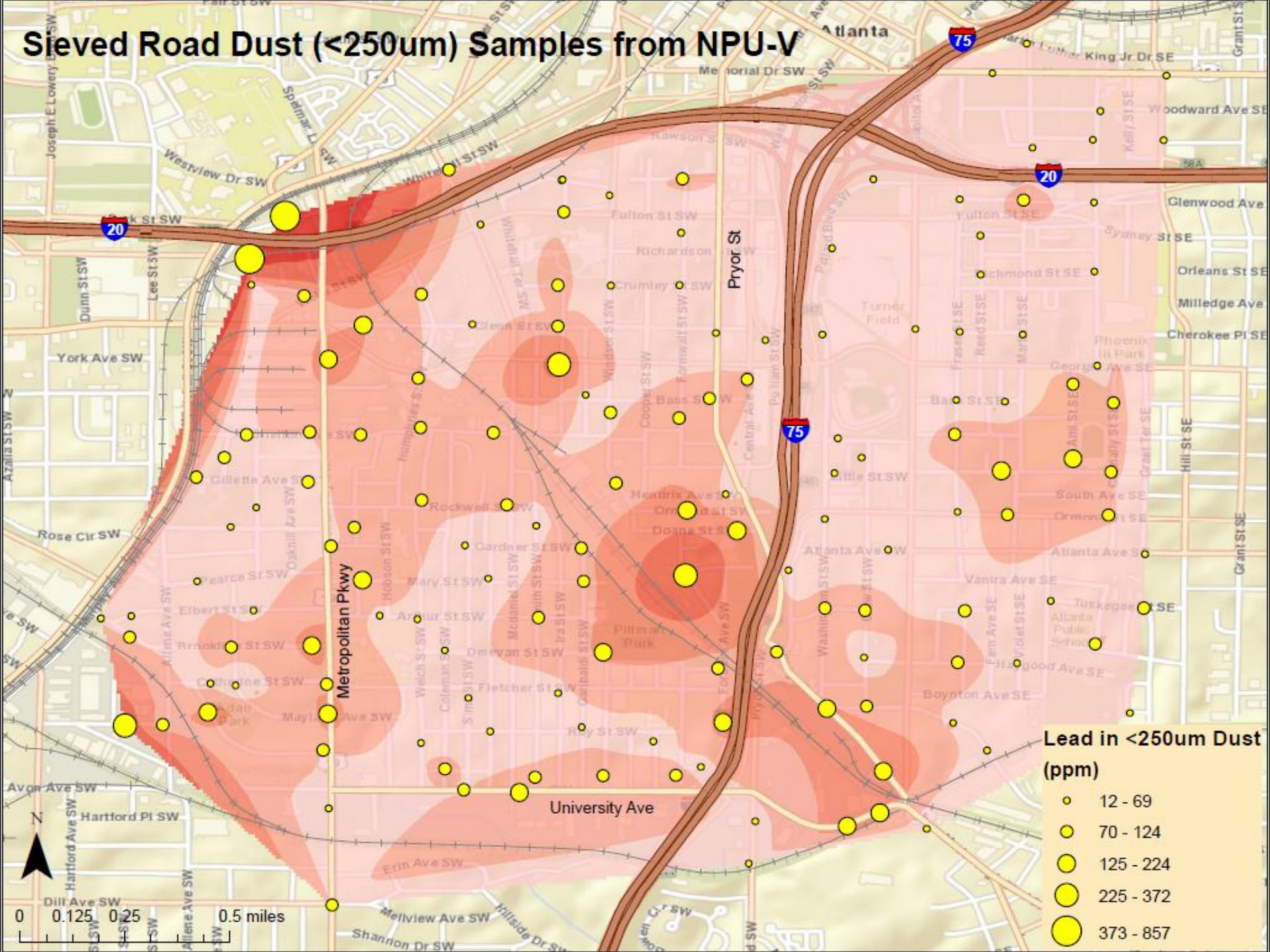


## Lead in Road Dust (ppm)

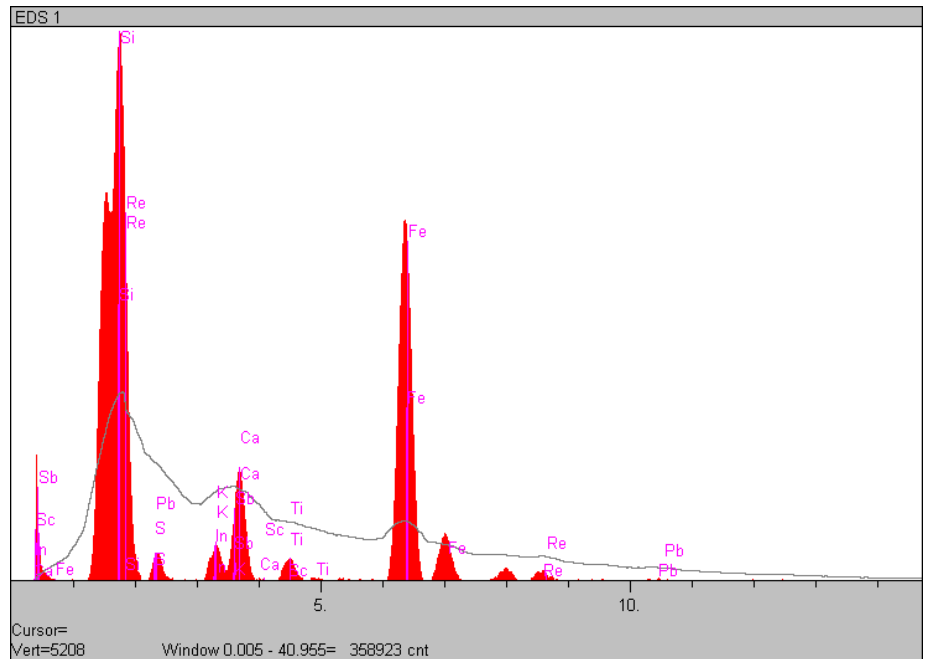
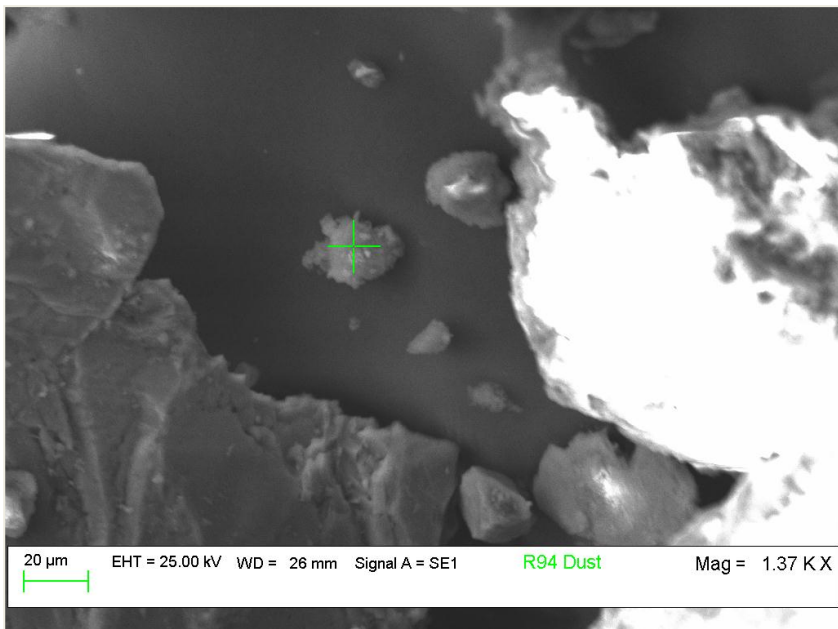
