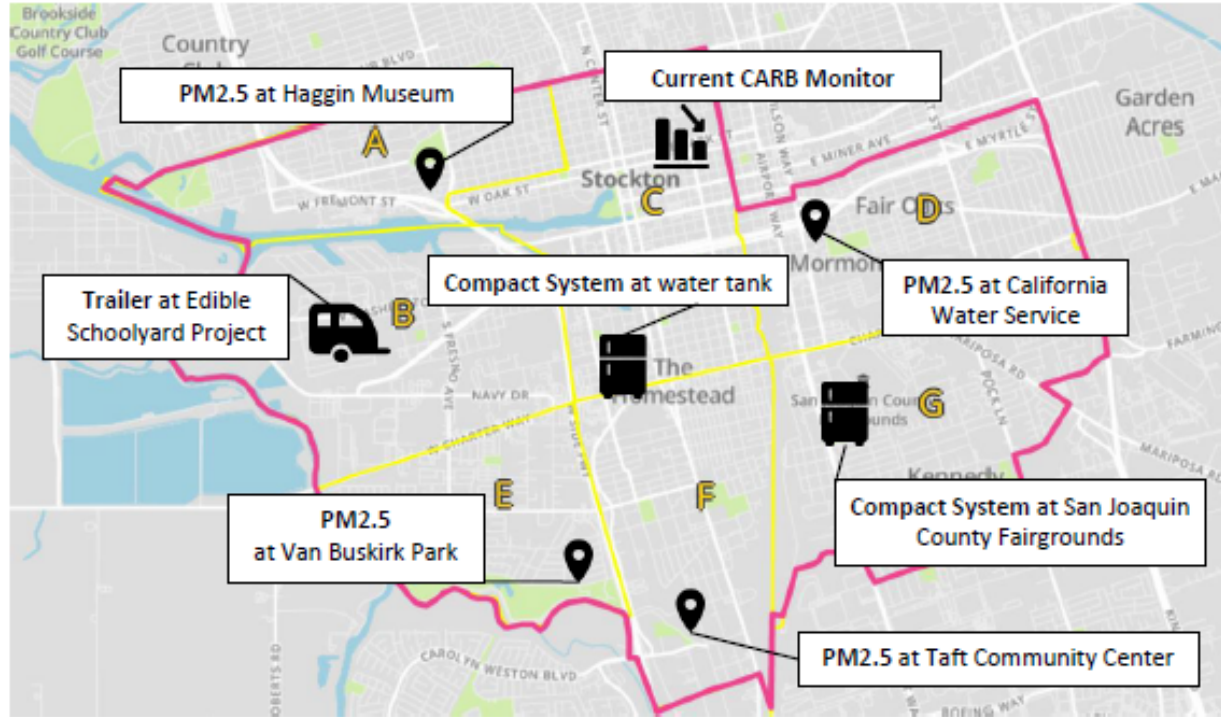


Update on Stockton Community Air Monitoring

Stockton CSC Meeting
May 1, 2024

CAMP Implementation Status



Mobile Monitoring Van: respond to community concern	Compact System: PM2.5, Black Carbon, SO2, NO2/NO, & VOC
Trailer: PM2.5, Black Carbon, Ozone, CO, NO2/NO, H2S/SO2, VOC, & Toxics	CARB Monitor: PM2.5, PM10, Ozone, NO2/NO, CO, & Toxics
PM2.5 Monitor	

Zone	Location	Installed	Notes
A	Haggin Museum	X	PM2.5 installed on April 4, 2022; VOC sampling from Sept. 2022 to June 2023
B	Edible Schoolyard Project (Boggs Tract Community Farm)	X	Installed on June 26, 2023; VOC sampling commenced July 2023
C	University Park (CARB)	X	CARB installed on October 1, 2021
C	Water Tank (El Dorado St. & E. Clay St.)	X	Installed on March 2, 2022
D	California Water Service Building (E. Lafayette St.)	X	Installed on February 16, 2022
E	Van Buskirk Park		<u>Van Buskirk:</u> Information provided to City of Stockton Public Works who needs time to discuss internally. Awaiting response. Permission denied at Conway Homes (Housing Authority of the County of San Joaquin) and Kipp School.
F	Taft Community Center		Working with Taft Community Center to install electrical infrastructure
F	Little Manila Center	X	PM2.5 monitor temporarily deployed at Little Manila Center
G	San Joaquin County Fairgrounds	X	Installed on May 3, 2022

Community Air Monitoring Platforms



Community Air Monitoring Platforms (cont'd)

