4.0 Analyses of Individual Nonattainment Areas

4.3 Region 3 Nonattainment Areas

4.3.3 Pennsylvania

PENNSYLVANIA
Area Designations For the
24-Hour Fine Particle National Ambient Air Quality Standard

The table below identifies the counties in the Commonwealth of Pennsylvania that EPA has designated as not attaining the 2006 24-hour fine particle ($PM_{2.5}$) standard.[1] A county (or part thereof) is designated as nonattainment if it has an air quality monitor that is violating the standard or if the county is determined to be contributing to the violation of the standard.

Area	Pennsylvania Recommended Nonattainment Counties	EPA's Designated Nonattainment Counties
Allentown-Bethlehem-Easton	Lehigh County Northampton County	Lehigh County Northampton County
Harrisburg-Lebanon-Carlisle	Cumberland County Dauphin County Lebanon County	Cumberland County Dauphin County Lebanon County
Johnstown	Cambria County Indiana County (partial)	Cambria County Indiana County (partial)
Lancaster	Lancaster County	Lancaster County
Liberty-Clairton	Allegheny County (partial)	Allegheny County (partial)
Philadelphia	Bucks County Chester County Delaware County Montgomery County Philadelphia County	Bucks County Chester County Delaware County Montgomery County Philadelphia County
Pittsburgh	Allegheny County (partial) Armstrong County (partial) Beaver County Butler County Lawrence County (partial) Washington County Westmoreland County	Allegheny County (partial) Armstrong County (partial) Beaver County Butler County Greene County Lawrence County (partial) Washington County Westmoreland County
Reading	Berks County	Berks County
State College	Centre County	None: demonstrating attainment based on 2005-2007 monitoring data
York	York County	York County

[1] EPA designated nonattainment areas for the 1997 fine particle standards in 2005. In 2006, the 24-hour $PM_{2.5}$ standard was revised from 65 micrograms per cubic meter (average of 98^{th} percentile values for 3 consecutive years) to 35 micrograms per cubic meter; the level of the annual standard for $PM_{2.5}$ remained unchanged at 15 micrograms per cubic meter (average of annual averages for 3 consecutive years).

EPA has designated Mercer County as unclassifiable and the remaining counties in the state as "attainment/unclassifiable." EPA designated a county as "unclassifiable" when: one or more of its monitors recorded a violation in 2004-2006; all monitors in the county with complete 2005-2007 data showed attainment; and one or more other monitors in the county had 2005-2007 monitoring data that was not complete and could not be used for determining compliance with the standard.

EPA Technical Analysis for the Allentown-Bethlehem-Easton Area

Introduction

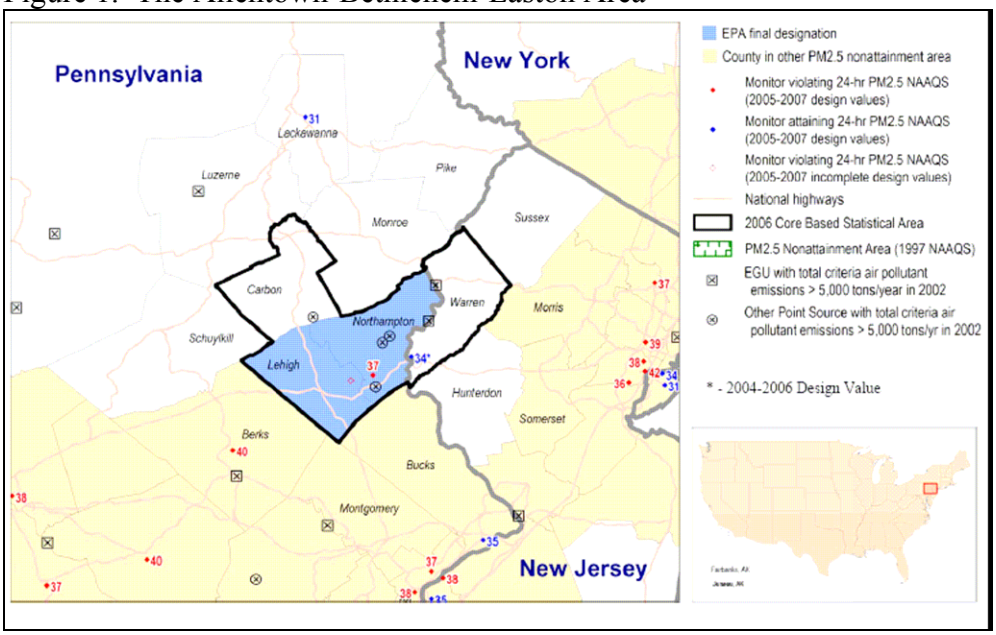
Pursuant to section 107(d) of the Clean Air Act, EPA must designate as nonattainment those areas that violate the NAAQS and those areas that contribute to violations. This technical analysis for the Allentown-Bethlehem-Easton area identifies the counties with monitors that violate the 2006 24-hour $PM_{2.5}$ standard and evaluates nearby counties for contribution to fine particle concentrations in the area. EPA has evaluated these counties based on the weight of evidence of the following nine factors recommended in EPA guidance and any other relevant information:

- pollutant emissions
- air quality data
- population density and degree of urbanization
- traffic and commuting patterns
- growth
- meteorology
- geography and topography
- jurisdictional boundaries
- level of control of emissions sources

We also used analytical tools and data such as pollution roses, fine particle composition monitoring data, back trajectory analyses, and the contributing emission score (CES) to evaluate these areas. (See additional discussion of the CES under Factor 1 below.)

Figure 1 is a map which identifies the counties in the Allentown-Bethlehem-Easton area and provides other relevant information such as the locations and design values of air quality monitors, and the metropolitan area boundary.

Figure 1. The Allentown-Bethlehem-Easton Area



In December 2007, the Commonwealth of Pennsylvania recommended that two counties in Pennsylvania be designated as "nonattainment" for the 2006 24-hour $_5$ standard in the Allentown-Bethlehem-Easton area, based on air quality data from 2004-2006. These data are from Federal Reference Method (FRM) monitors located in the commonwealth. (See the December 28, 2007 letter from the Pennsylvania Department of Environmental Protection to EPA, received on January 3, 2008.)

In August 2008, EPA notified the Commonwealth of Pennsylvania of its intended designations. In this letter, EPA also requested that if the Commonwealth of Pennsylvania wished to provide comments on EPA's intended designation, it should do so by October 20, 2008. EPA stated that it would consider any additional information (e.g., on power plants or partial county areas) provided by the state in making final decisions on the designations.

Based on EPA's technical analysis described below, EPA has designated two counties in Pennsylvania as nonattainment for the 2006 24-hour $PM_{2.5}$ air quality standard as part of the Allentown-Bethlehem-Easton nonattainment area, based upon currently available information. These counties are listed in the table below.

Allentown-Bethlehem-Easton area	State-Recommended Nonattainment Counties	EPA-Final Designated Nonattainment Counties
Pennsylvania	Northampton County Lehigh County	Northampton County Lehigh County

The following is a technical analysis for the Allentown-Bethlehem-Easton area.

Factor 1: Emissions data

For this factor, EPA evaluated county level emission data for the following $PM_{2.5}$ components and precursor pollutants: $PM_{2.5}$ emissions total, $PM_{2.5}$ emissions carbon, $PM_{2.5}$ emissions other, sulfur

dioxide (SO_2), nitrogen oxides (NO_x), volatile organic compounds (VOCs), and ammonia (NH_3). "$PM_{2.5}$ emissions total" represents direct emissions of $PM_{2.5}$ and includes: "$PM_{2.5}$ emissions carbon," "$PM_{2.5}$ emissions other," primary sulfate (SO_4), and primary nitrate. (Although primary sulfate and primary nitrate, which are emitted directly from stacks rather than forming in atmospheric reactions with SO_2 and NO_x, are part of "$PM_{2.5}$ emissions total," they are not shown in Table 1 as separate items). "$PM_{2.5}$ emissions carbon" represents the sum of organic carbon (OC) and elemental carbon (EC) emissions, and "$PM_{2.5}$ emissions other" represents other inorganic particles (crustal). Emissions of SO_2 and NO_x, which are precursors of the secondary $PM_{2.5}$ components sulfate and nitrate, are also considered. VOCs and NH_3 are also potential $PM_{2.5}$ precursors and are included for consideration.

Emissions data were derived from the 2005 National Emissions Inventory (NEI), version 1. See http://www.epa.gov/ttn/naaqs/pm/pm25_2006_techinfo.html.

EPA also considered the Contributing Emissions Score for each county. The CES is a metric that takes into consideration emissions data, meteorological data, and air quality monitoring information to provide a relative ranking of counties in and near an area. Note that this metric is not the exclusive manner for consideration of data for these factors. A summary of the CES is included in attachment 2, and a more detailed description can be found at http://www.epa.gov/ttn/naaqs/pm/pm25_2006_techinfo.html#C.

Table 1 shows emissions of $PM_{2.5}$ and precursor pollutants components (given in tons per year) and the CES for violating and potentially contributing counties in the Allentown-Bethlehem-Easton area. Counties are listed in descending order by CES.

Table 1. $PM_{2.5}$ Related Emissions and Contributing Emissions Score

County, State	State Recommended Nonattainment ?	CES	$PM_{2.5}$ emissions total (tpy)	$PM_{2.5}$ emissions carbon (tpy)	$PM_{2.5}$ emissions other (tpy)	SO_2 (tpy)	NOx (tpy)	VOCs (tpy)	NH_3 (tpy)
Northampton, PA	Yes	100	5,222	665	4,556	60,396	24,620	10,960	807
Lehigh, PA	Yes	35	1,328	501	828	3,749	11,503	13,369	904
Berks, PA	Yes - other area	25	3,378	922	2,456	18,874	18,086	19,117	4,653
Montgomery, PA	Yes - other area	23	2,597	1,118	1,477	5,411	23,306	37,216	1,535
Bucks, PA	Yes - other area	19	2,022	876	1,146	3,951	16,792	26,241	1,834
Philadelphia, PA	Yes - other area	13	2,506	1,248	1,258	11,293	38,733	35,230	1,299
Monroe, PA	No	12	1,153	590	563	1,022	5,245	8,575	281
Warren, NJ	Yes – partial	12	1,105	588	517	563	5,088	5,468	747
Hunterdon, NJ	No	10	769	454	316	556	3,882	5,053	395
Schuylkill, PA	No	10	1,247	547	700	7,239	6,219	6,873	1,137
Carbon, PA	No	9	649	313	336	1,432	2,913	4,271	220
Luzerne, PA	No	7	1,671	783	888	7,157	10,387	14,098	598
Morris, NJ	Yes - other area	5	1,498	953	545	1,177	13,774	22,461	772
Somerset, NJ	Yes - other area	4	801	451	349	577	7,886	9,823	532
Sussex, NJ	No	3	1,270	744	526	669	2,726	11,442	361
Lackawanna, PA	No	1	830	334	496	1,276	6,660	8,753	420
Pike, PA	No	1	802	419	384	266	2,353	3,985	108

Based upon the data set forth in Table 1, Northampton County has the highest $PM_{2.5}$ total emissions and SO_2 emissions, and the second highest NOx emissions, as well as the highest CES score (100). This is one indication that Northampton is contributing the most towards its nonattainment. Lehigh County has the next highest CES (35), which indicates that this county has about one-third as much influence on the area's nonattainment as Northampton County. Lehigh County's emissions are low compared to many other counties in this analysis. However, Lehigh County borders Northampton County, and combined ambient level and meteorological information reflected in the pollution roses for this area indicate that Lehigh is often upwind from the violating monitor on days with high ambient levels of $PM_{2.5}$ (see Figure 1).

Philadelphia (CES=13) has the highest NOx emissions, while Berks county has the second highest SO_2 emissions. Berks, Montgomery, and Philadelphia Counties have the second, third, and fourth highest $PM_{2.5}$total emissions, respectively. These counties are in existing nonattainment areas for the 1997 $PM_{2.5}$ NAAQS, and are included in those same nonattainment areas for the 2006 $PM_{2.5}$ NAAQS. Berks County is in the Reading nonattainment area. Montgomery and Philadelphia Counties are part of the Philadelphia-Wilmington nonattainment area. Bucks County has the next highest emissions and next highest CES (19). Bucks County is part of the Philadelphia-Wilmington nonattainment area for the 1997 $PM_{2.5}$ NAAQS, and is included in that nonattainment area for the 2006 $PM_{2.5}$ NAAQS.

There are four other counties with CESs of ten or greater, Monroe and Schuylkill Counties in Pennsylvania and Warren and Hunterdon Counties in New Jersey. Of those, Schuylkill and Monroe Counties have the highest emissions, and Warren and Hunterdon Counties have the lowest. Compared to Northampton County, however, the emissions of $PM_{2.5}$ and $PM_{2.5}$ precursors in these counties are quite low. So, on the basis of this factor only, Northampton and Lehigh would be recommended for inclusion in the Allentown nonattainment area.

Factor 2: Air quality data

This factor considers the 24-hour $PM_{2.5}$ design values in micrograms per cubic meter ($\mu g/m^3$) for air-quality monitors in counties in the Allentown-Bethlehem-Easton area based on data for the 2005-2007 period. A monitor's design value indicates whether that monitor attains a specified air-quality standard. The 2006 24-hour $PM_{2.5}$ standard is met when the 3-year average of a monitor's 98^{th} percentile values is 35 $\mu g/m^3$ or less. A design value is only valid if minimum data completeness criteria are met.

The 24-hour $PM_{2.5}$ design values for counties in the Allentown-Bethlehem-Easton area are shown in Table 2.

Table 2. Air Quality Data

County, State	State Recommended Nonattainment?	Design Values 2003-05 ($\mu g/m^3$)	Design Values 2004-06 ($\mu g/m^3$)	Design Values 2005-07 ($\mu g/m^3$)
Northampton, PA	Yes	36	37	37
Lehigh, PA	Yes	36	No monitor	
Berks, PA	Yes - other area	39	37	40
Montgomery, PA	Yes - other area		Inc	Inc
Bucks, PA	Yes - other area		33	35
Philadelphia, PA	Yes - other area	38	36	38
Monroe, PA	No	No monitor		

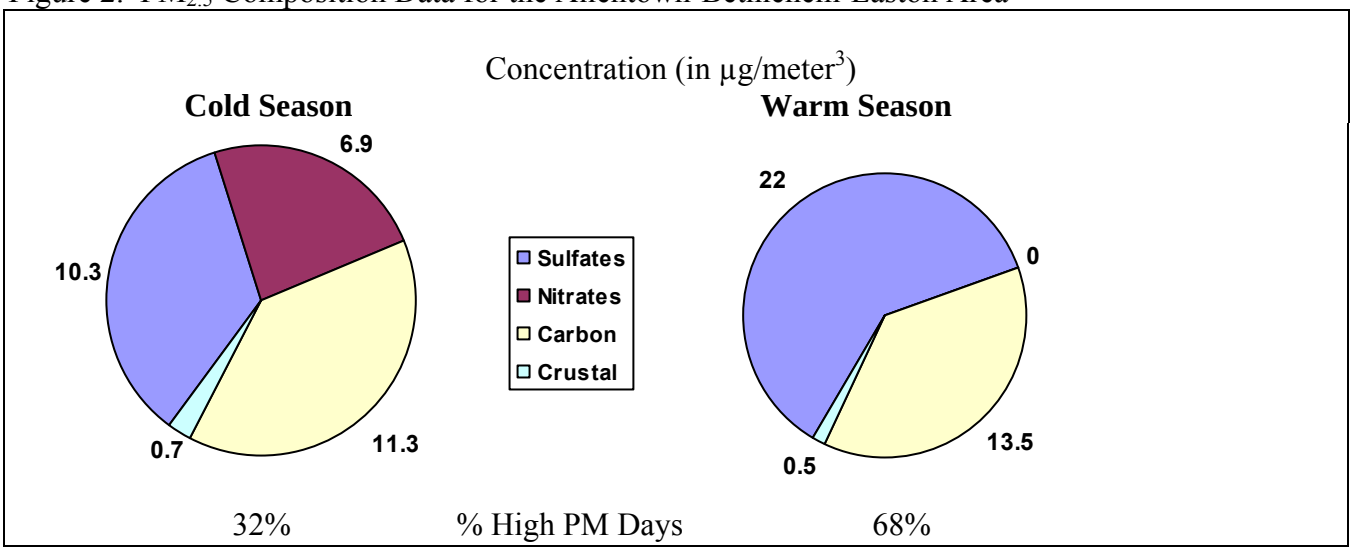
Warren, NJ	Yes – partial		34	
Hunterdon, NJ	No	No monitor		
Schuylkill, PA	No	No monitor		
Carbon, PA	No	No monitor		
Luzerne, PA	No	32		
Morris, NJ	Yes - other area	34	31	
Somerset, NJ	Yes - other area	No monitor		
Sussex, NJ	No	No monitor		
Lackawanna, PA	No	33	31	31
Pike, PA	No	No monitor		

Northampton and Lehigh Counties in Pennsylvania show violations of the 2006 24-hour $PM_{2.5}$ standard. Therefore, these counties are included in the Allentown-Bethlehem-Easton nonattainment area. Berks and Philadelphia Counties in Pennsylvania also show violations of the 2006 24-hour $PM_{2.5}$ standard. However, as stated in Factor 1, above, Berks and Philadelphia Counties are in other nonattainment areas for the 1997 and 2006 $PM_{2.5}$ NAAQS.
Although the other counties in this area of analysis did have a monitor, or had a monitor that did not show a violation of the $PM_{2.5}$ 24-hour standard, the absence of a violating monitor alone is not a sufficient reason to eliminate counties as candidates for nonattainment status. Each county has been evaluated based on the weight of evidence of all nine factors and other relevant information.

The violation in Lehigh County was for the 2003-2005 period. Pennsylvania Department of Environmental Protection (PADEP) discontinued this monitor at the end of 2005. In the December 28, 2007 designation recommendation letter, Pennsylvania stated that the 24-hour $PM_{2.5}$ design values at the Lehigh County monitor (the "Allentown monitor") and the monitor in Northampton County (the "Freemansburg monitor") were very similar. Specifically, "Twenty-four hour $PM_{2.5}$ design values in 2005, the last year both monitors were operating, for Allentown and Freemansburg were 36.4 $\mu g/m^3$ and 36.1 $\mu g/m^3$ respectively." These monitors are less than 5 miles apart, with the Freemansburg monitor east-northeast (i.e. downwind) of the Allentown monitor.

Under this factor, we also consider fine particle composition monitoring data. Air quality monitoring data on the composition of fine particle mass are available from the EPA Chemical Speciation Network and the IMPROVE monitoring network. Analysis of these data indicates that the days with the highest fine particle concentrations occur in both the cold and warm seasons, but more often in the warm season. Figure 2 illustrates average concentrations of $PM_{2.5}$ components for both warm and cold season high $PM_{2.5}$ days. This data indicates that sources of SO_2 and direct $PM_{2.5}$ carbon emissions are key contributors to exceedances in the area.

Figure 2. $PM_{2.5}$ Composition Data for the Allentown-Bethlehem-Easton Area



Note: Eligible monitors for providing design value data generally include State and Local Air Monitoring Stations (SLAMS) at population-oriented locations with an FRM monitor. All data from Special Purpose Monitors (SPM) using an FRM is eligible for comparison to the relevant NAAQS, subject to the requirements given in the October 17, 2006 Revision to Ambient Air Monitoring Regulations (71 FR 61236). All monitors used to provide data must meet the monitor siting and eligibility requirements given in 71 FR 61236 to 61328 in order to be acceptable for comparison to the 2006 24-hr $PM_{2.5}$ NAAQS for designation purposes.

Factor 3: Population density and degree of urbanization (including commercial development)

Table 3 shows the 2005 population for each county in the area being evaluated, as well as the population density for each county in that area. Population data give an indication of whether it is likely that population-based emissions might contribute to violations of the 2006 24-hour $PM_{2.5}$ standard.

Table 3. Population

County	State Recommended Nonattainment?	2005 Population	2005 Population Density (pop/sq mi)
Northampton, PA	Yes	287,334	762
Lehigh, PA	Yes	330,168	948
Berks, PA	Yes - other area	396,236	458
Montgomery, PA	Yes - other area	774,666	1591
Bucks, PA	Yes - other area	619,772	998
Philadelphia, PA	Yes - other area	1,456,350	10220
Monroe, PA	No	162,415	264
Warren, NJ	Yes – partial	110,317	305
Hunterdon, NJ	No	130,042	297
Schuylkill, PA	No	146,996	188
Carbon, PA	No	61,876	160
Luzerne, PA	No	312,795	345
Morris, NJ	Yes - other area	490,084	1019
Somerset, NJ	Yes - other area	319,830	1049
Sussex, NJ	No	152,726	285
Lackawanna, PA	No	209,622	452

Pike, PA	No	56,180	99

The above data indicates that the counties with the highest populations and population densities are in separate existing nonattainment areas for the 1997 $PM_{2.5}$ NAAQS and are included in those same nonattainment areas for the 2006 $PM_{2.5}$ NAAQS. Lehigh and Northampton Counties have the next highest populations and population densities. Luzerne County has a 2005 population similar to that of Lehigh and Northampton Counties, but its population density is about one-half to one-third that of those counties. Lackawanna County has a higher population density than Luzerne County, but has lower population. Lackawanna County's population density is less than half that of Lehigh County. Warren and Carbon Counties are part of the Allentown-Bethlehem-Easton metropolitan statistical area (MSA). However, their 2005 populations and population densities are much smaller than Northampton and Lehigh Counties. Warren County's population and population density are roughly one-third that of Lehigh County. Carbon County's population and population density are roughly one-half that of Warren County.
Based on this factor, Northampton and Lehigh Counties are high ranking for inclusion in the Allentown-Bethlehem-Easton nonattainment area.

Factor 4: Traffic and commuting patterns

This factor considers the number of commuters in each county who drive to another county within the Allentown-Bethlehem-Easton area, the percent of total commuters in each county who commute to other counties within the Allentown-Bethlehem-Easton area, as well as the total Vehicle Miles Traveled (VMT) for each county in millions of miles (see Table 4). A county with numerous commuters is generally an integral part of an urban area and is likely contributing to fine particle concentrations in the area.

Table 4. Traffic and Commuting Patterns

County, State	State Recommended Nonattainment?	2005 VMT (millions of miles)	Number Commuting to any violating counties	Percent Commuting to any violating counties	Number Commuting into & within statistical area	Percent Commuting into & within statistical area
Northampton, PA	Yes	2,399	99,230	79	106,210	85
Lehigh, PA	Yes	3,374	131,610	89	129,570	88
Berks, PA	Yes - other area	3,320	147,990	83	7,250	4
Montgomery, PA	Yes - other area	7,527	6,660	2	2,480	1
Bucks, PA	Yes - other area	5,250	3,980	1	3,870	1
Philadelphia, PA	Yes - other area	6,499	469,300	82	471	0
Monroe, PA	No	1,556	5,140	8	7,060	11
Warren, NJ	Yes – partial	1,342	2,410	5	23,440	47
Hunterdon, NJ	No	929	520	1	1,630	3
Schuylkill, PA	No	1,353	7,790	12	3,030	5
Carbon, PA	No	699	6,900	27	19,070	74
Luzerne, PA	No	2,922	990	1	1,450	1
Morris, NJ	Yes - other area	5,398	130	0	1,760	1
Somerset, NJ	Yes - other area	2,702	70	0	360	0
Sussex, NJ	No	889	40	0	1,440	2
Lackawanna, PA	No	1,963	270	0	280	0
Pike, PA	No	584	200	1	360	2

The listing of counties in Table 4 reflects a ranking of the number of people commuting to other counties. As with population and population density in Factor 3, counties with the highest VMT are in

separate existing nonattainment areas for the 1997 $PM_{2.5}$ NAAQS, and are included in those same nonattainment areas for the 2006 $PM_{2.5}$ NAAQS. These areas do not have many commuters into the Allentown-Bethlehem-Easton MSA.

Northampton and Lehigh Counties have the most commuters into and within the MSA. Warren and Carbon Counties have the next highest numbers of commuters into and within the MSA. However, their 2005 VMT are much lower than the VMT in Northampton and Lehigh Counties. Warren and Carbon Counties also have much lower numbers of commuters into and within the MSA. Furthermore, the majority of commuters from Warren and Carbon Counties into and within the MSA are actually commuting within their own home county. Of the 23,440 commuters from Warren County into and within the MSA, 21,034 are commuting within Warren County. Of the 19,070 commuters from Carbon County into and within the MSA, 12,341 are commuting within Carbon County.

Of the remaining counties, only Luzerne County has VMT comparable to Northampton and Lehigh Counties. However, Luzerne County has only 1,450 commuters into the MSA. Northampton and Lehigh Counties are high ranking candidates for nonattainment designation on the basis of this factor.

Note: The 2005 VMT data used for Tables 4 and 5 of the technical analysis have been derived using methodology such as that described in "Documentation for the 2005 Mobile National Emissions Inventory, Version 2," December 2008, prepared for the Emission Inventory Group, U.S. EPA. This document may be found at: ftp://ftp.epa.gov/EmisInventory/2005_nei/mobile_sector/documentation/2005_mobile_nei_version_2_report.pdf

Factor 5: Growth rates and patterns

This factor looks at population growth for counties in the Allentown-Bethlehem-Easton area from 2000 to 2005, as well as patterns of VMT growth from 1996 to 2005. A county with rapid population or VMT growth is generally an integral part of an urban area and is likely to be contributing to fine particle concentrations in the area.

Table 5 below shows population, population growth, VMT, and VMT growth for counties that are included in the Allentown-Bethlehem-Easton area. Counties are listed in descending order based on VMT growth between 1996 and 2005.

Table 5. Population and VMT Values and Percent Change

Location	Population (2005)	Population % change (2000 - 2005)	2005 VMT (millions of miles)	VMT % change (1996 - 2005)
Northampton, PA	287,334	7	2,399	21
Lehigh, PA	330,168	6	3,374	34
Berks, PA	396,236	6	3,320	11
Montgomery, PA	774,666	3	7,527	73
Bucks, PA	619,772	3	5,250	49
Philadelphia, PA	1,456,350	(4)	6,499	(31)
Monroe, PA	162,415	16	1,556	19
Warren, NJ	110,317	7	1,342	2
Hunterdon, NJ	130,042	6	929	(42)
Schuylkill, PA	146,996	(2)	1,353	(1)
Carbon, PA	61,876	5	699	0

Luzerne, PA	312,795	(2)	2,922	6
Morris, NJ	490,084	4	5,398	56
Somerset, NJ	319,830	7	2,702	39
Sussex, NJ	152,726	6	889	(22)
Lackawanna, PA	209,622	(2)	1,963	14
Pike, PA	56,180	20	584	(8)

Northampton and Lehigh Counties both have experienced moderate population growth, six to seven percent from 2000 to 2005, and high VMT growth, twenty-one to thirty-four percent from 1996 to 2005. The other counties in the MSA, Warren and Carbon Counties, also experienced moderate population growth from 2000 to 2005, five to seven percent. However, Warren, and Carbon Counties have had little to no VMT growth from 1996 to 2005.

Pike and Monroe Counties had high population growth from 1996 to 2005, but their populations are still much lower than the populations of Northampton and Lehigh Counties.

Of the remaining counties that are not part of existing nonattainment areas for the 1997 $PM_{2.5}$ NAAQS, Monroe and Lackawanna Counties had the largest increases in VMT from 1996 to 2005. However, VMT in Monroe and Lackawanna Counties is still lower than VMT in Northampton and Lehigh Counties. Northampton and Lehigh Counties are high ranking candidates for nonattainment designation on the basis of this factor.

Factor 6: Meteorology (weather/transport patterns)

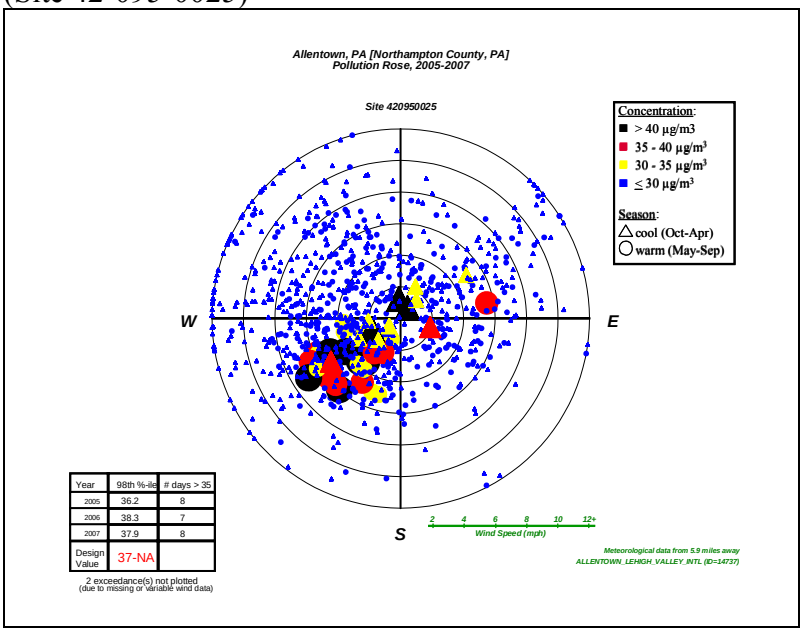
For this factor, EPA considered data from National Weather Service instruments and other meteorological monitoring sites in the area. Wind direction and wind speed data for 2005-2007 were analyzed, with an emphasis on "high $PM_{2.5}$ days" for each of two seasons (an October-April "cold" season and a May-September "warm" season). These high days are defined as days where any FRM air quality monitors had 24-hour $PM_{2.5}$ concentrations above 95% on a frequency distribution curve of $PM_{2.5}$ 24-hour values.

For each air quality monitoring site, EPA developed a "pollution rose" to understand the prevailing wind direction and wind speed on the days with highest fine particle concentrations. The figure identifies 24-hour $PM_{2.5}$ values by color; days exceeding 35 ug/m3 are denoted with a red or black icon. A dot indicates the day occurred in the warm season; a triangle indicates the day occurred in the cool season. The center of the figure indicates the location of the air quality monitoring site, and the location of the icon in relation to the center indicates the direction from which the wind was blowing on that day. An icon that is close to the center indicates a low average wind speed on that day. Higher wind speeds are indicated when the icon is further away from the center.

The following pollution roses for Northampton and Lehigh Counties show that the predominant wind in the Allentown-Bethlehem-Easton area on individual days with elevated $PM_{2.5}$ levels is from the southwest (See Figures 6 and 6.1). However, on some days where $PM_{2.5}$ concentrations exceed 35 $\mu g/m^3$, winds are from the north or north-northeast. This data indicates a larger influence from Lehigh, Berks, and Montgomery Counties, and further southwest. This data supports the inclusion of Lehigh County in this area, and suggests that any emissions from Carbon County, PA and Warren County, NJ, influence violations in this area to a far lesser degree.

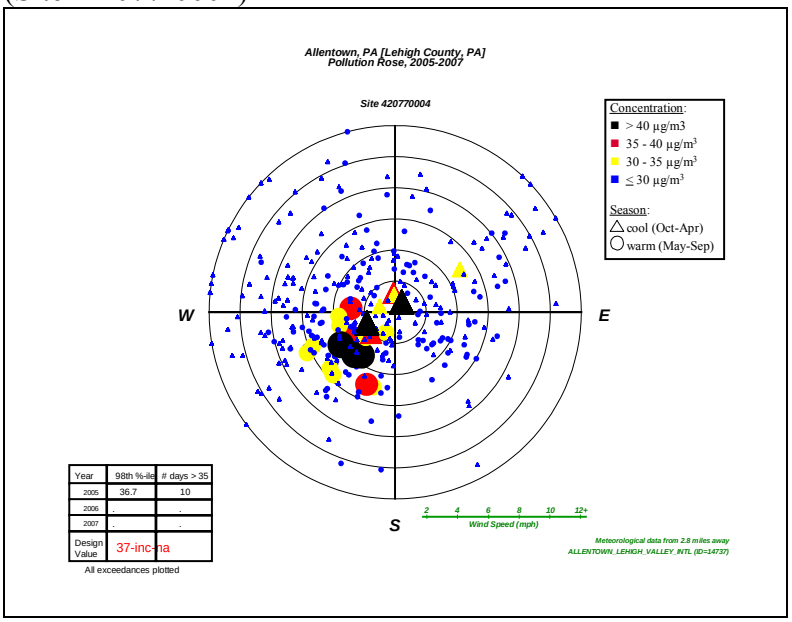
Figure 6. Pollution Trajectory Plot for Northampton County, PA

(Site 42-095-0025)



igure 6.1. Pollution Trajectory Plot Lehigh County, PA

(Site 42-077-0004)



The following pollution rose (see Figure 6.2) for the Warren County monitor also shows that the predominant wind direction in the area is from the southwest.

Figure 6.2. Pollution Trajectory Plot Warren County, NJ
(Site 44-041-0006)

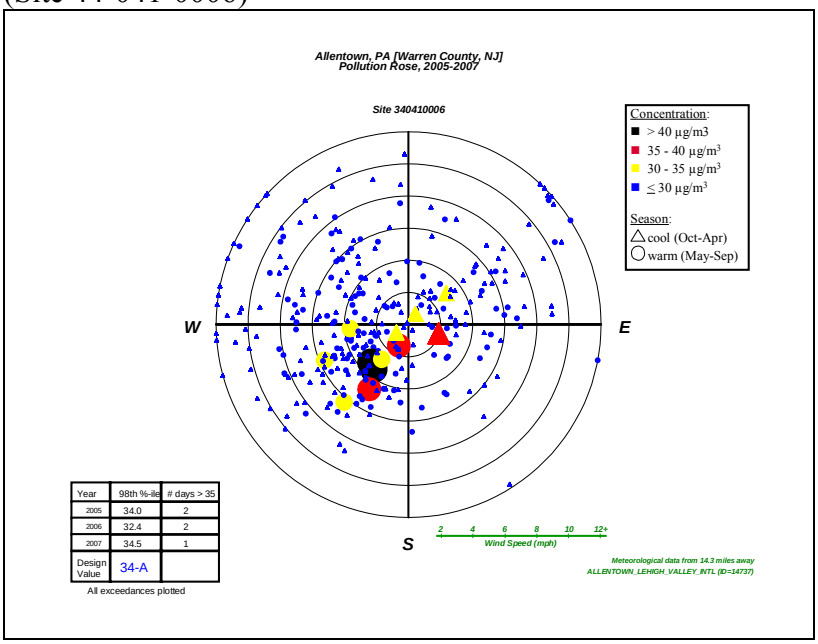
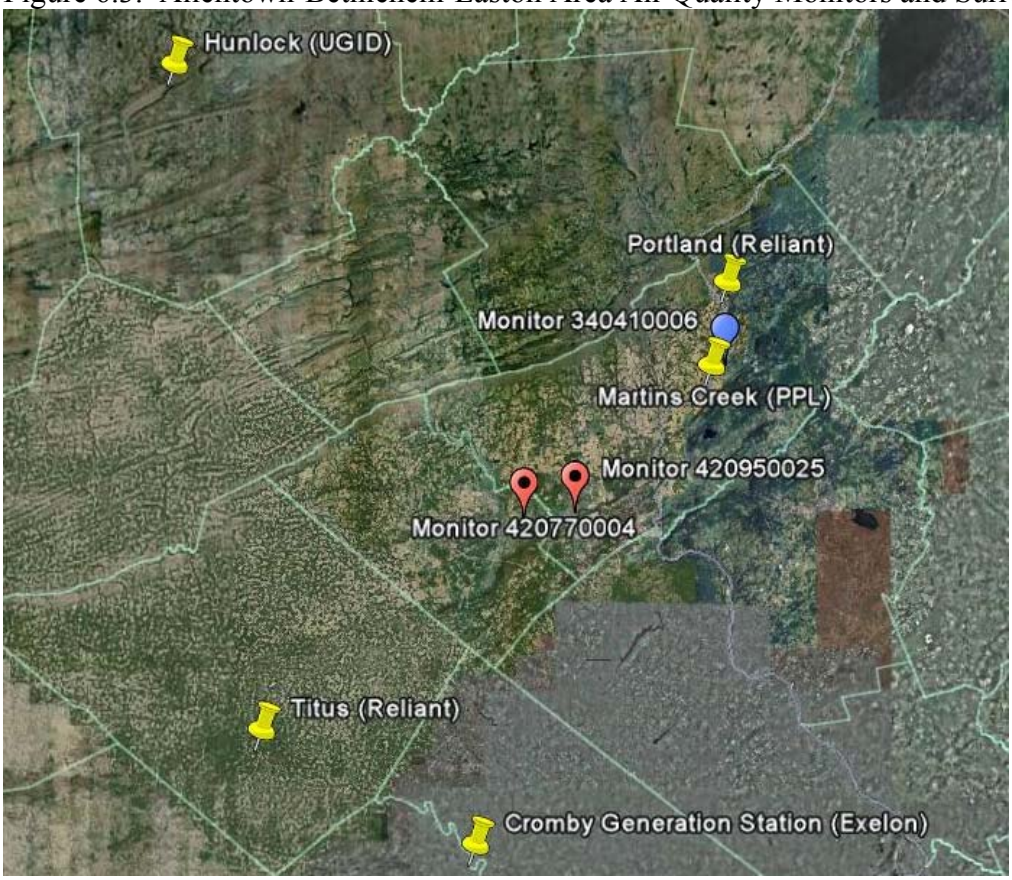


Figure 6.3, below, shows the Northampton, Lehigh, and Warren County monitors, monitors 420950025, 420770004, and 340410006, respectively. Figure 6.3 also includes the four largest electric generating units (EGUs) in the area. The Portland and Martins Creek facilities are in Northampton County, near its border with Warren County. The Hunlock facility is northwest of the Allentown-Bethlehem-Easton area, while the Titus facility is southeast, in Berks County. The Cromby facility is in Chester County, near its border with Montgomery County.

The pollution roses, above, indicate possible influences on the Northampton and Lehigh monitors from the EGUs to the southwest, e.g., the Titus and Cromby facilities. The days exceeding 35 µg/m^3 $PM_{2.5}$ when winds are predominantly from the north, east, or northeast indicate probable influences from the Portland and Martins Creek facilities. Although on the basis of this factor it would appear that the facilities in Berks and Chester Counties to the south of the violating monitor warrant inclusion of those counties in this nonattainment area for this factor, the fact is that they are further away and are being included as part of other nonattainment areas on the basis of comprehensive technical analyses performed by EPA for those areas.

Figure 6.3. Allentown-Bethlehem-Easton Area Air Quality Monitors and Surrounding Large EGUs



Note: The meteorology factor is also considered in each county's Contributing Emissions Score because the method for deriving this metric included an analysis of trajectories of air masses for high $PM_{2.5}$ days.

Factor 7: Geography/topography (mountain ranges or other air basin boundaries)

The geography/topography analysis looks at physical features of the land that might have an effect on the air shed and, therefore, on the distribution of $PM_{2.5}$ over the Allentown-Bethlehem-Easton area.

The Allentown-Bethlehem-Easton area does have geographical or topographical barriers affecting air pollution transport within its air shed. In support of its recommendation to group Lehigh and Northampton Counties in the Allentown-Bethlehem-Easton nonattainment area, and to exclude Carbon County, Pennsylvania stated in its December 28, 2007 designation recommendation letter that Lehigh and Northampton Counties are: "…bounded on the north by Blue Mountain providing a significant physical barrier. A broad valley runs from east to west connecting both Lehigh and Northampton counties." Thus, the geographical and topographical features in this area suggest that there is transport of pollutants between Lehigh and Northampton Counties. However, the physical barrier between Carbon and Northampton Counties, i.e., Blue Mountain, means that Carbon County is less likely to contribute to violations in Northampton County.

The Delaware River separates Hunterdon and Warren counties in New Jersey from the Pennsylvania counties in the Allentown, PA-NJ area; however this is not a significant barrier that would influence

the air shed. Although the river valley does not constitute a barrier to transport of air pollutants, Warren County is not recommended for inclusion in the nonattainment area based on all other factors.

Factor 8: Jurisdictional boundaries (e.g., existing PM areas)

In evaluating the jurisdictional boundary factor, EPA gave special consideration to areas that were already designated nonattainment in 2005 for violating the 1997 fine particle standards. Analysis of chemical composition data in these areas indicates that the same components that make up most of the $PM_{2.5}$ mass in the area on an annual average basis (such as sulfate and direct $PM_{2.5}$ carbon in many eastern areas) also are key contributors to the $PM_{2.5}$ mass on days exceeding the 2006 24-hour $PM_{2.5}$ standard. These data indicate that in many cities, the same source categories that contribute to violations of the annual standard also contribute to exceedances of the 2006 24-hour standard.

Most areas that were originally designated nonattainment for the $PM_{2.5}$ standards still have not attained the standards. Thus, EPA has generally concluded that counties that were designated as having emissions sources contributing to fine particle concentrations which continue to exceed the 1997 standards (all areas violated the annual standard, three also violated the previous 24-hour standard) also contribute to fine particle concentrations on the highest days. For this reason, EPA believes that for most existing nonattainment areas, the nonattainment area for the 2006 24-hour standard should be the same. Consideration also should be given to existing boundaries and organizations as they may facilitate air quality planning and the implementation of control measures to attain the standard. Areas already designated as nonattainment represent important boundaries for state air quality planning.

Northampton, Lehigh, and Carbon Counties were a Subpart 1 ("Basic") nonattainment area for the 1997 8-hour ozone NAAQS. These counties now make up the Allentown-Bethlehem-Easton 8-hour ozone maintenance area. The Allentown-Bethlehem-Easton area did not violate the 1997 $PM_{2.5}$ standards, and therefore was not designated nonattainment under that standard.

The Lehigh Valley Planning Commission is the metropolitan planning organization (MPO) for Lehigh and Northampton Counties. Carbon County is part of the Northeastern Pennsylvania Alliance Rural Planning Organization. The MPO for Warren County, NJ is the North Jersey Transportation Planning Authority. Therefore, for metropolitan planning purposes there is no justification to include or exclude counties outside the Allentown area, since the Lehigh Valley Planning Commission would undertake metropolitan planning for the entire nonattainment area.

There are no major jurisdictional boundary issues in the Allentown-Bethlehem-Easton area. EPA is designating Northampton and Lehigh Counties as the nonattainment area. The air quality planning for the area will be conducted by the Pennsylvania Department of Environmental Protection. Transportation planning is covered by one MPO, the Lehigh Valley Planning Commission.

Factor 9: Level of control of emission sources

Under this factor, the existing level of control of emission sources is taken into consideration. The emissions data used by EPA in this technical analysis and provided in Table 1 (under Factor 1) represent emissions levels taking into account any control strategies implemented in the Allentown-Bethlehem-Easton area before 2005 on stationary, mobile, and area sources. Data are presented for $PM_{2.5}$ components that are directly emitted (carbonaceous $PM_{2.5}$ and crustal $PM_{2.5}$) and for pollutants which react in the atmosphere to form fine particles (e.g. SO_2, NOx, VOC, and ammonia).

In considering county-level emissions, EPA used data from the 2005 National Emissions Inventory, the most updated version of the national inventory available at the beginning of the designations process in late 2007. However, EPA recognized that for certain counties, emissions may have changed since 2005. For example, certain power plants or large sources of emissions in or near this area may have installed emission controls or otherwise significantly reduced emissions since 2005. Some States provided updated information on emissions and emission controls in their comments to EPA. EPA considered such additional information in making final designation decisions.

With regard to nearby power plants, EPA considered information about whether a specific plant installed federally enforceable emission controls by December 2008 resulting in significant emissions reductions. A control requirement is considered to be federally-enforceable if it is required by a State regulation adopted in a State implementation plan, if it is included in a federally-enforceable Title V operating permit, or if it is required by a consent decree which also requires the controls to be included in federally enforceable permit upon termination of the consent decree. In making final decisions, EPA also considered whether a facility would continue to emit pollutants which contribute to $PM_{2.5}$ exceedances even after emission controls are operational

The emission estimates on Table 1 (under Factor 1) include any control strategies implemented by the State in the Allentown-Bethlehem-Easton area during or before 2005 that may influence emissions of any component of $PM_{2.5}$ emissions (i.e., total carbon, SO_2, NOx, and crustal $PM_{2.5}$).

