



Enhanced Air Quality Monitoring in Pima County, AZ

Natalie Shepp, MPH

Climate & Community Engagement Manager

Pima County Department of Environmental Quality

AAPCA 2025 Spring Meeting

May 2, 2025

A stylized blue graphic of a building with a domed roof and arched windows, located on the left side of the slide.

Project Motivation

1. Air pollution exposures are associated with poor health outcomes
2. Low-income and minority populations are disproportionately impacted
3. Children are especially vulnerable
4. The current monitoring system is for regulatory purposes and cannot capture more localized variability
5. Engaging community is needed to better understand air pollution sources and impacts



EPA Environmental Justice Air Monitoring Grant (ARPA)

In July 2023, our team was funded to expand localized air quality monitoring at Pima County schools.

Goals:

1. Establish a network of low-cost sensors measuring air pollutants at Pima County schools (PM_1 , $PM_{2.5}$, PM_{10} , Ozone, NO , NO_2 , CO)
2. Construct website to visualize air pollution data
3. Develop community science curriculum to implement at schools

Our Team



Natalie Shepp, MPH



Ashley A. Lowe, PhD, MSPH



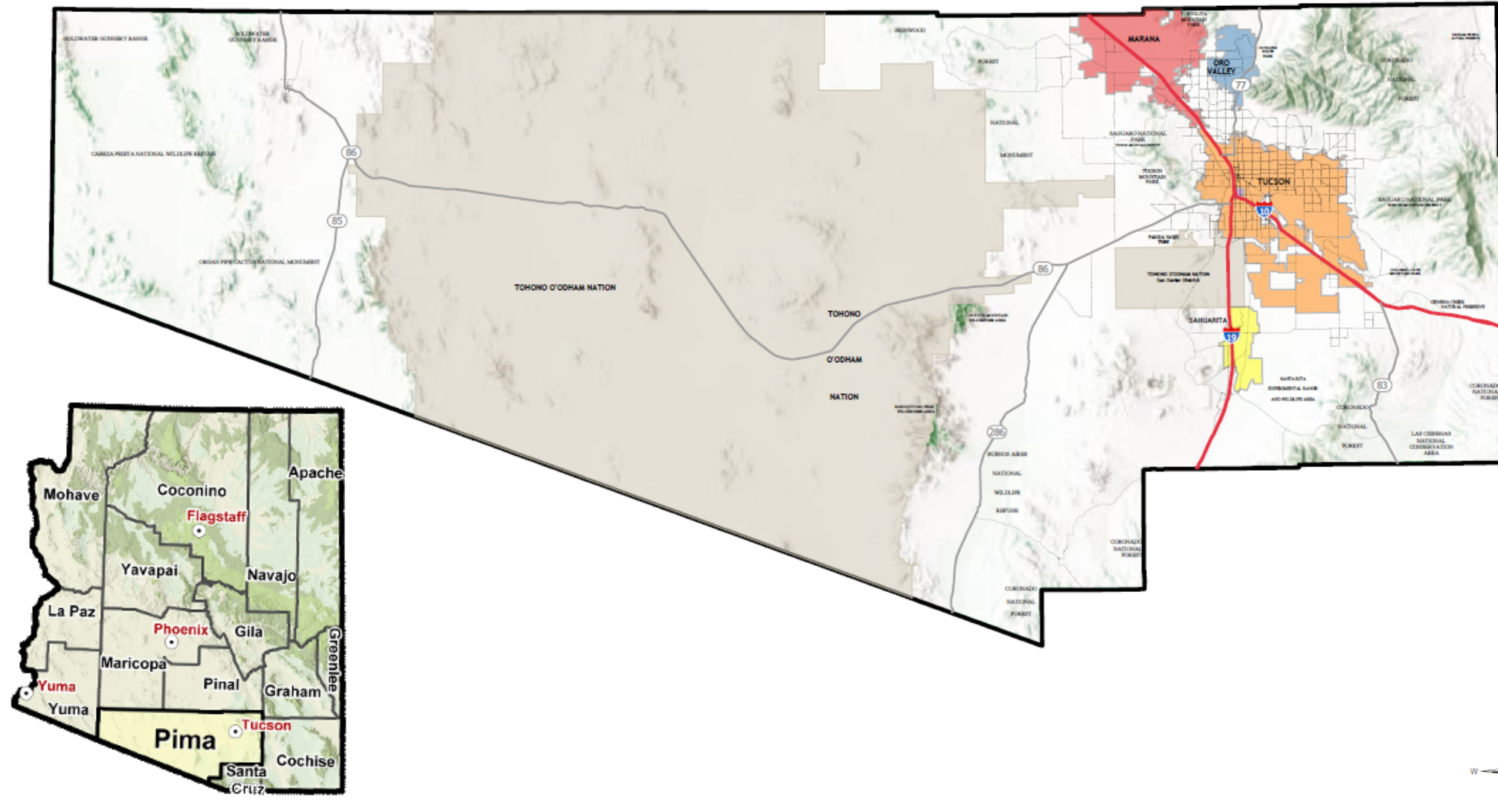
Chris Lim, PhD



Local Situation Tucson, AZ

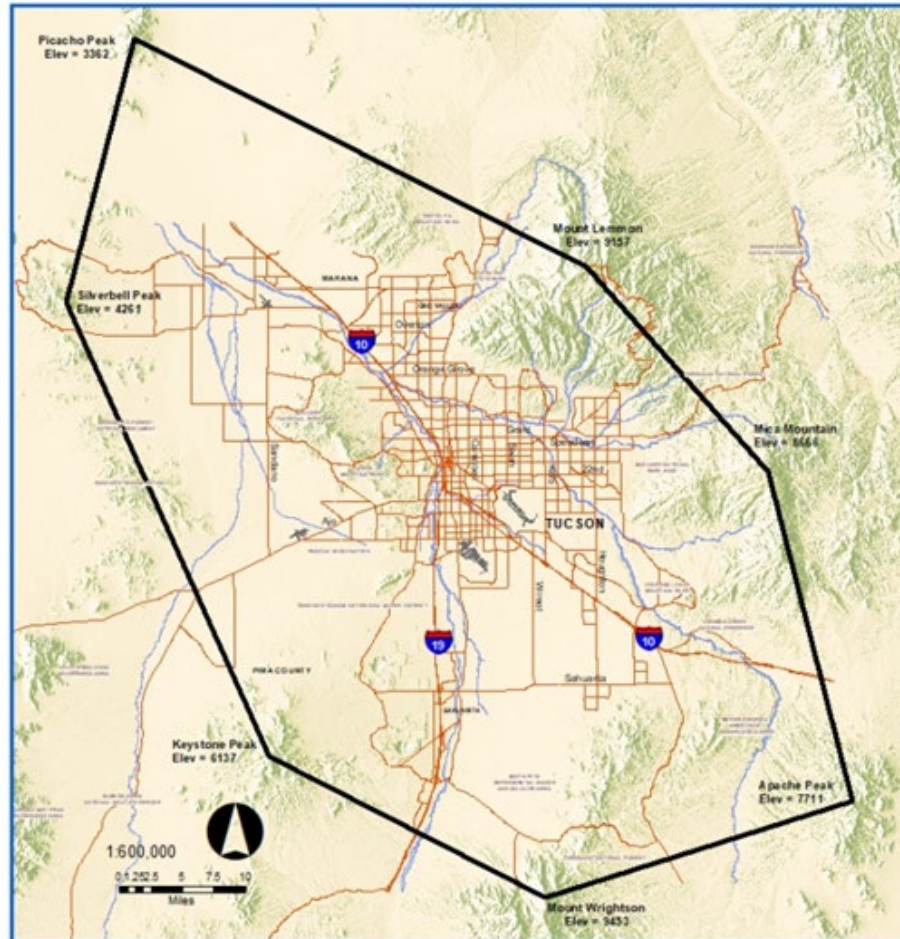


P I M A C O U N T Y

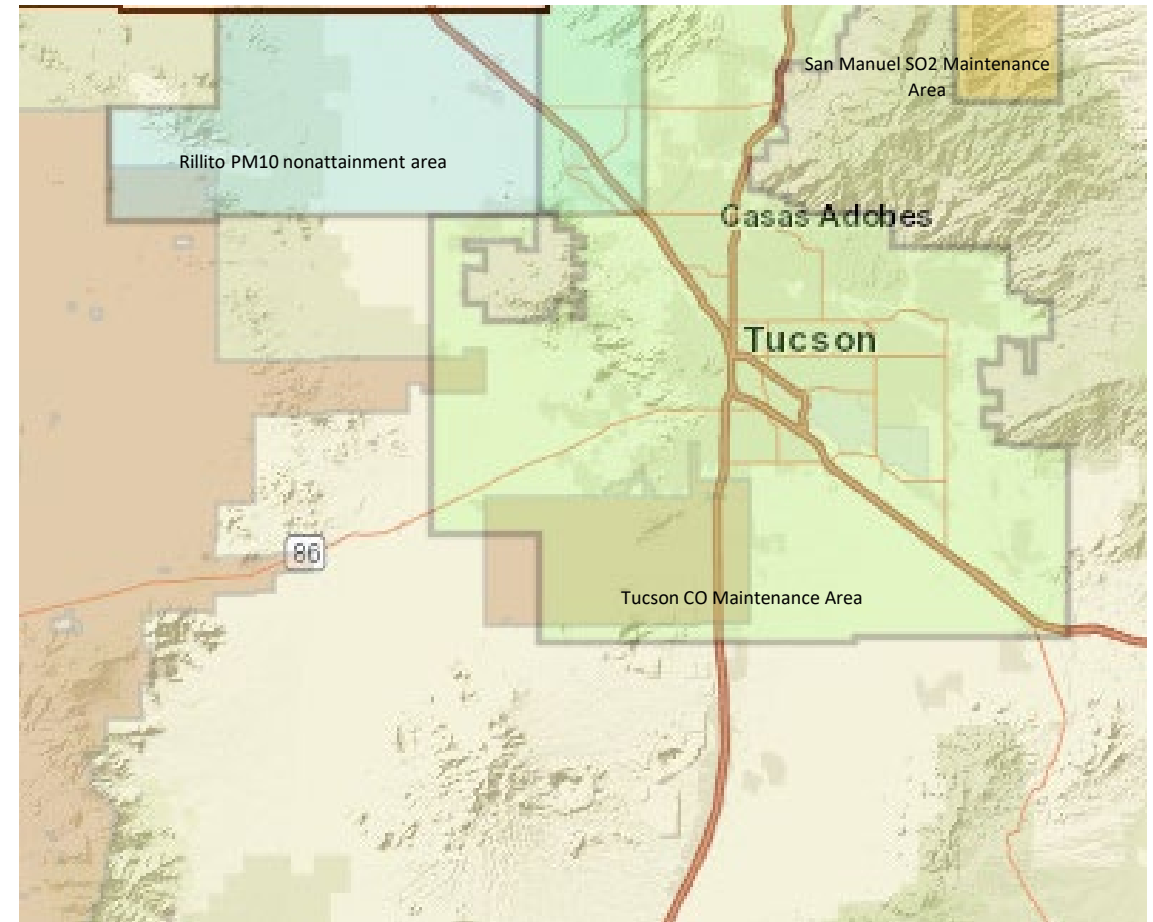


Air Quality in Pima County

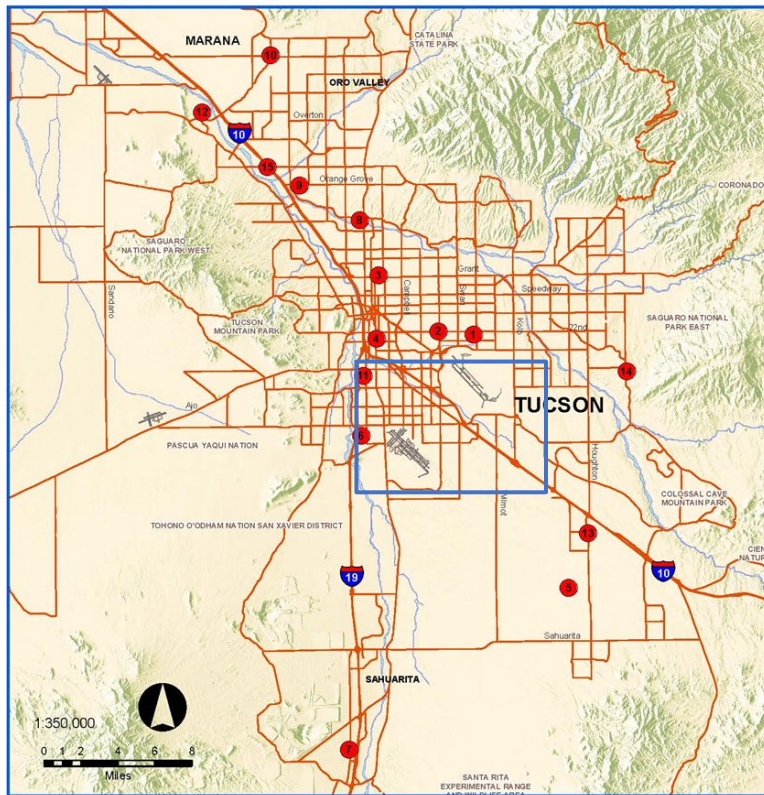
Tucson Air Planning Area (TAPA)