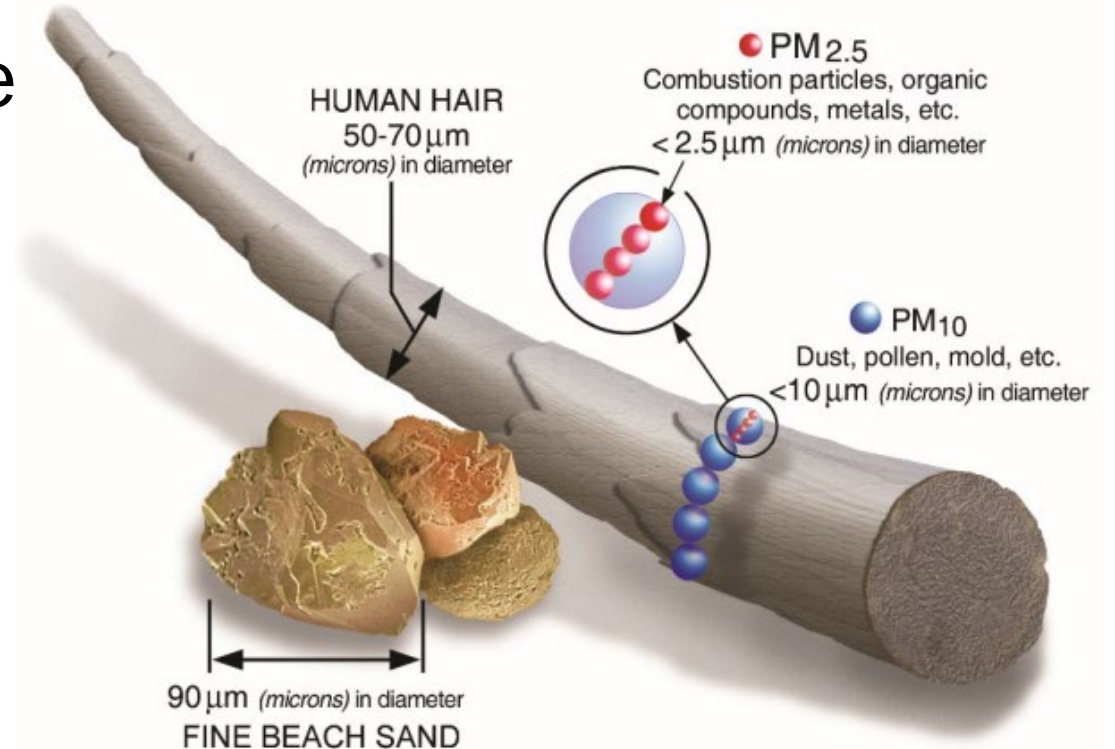


Community Air Monitoring Platforms (cont'd)



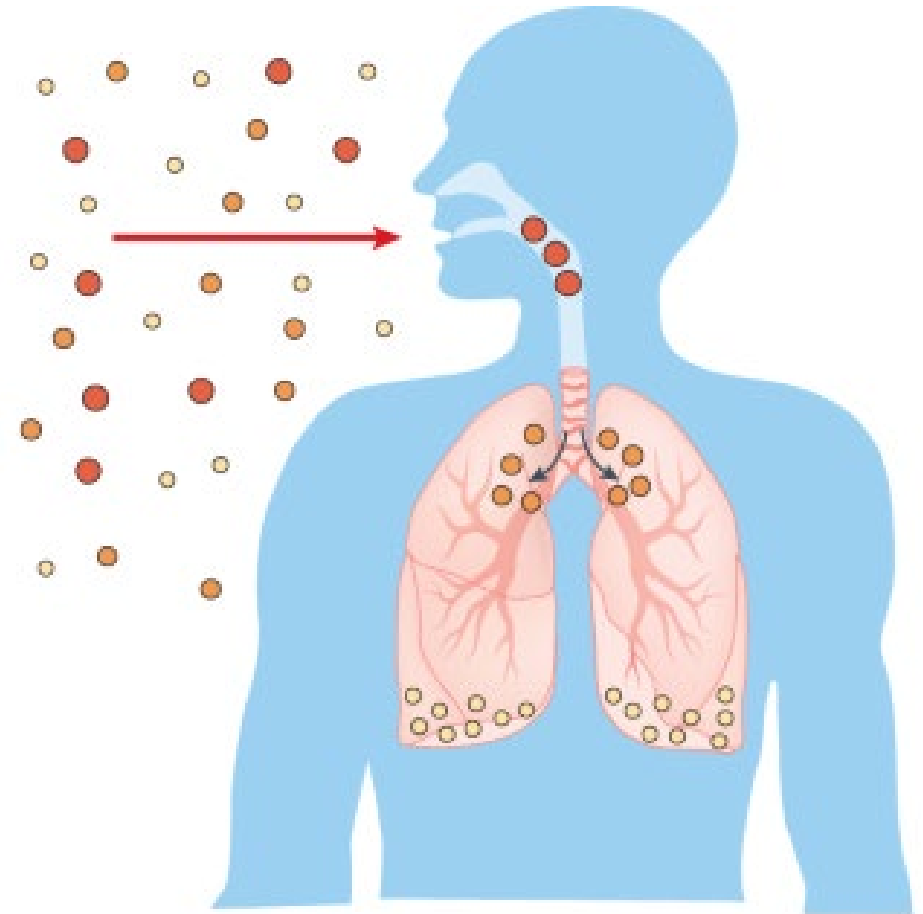
Winter Air Pollution: PM 2.5

- PM2.5 is primary pollutant during winter
- Can be emitted directly, like smoke from fireplaces
- Can be formed in the atmosphere when certain compounds are present, like NO_x from trucks
- PM levels worse when inversion layer, or lid, sits over Valley

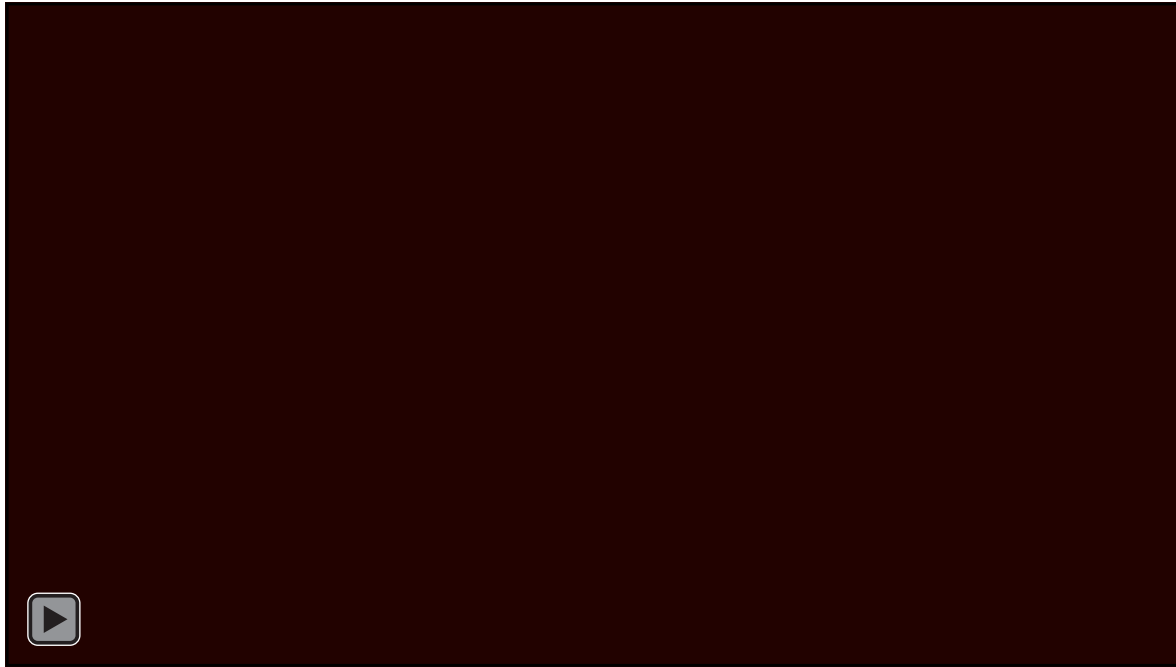


Health Effects of PM2.5

- Premature death in people with heart or lung disease
- Aggravated asthma
- Increased respiratory symptoms – irritation of the airways, coughing, difficulty breathing
- Decreased lung function in children
- Irregular heartbeat and nonfatal heart attacks
- Increased respiratory and cardiovascular hospitalizations
- Chronic bronchitis
- Lung cancer



What is an Inversion Layer?



