



North Minneapolis fine particle monitoring

Results from January 1, 2014 – June 30, 2014

On January 1, 2013, the Minnesota Pollution Control Agency (MPCA) began a 1-3 year monitoring study to assess fine particle pollution in an industrial area of North Minneapolis. Located on the roof of a commercial building, the monitoring site (green star on map) is bordered by North Lowry Avenue to the north, the west bank of the Mississippi River to the east, North 31st Avenue to the south, and Pacific Street to the west. The surrounding area contains a mix of land uses including metal recyclers, manufacturing facilities, and retail. The nearest residential area is located approximately ¼ mile from the monitoring site.

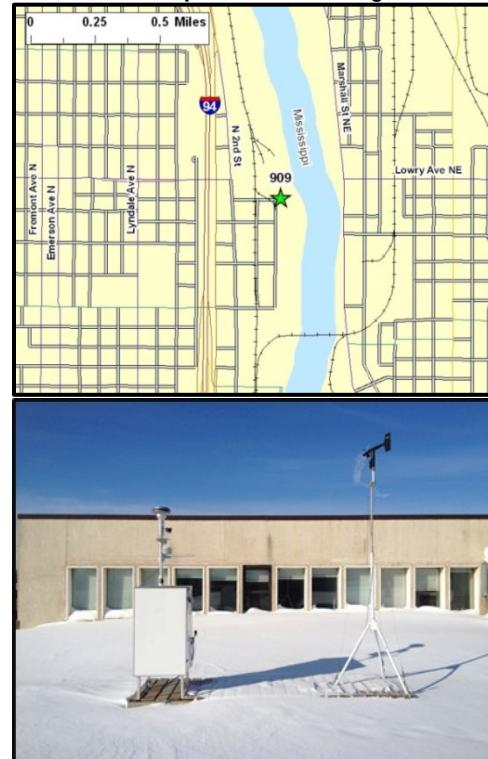
The monitoring site includes hourly measurements of fine particles, wind direction, and wind speed. All data is collected hourly by the MPCA and automatically reported to the Air Quality Index website

<http://www.pca.state.mn.us/kppq8kxu>. Monitoring results are reviewed and submitted to the U.S. Environmental Protection Agency's air quality database quarterly.

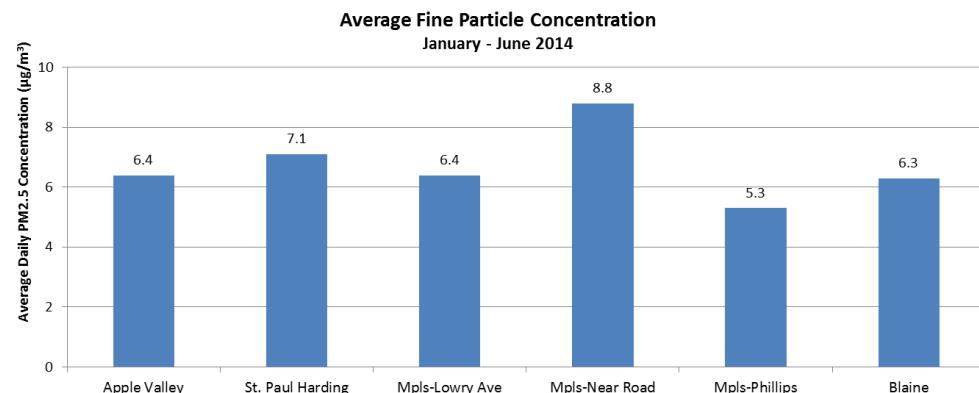
Initial results

Initial monitoring results indicate that on most days, the average daily fine particle concentrations at the North Minneapolis monitoring site were similar to the fine particle measurements at other Twin Cities monitoring sites. Overall, the values measured at the south Minneapolis Phillips monitor, found in a more residential area, were lower than what was measured at the North Minneapolis monitor. Conversely, values measured at the Near Road monitor, located along the I-94 and I-35W freeway commons, were higher than those at the North Minneapolis monitor.