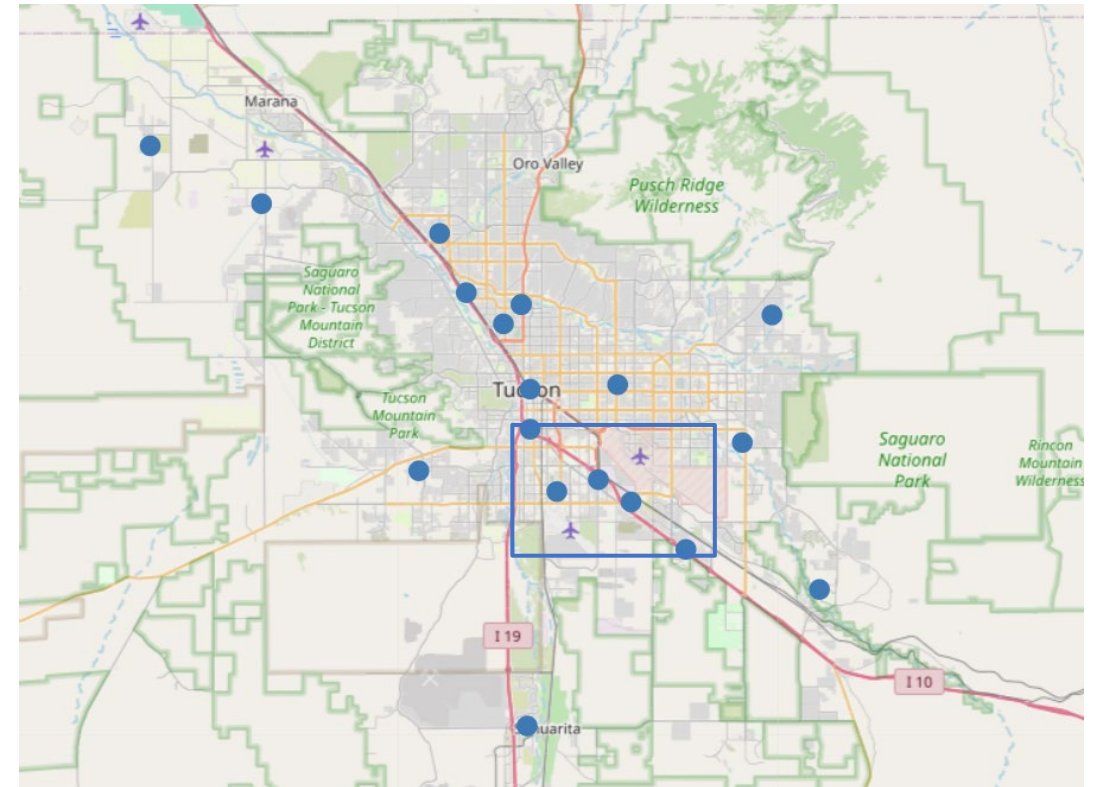
Nonattainment & Maintenance Areas



Existing Regulatory Air Monitoring Network



New Air Quality Sensors at Pima County Schools



Permitted Class I Air Pollution Sources