In the Allentown-Bethlehem-Easton Area and the surrounding counties, there may be some emission reductions of SO_2 and NOx subsequent to 2005 that are not accounted for elsewhere in this analysis, due to new controls at large electric generating units (EGUs).

Table 9 shows emissions and controls (current and projected) for EGUs with SO_2 plus NO_x emissions greater than 5000 tons. Data was obtained from the 2006 National Electric Energy Data System (NEEDS) database. Table 9 also lists one EGU that is not included in the NEEDS database, but which has comparable SO_2 and NO_x emissions, the UGI Development Co Hunlock Power Station. Table 9.1 shows emissions for the same EGUs for the years 2002 through 2007. Note that the Cromby facility in Chester County, PA, was included because it is a large facility that is on the border between Chester and Montgomery Counties. The data was obtained from the emissions section of EPA's Clean Air Markets Division (CAMD) website http://camddataandmaps.epa.gov/gdm/index.cfm?fuseaction=emissions.wizard.

Table 9. EGUs with SO_2 plus NO_x emissions > 5000 tons, from the 2006 NEEDS EGU database

County, State	Plant Name	Plant Type	UniqueID Final	2006 SO_2	2006 NOx	Scrubber Online Year	Scrubber Efficiency	SCR Online Year	Capacity MW
Northampton, PA	Northampton Generating Company	Coal Steam	50888_B_BLR1	0	422		91.6		112.0
	Portland	Coal Steam	3113_B_2	18,187	2,207				243.0
			3113_B_1	12,497	1,144				157.0
	PPL Martins Creek	Coal Steam	3148_B_3	502	434				850.0
			3148_B_4	351	261				820.0
Berks, PA	Titus	Coal Steam	3115_B_3	4,718	708				81.0
			3115_B_1	4,666	699				81.0
			3115_B_2	3,954	589				81.0
Schuylkill, PA	Gilberton Power Co, John B. Rich Memorial Power Station	Coal Steam	10113_B_CFB1	0	101		91.6		40.0
			10113_B_CFB2	0	100		91.6		40.0
	Northeastern Power Co, Kline Township Cogen Facility	Coal Steam	50039_B_1	0	161		91.6		50.0
	St Nicholas Cogen Project	Coal Steam	54634_B_1	0	241		91.6		88.0
	Wheelabrator Frackville Energy	Coal Steam	50879_B_BLR1	0	316		91.6		44.5
	WPS Westwood Generation LLC	Coal Steam	50611_B_031	300	289		91.6		30.0
Carbon, PA	Panther Creek Energy Facility	Coal Steam	50776_B_BLR1	0	286		88.9		41.5
			50776_B_BLR2	0	272		88.9		41.5
Chester. PA	Cromby Generating Station	Coal Steam	3159_B_1	3,435	1,581	1982	93.8		48.0
			3159_B_2	178	112				201.0
			3159_B_FB1	3,435	1,581		89.0		48.0
			3159_B_FB2	3,435	1,581		89.0		48.0
Luzerne, PA	UGI Development Co Hunlock Power Station	Coal Steam	3176	4,463.4	493.9	No Data: This facility not in NEEDS EGU Database			

Table 9.1. EGU 2002 to 2007 Emissions from EPA's CAMD

Northampton Generating Company, Northampton County, PA, Facility ID: 50888

Year	# Months Reported	SO_2 Tons	NOx Tons	CO_2 Tons	Heat Input (mmBtu)
2002	No Data				
2003	12	Not Reported	360.9	Not Reported	10,318,197
2004	12		409.5		10,846,447
2005	12		402.2		10,741,008
2006	12		421.8		11,340,606
2007	12		399.4		9,362,013

Portland, Northampton County, PA, Facility ID: 3113

Year	# Months Reported	SO_2 Tons	NOx Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	24,319.9	3,015.2	2,011,568.0	19,743,819
2003	12	28,245.0	2,976.7	2,022,879.0	19,893,636
2004	12	30,721.1	3,305.9	2,222,961.9	21,764,976
2005	12	29,105.1	3,250.5	2,270,088.4	22,262,122
2006	12	30,685.4	3,357.3	2,260,924.7	22,063,385
2007	12	32,729.9	3,641.5	2,384,956.4	23,282,708

PPL Martins Creek, Northampton County, PA, Facility ID: 3148

Year	# Months Reported	SO_2 Tons	NOx Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	22,051.0	5,126.3	2,528,754.9	28,188,724
2003	12	24,825.7	6,646.4	3,062,643.0	33,597,993
2004	12	22,679.6	6,552.1	3,087,076.1	33,838,085
2005	12	19,082.8	6,727.7	3,203,767.2	35,757,795
2006	12	16,815.2	3,104.4	1,528,161.4	16,052,217
2007	12	14,972.3	3,667.8	1,670,459.5	18,506,376

Titus, Berks County, PA, Facility ID: 3115

Year	# Months Reported	SO_2 Tons	NOx Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	13,840.5	1,790.6	1,239,473.3	12,080,730
2003	12	15,892.3	2,088.3	1,344,585.4	13,105,065
2004	12	13,577.7	1,996.2	1,245,216.7	12,136,589
2005	12	14,926.4	2,269.9	1,404,778.6	13,691,829
2006	12	13,338.6	1,997.2	1,258,790.7	12,268,916
2007	12	14,488.7	2,474.4	1,481,640.1	14,440,906

John B. Rich Memorial Power Station (Gilberton), Schuylkill County, PA, Facility ID: 10113

Year	# Months Reported	SO_2 Tons	NOx Tons	CO_2 Tons	Heat Input (mmBtu)
2002	No Data				
2003	12	Not Reported	181.2	Not Reported	8,447,864
2004	12		184.4		8,672,682
2005	12		250.3		8,363,092
2006	12		201.2		8,420,582
2007	12		184.5		8,115,721

Northeastern Power Company, Schuylkill County, PA, Facility ID: 50039

Year	# Months Reported	SO_2 Tons	NOx Tons	CO_2 Tons	Heat Input (mmBtu)
2002	No Data				
2003	12	Not Reported	145.5	Not Reported	5,420,251
2004	12		165.3		5,654,819
2005	12		103.3		3,425,862
2006	12		160.6		6,227,624
2007	12		151.7		6,008,400

St Nicholas Cogen Project, Schuylkill County, PA, Facility ID: 54634

Year	# Months Reported	SO_2 Tons	NOx Tons	CO_2 Tons	Heat Input (mmBtu)
2002	No Data				
2003	12	Not Reported	290.4	Not Reported	9,536,633
2004	12		262.2		9,445,792
2005	12		266.1		9,350,034
2006	12		241.5		9,987,895
2007	12		196.5		9,064,638

Wheelabrator Frackville Energy, Schuylkill County, PA, Facility ID: 50879

Year	# Months Reported	SO_2 Tons	NOx Tons	CO_2 Tons	Heat Input (mmBtu)
2002	No Data				
2003	12	Not Reported	283.4	Not Reported	4,745,383
2004	12		301.6		4,821,380
2005	12		309.6		4,923,553
2006	12		316.1		4,734,927
2007	12		348.4		4,956,785

WPS Westwood Generation LLC, Schuylkill County, PA, Facility ID: 50611

Year	# Months Reported	SO_2 Tons	NOx Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	384.6	248.3	353,653.6	2,946,010
2003	12	363.9	265.7	410,787.0	3,395,849
2004	12	362.8	255.5	412,223.4	3,402,889
2005	12	364.5	392.5	454,330.3	3,748,377
2006	12	299.7	288.8	404,693.5	3,341,946
2007	12	231.0	216.2	307,962.8	2,646,090

Panther Creek Energy Facility, Carbon County, PA, Facility ID: 50776

Year	# Months Reported	SO_2 Tons	NOx Tons	CO_2 Tons	Heat Input (mmBtu)
2002	No Data				
2003	12	Not Reported	577.1	Not Reported	9,715,305
2004	12		544.8		9,074,909
2005	12		493.6		8,487,139
2006	12		558.2		8,775,600
2007	12		531.1		8,270,705

Hunlock Power Station, Luzerne County, PA, Facility ID: 3176					
Year	# Months Reported	SO_2 Tons	NOx Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	3,369.4	447.5	371,025.3	3,363,966
2003	12	3,335.5	425.3	322,886.9	2,991,768
2004	12	3,831.3	552.2	385,821.6	3,602,653
2005	12	4,531.9	451.2	350,218.8	3,263,526
2006	12	4,463.4	493.9	358,886.9	3,420,829
2007	12	3,673.5	558.0	356,647.2	3,410,059
Cromby Generation Station (Exelon), Chester County, PA, Facility ID: 3159					
Year	# Months Reported	SO_2 Tons	NOx Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	3,666.6	1,416.5	888,337.4	9,365,376
2003	12	5,442.3	1,952.5	1,257,579.8	13,222,000
2004	12	6,864.9	2,053.2	1,247,551.4	12,790,103
2005	12	4,989.2	2,104.9	1,221,416.0	12,799,778
2006	12	3,613.5	1,692.7	970,952.9	9,881,506
2007	12	3,446.6	1,973.3	1,062,054.7	10,942,142

As seen in Tables 9 and 9.1, none of the EGUs in the Allentown-Bethlehem-Easton area and surrounding counties put controls in place between 2005 and 2007. However, under an agreement with the Commonwealth of Pennsylvania, the Martins Creek facility in Northampton County was required to shut down its two coal-fired units or re-power them with clean-coal technology by September 2007. (See the October 10, 2003 Commonwealth of Pennsylvania E News Release.) According to PPL, Martins Creek's two coal-fired were shut down September 14, 2007. (See "Martins Creek at a Glance": http://www.pplweb.com/ppl+generation/coal+plants/ppl+martins+creek/) Thus, emissions from Martins Creek may be significantly reduced by December 2008. However, Martin's Creek is located in Northampton County, which has a violating monitor and would be designated nonattainment regardless of the lower expected emissions from this particular facility.

Conclusion

EPA's technical analysis indicates that Northampton and Lehigh Counties contribute the most to the $PM_{2.5}$ nonattainment problem in the Allentown-Bethlehem-Easton area. Compared to the other counties in the MSA, Northampton and Lehigh have high CES, high VMT growth, relatively high populations and population densities, and the most commuters into and within the MSA. Meteorological data and jurisdictional boundaries support their designation as nonattainment.

Carbon and Warren Counties have much lower emissions, populations, and population densities than Lehigh and Northampton Counties. Carbon and Warren Counties also have much lower VMT and fewer commuters travelling into and within the MSA. Furthermore, the majority of commuters from Warren and Carbon Counties into and within the MSA are actually commuting within their own home county. Also, Lehigh and Northampton Counties are served by a single metropolitan planning organization, the Lehigh Valley Planning Commission. Carbon and Warren Counties are in different MPOs. Carbon County is also separated topographically from the Allentown area. In addition, meteorological data indicates that prevailing winds at the violating monitor in Northampton County on

days with elevated $PM_{2.5}$ at or near the level of the 2006 24-hour $PM_{2.5}$ NAAQS are from the southwest, with occasional high level days when winds are from the north, east, or northeast. This data indicates a large influence from Lehigh, Berks, and Montgomery Counties, and further southwest, but much less influence from either Warren or Carbon Counties.

The area is also affected by short and long-range transport primarily from the southwest. However, other nearby counties such as Berks and Montgomery Counties affecting the Allentown-Bethlehem-Easton area are in other designated nonattainment areas for the 1997 $PM_{2.5}$ NAAQS, and have been recommended for inclusion in those same nonattainment areas for the 2006 $PM_{2.5}$ NAAQS. They are similarly in separate MPOs. For all of these reasons, EPA has determined that it is appropriate to designate only Northampton and Lehigh Counties in the Allentown-Bethlehem-Easton nonattainment area for the 2006 $PM_{2.5}$ NAAQS.

In December 2007, the State of New Jersey recommended that Knowlton Township in Warren County be designated as "nonattainment" for the 2006 24-hour $PM_{2.5}$ as part of the Allentown-Bethlehem-Easton area. However, in August 2008, based on EPA's technical analysis of the area, EPA recommended that Warren County, New Jersey, in its entirety, be designated attainment/unclassifiable. In response, the State of New Jersey provided additional technical data to EPA in letters dated September 17, 2008 and October 20, 2008. This additional information was submitted to support New Jersey's recommendation that Knowlton Township in Warren County, NJ be included in the Allentown-Bethlehem-Easton nonattainment area. EPA evaluated this information and determined that the inclusion of any portion of Warren County in the Allentown-Bethlehem-Easton nonattainment area is not appropriate. For further information, refer to EPA's technical analysis for the Allentown area. There is a monitor in Warren County, but that monitor does not show a violation of the 24-hour PM2.5 standard. Neither has Warren County been shown to contribute to nonattainment in the Allentown-Bethlehem-Easton area. EPA does not rely upon modeling (which New Jersey submitted to demonstrate a showing of nonattainment). Further, Warren County has not been demonstrated to contribute to a violation in counties that do show monitored violations of the standard (i.e., Northampton, Berks, etc.). Therefore, the Clean Air Act does not support designation of Warren County as nonattainment under the standard.

Additional information regarding responses to specific State comments can be found in EPA's Response to Comments document at http://www.epa.gov/pmdesignations/2006standards/tech.htm.

EPA Technical Analysis for the Harrisburg-Lebanon-Carlisle Area

Introduction

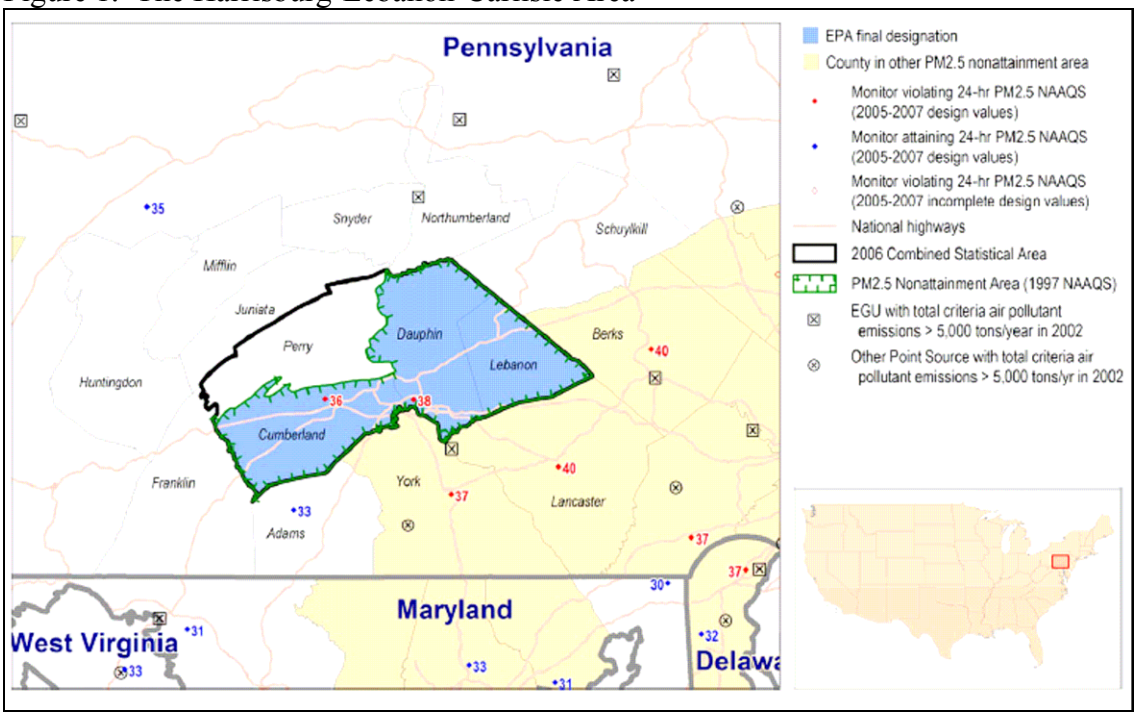
Pursuant to section 107(d) of the Clean Air Act, EPA must designate as nonattainment those areas that violate the NAAQS and those nearby areas that contribute to violations. This technical analysis for the Harrisburg-Lebanon-Carlisle area identifies the counties with monitors that violate the 2006 24-hour $PM_{2.5}$ standard and evaluates nearby counties for contributions to fine particle concentrations in the area. EPA has evaluated these counties based on the weight of evidence of the following nine factors recommended in EPA guidance and any other relevant information:

- pollutant emissions
- air quality data
- population density and degree of urbanization
- traffic and commuting patterns
- growth
- meteorology
- geography and topography
- jurisdictional boundaries
- level of control of emissions sources

We also used analytical tools and data such as pollution roses, fine particle composition monitoring data, back trajectory analyses, and the contributing emission score (CES) to evaluate these areas. (See additional discussion of the CES under Factor 1 below.)

Figure 1 is a map of the counties in the nonattainment area and other relevant information such as the locations and design values of air quality monitors, and the metropolitan area boundary.

Figure 1. The Harrisburg-Lebanon-Carlisle Area



For this area, EPA previously established $PM_{2.5}$ nonattainment boundaries for the 1997 $PM_{2.5}$ NAAQS that included three full counties, Cumberland, Dauphin and Lebanon Counties all in the Commonwealth of Pennsylvania.

In December 2007, the Commonwealth of Pennsylvania recommended that the same counties, be designated as "nonattainment" for the 2006 24-hour $PM_{2.5}$ standard based on air quality data from 2004-2006. See the December 28, 2007 letter from the Pennsylvania Department of Environmental Protection to EPA. These data are from Federal Reference Method (FRM) monitors located in the state.

In August 2008, EPA notified the Commonwealth of Pennsylvania of its intended designations. In this letter, EPA also requested that if the Commonwealth of Pennsylvania wished to provide comments on EPA's intended designation, it should do so by October 20, 2008. EPA stated that it would consider any additional information (e.g., on power plants or partial county areas) provided by the state in making final decisions on the designations.

Based on EPA's technical analysis described below, EPA has designated Cumberland, Dauphin, and Lebanon Counties, the same counties as previously designated nonattainment for the 1997 $PM_{2.5}$ NAAQS, as nonattainment for the 2006 24-hour $PM_{2.5}$ air-quality standard as part of the Harrisburg-Lebanon-Carlisle nonattainment area, based upon currently available information. These counties are listed in the table below.

Harrisburg-Lebanon-Carlisle Area	State-Recommended Nonattainment Counties	EPA Final Designated Nonattainment Counties
Pennsylvania	Cumberland County Dauphin County Lebanon County	Cumberland County Dauphin County Lebanon County

The following is a technical analysis for the Harrisburg area.

Factor 1: Emissions data

For this factor, EPA evaluated county level emission data for the following $PM_{2.5}$ components and precursor pollutants: $PM_{2.5}$ emissions total, $PM_{2.5}$ emissions carbon, $PM_{2.5}$ emissions other, sulfur dioxide (SO_2), nitrogen oxides (NO_x), volatile organic compounds (VOCs), and ammonia (NH_3). "$PM_{2.5}$ emissions total" represents direct emissions of $PM_{2.5}$ and includes: "$PM_{2.5}$ emissions carbon," "$PM_{2.5}$ emissions other," primary sulfate (SO_4), and primary nitrate. (Although primary sulfate and primary nitrate, which are emitted directly from stacks rather than forming in atmospheric reactions with SO_2 and NO_x, are part of "$PM_{2.5}$ emissions total," they are not shown in Table 1 as separate items). "$PM_{2.5}$ emissions carbon" represents the sum of organic carbon (OC) and elemental carbon (EC) emissions, and "$PM_{2.5}$ emissions other" represents other inorganic particles (crustal). Emissions of SO_2 and NO_x, which are precursors of the secondary $PM_{2.5}$ components sulfate and nitrate, are also considered. VOCs and NH_3 are also potential $PM_{2.5}$ precursors and are included for consideration.

Emissions data were derived from the 2005 National Emissions Inventory (NEI), version 1. See http://www.epa.gov/ttn/naaqs/pm/pm25_2006_techinfo.html.

EPA also considered the Contributing Emissions Score for each county. The CES is a metric that takes into consideration emissions data, meteorological data, and air quality monitoring information to provide a relative ranking of counties in and near an area. Note that this metric is not the exclusive manner for consideration of data for these factors. A summary of the CES is included in attachment 2, and a more detailed description can be found at http://www.epa.gov/ttn/naaqs/pm/pm25_2006_techinfo.html#C.

Table 1 shows emissions of $PM_{2.5}$ and precursor pollutants components (given in tons per year) and the CES values for violating and potentially contributing counties in the Harrisburg-Lebanon-Carlisle area. Counties that are part of the Harrisburg-Lebanon-Carlisle nonattainment area for the 1997 $PM_{2.5}$ NAAQS are shown in boldface. Counties are listed in descending order by CES.

Table 1. $PM_{2.5}$ Related Emissions and Contributing Emissions Score

County, State	State Recommended Nonattainment?	CES	$PM_{2.5}$ emissions total (tpy)	$PM_{2.5}$ emissions carbon (tpy)	$PM_{2.5}$ emissions other (tpy)	SO_2 (tpy)	NOx (tpy)	VOCs (tpy)	NH_3 (tpy)
York, PA	Yes – other area	100	7,614	1,217	6,396	118,621	32,214	18,478	3,913
Cumberland, PA	**Yes**	**16**	**1,677**	**698**	**979**	**1,976**	**14,454**	**9,939**	**2,105**
Dauphin, PA	**Yes**	**10**	**1,074**	**528**	**546**	**2,443**	**12,548**	**12,569**	**1,664**
Snyder, PA	No	9	1,183	208	976	28,199	4,434	2,856	1,762
Adams, PA	No	4	1,142	444	697	581	2,825	4,660	3,353
Berks, PA	Yes – other area	4	3,378	922	2,456	18,874	18,086	19,117	4,653
Lancaster, PA	Yes – other area	4	3,258	1,159	2,099	4,017	16,396	26,407	16,486
Lebanon, PA	**Yes**	**3**	**855**	**338**	**516**	**1,778**	**5,876**	**5,924**	**4,445**
Franklin, PA	No	3	1,083	385	699	851	5,470	6,972	5,092
Perry, PA	No	2	486	233	253	444	2,515	2,278	1,541
Schuylkill, PA	No	2	1,247	547	700	7,239	6,219	6,873	1,137
Huntingdon, PA	No	1	565	257	307	791	2,526	3,247	870
Juniata, PA	No	1	291	125	167	252	1,807	1,499	1,577
Mifflin, PA	No	1	553	244	309	490	2,695	2,333	1,282
Northumberland, PA	No	1	728	308	420	1,505	3,442	5,275	1,722

Based upon the above data, York County has by far the highest level of SO_2, NOx and $PM_{2.5}$ emissions. In fact, SO_2 emissions in York County are more than the total SO_2 emissions in all the counties in and adjacent to the nonattainment area. This is primarily due to the emissions from the Brunner Island power station, which itself emitted over 104,000 tons of SO_2 and nearly 14,000 tons of NOx in 2005. Lancaster County leads the area of analysis in emissions of NH_3 and VOC emissions.

The overwhelming emissions contribution of York County has a great deal to do with why it is assigned the highest CES in the area of analysis (normalized to 100). Cumberland and Dauphin Counties have the next highest CES scores after York, although their emissions contributions for all pollutants are relatively low, with the exception of VOCs. The CES values for these counties are likely skewed due to their contribution from and proximity to York. Lebanon County has lower emissions and is further from the dominant emissions of York, and has a commensurately lower CES value. The CES scores for the area are consistent with what one would expect, given in particular the emissions levels and distance of those emissions from the violating monitor.

Based on emissions levels and CES values, York County, followed distantly by Cumberland and Dauphin Counties, is the highest ranking candidate for a 2006 24-hour $PM_{2.5}$ nonattainment designation within the area which is the subject of this analysis.

It should be noted however that three of the counties adjacent to the Harrisburg-Lebanon-Carlisle area have violating monitors (i.e., York, Lancaster, and Berks Counties) and were recommended by Pennsylvania for nonattainment as part of separate nonattainment areas. York, Lancaster, and Berks Counties are in separate nonattainment areas for the 1997 $PM_{2.5}$ NAAQS. Furthermore, as explained in detail in Factor 8, below, the York, Lancaster, and Berks areas are distinct from the Harrisburg-Lebanon-Carlisle area. They are in separate metropolitan statistical areas and are served by separate metropolitan planning organizations. Furthermore, for air quality planning purposes, Pennsylvania defined separate air basins for these areas. Therefore, EPA has determined that it is appropriate to include York, Lancaster, and Berks Counties in separate nonattainment areas for the 2006 24-hour $PM_{2.5}$ NAAQS. To the extent that emissions from the York, Lancaster, and Berks Counties may contribute to the Harrisburg-Lebanon-Carlisle nonattainment area, that contribution will be lessened by emission controls put in place in those separate nonattainment areas.

Those counties with CES scores lower than 3 have comparatively low emissions and do not appear to contribute significantly to the violating monitors in Cumberland and Dauphin Counties. Of these counties with CES lower than three, none have violating monitors and none have been recommended for nonattainment designation by Pennsylvania.

Factor 2: Air quality data

This factor considers the 24-hour $PM_{2.5}$ design values micrograms per cubic meter ($\mu g/m^3$) for air-quality monitors in counties in the Harrisburg-Lebanon-Carlisle area based on data for the 2005-2007 period. A monitor's design value indicates whether that monitor attains a specified air-quality standard. The 24-hour $PM_{2.5}$ standard is met when the 3-year average of a monitor's 98^{th} percentile values is 35 $\mu g/m^3$ or less. A design value is only valid if minimum data completeness criteria are met.

The 24-hour $PM_{2.5}$ design values for counties in the Harrisburg-Lebanon-Carlisle area are shown in Table 2, with the current 1997 $PM_{2.5}$ nonattainment area appearing in bold.

Table 2. Air Quality Data

County	State Recommended Nonattainment?	Design Values 2003-05 ($\mu g/m^3$)	Design Values 2004-06 ($\mu g/m^3$)	Design Values 2005-07 ($\mu g/m^3$)
Cumberland, PA	**Yes**	**40**	**38**	**36**
Dauphin, PA	**Yes**	**39**	**38**	**38**
Lebanon, PA	**Yes**	**No monitor**		
York, PA	Yes– other area	41	37	37
Snyder, PA	No	No monitor		
Adams, PA	No	36	35	33
Berks, PA	Yes – other area	39	36	40
Lancaster, PA	Yes – other area	44	39	40
Franklin, PA	No	No monitor		
Perry, PA	No	No monitor		
Schuylkill, PA	No	No monitor		
Huntingdon, PA	No	No monitor		

Juniata, PA	No	No monitor
Mifflin, PA	No	No monitor
Northumberland, PA	No	No monitor

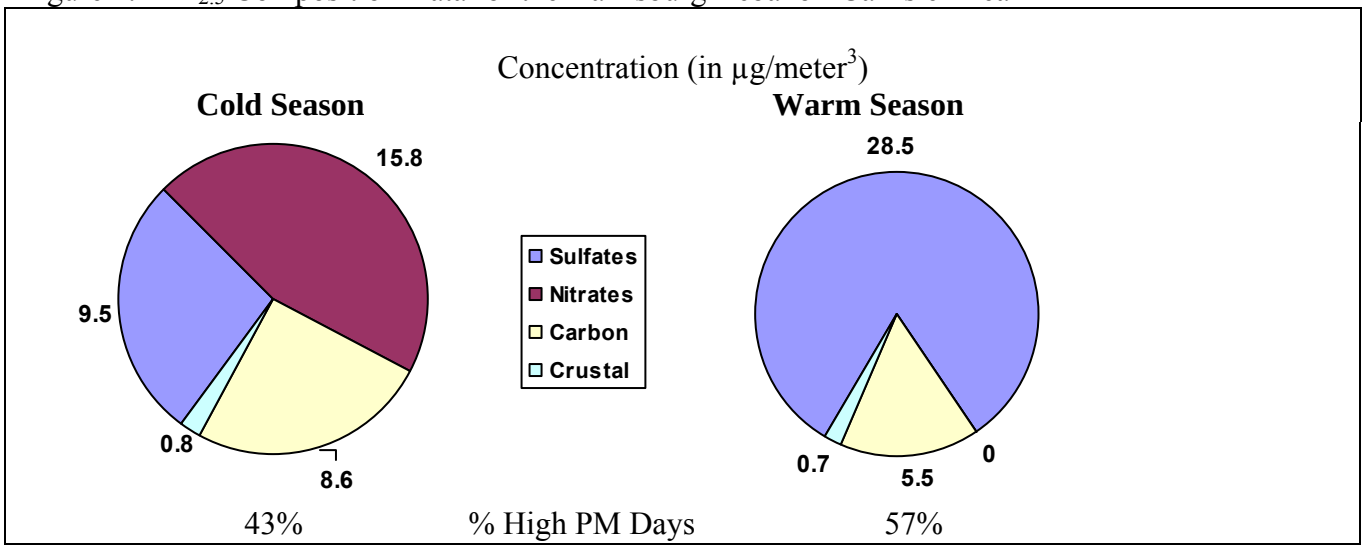
Cumberland and Dauphin Counties violate the 2006 24-hour $PM_{2.5}$ standard. Therefore, these counties are included in the Harrisburg-Lebanon-Carlisle nonattainment area. The adjacent counties of York, Berks, and Lancaster Counties also violate the 2006 24-hour $PM_{2.5}$ standard, over the same period. However, these counties are included as part of separate nonattainment areas for the 2006 24-hour $PM_{2.5}$ NAAQS and are addressed in separate technical analyses.

The absence of a violating monitor alone is not a sufficient reason to eliminate counties as candidates for nonattainment status. Each county has been evaluated based on the weight of evidence of the nine factors and other relevant information.

Based upon 2005-07 design values, Berks and Lancaster Counties have the highest design values, followed by Dauphin, York, and Cumberland Counties, which all continue to monitor violations of the standard. However, as stated above, Berks, Lancaster and York Counties are in separate nonattainment areas for the 1997 $PM_{2.5}$ NAAQS. EPA is designating these counties as part of those same nonattainment areas for the 2006 $PM_{2.5}$ NAAQS. Based upon the above data, Adams County does not have a violating monitor and has low emissions compared to the other counties in this analysis and low CES values.

Under this factor, we also consider fine particle composition monitoring data. Air quality monitoring data on the composition of fine particle mass are available from the EPA Chemical Speciation Network and the IMPROVE monitoring network. Analysis of these data indicates that the days with the highest fine particle concentrations occur in both cool and warm seasons, and the average chemical composition of the highest days are typically characterized by high levels of nitrates in the cold season, and high levels of sulfates in the warm season. This data demonstrates the contribution of the SO_2 emissions from York County, which result in high sulfate composition, as well as the local contribution of nitrates by Lancaster County, most likely due to the higher ammonia levels there. See Figure 2. This data indicates that sources of SO_2, NOx, and direct $PM_{2.5}$ carbon emissions are key contributors to exceedances in the area.

Figure 2. $PM_{2.5}$ Composition Data for the Harrisburg-Lebanon-Carlisle Area



Note: Eligible monitors for providing design value data generally include State and Local Air Monitoring Stations (SLAMS) at population-oriented locations with an FRM monitor. All data from Special Purpose Monitors (SPM) using an FRM is eligible for comparison to the relevant NAAQS, subject to the requirements given in the October 17, 2006 Revision to Ambient Air Monitoring Regulations (71 FR 61236). All monitors used to provide data must meet the monitor siting and eligibility requirements given in 71 FR 61236 to 61328 in order to be acceptable for comparison to the 2006 24-hr $PM_{2.5}$ NAAQS for designation purposes.

Factor 3: Population density and degree of urbanization

Table 3, shows the 2005 population for each county in the Harrisburg-Lebanon-Carlisle area, as well as the population density for each county in that area. Population data gives an indication of whether it is likely that population-based emissions might contribute to violations of the 24-hour $PM_{2.5}$ standard.

Table 3. Population

County	State Recommended Nonattainment?	2005 Population	2005 Population Density (pop/sq mi)
Cumberland, PA	**Yes**	**223,017**	**405**
Dauphin, PA	**Yes**	**252,949**	**454**
Lebanon, PA	**Yes**	**125,429**	**346**
York, PA	Yes– other area	408,182	449
Snyder, PA	No	37,949	114
Adams, PA	No	99,746	191
Berks, PA	Yes – other area	396,236	458
Lancaster, PA	Yes – other area	489,936	499
Franklin, PA	No	137,273	178
Perry, PA	No	44,724	81
Schuylkill, PA	No	146,996	188
Huntington, PA	No	45,772	51
Juniata, PA	No	23,412	60
Mifflin, PA	No	46,085	112
Northumberland, PA	No	92,280	194

Based upon the above data and other relevant data, this area varies from sparsely to densely populated, with county level population densities ranging from a low of 51 persons per square mile in Huntington County, PA to a high of 499 in York, PA. Most of these counties are characterized by their relatively distributed populations, relatively small urban centers, and predominately rural/suburban development pattern.

The above data indicates that York, Lancaster, and Berks Counties have the highest populations in the Harrisburg-Lebanon-Carlisle area. However, as noted above these counties are being designated as part of separate nonattainment areas. Of the remaining listed counties, Dauphin and Cumberland have the highest populations. Lancaster and Berks Counties have the highest population density. Dauphin, York, Cumberland and Lebanon Counties also have significantly greater population density than the remaining counties within the Harrisburg-Lebanon-Carlisle area. Lebanon County has a relatively high population density, but only about half the total population of Cumberland and Dauphin Counties, each. The counties shown in Factor 1 to have low CES values and relatively low emissions are shown

here to have comparatively low populations and population densities. Based on this factor, Dauphin, Cumberland and Lebanon counties could be considered for inclusion in the nonattainment area.

Factor 4: Traffic and commuting patterns

This factor considers the number of commuters in each county who drive to another county within the Harrisburg-Lebanon-Carlisle area, the percent of total commuters in each county who commute to other counties within the Harrisburg-Lebanon-Carlisle area, as well as the total Vehicle Miles Traveled (VMT) for each county in millions of miles (see Table 4). A county with numerous commuters is generally an integral part of an urban area and is likely contributing to fine particle concentrations in the area.

The listing of counties in Table 4 reflects a ranking based on the number of people commuting to other counties. The counties that are in the nonattainment area for the 1997 $PM_{2.5}$ NAAQS are shown in boldface.

Table 4. Traffic and Commuting Patterns

County	State Recommended Nonattainment?	2005 VMT (millions of miles)	Number Commuting to any violating counties	Percent Commuting to any violating counties	Number Commuting into & within statistical area	Percent Commuting into & within statistical area
Cumberland, PA	**Yes**	**2,996**	**100,130**	**95**	**96,320**	**91**
Dauphin, PA	**Yes**	**3,413**	**115,390**	**95**	**113,240**	**94**
Lebanon, PA	**Yes**	**1,133**	**21,020**	**36**	**50,890**	**87**
York, PA	Yes – other area	3,333	169,300	88	21,840	11
Snyder, PA	No	419	660	4	820	5
Adams, PA	No	742	14,000	31	2,730	6
Berks, PA	No	3,320	145,730	82	2,940	2
Lancaster, PA	Yes – other area	4,392	217,820	94	10,110	4
Franklin, PA	Yes – other area	1,535	4,360	7	3,970	6
Perry, PA	No	424	13,840	65	20,190	95
Schuylkill, PA	No	1,353	8,480	14	3,960	6
Huntingdon, PA	No	465	430	2	290	2
Juniata, PA	No	226	2,200	21	2,670	26
Mifflin, PA	No	403	480	2	510	3
Northumberland, PA	No	797	1,880	5	1,800	4

Note: The 2005 VMT data used for Tables 4 and 5 of the technical analysis have been derived using methodology such as that described in "Documentation for the 2005 Mobile National Emissions Inventory, Version 2," December 2008, prepared for the Emission Inventory Group, U.S. EPA. This document may be found at: ftp://ftp.epa.gov/EmisInventory/2005_nei/mobile_sector/documentation/2005_mobile_nei_version_2_report.pdf

The data set forth in Table 4.1, below, relates to predominant commuting patterns for the Harrisburg-Lebanon-Carlisle area. Based upon this data, it appears that the bulk of commuter movement is within and between the counties in the Harrisburg-Lebanon-Carlisle area that have monitors that violate the 2006 $PM_{2.5}$ 24-hour standard. The table is read by finding the county that contributes commuters in

the left column, and reading across the table to the column to where those commuters travel (e.g., on average, 142,104 commuter trips per day originate and end in York County).

Table 4.1. Predominant Commuting Patterns for the Harrisburg-Lebanon-Carlisle Area

Commuting From:	CSA	CBSA	Number commuting into any violating counties	Number commuting into statistical area	Commuting To:						
					Berks	Cumberland	Dauphin	Lancaster	York	Lebanon	Perry
Berks	Philadelphia-Camden-Vineland, PA-NJ-DE-MD	Reading, PA	145,730	2,940	140,819	238	651	3,870	152	2,053	6
Cumberland	**Harrisburg-Carlisle-Lebanon, PA**	**Harrisburg-Carlisle, PA**	**100,130**	**96,320**	**84**	**73,081**	**22,448**	**705**	**3,807**	**419**	**370**
Dauphin	**Harrisburg-Carlisle-Lebanon, PA**	**Harrisburg-Carlisle, PA**	**115,390**	**113,240**	**175**	**16,310**	**93,958**	**2,585**	**2,365**	**2,508**	**466**
Lancaster		Lancaster, PA	217,820	10,110	4,074	1,197	6,927	201,608	4,018	1,952	32
York	York-Hanover-Gettysburg, PA	York-Hanover, PA	169,300	21,840	240	11,626	9,848	5,485	142,104	332	32
Lebanon	**Harrisburg-Carlisle-Lebanon, PA**	**Lebanon, PA**	**21,020**	**50,890**	**2,799**	**1,335**	**12,853**	**3,770**	**266**	**36,677**	**21**
Adams	York-Hanover-Gettysburg, PA	Gettysburg, PA	14,000	2,730							
Perry	Harrisburg-Carlisle-Lebanon, PA	Harrisburg-Carlisle, PA	13,840	20,190							
Schuylkill		Pottsville, PA	8,480	3,960							
Franklin		Chambersburg, PA	4,360	3,970							
Juniata			2,200	2,670							
Northumberland	Sunbury-Lewisburg-Selinsgrove, PA	Sunbury, PA	1,880	1,800							
Snyder	Sunbury-Lewisburg-Selinsgrove, PA	Selinsgrove, PA	660	820							
Mifflin		Lewistown, PA	480	510							
Huntingdon		Huntingdon, PA	430	290							

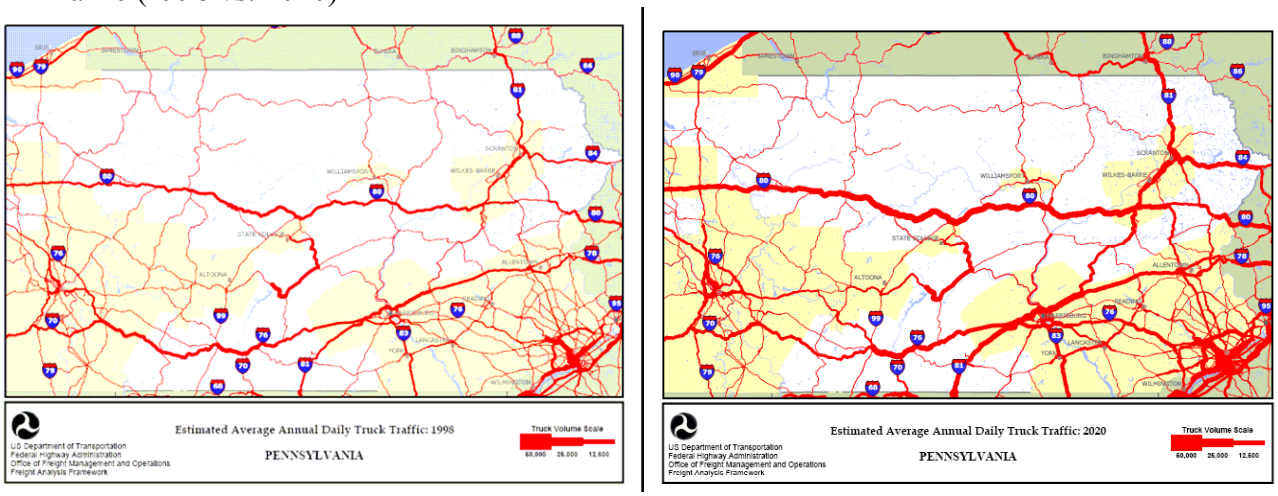
Based upon the above data, it appears that, for each of the counties with a violating monitor, the great majority of commuters travel within the confines of their own county and the number of commuters crossing into other counties with a violating monitor is relatively low. For example, in York County over 78% of commuter trips originate and end within the county, with fewer than 10% travelling to the violating counties of Cumberland and Dauphin Counties.

Although York and Berks Counties have the highest overall number of commuters, most do not cross into the other counties with violating monitors. Also, Cumberland and Dauphin Counties have relatively high numbers of commuters, but most travel within the Harrisburg area. Lebanon County's

VMT is only roughly one-third that of Cumberland and Dauphin Counties, and it has far fewer commuters. However, 87% of Lebanon County's commuters commute into and within the statistical area, with over 14,000 commuters into Cumberland and Dauphin Counties.

Tables 4 and 4.1 only address commuter traffic, and do not track non-commuter travel patterns. These tables do not directly address heavy-duty diesel truck traffic from surrounding counties to the Harrisburg-Lebanon-Carlisle area. The entire region is expected to see strong growth in truck traffic over the next several decades (see Figure 4).

Figure 4. U.S. Department of Transportation Estimated Pennsylvania Average Annual Daily Truck Traffic (1998 vs. 2020)



While York, Berks, and Lancaster Counties all rank high for VMT under this factor, Pennsylvania recommended them for nonattainment designation as separate areas. Based upon the data set forth in Table 4.1, above, it appears that very few commuters from York, Lancaster, and Berks Counties travel into the Harrisburg-Carlisle-Lebanon Combined Statistical Area (CSA) compared to the commuters from Dauphin, Cumberland, and Lebanon Counties who travel within that CSA. As explained in greater detail in Factor 8, below, the Harrisburg-Carlisle-Lebanon, York, Berks, and Lancaster areas are in separate metropolitan statistical areas and are served by separate metropolitan planning organizations. In addition, for air quality planning purposes, Pennsylvania defined separate air basins for these areas. Therefore, EPA has determined that it is appropriate to include York, Lancaster, and Berks Counties in separate nonattainment areas for the 2006 24-hour $PM_{2.5}$ NAAQS. To the extent that vehicle emissions from the York, Lancaster, and Berks Counties may contribute to the Harrisburg-Lebanon-Carlisle nonattainment area, that contribution will be lessened by emission controls put in place in those separate nonattainment areas.

Of the remaining counties, Dauphin, Cumberland, and Lebanon Counties rank highest for nonattainment designation based on this factor. The commuting numbers for these counties also indicate an economic linkage between the three counties. These three counties are also high ranking candidates for designation based on several other factors.

Factor 5: Growth rates and patterns

This factor considers population growth for 2000-2005 and growth in vehicle miles traveled for 1996-2005 for counties in the Harrisburg-Lebanon-Carlisle area, as well as patterns of population and VMT growth. A county with rapid population or VMT growth is generally an integral part of an urban area and likely to be contributing to fine particle concentrations in the area.

Table 5 below shows population, population growth, VMT, and VMT growth for counties in the Harrisburg-Lebanon-Carlisle area.