North Minneapolis monitoring site



Average fine particle concentration at Twin Cities area sites: January – May 31, 2014

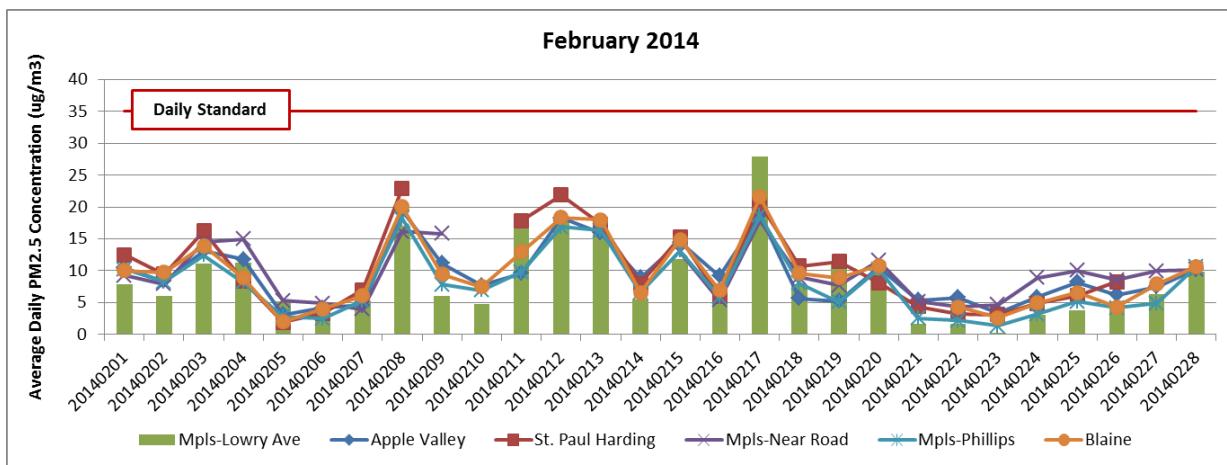
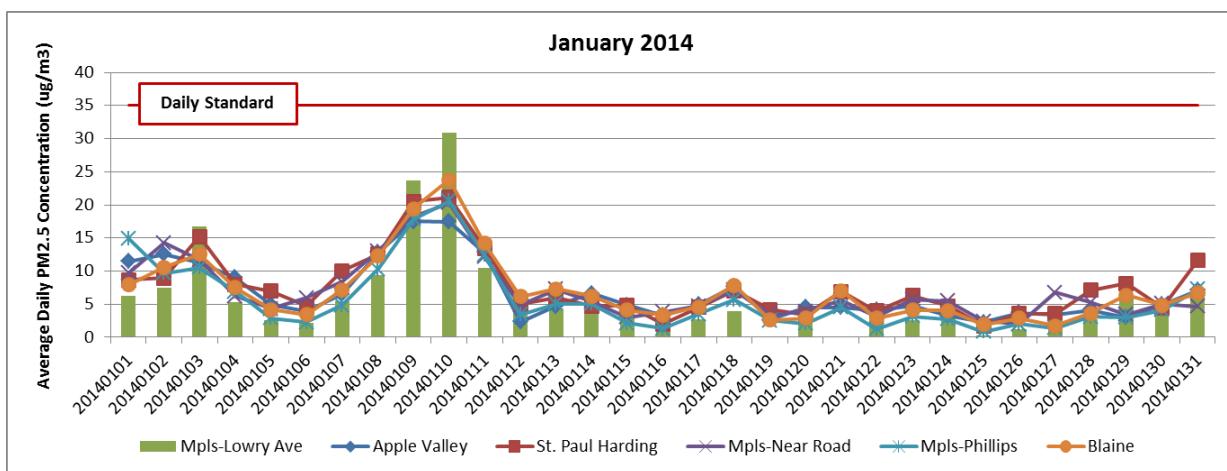