<https://youtu.be/8lyHVO19vPY?si=3yjWxNHua-QyVtRu>

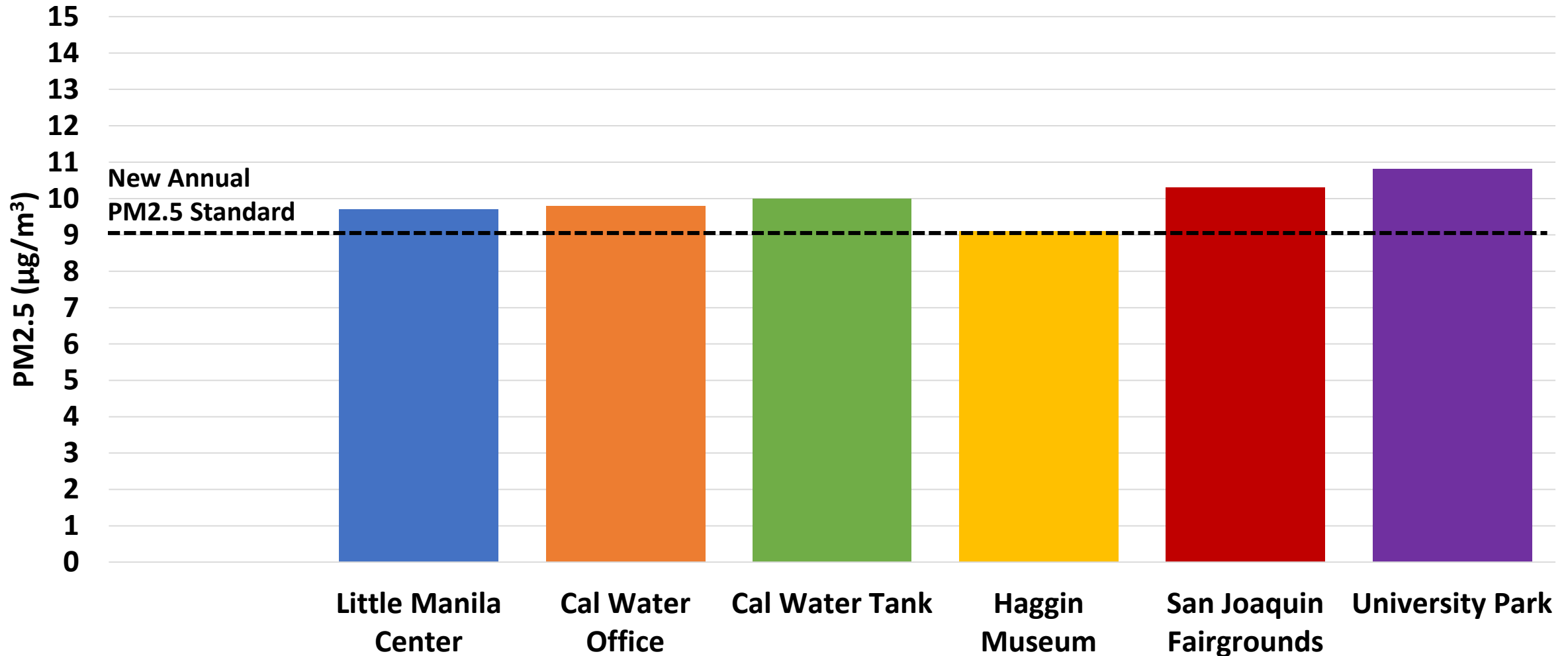
Key Takeaways from October 2023– March 2024

Across all community sites, most days PM_{2.5} concentrations measured in the Good or Moderate Air Quality Index (AQI) categories – only few days in the Unhealthy for Sensitive Groups AQI category

Stagnant weather contributed to occasional elevated PM_{2.5} concentrations

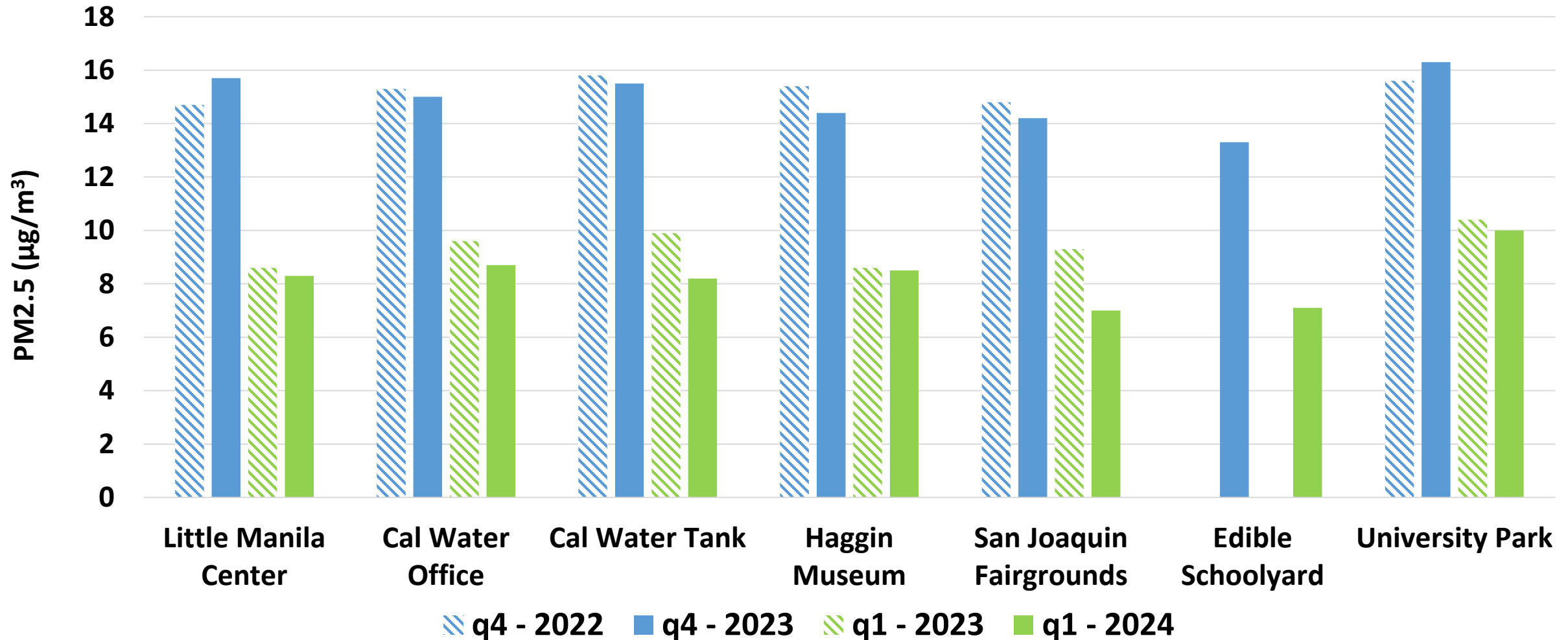
Volatile Organic Compound (VOC) concentrations remained below health thresholds