Table 5. Population and VMT Values and Percent Change

Location	Population (2005)	Population % change (2000 - 2005)	Vehicle Miles Traveled in 2005 (millions of miles)	Percentage VMT Growth (1996 to 2005)
Lancaster, PA	489,936	4	4,392	21
Dauphin, PA	**252,949**	**0**	**3,413**	**27**
York, PA	408,182	7	3,333	6
Berks, PA	396,236	6	3,320	11
Cumberland, PA	**223,017**	**4**	**2,996**	**25**
Franklin, PA	137,273	6	1,535	18
Schuylkill, PA	146,996	(2)	1,353	(1)
Lebanon, PA	**125,429**	**4**	**1,133**	**7**
Northumberland, PA	92,280	(2)	797	5
Adams, PA	99,746	9	742	9
Huntingdon, PA	45,772	0	465	30
Perry, PA	44,724	3	424	17
Snyder, PA	37,949	1	419	40
Mifflin, PA	46,085	(1)	403	11
Juniata, PA	23,412	2	226	22

Based upon the above data, Lancaster County had the highest 2005 VMT levels. Although Snyder and Huntingdon Counties had the largest percentage gains in VMT growth, their 2005 VMT levels were quite low compared to Lancaster, Dauphin, Cumberland, and Lebanon Counties, and other counties in this analysis. Considering only VMT levels and VMT growth between 2000 to 2005, in comparison with all counties listed above, Dauphin and Cumberland Counties had larger VMT levels, 3,413 VMT and 2,996 VMT respectively, and had higher VMT growth, 27 and 25 percent respectively.

Population growth was highest in absolute terms in York County. Lebanon, Dauphin, and Cumberland Counties all had population growth rates for the period from 2000 to 2005 of between four to seven percent. Of the counties being analyzed here, York County appears to be the highest ranking county in terms of population growth. Due to the relatively modest population of all of these counties, and the relatively low populations, population growth is not a high ranking factor in this analysis.

The large VMT growth rates make VMT growth a larger concern. York, Berks, and Lancaster Counties all rank high for VMT under this factor, however these counties are included as part of separate nonattainment areas for the 2006 24-hour $PM_{2.5}$ NAAQS and are addressed in separate technical analyses for those areas. High rates of VMT growth in combination with high baseline VMT levels make VMT growth a higher ranking factor for Dauphin, Cumberland and Lancaster

Counties. However, VMT levels in most of the Harrisburg-Lancaster-Lebanon area and surrounding counties continues to be relatively small. Based on this factor, Dauphin, Cumberland and Lebanon could be considered for inclusion in the nonattainment area.

Factor 6: Meteorology (weather/transport patterns)

For this factor, EPA considered data from National Weather Service instruments and other meteorological monitoring sites in the area. Wind direction and wind speed data for 2005-2007 were analyzed, with an emphasis on "high $PM_{2.5}$ days" for each of two seasons (an October-April "cold" season and a May-September "warm" season). These high days are defined as days where any FRM air quality monitors had 24-hour $PM_{2.5}$ concentrations above 95% on a frequency distribution curve of $PM_{2.5}$ 24-hour values

For each air quality monitoring site, EPA developed a "pollution rose" to understand the prevailing wind direction and wind speed on the days with highest fine particle concentrations. The figures identify 24-hour $PM_{2.5}$ values by color; days exceeding 35 ug/m3 are denoted with a red or black icon. A dot indicates the day occurred in the warm season; a triangle indicates the day occurred in the cool season. The center of the figure indicates the location of the air quality monitoring site, and the location of the icon in relation to the center indicates the direction from which the wind was blowing on that day. An icon that is close to the center indicates a low average wind speed on that day. Higher wind speeds are indicated when the icon is further away from the center.

Harrisburg and Carlisle Areas

The pollution roses for Dauphin County (Harrisburg area) and Cumberland County (Carlisle area) are similar. See Figures 6 and 6.1, below. These figures show a similar northwest-southeast prevailing wind direction on high $PM_{2.5}$ days in both the cold and warm season, and show more warm high $PM_{2.5}$ days in the southwest quadrant and cool weather days in the southeast and northwest quadrant. These patterns indicate influences from Lebanon, York, Lancaster and Cumberland Counties on Dauphin County. For Cumberland County, the pollution rose indicates particulate contribution from York County (from the southeast), plus westerly and northwesterly components.

Figure 6. Pollution Trajectory Plot for Dauphin County, PA
(Site 42-043-0401)

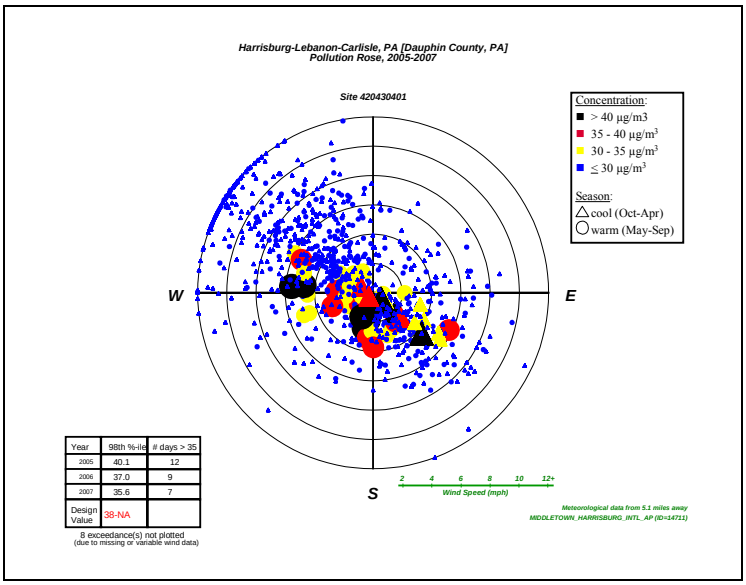
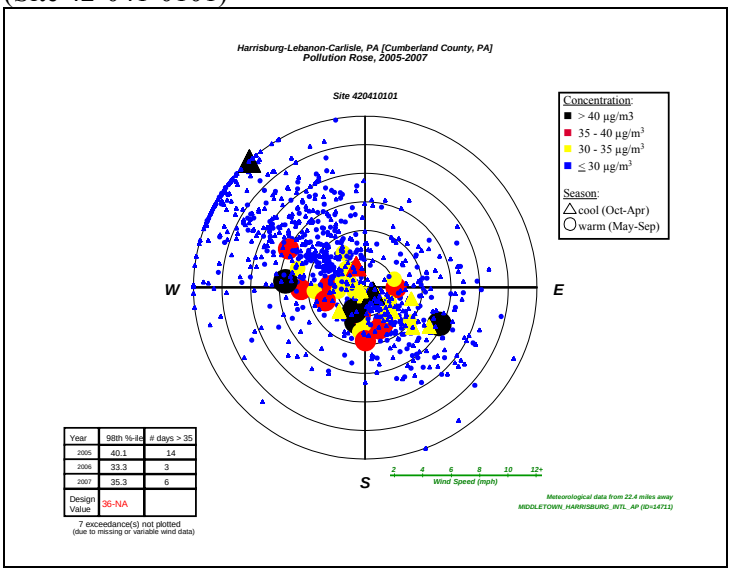


Figure 6.1. Pollution Trajectory Plot for Cumberland County, PA
(Site 42-041-0101)



Lancaster and York Areas

The pollution roses in Figures 6.2 and 6.3, below, for the adjacent counties of York and Lancaster monitors show that for both warm and cool seasons on days with the highest measured $PM_{2.5}$ (>30 $\mu g/m^3$) concentration values, winds are mild. Prevailing wind directions in the warm season for York

are from the south, and for Lancaster, from the northwest. In the cool season, winds are from the northwest in York and from the southeast in Lancaster.

Figure 6.2. Pollution Trajectory Plot for York County, PA (Site 42-133-0008)

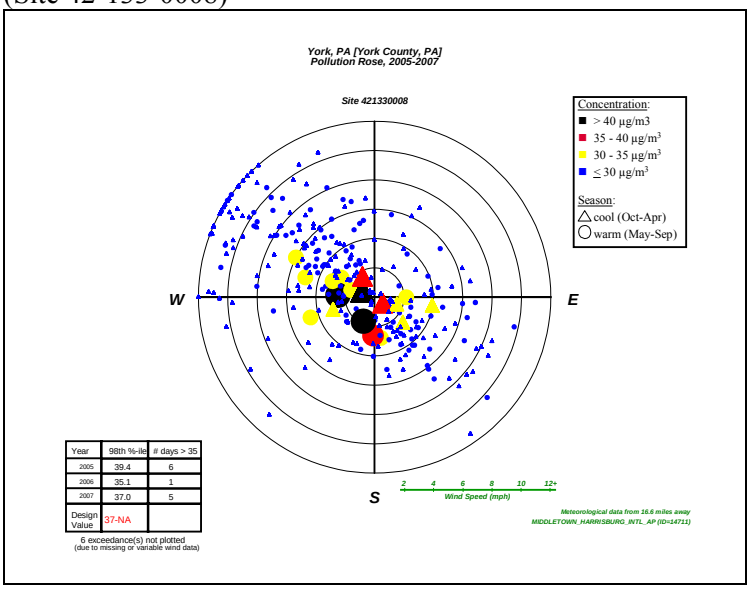
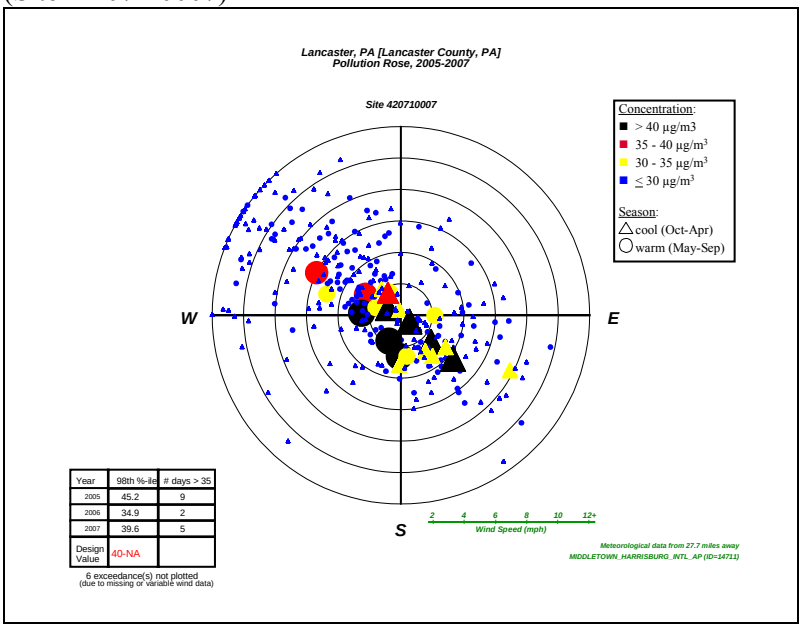


Figure 6.3. Pollution Trajectory Plot for Lancaster County, PA (Site 42-071-0007)

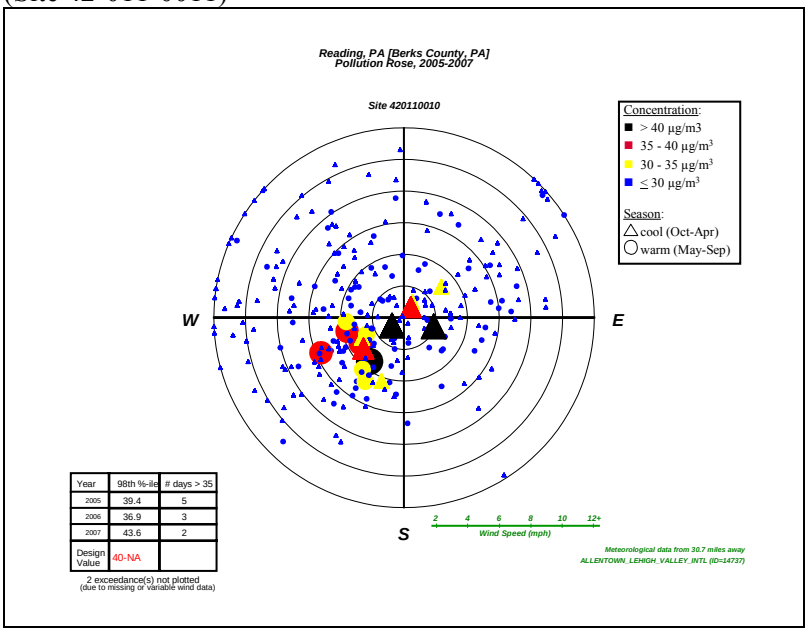


Reading Area

The Reading monitor is located fairly distant due east of the violating monitors in Dauphin and Cumberland Counties. For high days in the cool season, the pollution rose for Berks County shows a

prevalence of light winds from the northeast or southwest direction. The trend for warm days appears to be for light winds from the southwest. See Figure 6.4, below. It appears from this information that the wind magnitude and direction on high days in Berks County does not contribute significantly to the violating monitors in Dauphin and Cumberland Counties.

Figure 6.4. Pollution Trajectory Plot for Berks County, PA
(Site 42-011-0011)



The wind patterns and pollution trajectories show that emissions from Dauphin and Cumberland Counties impact each other. The pollution roses also indicate Lebanon County as contributing to Dauphin and Cumberland Counties. Based on the above analysis of this factor, EPA concludes that Cumberland and Dauphin Counties are high ranking candidates for a 2006 24-hour $PM_{2.5}$ nonattainment designation.

Lancaster and York Counties have meteorology patterns that likely result in some contribution of transported pollution to the violating monitors in the 1997 Harrisburg-Lebanon-Carlisle $PM_{2.5}$ nonattainment area. However, those counties have been included in separate nonattainment areas based on historical jurisdictions and factors supporting separate economic areas.

The pollution rose data does not show a clear contribution from Berks County to the violating monitors in Dauphin and Cumberland Counties. Therefore, Berks County is a lower ranking candidate for a 2006 24-hour $PM_{2.5}$ nonattainment designation in the Harrisburg area.

Note: The meteorology factor is also considered in each county's Contributing Emissions Score because the method for deriving this metric included an analysis of trajectories of air masses for high $PM_{2.5}$ days.

Factor 7: Geography/topography (mountain ranges or other air basin boundaries)

The geography/topography analysis evaluates the physical features of the land that might have an effect on the air shed and, therefore, on the distribution of $PM_{2.5}$ over the Harrisburg-Lebanon-Carlisle area.

The Southcentral Region of Pennsylvania is home to four separate nonattainment areas under the 1997 $PM_{2.5}$ NAAQS, including the Harrisburg-Lebanon-Carlisle, Lancaster, York and Reading nonattainment areas. These areas generally lie to the south and east of the southern boundary of the Allegheny Mountains, which influence regional wind patterns and serves as a barrier to low maritime air masses originating from the Atlantic Ocean. Several broad valleys stretch across this Southcentral Region, although these terrain features are smaller than the mountains to the north. Statistical analysis by Pennsylvania Department of Environmental Protection indicate monitors within the area generally correlate well with each other, but less well with monitors located in eastern Pennsylvania, or in Adams County (to the west) or Perry County (to the north).

The Harrisburg-Lebanon-Carlisle area does not have geographical or topographical barriers that significantly limit air-pollution transport within its air shed. Therefore, geography did not play a significant role in the decision-making process. Although the general Harrisburg-Lebanon-Carlisle area and the general York, Lancaster and Reading areas are geographically contiguous and to some degree may contribute particulate emissions to one another, EPA has, previously, analyzed the Harrisburg-Lebanon-Carlisle area separately from the York, Lancaster and Reading areas for purposes of designation determinations based upon both PM and ozone standards. For reasons discussed above, EPA is analyzing the Harrisburg-Lebanon-Carlisle area separately from the York, Lancaster and Reading areas for purposes of the 2006 24-hour $PM_{2.5}$ nonattainment designation determination.

Factor 8: Jurisdictional boundaries (e.g., existing PM areas)

In evaluating the jurisdictional boundary factor, EPA gave special consideration to areas that were already designated nonattainment in 2005 for violating the 1997 fine particle standards. Analysis of chemical composition data in these areas indicates that the same components that make up most of the $PM_{2.5}$ mass in the area on an annual average basis (such as sulfate and direct $PM_{2.5}$ carbon in many eastern areas) also are key contributors to the $PM_{2.5}$ mass on days exceeding the 2006 24-hour $PM_{2.5}$ standard. These data indicate that in many cities, the same source categories that contribute to violations of the annual standard also contribute to exceedances of the 2006 24-hour standard.

Most areas that were originally designated nonattainment for the $PM_{2.5}$ standards still have not attained the standards. Thus, EPA has generally concluded that counties that were designated as having emissions sources contributing to fine particle concentrations which continue to exceed the 1997 standards (all areas violated the annual standard, three also violated the previous 24-hour standard) also contribute to fine particle concentrations on the highest days. For this reason, EPA believes that for most existing nonattainment areas, the nonattainment area for the 2006 24-hour standard should be the same. Consideration also should be given to existing boundaries and organizations as they may facilitate air quality planning and the implementation of control measures to attain the standard. Areas already designated as nonattainment represent important boundaries for state air quality planning.

As mentioned above, the Southcentral Region of Pennsylvania is home to four separate nonattainment areas under the 1997 $PM_{2.5}$ NAAQS, including the Harrisburg-Lebanon-Carlisle, York, Lancaster, and Reading nonattainment areas. These nonattainment areas are also in separate metropolitan statistical areas (MSAs):

- The Harrisburg-Carlisle MSA includes Cumberland, Dauphin, and Perry Counties. The Harrisburg-Carlisle-Lebanon Combined Statistical Area (CSA) includes the Harrisburg-Carlisle MSA along with the Lebanon MSA (Lebanon County).
- The York-Hanover MSA is comprised of a single county, York. The York-Hanover-Gettysburg, CSA includes the York-Hanover MSA plus the Gettysburg, PA Micropolitan Statistical Area of Adams County.
- The Lancaster MSA is comprised of Lancaster County.
- The Reading MSA consists of Berks County. The Reading MSA is part of the Philadelphia-Camden-Vineland CSA.

These areas are served by separate metropolitan planning organizations (MPOs): the Tri-County Regional Planning Commission (RPC), the Lebanon County Planning Department, the York County Planning Commission, the Lancaster County Planning Commission, and the Berks County Planning Commission.

Pennsylvania has defined four air basins that roughly correspond to the 1997 Harrisburg-Lebanon-Carlisle $PM_{2.5}$ nonattainment area and the 2006 $PM_{2.5}$ nonattainment areas in Southcentral Pennsylvania: 1) Lancaster Air Basin in Lancaster County; 2) Reading Air Basin in Berks County; 3) Harrisburg Air Basin in Cumberland and Dauphin Counties; and, 4) the York Air Basin in York County. These air basins are defined in 25 *Pa Code* § 121.1, and designate sulfur compound controls outlined in 25 *Pa Code* § 123.22.

The definitions of these four air basins, as they appear in 25 *Pa Code* § 121.1 appear below:

> *Lancaster air basin*—The political subdivisions in Lancaster County of East Petersburg Borough, City of Lancaster, Lancaster Township, Manheim Township, and Millersville Borough.
>
> *Reading air basin*—The political subdivisions in Berks County of Bern Township, Cumru Township, Kenhorst Borough, Laureldale Borough, Leesport Borough, Lower Alsace Township, Mohnton Borough, Mt. Penn Borough, Muhlenberg Township, City of Reading, Shillington Borough, Sinking Spring Borough, Spring Township, St. Lawrence Borough, Temple Borough, West Lawn Borough, West Reading Borough, Wyomissing Borough, and Wyomissing Hills Borough.
>
> *Harrisburg air basin*—The following political subdivisions in Cumberland County: Camp Hill Borough, East Pennsboro Township, Lemoyne Borough, New Cumberland Borough, West Fairview Borough, Wormleysburg Borough, and the political subdivisions in Dauphin County of the City of Harrisburg, Highspire Borough, Lower Swatara Township, Middletown Borough, Paxtang Borough, Royalton Borough, Steelton Borough, Susquehanna Township, and Swatara Township.

York air basin—The political subdivisions in York County of Manchester Township, North York Borough, Spring Garden Township, Springettsbury Township, West Manchester Township, West York Borough, and City of York.

Areas designated as 8-hour ozone nonattainment areas, and prior $PM_{2.5}$ nonattainment areas, are also important boundaries for State air-quality planning. To the degree appropriate, based upon violations and contributions to violations of the ozone and $PM_{2.5}$ NAAQS in a particular area, EPA believes it may be helpful for air planning purposes and for attainment of both NAAQS, for there to be some consistency between ozone and $PM_{2.5}$ nonattainment area boundaries. For the 1997 $PM_{2.5}$ standard and the 1997 8-hour ozone standard, the Harrisburg-Lebanon-Carlisle metropolitan area (as defined by Office of Management and Budget in 1999) was designated as a separate nonattainment area from the other nearby metropolitan areas surrounding it. York and Adams Counties were designated as the York Subpart 1 ("Basic") 8-hour ozone nonattainment area. Berks County was designated as the Reading Subpart 1 ("Basic") 8-hour ozone nonattainment area, Lancaster County designated as the Lancaster marginal 8-hour ozone nonattainment area. The Harrisburg-Lebanon-Carlisle, York, Reading, and Lancaster 8-hour ozone nonattainment areas have all been re-designated to attainment for the 1997 8-hour ozone standard. Perry County was not included in the 1997 $PM_{2.5}$ Harrisburg-Lebanon-Carlisle nonattainment area, due to its generally low ranking in the technical analysis performed by EPA under that standard. Perry County was, however, included in the 8-hour ozone nonattainment area, and is now a part of that 8-hr ozone maintenance area.

The Harrisburg-Carlisle metropolitan area is served by one Metropolitan Planning Organization, the Tri-County Regulatory Planning Commission, which has planning responsibilities for Dauphin, Cumberland, and Perry Counties. A separate MPO is responsible for Lebanon County.

Factor 9: Level of control of emission sources

Under this factor, the existing level of control of emission sources is taken into consideration. The emissions data used by EPA in this technical analysis and provided in Table 1 (under Factor 1) represent emissions levels taking into account any control strategies implemented in the Harrisburg-Lebanon-Carlisle area before 2005 on stationary, mobile, and area sources. Data are presented for $PM_{2.5}$ components that are directly emitted (carbonaceous $PM_{2.5}$ and crustal $PM_{2.5}$) and for pollutants which react in the atmosphere to form fine particles (e.g. SO_2, NOx, VOC, and ammonia).

In considering county-level emissions, EPA used data from the 2005 National Emissions Inventory, the most updated version of the national inventory available at the beginning of the designations process in late 2007. However, EPA recognized that for certain counties, emissions may have changed since 2005. For example, certain power plants or large sources of emissions in or near this area may have installed emission controls or otherwise significantly reduced emissions since 2005. Some States provided updated information on emissions and emission controls in their comments to EPA. EPA considered such additional information in making final designation decisions.

With regard to nearby power plants, EPA considered information about whether a specific plant installed federally enforceable emission controls by December 2008 resulting in significant emissions reductions. A control requirement is considered to be federally-enforceable if it is required by a State regulation adopted in a State implementation plan, if it is included in a federally-enforceable Title V operating permit, or if it is required by a consent decree which also requires the controls to be included in federally enforceable permit upon termination of the consent decree. In making final decisions,

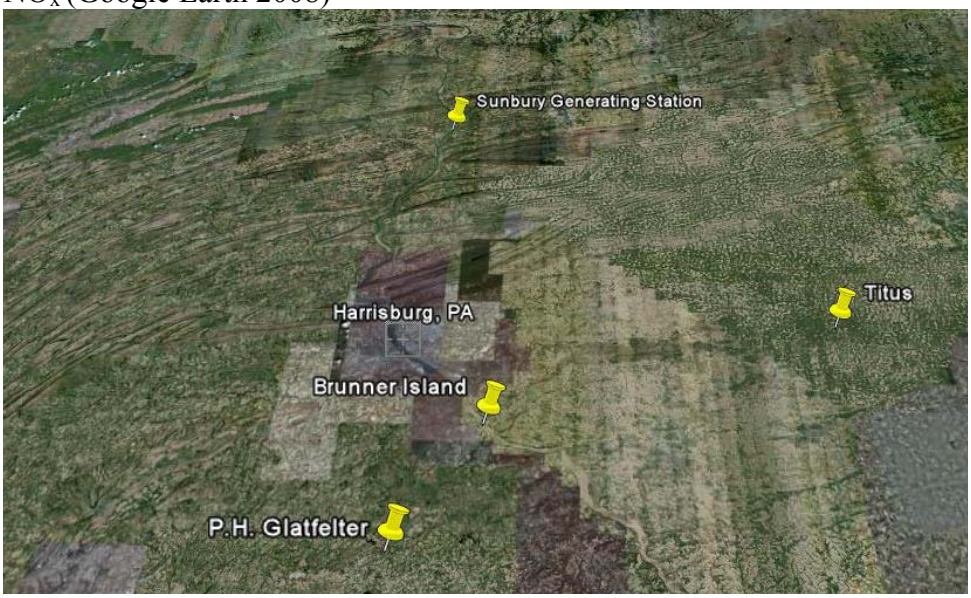
EPA also considered whether a facility would continue to emit pollutants which contribute to $PM_{2.5}$ exceedances even after emission controls are operational.

Figure 9, below, depicts the location of the four electrical generating units (EGUs) within the Harrisburg-Lebanon-Carlisle area and nearby vicinity which have combined SO_2 and NO_x emissions of greater than 5,000 tons annually. Table 9 shows emissions and controls (current and projected) for EGUs with SO_2 plus NO_x emissions greater than 5000 tons. Data was obtained from the 2006 National Electric Energy Data System (NEEDS) database. Table 9.1 shows emissions for the same EGUs for the years 2002 through 2008. The data was obtained from the emissions section of EPA's Clean Air Markets Division (CAMD) website http://camddataandmaps.epa.gov/gdm/index.cfm?fuseaction=emissions.wizard.

Table 9. EGUs with SO_2 plus NO_x emissions > 5000 tons, from the 2006 NEEDS EGU Database

County	Plant Name	Plant Type	UniqueID Final	2006 SO_2	2006 NOx	Scrubber Online Year	Scrubber Efficiency	SCR Online Year	Capacity MW	1997 $PM_{2.5}$ Nonattainment Area
Berks	Titus	Coal Steam	3115_B_3	4,718	708				81.0	Reading
			3115_B_1	4,666	699				81.0	
			3115_B_2	3,954	589				81.0	
Snyder	Sunbury Generating Station	Coal Steam	3152_B_4	6,668	704				128.0	Attainment
			3152_B_3	7,039	819				82.7	
			3152_B_2B	2,712	330				37.6	
			3152_B_1A	2,556	277		91.6		37.6	
			3152_B_1B	2,496	275		91.6		37.6	
			3152_B_2A	2,404	297				37.6	
York	P H Glatfelter	Coal Steam	50397_B_5PB036				91.6		36.1	York
	PPL Brunner Island	Coal Steam	3140_B_3	45,447	6,288	2008	95.0		749.0	York
			3140_B_2	26,606	3,600	2009	95.0		378.0	
			3140_B_1	21,492	2,866	2009	95.0		321.0	

Figure 9. The Harrisburg-Lebanon-Carlisle Area showing nearby EGUs over 5,000 tons/year SO_2 and NO_x (Google Earth 2008)



The Harrisburg-Lebanon-Carlisle area contains no large stationary point sources (defined here as those emitting levels of SO_2 plus NOx greater those 5,000 tons per year). However, several large sources are present in the counties adjacent to the Harrisburg-Lebanon-Carlisle area (see Figure 9).

Of these sources, the most notable in terms of emissions levels is the PPL Brunner Island power station in York Haven, York County. This facility emitted over 106,000 tons of SO_2 in 2007 (see Table 9). Under a consent agreement, two scrubbers are in the process of being constructed at Brunner Island. EPA believes that these scrubbers will handle exhaust from the plants three coal fired boilers. The first of these scrubbers is to be completed during 2008, and the second scrubber for the remaining boiler units is projected to be completed in 2009. These scrubbers are projected to remove about 100,000 tons of SO_2 per year, which will have a significant impact on air quality in the surrounding area.

Table 9.1. Selected EGU Emissions (2002-2007) from EPA's Clean Air Markets Division

Brunner Island, York County, PA, Facility ID: 3140

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	68,931.9	16,190.7	8,773,248.7	85,510,980
2003	12	73,731.0	13,507.7	7,870,160.3	76,709,689
2004	12	92,073.5	16,249.1	9,317,167.7	90,810,610
2005	12	104,601.6	13,929.5	9,020,665.8	87,923,213
2006	12	93,545.0	12,753.7	8,173,709.4	79,665,649
2007	12	106,148.2	15,730.2	9,380,958.3	91,432,329

Sunbury Generating Station, Snyder County, PA, Facility ID: 3152

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	25,216.2	5,398.3	2,505,104.3	23,347,084
2003	12	28,065.8	3,552.9	2,261,858.1	21,185,122
2004	12	27,734.5	2,913.2	2,144,078.4	19,981,770

2005	12	27,738.3	2,897.3	2,299,850.0	21,310,739
2006	12	23,874.9	2,701.8	2,233,097.1	21,384,758
2007	12	29,807.2	3,776.8	2,724,661.0	26,556,171
Titus, Berks County, PA, Facility ID: 3115					
Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	13,840.5	1,790.6	1,239,473.3	12,080,730
2003	12	15,892.3	2,088.3	1,344,585.4	13,105,065
2004	12	13,577.7	1,996.2	1,245,216.7	12,136,589
2005	12	14,926.4	2,269.9	1,404,778.6	13,691,829
2006	12	13,338.6	1,997.2	1,258,790.7	12,268,916
2007	12	14,488.7	2,474.4	1,481,640.1	14,440,906
PH Glatfelter, York County, PA, Facility ID: 50397					
Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	No Data			
2003	12	Not Reported	Not Reported	2,142.1	10,960,507
2004	12			2,068.6	10,423,119
2005	12			1,765.0	10,408,417
2006	12			1,735.7	10,495,477
2007	12			1,691.2	10,009,067

Based upon this factor, significant reductions in emissions are expected in the area after the time of designation but prior to the date by when the attainment demonstration for the area would be due. York County is the dominant county in the area from an SO_2 emissions perspective, and the area in general will benefit greatly in the 2008-2009 timeframe from reduction in emission from the Brunner Island power station. York is a high-ranking candidate for nonattainment based upon this factor, and for the other factors that are based on CESs. However, York is included as a separate nonattainment area for the 2006 24-hour $PM_{2.5}$ NAAQS and is addressed in separate technical analysis for that area. Further, this facility is located in a separate jurisdictional area for both economic and air quality planning purposes.

Conclusion

EPA's technical analysis demonstrates that Cumberland, Dauphin, and Lebanon Counties contribute significantly to the $PM_{2.5}$ nonattainment problem in the Harrisburg-Lebanon-Carlisle area.

The Harrisburg-Lebanon-Carlisle area is a separate and distinct area, not associated economically or jurisdictionally with the Lancaster, Berks, and York areas. Historically, these areas have been separate nonattainment areas for both particulate matter and ozone. Lancaster, Berks, and York Counties are in separate nonattainment areas for the 1997 $PM_{2.5}$ NAAQS, the Lancaster, Reading, and York nonattainment areas, respectively. Very few commuters from York, Lancaster, and Berks Counties travel into the Harrisburg-Carlisle-Lebanon CSA compared to the commuters from Dauphin, Cumberland, and Lebanon Counties who travel within that CSA. Furthermore, the York, Lancaster, and Berks areas are in separate metropolitan statistical areas and are served by separate metropolitan planning organizations. In addition, for air quality planning purposes, Pennsylvania defined separate air basins for these areas. Therefore, EPA has determined that it is appropriate to include York,

Lancaster, and Berks Counties in separate nonattainment areas for the 2006 24-hour $PM_{2.5}$ NAAQS. To the extent that emissions from the York, Lancaster, and Berks Counties may contribute to the Harrisburg-Lebanon-Carlisle nonattainment area, that contribution will be lessened by emission controls put in place in those separate nonattainment areas.

Cumberland, Dauphin, and Lebanon Counties in Pennsylvania were designated nonattainment for the 1997 annual $PM_{2.5}$ NAAQS as the Harrisburg-Lebanon-Carlisle nonattainment area. Cumberland and Dauphin Counties have monitors showing violations of 2006 24-hour $PM_{2.5}$ NAAQS. Lebanon County has no monitors, but is economically linked to Cumberland and Dauphin Counties, with over 14,000 Lebanon residences commuting to Cumberland and Dauphin Counties. In addition, based on emission levels, economic linkages, traffic, and commuting, emissions from Cumberland, Dauphin, and Lebanon Counties, such as those from vehicles and other small area sources, contribute to the nonattainment problem in the Harrisburg area. Therefore, EPA has determined that it is appropriate to include Cumberland, Dauphin, and Lebanon Counties in the Harrisburg-Lebanon-Carlisle nonattainment area for the 2006 24-hour $PM_{2.5}$ NAAQS.

EPA Technical Analysis for the Johnstown Area

Introduction

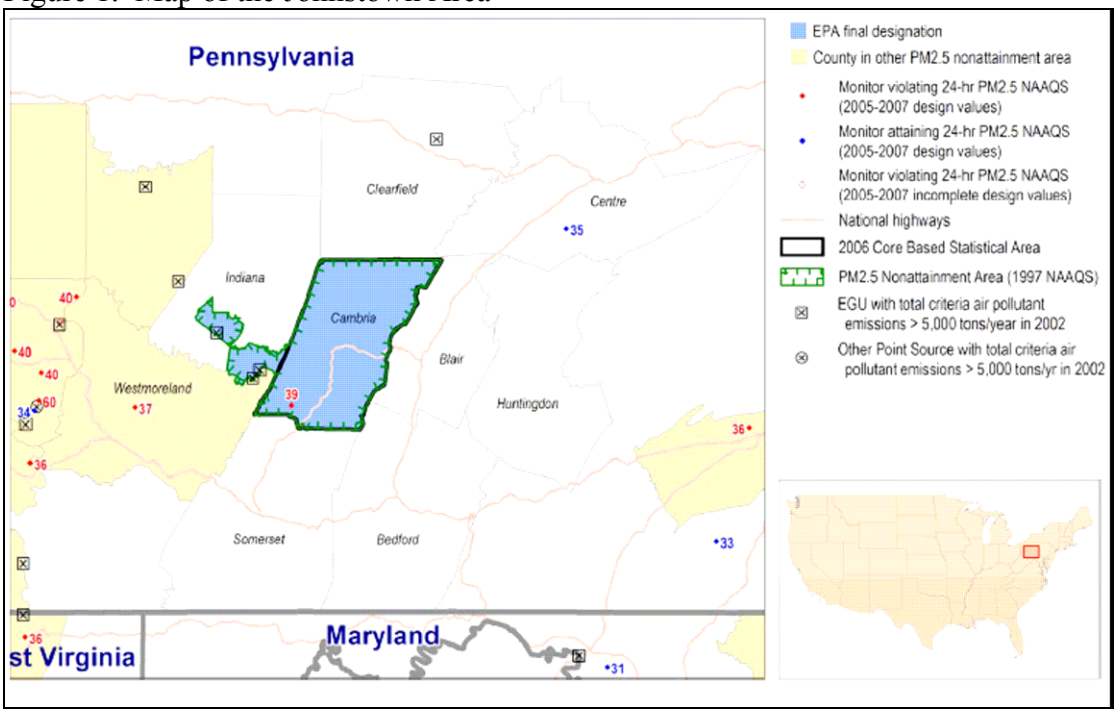
Pursuant to section 107(d) of the Clean Air Act, EPA must designate as nonattainment those areas that violate the NAAQS and those nearby areas that contribute to violations. This technical analysis for the Johnstown area identifies the counties with monitors that violate the 2006 24-hour $PM_{2.5}$ standard and evaluates nearby counties for contributions to fine particle concentrations in the area. EPA has evaluated these counties based on the weight of evidence of the following nine factors recommended in EPA guidance and any other relevant information:

- pollutant emissions
- air quality data
- population density and degree of urbanization
- traffic and commuting patterns
- growth
- meteorology
- geography and topography
- jurisdictional boundaries
- level of control of emissions sources

We also used analytical tools and data such as pollution roses, fine particle composition monitoring data, back trajectory analyses, and the contributing emission score (CES) to evaluate these areas. (See additional discussion of the CES under Factor 1 below.)

Figure 1 is a map of the counties in the Johnstown nonattainment area and other relevant information such as the locations and design values of air quality monitors, and the metropolitan area boundary.

Figure 1. Map of the Johnstown Area



For this area, EPA previously established $PM_{2.5}$ nonattainment boundaries for the 1997 $PM_{2.5}$ NAAQS that included the one full county (Cambria County) and one partial county (portions of Indiana County), with all being located in Pennsylvania.

In December 2007, Pennsylvania recommended that the same counties be designated as "nonattainment" for the 2006 24-hour $PM_{2.5}$ standard based on air quality data from 2004-2006. See the December 28, 2008 letter from the Pennsylvania Department of Environmental Protection to EPA. These data are from Federal Reference Method (FRM) monitors located in the state.

In August 2008, EPA notified the Commonwealth of Pennsylvania of its intended designations. In this letter, EPA also requested that if the Commonwealth of Pennsylvania wished to provide comments on EPA's intended designation, it should do so by October 20, 2008. EPA stated that it would consider any additional information (e.g., on power plants or partial county areas) provided by the state in making final decisions on the designations.

Based on EPA's technical analysis described below, EPA has designated Cambria County and portions of Indiana County as nonattainment for the 2006 24-hour $PM_{2.5}$ NAAQS as the Johnstown nonattainment area, based upon currently available information. These counties are listed in the table below.

Johnstown	State-Recommended Nonattainment Counties	EPA Final Designated Nonattainment Counties
Pennsylvania	Cambria County Indiana County (partial)	Cambria County Indiana County (partial)

The following is a technical analysis for the Johnstown area.

Factor 1: Emissions data

For this factor, EPA evaluated county level emission data for the following $PM_{2.5}$ components and precursor pollutants: $PM_{2.5}$ emissions total, $PM_{2.5}$ emissions carbon, $PM_{2.5}$ emissions other, sulfur dioxide (SO_2), nitrogen oxides (NO_x), volatile organic compounds (VOCs), and ammonia (NH_3). "$PM_{2.5}$ emissions total" represents direct emissions of $PM_{2.5}$ and includes: "$PM_{2.5}$ emissions carbon," "$PM_{2.5}$ emissions other," primary sulfate (SO_4), and primary nitrate. (Although primary sulfate and primary nitrate, which are emitted directly from stacks rather than forming in atmospheric reactions with SO_2 and NO_x, are part of "$PM_{2.5}$ emissions total," they are not shown in Table 1 as separate items). "$PM_{2.5}$ emissions carbon" represents the sum of organic carbon (OC) and elemental carbon (EC) emissions, and "$PM_{2.5}$ emissions other" represents other inorganic particles (crustal). Emissions of SO_2 and NO_x, which are precursors of the secondary $PM_{2.5}$ components sulfate and nitrate, are also considered. VOCs and NH_3 are also potential $PM_{2.5}$ precursors and are included for consideration.

Emissions data were derived from the 2005 National Emissions Inventory (NEI), version 1. See http://www.epa.gov/ttn/naaqs/pm/pm25_2006_techinfo.html.

EPA also considered the Contributing Emissions Score for each county. The CES is a metric that takes into consideration emissions data, meteorological data, and air quality monitoring information to provide a relative ranking of counties in and near an area. Note that this metric is not the exclusive manner for considering data for these factors. A summary of the CES is included in Attachment 2, and a more detailed description can be found at http://www.epa.gov/ttn/naaqs/pm/pm25_2006_techinfo.html#C.

Table 1 shows emissions of $PM_{2.5}$ and precursor pollutants components (given in tons per year) and the CES for violating and potentially contributing counties in the Johnstown area. Counties that are part of the Johnstown nonattainment area for the 1997 $PM_{2.5}$ NAAQS are shown in boldface. Counties are listed in descending order by CES.

Table 1. $PM_{2.5}$ Related Emissions and Contributing Emissions Score

County, State	State Recommended Nonattainment?	CES	$PM_{2.5}$ emissions total (tpy)	$PM_{2.5}$ emissions carbon (tpy)	$PM_{2.5}$ emissions other (tpy)	SO_2 emissions (tpy)	NO_x emissions (tpy)	VOC emissions (tpy)	NH_3 emissions (tpy)
Indiana, PA	**Yes-Partial County**	**100**	**12,409**	**851**	**11,558**	**147,536**	**42,777**	**4,693**	**706**
Cambria, PA	**Yes**	**29**	**844**	**324**	**520**	**7,752**	**6,177**	**5,363**	**494**
Westmoreland, PA	Yes – other area	35	1,779	798	981	3,506	16,655	15,073	1,175
Somerset, PA	No	16	903	425	479	1,844	4,654	5,591	1,596
Blair, PA	No	10	772	315	458	2,374	5,016	5,222	1,211
Bedford, PA	No	9	599	291	308	779	4,534	4,092	1,377
Clearfield, PA	No	5	3,248	503	2,745	48,498	11,279	4,636	360
Huntingdon, PA	No	3	565	257	307	791	2,526	3,247	870
Centre, PA	Yes – other area	2	1,192	465	726	5,708	6,651	6,017	1,097

Based on the data set forth in Table 1, emissions of total $PM_{2.5}$ are highest in Indiana County, as are the "other" species of $PM_{2.5}$. Sulfur dioxide emissions are dramatically higher in Indiana County; these emissions are more than twice the combined total of the remainder of the area EPA evaluated. Emissions of NO_x are also highest by far in Indiana County as compared to elsewhere in the area. VOC emissions are highest in Westmoreland County. Ammonia emissions levels are fairly consistent across the area subject to this technical analysis.

Indiana County is immediately adjacent to the Johnstown metropolitan area and has a very large emissions contribution to the area. These emissions result primarily from three large coal-fired electric generating units (EGUs) located in Indiana County: the Homer City Station Plant, the Conemaugh Plant, and the Seward Plant. As a result of the disproportionately large emissions contribution from these individual sources and the low relative contribution from the remainder of Indiana County, EPA previously designated only the Indiana County townships and boroughs in which these EGUs are located for the 1997 PM2.5 NAAQS. EPA has concluded that the disproportionate amount of emissions from these sources also supports inclusion of only these portions of Indiana County within the Johnstown nonattainment area for 2006 $PM_{2.5}$ NAAQS.

Cambria County has monitored violations of the 2006 $PM_{2.5}$ NAAQS, and accordingly requires a designation of nonattainment. EPA has evaluated the emissions and other relevant information for other counties to determine whether other nearby areas contribute to those violations in Cambria. With the exception of VOC emissions, emissions from Cambria County are much lower than those of Indiana County supporting the conclusion that Indiana is contributing to violations adjacent Cambria County. The emission contribution from Clearfield County is worth noting in that emissions of SO_2 and NO_x are comparatively higher than the remaining counties in the area of analysis. However, its low CES value and its low ranking under the remaining factors here, does not support designation of Clearfield County as nonattainment.

With respect to CES scores, Indiana has the highest CES score of 100, followed distantly by Westmoreland, Cambria, and Somerset Counties. Indiana's CES score of 100 reflects the highest contribution to violations in Cambria County (normalized to a value of 100), with all other scores relative to that value. Westmoreland County has a comparatively high CES scores; however, EPA is including this county in the Pittsburgh nonattainment area for the 2006 $PM_{2.5}$ NAAQS. Westmoreland County is much more economically integrated with the Pittsburgh area, and already subject to air quality planning with the rest of that area. See the "EPA Technical Analysis for the Pittsburgh-Beaver Valley Area." Based on emissions levels and CES values, Indiana County is the highest ranking candidate inclusion with Cambria County for the 2006 $PM_{2.5}$ NAAQS nonattainment designation for the Johnstown area. Based upon their low emissions and CES scores and lack of a violating monitor, we believe that the other nearby counties in this area rank low for consideration of contribution based on this factor.

Factor 2: Air quality data

This factor considers the 24-hour $PM_{2.5}$ design values in micrograms per cubic meter ($\mu g/m^3$) for air quality monitors in counties in the Johnstown area based on data for the 2005-2007 period. A monitor's design value indicates whether that monitor attains a specified air quality standard. The 2006 24-hour $PM_{2.5}$ standard is met when the 3-year average of a monitor's 98th percentile values is 35 $\mu g/m^3$ or less. A design value is only valid if minimum data completeness criteria are met.

The 24-hour $PM_{2.5}$ design values for counties in the Johnstown area are shown in Table 2.

