Across Grades, Across Forests, Across Town:

A University and K-5 Geospatial Outreach Project
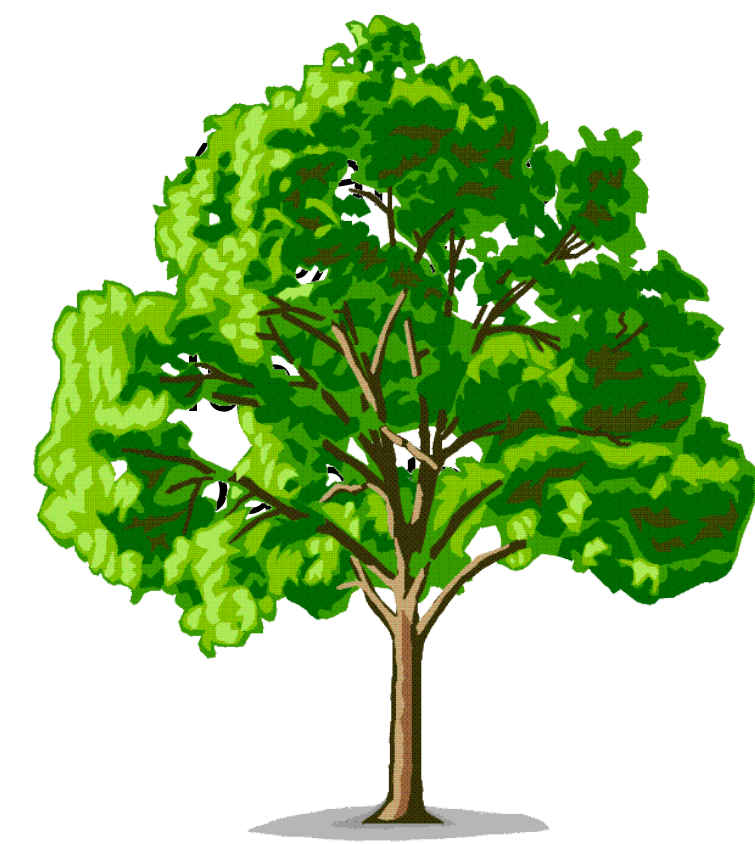
Reed Perkins

Department of Environmental Science, Queens University of Charlotte, Charlotte NC

perkinsr@queens.edu

Introduction

First Ward Elementary School NC) is an inner-city school with students on free-or-reduced subsidy. Most students' not attended college.

Through a grant from Wells Fargo Bank, First Ward built a "Sense and Science" garden featuring new trees, shrubs, and vegetable beds. First Ward teachers and I developed a geospatial science project to map the school's urban "forest", then estimate its economic and environmental value. This work was conducted with my students as part of my Introduction to Environmental Science (ENVR 101) course.

Both schools are part of the Little Sugar Creek Watershed.

Methods

- Preparation. As part of ENVR 101, I conducted an identical exercise with only my students to teach how to measure tree dbh, total height, crown height, crown width, and crown condition, and to use GPS units.

- Collaboration. Both schools had equal ownership of the project. Prior to data collection, I met with the First Ward's Arts Coordinator and teachers to strategize how to integrate the two groups of students.

- Data collection. Groups of six students (2 university and 4 elementary) measured for each of the 50 trees in the garden. This occurred as part of the regularly scheduled ENVR 101 course schedule. GPS units were used to collect lat/long data for each tree.