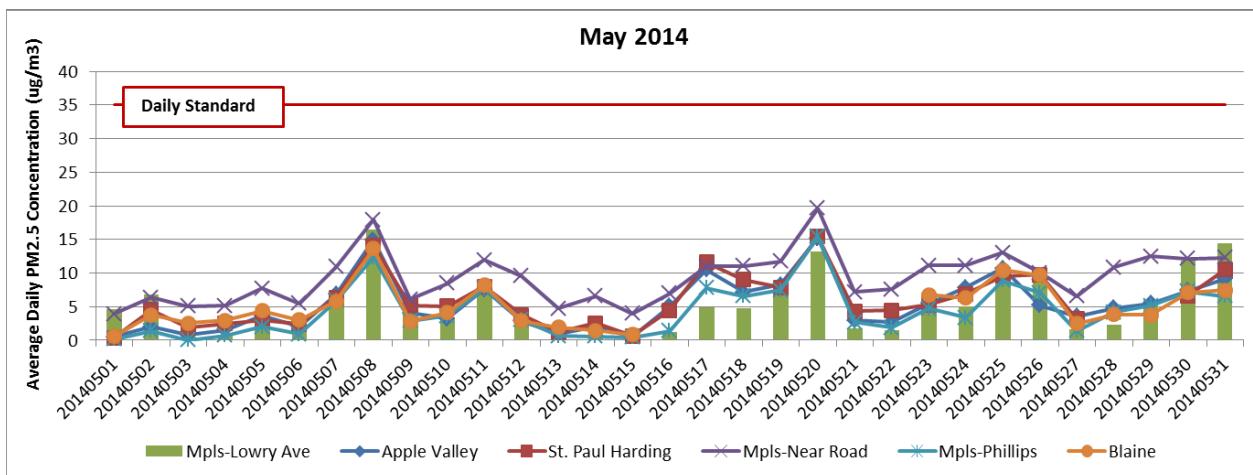
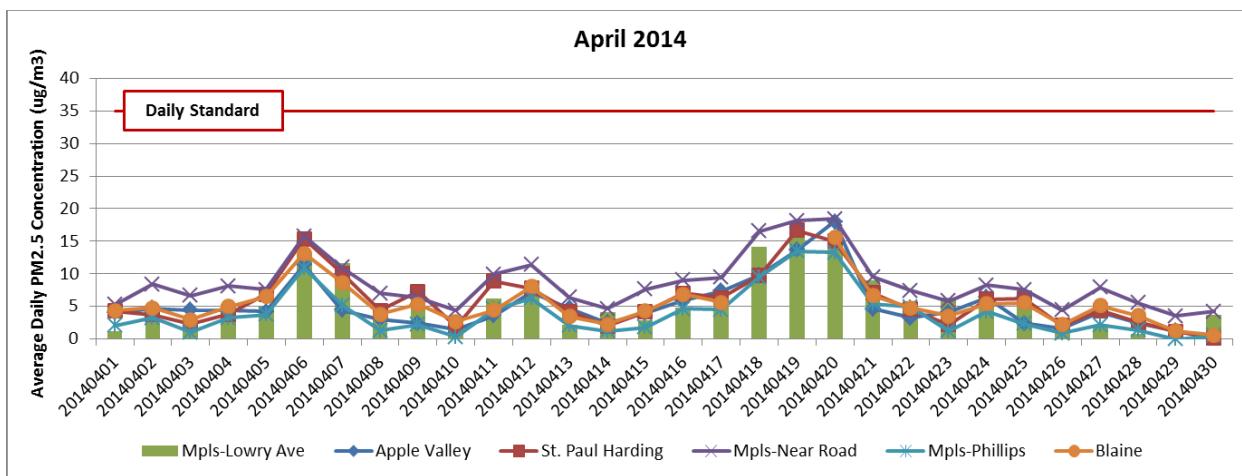
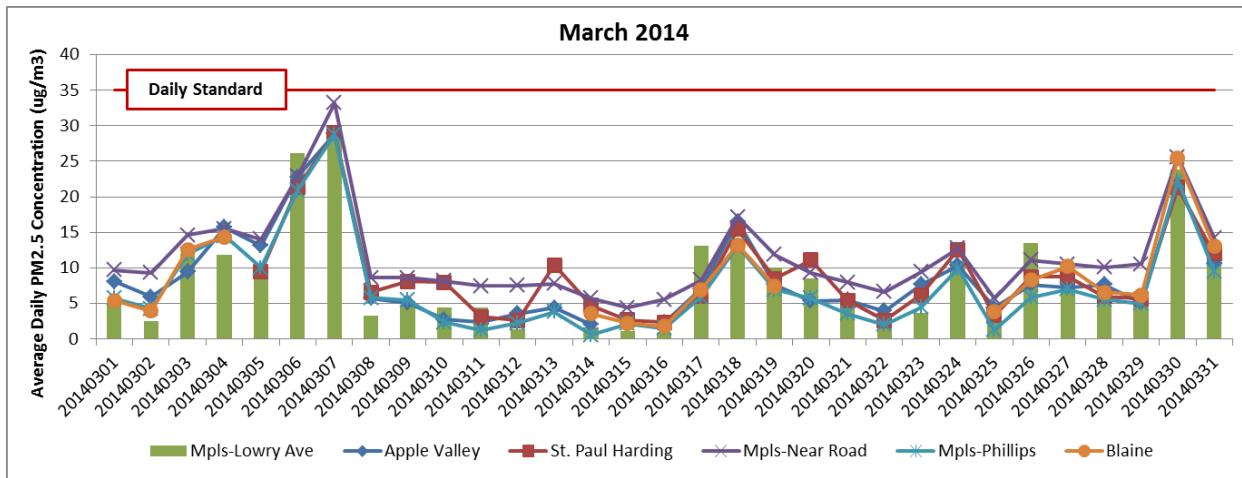
For the first six months of 2014, all 24-hour average fine particle concentrations measured at the North Minneapolis monitoring site were below the federal 24-hour fine particle standard of $35 \mu\text{g}/\text{m}^3$, which is also the level at which the MPCA issues an air pollution health alert. Monthly time trends of the 24-hour average fine particle concentrations measured at the North Minneapolis (bars) and other Twin Cities area fine particle monitoring sites (lines) are included below.

