

Memorandum



CITY OF DALLAS

DATE March 6, 2023

TO Honorable Chair Blackmon and Members of the Environment & Sustainability Committee

SUBJECT **City of Dallas Neighborhood Air Monitoring Program Update**

Initial Purchase and Delivery: On April 13, 2022 the City Council approved a master agreement for the purchase of 24 AQMesh air quality sensors from Ambilabs, LLC (U.S. distributor for AQMesh). OEQS staff arranged for delivery of an initial order of eight sensors from Ambilabs. The original estimate was for delivery in mid-June 2022. However, AQMesh experienced a series of production and quality control issues that took substantially longer than anticipated. OEQS took delivery of the initial eight sensors between October 13 to October 17, 2022. The installation of all eight units at the Hinton Continuous Air Monitoring Station (CAMS) was completed on October 18, 2022.

Installation and Co-Location: The installation of the sensors at the Hinton CAMS provided an opportunity to compare the data from the AQMesh sensors with the data from the calibrated reference monitors at Hinton that are used by the TCEQ and EPA to measure air quality for comparison to the National Ambient Air Quality Standards. The AQMesh sensors were placed at Hinton to be in close proximity to the reference monitors. The sensors were allowed to go through a long period of co-location and shake down at Hinton. During the period from initial installation and late January, staff worked with the manufacturer to calibrate the monitors and to troubleshoot several apparent technical challenges to local installation.

All of technical issues were resolved by early January. The co-location data from the AQMesh sensors and the reference monitors has been shared with the AQMesh technical support staff in the United Kingdom. Technical support is providing a detail comparison of the data for each sensor and the reference monitors. They will use this information to provide correction factors specific to each pollutant measured and each sensor unit. This analysis is in progress and the results are expected soon.

Field Installation: Installation of the sensors has begun. The first two sensors were installed along the Singleton corridor in West Dallas on January 13, 2022. One sensor was installed at the West Dallas Multipurpose Center and a second sensor at the North end of Fish Trap Lake in a park owned and operated by the Dallas Housing Authority. The sensor at the West Dallas Multipurpose Center provides a location that is upwind of Singleton Boulevard. The location at the North end of Fish Trap location is generally downwind (North) of Singleton Boulevard.

A third sensor has been deployed at the Larry Johnson Recreation Center at 3700 Dixon Ave. This sensor is the first of two sensors planned for this neighborhood. The second sensor will be on the fence line of the cement batch plant being installed at 5000 Scyene Road. The intent in these two locations is to focus on the emissions from the batch plant

when operating. The second sensor for the Dixon Circle neighborhood is scheduled for installation on March 3, 2023. Photograph 1 below shows the sensor installation at the Larry Johnson Recreation Center.

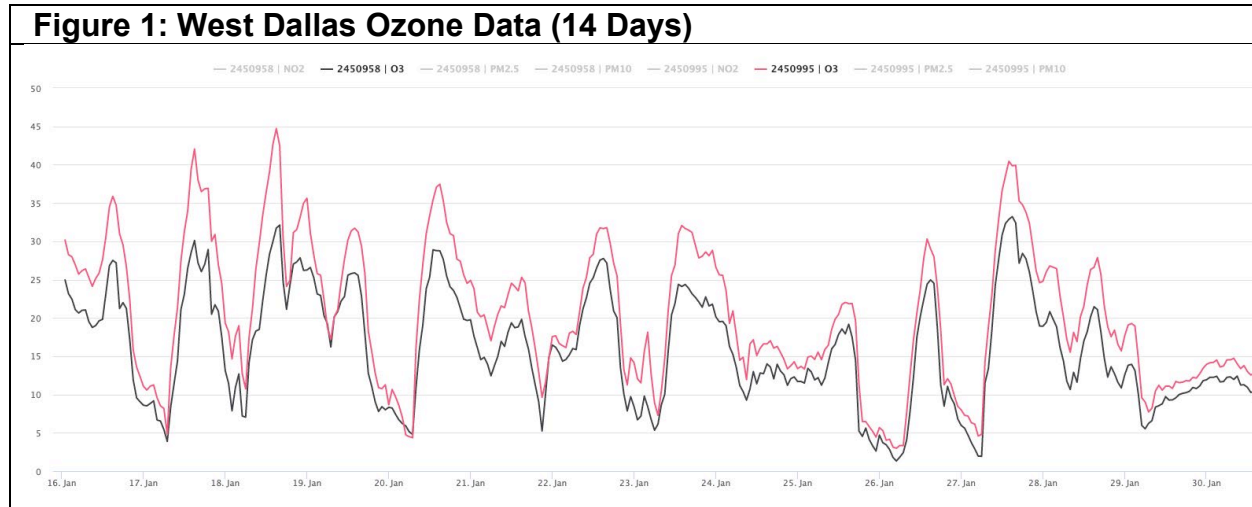
Photograph 1: AQMesh Sensor Unit Being Installed at Larry Johnson Recreation Center