2023 Annual PM2.5 Average



2023 average PM2.5 slightly above the new, more protective 9 µg/m³ annual standard

PM2.5 Quarterly Average Comparison

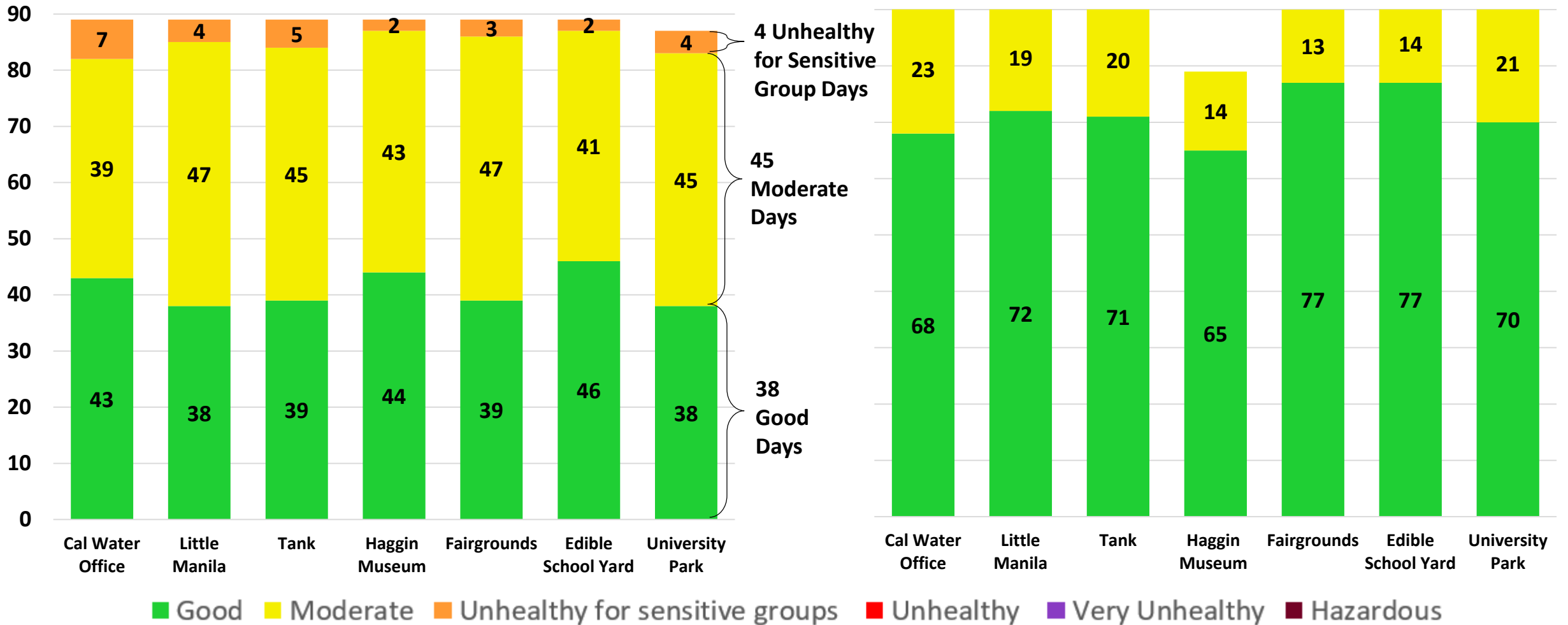


Cleaner Quarter 4 and Quarter 1 this current period for most sites

Air Quality Index (AQI)

