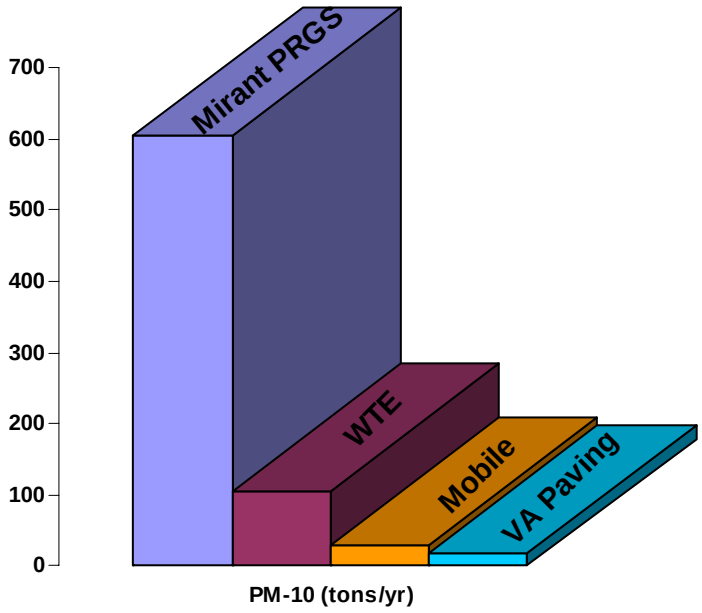
CITY OF ALEXANDRIA
DEPARTMENT OF TRANSPORTATION AND ENVIRONMENTAL SERVICES

Ambient Air Quality Monitoring of Particulate Matter Concentrations
Cameron Station, Alexandria, Virginia (June-July, 2006)

The City of Alexandria recently (starting June 4, 2006) began monitoring ambient air at its new monitoring station located at Armistead Boothe Park, near Samuel Tucker Elementary School. The monitoring was conducted to measure ambient concentrations of particulate matter less than 10 microns in diameter, i.e., PM-10 in the ambient air surrounding Cameron Station. This brief report presents the background, monitoring results, and 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. 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 resident of Cameron Station to the west and south of the Cameron Station. To address these concerns, the City's first short term monitoring study was performed 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 predicted weather, and wind direction. Monitoring on days when rainfall was predicted was avoided. The results met the national ambient air quality standards, however were higher than expected. In response, the City has installed a new long term monitoring station for 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 affect air quality 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. The above chart shows a comparison of these emissions.

A microscopic analysis of the PM-10 samples collected in August 2004 showed that some of the particulate matter was due to fuel combustion sources. However, it is not possible from these results to identify the exact source(s) of the measured particulate matter.

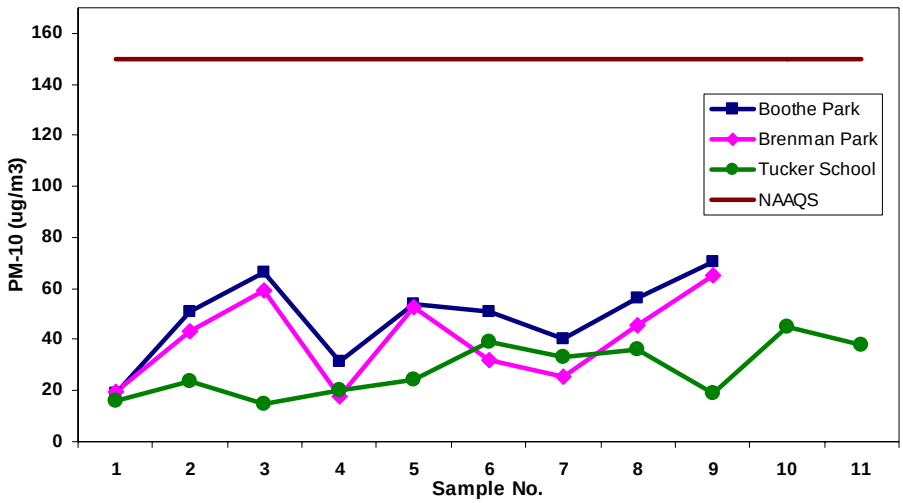
Monitoring Results

The following is a summary of the PM-10 monitoring results. The table lists the measured concentrations from all monitors in this study. The listed values are 24-hour average PM-10 concentrations and can be directly compared to the EPA-specified National Ambient Air Quality Standard (NAAQS) of **150 µg/m^3**. A chart of the PM-10 concentrations is also provided below.

Sample No.	Measured 24-Hour Average PM-10 Concentrations (µg/m^3) at Cameron Station					
	Boothe Park August 2004 Limited monitoring		Brenman Park August 2004 Limited monitoring		Boothe Park near Samuel Tucker School (New Long term Monitor)	
1	8/6/2004	**18.9**	8/6/2004	**19.4**	6/4/2006	**15.8**
2	8/9/2004	**51.2**	8/9/2004	**43.0**	6/7/2006	**23.8**
3	8/10/2004	**66.5**	8/10/2004	**59.4**	6/10/2006	**14.8**
4	8/11/2004	**31.3**	8/11/2004	**17.9**	6/13/2006	**20.2**
5	8/16/2004	**53.9**	8/16/2004	**53.0**	6/16/2006	**24.1**
6	8/17/2004	**50.7**	8/17/2004	**31.9**	6/19/2006	**38.9**
7	8/18/2004	**40.4**	8/18/2004	**25.7**	6/22/2006	**33.3**
8	8/23/2004	**56.4**	8/23/2004	**45.4**	7/1/2006	**36.3**
9	8/24/2004	**70.8**	8/24/2004	**65.2**	7/7/2006	**18.9**
					7/10/2006	**45.0**
					7/16/2006	**37.7**

Discussion of Findings

The City conducted limited monitoring at Cameron Station. A comparison of the monitoring results with the NAAQS shows that the ambient PM-10 concentrations at Cameron Station are well below the



NAAQS. The monitored PM-10 concentrations range from 14.8 µg/m^3 to 70.8 µg/m^3. 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. As more data is collected (4 quarters or more), comparison to annual standard will be more appropriate.

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.