

Case Study

City Assures Community with Real-Time Air Quality Dashboard

The City of Dallas used a public dashboard to demonstrate how real-time actionable data was used to mitigate emissions of particulate matter and odors.



Project

The City of Dallas

Services

3x AQS 1, Aeroqual Cloud Plus

Location

Dallas, Texas, USA

Measurements

PM₁₀, PM_{2.5}, PM₁, TSP, VOCs and wind.

Date

2020

Sector

Remediation



City assures community with real-time air quality dashboard

The City of Dallas used a public dashboard to demonstrate how real-time actionable data was used to mitigate emissions of particulate matter and odors during the removal of an illegal shingle stockpile. Staying well within compliance of air ordinances and being completely transparent with the data and its accuracy, earned the trust of the community. As a result, the project was completed in half the time, two months ahead of schedule.

Removing 100,000 tons of asphalt shingle from a floodplain

Blue Star Recycling had been collecting and processing asphalt roof shingles on its leased property from January 2018 through May 2019. Community complaints sparked an investigation that found business operations violated local and state law, having accumulated 100,000 tons of shingles on a floodplain. The facility was shut down and a protracted legal process to fund the cleanup began. National and local media attention was high, dubbing the case “shingle mountain” and highlighted social justice and environmental issues. On December 11, 2020, the City of Dallas and the State of Texas, on behalf of the Texas Commission of Environmental Quality (TCEQ), reached a settlement with the defendants.



The City of Dallas agreed to remove and dispose of solid waste at the property. They engaged Modern Geosciences to conduct an environmental assessment and conduct air quality monitoring and mitigation to minimize impact to the community. Kenneth Tramm, Principal at Modern Geosciences, understands the challenges of remediation projects in urban environments, especially when there has been lots of activist and media attention. Tramm knew it would be important to set the bar high on monitoring, mitigation, and communication to the community to build back their trust.

Making better decisions from better data in real-time

Tramm wanted to give site personnel and leadership real-time alerts so they could react quickly in the event of an exceedance. He wanted accurate and defensible data so that the City of Dallas and the community felt secure, and he needed monitoring equipment with exceptional total system uptime even in a challenging industrial environment. Tramm selected an industrial air monitoring network from Aeroqual, comprising Aeroqual Cloud software, and three Aeroqual AQS 1 monitors configured to measure PM_{1} , $PM_{2.5}$, PM_{10} , and TSP, volatile organic compounds (VOCs), and wind speed and direction.

“We chose to invest in this technology now because we want to have innovative tools and expertise ready for when a client needs a solution.”

Kenneth Tramm, Ph.D., PG, CHMM
Modern Geosciences

Modern Geosciences devised a monitoring program that involved a baseline period, followed by discreet monitoring at the work area and continuous monitoring on the perimeter. All monitoring data flowed to Aeroqual Cloud in real-time giving Modern Geosciences and the client full remote access. Wind speed and direction data coupled with measurement limits allowed Modern Geosciences to mitigate and address any issues before they impacted the community and to accept or refute complaints regarding odor, dust on cars, or others of the like.

Communication is critical in remediation projects near sensitive communities. Project goals were set by the EPA in accordance with the National Ambient Air Quality Standards (NAAQS) for $PM_{2.5}$ of less than 35 g/m^3 and PM_{10} of less than 150 g/m^3 , based on a 24-hour standard. The EPA, TCEQ, and related regulatory agencies set a goal of less than 1.0 ppmv for total VOCs within the Real-time Air Community Monitor Plan (RACMP). Aeroqual Cloud software triggered mobile phone text alerts and emails to site personnel and Modern Geosciences team members if pollutants hit pre-set levels. It also provided the integration platform to export $PM_{2.5}$, PM_{10} , and VOC data to a public website set up by the City of Dallas for the community members. On this public Air Quality Dashboard, anyone could see thresholds established from the baseline monitoring, real-time air quality parameters from the three site-based monitors, and the local TCEQ reference station. A complementary Cleanup dashboard on the website showed removal progress and a photo diary.

Remediation project completed in half the time with community trust

Modern Geosciences and the City of Dallas used real-time data from the Aeroqual network to make better decisions and fully meet all project goals on critical air quality parameters, protecting the local community from fugitive dust emissions and odors. One of the most sensitive community health parameters, $PM_{2.5}$, was kept well below the project goal of 35 g/m^3 with emissions ranging from $3\text{-}10 \text{ g/m}^3$, consistent with baseline data ranges when no remediation activity was present. One evening post-work, the team was rallied after Aeroqual Cloud sent alerts for exceeded set points on $PM_{2.5}$ and PM_{10} . Subsequent investigation found it was an early warning of a large fire at a Dallas mulch business about 17 miles away.



The systems ran flawlessly, even during a historic winter storm with record-low temperatures and snowfall. Aeroqual Cloud is set up with diagnostic alerts to warn of any sensor, power, or communication failures, giving Modern Geosciences peace of mind that the systems were functioning normally. Auto Baseline Correction (ABC) on the VOC modules removes the need for frequent on-site calibrations, and two-way system integration between the monitors and Aeroqual Cloud meant personnel could dial in to check data, make sensor calibrations, and protect the integrity of data collection.

“Real-time tools are essential to create actionable data that guides how we work on our site, mitigate emissions, and develop defensible data to reassure the community.”

Kenneth Tramm, Ph.D., PG, CHMM
Modern Geosciences

The Air Quality Dashboard provided the community with easy access to data, so they could see for themselves the reliability of the air monitoring equipment, accurate correlation with the TCEQ reference station, and most importantly, the successful efforts of the City of Dallas and the cleanup crew to mitigate any ill effects from particulate matter or odor. With trust restored, the remediation project proceeded faster than anticipated with the shingle stockpile removed in two months instead of four, leaving a community safer and happier.

About



City of Dallas

City of Dallas department known as the Office of Environmental Quality & Sustainability is committed to protecting and improving the environment by leading and guiding the City of Dallas in its efforts on environmental compliance, pollution prevention, and continual improvement.



Aeroqual

Aeroqual develops integrated monitoring and software systems underpinned by industry-leading sensor technology to support environmental, health, and safety professionals in protecting people and the planet from the impact of air pollution. That's why governments, industry, researchers, and consultants trust Aeroqual to deliver actionable data for their air quality monitoring projects.



Modern Geosciences

is a trusted innovator in the environmental services industry who provides comprehensive environmental services to help stakeholders make better choices for their business or organization. Using customized equipment and effective sampling designs, Modern Geosciences helps clients understand air quality concerns during remediation projects, at industrial operations or production facilities, and within ambient air sheds for customers in Texas and throughout North America.