EPA Report Results of Particulate Matter Screening in Chanute, KS
September 28, 2012

In response to community reports of episodic releases of particulate matter (PM), the Environmental Protection Agency (EPA) and the Kansas Department of Health and Environment (KDHE) designed a PM monitoring campaign to sample and identify potential PM concentration gradients in the community.

In order to accomplish this goal, the monitoring campaign was comprised of the permanent monitor station located at the KDHE field office (1500 West Seventh Street) and two additional temporary sites, one at Central Park and one at Highland Park. The field office station has the capability to monitor for PM_{10} (coarse particles) using the federal reference method (FRM). FRM instrument data can be compared to the National Ambient Air Quality Standard (NAAQS) for air quality compliance purposes. The Central Park temporary monitor station consisted of two screening level PM monitors one of which had the capability for monitoring coarse particles and the other of which had the capability to monitor particles 2.5 microns in size ($PM_{2.5}$ or "fine particles"). The Highland Park temporary monitor station consisted only of a coarse particle screening monitor. (See Attachment 4) On June 20, 2012, the Central Park fine particle monitor was relocated to Highland Park and monitoring was discontinued at Central Park because the Central Park coarse monitor failed.

Operation of all temporary monitoring stations was terminated on August 15, 2012.

Evaluation of Data:

To date, no 24-hour PM_{10} concentrations greater than the NAAQS of 150 $\mu g/m^3$ have been measured at either of the two temporary monitor stations or the field office. (Attachment 1)

Attachment 1 shows a graph of daily coarse PM screening level data collected by screening level monitors at the temporary monitor stations combined with KDHE field office FRM data. The data collected to date are very comparable across the spatially separated stations and are below the coarse PM NAAQS.

The 24-hour fine particle NAAQS is 35 $\mu g/m^3$. One 24-hour fine particle value of 35 $\mu g/m^3$ was measured at Central Park with screening level instruments during the 7 month study. (See discussion below and Attachment 2.) However, one such value does not constitute a violation of the NAAQS even if it were recorded by an FRM monitor. To determine attainment or violation of the fine PM standard, the 24-hour fine PM values are compared to the NAAQS by calculating the three year average of 98^{th} percentile values of monitoring data collected at a particular site in a year. This means that the eighth highest 24-hour value is used in a given year for a monitoring site that collects daily 24-hour data to calculate a three year average for comparison to the 35 $\mu g/m^3$ NAAQS.

[1] For a complete description of the proposed environmental screening in Chanute, KS, the reader is referred to the "Chanute Air Monitoring Proposal" published on the EPA Region 7's webpage http://www.epa.gov/region07/air/quality/chanute.htm.

Attachment 2 shows a graph of daily $PM_{2.5}$ data collected by the EPA screening monitors located in Chanute. $PM_{2.5}$ is typically considered to be a very large scale pollutant which varies over time with passage of weather fronts. It is not uncommon to see multiple counties and even multiple states affected simultaneously by large scale plumes of $PM_{2.5}$. Example data are presented in Attachment 3 which shows the Central Park $PM_{2.5}$ data compared to daily FRM $PM_{2.5}$ data collected in Tulsa and Wichita, the three sets of data track very closely. It is important to note that screening level data are used as a relative indicator of PM concentrations and that only FRM data should be directly compared to the NAAQS for compliance purposes.

Conclusion:

Seven months of screening level PM monitoring data have been collected in the Chanute area, representing a wide variety of meteorological conditions. (Attachment 4)

