



Department of Transportation and Environmental Services

Ambient Air Quality Monitoring for Particulate Matter Concentrations at Cameron Station, Alexandria, Virginia (June 2006 – August 2007) October 2007

The City of Alexandria (City) began monitoring ambient air for particulate matter in June of 2004 at a new monitoring station located at Armistead Boothe Park, near the Samuel Tucker Elementary School in Cameron Station. The monitoring was conducted to measure the ambient air concentrations of particulate matter less than 10 microns in diameter (i.e., PM-10) in the air surrounding Cameron Station. This report presents brief background information for this project, the analytical protocols used, and the monitoring results. Lastly, this report discusses the relevant findings.

Background

Residents of Cameron Station have expressed concerns about the health effects from potential exposure to high levels of particulate matter in their community. Specifically, the residents have raised concerns about emissions generated at the Virginia Paving hot mix asphalt facility located on Van Dorn Street. This facility is located a short distance from the residents of Cameron Station, to the west and south of Cameron Station. To address these concerns, the City conducted a short term monitoring study in August of 2004. Two monitors were used for this study-- one located in the Armistead Boothe Park and another located in the Ben Brenman Park. The study was designed to monitor PM-10 levels on days when its levels were anticipated to be the highest. This was based on engineering best practice analysis of weather conditions and predicted wind direction. Monitoring on days when rainfall was predicted was avoided. The results from this short monitoring period in 2004 met the national ambient air quality standards and are presented in Table I of this report. However, because they were higher than expected, the City installed a new long term monitoring station to measure PM-10 at Armistead Boothe Park, near Samuel Tucker Elementary School. This brief report presents the data collected at this newly established monitoring station since its inception, i.e. June 4, 2006. Similar reports will be released periodically to share the collected data with the community.

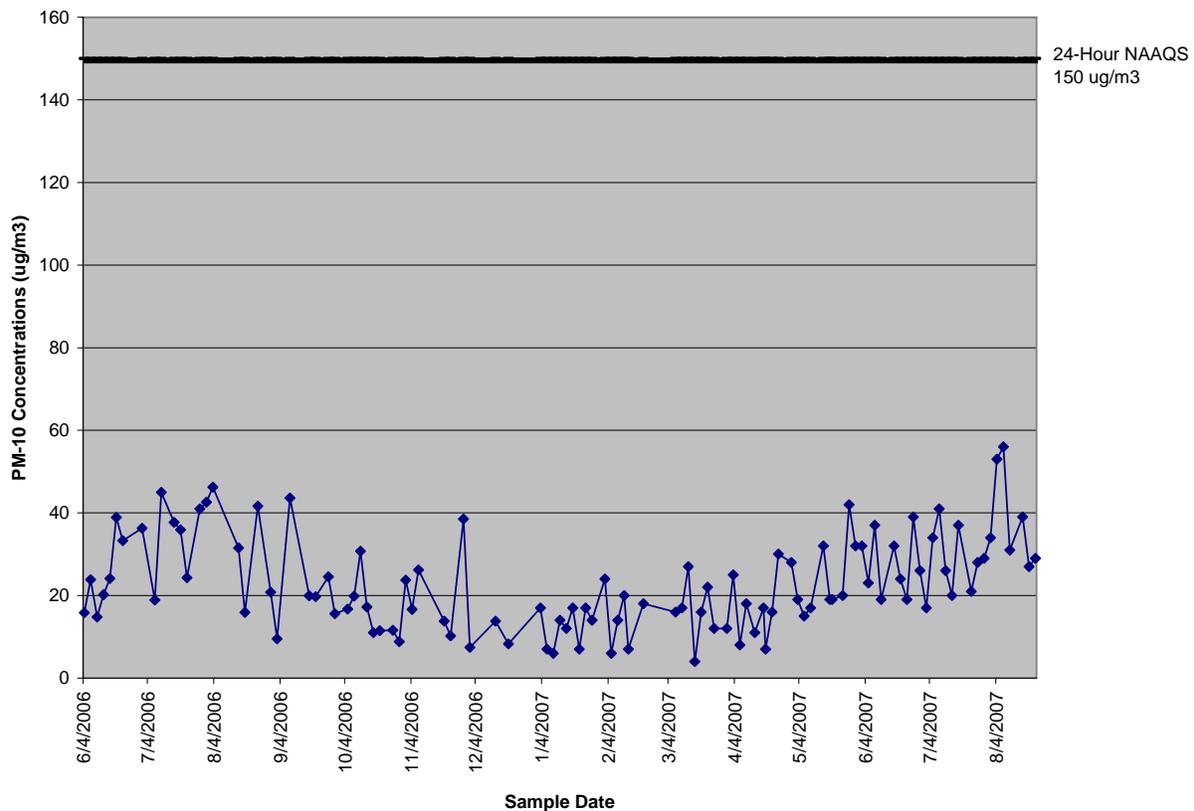
Sources of Particulate Matter Emissions

There are several sources of particulate matter emissions located within the City of Alexandria that are likely to affect air quality in and around Cameron Station. This includes industrial sources such as Covanta Waste-to-Energy facility, Mirant's coal-fired Potomac River Generating Station, Virginia Paving hot mix asphalt plant, and Vulcan Materials aggregate handling facility. Additionally, emissions generated from vehicular traffic (mobile sources) and roadway dust, including passenger cars and light- and heavy-duty trucks, are likely to contribute to the total amount of PM-10 in the neighborhood. Contributions can also be expected to occur from construction activities and off-road fuel-burning equipment such as lawn and garden equipment, as well as natural sources such as wind blown dust.

The City performed an analysis of the magnitude of emissions that are generated from the industrial and on-road mobile sources to develop an understanding of the relative contribution they may have on local air quality. In addition, microscopic analysis of the PM-10 samples collected in August 2004 showed particulate matter properties often associated with fuel combustion sources. However, it is not possible from these results to identify the exact source(s) of the measured particulate matter.

Monitoring Results

The following graph summarizes the PM-10 monitoring results for the long-term monitoring station located at Boothe Park near the Samuel Tucker School. Monitoring at this location started in June of 2006. The 24-hour average PM-10 concentrations are compared to the EPA-specified National Ambient Air Quality Standard (NAAQS) of **150 $\mu\text{g}/\text{m}^3$** . A comparison of the monitoring results with the NAAQS shows that the ambient PM-10 concentrations at Cameron Station are well below the NAAQS, as depicted in the chart below. As expected, the results show considerable day-to-day variability. Note that these results are only representative of short-term periods and are not suitable for comparison with the annual NAAQS established by EPA. An average of at least one full year of data that includes all meteorological conditions, including wet days, as well as daily, weekly and seasonal variations, would be required in order to evaluate annual impacts.



This report was prepared by Department of T&ES, Division of Environmental Quality. If you have any questions, please call Lalit Sharma, P.E., at 703-838-4334.