Table 2. Air Quality Data

County, State	State Recommended Nonattainment?	24-hr $PM_{2.5}$ Design Values 2003-05 ($\mu g/m^3$)	24-hr $PM_{2.5}$ Design Values 2004-06 ($\mu g/m^3$)	24-hr $PM_{2.5}$ Design Values 2005-07 ($\mu g/m^3$)
Indiana, PA	**Yes - Partial**	No Monitor		
Cambria, PA	**Yes**	**39**	**39**	**39**
Westmoreland, PA	Yes – Other NAA	38	37	37
Somerset, PA	No	No Monitor		
Blair, PA	No	No Monitor		
Bedford, PA	No	No Monitor		
Clearfield, PA	No	No Monitor		
Huntingdon, PA	No	No Monitor		
Centre, PA	Yes – Other NAA	38	36	35

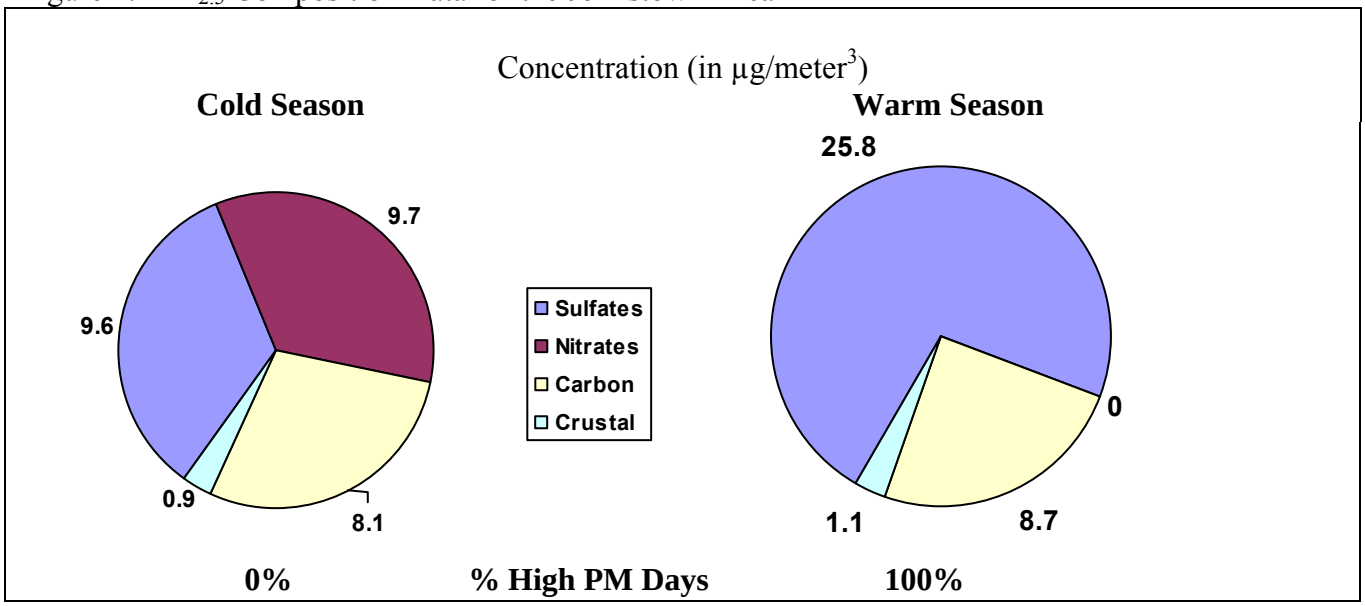
Cambria and Westmoreland Counties have monitored violations of the 2006 24-hour $PM_{2.5}$ standard. Therefore, it is appropriate to include Cambria County within the Johnstown nonattainment area. However, EPA has included Westmoreland County as part of the 2006 24-hour $PM_{2.5}$ standard Pittsburgh nonattainment area, and it is addressed in a separate technical analysis for the Pittsburgh area. See the "EPA Technical Analysis for Pittsburgh, Pennsylvania."

Of the remaining counties, Centre County previously had monitored violations of the 2006 24-hour $PM_{2.5}$ standard based upon 2003-05 and 2004-06 data, but 2005-07 data indicate that the monitor at issue is now meeting the standard. Although Centre County is now attaining the standard, EPA has also evaluated that county for contribution to the Johnstown area on the basis of emissions and CES score, as detailed in Factor 1 of this analysis.

Note that the absence of a violating monitor is not a sufficient reason to eliminate counties as candidates for nonattainment status based upon contribution to violations in other nearby areas. Each county has been evaluated based on the weight of evidence of all nine factors and other relevant information.

Under this factor, we also considered fine particle composition monitoring data. Air quality monitoring data on the composition of fine particle mass are available from the EPA Chemical Speciation Network and the IMPROVE monitoring network. Analysis of this data indicates that the days with the highest total fine particle concentrations in the Johnstown area occur exclusively in the warm season. During the warm season, the average chemical composition of the highest days appears to be predominated by sulfates. The average chemical composition is illustrated in Figure 2, below. This data indicates that sources of SO_2 emissions are key contributors to exceedances in the area.

Figure 2. $PM_{2.5}$ Composition Data for the Johnstown Area



Note: Eligible monitors for providing design value data generally include State and Local Air Monitoring Stations (SLAMS) at population-oriented locations with an FRM monitor. All data from Special Purpose Monitors (SPM) using an FRM is eligible for comparison to the relevant NAAQS, subject to the requirements given in the October 17, 2006 Revision to Ambient Air Monitoring Regulations (71 FR 61236). All monitors used to provide data must meet the monitor siting and

eligibility requirements given in 71 FR 61236 to 61328 in order to be acceptable for comparison to the 2006 24-hr $PM_{2.5}$ NAAQS for designation purposes.

Factor 3: Population density and degree of urbanization (including commercial development)

Table 3, shows the 2005 population for each county in the area being evaluated, as well as the population density for each county in that area. Population data gives an indication of whether it is likely that population-based emissions might contribute to violations of the 2006 24-hour $PM_{2.5}$ standard.

Table 3. Population

County, State	State Recommended Nonattainment?	2005 Population	2005 Population Density (people/sq mi)
Indiana, PA	**Yes – partial**	**88,481**	**106**
Cambria, PA	**Yes**	**147,804**	**214**
Westmoreland, PA	Yes – other area	367,133	355
Somerset, PA	No	78,796	73
Blair, PA	No	126,572	240
Bedford, PA	No	49,862	49
Clearfield, PA	No	82,634	72
Huntingdon, PA	No	45,772	51
Centre, PA	Yes – other area	140,313	126

The above data indicates that most of the counties in this area are relatively sparsely populated (with population densities of about 200 persons per square mile or less) and are characterized by small, sub-county sized metropolitan areas. Populations for all of the counties are relatively low, with Westmoreland County having the highest population in this area of analysis.

Blair and Centre Counties, which border Cambria County, have populations comparable to Cambria County. However, these counties are separated from Cambria County by a mountain range that runs north to south, separating Cambria and Clearfield Counties on the west from Centre and Blair Counties on the east.

None of these counties are high-ranking candidates for designation as nonattainment based solely upon this factor. Westmoreland County has a fairly large population, but is addressed in the Pittsburgh nonattainment area.

Factor 4: Traffic and commuting patterns

This factor considers the number of commuters in each county who drive to another county within the Johnstown area, the percent of total commuters in each county who commute to other counties within the area, as well as the total Vehicle Miles Traveled (VMT) for each county in millions of miles (see

Table 4). A county with numerous commuters is generally an integral part of an urban area and is likely contributing to fine particle concentrations in the area.

The listing of counties on Table 4 reflects a ranking based on the number of people commuting to other counties. The counties that are in the nonattainment area for the 1997 $PM_{2.5}$ NAAQS are shown in boldface.

Table 4. Traffic and Commuting Patterns

County, State	State Recommended Nonattainment?	2005 VMT (millions of miles)	Number Commuting into any Violating Counties	Percent Commuting into any Violating Counties	Number Commuting into and within Statistical Area	Percent Commuting into and within Statistical Area
Indiana, PA	**Yes – Partial**	**696**	**4,520**	**12**	**1,720**	**5**
Cambria, PA	**Yes**	**1,029**	**48,990**	**82**	**48,150**	**80**
Westmoreland, PA	Yes – Other NAA	3,583	106,910	65	860	1
Somerset, PA	No	997	5,820	17	5,170	15
Blair, PA	No	1,066	2,770	5	1,140	2
Bedford, PA	No	1,011	400	2	320	2
Clearfield, PA	No	1,081	5,300	15	510	2
Huntingdon, PA	No	465	2,000	11	30	0
Centre, PA	Other	1,441	57,920	92	60	0

The data set forth in Table 4.1, below, relates to predominant commuting patterns for the Johnstown area.

Table 4.1. Predominant Commuting Patterns for the Johnstown Area

Commuting From:	**CBSA**	**Commuting To:**				
		Cambria	Centre	Westmoreland	Violating	CBSA
Cambria, PA	Johnstown, PA	48,154	259	574	833	48,154
Centre, PA	State College, PA	63	57,815	39	102	63
Westmoreland, PA	Pittsburgh, PA	858	34	106,015	892	858
Somerset, PA	Somerset, PA					
Clearfield, PA	DuBois, PA					
Indiana, PA	Indiana, PA					
Huntingdon, PA	Huntingdon, PA					
Bedford, PA						
Blair, PA	Altoona, PA					

The above data indicates that the VMT and number of commuters within and between the counties in this area are low within this area, and the bulk of the commuting is actually within Cambria County itself. Of all the counties in and around Johnstown, Cambria stands out because over 98% of its commuters travelling within the county boundaries and 80% commuting within the statistical area.

Of the other counties near Johnstown, Westmoreland County has the highest VMT (more than twice the next highest county in the area) and the largest number of commuters commuting into a violating county, but not to Cambria County. Centre County has the next highest level of commuters to a violating county, but they also commute predominantly within Centre County. This suggests that Center County is not contributing to violations in Cambria with respect to this factor.

In general, it appears that information related to this factor is not dispositive for purposes of this nonattainment designation. However, of these counties, Cambria County is the highest ranked for this factor, due to its large number of commuters travelling within the statistical area.

Note: The 2005 VMT data used for Tables 4 and 5 of the technical analysis has been derived using methodology such as that described in "Documentation for the 2005 Mobile National Emissions Inventory, Version 2," December 2008, prepared for the Emission Inventory Group, U.S. EPA. This document may be found at: ftp://ftp.epa.gov/EmisInventory/2005_nei/mobile_sector/documentation/2005_mobile_nei_version_2_report.pdf

Factor 5: Growth rates and patterns

This factor considers population growth for 2000-2005 and growth in vehicle miles traveled for 1996-2005 for counties in the Johnstown area, as well as patterns of population and VMT growth. A county with rapid population or VMT growth is generally an integral part of an urban area and likely to be contributing to fine particle concentrations in the area.

Table 5 below shows population, population growth, VMT, and VMT growth for counties that are included in the Johnstown area.

Table 5. Population and VMT Values and Percent Change

County, State	Population (2005)	Population Density (2005) (persons/square mile)	Percent Population Change (2000-05)	2005 VMT (millions of miles)	Percent VMT Growth (1996-2005)
Indiana, PA	**88,481**	**106**	**(1)**	**696**	**2**
Cambria, PA	**147,804**	**214**	**(3)**	**1,029**	**(8)**
Westmoreland, PA	367,133	355	(1)	3,583	17
Somerset, PA	78,796	73	(2)	997	19
Blair, PA	126,572	240	(2)	1,066	(5)
Bedford, PA	49,862	49	-	1,011	23
Clearfield, PA	82,634	72	(1)	1,081	14
Huntingdon, PA	45,772	51	-	465	30
Centre, PA	140,313	126	3	1,441	25

As the data above indicates, all the counties in the area evaluated by EPA for Johnstown have relatively low populations and low population densities, in the range of 200 persons per mile or less (except for Westmoreland County). All of these counties (except Centre County) have had population declines since 2000. Therefore, population and population growth are not critical factors for the nonattainment designation in the Johnstown area.

With the exception of Westmoreland County, VMT levels are low for all these counties relative to other areas in Pennsylvania. VMT growth between 1996 and 2005 was negative in Cambria and Blair Counties, and flat in Indiana County. Huntington, Centre, Bedford, Somerset and Clearfield Counties experienced double digit growth in VMT between 1996 and 2005. However, these percentage-based growth levels are less relevant considering the relatively low absolute VMT levels. Overall, VMT levels remain relatively low throughout the area, with the exception of Westmoreland County, which has somewhat higher levels.

Note that commuting statistics in Factor 4 show that for the most part commuting miles for Cambria County are far and above the largest source of commuting into the county with the violating monitor. Of the other nearby counties (including Westmoreland County and the other counties with double digit VMT growth), none have large numbers of commuters travelling into the statistical area, including to Cambria County where the statistical area's violating monitor is located.

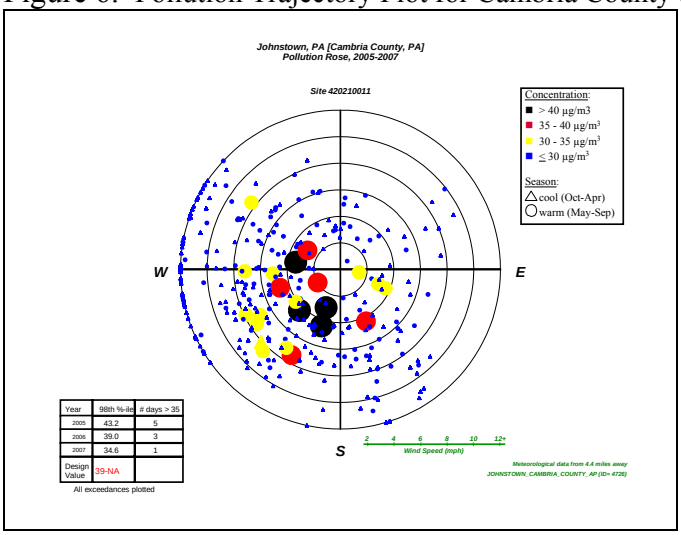
With the exception of Westmoreland County, those counties that have experienced double digit VMT growth are not high ranking candidates for nonattainment designation on the basis of Factors 1 through 4.

Factor 6: Meteorology (weather/transport patterns)

For this factor, EPA considered data from National Weather Service instruments and other meteorological monitoring sites in the area. Wind direction and wind speed data for 2005-2007 were analyzed, with an emphasis on "high $PM_{2.5}$ days" for each of two seasons (an October-April "cold" season and a May-September "warm" season). These high days are defined as days where any FRM air quality monitors had 24-hour $PM_{2.5}$ concentrations above 95% on a frequency distribution curve of $PM_{2.5}$ 24-hour values.

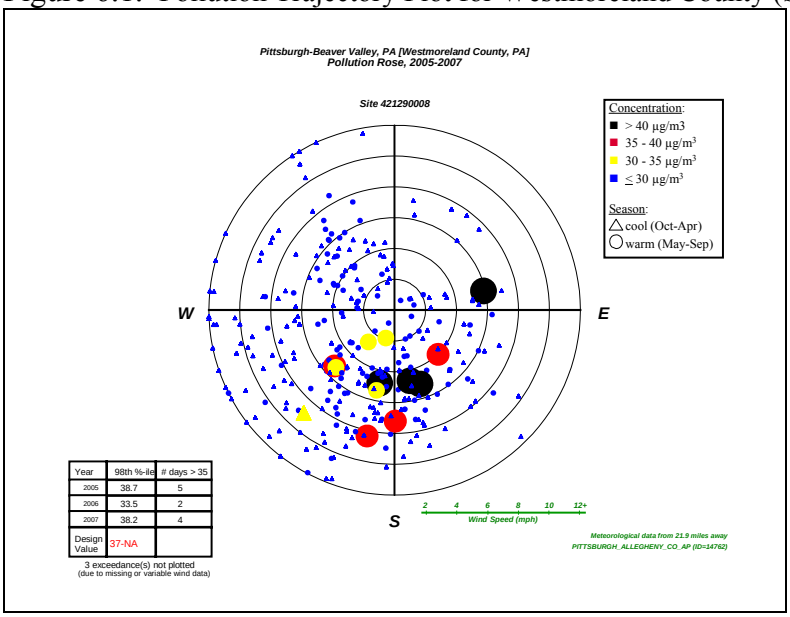
For each air quality monitoring site, EPA developed a "pollution rose" to understand the prevailing wind direction and wind speed on the days with highest fine particle concentrations. Each figure identifies 24-hour $PM_{2.5}$ values by color and days exceeding 35 ug/m3 are denoted with a red or black icon. A dot indicates the day occurred in the warm season; a triangle indicates the day occurred in the cool season. The center of the figure indicates the location of the air quality monitoring site, and the location of the icon in relation to the center indicates the direction from which the wind was blowing on that day. An icon that is close to the center indicates a low average wind speed on that day. Higher wind speeds are indicated when the icon is further away from the center.

Figure 6. Pollution Trajectory Plot for Cambria County (Site 42-021-0011)



As shown in the pollution rose in Figure 6, the surface wind directions for high $PM_{2.5}$ days in Cambria County are variable, covering most points of the compass. The pollution roses indicate that 24-hour $PM_{2.5}$ concentrations are influenced by emissions from any direction at various times. However, the data also suggests that emissions from the south relative to the violation are slightly more likely to contribute to the violation than emissions from other directions, particularly on the highest concentration days. It is important to note that all the high $PM_{2.5}$ days occurred during the warm season at this monitor. This pollution rose supports the conclusion that emissions in adjacent Indiana County are contributing to violations in Cambria County.

Figure 6.1. Pollution Trajectory Plot for Westmoreland County (Site 42-129-0008)



As shown in Figure 6.1, the average prevailing surface wind direction for high $PM_{2.5}$ days in Westmoreland County are from the southwest and the northeast. Wind speeds occur over a broader range at this monitor and the highest concentrations occur during the warm season. Wind directions on some of the high $PM_{2.5}$ days that occur during the high season show that particulate matter could

sometimes pass over Indiana or Cambria County, but in most instances this is not the wind direction on high $PM_{2.5}$ days at this monitor.

Pollution roses for the Johnstown area show that some component of elevated $PM_{2.5}$ measured at the Cambria monitor may originate from all wind directions.

Note: The meteorology factor is also considered in each county's Contributing Emissions Score because the method for deriving this metric included an analysis of trajectories of air masses for high $PM_{2.5}$ days.

Factor 7: Geography/topography (mountain ranges or other air basin boundaries)

The geography/topography analysis evaluates the physical features of the land that might have an effect on the air shed and, therefore, on the distribution of $PM_{2.5}$ over the Johnstown area.

The topography of the Johnstown air basin area isolates the city from inter-urban transport of low-level emissions, but not from transport of high-level emissions. Some of the highest terrain in Pennsylvania brackets the Johnstown area to the east and west. Over 34 square miles of mountain upland drains down into the city and then out the deepest river gap in the eastern United States. The city of Johnstown itself lies in the approximately two-mile wide flood plane formed by the junction of the Stonycreek and Little Conemaugh Rivers, and the narrow Conemaugh River Gap where water flows out of the City.

The Conemaugh River Gap is over 1600 feet deep, when measured from the top of Rager Mountain to the river level at its outfall from the Conemaugh Gap in Indiana County. The basin within which the city lies is about 300 feet below the surrounding ridgelines. These topographical features diminish the transport of low level emissions from surrounding areas. Figures 7 and 7.1 show the topographic relief of the Johnstown area and the Conemaugh River Valley is depicted on the left side of both figures.

Figure 7. Johnstown Aerial Topographic Photo
Source: Google Earth – August 2008



Figure 7.1. Johnstown Topographic Map



Source: US Geologic Survey – TerraServer USA website

Factor 8: Jurisdictional boundaries (e.g., existing $PM_{2.5}$ areas)

In evaluating the jurisdictional boundary factor, EPA gave special consideration to areas that were already designated nonattainment in 2005 for violating the 1997 fine particle standards. Analysis of chemical composition data in these areas indicates that the same components that make up most of the $PM_{2.5}$ mass in the area on an annual average basis (such as sulfate and direct $PM_{2.5}$ carbon in many eastern areas) also are key contributors to the $PM_{2.5}$ mass on days exceeding the 2006 24-hour $PM_{2.5}$ standard. These data indicate that in many cities, the same source categories that contribute to violations of the annual standard also contribute to exceedances of the 2006 24-hour standard.

Most areas that were originally designated nonattainment for the $PM_{2.5}$ standards still have not attained the standards. Thus, EPA has generally concluded that counties that were designated as having emissions sources contributing to fine particle concentrations which continue to exceed the 1997 standards (all areas violated the annual standard, three also violated the previous 24-hour standard) also contribute to fine particle concentrations on the highest days. For this reason, EPA believes that for most existing nonattainment areas, the nonattainment area for the 2006 24-hour standard should be the same. Consideration also should be given to existing boundaries and organizations as they may

facilitate air quality planning and the implementation of control measures to attain the standard. Areas already designated as nonattainment represent important boundaries for state air quality planning.

Of the counties considered in this technical analysis for Johnstown, only Cambria, Westmoreland and portions of Indiana Counties were designated nonattainment under the 1997 $PM_{2.5}$ NAAQS. Cambria and Indiana Counties comprised the Johnstown 1997 $PM_{2.5}$ nonattainment area. Westmoreland County was part of the Pittsburgh-Beaver Valley 1997 $PM_{2.5}$ nonattainment area.

To the degree appropriate, based upon violations and contributions to violations of the ozone and $PM_{2.5}$ NAAQS in a particular area, EPA believes it may be helpful for air planning purposes and for attainment of both NAAQS, for there to be some consistency between ozone and $PM_{2.5}$ nonattainment area boundaries. Cambria County was the sole county in the Johnstown technical analysis area that comprised the Johnstown 8-hour ozone nonattainment area. Most of the remaining counties were also designated nonattainment under the 8-hour ozone standard, but were part of separate nonattainment areas. State College (Centre County) and Altoona (Blair County) were designated by EPA as separate, one-county Subpart 1 nonattainment areas. Indiana and Clearfield Counties were designated as a Subpart 1 nonattainment area. Westmoreland County was designated Subpart 1 nonattainment as part of the Pittsburgh-Beaver Valley 8-hour ozone nonattainment area. Bedford, Huntingdon, and Somerset Counties were designated unclassifiable/attainment under the 8-hour ozone standard. Since then, with the exception of Pittsburgh-Beaver Valley, EPA has redesignated these counties as 8-hour nonattainment ozone maintenance areas.

Pennsylvania's regional transportation planning organizations (which often also serve as economic planning organizations) fall along county lines. In the case of the counties considered as part of this technical analysis, there is one Metropolitan Planning Organization that includes Cambria, Bedford, Blair, Huntingdon and Somerset Counties. Westmoreland and Indiana County are part of another MPO covering a larger, Southwestern Pennsylvania region. Centre County has its own MPO.

The 1997 $PM_{2.5}$ nonattainment area also contains the Johnstown air basin, defined by the Pennsylvania and which is subject to a common set of state regulatory requirements relating to sulfur compound (See 25 Pa Code § 121.1 and 123.22). It is important to note that sulfur compounds are an important $PM_{2.5}$ precursor.

Based upon the above discussion and supporting data, EPA believes that the same boundaries established for the 1997 $PM_{2.5}$ nonattainment area are appropriate for the 2006 24-hour $PM_{2.5}$ area for the Johnstown area.

Factor 9: Level of control of emission sources

Under this factor, the existing level of control of emission sources is taken into consideration. The emissions data used by EPA in this technical analysis and provided in Table 1 (under Factor 1) represent emissions levels taking into account any control strategies implemented in the Johnstown area before 2005 on stationary, mobile, and area sources. Data are presented for $PM_{2.5}$ components that are directly emitted (carbonaceous $PM_{2.5}$ and crustal $PM_{2.5}$) and for pollutants which react in the atmosphere to form fine particles (e.g. SO_2, NOx, VOC, and ammonia).

In considering county-level emissions, EPA used data from the 2005 National Emissions Inventory, the most updated version of the national inventory available at the beginning of the designations process in late 2007. However, EPA recognized that for certain counties, emissions may have changed since 2005. For example, certain power plants or large sources of emissions in or near this area may have installed emission controls or otherwise significantly reduced emissions since 2005. Some States provided updated information on emissions and emission controls in their comments to EPA. EPA considered such additional information in making final designation decisions.

With regard to nearby power plants, EPA considered information about whether a specific plant installed federally enforceable emission controls by December 2008 resulting in significant emissions reductions. A control requirement is considered to be federally-enforceable if it is required by a State regulation adopted in a State implementation plan, if it is included in a federally-enforceable Title V operating permit, or if it is required by a consent decree which also requires the controls to be included in federally enforceable permit upon termination of the consent decree. In making final decisions, EPA also considered whether a facility would continue to emit pollutants which contribute to $PM_{2.5}$ exceedances even after emission controls are operational.

The emission estimates in Table 1 (under Factor 1) reflect implementation of control strategies implemented by the Commonwealth in the Johnstown area before and during 2005 that may influence emissions of any component of $PM_{2.5}$ emissions (i.e., total carbon, SO_2, NO_x, and crustal $PM_{2.5}$).

In Johnstown and the surrounding area, there may be some emission reductions of SO_2 and NO_x subsequent to 2005 that are not accounted for elsewhere in this analysis, due to new controls at large EGUs. However, as discussed below, while certain EGUs have installed scrubbers, these controls were in place before 2005, and therefore those emission reductions are reflected in Factor 1.

Table 9 shows emissions and controls (current and projected) for EGUs with SO_2 plus NO_x emissions greater than 5000 tons per year. Table 9.1 shows several EGUs in Cambria County with emissions much lower than 5000 tons per year. Data was obtained from the 2006 National Electric Energy Data System (NEEDS) database. Table 9.2 shows emissions for the same EGUs for the years 2002 through 2007. The data was obtained from the emissions section of EPA's Clean Air Markets Division (CAMD) website: http://camddataandmaps.epa.gov/gdm/index.cfm?fuseaction=emissions.wizard.

Table 9. EGUs with SO_2 plus NO_x emissions > 5000 tpy, from the 2006 NEEDS EGU database

County	Plant Name	Plant Type	Unique ID Final	2006 SO_2	2006 NO_x	Scrubber Online Year	Scrubber Efficiency	SCR Online Year	Capacity MW
Indiana	Conemaugh	Coal Steam	3118-B-1	4,201	12,710	1994	96.9		850.0
			3118-B-2	3,836	10,660	1995	98.0		850.0
	Homer City Station	Coal Steam	3122-B-3	2,598	4,533	2001	97.7	2001	650.0
			3122-B-1	53,168	4,929			2001	620.0
			3122-B-2	51,006	5,559			2000	614.0
	Seward	Coal Steam	3130_B_2	3,735	874	2004	95.0		260.5
			3130_B_1	3,623	846	2004	95.0		260.5
Clearfield	Shawville	Coal Steam	3131_B_4	13,670	1,980				175.0
			3131_B_3	13,387	1,929				175.0

			3131_B_2	10,976	1,870				127.5
			3131_B_1	9,253	1,633				122.0

Table 9.1 EGUs with SO_2 plus NO_x emissions <5000 tpy, from the 2006 NEEDS EGU database

County	Plant Name	Plant Type	Unique ID Final	2006 SO_2	2006 NO_x	Scrubber Online Year	Scrubber Efficiency	SCR Online Year	Capacity MW
Cambria	Cambria Cogen	Coal Steam	10641-B-B2	0	530		91.6		44.0
			10641-B-B1	0	498		91.6		44.0
	Colver Power Project	Coal Steam	10143-B-ABB01	0	678		91.6		110.0
	Ebensburg Power	Coal Steam	10603_B_031	0	260		91.6		49.5

Table 9.2. Selected EGU Emissions (2002-2007) from EPA's Clean Air Markets Division

Conemaugh, Indiana County, PA, Facility ID: 3118

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	5,936.4	19,460.9	11,603,127.7	113,132,105
2003	12	7,373.3	21,508.4	12,871,213.1	125,449,777
2004	12	7,204.2	19,741.3	12,336,450.1	120,259,118
2005	12	7,177.1	19,663.3	12,609,081.9	122,906,774
2006	12	8,036.9	23,369.4	13,991,064.0	136,378,534
2007	12	6,783.3	20,124.6	12,124,918.8	118,215,814

Homer City , Indiana County, PA, Facility ID: 3122

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	105,784.4	25,164.6	11,709,766.6	114,082,529
2003	12	151,677.6	21,330.1	13,993,063.1	136,384,703
2004	12	149,956.9	20,123.9	13,052,616.6	127,218,463
2005	12	132,022.8	18,256.1	13,408,986.7	130,691,897
2006	12	106,772.1	15,021.1	11,970,802.0	116,674,489
2007	12	120,767.8	17,444.1	13,576,987.3	132,329,347

Seward, Indiana County, PA, Facility ID: 3130

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	10,737.5	1,751.6	903,787.8	8,808,855
2003	12	9,192.2	1,462.4	757,575.7	7,383,784
2004	12	2,801.0	1,971.9	1,274,765.8	24,896,699
2005	12	7,618.9	1,446.0	3,128,927.5	30,496,421
2006	12	7,358.0	1,720.6	3,446,385.4	33,631,632
2007	12	8,096.0	1,739.2	3,731,173.7	36,400,512

Shawville, Clearfield County, PA, Facility ID: 3131					
Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	38,225.9	6,533.6	3,051,848.1	29,745,503
2003	12	43,392.4	7,188.6	3,402,211.6	33,159,915
2004	12	44,320.0	6,864.3	3,181,911.9	31,012,783
2005	12	46,976.3	6,884.6	3,403,901.5	33,176,494
2006	12	47,287.1	7,412.9	3,634,960.0	35,428,521
2007	12	49,064.9	7,356.6	3,577,584.7	34,869,260

Based upon the above data, it appears that some EGUs in this area have made efficiency improvements that have resulted in somewhat lowered emissions or emission rates. For example, the 80-year old 200-megawatt Seward coal steam plant was converted to a 521-megawatt waste coal-fired plant in 2004 with a circulating fluidized bed combuster coupled with a scrubber. It appears that in spite of an increase in heat input levels, 2007 SO_2 emissions are lower than the 2003 SO_2 levels and NO_x emissions are only 20% higher. However, the scrubbers at the Seaward plant were in place before 2005, and therefore those emission reductions are reflected in Factor 1.

Conclusion

The Johnstown and the surrounding nearby areas, which EPA evaluated for this technical analysis, has monitors in Cambria and Westmoreland Counties that violate the 2006 24-hour $PM_{2.5}$ NAAQS based on 2005-2007 FRM data in the EPA Air Quality System (AQS). The largest sources of direct $PM_{2.5}$ and $PM_{2.5}$ precursor emissions in this area are three large EGUs in Indiana County (and another in Clearfield County). The western edge of this analysis area overlaps the Pittsburgh 1997 $PM_{2.5}$ nonattainment area (in Westmoreland County – which EPA is designating as part of the Pittsburgh nonattainment area). The area has generally small, low-density population centers with relatively low levels of vehicle miles of travel. Commuting patterns show low levels of inter-county commuting. Population, VMT and commercial growth are thus generally not significant factors in this area. Topography is an important factor, as the Johnstown area is part of a river valley almost entirely surrounded by low mountains; these mountains limit transport of low-level emissions and impact meteorology and $PM_{2.5}$ formation. Pollution roses indicate that wind patterns in Westmoreland and Centre Counties appear not to have a major impact on Cambria County's violating monitor. Westmoreland County is a more natural fit to the Pittsburgh rather than the Johnstown nonattainment area, as it is part of the MSA and historically has been part of the Pittsburg ozone and PM nonattainment areas. Centre County, which is further removed geographically and meteorologically from the violating monitor in Cambria County, is a low-ranked candidate for a 2006 24-hour $PM_{2.5}$ nonattainment designation. Jurisdictional boundaries for existing ozone and $PM_{2.5}$ nonattainment areas, as well as existing state-defined air basins, support maintaining the existing 1997 $PM_{2.5}$ area boundaries. Based upon consideration of the information in the technical analysis, Bedford, Blair, Centre, Clearfield, and Somerset Counties do not contribute to violations in this area, and thus are not included within the Johnstown nonattainment area. Therefore, EPA has determined that it is appropriate to include Cambria County and a portion of Indiana County as part of the Johnstown nonattainment area for the 2006 24-hour $PM_{2.5}$ NAAQS.

EPA Technical Analysis for the Lancaster Area

Introduction

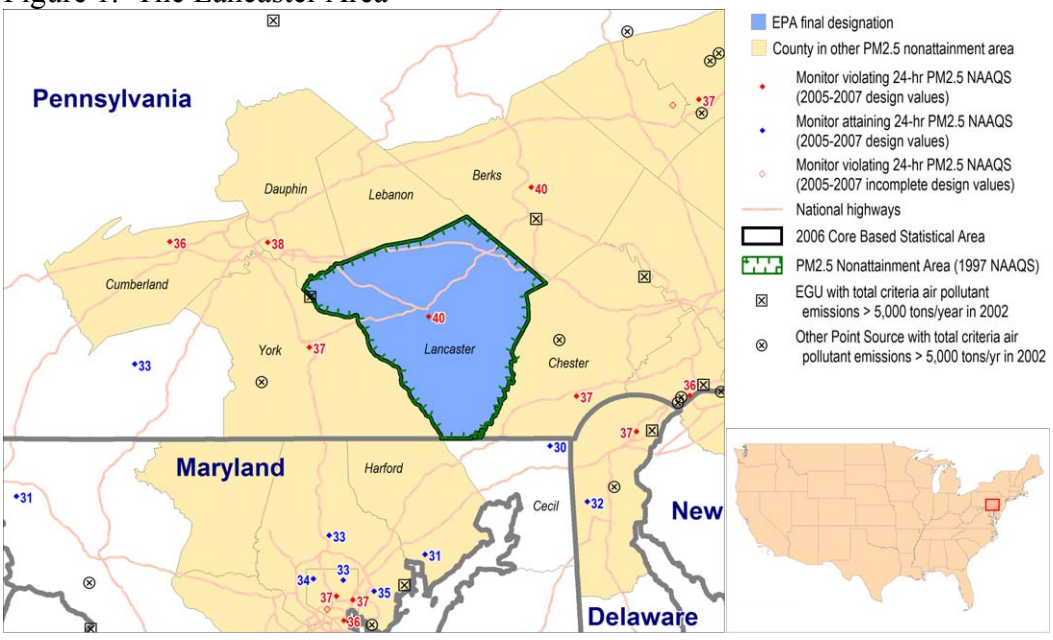
Pursuant to section 107(d) of the Clean Air Act, EPA must designate as nonattainment those areas that violate the NAAQS and those areas that contribute to violations. This technical analysis for the Lancaster area identifies the counties with monitors that violate the 2006 24-hour $PM_{2.5}$ standard and evaluates nearby counties for contribution to fine particle concentrations in the area. EPA has evaluated these counties based on the weight of evidence of the following nine factors recommended in EPA guidance and any other relevant information:

- pollutant emissions
- air quality data
- population density and degree of urbanization
- traffic and commuting patterns
- growth
- meteorology
- geography and topography
- jurisdictional boundaries
- level of control of emissions sources

We also used analytical tools and data such as pollution roses, fine particle composition monitoring data, back trajectory analyses, and the contributing emission score (CES) to evaluate these areas. (See additional discussion of the CES under Factor 1 below.)

Figure 1 is a map which identifies the counties in the Lancaster nonattainment area and provides other relevant information such as the locations and design values of air quality monitors, and the metropolitan area boundary.

Figure 1. The Lancaster Area



For this area, EPA previously established $PM_{2.5}$ nonattainment boundaries for the 1997 $PM_{2.5}$ NAAQS that included one full county, Lancaster County, Pennsylvania.

In December 2007, Pennsylvania recommended that Lancaster County, be designated as "nonattainment" for the 2006 24-hour $PM_{2.5}$ standard based on air quality data from 2004-2006. These data are from Federal Reference Method (FRM) monitors located in the state. (See the December 28, 2008 letter from the Pennsylvania Department of Environmental Protection to EPA.)

In August 2008, EPA notified the Commonwealth of Pennsylvania of its intended designations. In this letter, EPA also requested that if the Commonwealth of Pennsylvania wished to provide comments on EPA's intended designation, it should do so by October 20, 2008. EPA stated that it would consider any additional information (e.g., on power plants or partial county areas) provided by the state in making final decisions on the designations.

Based on EPA's technical analysis described below, EPA has designated the same county, Lancaster County, as previously designated for the 1997 $PM_{2.5}$ NAAQS, as nonattainment for the 2006 24-hour $PM_{2.5}$ air quality standard as part of the Lancaster nonattainment area. The county is listed in the table below.

Lancaster	State-Recommended Nonattainment Counties	EPA Final Designated Nonattainment Counties
Pennsylvania	Lancaster County	Lancaster County

The following is a technical analysis for the Lancaster Area.

Factor 1: Emissions data

For this factor, EPA evaluated county level emission data for the following $PM_{2.5}$ components and precursor pollutants: $PM_{2.5}$ emissions total, $PM_{2.5}$ emissions carbon, $PM_{2.5}$ emissions other, sulfur dioxide (SO_2), nitrogen oxides (NO_x), volatile organic compounds (VOCs), and ammonia (NH_3). "$PM_{2.5}$ emissions total" represents direct emissions of $PM_{2.5}$ and includes: "$PM_{2.5}$ emissions carbon," "$PM_{2.5}$ emissions other," primary sulfate (SO_4), and primary nitrate. (Although primary sulfate and primary nitrate, which are emitted directly from stacks rather than forming in atmospheric reactions with SO_2 and NO_x, are part of "$PM_{2.5}$ emissions total," they are not shown in Table 1 as separate items). "$PM_{2.5}$ emissions carbon" represents the sum of organic carbon (OC) and elemental carbon (EC) emissions, and "$PM_{2.5}$ emissions other" represents other inorganic particles (crustal). Emissions of SO_2 and NO_x, which are precursors of the secondary $PM_{2.5}$ components sulfate and nitrate, are also considered. VOCs and NH_3 are also potential $PM_{2.5}$ precursors and are included for consideration.

Emissions data were derived from the 2005 National Emissions Inventory (NEI), version 1. See http://www.epa.gov/ttn/naaqs/pm/pm25_2006_techinfo.html.

EPA also considered the Contributing Emissions Score for each county. The CES is a metric that takes into consideration emissions data, meteorological data, and air quality monitoring information to provide a relative ranking of counties in and near an area. Note that this metric is not the exclusive manner for consideration of data for these factors. A summary of the CES is included in Attachment 2,

and a more detailed description can be found at
http://www.epa.gov/ttn/naaqs/pm/pm25_2006_techinfo.html#C.

Table 1 shows emissions of $PM_{2.5}$ and precursor pollutant components (given in tons per year) and the CES for violating and potentially contributing counties in the Lancaster area. Counties are listed in descending order by CES, with the exception of Lancaster County, which is part of the Lancaster nonattainment area for the 1997 $PM_{2.5}$ NAAQS. Data for Lancaster County is shown in boldface.

Table 1. $PM_{2.5}$ Related Emissions and Contributing Emissions Score

County, State	State Recommended Nonattainment	CES	$PM_{2.5}$ emissions total (tpy)	$PM_{2.5}$ emissions carbon (tpy)	$PM_{2.5}$ emissions other (tpy)	SO_2 (tpy)	NOx (tpy)	VOCs (tpy)	NH_3 (tpy)
Lancaster, PA	**Yes**	**12**	**3,258**	**1,159**	**2,099**	**4,017**	**16,396**	**26,407**	**16,486**
York, PA	Yes – other area	100	7,614	1,217	6,396	118,621	32,214	18,478	3,913
Berks, PA	Yes – other area	7	3,378	922	2,456	18,874	18,086	19,117	4,653
Chester, PA	Yes – other area	6	2,124	799	1,325	7,990	16,507	19,666	2,563
Harford, MD	Yes – other area	3	1,769	879	890	2,307	7,310	10,512	967
Dauphin, PA	Yes – other area	2	1,074	528	546	2,443	12,548	12,569	1,664
Lebanon, PA	Yes – other area	2	855	338	516	1,778	5,876	5,924	4,445
Cecil, MD	No	1	870	446	425	1,298	3,962	5,853	749
Cumberland, PA	Yes – other area	1	1,677	698	979	1,976	14,454	9,939	2,105

As shown above, York County has by far the highest emissions levels of $PM_{2.5}$, NOx, and (to an even greater degree) SO_2. In fact, SO_2 levels in York County are more than twice the combined emissions from all the other counties being analyzed here. This is primarily due to the emissions from the Brunner Island power station, which emitted over 104,000 tons of $S0_2$ and nearly 14,000 tons of NOx in 2005 (See Table 9.1). Lancaster County leads this analysis area in emissions of NH_3 and VOCs. SO_2 emissions from York are nearly 30 times larger than those of Lancaster, and 10 times greater than those of the next largest SO_2 contributor, Berks County.

York County's overwhelming emissions contribution and proximity to Lancaster lead to it have the highest CES score, followed by Lancaster County. The CES scores for all other counties being analyzed are much lower, likely the result of their low emissions of all precursor pollutants, coupled with their distance from Lancaster and the prevailing wind patterns and meteorology for the area.

Based on this factor, York and Lancaster Counties are the highest ranking candidates for the 2006 24-hour $PM_{2.5}$ nonattainment designation in the Lancaster nonattainment area. However, York County is part of the York nonattainment area under the 1997 $PM_{2.5}$ NAAQS and is a separate economic area, and based on all of the factors as detailed below EPA is designating York County as a separate nonattainment area for the 2006 $PM_{2.5}$ NAAQS. (See the "EPA Technical Analysis for the York Area.") Berks and Chester Counties have emissions levels similar to that of Lancaster County (except for NH_3). These counties are also part of separate nonattainment areas under the 1997 $PM_{2.5}$ NAAQS (Reading and Philadelphia-Wilmington, respectively) and are separate economic areas, and are also designated as separate nonattainment areas for the 2006 $PM_{2.5}$ NAAQS. (See the "EPA Technical Analysis for the Reading Area" and the "EPA Technical Analysis for the Philadelphia-Wilmington Area.")

Lancaster, York, Chester, and Berks Counties are in separate nonattainment areas for the 1997 $PM_{2.5}$ NAAQS. Furthermore, as explained in detail in Factor 8, below, the York, Chester, and Berks

Counties are in areas that are distinct from the Lancaster area. They are in separate metropolitan statistical areas and are served by separate metropolitan planning organizations. Furthermore, for air quality planning purposes, Pennsylvania defined separate air basins for these areas. Therefore, EPA has determined that it is appropriate to include York, Chester, and Berks Counties in separate nonattainment areas for the 2006 24-hour $PM_{2.5}$ NAAQS. To the extent that emissions from York, Chester, and Berks Counties may contribute to the Lancaster nonattainment area, that contribution will be lessened by emission controls put in place in those separate nonattainment areas.

Factor 2: Air quality data

This factor considers the 24-hour $PM_{2.5}$ design values in micrograms per cubic meter ($\mu g/m^3$) for air quality monitors in counties in the Lancaster area based on data for the 2005-2007 period. A monitor's design value indicates whether that monitor attains a specified air quality standard. The 2006 24-hour $PM_{2.5}$ standard is met when the 3-year average of a monitor's 98^{th} percentile values is 35 $\mu g/m^3$ or less. A design value is only valid if minimum data completeness criteria are met.

The 24-hour $PM_{2.5}$ design values for counties in the Lancaster area are shown in Table 2.