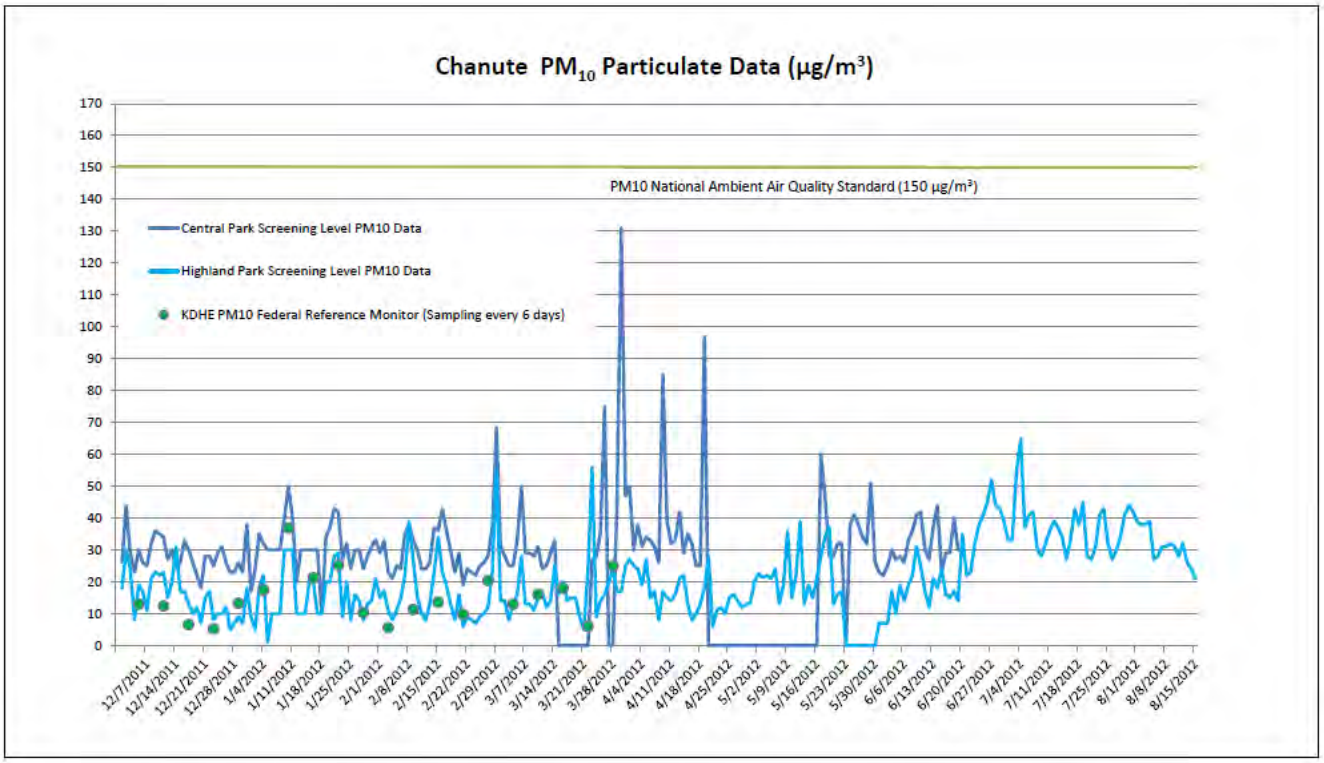
The PM_{10} data collected Central Park does appear to be somewhat higher than the Highland Park observations. Regardless, both the screening level and FRM PM_{10} data collected to date has all been less than the NAAQS.

The $PM_{2.5}$ data collected to date do show some higher daily concentrations, yet the Chanute screening data tracks very closely with continuous FRM data collected in Tulsa and Wichita for four consecutive months.