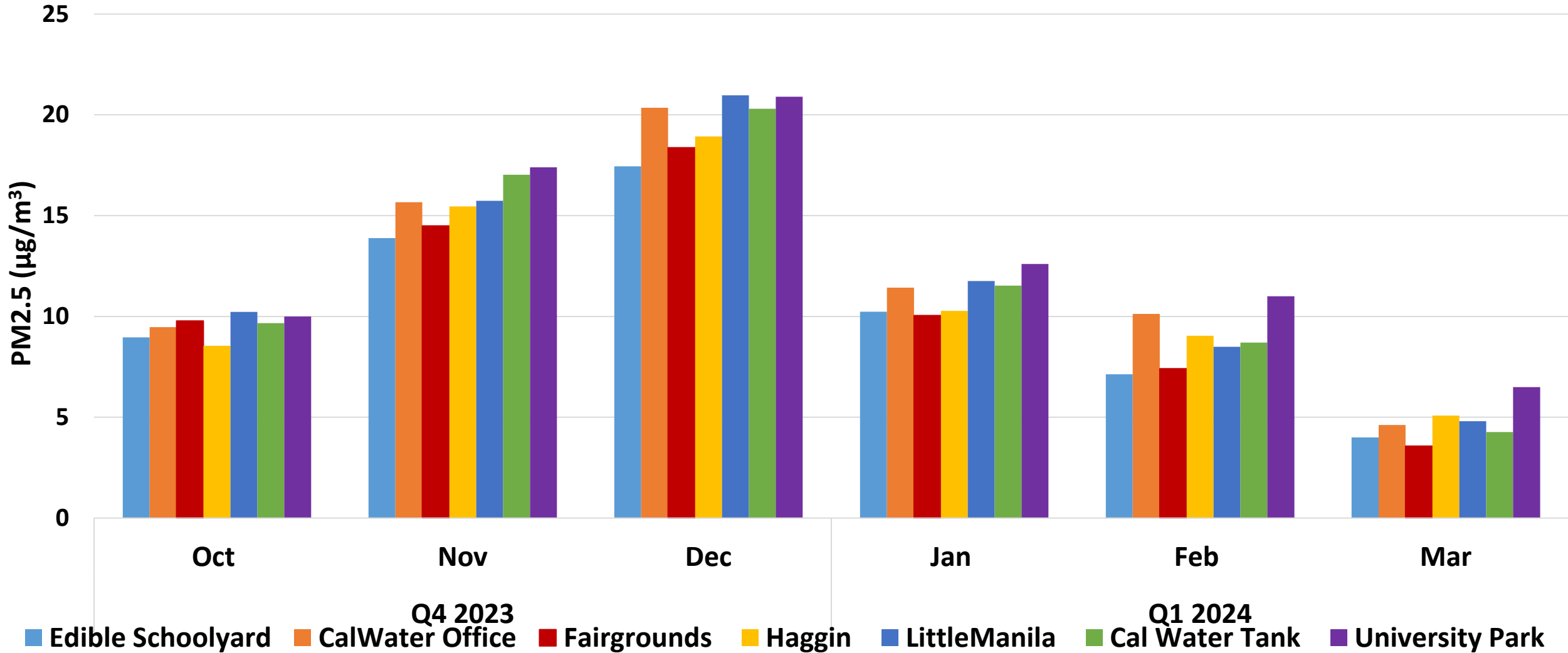
2023 – Quarter 4

2024 – Quarter 1



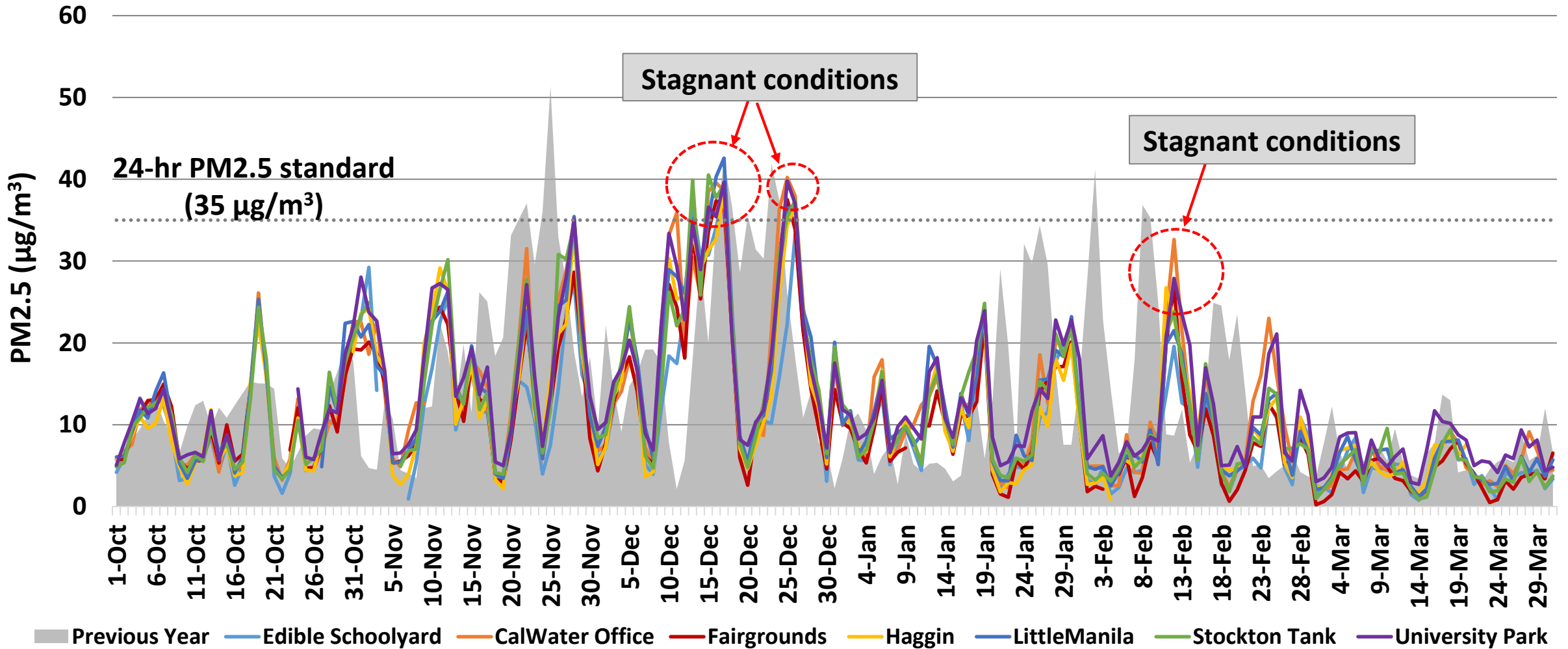
Majority “good” and “moderate” days with cleaner quarter 1

PM2.5 Monthly Average Comparison



PM2.5 increases from October to December then drops down in Q1

PM2.5 Daily Average Comparison



Compared to prior year, overall less PM2.5 emissions with varying spikes and dips.

Efforts to Understand Causes of High PM2.5

Surveillance and Enforcement

- Inspectors and air monitoring operators are looking for activity around the area (construction, wood burning, etc.)

Air Pollution Monitoring Network

- PM2.5 collected at the Edible Schoolyard monitoring site for lab analysis.