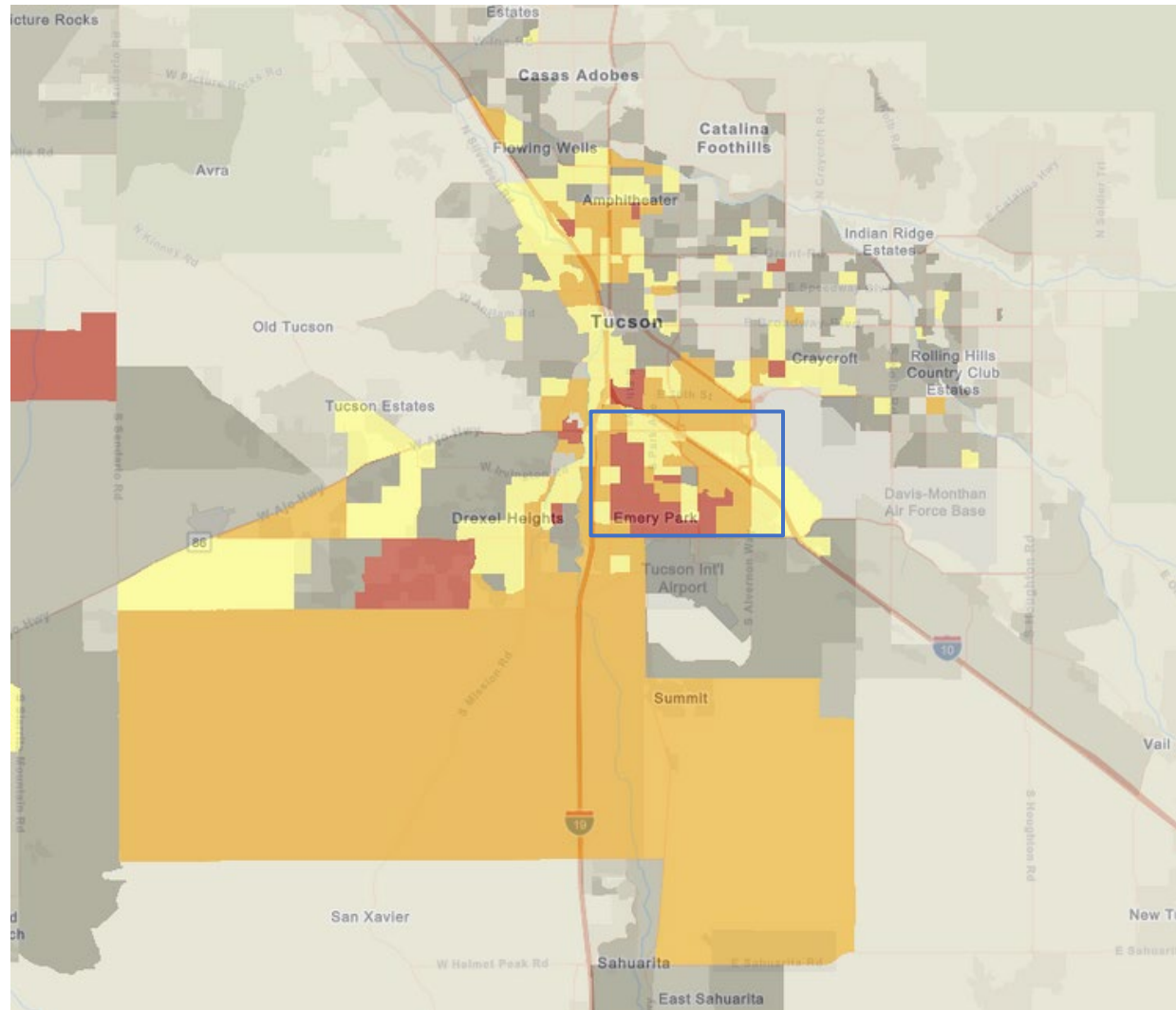


Disproportionate Burdens



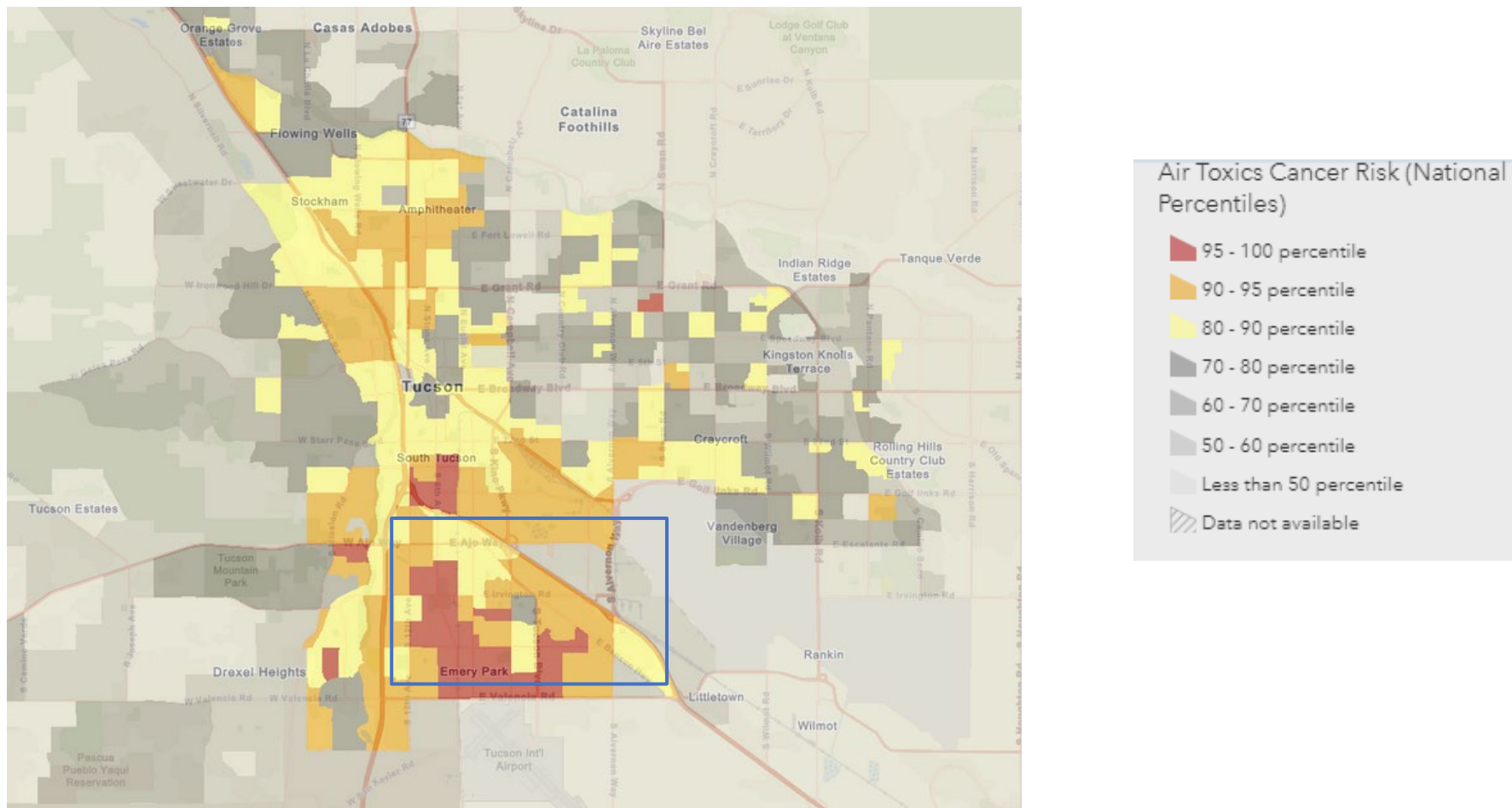
Socioeconomic Indicators

Demographic Index (based on low-income & people of color)