Table 2. Air Quality Data

County	State Recommended Nonattainment?	Design Values 2003-05 ($\mu g/m^3$)	Design Values 2004-06 ($\mu g/m^3$)	Design Values 2005-07 ($\mu g/m^3$)
Lancaster, PA	**Yes**	**44**	**39**	**40**
York, PA	Yes – other area	41	37	37
Berks, PA	Yes – other area	39	37	40
Chester, PA	Yes – other area			37
Harford, MD	Yes – other area	34	31	31
Dauphin, PA	Yes – other area	39	38	38
Lebanon, PA	Yes – other area	No monitor		
Cecil, MD	No	33	30	30
Cumberland, PA	Yes – other area	40	38	36

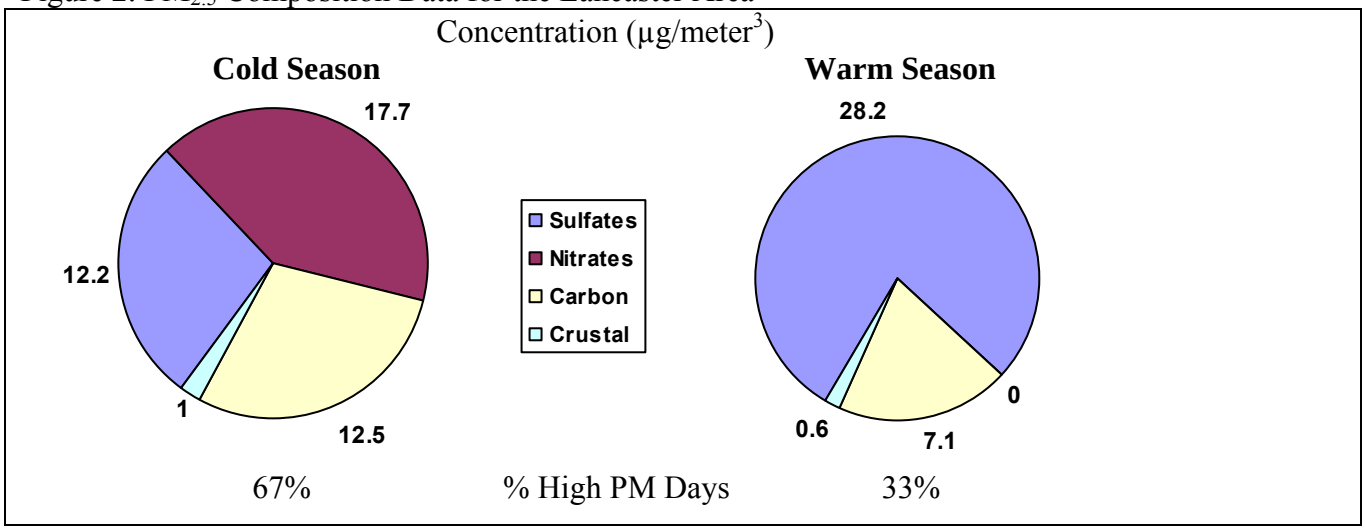
As shown in Table 2, Lancaster County shows violations of the 2006 24-hour $PM_{2.5}$ standard during 2005-2007 and thus must be included in the nonattainment area based on this factor. In addition the adjacent counties of York, Berks, Chester, Cumberland, and Dauphin Counties all show violations of the 2006 24-hour $PM_{2.5}$ standard during 2005-2007. However, York, Berks, Chester, Cumberland, and Dauphin Counties are part of other nonattainment areas for the 1997 $PM_{2.5}$ NAAQS (York, Reading and Philadelphia-Wilmington, and Harrisburg, respectively) and are separate economic areas. Each of these counties has been included in those same nonattainment areas for the 2006 $PM_{2.5}$ NAAQS, and each is addressed in separate technical analyses. See the "EPA Technical Analysis for York Area," the "EPA Technical Analysis for the Reading Area," the "EPA Technical Analysis for the Philadelphia-Wilmington Area," and the "EPA Technical Analysis for the Harrisburg Area."

The absence of a violating monitor alone is not a sufficient reason to eliminate counties as candidates for nonattainment status. Each county has been evaluated based on the weight of evidence of the nine factors and other relevant information.

Under this factor, we also consider fine particle composition monitoring data. Air quality monitoring data on the composition of fine particle mass are available from the EPA Chemical Speciation

Network and the IMPROVE monitoring network. Analysis of these data indicates that the days with the highest fine particle concentrations occur in both cool and warm seasons, but with twice as many of the highest days in the cold season. The average chemical composition of the highest days is typically characterized by high levels of sulfates in the warm season and high levels of nitrates in the cold season as illustrated in Figure 2. This data indicates that sources of SO_2, NOx, and direct $PM_{2.5}$ carbon emissions are key contributors to exceedances in the area.

Figure 2. $PM_{2.5}$ Composition Data for the Lancaster Area



Note: Eligible monitors for providing design value data generally include State and Local Air Monitoring Stations (SLAMS) at population-oriented locations with an FRM monitor. All data from Special Purpose Monitors (SPM) using an FRM is eligible for comparison to the relevant NAAQS, subject to the requirements given in the October 17, 2006 Revision to Ambient Air Monitoring Regulations (71 FR 61236). All monitors used to provide data must meet the monitor siting and eligibility requirements given in 71 FR 61236 to 61328 in order to be acceptable for comparison to the 2006 24-hr $PM_{2.5}$ NAAQS for designation purposes.

Factor 3: Population density and degree of urbanization (including commercial development)

Table 3 shows the 2005 population for each county in the area being evaluated, as well as the population density for each county in that area. Population data gives an indication of whether it is likely that population-based emissions might contribute to violations of the 2006 24-hour $PM_{2.5}$ standard.

Table 3. Population

County	State Recommended Nonattainment?	2005 Population	2005 Population Density (pop/sq mi)
Lancaster, PA	**Yes**	**489,936**	**499**
York, PA	Yes – other area	408,182	449
Berks, PA	Yes – other area	396,236	458
Chester, PA	Yes – other area	473,723	624
Harford, MD	Yes – other area	238,850	519
Dauphin, PA	Yes – other area	252,949	454
Lebanon, PA	Yes – other area	125,429	346

Cecil, MD	No	97,474	257
Cumberland, PA	Yes – other area	223,017	405

The area of analysis in and around the Lancaster area ranges from moderately to sparsely populated, with county level population densities ranging from a low of 257 to a high of 624. Most of these counties are characterized by relatively small metropolitan areas surrounded by less population dense rural settings. Urban areas in this region are generally small geographically, with most having single county metropolitan areas boundaries, as defined by the Office of Management and Budget (OMB).

Lancaster County, followed closely by Chester and York Counties, are the highest ranking for this factor with respect to population. Chester County is highest ranking with respect to population density. However, this factor is not of critical importance with respect to the Lancaster area, due to the relatively sparse population density and lack of interaction between the cities in terms of economic linkages and commuting as described further below

Factor 4: Traffic and commuting patterns

This factor considers the number of commuters in each county who drive to another county within the Lancaster area, the percent of total commuters in each county who commute to other counties within the Lancaster area, and the total Vehicle Miles Traveled (VMT) for each county in millions of miles (see Table 4). A county with numerous commuters is generally an integral part of an urban area and is likely contributing to fine particle concentrations in the area.

The listing of counties on Table 4 reflects a ranking based on the number of people commuting to other counties. The counties that are in the nonattainment area for the 1997 $PM_{2.5}$ NAAQS are shown in boldface.

Table 4. Traffic and Commuting Patterns

County, State	State Recommended Nonattainment?	2005 VMT (millions of miles)	Number Commuting to any violating counties	Percent Commuting to any violating counties	Number Commuting into & within statistical area	Percent Commuting into & within statistical area
Lancaster, PA	**Yes**	**3,895**	**223,960**	**97**	**201,610**	**87**
York, PA	Yes – other area	3,088	169,420	88	5,490	3
Berks, PA	Yes – other area	3,178	151,330	85	3,870	2
Chester, PA	Yes – other area	4,255	142,910	66	2,830	1
Dauphin, PA	Yes – other area	3,001	115,450	95	2,590	2
Cumberland, PA	Yes – other area	2,743	100,180	95	710	1
Lebanon, PA	Yes – other area	1,158	21,120	36	3,770	6
Cecil, MD	No	1,211	1,270	3	160	0
Harford, MD	Yes – other area	2,233	820	1	110	0

Note: The 2005 VMT data used for Tables 4 and 5 of the technical analysis has been derived using methodology such as that described in "Documentation for the 2005 Mobile National Emissions Inventory, Version 2," December 2008, prepared for the Emission Inventory Group, U.S. EPA. This document may be found at:

ftp://ftp.epa.gov/EmisInventory/2005_nei/mobile_sector/documentation/2005_mobile_nei_version_2_report.pdf

Table 4.1. Predominant Commuting Patterns for the Lancaster Area (2005)

Commuting From:	Number commuting into any violating counties	Number commuting into statistical area	Commuting To:				
			Berks	Cumberland	Dauphin	**Lancaster**	York
Berks, PA	151,330	3,870	140,819	238	651	**3,870**	152
Chester, PA	142,910	2,828	1916	23	263	**2,828**	197
Cumberland, PA	100,180	710	84	73,081	22,448	**705**	3,807
Dauphin, PA	115,450	2,590	175	16,310	93,958	**2,585**	2,365
Lancaster, PA	**223,960**	**201,610**	**4,074**	**1,197**	**6,927**	**201,608**	**4,018**
Lebanon	21,120	3,770	2,799	1,335	12,853	**3.770**	266
York, PA	169,420	5,490	240	11,626	9,848	**5,485**	142,104

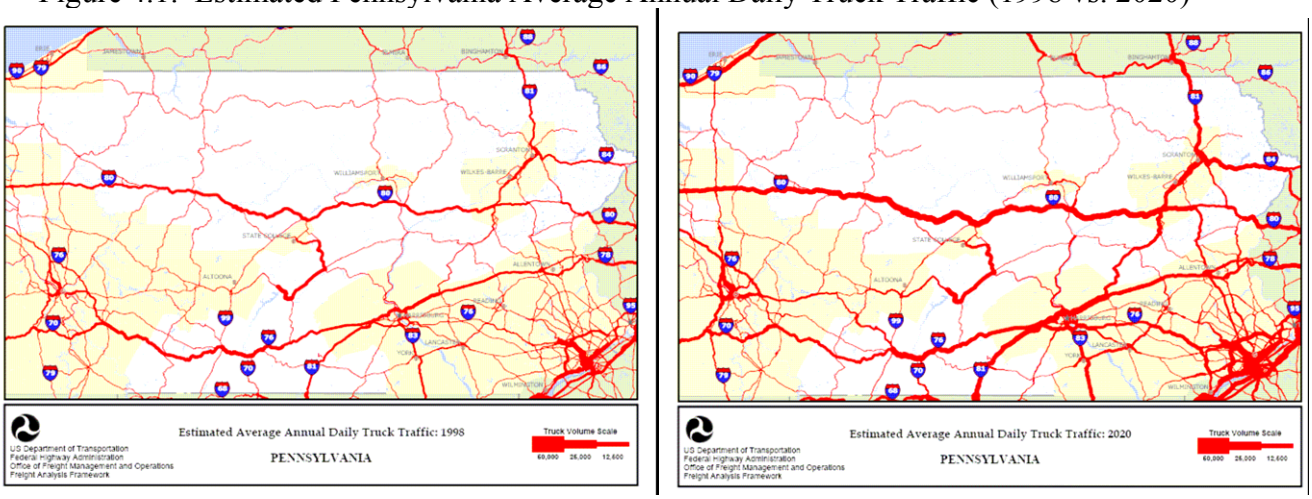
Source: United States 2000 Census County-to-County Worker Flow Files
http://www.cencus.gov/population/www/cen2000/commuting/index.html

Table 4.1 shows the bulk of commuter movement within and between the counties in the Lancaster area. The table is read by finding the county that contributes commuters in the left column, and reading across the table to the column to where those commuters travel (e.g., on average, 201,608 commuter trips per day originate and end in Lancaster County). Table 4.1 indicates that each of the neighboring counties contributes commuters most to itself, with relatively few commuters crossing county lines. For example, in Lancaster County over 90% of commuter trips originate and end within the county, with fewer than 10% travelling to Lancaster from adjacent counties.

The entire evaluation area for this technical analysis had combined annual average VMT levels of nearly 25 million miles per day, which is a significant amount of vehicle traffic. The number of commuters is comparatively small, however, and as a portion of that total, few commuters travel across county lines.

Although the Lancaster contribution to traffic levels in the Lancaster area is significant, there is little contribution to Lancaster County from surrounding area commuter traffic. However, this data may not adequately take into account heavy-duty diesel truck traffic from surrounding counties to the Lancaster area. The entire region is expected to see growth in truck traffic over the next several decades (see Figure 4.1).

Figure 4.1. Estimated Pennsylvania Average Annual Daily Truck Traffic (1998 vs. 2020)



Lancaster County has the highest number of commuters in the area of evaluation. Lancaster County's commuters operate primarily in the statistical area where the Lancaster violating monitor is located. Chester County has the overall highest VMT levels, followed closely by Lancaster County. For this factor, Lancaster County is highest ranking for nonattainment designation, and is also high ranking based on other factors and its CES value. Of the remaining counties that have a high percentage of commuter traffic into a county with a violating monitor (York, Berks, Chester, Dauphin, and Cumberland Counties), each has been designated as part of another nonattainment area for the 2006 24-hour $PM_{2.5}$ NAAQS, and each was also part of another nonattainment area under the 1997 $PM_{2.5}$ NAAQS.

As shown above in Table 4.1, above, very few commuters from York, Berks, Chester, Dauphin, and Cumberland Counties travel into the Lancaster metropolitan statistical area (MSA) compared to the commuters from Lancaster County who travel within the MSA. As explained in detail in Factor 8, below, Lancaster, York, Berks, Chester, Dauphin, and Cumberland Counties are in separate metropolitan statistical areas and are served by separate metropolitan planning organizations. In addition, for air quality planning purposes, Pennsylvania defined separate air basins for these areas. Therefore, EPA has determined that it is appropriate to include York, Berks, Chester, Dauphin, and Cumberland Counties in separate nonattainment areas for the 2006 24-hour $PM_{2.5}$ NAAQS. To the extent that vehicle emissions from York, Berks, Chester, Dauphin, and Cumberland Counties may contribute to the Lancaster nonattainment area, that contribution will be lessened by emission controls put in place in those separate nonattainment areas.

Factor 5: Growth rates and patterns

This factor considers population growth for 2000-2005 and growth in vehicle miles traveled for 1996-2005 for counties in the Lancaster area, as well as patterns of population and VMT growth. A county with rapid population or VMT growth is generally an integral part of an urban area and is likely to be contributing to fine particle concentrations in the area.

Table 5 below shows population, population growth, VMT, and VMT growth for counties that are included in the Lancaster area.

Table 5. Population and VMT Values and Percent Change

Location	Population (2005)	Population Dens (2005)	Population % change (2000 - 2005)	2005 VMT (millions of miles)	VMT % change (1996 to 2005)
Lancaster, PA	**489,936**	**499**	**4**	**4,392**	**21**
York, PA	408,182	449	7	3,333	6
Berks, PA	396,236	458	6	3,320	11
Chester, PA	473,723	624	9	4,414	54
Dauphin, PA	238,850	519	9	2,068	0
Cumberland, PA	252,949	454	0	3,413	27
Lebanon, PA	125,429	346	4	1,133	7
Cecil, MD	97,474	257	13	1,193	10
Harford, MD	223,017	405	4	2,996	25

Lancaster and Chester Counties have the highest VMT levels in the area of analysis, followed closely by York, Berks, and Cumberland Counties. Those counties have similar levels of VMT, but very different levels of VMT growth. Lancaster County had low population growth between 2000 and 2005. However, Lancaster County had a sizable increase in VMT from 1996 and 2005, which was larger than all other counties in the analysis area (except for Chester County which experienced a 54% jump in VMT). Cumberland County and Harford County have a fairly large percentage increase in VMT, but their overall VMT levels are similar to that of the other counties in the area.

Lancaster, York and Chester Counties are the highest ranking counties in the area in terms of population. Lancaster and Chester Counties are highest ranking in terms of VMT. Both are high ranking for other factors as well. However, as noted York and Chester are included in separate nonattainment areas based on analysis of all the factors and analytic tools.

Factor 6: Meteorology (weather/transport patterns)

For this factor, EPA considered data from National Weather Service instruments and other meteorological monitoring sites in the area. Wind direction and wind speed data for 2005-2007 were analyzed, with an emphasis on "high $PM_{2.5}$ days" for each of two seasons (an October-April "cold" season and a May-September "warm" season). These high days are defined as days where any FRM air quality monitors had 24-hour $PM_{2.5}$ concentrations above 95% on a frequency distribution curve of $PM_{2.5}$ 24-hour values.

For each air quality monitoring site, EPA developed a "pollution rose" to understand the prevailing wind direction and wind speed on the days with highest fine particle concentrations. The figure identifies 24-hour $PM_{2.5}$ values by color; days exceeding 35 ug/m3 are denoted with a red or black icon. A dot indicates the day occurred in the warm season; a triangle indicates the day occurred in the cool season. The center of the figure indicates the location of the air quality monitoring site, and the location of the icon in relation to the center indicates the direction from which the wind was blowing on that day. An icon that is close to the center indicates a low average wind speed on that day. Higher wind speeds are indicated when the icon is further away from the center.

The pollution roses in Figures 6 and 6.1, below, for the adjacent counties of York and Lancaster monitors show that for both warm and cool seasons on days with the highest measured $PM_{2.5}$ (>30

µg/m^3) concentration values, winds are mild. Prevailing wind directions in the warm season for York are from the south, and for Lancaster, from the northwest. In the cool season, winds are from the northwest in York and from the southeast in Lancaster.

Figure 6. Pollution Trajectory Plot for Lancaster County, PA
(Lancaster, Lincoln Junior High School Monitor, Site 42-071-0007)

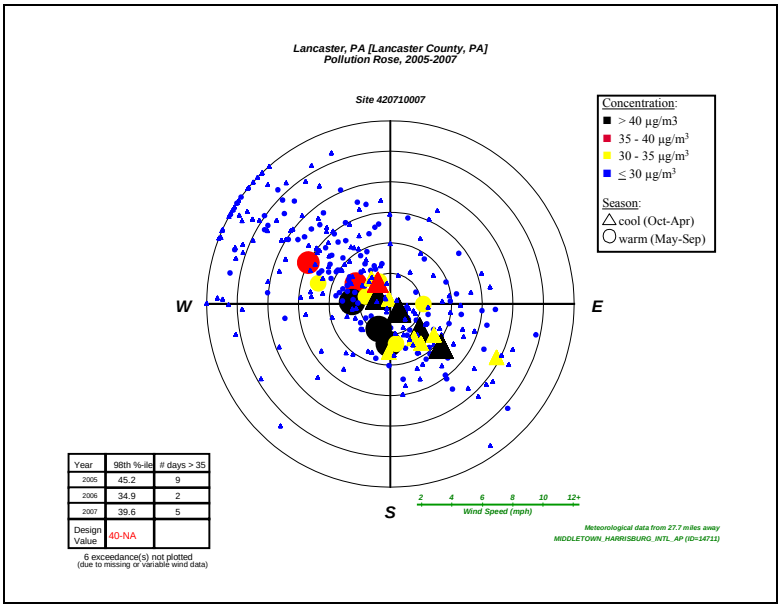
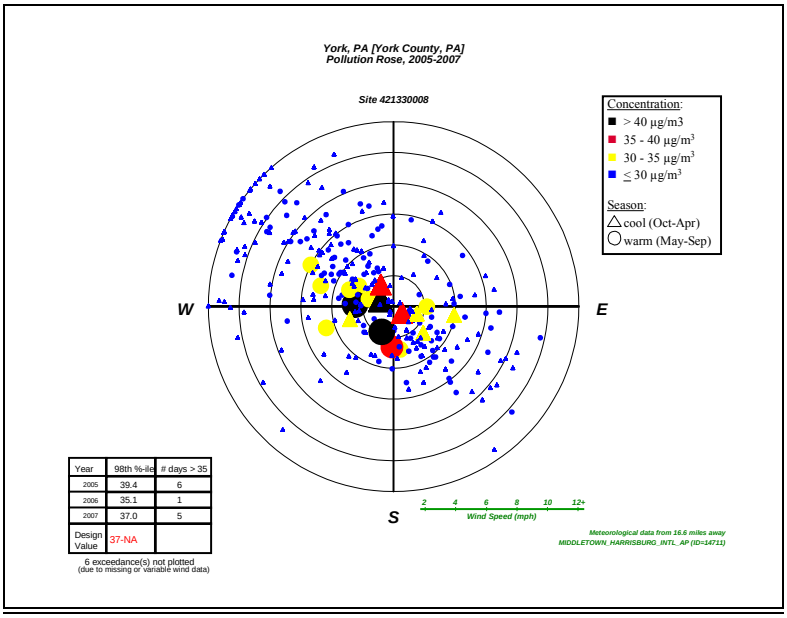


Figure 6.1. Pollution Trajectory Plot for York County, PA
(York Monitor, Davis Jr. High School, Site 42-133-0008)



The pollution roses for Dauphin County (Harrisburg area) and Cumberland County (Carlisle area) are similar. See Figures 6.2 and 6.3. They show a similar northwest-southeast prevailing wind directions on high concentration days in both the cold and warm season, and show more warm high $PM_{2.5}$ days in the southwest quadrant and cool weather days in the southeast and northwest quadrant.

Figure 6.2. Pollution Trajectory Plot for Dauphin County, PA
(Harrisburg Monitor, 1833 UPS Drive, Site 42-043-0401)

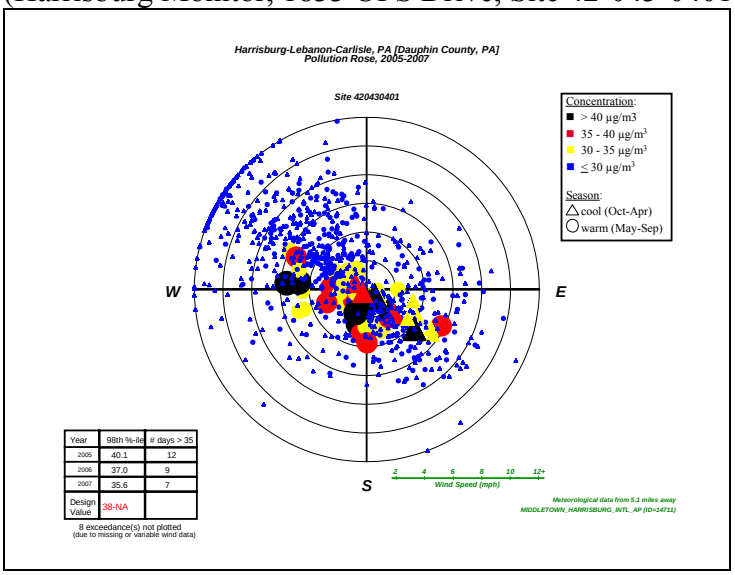
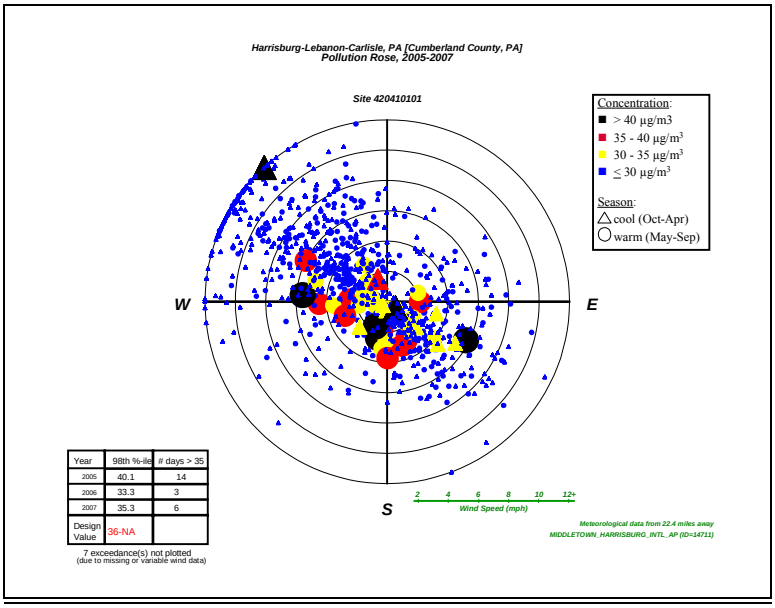
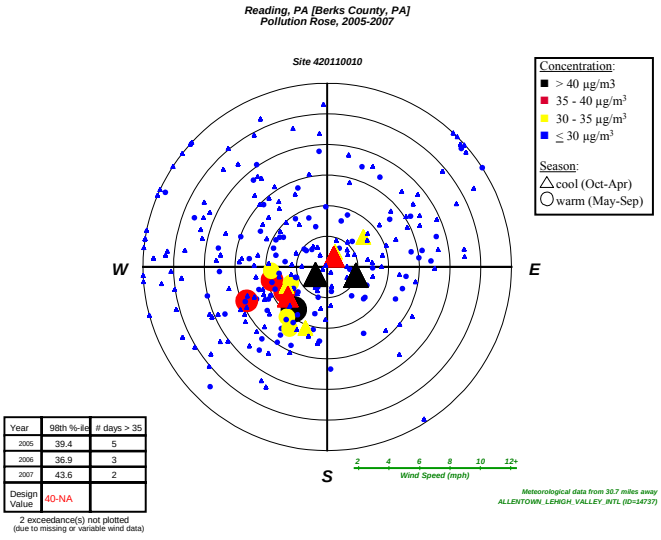


Figure 6.3. Pollution Trajectory Plot for Cumberland County, PA
(Carlisle Monitor, Site 42-041-0101)



The Reading monitor in Berks County lies fairly distant to the north and east of the violating monitor in Lancaster. For high days in both the warm and the cool season, it shows a prevalence of light winds from the southwest direction. (See Figure 6.4) It appears from this information that the wind magnitude and direction on high days in Berks County does not contribute significantly to the violating Lancaster monitor.

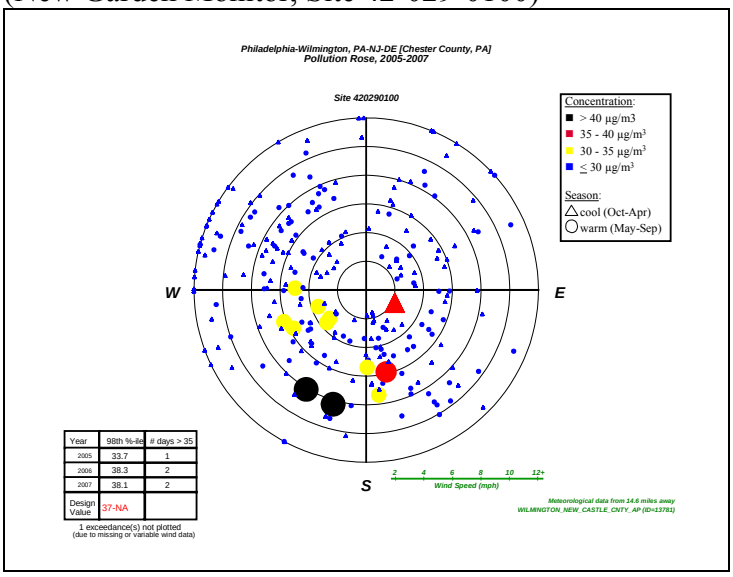
Figure 6.4. Pollution Trajectory Plot for Berks County, PA
(Reading Airport Monitor, Site 42-011-0010)



The New Garden monitor in Chester County lies to the distant south and east of the violating monitor in Lancaster. For high days in the warm season, it shows prevailing winds from the southwest,

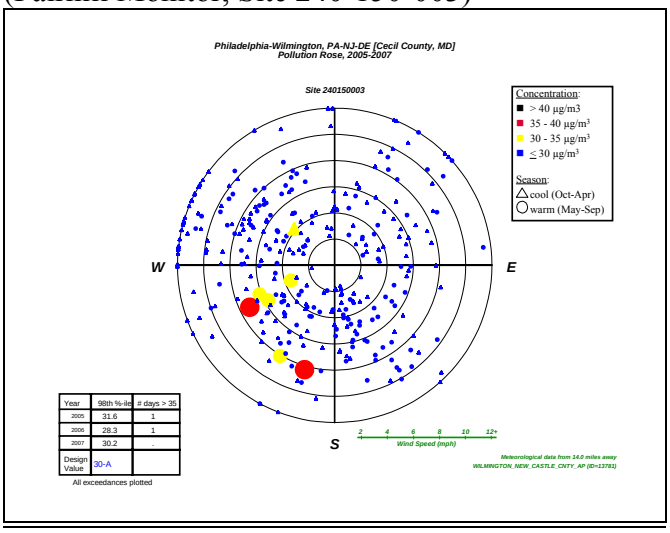
indicating transport from the direction of the Baltimore or Washington areas. The trend for cool days is for light winds from the east, from the direction of the Philadelphia-Wilmington, PA-DE area. From this, it appears that wind magnitude and direction on high days in Chester County does not contribute significantly to the violating Lancaster monitor. (See Figure 6.5)

Figure 6.5. Pollution Trajectory Plot for Chester County, PA
(New Garden Monitor, Site 42-029-0100)



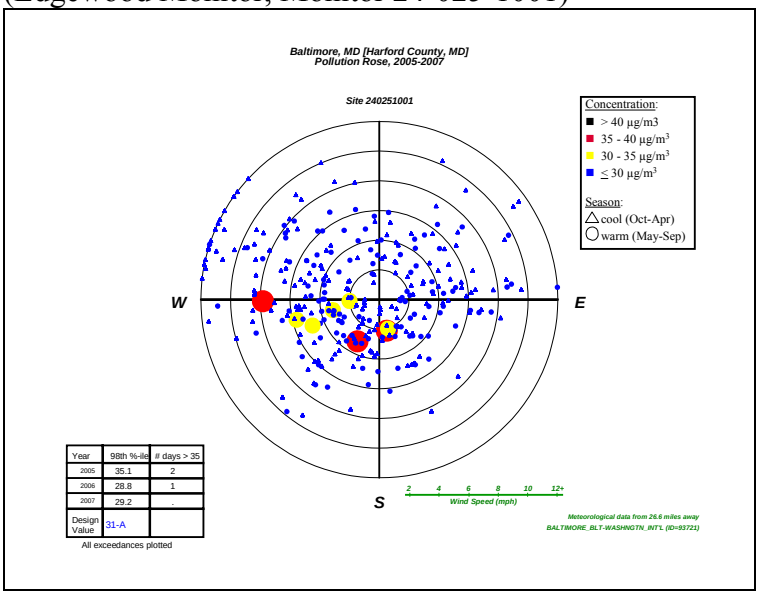
The Fairhill monitor in Cecil County lies fairly distant to the south and east of the violating monitor in Lancaster, south even of the New Garden monitor in Chester County. For high days in the warm season, it trends similar to the New Garden monitor, with winds from the southwest -- indicating transport from the direction of the Baltimore or Washington areas, rather than the Lancaster area. It appears from this information that the wind magnitude and direction on high days in Cecil County do not contribute significantly to the violating Lancaster monitor. (See Figure 6.6)

Figure 6.6. Pollution Trajectory Plot for Cecil County, PA
(Fairhill Monitor, Site 240-150-003)



The Edgewood monitor in Harford County lays distant, due south to the violating monitor in Lancaster. On high days in the warm season, winds prevail from the western direction, indicating impact from the direction of the Baltimore area rather than the Lancaster area. It appears from this information that Harford County does not contribute significantly to the violating Lancaster monitor. (See Figure 6.7)

Figure 6.7. Pollution Trajectory Plot for Harford County, MD
(Edgewood Monitor, Monitor 24-025-1001)



EPA's analysis of meteorology shows that $PM_{2.5}$ emissions during high $PM_{2.5}$ days in 2005-2007 from Dauphin, Cumberland, and York Counties likely impact the Lancaster area. York also ranks high for several other factors. However, Dauphin, Cumberland, and York Counties are in separate nonattainment areas for the 1997 $PM_{2.5}$ NAAQS and are separate economic areas. Therefore, based on analysis of all the factors and analytic tools, EPA has determined that it is appropriate to include Dauphin, Cumberland, and York Counties in separate nonattainment areas for the 2006 24-hour $PM_{2.5}$ NAAQS and these counties are addressed in separate technical analyses. To the extent that there is any contribution of transported pollution from Dauphin, Cumberland, and York Counties to the Lancaster nonattainment area, that contribution will be lessened by emission controls put in place in those separate nonattainment areas.

None of the remaining counties adjacent to Lancaster County seem to have significant impact on Lancaster County, on the basis of these pollution roses. Based on this analysis for this factor, EPA concludes that Chester and Berks Counties in Pennsylvania and Cecil and Harford Counties in Maryland (which are further removed geographically and meteorologically from the Lancaster area) are low-ranked candidates for a 2006 24-hour $PM_{2.5}$ nonattainment designation.

Note: The meteorology factor is also considered in each county's Contributing Emissions Score (CES) because the method for deriving this metric included an analysis of trajectories of air masses for high $PM_{2.5}$ days.

Factor 7: Geography/topography (mountain ranges or other air basin boundaries)

The geography/topography analysis looks at physical features of the land that might have an effect on the air shed and, therefore, on the distribution of $PM_{2.5}$ over the Lancaster area.

The South Central Region of Pennsylvania is home to four separate nonattainment areas under the 1997 $PM_{2.5}$ NAAQS, including the Lancaster, York, Harrisburg-Lebanon-Carlisle, and Reading nonattainment areas. These areas lie to the south of Blue Mountain, which marks the southern boundary of the Allegheny Mountains, which influence regional wind patterns and serves as a barrier to low maritime air masses originating from the Atlantic Ocean. Several broad valleys stretch across this South Central Region, although these terrain features are smaller than the mountains to the north. Statistical analysis by Pennsylvania Department of Environmental Protection indicate monitors within the area generally correlate well with each other, but less well with monitors in eastern Pennsylvania, or with Adams County (to the west) or Perry County (to the north).

The Lancaster area does not have significant topographical barriers limiting air pollution transport within its air shed. Therefore, geography did not play a significant role in the decision-making process. However, Pennsylvania and EPA feel that the air basins have served as a distinguishing characteristic. In the past, EPA has designated the Lancaster area separately from the York, Harrisburg-Lebanon-Carlisle, and Reading areas for both PM and ozone standards, although these areas are geographically contiguous and to some degree may contribute to one another. For the reasons explained above EPA believes it is appropriate to continue to treat these as separate nonattainment areas for the 2006 24-hour $PM_{2.5}$ standard.

Factor 8: Jurisdictional boundaries (e.g., existing PM areas)

In evaluating the jurisdictional boundary factor, EPA gave special consideration to areas that were already designated nonattainment in 2005 for violating the 1997 fine particle standards. Analysis of chemical composition data in these areas indicates that the same components that make up most of the $PM_{2.5}$ mass in the area on an annual average basis (such as sulfate and direct $PM_{2.5}$ carbon in many eastern areas) also are key contributors to the $PM_{2.5}$ mass on days exceeding the 2006 24-hour 2006 $PM_{2.5}$ standard. These data indicate that in many cities, the same source categories that contribute to violations of the annual standard also contribute to exceedances of the 2006 24-hour standard.

Most areas that were originally designated nonattainment for the $PM_{2.5}$ standards still have not attained the standards. Thus, EPA has generally concluded that counties that were designated as having emissions sources contributing to fine particle concentrations which continue to exceed the 1997 standards (all areas violated the annual standard, three also violated the previous 24-hour standard) also contribute to fine particle concentrations on the highest days. For this reason, EPA believes that for most existing nonattainment areas, the nonattainment area for the 2006 24-hour standard should be the same. Consideration also should be given to existing boundaries and organizations as they may facilitate air quality planning and the implementation of control measures to attain the standard. Areas already designated as nonattainment represent important boundaries for state air quality planning.

The analysis of jurisdictional boundaries considered the planning and organizational structure of the Lancaster area to determine if the implementation of controls in a potential nonattainment area can be carried out in a cohesive manner.

As mentioned above, the Southcentral Region of Pennsylvania is home to four separate nonattainment areas under the 1997 $PM_{2.5}$ NAAQS, including the Harrisburg-Lebanon-Carlisle, York, Lancaster, and Reading nonattainment areas. These nonattainment areas are in separate metropolitan statistical areas (MSAs).

- The Harrisburg-Carlisle MSA includes Cumberland, Dauphin, and Perry Counties. The Harrisburg-Carlisle-Lebanon Combined Statistical Area (CSA) includes the Harrisburg-Carlisle MSA along with the Lebanon MSA (Lebanon County).
- The York-Hanover MSA is comprised of a single county, York. The York-Hanover-Gettysburg, CSA includes the York-Hanover MSA plus the Gettysburg, PA Micropolitan Statistical Area of Adams County.
- The Lancaster MSA is comprised of Lancaster County.
- The Reading MSA consists of Berks County. The Reading MSA is part of the Philadelphia-Camden-Vineland CSA.

These areas are served by separate metropolitan planning organizations (MPOs), the Tri-County Regional Planning Commission (RPC), the Lebanon County Planning Department, the York County Planning Commission, the Lancaster County Planning Commission, and the Berks County Planning Commission.

Chester and Harford Counties are in separate nonattainment areas under the 1997 $PM_{2.5}$ NAAQS, including the Philadelphia-Wilmington and Baltimore nonattainment areas. Chester and Harford Counties are also in separate MSAs, the Philadelphia-Camden-Wilmington MSA and the Baltimore-Towson MSA. Furthermore, these areas are served by separate MPOs, the Delaware Valley Regional Planning Commission and the Baltimore Metropolitan Council.

Pennsylvania has defined four air basins that roughly correspond to the 1997 and the 2006 proposed $PM_{2.5}$ nonattainment areas in Southcentral Pennsylvania. These include the Lancaster Air Basin in Lancaster County, the Reading Air Basin in Berks County, the Harrisburg Air Basin in Cumberland and Dauphin Counties, and the York Air Basin in York County. In addition, Pennsylvania has defined the Southeast Pennsylvania air basin that corresponds to the 5-county Philadelphia area. These air basins are defined in 25 *Pa Code* § 121.1, and designate sulfur compound controls outlined in 25 *Pa Code* § 123.22.

The definitions of these four air basins, as they appear in 25 *Pa Code* § 121.1 appear below:

> *Lancaster air basin*—The political subdivisions in Lancaster County of East Petersburg Borough, City of Lancaster, Lancaster Township, Manheim Township, and Millersville Borough.
>
> *Reading air basin*—The political subdivisions in Berks County of Bern Township, Cumru Township, Kenhorst Borough, Laureldale Borough, Leesport Borough, Lower Alsace Township, Mohnton Borough, Mt. Penn Borough, Muhlenberg Township, City of Reading, Shillington Borough, Sinking Spring Borough, Spring Township, St. Lawrence Borough, Temple Borough, West Lawn Borough, West Reading Borough, Wyomissing Borough, and Wyomissing Hills Borough.

Harrisburg air basin—The following political subdivisions in Cumberland County: Camp Hill Borough, East Pennsboro Township, Lemoyne Borough, New Cumberland Borough, West Fairview Borough, Wormleysburg Borough, and the political subdivisions in Dauphin County of the City of Harrisburg, Highspire Borough, Lower Swatara Township, Middletown Borough, Paxtang Borough, Royalton Borough, Steelton Borough, Susquehanna Township, and Swatara Township.

York air basin—The political subdivisions in York County of Manchester Township, North York Borough, Spring Garden Township, Springettsbury Township, West Manchester Township, West York Borough, and City of York.

Southeast Pennsylvania air basin—The counties of Bucks, Chester, Delaware, Montgomery, and Philadelphia.

Areas designated as 8-hour ozone nonattainment areas, and prior $PM_{2.5}$ nonattainment areas, are also important boundaries for State air quality planning. For the 1997 $PM_{2.5}$ standard and the 8-hour ozone standard, Lancaster County (i.e., the one-county Lancaster metropolitan area) was designated as a separate nonattainment area from the other areas surrounding it. Lancaster County is designated as the Lancaster marginal 8-hour ozone nonattainment area. This one-county Lancaster metropolitan area is served by its own transportation planning agency based on economic, political, and commuting patterns.

Other counties included in this technical analysis are also designated as 8-hour ozone nonattainment areas, separate from the Lancaster area. York and Adams Counties were designated as the York Subpart 1 ("Basic") 8-hour ozone nonattainment area. Berks County was designated as the Reading Subpart 1 ("Basic") 8-hour ozone nonattainment area. Dauphin, Lebanon, and Cumberland Counties were part of the Harrisburg-Lebanon-Carlisle Subpart 1 ("Basic") 8-hour ozone nonattainment area. These areas have all been re-designated to attainment for the 1997 8-hour ozone standard.

Chester County is part of the Philadelphia-Wilmington-Atlantic City moderate 8-hour ozone nonattainment area. Harford County is part of the Baltimore moderate 8-hour ozone nonattainment area.

To the degree appropriate, based upon violations and contributions to violations of the ozone and $PM_{2.5}$ NAAQS in a particular area, EPA believes it may be helpful for air planning purposes and for attainment of both NAAQS, for there to be some consistency between ozone and $PM_{2.5}$ nonattainment area boundaries. Comparison of ozone areas with potential $PM_{2.5}$ nonattainment areas, therefore, gives added weight to designation of Lancaster County as a separate $PM_{2.5}$ nonattainment area under the 2006 standard.

Factor 9: Level of control of emission sources

Under this factor, the existing level of control of emission sources is taken into consideration. The emissions data used by EPA in this technical analysis and provided in Table 1 (under Factor 1) represent emissions levels taking into account any control strategies implemented in the Lancaster area before 2005 on stationary, mobile, and area sources. Data are presented for $PM_{2.5}$ components

that are directly emitted (carbonaceous $PM_{2.5}$ and crustal $PM_{2.5}$) and for pollutants which react in the atmosphere to form fine particles (e.g. SO_2, NOx, VOC, and ammonia).

In considering county-level emissions, EPA used data from the 2005 National Emissions Inventory, the most updated version of the national inventory available at the beginning of the designations process in late 2007. However, EPA recognized that for certain counties, emissions may have changed since 2005. For example, certain power plants or large sources of emissions in or near this area may have installed emission controls or otherwise significantly reduced emissions since 2005. Some States provided updated information on emissions and emission controls in their comments to EPA. EPA considered such additional information in making final designation decisions.

With regard to nearby power plants, EPA considered information about whether a specific plant installed federally enforceable emission controls by December 2008 resulting in significant emissions reductions. A control requirement is considered to be federally-enforceable if it is required by a State regulation adopted in a State implementation plan, if it is included in a federally-enforceable Title V operating permit, or if it is required by a consent decree which also requires the controls to be included in federally enforceable permit upon termination of the consent decree. In making final decisions, EPA also considered whether a facility would continue to emit pollutants which contribute to $PM_{2.5}$ exceedances even after emission controls are operational.

The area surrounding and including the Lancaster area has several large stationary, point sources (see Figure 9) that emit high levels of SO_2 plus NOx (defined as greater those emitting 5,000 tons per year). Most notable of these in terms of emissions levels is the PPL Brunner Island power station in York Haven, York County. This facility emitted over 106,000 tons of SO_2 in 2007 (see Table 9.1). Under a consent agreement, two scrubbers are in the process of being constructed at Brunner Island, which will handle exhaust from the plants three coal fired boilers. The first of these scrubbers is to be completed in 2008 (see Table 9), and the second scrubber for the remaining boiler units will be completed in 2009. These scrubbers are projected to remove about 100,000 tons of SO_2 per year, which will have a significant impact on air quality in and around the York area.