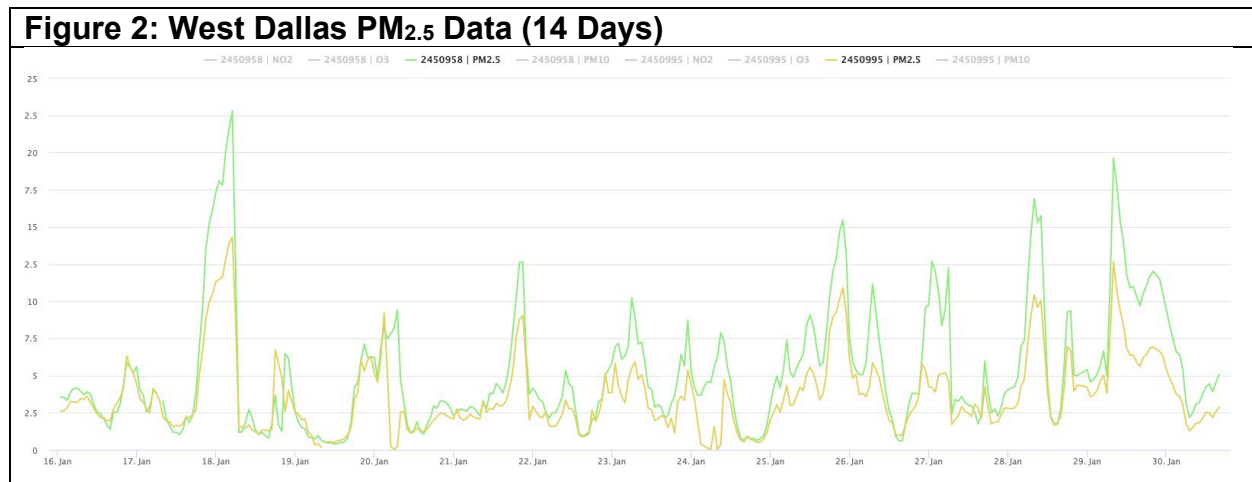
OEQS will install three additional sensors in West Dallas and two additional sensors in the Floral Farms community as soon as suitable sites are determined and permission is obtained. At least one sensor is also planned for Carbondale Street on the West side of the Joppa community.

Monitor Performance: Initial data from the monitors in the field is very promising. The two monitors in West Dallas are providing data that are very similar to each other. As more data is accumulated, a detailed analysis of the data from each sensor should provide insights about the local air quality in the communities where installed. This analysis will be more detailed as more sensors are added to the surrounding community.

In Figure 1 below, 14 days of ozone data from the sensors in West Dallas is provided.



The ozone data in this example shows how close the two sensors in West Dallas are reading. There are some periods when the two sensors deviate, but overall the sensors are operating within the margin of error provided by the manufacturer. Figure 2 provides a similar comparison of the PM_{2.5} data for the two sensors.



This PM_{2.5} data is similar to the ozone data, and the two sensors are reading consistently. This will provide more confidence in the detailed analysis that will be carried out on the data in the future. NO₂ and PM₁₀ data is consistent with these results. Overall, the sensors are performing as expected. Over time, more details will emerge from the data and allow more in-depth analysis.

Data from the sensor placed at the Larry Johnson Recreation Center is just starting to come in and will be evaluated consistent with the analyses for the West Dallas monitors.

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Future Plans: OEQS is ordering 16 more sensors from Ambilabs. These sensors will have enhanced capabilities. In this group of 16, eight sensor units will include sulfur dioxide (SO₂) measurement capabilities. Also, eight units will include the ability to detect and measure both volatile organic compounds (VOC) and carbon monoxide (CO). These capabilities will be helpful in some areas of the City where high emissions of sulfur compounds and VOC are suspected.

OEQS is working with the Department of Data Analytics and Business Intelligence on a web-based dashboard that will display a graphical representation of the data and allow interested parties to download detailed information for their analysis. This portal will be open to all interested parties. The data portal will be similar to the data portal that was used for the air monitoring at the Blue Star site. Once construction is complete, the portal will be made available to everyone.

Please contact Carlos Evans, Director, OEQS: carlos.evans@dallas.gov; (469) 617-1925, or Susan Alvarez, Assistant Director, OEQS: susan.alvarez@dallas.gov; (214) 671-9505, if you have questions or desire additional information.



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