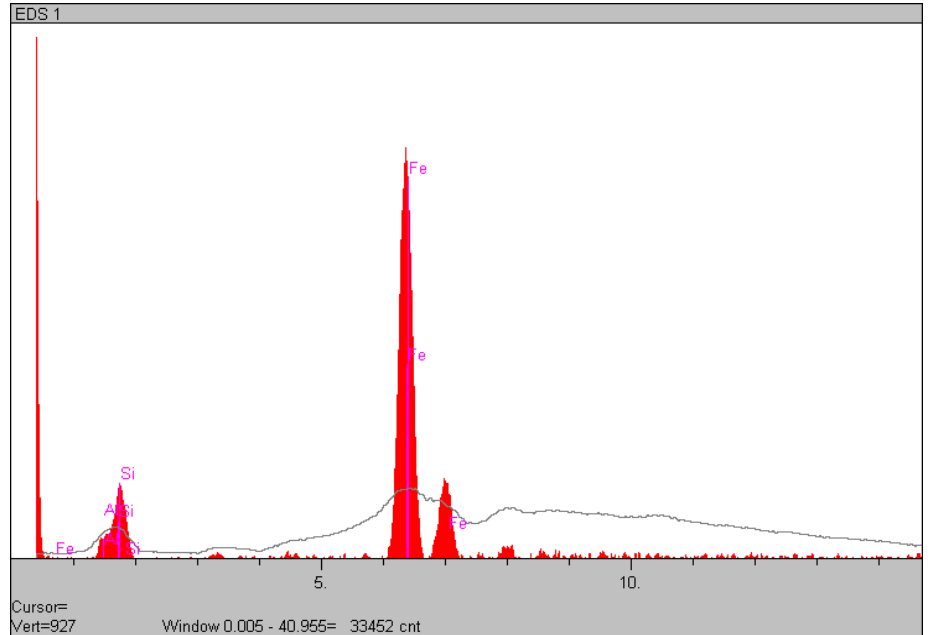
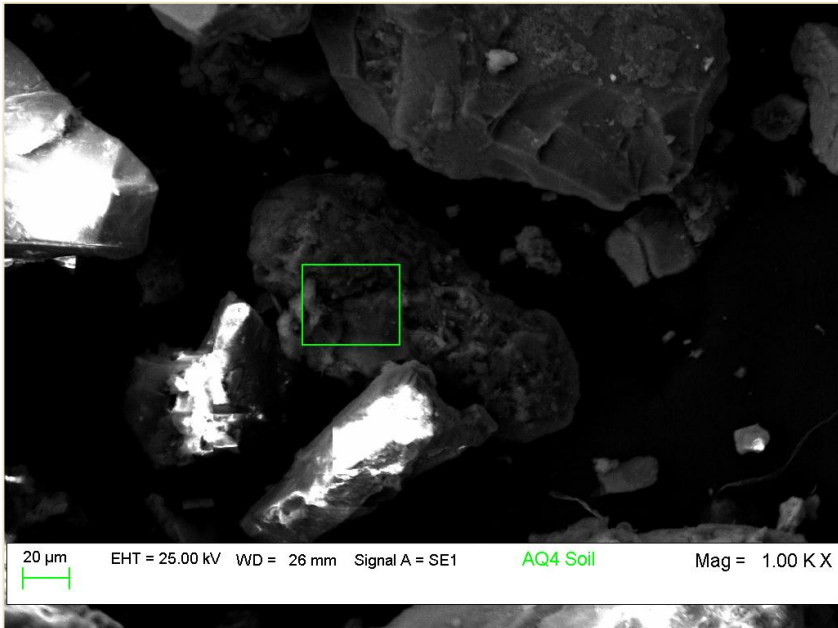
- 11 - 48
- 49 - 94
- 95 - 238
- 239 - 593
- 594 - 968