Figure 9. Relief Map of the Lancaster Area with select Electric Generating Units (EGUs) Displayed

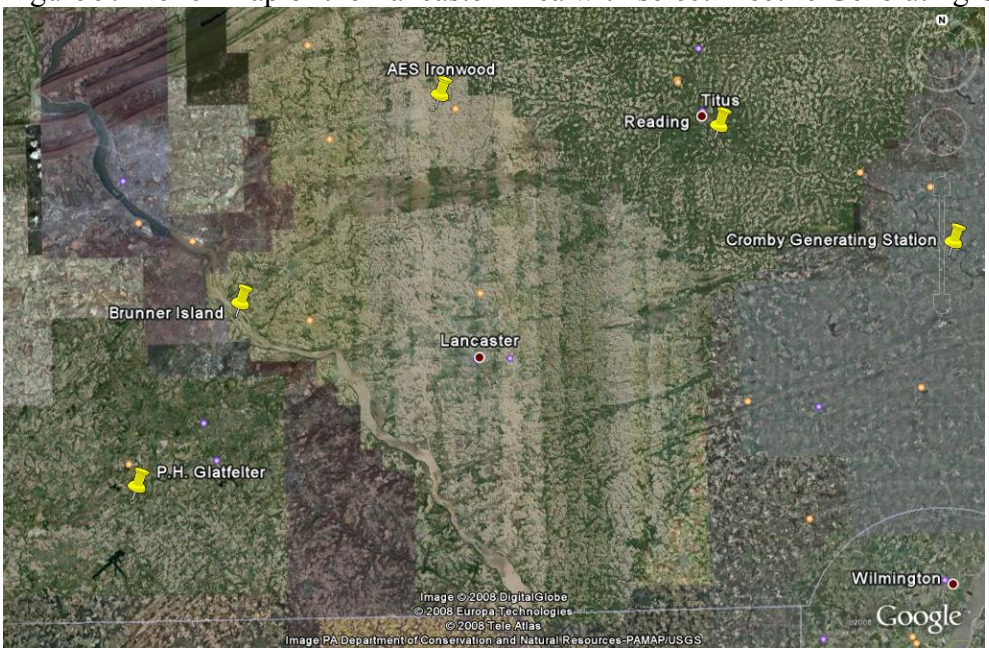


Table 9. EGUs with SO_2 plus NO_x emissions > 5000 tons, from the 2006 NEEDS EGU database

County	Plant Name	Plant Type	UniqueID Final	2006 SO_2	2006 NO_x	Scrubber Online Year	Scrubber Efficiency	SCR Online Year	Capacity MW	1997 $PM_{2.5}$ Nonattainment Area
York, PA	PPL Brunner Island	Coal Steam	3140-B-3	45,447	6,288	2008	95.0		749.0	York
			3140-B-2	26,606	3,600	2009	95.0		378.0	
			3140-B-1	21,492	2,866	2009	95.0		321.0	
Berks, PA	Titus	Coal Steam	3115-B-3	4,718	708				81.0	Reading
			3115-B-1	4,666	699				81.0	
			3115-B-2	3,954	589				81.0	
Chester, PA	Cromby Generating Station	O/G Steam	3159-B-1	3,435	1,581	1982	93.8		48.0	Philadelphia
			3159-B-2	178	112				201.0	
			3159-B-FB1	3,435	1,581		89.0		48.0	
			3159-B-FB2	3,435	1,581		89.0		48.0	

Table 9.1. Selected EGU Emissions (2002-2007) from EPA's Clean Air Markets Division

Brunner Island, York County, PA **Facility ID: 3140**

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	68,931.9	16,190.7	8,773,248.7	85,510,980
2003	12	73,731.0	13,507.7	7,870,160.3	76,709,689
2004	12	92,073.5	16,249.1	9,317,167.7	90,810,610
2005	12	104,601.6	13,929.5	9,020,665.8	87,923,213
2006	12	93,545.0	12,753.7	8,173,709.4	79,665,649
2007	12	106,148.2	15,730.2	9,380,958.3	91,432,329

Titus, Berks County, PA **Facility ID: 3115**

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	13,840.5	1,790.6	1,239,473.3	12,080,730
2003	12	15,892.3	2,088.3	1,344,585.4	13,105,065
2004	12	13,577.7	1,996.2	1,245,216.7	12,136,589
2005	12	14,926.4	2,269.9	1,404,778.6	13,691,829
2006	12	13,338.6	1,997.2	1,258,790.7	12,268,916
2007	12	14,488.7	2,474.4	1,481,640.1	14,440,906

Cromby Generating Station, Chester County, PA **Facility ID: 3159**

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	3,666.6	1,416.5	888,337.4	9,365,376
2003	12	5,442.3	1,952.5	1,257,579.8	13,222,000
2004	12	6,864.9	2,053.2	1,247,551.4	12,790,103

2005	12	4,989.2	2,104.9	1,221,416.0	12,799,778
2006	12	3,613.5	1,692.7	970,952.9	9,881,506
2007	12	3,446.6	1,973.3	1,062,054.7	10,942,142

Based upon this factor, significant reductions in emissions are expected in York County area after the time of designation but prior to the date by when the attainment demonstration for the area would be due. York County is a high-ranking candidate for nonattainment based upon this factor, and for the other factors that are based on CESs. However, this facility is located in a separate jurisdictional area for both economic and air quality planning purposes, and York County is being designated as nonattainment for the 2006 24-hour $PM_{2.5}$ standard as a separate nonattainment area based upon analysis of all of the factors and analytic tools.

Conclusion

This technical analysis demonstrates that the Lancaster area is a separate and distinct area, not associated economically or jurisdictionally with the York, Reading, Harrisburg-Lebanon-Carlisle, Philadelphia, and Baltimore areas. Historically, these areas have been separate nonattainment areas for both particulate matter and ozone. Lancaster, York, Berks, Chester, Dauphin, Lebanon, Cumberland, and Harford Counties are in separate nonattainment areas for the 1997 $PM_{2.5}$ NAAQS, the Lancaster, York, Reading, Philadelphia-Wilmington, Harrisburg-Lebanon-Carlisle, and Baltimore nonattainment areas, respectively. Very few commuters from York, Berks, Chester, Dauphin, Lebanon, Cumberland, and Harford Counties travel into Lancaster County compared to the commuters from Lancaster County who travel within that county. Furthermore, as explained in detail in Factor 8, Lancaster, York, Berks, Chester, Dauphin, Lebanon, Cumberland, and Harford Counties are in separate metropolitan statistical areas and are served by separate metropolitan planning organizations. In addition, for air quality planning purposes, Pennsylvania defined separate air basins for the Lancaster, York, Reading, Philadelphia-Wilmington, and Harrisburg-Lebanon-Carlisle areas. Therefore, EPA has determined that it is appropriate to include York, Berks, Chester, Dauphin, Lebanon, Cumberland, and Harford Counties in separate nonattainment areas for the 2006 24-hour $PM_{2.5}$ NAAQS. To the extent that emissions from York, Berks, Chester, Dauphin, Lebanon, Cumberland, and Harford Counties may contribute to the Lancaster nonattainment area, that contribution it will be lessened by emission controls put in place in those separate nonattainment areas.

The Lancaster area and surrounding counties, which EPA used as the area of consideration for this technical analysis, has monitors in Lancaster, York, Berks, Chester, Dauphin, and Cumberland Counties that all violate the 2006 24-hour $PM_{2.5}$ NAAQS based on 2005-2007 FRM data in the EPA Air Quality System. The largest source of direct $PM_{2.5}$ and $PM_{2.5}$ precursor emissions in this analysis area comes from the Brunner Island power plant in York County and to a much lesser extent, several smaller electric generating units in Berks and Chester Counties. The Lancaster 1997 $PM_{2.5}$ nonattainment area is almost completely surrounded by the adjacent 1997 $PM_{2.5}$ nonattainment areas of Harrisburg (Cumberland, Dauphin, and Lebanon Counties), York (York County), Reading (Berks County), and part of Philadelphia (Chester County). EPA is designating these areas as separate nonattainment areas for the 2006 24-hour $PM_{2.5}$ NAAQS. The Lancaster area of analysis has a moderately populated county with sub-county and low-density population centers. VMT levels for the analysis area, in total, are fairly high, but commuting patterns show low levels of inter-county commuting, and commuting is generally limited to the statistical area in which each county lays. Population, VMT, and commercial growth vary in levels of importance by county/metropolitan area in

the area of analysis. VMT growth is the most significant of these, with high VMT growth in Lancaster County. Topography is not a significant factor, although there are several relatively distant mountains that likely affect wind patterns and meteorology in the area. The Commonwealth considers the existing air basins overlaying parts of the area to be an important consideration under the geography/topography factor. Pollution roses show impact from York County on the Lancaster area. However, jurisdictional boundaries for existing ozone and $PM_{2.5}$ nonattainment areas, as well as existing state-defined air basins, coupled with economic and commuting patterns support maintaining the existing 1997 $PM_{2.5}$ area boundaries.

Therefore, EPA is maintaining the same single-county boundary established for the 1997 $PM_{2.5}$ NAAQS in designating the Lancaster nonattainment area under the 2006 24-hour $PM_{2.5}$ NAAQS.

EPA Technical Analysis for the Liberty-Clairton Area

Introduction

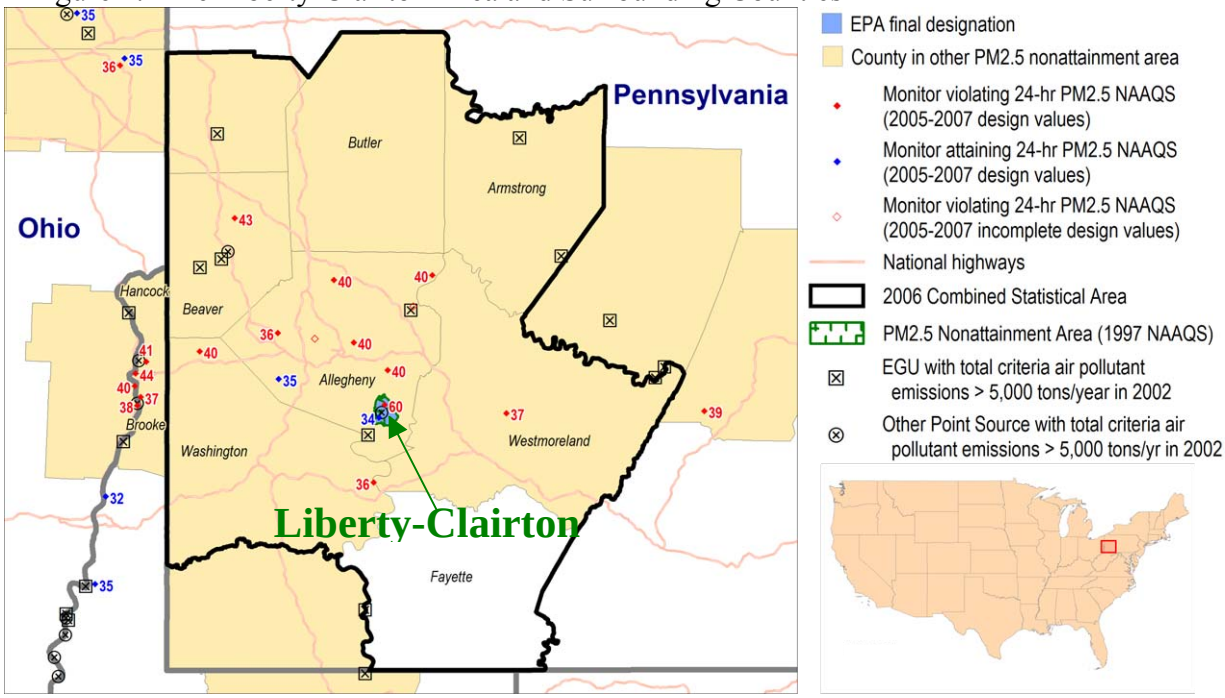
Pursuant to section 107(d) of the Clean Air Act, the Environmental Protection Agency (EPA) must designate as nonattainment those areas that violate the national ambient air quality standard (NAAQS) and those nearby areas that contribute to violations. This technical analysis for the Liberty-Clairton area identifies the counties with monitors that violate the 2006 24-hour $PM_{2.5}$ standard and evaluates nearby counties for contributions to fine particle concentrations in the area. EPA has evaluated these counties based on the weight of evidence of the following nine factors recommended in EPA guidance and any other relevant information:

- pollutant emissions
- air quality data
- population density and degree of urbanization
- traffic and commuting patterns
- growth
- meteorology
- geography and topography
- jurisdictional boundaries
- level of control of emissions sources

We also used analytical tools and data such as pollution roses, fine particle composition monitoring data, back trajectory analyses, and the contributing emission score (CES) to evaluate these areas. (See additional discussion of the CES under Factor 1).

Figure 1 is a map of the counties in the Liberty-Clairton area and other relevant information such as the locations and design values of air quality monitors, and the metropolitan area boundary.

Figure 1. The Liberty-Clairton Area and Surrounding Counties



For the Liberty-Clairton area, EPA previously established $PM_{2.5}$ nonattainment boundaries for the 1997 $PM_{2.5}$ NAAQS that included a portion of Allegheny County, Pennsylvania.

In December 2007, the Commonwealth of Pennsylvania recommended that the same portion of Allegheny County be designated as "nonattainment" for the 2006 24-hour $PM_{2.5}$ standard based on air quality data from 2004-2006. These data are from Federal Reference Method (FRM) monitors located in the Commonwealth. (See the December 28, 2007 from the Pennsylvania Department of the Environment to EPA, received on January 3, 2008.)

In August 2008, EPA notified the Commonwealth of Pennsylvania of its intended designations. In this letter, EPA also requested that if the Commonwealth of Pennsylvania wished to provide comments on EPA's intended designation, it should do so by October 20, 2008. EPA stated that it would consider any additional information (e.g., on power plants or partial county areas) provided by the state in making final decisions on the designations.

Based on EPA's technical analysis described below, EPA has designated that the same portion of Allegheny County, PA as nonattainment for the 2006 24-hour $PM_{2.5}$ air-quality standard as part of the Liberty-Clairton nonattainment area, based upon currently available information. These counties are listed in the table below.

Liberty-Clairton Area	State-Recommended Nonattainment Counties	EPA Final Designated Nonattainment Counties
Pennsylvania	Portion of Allegheny County: City of Clairton and Boroughs of Glassport, Liberty, Lincoln and Port View	Portion of Allegheny County: City of Clairton and Boroughs of Glassport, Liberty, Lincoln and Port View

The following is a technical analysis for the Liberty-Clairton area.

Factor 1: Emissions data

For this factor, EPA evaluated county level emission data for the following $PM_{2.5}$ components and precursor pollutants: $PM_{2.5}$ emissions total, $PM_{2.5}$ emissions carbon, $PM_{2.5}$ emissions other, sulfur dioxide (SO_2), nitrogen oxides (NO_x), volatile organic compounds (VOCs), and ammonia (NH_3). "$PM_{2.5}$ emissions total" represents direct emissions of $PM_{2.5}$ and includes: "$PM_{2.5}$ emissions carbon," "$PM_{2.5}$ emissions other," primary sulfate (SO_4), and primary nitrate. (Although primary sulfate and primary nitrate, which are emitted directly from stacks rather than forming in atmospheric reactions with SO_2 and NO_x, are part of "$PM_{2.5}$ emissions total," they are not shown in Table 1 as separate items). "$PM_{2.5}$ emissions carbon" represents the sum of organic carbon (OC) and elemental carbon (EC) emissions, and "$PM_{2.5}$ emissions other" represents other inorganic particles (crustal). Emissions of SO_2 and NO_x, which are precursors of the secondary $PM_{2.5}$ components sulfate and nitrate, are also considered. VOCs and NH_3 are also potential $PM_{2.5}$ precursors and are included for consideration.

Emissions data were derived from the 2005 National Emissions Inventory (NEI), version 1. See http://www.epa.gov/ttn/naaqs/pm/pm25_2006_techinfo.html.

EPA also considered the Contributing Emissions Score for each county. The CES is a metric that takes into consideration emissions data, meteorological data, and air quality monitoring information to

provide a relative ranking of counties in and near an area. Note that this metric is not the exclusive manner for considering data for these factors. A summary of the CES is included in Attachment 2, and a more detailed description can be found at http://www.epa.gov/ttn/naaqs/pm/pm25_2006_techinfo.html#C.

However, no CES values were calculated for the Liberty-Clairton area due too its unique circumstance of being a portion of Allegheny County, completely surrounded by the Pittsburgh area. Please see the technical analysis for the Pittsburgh area for CES scores for that area.

Table 1 shows emissions of $PM_{2.5}$ and precursor pollutants components (given in tons per year) for violating and potentially contributing counties in the Liberty-Clairton area. The Liberty-Clairton nonattainment area for the 1997 $PM_{2.5}$ NAAQS is shown in boldface.

Table 1. $PM_{2.5}$ Related Emissions and Contributing Emissions Score

County, State	State Recommended Nonattainment ?	$PM_{2.5}$ emissions total (tpy)	$PM_{2.5}$ emissions carbon (tpy)	$PM_{2.5}$ emissions other (tpy)	SO_2 (tpy)	NOx (tpy)	VOCs (tpy)	NH_3 (tpy)
Allegheny, PA	**Yes (partial)** + Yes- other area partial	**5,221**	**2,245**	**2,975**	**51,471**	**63,290**	**46,690**	**2,249**
Armstrong, PA	Yes - other area partial	11,962	780	11,182	209,910	20,352	3,417	844
Beaver, PA	Yes - other area	2,909	451	2,457	45,452	33,400	7,424	450
Brooke, WV	Yes - other area	579	192	388	1,349	2,131	3,436	210
Butler, PA	Yes - other area	1,232	441	791	3,359	7,549	8,805	771
Fayette, PA	No	657	298	360	1,291	4,064	5,377	521
Hancock, WV	Yes - other area	3,781	704	3,077	2,039	4,404	2,298	830
Washington, PA	Yes - other area	1,683	514	1,170	6,318	16,311	9,297	919
Westmoreland, PA	Yes - other area	1,779	798	981	3,506	16,655	15,073	1,175

The Liberty-Clairton area is located in the Monongahela River Valley, known as the Mon Valley. The Mon Valley is historically an industrial area. Emissions in the Liberty-Clairton area are dominated by the U.S. Steel Clairton Cokes Works. Clairton Works is located approximately 20 miles south of Pittsburgh in Clairton, PA, and sits along the west bank of the Monongahela River. The Clairton Works is the country's largest coking operation, with 816 ovens grouped into 12 batteries, and annual capability of 4.7 million tons. Coke is produced by burning coal at high temperatures and is used in the steel making process.

Coke is made by heating coal to extremely high temperatures (1100°C) in an oxygen deficient atmosphere. This concentrates the carbon, and removes any impurities. The coke produced is subsequently used as fuel in iron and steel production because it generates very high heat without as much smoke. The production of the coke itself, however, produces significant amounts of emissions that affect ambient $PM_{2.5}$ levels in this area.

Table 1.1. U.S. Steel Clairton Coke Works 2004 Emissions Data

Source: "Point Source Emission Inventory Report, 2004," Allegheny County Health Department, Air Quality Program, http://www.achd.net/airqual/

CO	$PM_{2.5}$	PM10	PT	PMCond	SO_2	NOx	VOC
3893.90	306.32	711.93	2386.92	117.01	1653.76	4367.92	448.60

NOTE: - CO = carbon monoxide
- NOx = emissions of oxides of nitrogen reported as nitrogen dioxide

- $PM_{2.5}$ = filterable particulate with an aerodynamic diameter less than 2.5 microns
- PM10 -= filterable particulate with an aerodynamic diameter less than 10 microns
- PT = total filterable particulate
- PMCOND = condensable particulate matter defined as material in the vapor state at temperatures above 68º F and a solid at lower temperatures.
- SO_2 = sulfur dioxide
- VOCs = Volatile Organic Compounds.

Factor 2: Air quality data

This factor considers the 24-hour $PM_{2.5}$ design values in micrograms per cubic meter ($\mu g/m^3$) for air quality monitors in counties in the Liberty-Clairton area based on data for the 2005-2007 period. A monitor's design value indicates whether that monitor attains a specified air quality standard. The 2006 24-hour $PM_{2.5}$ standard is met when the 3-year average of a monitor's 98th percentile values is 35 $\mu g/m^3$ or less. A design value is only valid if minimum data completeness criteria are met.

The 24-hour $PM_{2.5}$ design values for counties in the Liberty-Clairton area are shown in Table 2.

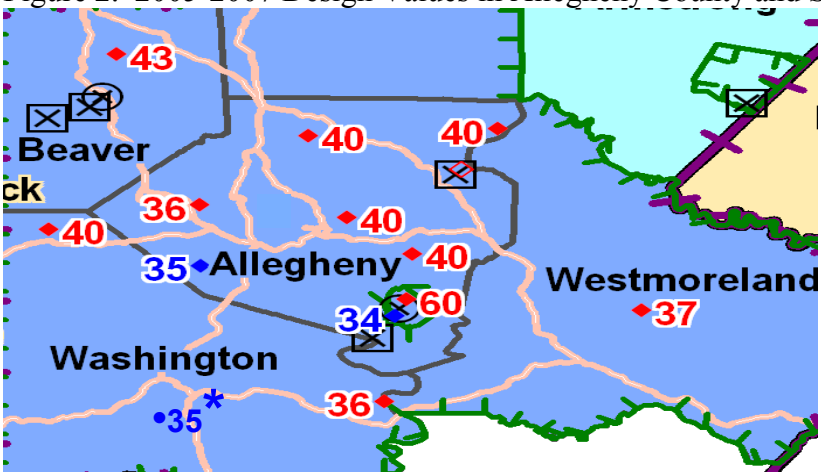
Table 2. Air Quality Data

County, State	State Recommended Nonattainment?	Design Values 2003-05 ($\mu g/m^3$)	Design Values 2004-06 ($\mu g/m^3$)	Design Values 2005-07 ($\mu g/m^3$)
Allegheny, PA	**Yes (partial)** +	**68**	**65**	**61**
	Yes - other area partial	52	45	40
Armstrong, PA	Yes - other area	No monitor		
Beaver, PA	Yes - other area	43	45	43
Brooke, WV	Yes - other area	42	40	44
Butler, PA	No	No monitor0		
Fayette, PA	Yes - other area	No monitor0		
Hancock, WV	Yes - other area	45	40	41
Washington, PA	Yes - other area	36	38	40
Westmoreland, PA	Yes- other area	38	37	37

The Liberty-Clairton portion of Allegheny County shows a violation of the 2006 24-hour $PM_{2.5}$ standard. Therefore, this portion of Allegheny County is included in the Liberty-Clairton nonattainment area. Beaver County, PA, Brooke County, WV, Hancock County, WV, Washington County, PA, and Westmoreland County, PA and other parts of Allegheny County outside the Liberty-Clairton area also show violations of the 2006 24-hour $PM_{2.5}$ standard. However, Allegheny County (except for the Liberty-Clairton area) and Beaver, Washington, and Westmoreland Counties in Pennsylvania are part of the Pittsburgh nonattainment area for the 1997 and 2006 $PM_{2.5}$ NAAQS and therefore, are not included in the Liberty-Clairton area for the 2006 24-hour $PM_{2.5}$ standard. In addition, Brooke and Hancock Counties in West Virginia are part of the Steubenville-Weirton nonattainment area for the 1997 and 2006 $PM_{2.5}$ NAAQS and therefore, are not included in the Liberty-Clairton area for the 2006 24-hour $PM_{2.5}$ standard.

There are eight air quality monitors in Allegheny County. In Figure 2, $PM_{2.5}$ design values at seven of the eight monitors correlate well. However, the $PM_{2.5}$ design value at Liberty Borough is considerably higher. The 2005 - 2007 design value at the Liberty Borough monitor is 60.9 $\mu g/m^3$, while the design values at the other seven monitors in Allegheny County are between 34 and 40 $\mu g/m^3$. The large local sources plus the unique topographical features in this location result in substantially higher $PM_{2.5}$ monitored values at the Liberty Borough monitor than the other monitors in Allegheny County.

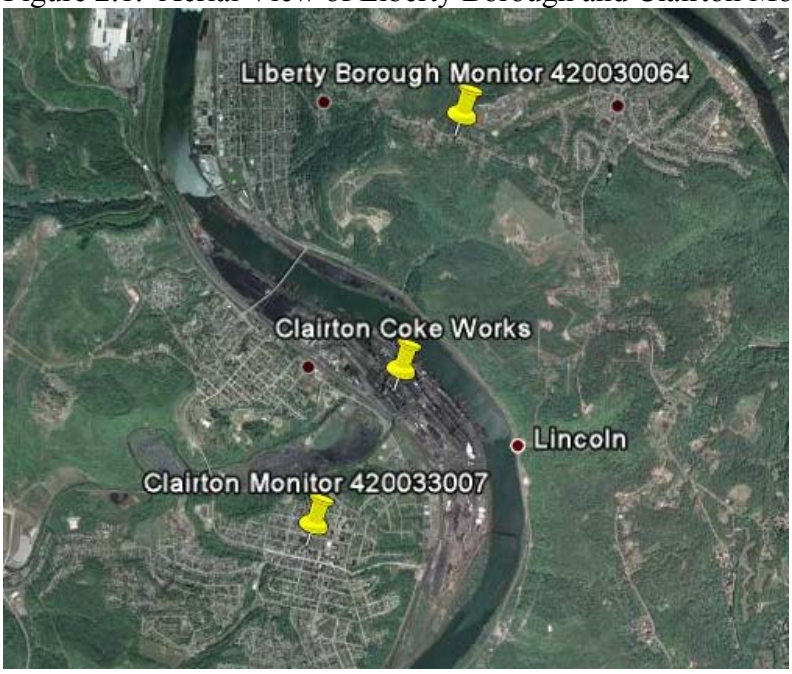
Figure 2. 2005-2007 Design Values in Allegheny County and Surrounding Counties



*Monitor 421250200 in Washington County, PA has incomplete data for 2006.

This point is demonstrated dramatically by contrasting the design value at the Liberty Borough monitor, 60.9 µg/m^3, with that of the Clairton monitor, 33.9 µg/m^3. The Clairton monitor is two miles southwest of the Liberty Borough monitor, and less than a mile southwest of the Clairton Coke Works.

Figure 2.1. Aerial View of Liberty Borough and Clairton Monitors (Google Earth 2008)

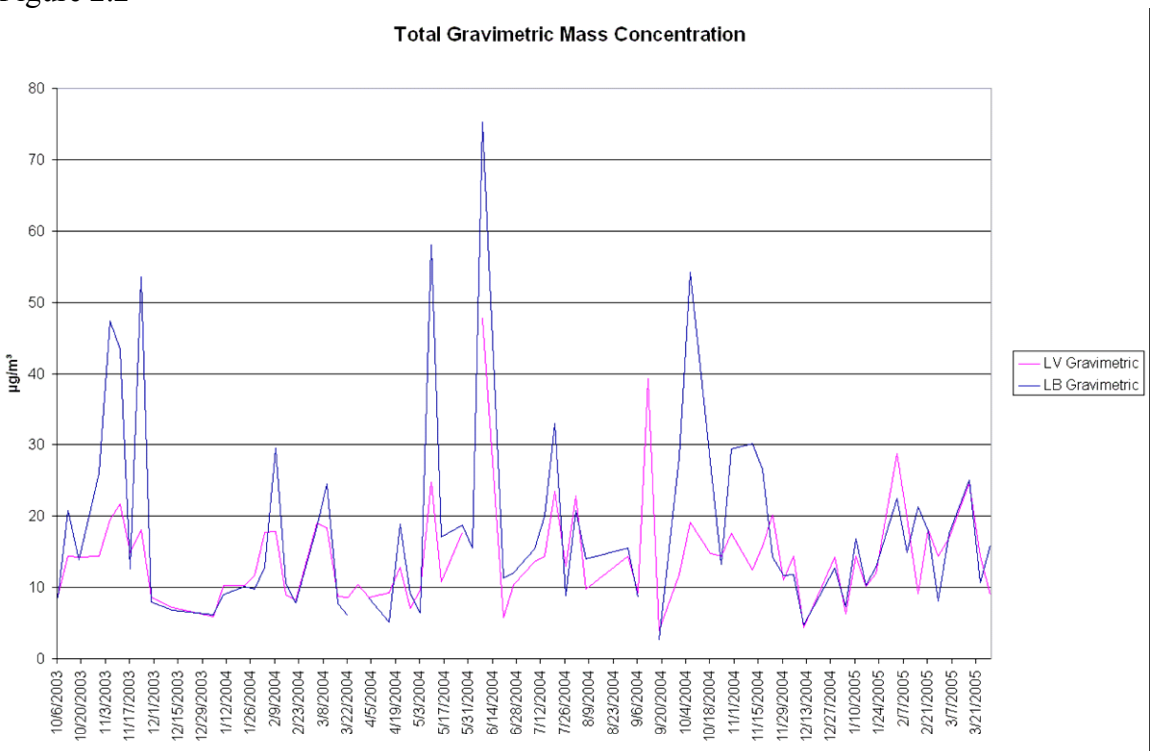


Speciation data further illuminates Liberty-Clairton area's unique local problem. The Allegheny County Health Department (ACHD) conducted an 18-month study which compared $PM_{2.5}$ speciation data at the Liberty Borough monitor to another monitor in Allegheny County, the Lawrenceville monitor. (See, "$PM_{2.5}$ Chemical Speciation and Related Comparisons at Lawrenceville and Liberty: 18-Month Results," dated June 7, 2005, prepared by Jason Maranche, Allegheny County Health Department, which is attached.) The Lawrenceville monitor (# 42-003-008) is located in Pittsburgh, downwind from the central business district. The Liberty Borough monitor site is located in the Monongahela Valley, which contains a mix of urban residential, heavy industrial and rural areas.

The ACHD study showed that the Lawrenceville monitor is impacted by sulfates during warmer weather and nitrates during colder weather. The Liberty Borough monitor showed similar levels of nitrates and sulfates, depending on the season. However, the main species detected year-round at Liberty Borough were organic and elemental carbon.

The ACHD study included the following plot showing total concentrations at both monitors over the 18-month period. See Figure 2.2.

Figure 2.2



The ACHD study made the following observations:

- "Total $PM_{2.5}$ at Lawrenceville and Liberty show similar peaks at the same times, but to varying extents at each site. Liberty is generally the highest site on peak days, but can be lower for some peaks. On average or low $PM_{2.5}$ days, Liberty and Lawrenceville are often nearly equal. This indicates that regional flow and meteorology may be the primary controlling factors in the formation of $PM_{2.5}$ on low and average days. Wind speed aloft (upper air), relative humidity, and temperature can affect both sites on a broad-scale. Additional accumulation at Liberty may be dependent on local conditions such as surface wind and temperature."

- "Major species concentrations at Lawrenceville parallel those sampled at other Eastern U.S. metropolitan areas, while the concentrations at Liberty follow their own course. The differences in concentrations of many elements may provide clues to the regional, urban excess, and localized river valley components of $PM_{2.5}$ in Allegheny County."

Every 6 days, the sampling at the Liberty Borough and Lawrenceville monitors is concurrent. An analysis of the concurrent sampling in the ACHD study showed that sulfate and nitrate concentrations

at both site were very similar. The ADCH study concluded that, sulfates and nitrates are regional species. However, there were large differences between the two monitors for organic and elemental carbon. The ACHD study showed that ammonium and "other" species are also higher at the Liberty Borough monitor than at Lawrenceville. However, carbon, especially organic carbon, is by far the dominant species at Liberty Borough.

The ACHD study included the following plots showing organic and elemental carbon concentrations at both monitors over the 18-month period. See Figures 2.3 and 2.4.

Figure 2.3

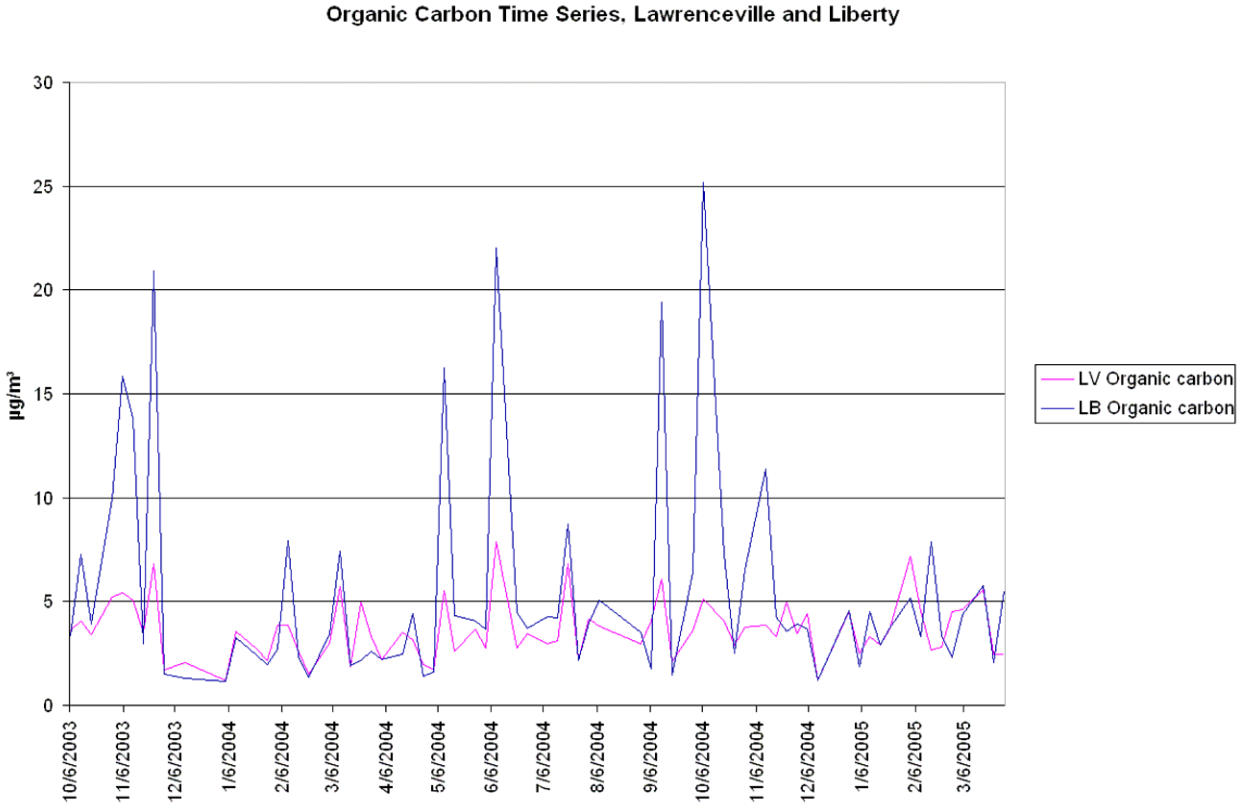
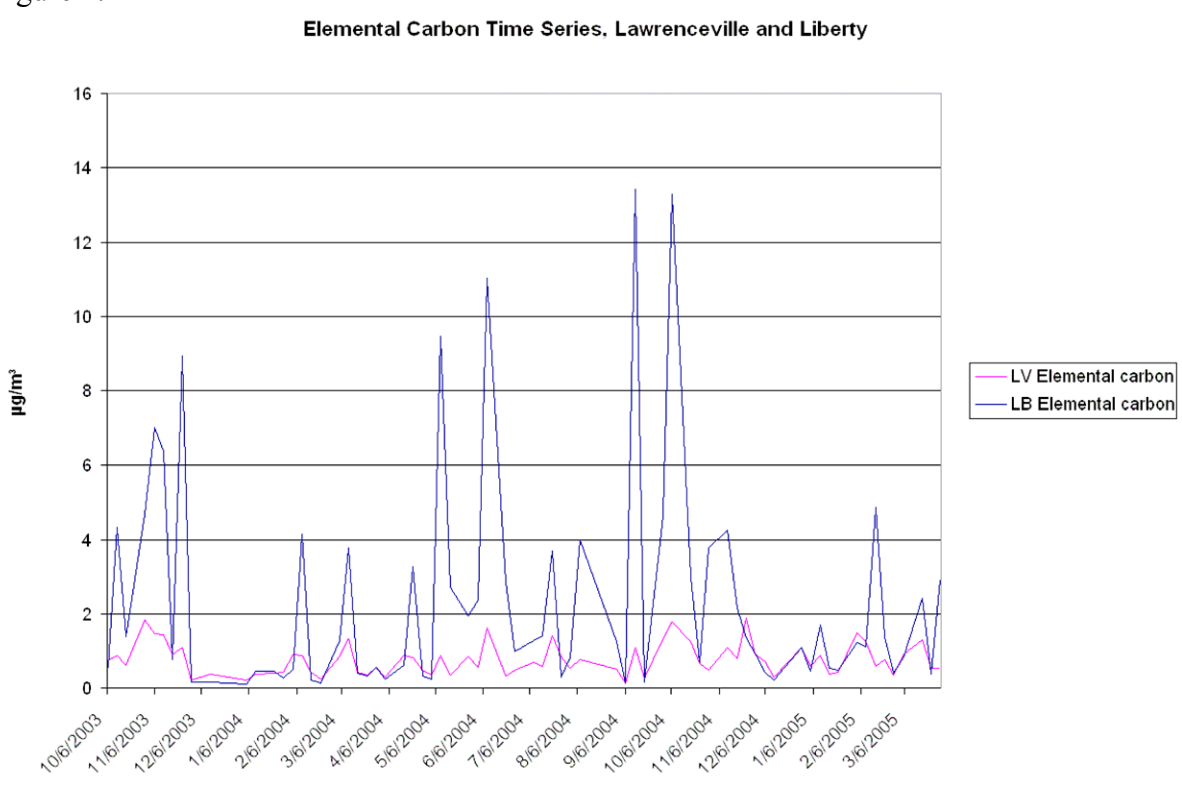


Figure 2.4



The ACHD study also looked at two other monitors in southwestern Pennsylvania, one upwind from Allegheny County and one downwind. The upwind monitor, the Florence monitor, is in the northwester corner of Washington County, PA. This monitor is west of the Lawrenceville monitor, and northwest of the Liberty Borough monitor. Downwind, the Greensburg monitor is located in Westmoreland County. This monitor is east of the Liberty Borough monitor, and southeast of the Lawrenceville monitor. (Please note that Washington and Westmoreland Counties are in the Pittsburgh nonattainment area for the 1997 $PM_{2.5}$ NAAQS.) The ACHD study found that, "By total gravimetric (weighed) mass concentrations, Florence, Lawrenceville, and Greensburg match well, indicative of the regional flow through the multi-county area. Liberty Borough shows the highest mass concentrations, due to regional flow plus localized excess. Lawrenceville and Greensburg show the next highest concentrations, due to gained urban excess. Accordingly, Florence is usually the lowest by total mass, since it reflects regional flow without localized urban excess."

Furthermore, concentrations of sulfate and nitrate track well with all four monitors, indicating that they are regional pollutants. Organic carbon, elemental carbon, and ammonium are higher at Liberty Borough. As when comparing Liberty Borough to Lawrenceville alone, organic carbon at Liberty Borough is far higher than at the other three monitors.

On peak PM days, organic carbon is anywhere from a few $\mu g/m^3$ higher at Liberty Borough to nearly 20 $\mu g/m^3$ higher. Similarly, elemental carbon is from a few $\mu g/m^3$ higher at Liberty Borough to about 12 $\mu g/m^3$ higher. The differences in ammonium concentrations are much smaller, from 1 or 2 $\mu g/m^3$ to about 7 $\mu g/m^3$. The additional concentrations of organic carbon, elemental carbon, and ammonium account for the more than 20 $\mu g/m^3$ difference between Liberty Borough and the other monitors in Southwester Pennsylvania. (See Table 2.1.)

Table 2.1. Representative Design Values in Southwestern Pennsylvania

	Design Values ($\mu g/m^3$)	
Monitor Name, Location	2004-2006	2005-2007
Liberty Borough, Allegheny County	65.5	60.9
Lawrenceville, Allegheny County	39.5	39.9
Greensburg, Westmoreland County	37.1	36.8
Florence, Washington County	38.2	39.9

Similarly, speciation data from the Liberty Borough monitor compared to other surrounding nonattainment areas shows similar results. A comparison of speciation data from the Liberty Borough monitor to Morgantown, WB to the south; Steubenville-Weirton, WV to the west; and Johnstown, PA to the east shows that carbon is far higher at Liberty Borough then the other areas. See Table 2.2.

Table 2.2. Particulate Matter Speciation Date for Liberty-Clairton and Nearby Areas

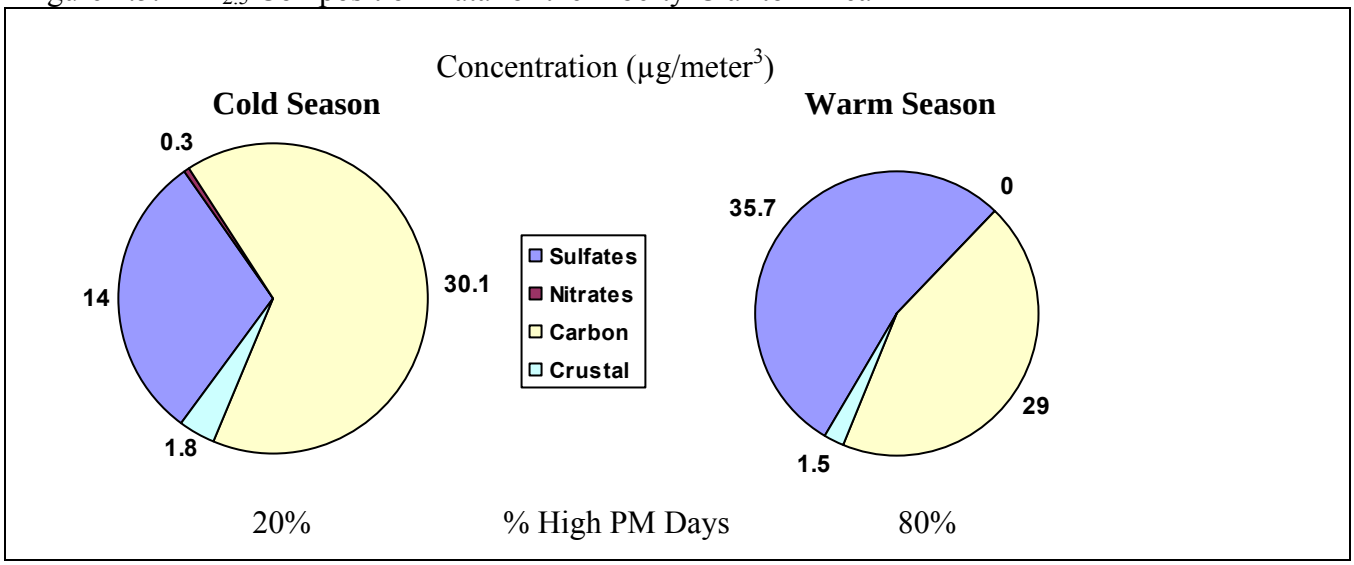
Area	Speciation Data								
Liberty-Clairton, PA	Sulfate ($\mu g/m^3$)	Nitrate ($\mu g/m^3$)	Carbon ($\mu g/m^3$)	Crustal ($\mu g/m^3$)	Total ($\mu g/m^3$)	Sulfate Percent	Nitrate Percent	Carbon Percent	Crustal Percent
Total Concentration (Cold)	14.0	0.3	30.1	1.8	46.2	30	1	65	4
Regional Concentration (Cold)	7.8	0.3	4.2	0.8	13.1	60	2	32	6
Urban Increment (Cold)	6.2	0.0	25.9	1.0	33.1	19	0	78	3
Total Concentration (Warm)	35.7	0.0	29.0	1.5	66.2	54	0	44	2
Regional Concentration (Warm)	20.6	0.0	4.4	1.4	26.4	78	0	17	5
Urban Increment (Warm)	15.1	0.0	24.6	0.1	39.8	38	0	62	0
Morgantown, WV	Sulfate ($\mu g/m^3$)	Nitrate ($\mu g/m^3$)	Carbon ($\mu g/m^3$)	Crustal ($\mu g/m^3$)	Total ($\mu g/m^3$)	Sulfate Percent	Nitrate Percent	Carbon Percent	Crustal Percent
Total Concentration (Cold)	9.6	9.7	8.1	0.9	28.3	34	34	29	3
Regional Concentration (Cold)	8.0	7.5	5.0	0.6	21.1	38	36	24	3
Urban Increment (Cold)	1.6	2.2	3.1	0.3	7.2	22	31	43	4
Total Concentration (Warm)	25.8	0.0	8.7	1.1	35.6	72	0	24	3
Regional Concentration (Warm)	22.8	0.0	6.3	1.0	30.1	76	0	21	3
Urban Increment (Warm)	3.0	0.0	2.4	0.1	5.5	55	0	44	2
Steubenville-Weirton, WV	Sulfate ($\mu g/m^3$)	Nitrate ($\mu g/m^3$)	Carbon ($\mu g/m^3$)	Crustal ($\mu g/m^3$)	Total ($\mu g/m^3$)	Sulfate Percent	Nitrate Percent	Carbon Percent	Crustal Percent
Total Concentration (Cold)	28.4	0.0	8.2	1.0	37.7	75	0	22	3
Regional Concentration (Cold)	25.1	0.0	4.4	1.2	30.7	82	0	14	4
Urban Increment (Cold)	3.3	0.0	3.8	0.0	7.1	46	0	54	0
Total Concentration (Warm)	28.4	0.0	8.2	1.0	37.7	75	0	22	3
Regional Concentration (Warm)	25.1	0.0	4.4	1.2	30.7	82	0	14	4
Urban Increment (Warm)	3.3	0.0	3.8	0.0	7.1	46	0	54	0
Johnstown, PA	Sulfate ($\mu g/m^3$)	Nitrate ($\mu g/m^3$)	Carbon ($\mu g/m^3$)	Crustal ($\mu g/m^3$)	Total ($\mu g/m^3$)	Sulfate Percent	Nitrate Percent	Carbon Percent	Crustal Percent
Total Concentration (Cold)	9.6	9.7	8.1	0.9	28.3	34	34	29	3
Regional Concentration (Cold)	8.0	7.5	5.0	0.6	21.1	38	36	24	3
Urban Increment (Cold)	1.6	2.2	3.1	0.3	7.2	22	31	43	4
Total Concentration (Warm)	25.8	0.0	8.7	1.1	35.6	72	0	24	3
Regional Concentration (Warm)	22.8	0.0	6.3	1.0	30.1	76	0	21	3
Urban Increment (Warm)	3.0	0.0	2.4	0.1	5.5	55	0	44	2

Thus, the high concentrations of carbon at the Liberty Borough monitor indicate a unique local problem in the area. The additional carbon is, on average, approximately equal to the difference

between the Liberty Borough design concentration and the concentration for the remainder of the surrounding Pittsburgh area.