- Data Analysis. We used a free software model ("i-Tree") produced by the USFS and partners to analyze the data.
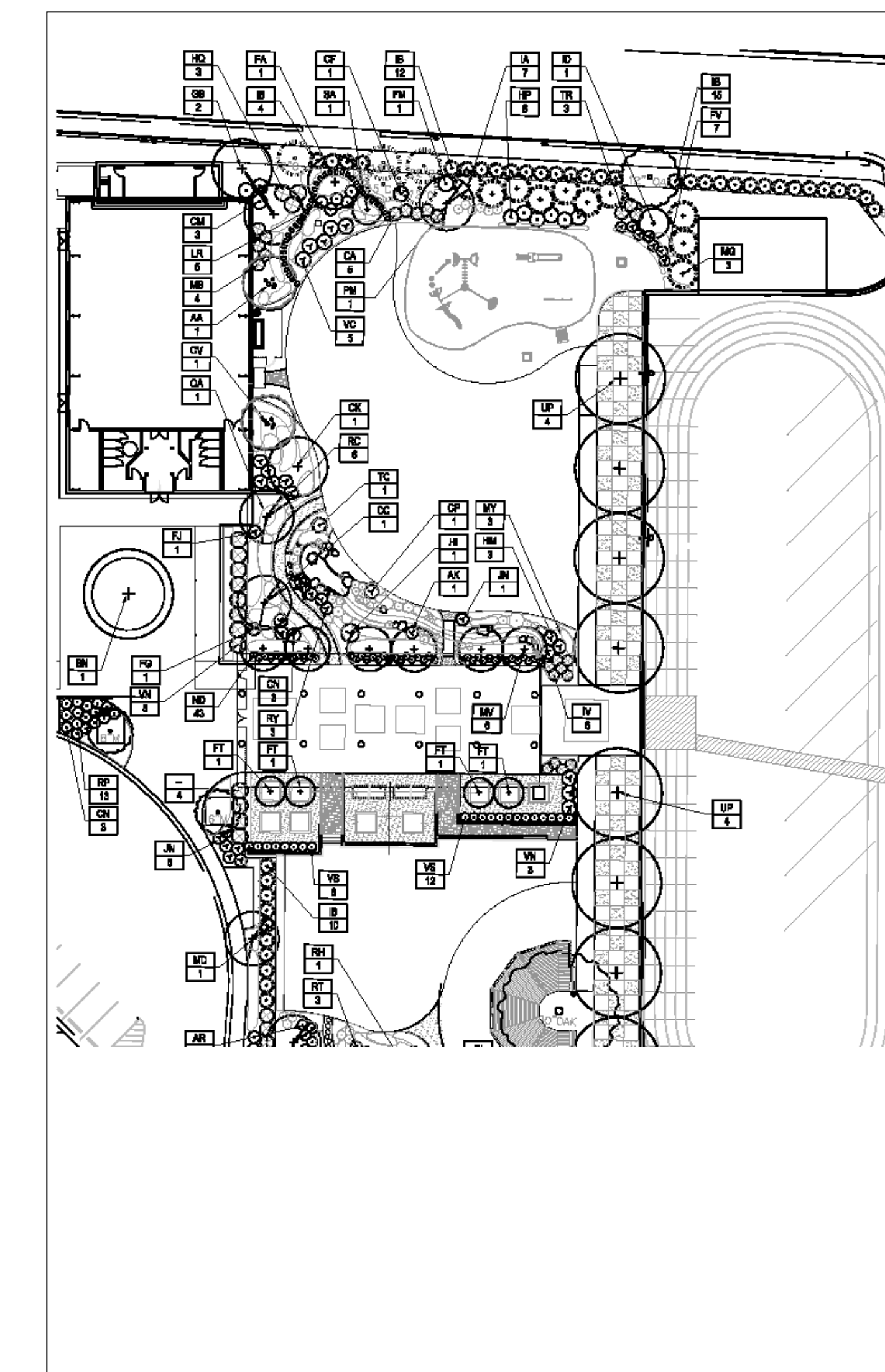
Planting guide and map of First Ward Elementary's "Sense and Science Garden"

First Ward Elementary student (left) and Queens University student (right) map campus trees and measure their dimensions.

Goals

First Ward teachers' goals were the following:
1) Integrate the Sense and Science garden into their math and science curriculum;
2) Raise student interest in science learning; and
3) Increase student awareness of local ecosystems.

My goals for this project were the following:
1) to infuse the standard ENVR 101 course content with geo-spatial purpose;
2) To integrate community service into course activities; and
3) to put my students in the role of teachers.

Results

Results from the i-Tree analysis are shown below.