Types of PM2.5 at Edible Schoolyard

July– December 2023

Ammonium Nitrate:

- Formed in atmosphere (not emitted) from emissions of nitrogen oxides (NO_x), which is mostly from mobile sources.

Ammonium Sulfate:

- Formed in atmosphere (not emitted) from emissions of sulfur oxide (SO_x) from mobile sources and industrial processes.

Organic carbon:

- **Directly Emitted:** combustion including cooking, industrial processes, mobile source exhaust, tire wear, and wood burning
- **Formed in Atmosphere:** from wood burning, solvent use, and industrial processes.
- **Wood burning indicators:** Levoglucosan, mannosan, galactosan, potassium ions

Elemental Carbon:

- Directly emitted, also known as soot or black carbon, and is formed during incomplete combustion in fuels, including mobile exhaust (mainly diesel) and wood burning

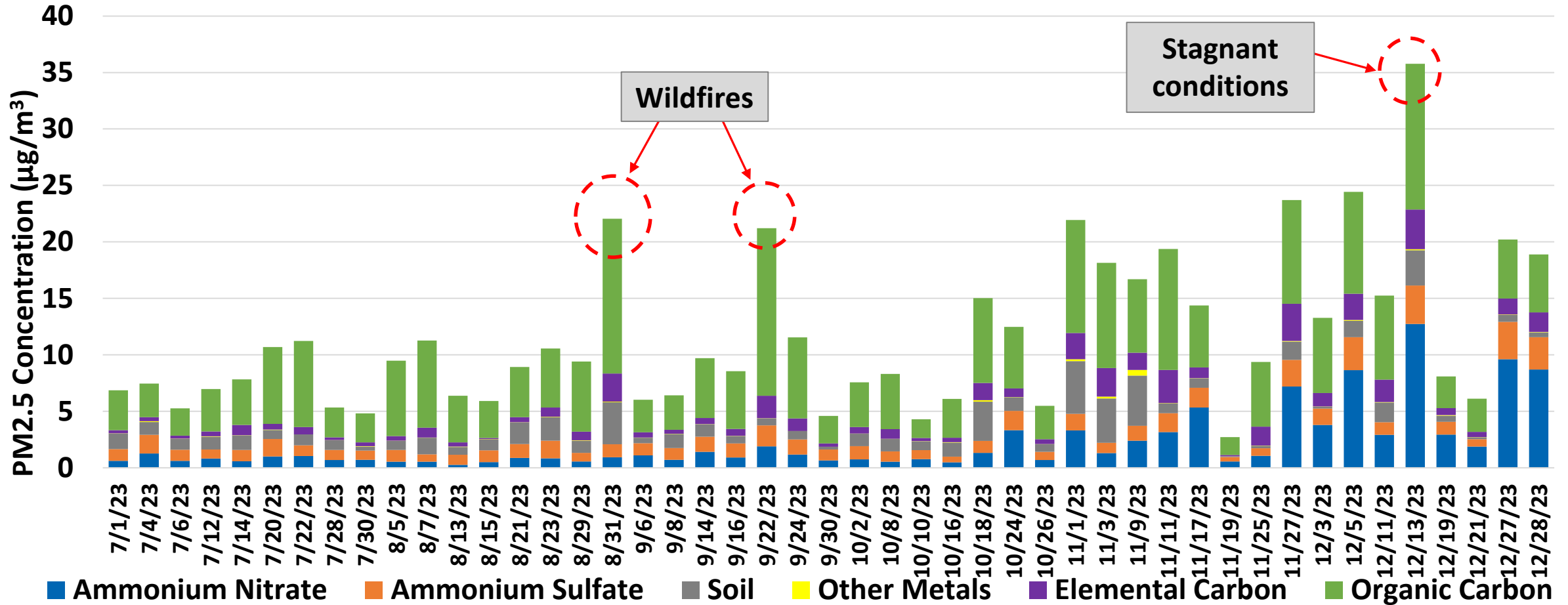
Soil:

- Road dust and soil dust in the air from activity, such as soil disturbance or airflow from traffic.

Other Metals:

- Components from soil emissions or found in other particulates having been emitted in connection with combustion from engine wear, brake wear, and similar processes. Also fireworks.