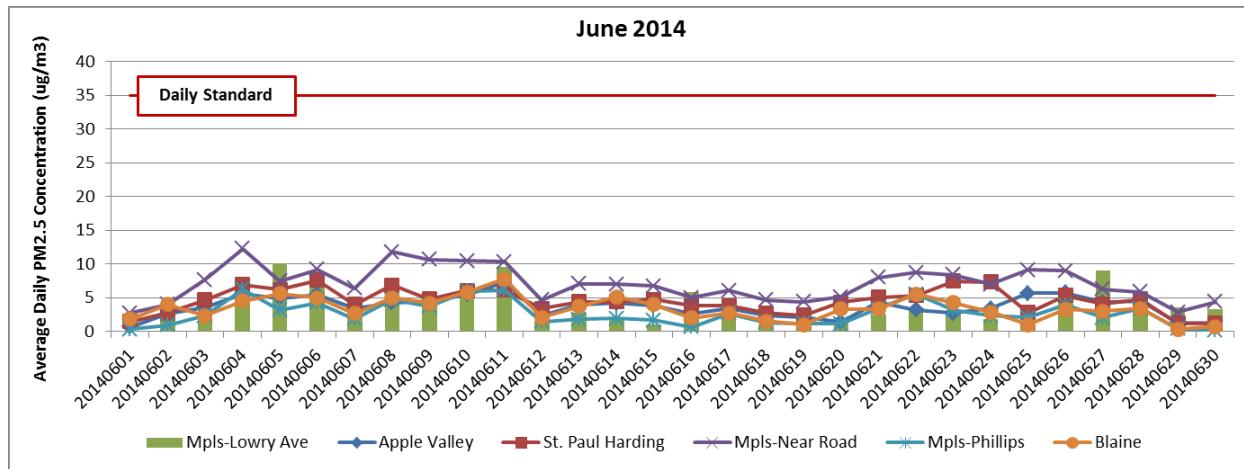
On most days, the daily fine particle concentrations at the North Minneapolis monitoring site were similar in value or trend (going up or down) as seen at the other Twin Cities sites. On a couple of days, however, there were clear differences between the North Minneapolis monitored concentration and the concentrations measured at the other Twin Cities sites.

Between January 1 and June 30, the highest daily fine particle concentration recorded at the North Minneapolis monitor was $31 \mu\text{g}/\text{m}^3$ (as seen in the January graph below). The fine particle levels measured that day were slightly higher than levels measured at the other Twin Cities monitoring sites.

Monthly summaries of daily fine particle monitoring results, January – June 2014







Assessment of elevated fine particle results

During this time period, on most days, fine particle concentrations measured at the North Minneapolis monitoring site were close in value with other Twin Cities area monitors. However, on two days the daily average fine particle concentration at the North Minneapolis site was appreciably higher than other Twin Cities monitoring sites – January 10th and February 17th. These fine particle concentrations did not exceed the daily fine particle standard of 35 µg/m³, but they do potentially indicate that a local emission source had influenced fine particle concentrations in the area surrounding the monitor on those days.