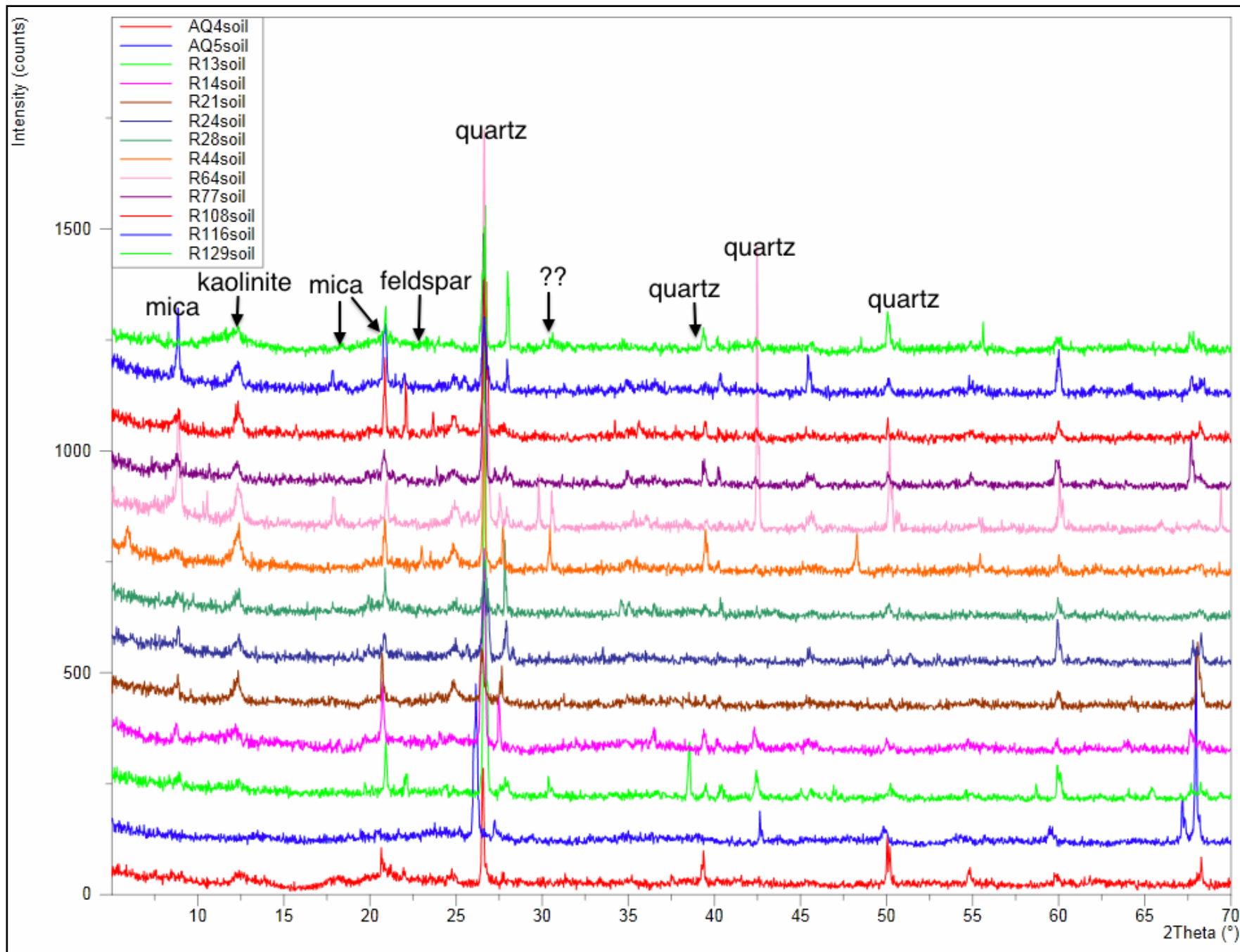
# Sieved Road Dust (<250um) Samples from NPU-V