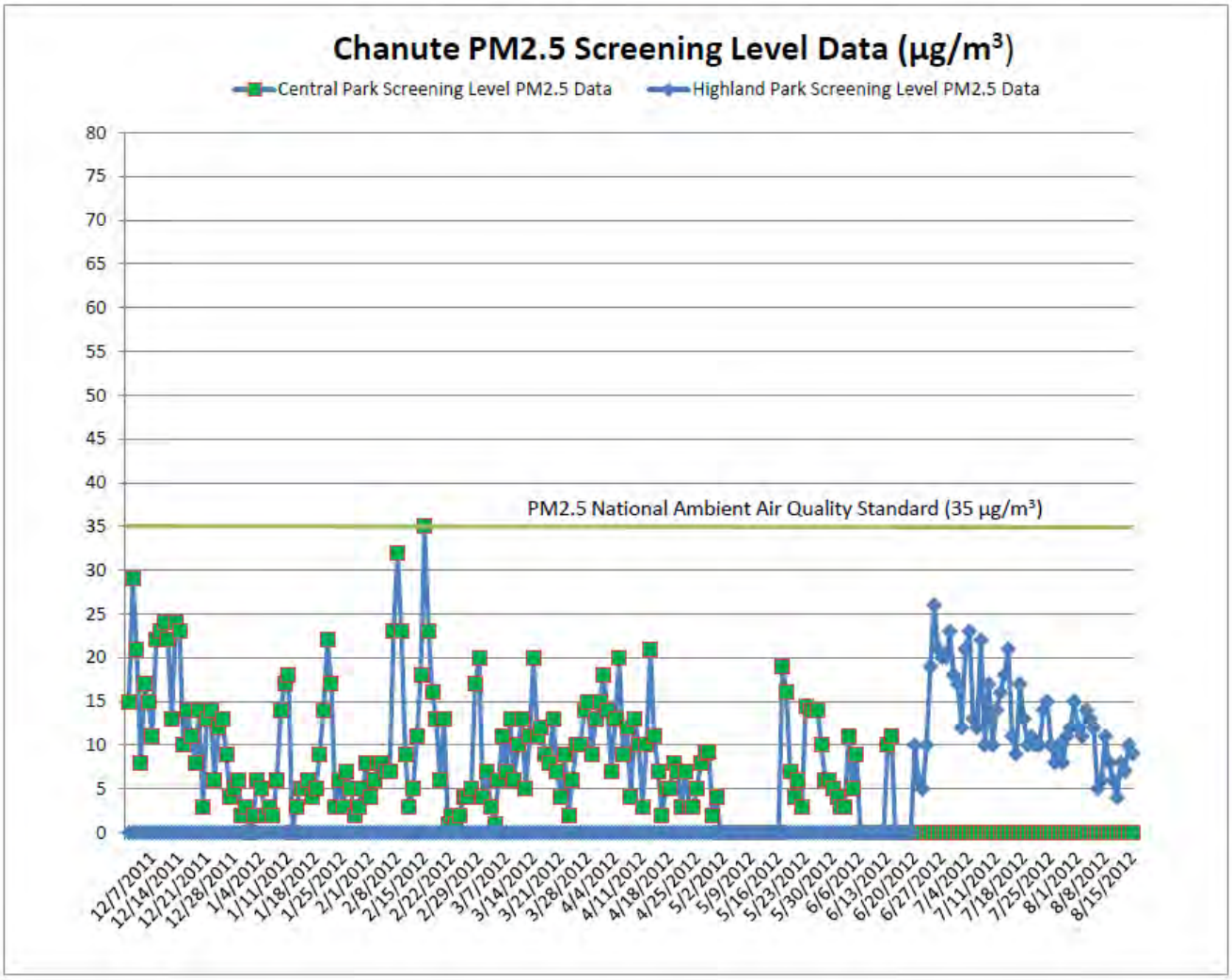
As reflected in their 2012-2013 Ambient Air Monitoring Network Plan, KDHE is currently considering replacement of the current PM_{10} monitor with continuous monitoring technology. In addition, KDHE is considering relocation of the Mine Creek monitoring site to the Chanute area which would include monitors for $PM_{2.5}$, sulfur dioxide, ozone, and oxides of nitrogen.

Based on the results of this study, no further Federal monitoring is proposed. As part of their overall State ambient air monitoring network planning process, KDHE is encouraged to continue progress toward relocation of the Mine Creek monitoring site to the Chanute area.