Under this factor, we also consider fine particle composition monitoring data. Air quality monitoring data on the composition of fine particle mass are available from the EPA Chemical Speciation Network and the IMPROVE monitoring network. Analysis of these data indicates that the days with the highest fine particle concentrations in the Liberty-Clairton area occur predominantly in the summer. The average chemical composition of the highest days is illustrated in Figure 2.5, below. This data indicates that sources of direct $PM_{2.5}$ carbon and SO_2 emissions are key contributors to exceedances in the area. This data corresponds with the data compiled and analyzed by ACHD, which is discussed above.

Figure 2.5. $PM_{2.5}$ Composition Data for the Liberty-Clairton Area



Note: Eligible monitors for providing design value data generally include State and Local Air Monitoring Stations (SLAMS) at population-oriented locations with an FRM monitor. All data from Special Purpose Monitors (SPM) using an FRM is eligible for comparison to the relevant NAAQS, subject to the requirements given in the October 17, 2006 Revision to Ambient Air Monitoring Regulations (71 FR 61236). All monitors used to provide data must meet the monitor siting and eligibility requirements given in 71 FR 61236 to 61328 in order to be acceptable for comparison to the 2006 24-hr $PM_{2.5}$ NAAQS for designation purposes.

Factor 3: Population density and degree of urbanization (including commercial development)

Table 3 shows the 2005 population for each county in the area being evaluated, as well as the population density for each county in that area. Population data gives an indication of whether it is likely that population-based emissions might contribute to violations of the 2006 24-hour $PM_{2.5}$ standard. The Liberty-Clairton area for the 1997 $PM_{2.5}$ NAAQS area is shown in boldface.

Table 3. Population

County, State	State Recommended Nonattainment?	2005 Population	2005 Population Density (pop/sq mi)
Allegheny, PA	**Yes (partial)** +	**1,233,036**	**1658**

	Yes- other area partial		
Armstrong, PA	Yes - other area partial	70,527	106
Beaver, PA	Yes - other area	176,825	399
Brooke, WV	Yes - other area	24,474	265
Butler, PA	Yes - other area	181,526	229
Fayette, PA	No	146,206	183
Hancock, WV	Yes - other area	31,191	354
Washington, PA	Yes - other area	206,418	240
Westmoreland, PA	Yes - other area	367,133	355

Because of the unique nature of the Liberty-Clairton area, with its local source and topography issues, this factor does not weigh heavily in this technical analysis. The Liberty-Clairton area is completely surrounded by the Pittsburgh area. This factor is fully considered in the technical analysis for the Pittsburgh area.

Factor 4: Traffic and commuting patterns

This factor considers the number of commuters in each county who drive to another county within the Liberty-Clairton area, the percent of total commuters in each county who commute to other counties within the Liberty-Clairton area, as well as the total Vehicle Miles Traveled (VMT) for each county in millions of miles (see Table 4). A county with numerous commuters is generally an integral part of an urban area and is likely contributing to fine particle concentrations in the area.

Table 4. Traffic and Commuting Patterns

County, State	State Recommended Non-attainment?	2005 VMT (millions of miles)	Number Commuting to any violating counties	Percent Commuting to any violating counties	Number Commuting into and within statistical area	Percent Commuting into and within statistical area
Allegheny, PA	**Yes (partial)** + Yes- other area partial	**10,003**	**(3)**	**563,410**	**573,120**	**99**
Armstrong, PA	Yes - other area partial	565	(2)	7,480	26,420	89
Beaver, PA	Yes - other area	1,522	0	71,950	78,710	97
Brooke, WV	Yes - other area	210	0	8,040	1,280	12
Butler, PA	Yes - other area	1,669	10	23,870	77,510	96
Fayette, PA	No	927	(14)	17,320	53,460	93
Hancock, WV	Yes - other area	187	(32)	11,830	2,290	16
Washington, PA	Yes - other area	2,399	25	84,880	85,970	96
Westmoreland, PA	Yes - other area	3,583	17	153,610	159,570	97

. Note: The 2005 VMT data used for Tables 4 and 5 of the technical analysis have been derived using methodology such as that described in "Documentation for the 2005 Mobile National Emissions Inventory, Version 2," December 2008, prepared for the Emission Inventory Group, U.S. EPA. This document may be found at: ftp://ftp.epa.gov/EmisInventory/2005_nei/mobile_sector/documentation/2005_mobile_nei_version_2_report.pdf

The listing of counties on Table 4 reflects the number of people commuting to other counties. The Liberty-Clairton area for the 1997 $PM_{2.5}$ NAAQS area is shown in boldface.

Because of the unique nature of the Liberty-Clairton area, with its local source and topography issues, this factor does not weigh heavily in this technical analysis. The Liberty-Clairton area is completely

surrounded by the Pittsburgh area. This factor is fully considered in the this technical analysis for the Pittsburgh area.

Factor 5: Growth rates and patterns

This factor considers population growth for 2000-2005 and growth in VMT for 1996-2005 for counties in Liberty-Clairton area, as well as patterns of population and VMT growth. A county with rapid population or VMT growth is generally an integral part of an urban area and likely to be contributing to fine particle concentrations in the area.

Table 5 shows population, population growth, VMT, and VMT growth for counties that are included in the Liberty-Clairton area. The Liberty-Clairton area for the 1997 $PM_{2.5}$ NAAQS area is shown in boldface.

Table 5. Population and VMT Values and Percent Change.

County, State	Population (2005)	Population Growt (2000 - 2005)	Population % change (2000 - 2005)	2005 VMT (millions of miles)	VMT % change (2000 to 2005)
Allegheny, PA	**1,233,036**	**1658**	**(4)**	**10,003**	**(3)**
Armstrong, PA	70,527	106	(2)	565	(2)
Beaver, PA	176,825	399	(2)	1,522	0
Brooke, WV	24,474	265	(4)	210	0
Butler, PA	181,526	229	4	1,669	10
Fayette, PA	146,206	183	(2)	927	(14)
Hancock, WV	31,191	354	(4)	187	(32)
Washington, PA	206,418	240	2	2,399	25
Westmoreland, PA	367,133	355	(1)	3,583	17

Because of the unique nature of the Liberty-Clairton area, with its local source and topography issues, this factor does not weigh heavily in this technical analysis. The Liberty-Clairton area is completely surrounded by the Pittsburgh nonattainment area. This factor is fully considered in the technical analysis for the Pittsburgh area.

Factor 6: Meteorology (weather/transport patterns)

For this factor, EPA considered data from National Weather Service instruments and other meteorological monitoring sites in the area. Wind direction and wind speed data for 2005-2007 were analyzed, with an emphasis on "high $PM_{2.5}$ days" for each of two seasons (an October-April "cold" season and a May-September "warm" season). These high days are defined as days where any FRM air quality monitors had 24-hour $PM_{2.5}$ concentrations above 95% on a frequency distribution curve of $PM_{2.5}$ 24-hour values.

For each air quality monitoring site, EPA developed a "pollution rose" to understand the prevailing wind direction and wind speed on the days with highest fine particle concentrations. Figures 6 and 6.2 identify 24-hour $PM_{2.5}$ values by color; days exceeding 35 ug/m3 are denoted with a red or black icon. A dot indicates the day occurred in the warm season; a triangle indicates the day occurred in the cool season. The center of the figure indicates the location of the air quality monitoring site, and the location of the icon in relation to the center indicates the direction from which the wind was blowing on that day. An icon that is close to the center indicates a low average wind speed on that day. Higher wind speeds are indicated when the icon is further away from the center.

The pollution roses for the Liberty-Clairton area (Figures 6 and 6.2) show that winds in the area are predominantly from the southwest. At the Liberty Borough monitor (# 420033064), high $PM_{2.5}$ days (days with $PM_{2.5}$ greater than 35 $\mu g/m^3$) are primarily days with winds from southwest and south, which is direction of the Clairton Coke Works. (See Figures 6 and 6.1.) To a far lesser degree, some days with high ambient $PM_{2.5}$ have winds from the northwest.

Figure 6. Pollution Trajectory Plot for the Liberty Borough Monitor, Allegheny County, PA (Site 420033064)

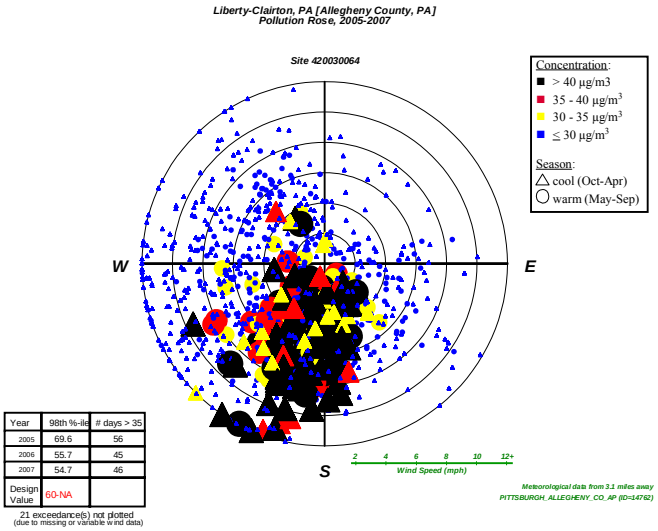
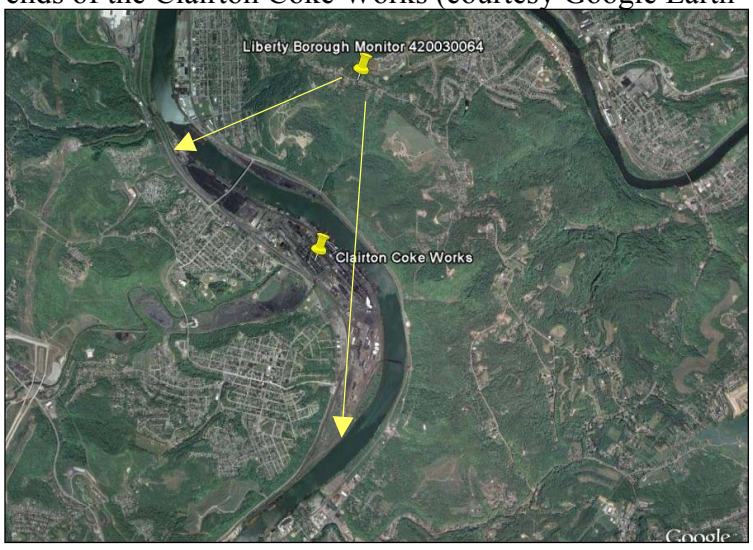
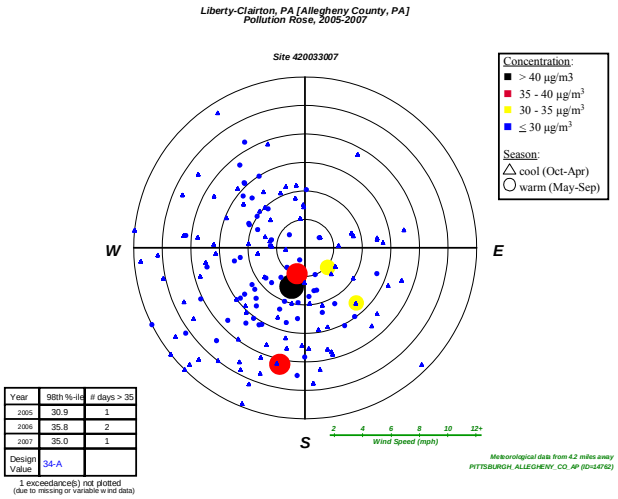


Figure 6.1. Liberty Borough Monitor and Clairton Coke Works, showing the northern and southern ends of the Clairton Coke Works (courtesy Google Earth – 2008)



At the Clairton monitor (# 4220033007), high $PM_{2.5}$ days are primarily days with winds from southwest and west. (See Figure 6.2.)

Figure 6.2. Pollution Trajectory Plot for the Clairton Monitor
(Site 420033007)



The ACHD study referenced in Factor 2 ("$PM_{2.5}$ Chemical Speciation and Related Comparisons at Lawrenceville and Liberty: 18-Month Results," dated June 7, 2005) also considered meteorology. That study stated that the Liberty Borough monitor, located in the Mon Valley, was much more affected by inversions than the Lawrenceville monitor, located to the northwest of Liberty Borough in Pittsburgh. The ACHD study concluded that, "Liberty $PM_{2.5}$ levels are highly influenced by nocturnal temperature inversions, when warmer upper-air layers trap pollutants close to surface level. Lawrenceville is moderately influenced by inversions near daybreak, but overall the levels remain steadier at Lawrenceville on a diurnal basis."

Note: The meteorology factor is also considered in each county's Contributing Emissions Score because the method for deriving this metric included an analysis of trajectories of air masses for high $PM_{2.5}$ days.

Factor 7: Geography/topography (mountain ranges or other air basin boundaries)

The geography/topography analysis looks at physical features of the land that might have an effect on the air shed and, therefore, on the distribution of $PM_{2.5}$ over the Liberty-Clairton area.

The Clairton Coke Works is at the base of the Mon Valley, approximately 750 feet above mean sea level (MSL). (See Figures 7 and 7.1, topographic maps of the area.) The facility sits on the west bank of the Monongahela River. On the east bank, the terrain rises sharply reaching elevations more than 300 feet above the coke works within a thousand feet of the plant. (See Figure 7.2, a three dimensional view to the north from the Clairton Coke Works.) The Liberty Borough monitor is about 1100 feet above MSL, to the northeast of the coke works. (See Figure 7.3, which is an aerial view of the Liberty-Clairton area.)

Figure 7. Clairton Coke Works Topographic Map (Source: USGS – TerraServer USA)

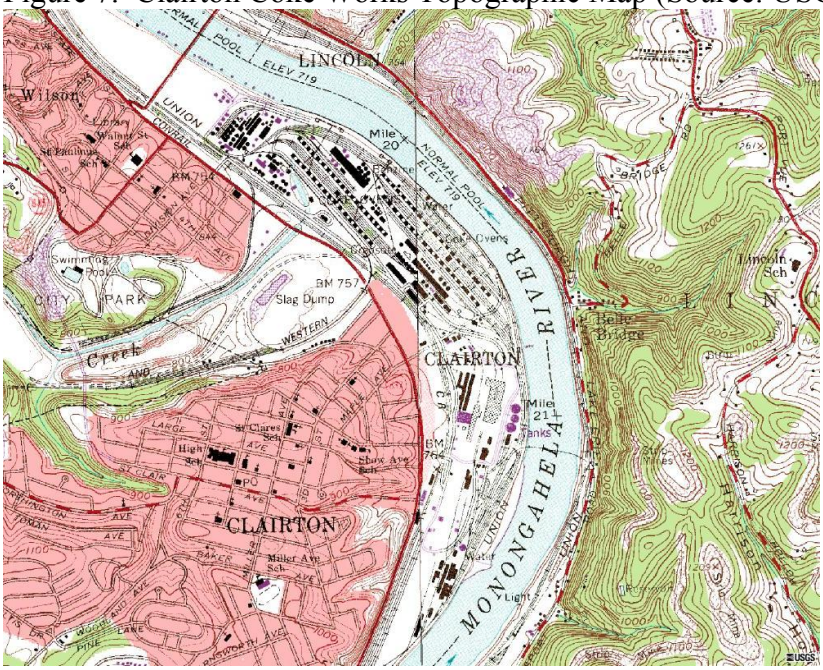


Figure 7.1 Liberty-Clairton Topographic Map (Source: USGS – TerraServer USA)

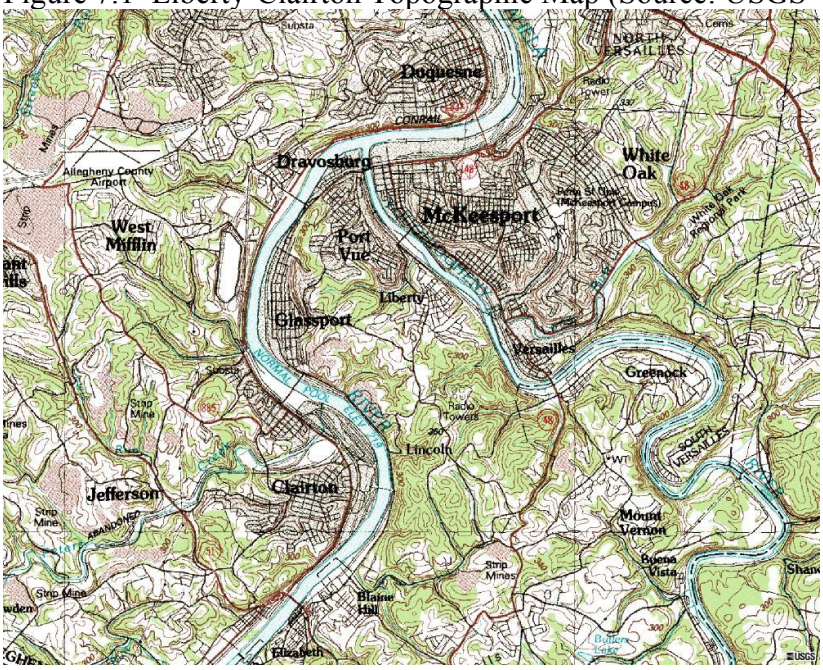
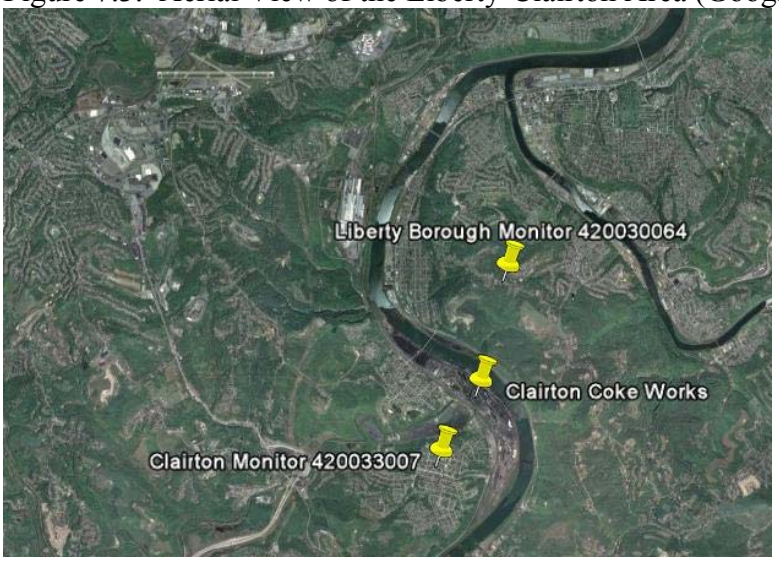


Figure 7.2. 3-D View from Clairton Coke Works to the North (Google Earth 2008)



Figure 7.3. Aerial View of the Liberty-Clairton Area (Google Earth 2008)



As stated in Pennsylvania's December 28, 2007 designation recommendation letter regarding the Pittsburgh area: "This region of Pennsylvania is dominated by relatively high terrain cut by numerous river valleys. While these features tend to trap local emissions . . ." This tendency to trap local emissions, combined with large local emissions, would explain why the monitored values at the Liberty Borough monitor are so much higher than at the other monitors in the Pittsburgh area.

Furthermore, in its October 20, 2008 letter to EPA regarding boundary recommendations for the 2006 $PM_{2.5}$ NAAQS, the Pennsylvania Department of Environmental Protection (PADEP) stated that the Clairton Coke Works facility has stack heights that are lower than normal power plant stacks. This would mean that the effects of a source like the coke works would impact the ground at a much closer location locally than a power plant. PADEP's October 20, 2008 letter also explained that the highest fine particulate concentrations occur at the Liberty Borough monitor when there are south-southwesterly winds along with a morning inversion. A morning inversion occurs when the ground is cooler than the air above it; normally at night, the area is under the control of high pressure and clear skies. With the warmer air being above the cooler air, vertical mixing is at a minimum. Therefore, anything exhausted in the boundary layer with an inversion in place will remain trapped in that layer. For example, as the coke works' low level sources emit emissions, the plume of emissions will only rise to the top of the inversion layer. At that point, the pollution is spread out horizontally. These

inversions usually set up only a few hundred feet above the surface. Therefore, fine particulate levels can become very high near the surface. In this case, the plume impacts the hillside across the river as well; the plume is actually not traveling large distances. This is evident from the speciation data from two sites, Liberty and Lawrenceville. (For more information on speciation data, see Factor 2, above.)

Factor 8: Jurisdictional boundaries (e.g., existing $PM_{2.5}$ areas)

In evaluating the jurisdictional boundary factor, EPA gave special consideration to areas that were already designated nonattainment in 2005 for violating the 1997 fine particle standards. Analysis of chemical composition data in these areas indicates that the same components that make up most of the $PM_{2.5}$ mass in the area on an annual average basis (such as sulfate and direct $PM_{2.5}$ carbon in many eastern areas) also are key contributors to the $PM_{2.5}$ mass on days exceeding the 2006 24-hour $PM_{2.5}$ standard. These data indicate that in many cities, the same source categories that contribute to violations of the annual standard also contribute to exceedances of the 2006 24-hour standard.

Most areas that were originally designated nonattainment for the $PM_{2.5}$ standards still have not attained the standards. Thus, EPA has generally concluded that counties that were designated as having emissions sources contributing to fine particle concentrations which continue to exceed the 1997 standards (all areas violated the annual standard, three also violated the previous 24-hour standard) also contribute to fine particle concentrations on the highest days. For this reason, EPA believes that for most existing nonattainment areas, the nonattainment area for the 2006 24-hour standard should be the same. Consideration also should be given to existing boundaries and organizations as they may facilitate air quality planning and the implementation of control measures to attain the standard. Areas already designated as nonattainment represent important boundaries for state air quality planning.

There are no jurisdiction issues in the Liberty-Clairton area. The five municipalities in the current $PM_{2.5}$ nonattainment area are all within Allegheny County, PA. The $PM_{2.5}$ planning for the area is under the purview of the Allegheny County Health Department. The Pennsylvania Department of Environmental Protection does the planning for the Pittsburgh nonattainment area. However, these two agencies have a long history of cooperation. EPA believes that while the control measures put in place by PADEP for the Pittsburgh area may help the Liberty-Clairton area move closer to attainment, ACHD may be required to implement some local measures.

Factor 9: Level of control of emission sources

Under this factor, the existing level of control of emission sources is taken into consideration. The emissions data used by EPA in this technical analysis and provided in Table 1 (under Factor 1) represent emissions levels taking into account any control strategies implemented in the Liberty-Clairton area before 2005 on stationary, mobile, and area sources. Data are presented for $PM_{2.5}$ components that are directly emitted (carbonaceous $PM_{2.5}$ and crustal $PM_{2.5}$) and for pollutants which react in the atmosphere to form fine particles (e.g. SO_2, NOx, VOC, and ammonia).

In considering county-level emissions, EPA used data from the 2005 National Emissions Inventory, the most updated version of the national inventory available at the beginning of the designations process in late 2007. However, EPA recognized that for certain counties, emissions may have changed since 2005. For example, certain power plants or large sources of emissions in or near this area may have installed emission controls or otherwise significantly reduced emissions since 2005. Some States provided updated information on emissions and emission controls in their comments to EPA. EPA considered such additional information in making final designation decisions.

With regard to nearby power plants, EPA considered information about whether a specific plant installed federally enforceable emission controls by December 2008 resulting in significant emissions reductions. A control requirement is considered to be federally-enforceable if it is required by a State regulation adopted in a State implementation plan, if it is included in a federally-enforceable Title V operating permit, or if it is required by a consent decree which also requires the controls to be included in federally enforceable permit upon termination of the consent decree. In making final decisions, EPA also considered whether a facility would continue to emit pollutants which contribute to $PM_{2.5}$ exceedances even after emission controls are operational.

As explained above in Factor 1, emissions in the Liberty-Clairton area are dominated by the U.S. Steel Clairton Cokes Works. In June 2007, U.S. Steel signed a consent agreement with the Allegheny County Health Department that requires the company to make repairs costing approximately $76 million at its Clairton Coke Works. Under this agreement CD, U.S. Steel must reduce emissions at its Clairton Coke Works according to a strict schedule. U.S. Steel is required to replace the walls in the ovens by June 30, 2010. The company could also be fined by the hour for visible pollution emissions detected by a smoke monitor, and must pay a $50,000 fine if that monitor is not working 90 percent of the time during each calendar quarter. However, EPA only considered controls in place and federally enforceable at the time of designation. Therefore, these planned future controls were not considered in this analysis. However, these future reductions will be relevant for the nonattainment area plan developed for this area.

Conclusion

The detailed technical analysis, including referenced data, set forth in Factors 1, 2, 6, 7 and 9, supports a finding that this area presents local air quality problems that differentiate this area from the surrounding area. Because of a very localized source of emissions and the unique topography which contains the emissions in this area, EPA has determined that it is appropriate to establish Liberty-Clairton as a separate nonattainment area within the larger Pittsburgh-Beaver Valley nonattainment area for the 2006 $PM_{2.5}$ NAAQS.

The Clairton Coke Works is a large and complex facility that emits a combination of particulates, sulfur dioxide, ammonia, and hundreds of volatile organic chemicals. Although the coke plant has numerous existing emission controls, the combination of a large amount of low-level emissions in a narrow river valley creates a local air quality problem which is uniquely different from the remainder of the area.

To illustrate the exceptional situation in the Liberty-Clairton area, one need only look at data from the eight air quality monitors in Allegheny County. $PM_{2.5}$ monitored values in seven of the eight monitors correlate well. Design values for 2005 - 2007 at seven monitors in Allegheny County are between 34 and 40 $\mu g/m^3$. However, the 2005-2007 design value at the Liberty Borough monitor is 60.9 $\mu g/m^3$. Concentrations of carbon at the Liberty Borough monitor far exceed those at other monitors in the Pittsburgh area. The additional carbon is, on average, approximately equal to the difference between the Liberty Borough design concentration and the concentration for the remainder of the surrounding Pittsburgh area. The carbon emissions from the Clairton Coke Works, trapped in the area because of its unique topographical situation, account for the excess carbon at the Liberty Borough monitor.

For the designations for the 1997 $PM_{2.5}$ NAAQS, PADEP provided extensive documentation to support a recommendation that a separate nonattainment area be designated within the Pittsburgh-

Beaver Valley nonattainment area. The recommended Liberty-Clairton area was specified as the five municipalities in the vicinity of the Clairton Coke Works as the "Clairton & 4 Boroughs area." This area is comprised of the City of Clairton and the Boroughs of Glassport, Liberty, Lincoln and Port View. PADEP resubmitted this material in its October 20, 2008 letter to EPA regarding boundary recommendations for the 2006 $PM_{2.5}$ NAAQS. EPA has concluded that the same boundaries are appropriate for the 2006 $PM_{2.5}$ NAAQS, based upon an evaluation of the data relevant to this area and exceedances of these standards as well.

Attachments

- "Point Source Emission Inventory Report, 2004," dated 4/30/06, Allegheny County Health Department, Air Quality Program.

- "$PM_{2.5}$ Chemical Speciation and Related Comparisons at Lawrenceville and Liberty: 18-Month Results," dated June 7, 2005, prepared by Jason Maranche, Allegheny County Health Department.

Allegheny County Health Department

Air Quality Program

Point Source Emission Inventory Report
2004

Summary of Air Emission Estimates from Point Sources
Allegheny County, PA
Criteria Air Pollutants for 1996-2004 and
Hazardous Air Pollutants (HAPs) for 1998-2004



Prepared
By
Marie Kelly

4/30/06

Allegheny County Health Department

Air Quality Program

Emission Inventory Section

Summary of Air Emission Estimations from Point Sources in Allegheny County Years 1996-2004 for Criteria Air Pollutants and 1998-2004 for Hazardous Air Pollutants

Executive Summary

Although point source air emissions in Allegheny County have declined significantly since 1996 only relatively small decreases were observed between 2003 and 2004.

Since 1996 emissions of carbon monoxide have declined nearly 20%, nitrogen oxides 42%, PM_{10} 40% and volatile organic compounds 46%. Sulfur dioxide (SO_2) emissions have only declined 1%. In any year well over eighty percent of sulfur dioxide emissions from Allegheny County's point sources are generated by the Reliant Cheswick Power Station located on the Allegheny River in Springdale, PA. SO_2 emissions vary with the demand for electrical power from this plant. In 2004 demand was down and the facility emitted 10% less sulfur dioxide than in 2003.

Between 1998 and 2001 emissions from the US EPA list of 188 Hazardous Air Pollutants (HAPs) increased 23%. In 2002 they decreased 16% and then increased again in 2003 by 12 %. In 2004 overall HAP emissions declined by 3%.

Total point source HAP emissions have failed to exhibit any discernable trend between 1998 and 2004 in Allegheny County. Cheswick Power Station, a coal burning electrical generating unit, emitted 82% of the total hydrochloric acid and 88% of the total hydrofluoric acid emitted by point sources in 2004. These two acid gasses have and continue to account for an average of 62% of all HAP emissions reported by point sources.

Emissions of the five criteria pollutants from point sources in the County have trended down since 1996. Emissions from the Cheswick Station mask the overall degree of reduction attributable to the other point sources included in the annual survey.

Examination of emission trends of both HAPS and criteria pollutants after excluding Cheswick's contribution show overall declines in both categories. Emissions of HAPS have declined 25% since 1998.Emissions of nitrogen oxides; PM_{10}, sulfur dioxide and volatile organic compounds have fallen by 50%, 42% 45% and 46% respectively. Unfortunately carbon monoxide emissions have only fallen by 14% in this period. These changes are largely attributable to closure or reduction in operations of industrial facilities in the County.

Emissions of both HAPS and criteria pollutants from the Cheswick Power Station are proportional to fuel use. So the total amount of industrial air pollution in the County will be highly dependent on the output from this one facility. However Cheswick has acted to reduce the amount of pollution generated by its operation. In 2003 nitrogen oxide emissions were reduced by the installation of a Selective Catalytic Reduction (SCR) device.

Introduction

The annual Air Quality Program's Point Source Emission Inventory Report for 2004 details and analyzes emission estimates from facilities with potential emissions in the categories listed below:

- 25 TPY or more of any criteria pollutant
- 10 TPY or more of any single Hazardous Air Pollutant (HAP)
- 25 TPY or more of any mixture of HAPs

In 1997 reporting of annual emission inventories was converted from a paper system to an electronic system. In 2004, 81% of submittals were made to the Allegheny County Health Department Website. Nineteen percent of submittals were made by e-mail.

In 1998 the availability of emission factors for HAPS increased making possible better estimates of emissions for these compounds.

This report provides graphs and tables comparing air emissions for 2004 to those from previous years. It contains six sections with three attachments.

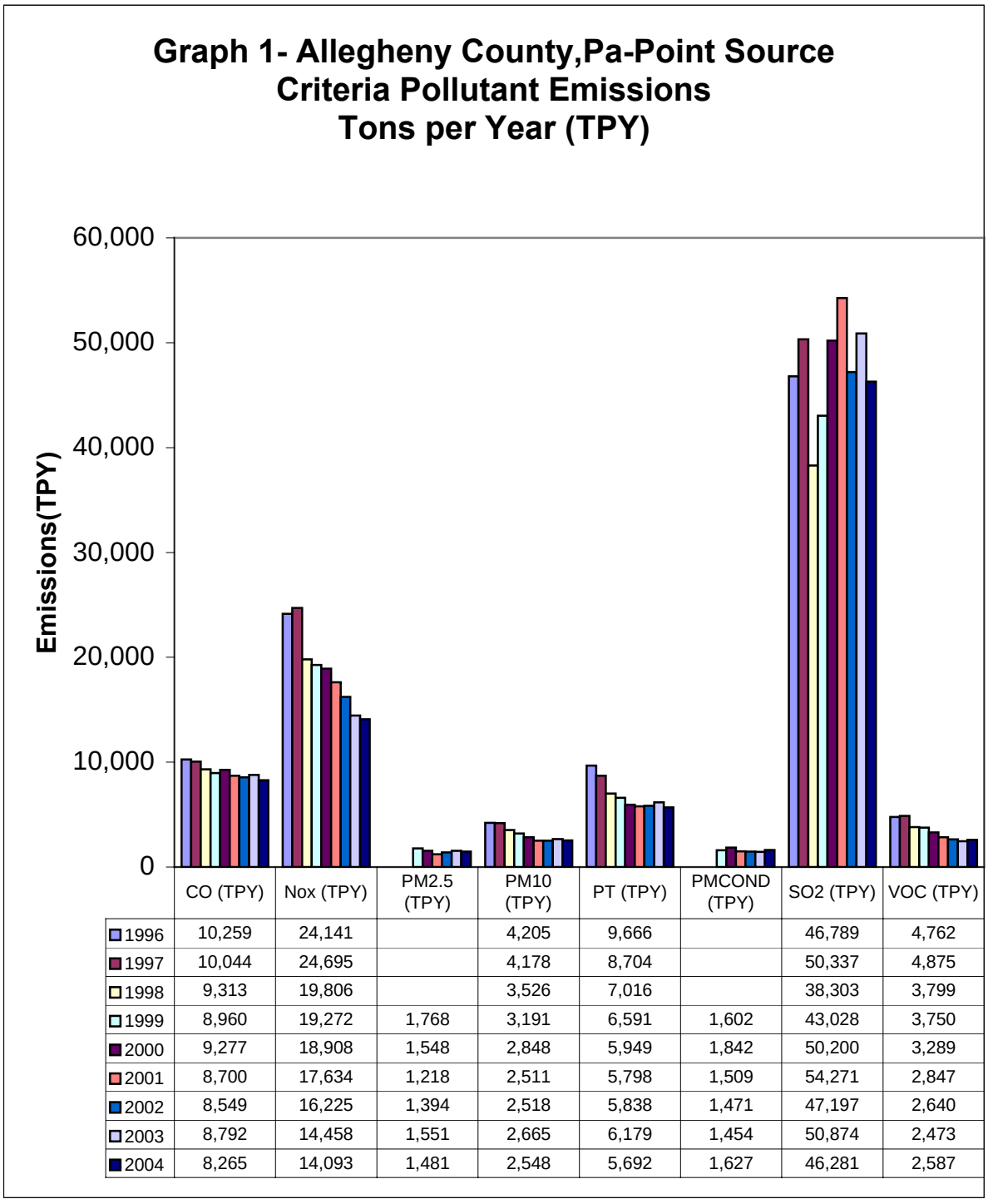
- Section I – Point source Criteria Emission Trends
- Section II – Point Source Criteria emissions by Industry Sector
- Section III- Sources and Form of Particulate Emissions- PM_{10}, $PM_{2.5}$, filterable and condensable.
- Section IV – Point source HAP Emissions
- Section V – Point Source HAP Emission Trends
- Section VI – Impact of the Reliant Cheswick Power Station on Total County Point Source Emissions

Cheswick Power Station's emissions merit a separate section because their total emissions are far greater than those of any other facility in the County.

- Attachment A – Criteria Pollutant Emissions for Individual Facilities
- Attachment B – List of HAP Emissions by Compound.
- Attachment C- HAP Emissions of Individual Facilities

Section I Criteria Pollutant Emissions

Graph 1 summarizes total emissions of criteria air pollutants and total particulates as defined by the Clean Air Act from point sources in Allegheny County.



	CO (TPY)	Nox (TPY)	PM2.5 (TPY)	PM10 (TPY)	PT (TPY)	PMCOND (TPY)	SO2 (TPY)	VOC (TPY)
1996	10,259	24,141		4,205	9,666		46,789	4,762
1997	10,044	24,695		4,178	8,704		50,337	4,875
1998	9,313	19,806		3,526	7,016		38,303	3,799
1999	8,960	19,272	1,768	3,191	6,591	1,602	43,028	3,750
2000	9,277	18,908	1,548	2,848	5,949	1,842	50,200	3,289
2001	8,700	17,634	1,218	2,511	5,798	1,509	54,271	2,847
2002	8,549	16,225	1,394	2,518	5,838	1,471	47,197	2,640
2003	8,792	14,458	1,551	2,665	6,179	1,454	50,874	2,473
2004	8,265	14,093	1,481	2,548	5,692	1,627	46,281	2,587

The pollutants shown include:

- CO – carbon monoxide
- NO_x – emissions of oxides of nitrogen reported as nitrogen dioxide
- $PM_{2.5}$ – filterable particulate with an aerodynamic diameter less than 2.5 microns
- PM_{10} - filterable particulate with an aerodynamic diameter less than 10 microns
- PT- total filterable particulate
- PMCOND- condensable particulate matter defined as material in the vapor state at temperatures above 68° F. and a solid at lower temperatures.
- SO_2- sulfur dioxide
- VOCs – Volatile Organic Compounds.

More detailed definitions are provided in the notes located at the end of the report.

Emissions of all criteria pollutants from the point sources in Allegheny County declined in 2004 with the exception of condensable particulate. It increased by 1.6%.

Table 1 - Estimated Point Source Criteria Air Emission Change in Allegheny County, PA
Tons per Year Emitted or % of 1996 Baseline Year

1996 Base Year (Tons/Yr)	Pollutant							
	CO	NOx	PM2.5	PM10	PT	PMCOND	SO2	VOC
	10,259	24,141		4,205	9,666		46,789	4,762
1997	-2.1%	2.3%		-0.7%	-9.9%		7.6%	2.4%
1998	-9.2%	-18.0%		-16.2%	-27.4%		-18.1%	-20.2%
1999	-12.7%	-20.2%	1,768	-24.1%	-31.8%	1,602	-8.0%	-21.3%
2000	-9.6%	-21.7%	-12.5%	-32.3%	-38.5%	15.0%	7.3%	-30.9%
2001	-15.2%	-27.0%	-31.1%	-40.3%	-40.0%	-5.8%	16.0%	-40.2%
2002	-16.7%	-32.8%	-21.2%	-40.1%	-39.6%	-8.2%	0.9%	-44.6%
2003	-14.3%	-40.1%	-12.2%	-36.6%	-36.1%	-9.2%	8.7%	-48.1%
2004	-19.4%	-41.6%	-16.2%	-39.4%	-41.1%	1.6%	-1.1%	-45.7%

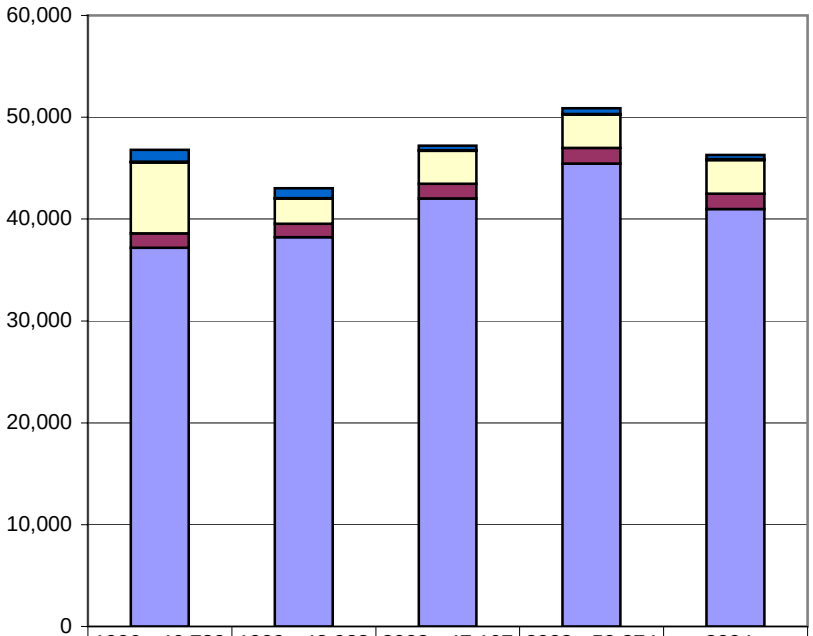
Trends in emissions of criteria pollutants in the County are discussed by industry sector in Section II. Section VI addresses contributions from the Cheswick Power Station to total County point source emissions.

Section II Criteria Point Source Air Emissions by Industrial Sector

Graphs 2a-2e detail emissions of each criteria pollutant from individual point source industrial sectors in the County. The six industrial sectors identified account for approximately 94% of all criteria point source air emissions. Facilities are sorted into sectors based on the size of their contribution to total air emissions. With the exception of sulfur dioxide, emissions of criteria pollutants have continued to decline overall. In 2004 a small increase in the condensable particulate was observed. Contributions from individual sectors show declines from the 1996 base despite some increases attributable to variable business conditions.

Sulfur Dioxide

Graph 2a - Cumulative Estimated Point Source Criteria Air Emissions in Allegheny County, Pa
Emissions of SO_2 by Industry Sector



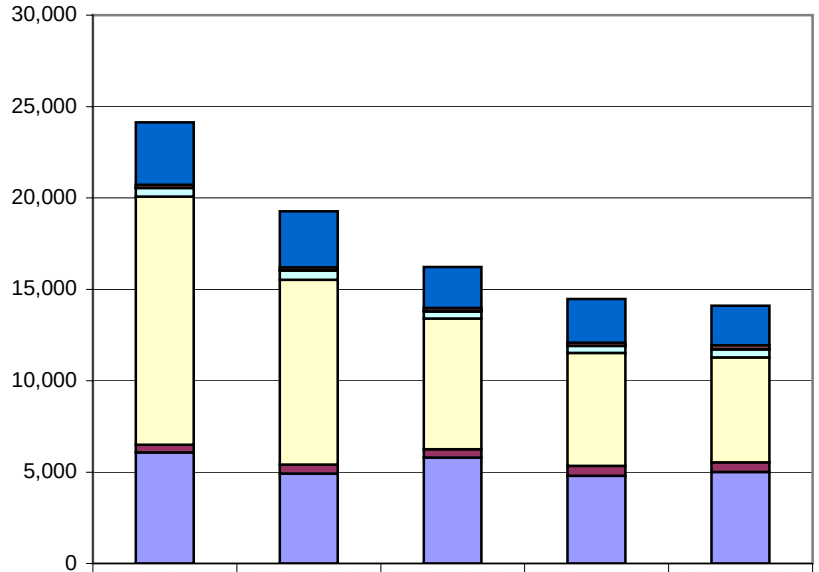
	1996 - 46,789 Tons	1999 - 43,028 Tons	2002 - 47,197 Tons	2003 - 50,874 Tons	2004 - 46,281Tons
Other	1,157	961	415	540	404
Paint & Chemical Manufacturing	15	14	17	24	12
Gasoline Transfer Terminals	4	1	4	7	5
Specialty Steel Production	43	42	44	41	66
Integrated Carbon Steel Production	6,970	2,462	3,247	3,280	3,297
Industrial Coal Fired Boilers	1,423	1,344	1,449	1,548	1,509
Utility Electric Generation Units	37,177	38,204	42,019	45,434	40,988

Sulfur dioxide emissions do not show a clear trend over the period examined. Approximately 90% of all sulfur dioxide emissions in the County in 2004 are from the Cheswick Power Station. Therefore, emissions of this compound from this source are addressed in Section VI. Emissions from this source overwhelm SO_2 emissions from other point sources in the County and determine the overall direction of SO_2 emissions.