Pollution Removed (g/yr)

Removal Value ($/yr)
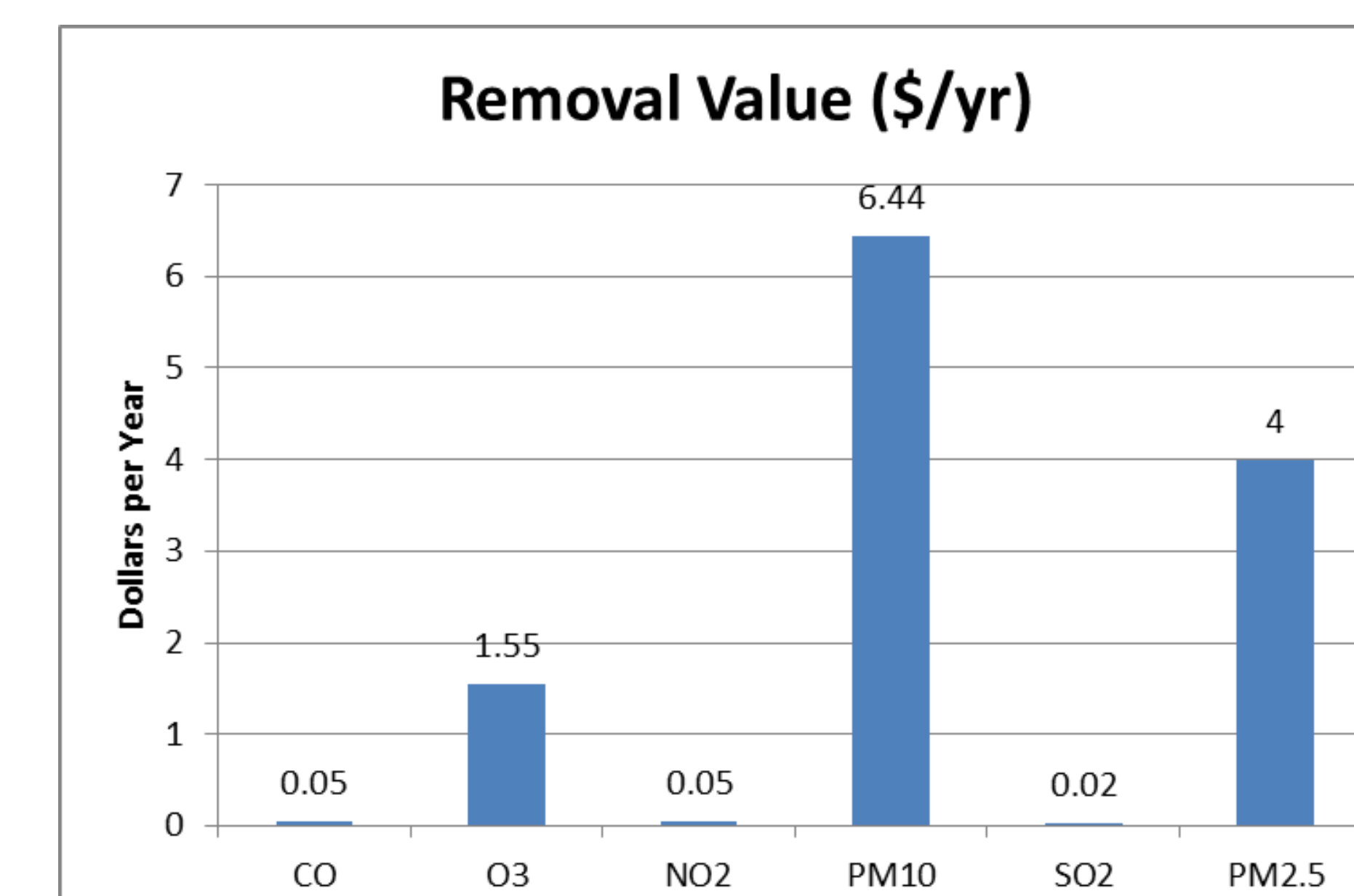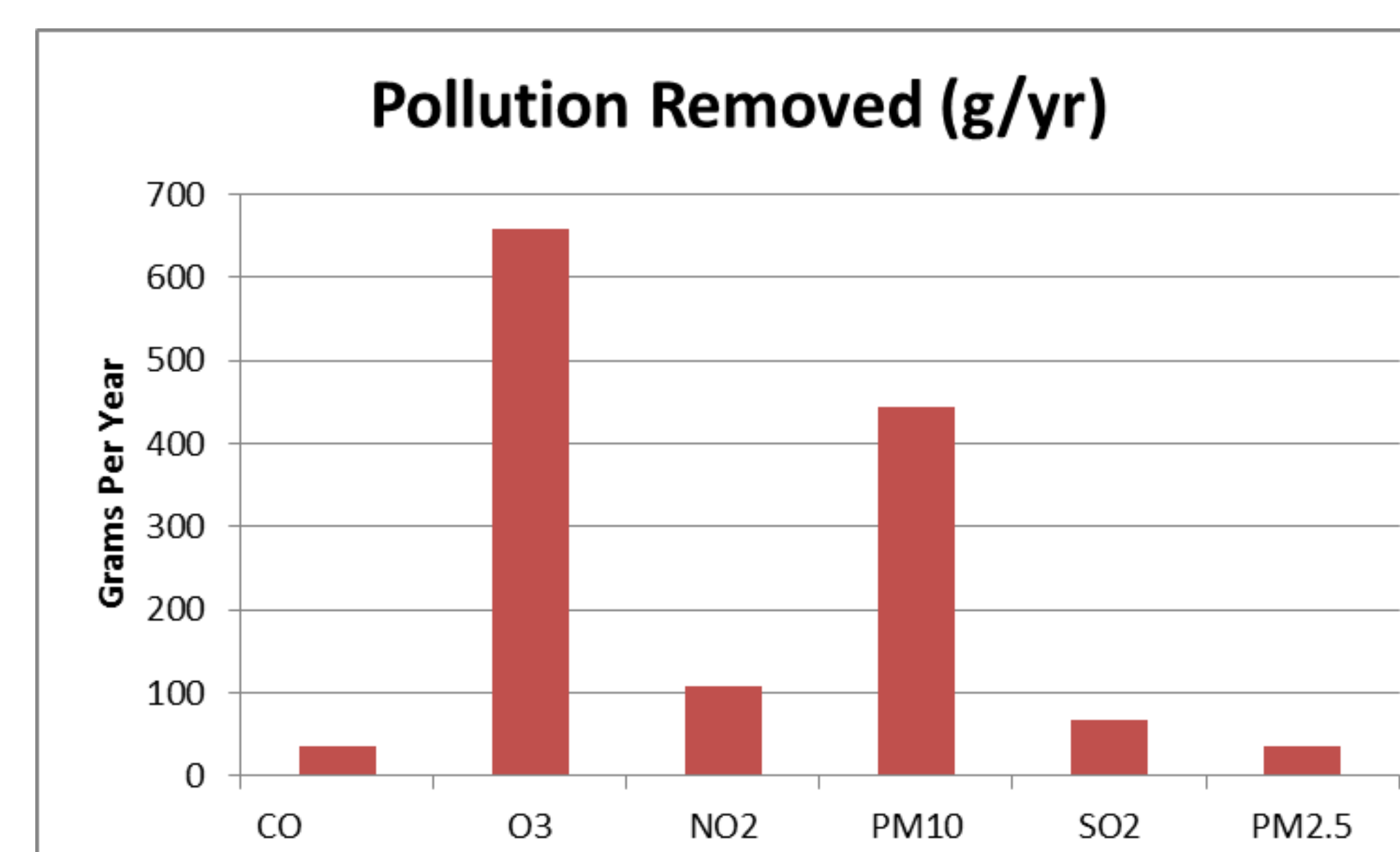
Conclusions

- This project was a success because of the process, not the product, of the work. Fifth graders became engaged in observation, field data collection, and geospatial inquiry.

- Pedagogically, this lab was very effective for my students. They became teachers as they paired with 5th-grade counterparts and demonstrated how to use GPS units and the importance of spatial information.

- This cooperative lab project will be continued in future years. Data will be added to the long-term record for temporal comparisons. Future work will also include analysis of Little Sugar Creek, the stream nearest First Ward Elementary.