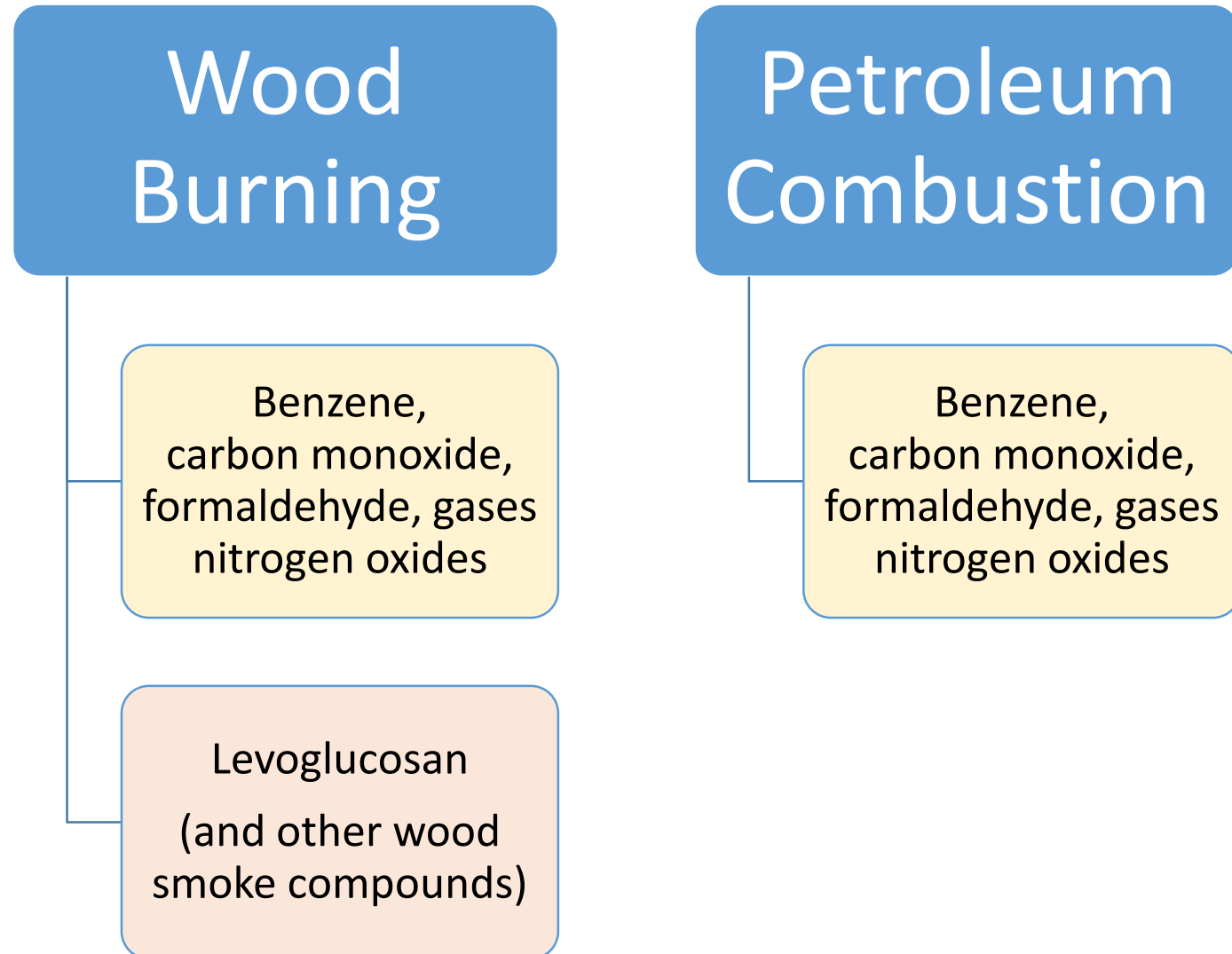
Types of PM2.5 at Edible Schoolyard



PM2.5 levels rise in the winter with more ammonium nitrate and organic carbon

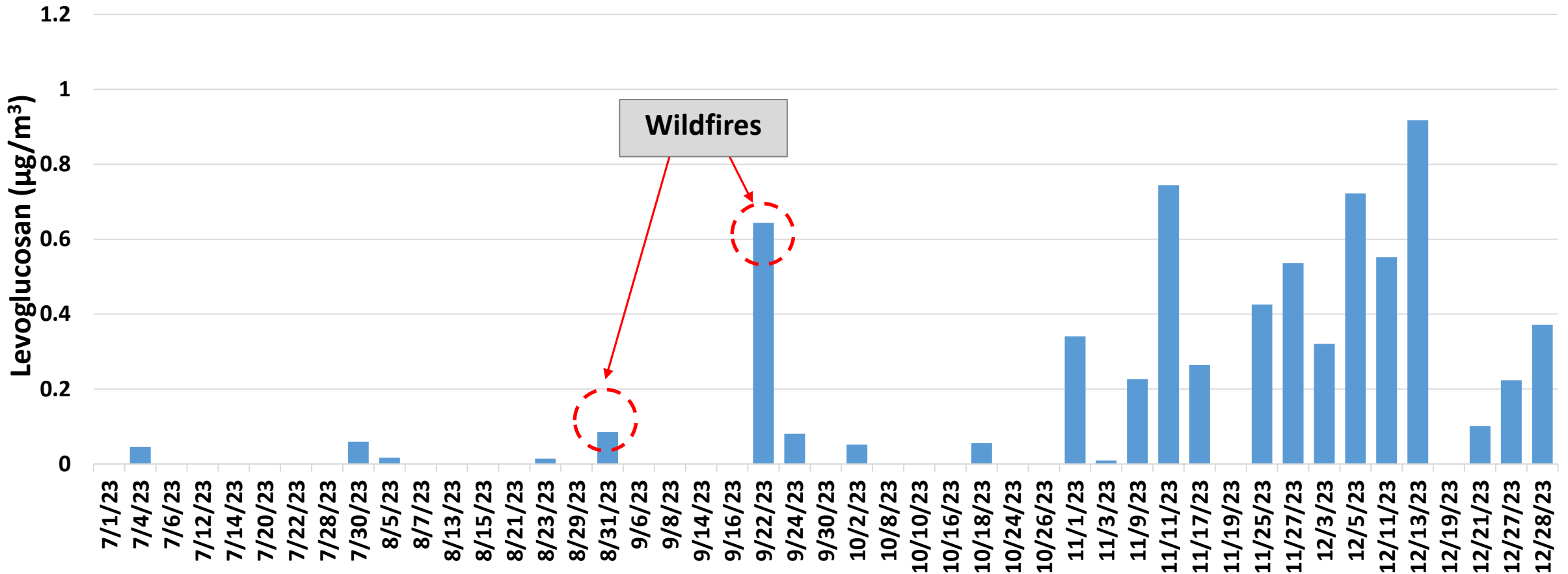
How can we tell if the PM2.5 is from wood burning?

- Here are some compounds that are present in wood smoke and other types of combustion
- Levoglucosan is found in PM2.5 from wood smoke and not from petroleum combustion (gasoline & diesel)



How can we tell if the PM2.5 is from wood burning?

“levoglucosan” indicates that PM2.5 collected came from wood burning



Increase in wood burning starting in November, including residential & illegal open burning

Volatile Organic Compound (VOC) Speciation Summary – Edible Schoolyard

- 23 samples taken from October 2, 2023 to December 28, 2023
- **Acetaldehyde & methanol** have associated Reference Exposure Level (REL), a health metric established by Office of Environmental Health Hazard Assessment
- Measured values well below REL thresholds.

Pollutant	Potential Sources of Emission	Short Term Impact		Long Term Impact	
		OEHHA Acute REL [1-hour] (ppb)	Max Measured [24-hour] (ppb)	OEHHA Chronic REL [Annual] (ppb)	Average Measured [Annual] (ppb)
Methanol	Automobile exhaust, solvent use, and naturally from vegetation and microbes	21,367	30.0 ✓	3,052	9.7 ✓
Acetaldehyde	Wood combustion in fireplaces and woodstoves, coffee roasting, burning of tobacco, vehicle exhaust fumes, and coal refining and waste processing	261	16.0 ✓	78	3.2 ✓

How can the District make sure the community knows that we expect worse air quality?