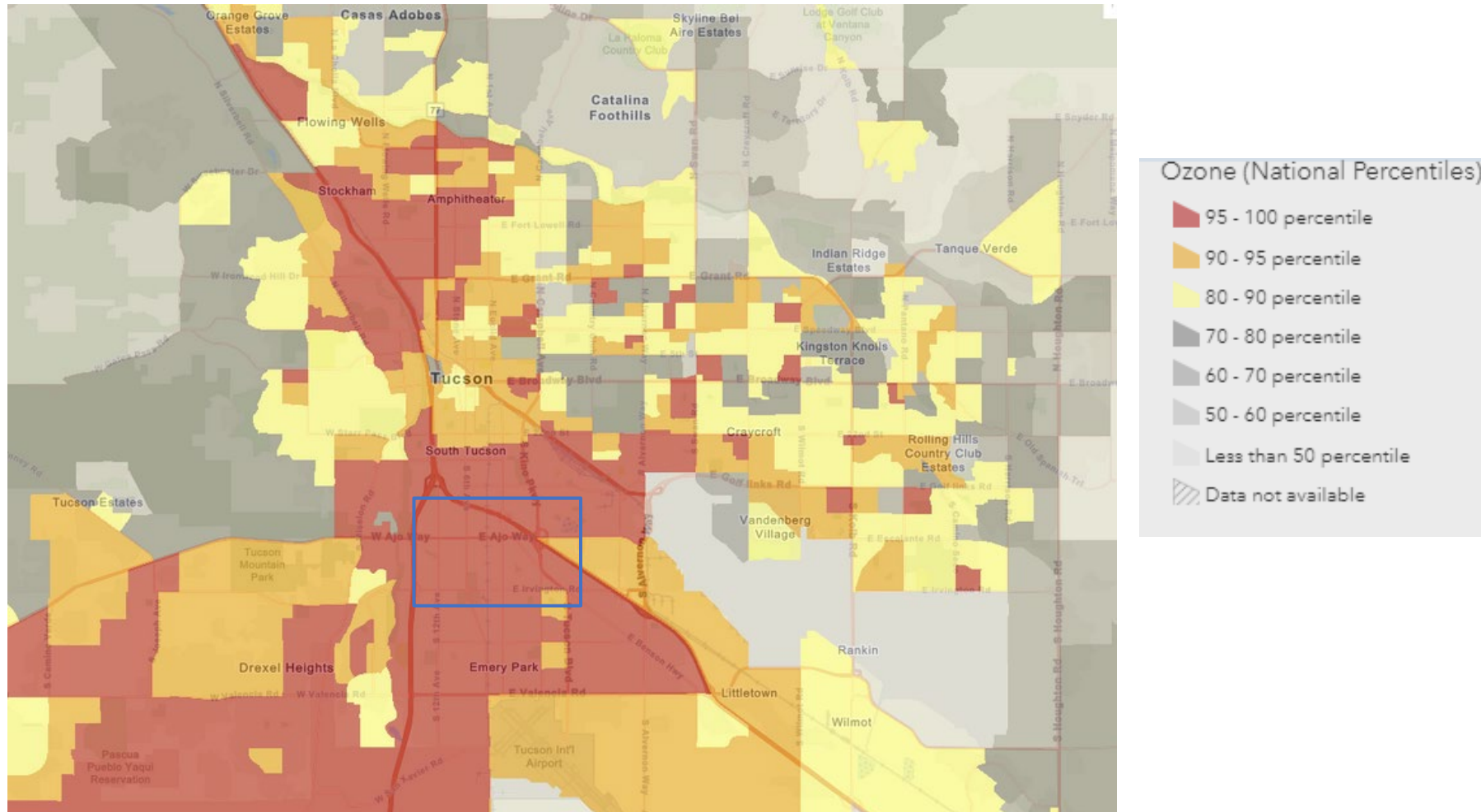
Environmental Indicators

Air Toxics Cancer Risk



Environmental Indicators

Ozone

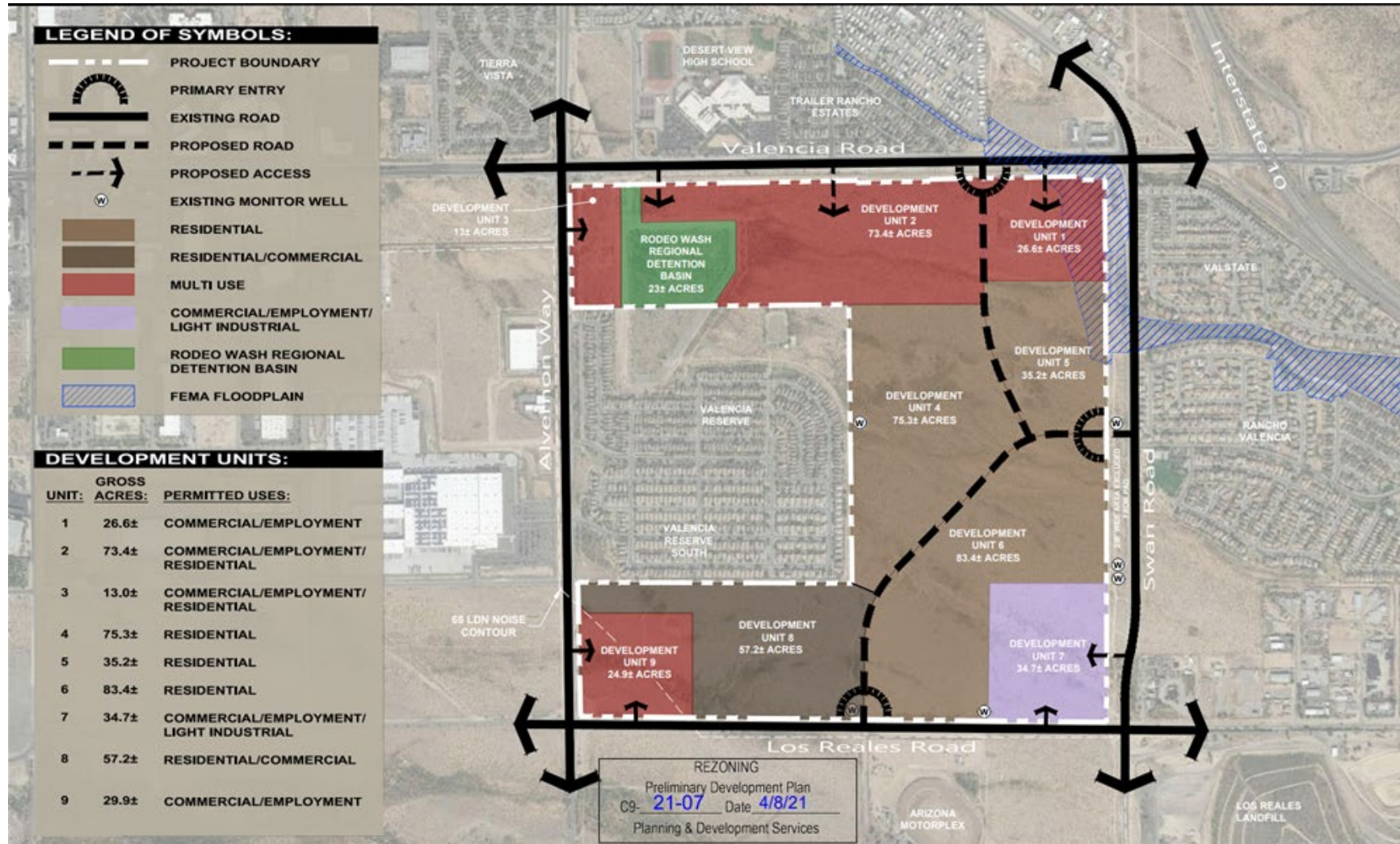


Historical EJ Issues in Tucson

- Trichloroethylene (TCE), an industrial solvent, was dumped in areas of south Tucson during the 1950s. Cancer among residents in this area has been linked to groundwater & soil contamination. In 1982, EPA designated the Tucson International Airport area as a Superfund site. The total settlements for claims since then have exceeded \$130 million.
- 1,4 Dioxane contamination has also been found in the same area
- Per- & polyfluoroalkyl (PFAS) substances have also been found in water wells in the same vicinity. Tucson Water has been testing for PFAS since 2009. Wells where PFAS has been detected have been turned off.
- TCE, 1,4 Dioxane, & PFAS contamination has been linked to sources on or around Davis Monthan Air Force Base.



...while further development plans continue



Pima County Schools



Pollution sources around schools



Goal 1: Air Quality Sensors

- 19 QuantAQ sensors, 1 control will stay at a regulatory site
- School Installations Completed

Tanque Verde Unified

Agua Caliente Elementary

Sunnyside Unified

Los Niños Elementary

Billy Lane Lauffer Middle

Desert View High

Sunnyside High

Tucson Unified

Vesey Elementary

Mission View Elementary

Secrist Middle

Rincon/University High

Flowing Wells Unified

Laguna Elementary

Flowing Wells High

Marana Unified

MUSD Early Learning

Roadrunner Elementary

Marana High

Sahuarita

Sahuarita High

Vail

Ocotillo Ridge Elementary

Vail Academy High

Other

Joel D. Valdez Main Library

- 1 sensor will also be installed at Ajo High School



Goal 2: Air Quality Data Website

Map Controls

Data Selection

Select Indicator:

O₃

Time Period:

Real-Time

Map Options

Map Background:

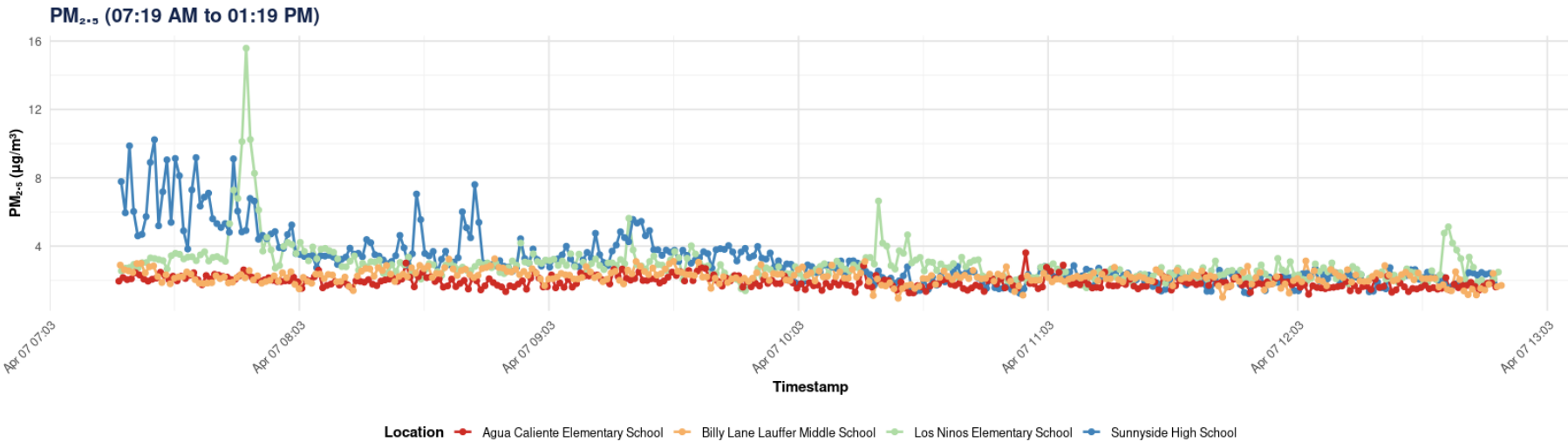
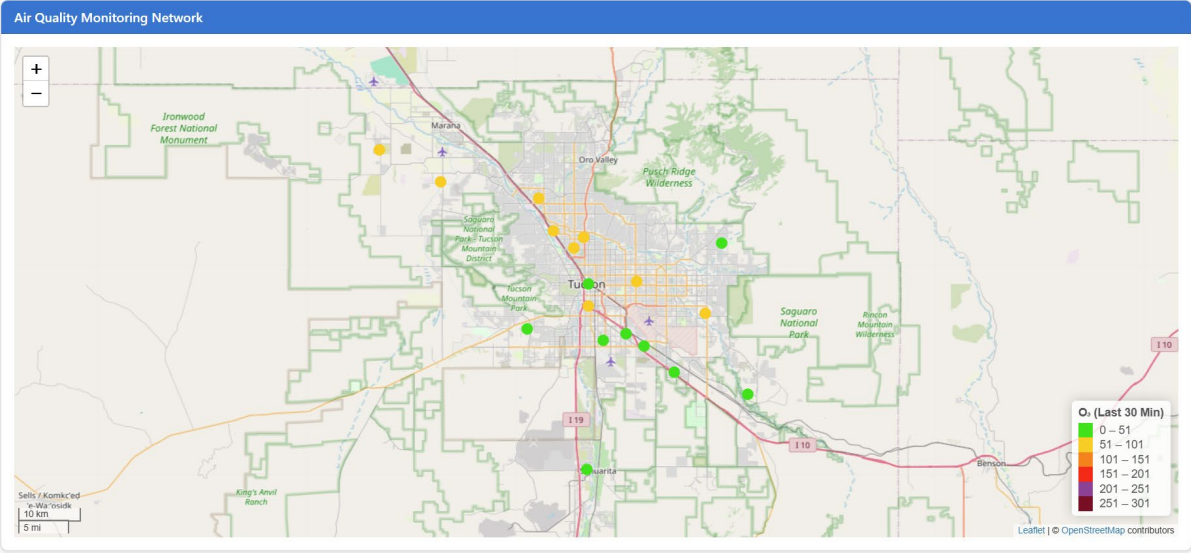
OpenStreetMap

Legend Style:

AQI

Color Palette:

☒ Standard ☐ Colorblind-friendly



Goal 3: School Curriculum

- Developed PDEQ/UA working group for development
- Proposed Modules
 1. Understanding air quality in Pima County
 2. Using scientific methods to measure air quality
 3. A student-led approach to understanding air quality at their school
 4. Data, data, data!
 5. Environmental Justice in Pima County
 6. Leveraging community capacity to ensure better air quality for all people in Pima County
- Expected completion is summer 2025 for use in 2025-26 school year

Questions?

Natalie Shepp, MPH

Natalie.Shepp@pima.gov

520-724-6885