# Conclusions

## **Air Quality**

- The spatial analysis showed higher NO<sub>2</sub> levels concentrated near the major highways as well as the railroads that border and cross-cut NPU-V.
- This preliminary assessment provides a foundation for understanding the physical realities of NPU-V in terms of air pollution, but more research needs to be done to correlate the air pollution to health data.

## **Soil**

- Soil and dust levels ranged from 10.67 to 968.33. Median values for all three sample types are above background levels; and a few of the samples are over 400 ppm and are therefore considered to be toxic.
- The lack of detection of Pb by SEM suggests that Pb is well distributed within small, dispersed particles rather than in distinct or detectable particles. Initial XRD results have shown a need for further analysis to specifically identify lead bearing minerals.



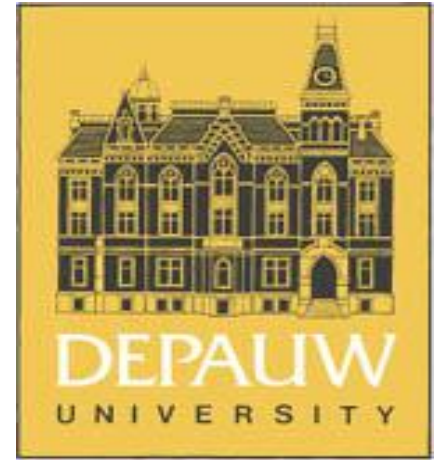
# Community Contribution







Award # 1156755





# Questions?



Check out the posters from the REU students!  
Today – Session 238 – Booth # 129 - 132