NEWSRelease
www.valleyair.org

HEALTHY AIR LIVING™
24hr Media Cell Phone (559) 309-3336

For immediate release 10/31/23

Attn: Local news, health and assignment editors

Media Contact
Heather Heinks (559) 994-7591

Spanish-language contact
Maricela Velasquez (559) 708-7087



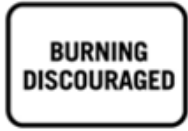
Residential Wood Smoke Reduction program begins November 1

San Joaquin Valley residents asked to prioritize public health by avoiding burning this winter


The District urges all Valley residents to help reduce harmful PM2.5 (particulate matter 2.5 microns and smaller) emissions and heat their homes by means other than burning wood whenever possible. Residential wood burning is one of the Valley's largest sources of wintertime PM2.5 emissions and is shown to have a direct effect on neighborhood air quality.

"We're asking San Joaquin Valley residents to continue the cooperation that has had a direct, positive impact on public health," said District Chief Communications Officer, Jaime Holt. "Choosing not to use your wood burning fireplace this winter is critical in our pollution reduction efforts and key to public health," she added.

The Residential Wood Smoke Reduction program runs from November 1 through the end of February every year, protecting public health through the reduction of harmful particulate matter. During that time, the District releases a daily, wood-burning status for each county, based on the air quality forecast. There are three burn status levels:

- Schools participate in the Healthy Air Living school program
- News releases are issued before known and expected high pollution days
- District posts updates to social media sites like Facebook, Twitter, and Nextdoor

 **Valley Air District @ValleyAir · Oct 31, 2023 ·**

The Residential Wood Smoke Reduction Program is a program that informs residents when they can use a wood-burning device and provides grants for residents to change out their wood burning fireplace or stove with an electric or gas device.

How can the District make sure the community knows that we expect worse air quality?

 **San Joaquin Valley Air Pollution Control District** ✓
Communications Representative Danny Gonzalez • 8 Dec

Live in the San Joaquin Valley? Please ensure you understand and follow your county's daily residential wood-burning declaration. #burnstatus


**CHECK DAILY
WOOD BURNING
DECLARATIONS**


**ON THE
VALLEY AIR APP**
VALLEYAIR.ORG/APP




Posted to Subscribers of San Joaquin Valley Air Pollution Control District

 **San Joaquin Valley Air Pollution Control District** ✓
Air Quality Education Rep Michelle Rivera • 17 hr ago

A low pressure system will generate gusty winds Wednesday afternoon through Friday with the strongest winds expected in the northern and western portions of the San Joaquin Valley. See more...

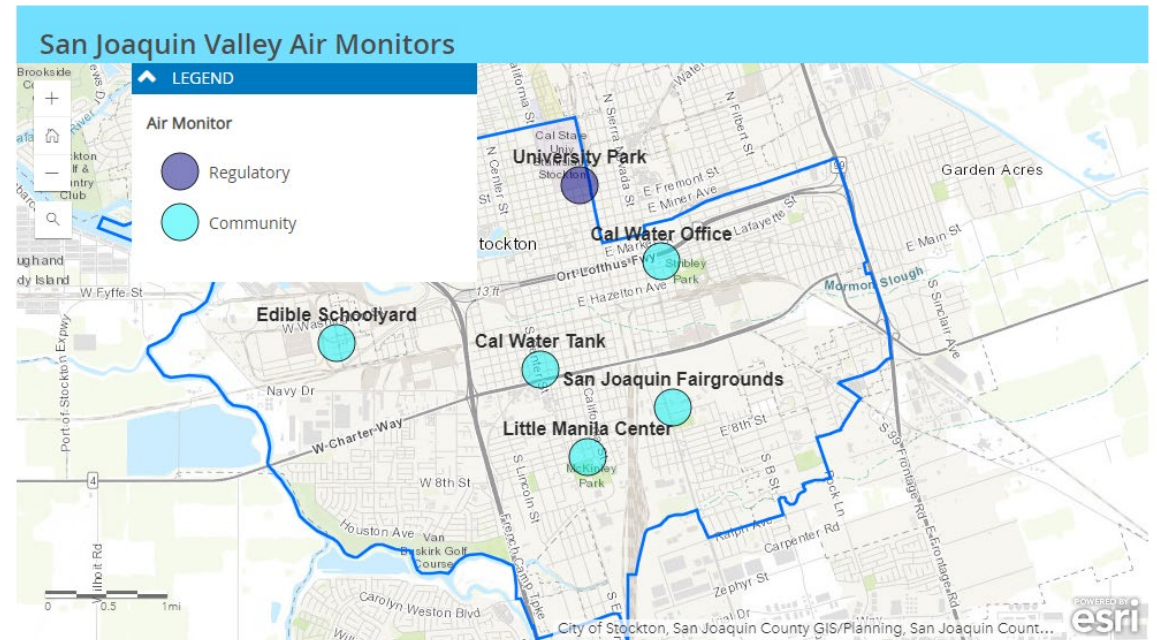
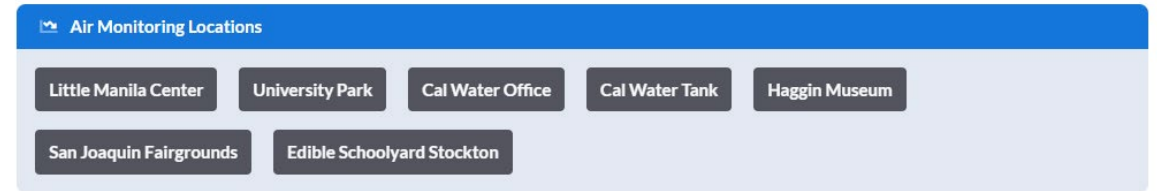
 **FORECAST**
Gusty Winds
Blowing dust is possible in dry soil areas

 **PRONÓSTICO**
Vientos Fuertes
Es posible que vea polvo en su área

Posted to Subscribers of San Joaquin Valley Air Pollution Control District

Community Air Quality Data

- District AB 617 webpage at: <http://community.valleyair.org/community-air-monitoring>
 - Real-time community air monitoring data
 - Quarterly reports
 - Weekly air monitoring updates



Comments/Questions?