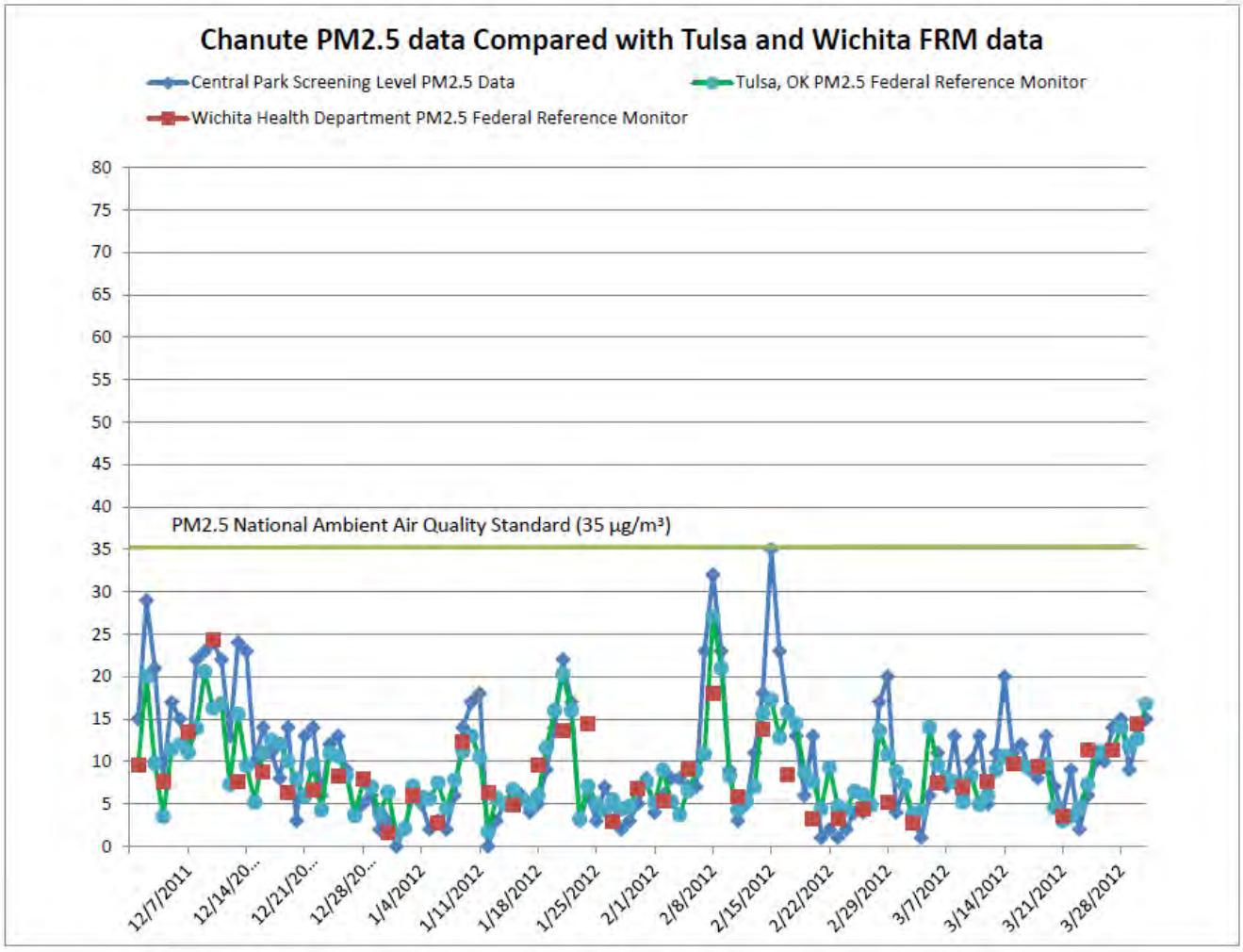
ATTACHMENT 1



ATTACHMENT 2

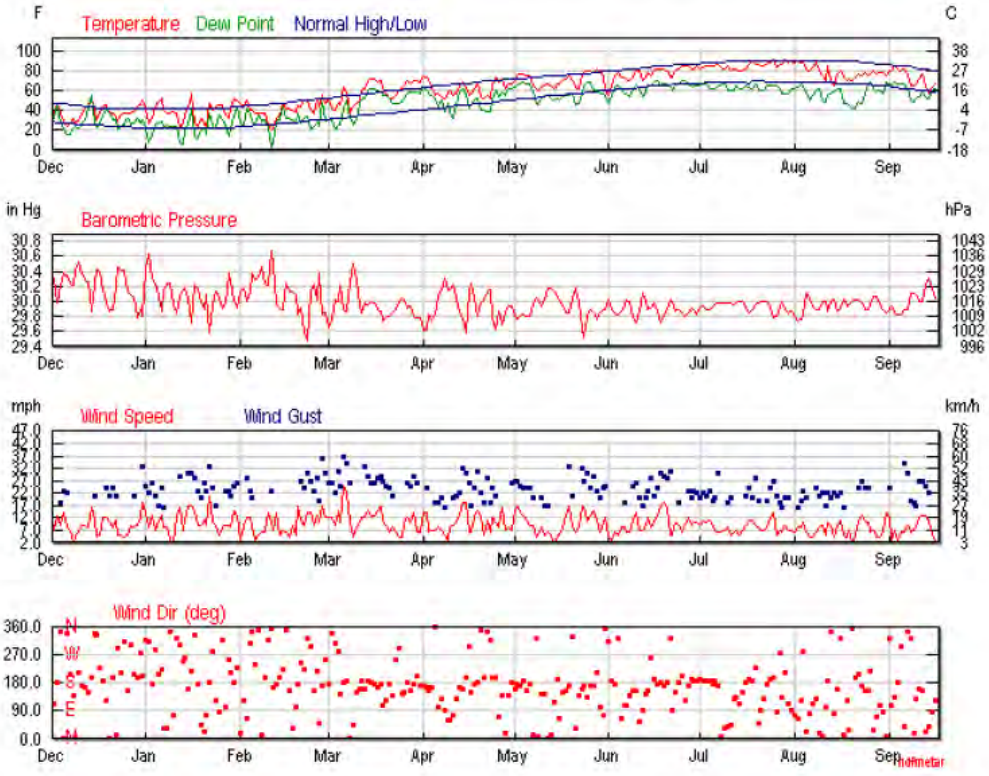


ATTACHMENT 3



ATTACHMENT 4

Chanute Historical Meteorological Data; December 1, 2011 – September 16, 2012



Source: Weather Underground