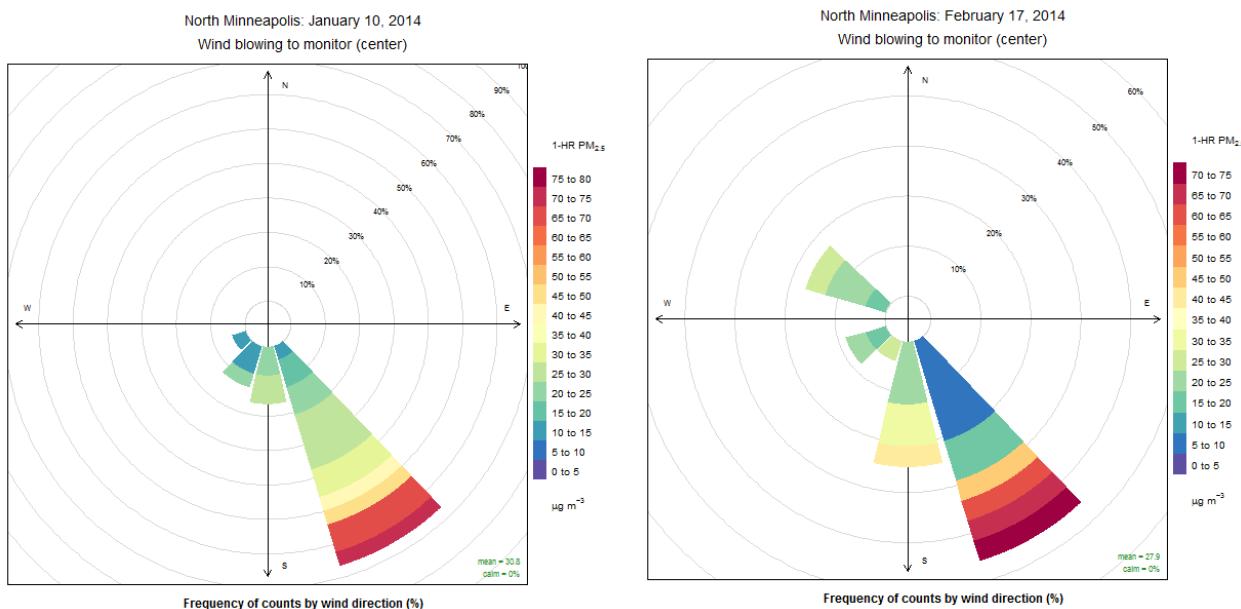
Aerial view of North Minneapolis monitoring site and surrounding land use



In addition to monitoring hourly concentrations of fine particles, the North Minneapolis monitoring site also measures hourly meteorological parameters including wind speed and direction. This information can be used to identify potential emission sources that are contributing to elevated fine particle concentrations. The pollution "roses" included on the next page summarize hourly fine particle and associated wind measurements for the two high fine particle days mentioned above – January 10, 2014, and February 17, 2014. The center of the pollution "rose" represents the location of the air monitor. The colors of the rose describe the hourly fine particle concentrations from low to high (cool to warm colors, respectively) and the length of the paddle describes how frequently the wind blew from that direction. For example, paddle drawn in the upper left corner indicates that the wind is blowing from the northwest towards the air monitor.

These pollution roses identify multiple wind directions associated with elevated fine particle concentrations, which suggests that there are likely multiple emissions activities and sources contributing to intermittent increases in fine particle concentrations at the North Minneapolis monitoring site. The MPCA will be working with the facilities in the area surrounding the monitor to identify activities or processes which may be contributing to these elevated fine particle concentrations.

Fine particle pollution roses on days with elevated PM_{2.5} results at the North Minneapolis monitor



For more information

For more information on the North Minneapolis fine particle monitoring project results or locations of monitors, please call 651-296-6300 or 800-657-3864 and ask for air monitoring staff. For general information on fine particle pollution visit: <http://www.pca.state.mn.us/6ackfqh>. A fact sheet posted on that page provides more background on fine particle monitoring in Minnesota; the fact sheet may be accessed directly at <http://www.pca.state.mn.us/index.php/view-document.html?gid=19057>.