Fifty percent of the decrease in sulfur dioxide emissions from integrated carbon steel production since 1998 is attributable to the closing of the Hazelwood LTV Coke Works.

Nitrogen Dioxide

Graph 2b - Cumulative Estimated Point Source Criteria Air Emissions In Allegheny County, Pa Emissions of NO_x by Industry Sector



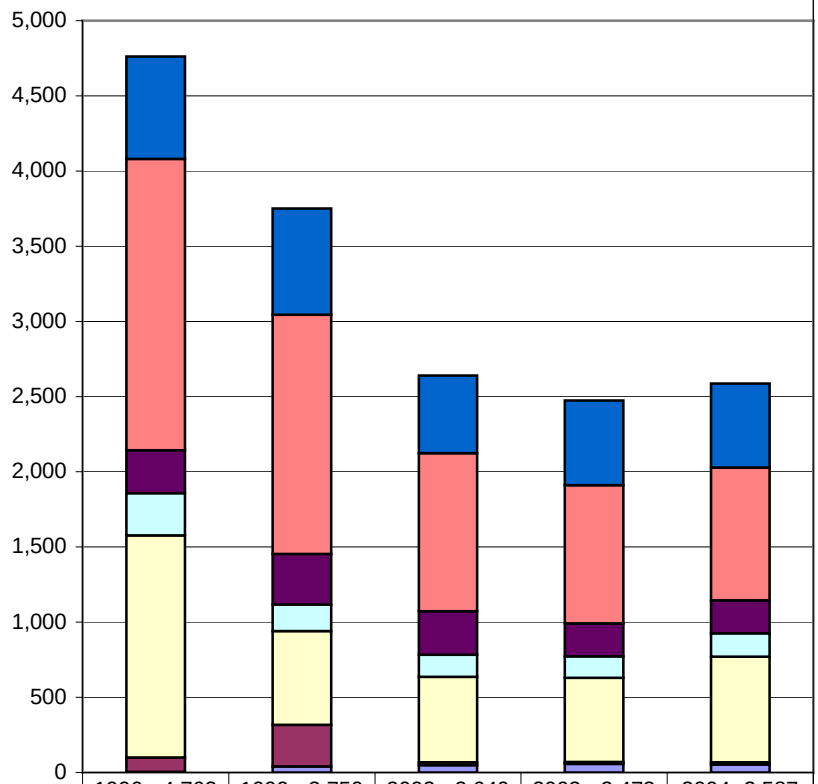
	1996 - 24,141 Tons	1999 - 19,272 Tons	2002 - 16,225 Tons	2003 - 14,458 Tons	2004-14,093 Tons
Other	3,421	3,065	2,245	2,380	2,154
Paint & Chemical Manufacturing	158	167	171	146	194
Gasoline Transfer Terminals	22	22	23	31	32
Specialty Steel Production	479	503	397	378	435
Integrated Carbon Steel Production	13,561	10,105	7,138	6,174	5,742
Industrial Coal Fired Boilers	428	486	448	545	525
Utility Electric Generation Units	6,073	4,924	5,804	4,804	5,012

Prior to 2004 significant decreases in emissions of nitrogen oxides were observed. However, the rate of decrease in the emissions of this pollutant in the last two years has leveled off. Between 2002 and 2003 emissions of nitrogen oxides decreased 11%. Between 2003 and 2004 the decrease of emissions of this pollutant was only 3%. The small decrease in nitrogen dioxide emissions in 2004 is due to small decreases in the integrated carbon steel production sector partially offset by a small increase in the utility category.

Unlike the period from 1996 to 2002, no large source of nitrogen oxide emissions has shut down recently. The large decreases in emissions of nitrogen oxides between 1996 and 2003 were largely attributable to the shutdown of the LTV Coke Works in 1998 and the Kosmos Cement kiln in 2001 and the installation of selective catalytic reduction control equipment at the Cheswick Power Station in 2003.

a) Volatile Organic Compounds (VOCs)

Graph 2c - Cumulative Estimated Point Source Criteria Air Emissions in Allegheny County, Pa
Emissions of VOCs by Industry Sector

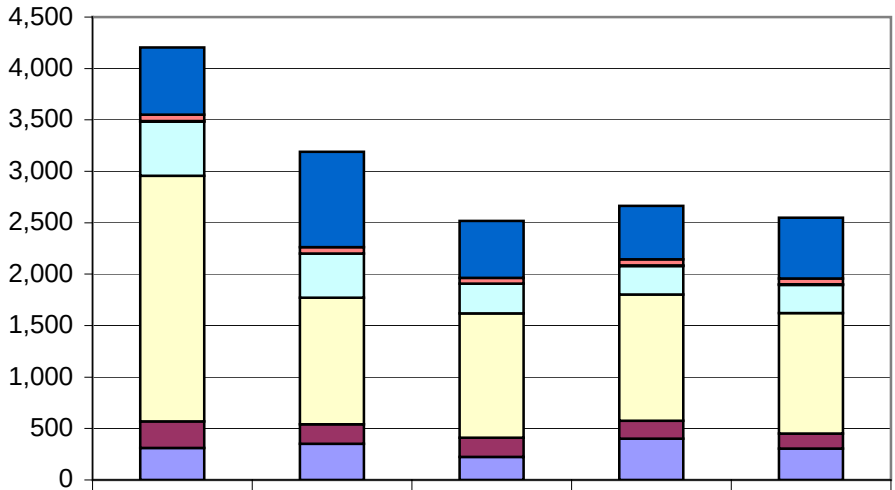


	1996 - 4,762 Tons	1999 - 3,750 Tons	2002 - 2,640 Tons	2003 - 2,473 Tons	2004- 2,587 Tons
Other	682	707	515	561	558
Paint & Chemical Manufacturing	1,937	1,589	1,053	921	883
Gasoline Transfer Terminals	283	337	288	219	220
Specialty Steel Production	282	177	147	143	155
Integrated Carbon Steel Production	1,476	624	568	559	704
Industrial Coal Fired Boilers	96	276	19	13	14
Utility Electric Generation Units	5	41	50	58	54

VOC emissions in 2004 increased 4.6% over 2003. Roughly three-quarters of this increase came from the integrated carbon steel sector. Otherwise as Graph 2c illustrates emissions of this pollutant have fluctuated within a narrow range since 2002.

b) PM10

Graph 2d - Cumulative Estimated Point Source Criteria Air Emissions in Allegheny County,PA
Emissions of PM_{10} by Industry Sector

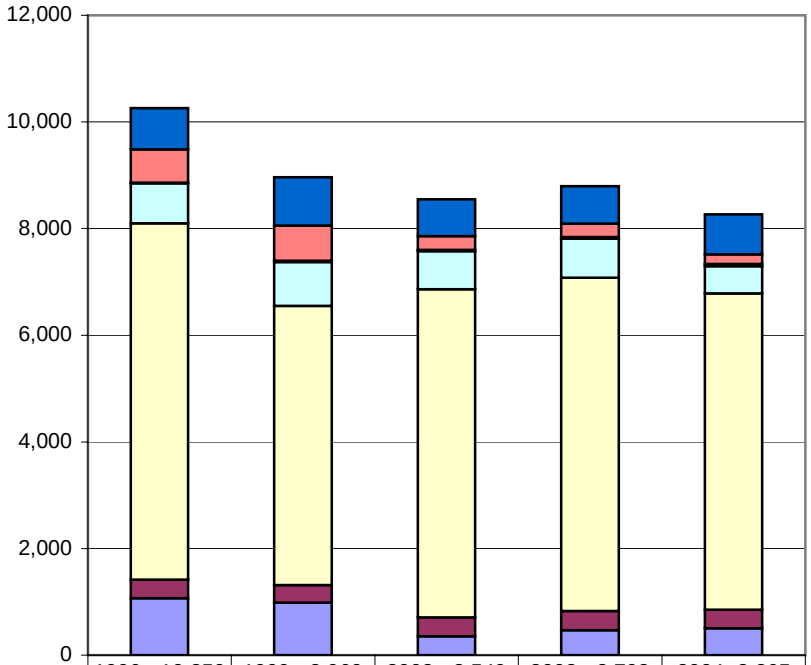


	1996 - 4,205 Tons	1999 - 3,191 Tons	2002 - 2,518 Tons	2003 - 2,665 Tons	2004 - 2,548 Tons
Other	653	929	555	521	591
Paint & Chemical Manufacturing	63	61	54	60	54
Gasoline Transfer Terminals	7	0	1	4	7
Specialty Steel Production	525	429	288	277	275
Integrated Carbon Steel Production	2,388	1,230	1,210	1,227	1,170
Industrial Coal Fired Boilers	259	188	186	174	145
Utility Electric Generation Units	310	353	224	402	306

In 2004 PM_{10} emissions declined 4.4% from 2003 despite an increase of 13.4% reported by sources included in the other industrial category on Graph 2d. This was offset by a 24 % decline in emissions from the utility sector.

c) Carbon Monoxide

Graph 2e - Cumulative Estimated Point Source Criteria Air Emissions in Allegheny County, Pa
Emissions of CO by Industry Sector



	1996 - 10,259 Tons	1999 - 8,960 Tons	2002 - 8,549 Tons	2003 - 8,792 Tons	2004- 8,265 Tons
Other	772	901	689	702	746
Paint & Chemical Manufacturing	627	663	260	250	181
Gasoline Transfer Terminals	11	22	22	28	41
Specialty Steel Production	748	821	714	734	514
Integrated Carbon Steel Production	6,687	5,239	6,156	6,252	5,927
Industrial Coal Fired Boilers	348	331	352	360	351
Utility Electric Generation Units	1,066	982	355	466	505

Emissions of carbon monoxide continued to decline in 2004 decreasing 6% from the level reported in 2003. All industrial sectors exhibited a decline in emissions of this pollutant except for the sources included in the other industrial category where there was an increase of 6%.

Section III Particulate Emissions and Their Sources

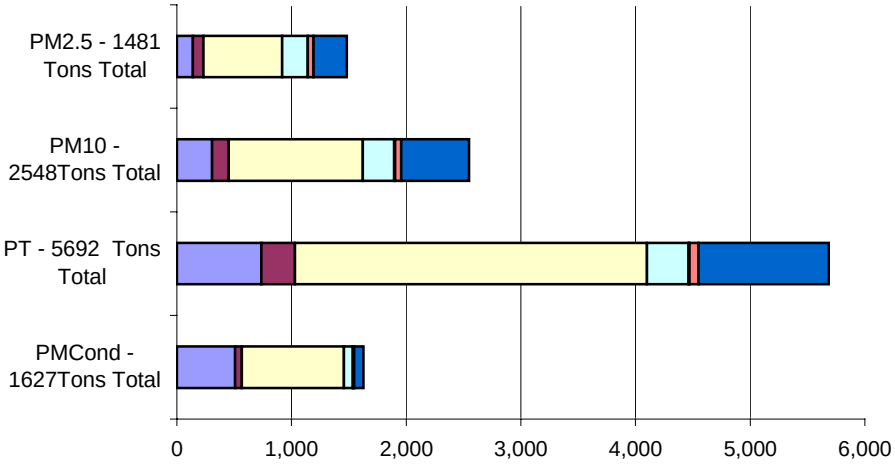
In the Allegheny County Emission Inventory, four forms of particulate matter are reported. These are total particulate (PT), condensable particulate (PMCond), PM_{10} and $PM_{2.5}$. The last two are fractions of total particulate. Below are the definitions of each of these forms

- PT- total filterable particulate is the material captured from flue gas on a filter heated to 248ºF.
- PM_{10} - fraction of filterable particulate with an aerodynamic diameter less than 10 microns
- $PM_{2.5}$ – fraction of filterable particulate with aerodynamic diameter less than 2.5 microns.
- PMCond- material collected from the filtered flue gas after it has passed through the 248ºF filter as a gas and been condensed from the sample stream and dried.

PM2.5, PM10 and PT are not independent of each other. PM2.5 is a fraction of both PM10 and PT. PM10 is a fraction of PT. Condensable particulate is not part of filterable particulate and its fractions in flue gas. It is a gas that condenses in ambient air to fine particulates.

Graph 3 is an illustration of the amount of each form of particulate matter released by each industrial sector through 2004

Graph 3 - Cumulative Contributions of Point Source Sectors to Forms of Particulate Emissions 2004 Allegheny County , Pa.



	PMCond - 1627Tons Total	PT - 5692 Tons Total	PM10 - 2548Tons Total	PM2.5 - 1481 Tons Total
Other	80	1,134	591	288
Paint & Chemical Manufacturing	8	78	54	52
Gasoline Transfer Terminals	3	10	7	1
Specialty Steel Production	79	363	275	222
Integrated Carbon Steel Production	891	3,069	1,170	686
Industrial Coal Fired Boilers	58	293	145	92
Utility Electric Generation Units	508	737	306	140

Section IV Hazardous Air Pollutants (HAPS)

Facilities are required to report emissions of any of the 188 HAPs listed in ACHD Article XXI, Section 2101.20.a. Article XXI is consistent with EPA Section 112(b) of the Clean Air Act.

Both hydrogen sulfide and ammonia are reported in this category. Hydrogen sulfide is a contaminant listed in Article XXI. Ammonia must be reported because it is a particulate precursor in air. Some HAPs are speciated when reported. Speciation is applied to exceptionally toxic HAPS such as hexavalent chromium.

HAP reporting requirements became more stringent with the 1999 Emission Inventory. Speciation for some compounds was introduced. So HAP emission estimates prior to 1999 are not comparable to those of previous years.

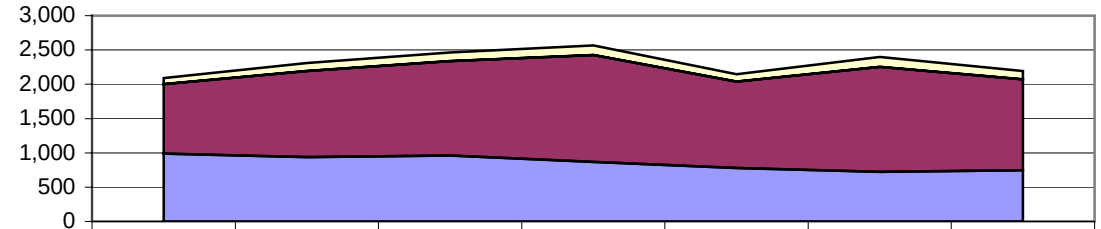
Attachment B lists point source HAP emissions in Allegheny County by total amount of individual compound. Adjustments to emissions of hydrochloric acid (HCl) and hydrofluoric acid (HF) are explained following the table.

The impact of exposure to individual HAP compounds varies greatly with both the concentration and the chemical properties of the compound. Exposure concentrations required to observe negative health impacts can differ by several orders of magnitude among different compounds. Synergistic effects of exposure to combinations of HAPs at differing concentrations have not been thoroughly studied.

Section V. HAP Emission Trends

Graph 4 illustrates HAP emissions trends in Allegheny County.

Graph 4 Hazardous Air Pollutant (HAP) Emissions in Allegheny County,Pa



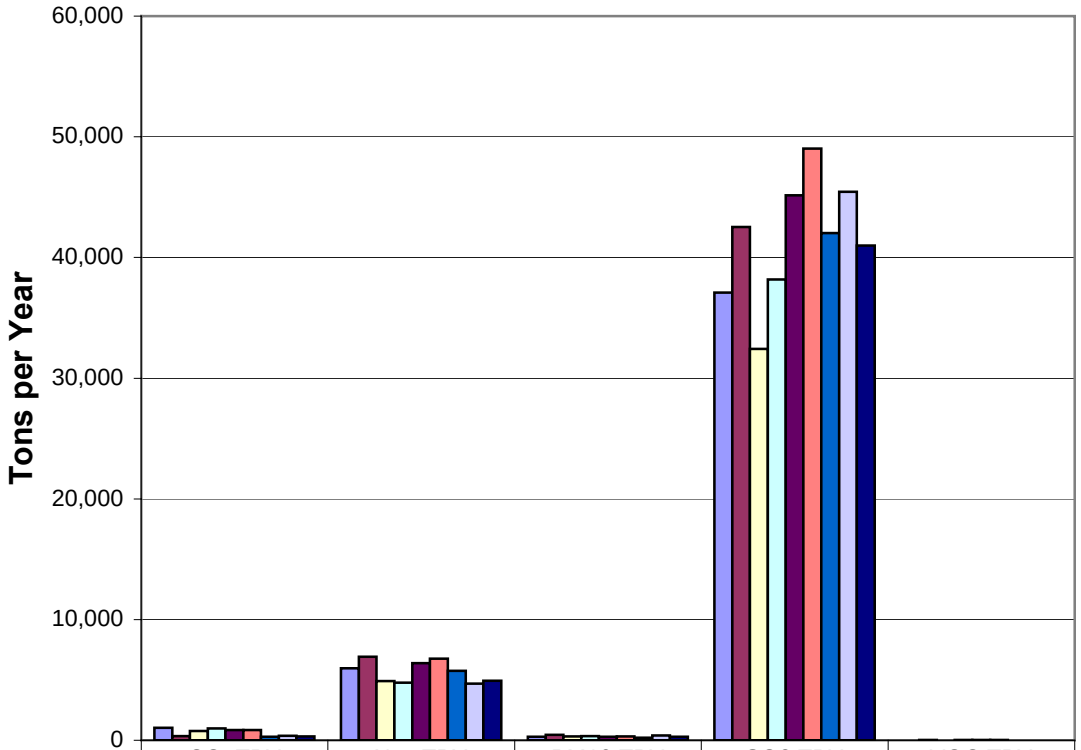
	1998 - 2,092 Tons	1999 - 2,308 Tons	2000 - 2,463 Tons	2001 - 2,566 Tons	2002 - 2,145 Tons	2003 - 2,396 Tons	2004-2,325 Tons.
Total HF Emissions	90	116	125	138	107	141	118
Total HCl Emissions	1,013	1,253	1,377	1,562	1,260	1,531	1,328
Other HAP Emissions	988	938	961	866	778	724	745

HF and HCl constitute 62% of total HAP emissions from County sources for the period 1998-2004. In 2003 and 2004 emissions of these two compounds from the Cheswick Power Station accounted for 40 % of total HAP emissions reported by point sources. The three largest sources of HCl and HF emissions are the Cheswick Power Station, the USS Clairton Works and the USS Irvin Plant. Emissions of HCl from Cheswick in any given year are between 30 to 40 times the amount emitted from the USS Clairton Works, the second largest emitter of this compound. In 2004 Cheswick accounted for 82% of total HCl emissions. Emissions of HF From Cheswick are approximately 85% of total emissions of this compound from point sources in the County. Emissions of HF and HCl rise and fall depending on the demand for electricity from the Cheswick Power Station and are therefore roughly proportional to the amount of coal burned. However, when emissions of these two HAPs are excluded from the total, Graph 4 shows emissions of HAP compounds from other sources have steadily declined-- falling 25% since 1998.

Section VI. Comparison Emissions of the Cheswick Power Station to Total County Point Source Emissions.

The Cheswick Power Station is the single largest point source emitter of both criteria pollutants and HAPs in Allegheny County. Graph 5 shows its contributions to total CO, PM_{10}, and VOCs is relatively small. But in 2004 it accounted for 35% of nitrogen oxide point source emissions and 89% of those of sulfur dioxide.

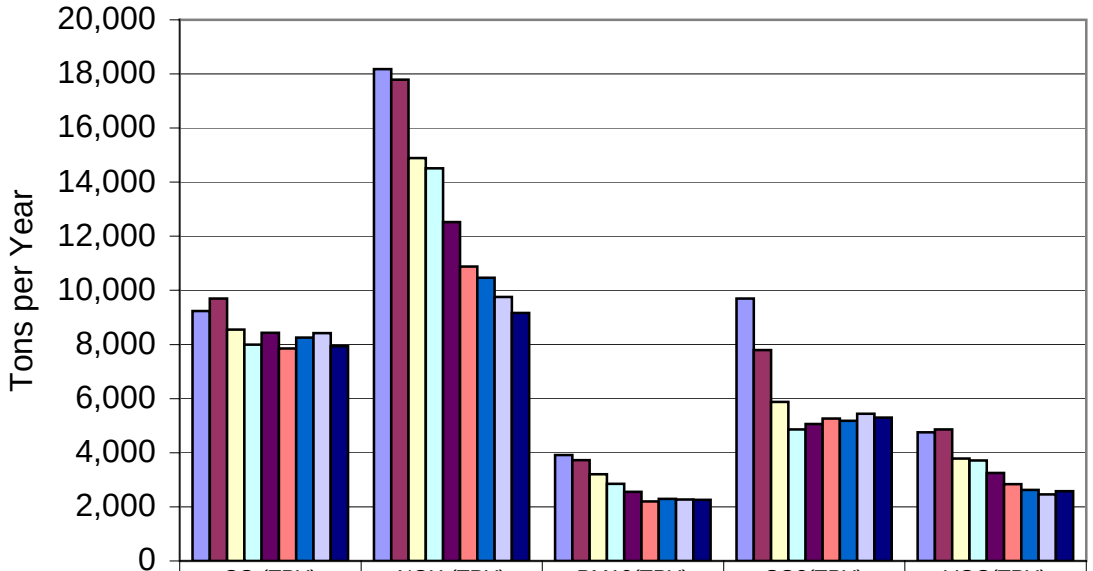
Graph 5 - Criteria Emissions from Cheswick Power Station
Tons per Year



	CO TPY	Nox TPY	PM10 TPY	SO2 TPY	VOC TPY
1996	1,024	5,957	291	37,095	4
1997	342	6,907	450	42,538	14
1998	762	4,918	323	32,422	10
1999	969	4,763	343	38,171	36
2000	841	6,385	295	45,143	39
2001	844	6,751	308	49,013	13
2002	299	5,762	222	42,018	11
2003	376	4,705	394	45,433	13
2004	323	4,928	294	40,983	11

By comparison Graph 6 shows criteria emissions from all the other sources in the County.

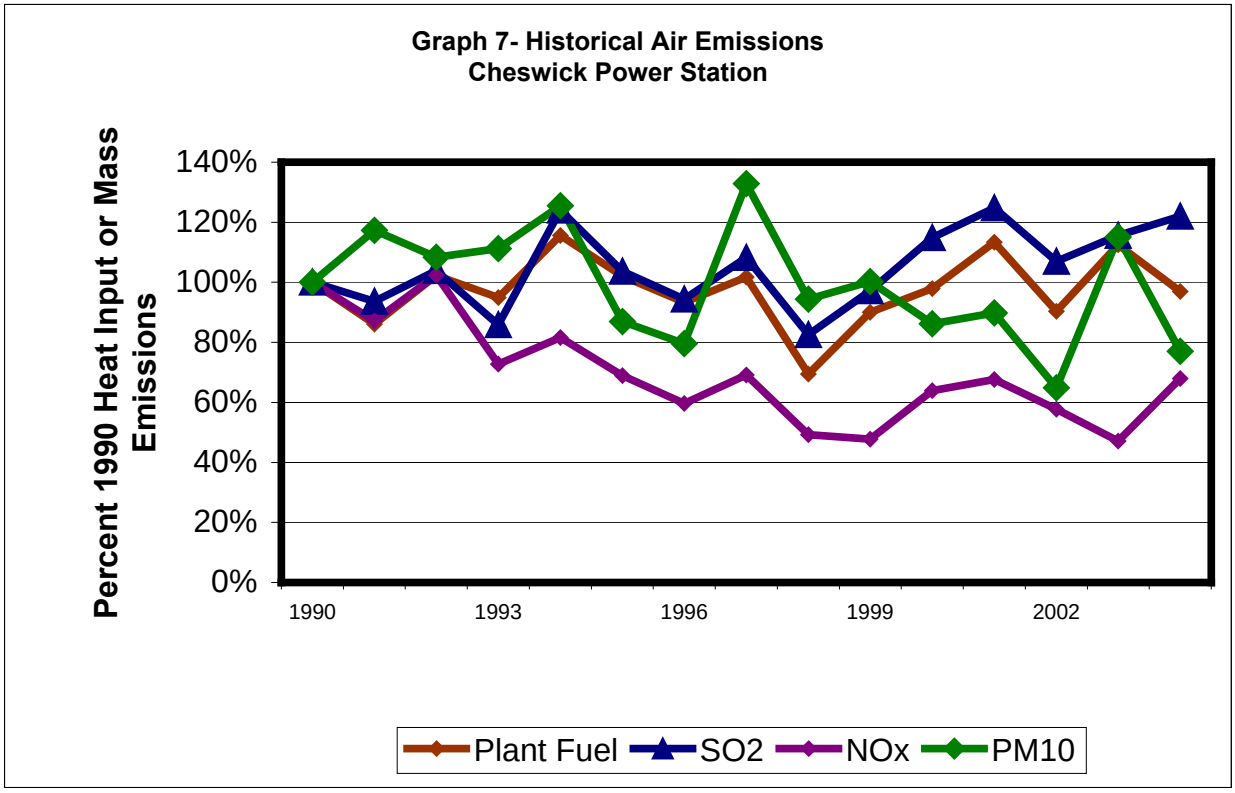
Graph 6- Criteria Emissions from Point Sources in Allegheny County Pa, except Cheswick Power Station Tons per Year (tpy)



	CO (TPY)	NOX (TPY)	PM10(TPY)	SO2(TPY)	VOC(TPY)
1996	9,235	18,184	3,914	9,695	4,757
1997	9,702	17,788	3,728	7,799	4,861
1998	8,551	14,888	3,203	5,881	3,789
1999	7,991	14,509	2,848	4,857	3,714
2000	8,436	12,523	2,552	5,057	3,250
2001	7,856	10,882	2,204	5,258	2,833
2002	8,250	10,463	2,297	5,178	2,629
2003	8,416	9,753	2,271	5,441	2,460
2004	7,942	9,165	2,254	5,298	2,576

Operations at Cheswick fluctuate with the demand for electricity, which is dependent on many economic factors. Demand for power from this plant disproportionately determines the total level of pollution in the County. The size of its contribution to total pollution masks emission trends from other point sources which overall are declining or fairly constant. See Graph 6.

Graph 7 examines trends of emissions of criteria pollutants from the Cheswick Power Station as a function of production since 1990. Since the sulfur content of the coal burned was relatively constant, sulfur dioxide emissions per unit of energy consumed were fairly stable.



The installation of particulate and nitrogen oxide control equipment has contributed to the overall decline of emissions of these two pollutants since 1990. However, the installation of a Selective Catalytic Reduction System (SCR) in 2003 while reducing NO_x emissions increased particulate emissions. In 2004 NO_x emissions increased slightly while particulate emissions again declined. This suggests the SCR was not as available in 2004 as it was in 2003.

Notes to the report:

1. Estimation of $PM_{2.5}$ and condensable particulate (PMCOND) emissions started with the 1999 inventory year.

2. Hydrogen sulfide is considered a pollutant in Allegheny County. Ammonia is a particulate precursor. Both are listed in the HAP tables. They are not among the 188 compounds designated HAPs by USEPA. Speciated compounds of very toxic HAPs such as hexavalent chromium and dioxin isomers are not specifically listed in ACHD Article XXI as HAPS, but are reported at de-minimus emission levels in the inventory.

3. Lead emissions are included in the HAPs tables.

4. Definitions of Emissions

    4.1. Filterable Particulate – Material emitted as liquid or solid at $248^{o}F$

    4.2. Condensable Particulate (PMCOND) – Material that is not filterable at $248^{o}F$ and condenses when passed through water in an ice bath.

    4.3. Total Particulate (PT) – Filterable Particulate

    4.4. PM_{10} - Filterable particulate with aerodynamic diameter less than 10 microns.

    4.5. $PM_{2.5}$ - Filterable particulate with aerodynamic diameter less than 2.5 microns

    4.6. Volatile Organic Compounds (VOCs) – Organic material that is photo reactive and a gas at $250^{o}F$. Contributes to the formation of ozone.

5. The sheet "HAPs" lists yearly emissions of HAPs for each source from 1998 - 2004. HAP emissions were estimated prior to this, but results are believed to be less accurate.

6. The DLM facility, formerly Heinz, is in the category Industrial Coal Fired Boiler.

7. Emission estimates for each facility are calculated each year. Estimates of previous years are not normally updated if emission factors or estimation techniques change for processes.

Attachment A
Individual Facility Criteria Pollutant Emissions

Allegheny County Health Department

Air Quality Program

Point Source Criteria Air Emission Report 1996-2004

Facility Name	Description Line	ZIP	Year of Inventory	Facility Criteria Emissions CO	NOx	PM2.5	PM10	PT	PMCond	SO2	VOC	Standard Industrial Code	SIC Description
A. STUCKI COMPANY	REBLDG OF RR SHOCK ABSC	15225	1999								1.43	3568	Power Transmission Equipment
ACN-PITTSBURGH, LLC	BAKERSTOWN CONTAINER C	15007	1996	0.43	2.10		2.97	4.74		0.01	43.26	3412	Metal Barrels, Drums & Pails
			1997	1.20	1.70		3.28	7.70		0.28	41.34		
			1998	1.40	1.96		4.72	8.54		0.31	54.06		
			1999	1.27	1.78	3.93	5.53	9.43	0.09	0.01	52.87		
			2000	1.35	2.29	4.96	4.99	8.52	0.08	0.05	47.34		
			2001	1.22	1.97	3.33	4.90	8.46	0.08	0.03	36.28		
			2002	1.28	2.17	2.51	5.55	9.92	0.08	0.12	49.31		
			2003	1.49	2.59	3.45	7.42	14.16	0.09	0.13	72.28		
			2004	1.76	3.07	3.69	6.52	12.86	0.11	0.17	81.04		
AFFIVAL, INC.	PRODUCES CORED WIRE PR	15139	1998	0.00	0.00		0.19	0.38		0.00	0.00	3496	Misc. Fabricated Wire Products
ALLDERDICE SCHOOL	ALLDERDICE SCHOOL	15217	1998	0.67	0.80		0.02	0.02		0.00	0.04	8211	Elementary And Secondary Schools
			1999	0.96	1.14	0.02	0.02	0.02	0.06	0.01	0.06		
			2000	0.97	1.15	0.02	0.02	0.02	0.07	0.01	0.06		
			2001	0.78	0.93	0.02	0.02	0.02	0.05	0.01	0.05		
			2002	0.80	0.95	0.02	0.02	0.02	0.05	0.01	0.05		
			2003	0.85	1.02	0.02	0.02	0.02	0.06	0.01	0.06		
			2004	1.17	1.39	0.03	0.03	0.03	0.08	0.01	0.08		
ALLEGHENY AGGREGATES, INC. FORMERLY HEIGHTS PLAZA MATERIALS,INC	GRADED AGGREGRATE	15065	1998	2.38	6.92		10.15	33.94		0.66	1.21	1442	Construction Sand And Gravel
			1999	1.31	6.05	1.62	6.33	25.57	0.42	0.40	0.49		
			2000	1.87	8.63	1.80	6.42	25.30	0.61	0.57	0.71		
			2001	1.89	8.73	1.29	4.50	14.54	0.61	0.57	0.71		
			2002	1.90	8.80	1.29	4.48	20.21	0.62	0.58	0.72		
			2003	1.68	7.78	1.21	4.37	19.98	0.55	0.51	0.64		
			2004	2.17	10.01	1.99	8.12	23.26	0.70	0.66	0.82		

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Facility Name	Description Line	ZIP	Year of Inventory	Facility Criteria Emissions CO	NOx	PM2.5	PM10	PT	PMCond	SO2	VOC	Standard Industrial Code	SIC Description
ALLEGHENY . ASPHALT MFG. INC	BITUMINOUS MFG PLANT	15219	1998	5.04	2.70		0.74	1.62		0.30	4.62	2951	Paving Mixtures And Blocks
			1999	6.92	7.02	0.64	5.64	15.47	4.91	0.61	5.92		
			2000	7.55	6.12	1.13	11.25	24.57	5.66	0.57	6.68		
			2001	19.71	6.80	7.82	14.04	35.22	0.00	0.66	4.91		
			2002	20.41	7.75	12.83	15.31	50.87	1.67	0.73	1.23		
			2003	24.91	9.76	15.60	18.61	57.59	0.94	0.90	1.51		
			2004	30.41	11.78	18.44	21.68	69.12	1.15	1.09	1.83		
ALLEGHENY COUNTY AIRPORT AUTHORITY	COMBINATION UTILITY	15231	1998	8.05	14.06		0.18	0.18		0.06	0.53	4581	Airports,Flying Fields
			1999	6.71	7.98	0.15	0.15	0.15	6.71	0.05	0.44		
			2000	7.51	8.94	0.17	0.17	0.68	0.51	0.05	0.49		
			2001	13.03	15.51	0.29	0.29	0.29	0.88	0.09	8.23		
			2002	7.52	9.15	0.17	0.18	0.18	0.51	0.05	15.31		
			2003	8.41	10.33	0.19	0.20	0.20	0.57	0.06	19.49		
			2004	8.59	10.62	0.21	0.21	0.21	0.58	0.06	18.53		
ALLEGHENY COUNTY SANITARY AUTHORITY	ALLEGHENY COUNTY SANIT/	15233	1996	1.18	16.03		2.60	2.60		27.60	21.13	4952	Sewerage Systems
			1997	19.33	11.60		3.37	6.53		17.39	17.51		
			1998	12.68	14.46		2.37	2.47		25.34	24.03		
			1999	12.21	7.11	1.33	1.73	5.88	1.20	21.52	25.72		
			2000	17.68	5.66	0.81	1.24	5.00	0.95	15.97	21.33		
			2001	20.49	6.00	0.81	1.25	5.28	1.10	19.08	16.61		
			2002	22.31	7.00	0.83	1.26	5.42	1.21	20.30	16.67		
			2003	21.02	6.94	0.83	1.27	5.29	1.14	18.90	16.66		
			2004	0.74	4.26	0.79	1.21	4.65	0.73	12.35	16.16		
ALLEGHENY ENERGYs SPRINGDALE CGT	GAS/OIL COMBUST. TURBINE	15144	2000	12.78	12.36	0.16	0.33	0.33	0.82	0.59	0.37	4911	Electric Services
			2001	14.12	13.64	0.36	0.36	0.36	0.90	0.65	0.39		
			2002	24.25	23.30	0.63	0.63	0.63		0.01	0.69		
			2003	57.21	61.01	5.45	5.45	5.45	4.16	0.52	22.04		
			2004	158.16	60.70	10.72	10.72	10.72	9.68	1.21	16.74		

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Facility Name	Description Line	ZIP	Year of Inventory	Facility Criteria Emissions CO	NOx	PM2.5	PM10	PT	PMCond	SO2	VOC	Standard Industrial Code	SIC Description
ALLEGHENY LUDLUM CORP BRACKENRIDGE	ALLEGHENY LUDLUM CORP	15014	1996	653.98	442.58		472.32	555.57		41.84	255.82	3312	Blast Furnaces And Steel Mills
			1997	742.24	441.32		469.23	514.19		44.00	174.35		
			1998	705.94	418.46		442.20	480.91		42.37	157.41		
			1999	708.28	470.60	326.88	393.26	490.37	90.43	41.85	165.50		
			2000	671.19	375.23	264.68	333.61	445.18	100.35	39.31	160.13		
			2001	628.81	323.96	210.92	265.20	342.05	86.07	36.99	134.18		
			2002	603.04	351.61	204.00	266.42	353.75	56.74	40.38	135.36		
			2003	630.15	332.00	211.22	256.32	331.64	64.12	37.68	132.21		
			2004	384.55	394.99	208.86	251.17	326.52	78.39	62.96	139.40		
ALLEGHENY POWER SPRINGDALE STATION	OIL FIRED UTILITY STATION	15144	1996	0.00	0.00		0.00	0.00		0.00	0.00	4911	Electric Services
			1997	0.00	0.00		0.00	0.00		0.00	0.00		
			1998	0.00	0.00		0.00	0.00		0.00	0.00		
			1999	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
			2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
			2001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
ALLEGHENY VALLEY HOSPITAl	HEALTH CARE FACILITY	15065	1998	1.89	2.25		0.04	0.04		0.01	0.12	8062	General Medical &s Surgical Hospital
			1999	2.58	3.07	0.06	0.06	0.06	0.18	0.02	0.32		
			2000	2.58	3.07	0.06	0.06	0.06	0.18	0.02	0.32		
			2001	0.60	1.97	0.04	0.14	0.43	0.01	6.36	0.18		
			2002	0.60	2.04	0.03	0.14	0.43	0.01	6.36	0.17		
			2003	5.59	6.65	0.14	0.18	0.38	0.38	0.04	0.52		
			2004	6.51	7.75	0.15	0.15	0.15	0.44	0.06	0.83		
ALMATIS INC	ALUMINA GRINDING AND PKG	15056	1998				3.91	5.11				3295	Minerals, Ground Or Treated
			1999			0.40	3.89	3.89					
			2000			0.36	3.60	3.60					
			2001			0.16	1.32	1.45					
			2002			1.63	1.62	3.24					
			2003			2.30	2.30	4.59					
			2004			0.60	3.00		6.01				

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Facility Name	Description Line	ZIP	Year of Inventory	Facility Criteria Emissions CO	NOx	PM2.5	PM10	PT	PMCond	SO2	VOC	Standard Industrial Code	SIC Description
AMERICAN BRIDGE MANUFACTURING	PAINT. AND FAB. OF STEEL	15108	2001	0.82	2.71	1.44	14.51	37.36	0.19	0.12	26.07	3441	Fabricated Structural Metal
			2002	0.93	2.84	0.57	2.54	8.66	0.19	0.13	7.72		
			2003	1.00	3.13	4.46	4.46	30.26	0.22	0.14	11.67		
			2004	1.08	3.22	4.56	4.56	25.27	0.22	0.14	9.64		
AMG RESOURCES CORP.	SECONDARY FERROUS RECYCLG	15225	1998	5.17	7.46		4.40	6.00		0.15	0.43	3341	Secondary Nonferrous Metals
			1999	3.89	8.80	0.52	4.41	6.04	2.67	0.39	0.56		
			2000	0.38	0.45	0.03	0.19	0.33	0.03	0.00	0.02		
			2001	0.63	2.23	0.10	0.49	1.67	0.00	0.15	0.24		
			2002	0.20	0.71	0.09	0.22	0.65	0.00	0.05	0.08		
ARISTECH CHEMICAL RESEARCH LAB	R&DCOMMERCIAL CHEM PRD	15146	1996		0.28		0.00	0.00			7.09	8731	Commercial Physical Research
							0.00	0.00			7.53		
							0.00	0.00			7.10		
							0.00	0.00			0.31		
							0.00	0.00			0.53		
ARROW CONCRETE CO.	CONCRETE BATCH PLANT	15203	1998	3.67	5.41		1.11	5.61		0.12	0.33	3273	Ready-Mixed Concrete
			1999	2.43	3.59	0.12	1.18	1.69	2.23	0.08	0.22		
			2000	2.43	3.59	0.21	1.62	2.29	0.15	0.08	0.22		
			2001	2.43	3.59	0.26	0.83	1.59	0.15	0.08	0.22		
			2002	2.62	4.47	1.35	1.35	1.68	0.15	0.14	0.35		
ARSENAL SCHOOL	ARSENAL SCHOOL	15201	1998	0.38	0.45		0.01	0.01		0.00	0.02	8211	Elementary And Secondary Schools
			1999	0.49	0.59	0.01	0.01	0.01	0.03	0.00	0.03		
			2000	0.42	0.50	0.01	0.01	0.01	0.03	0.00	0.03		
			2001	0.40	0.48	0.01	0.01	0.01	0.03	0.00	0.03		
			2002	0.46	0.54	0.01	0.01	0.01	0.03	0.00	0.03		
			2003	0.51	0.61	0.01	0.01	0.01	0.03	0.00	0.03		
			2004	0.45	0.53	0.01	0.01	0.01	0.03	0.00	0.03		

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Point Source Criteria Air Emission Report 1996-2004

Facility Name	Description Line	ZIP	Year of Inventory	Facility Criteria Emissions CO	NOx	PM2.5	PM10	PT	PMCond	SO2	VOC	Standard Industrial Code	SIC Description
ASHLAND SPECIALTY CHEMICAL CO - NEVILLE	ASHLAND CHEMICAL CO	15225	1996	504.89	39.00		1.56	1.56		0.13	99.48	2865	Cyclic Crudes And Intermediate
			1997	518.35	40.08		3.62	6.87		0.20	100.91		
			1998	514.52	31.72		2.63	6.05		0.17	102.54		
			1999	549.11	35.96	1.99	2.61	6.04	1.25	2.08	101.99		
			2000	554.27	35.79	2.02	2.66	6.41	0.03	4.18	127.44		
			2001	367.48	34.27	1.74	1.82	2.25	1.13	4.33	93.99		
			2002	171.04	46.99	1.93	2.23	3.88	1.58	0.22	12.48		
			2003	162.91	45.16	1.86	1.90	2.23	1.50	0.21	17.96		
			2004	35.21	33.80	1.83	1.87	2.09	1.46	0.53	17.54		
AXIOM AUTOMOTIVE TECHNOLOGIES	AUTOMOTIVE PARTS REFURBIS	15206	1998	0.03	0.23		0.23	0.27		0.34	1.85	3714	Motor Vehicle Parts & Accessories
			1999	0.02	0.18	0.22	0.22	0.26	0.48	0.21	3.91		
			2000	0.03	0.24	0.86	0.30	0.35	0.23	0.29	4.22		
			2001	0.02	0.15	0.19	0.19	0.22	0.41	0.18	4.11		
			2002	0.52	0.73	0.20	0.20	0.22	0.42	0.18	21.09		
			2003	0.66	1.05	1.21	0.43	0.50	0.93	0.41	17.53		
			2004	2.28	2.74	0.37	0.43	0.48	0.83	0.34	21.61		
BACHARACH INC. RIDC PARK. OHARA TWP	BACHARACH INC. RIDC PARK	15238	1996	0.16	0.79		0.02	0.02		0.00	0.20	3823	Process Control Instruments
			1997	0.55	0.65		0.01	0.01		0.00	0.17		
			1998	0.39	0.45		0.01	0.01		0.00	1.38		
			1999	0.39	0.45		0.01	0.01		0.00	1.38		
			2000	0.39	0.45	0.00	0.01	0.01	0.03	0.00	1.38		
			2001	0.39	0.45	0.01	0.01	0.01	0.03	0.00	1.17		
BAKE- LINE GROUP LLC	COOKIES/CRACKERS MANUFACT	15206	1996	1.91	8.07		0.36	0.36		0.04	8.73	2052	Cookies And Crackers
			1997	4.87	5.80		0.11	0.11		0.03	5.34		
			1998	4.45	5.30		0.10	0.10		0.03	3.67		
			1999	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
			2000	2.71	3.23	0.06	0.06	0.06	0.18	0.02	0.22		
			2001	3.41	4.06	0.08	0.08	0.08	0.23	0.02	5.09		
			2002	3.47	4.13	0.08	0.08	0.08	0.24	0.02	5.62		
			2003	3.47	4.13	0.08	0.08	0.08	0.24	0.02	5.62		

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BARBER SPRING	STEEL SIDED BUILDING	15201	1998	3.40	4.05		2.82	2.82		0.02	16.27	3493	Steel Springs, Except Wire
			1999	2.91	3.96	0.19	2.39	9.33	0.19	0.04	20.73		
			2000	4.67	6.29	0.24	3.23	12.59	0.31	0.06	27.37		
			2001	4.37	6.09	0.18	1.25	4.65	0.34	0.07	36.13		
			2002	4.01	5.24	0.50	3.16	11.78		0.07	20.42		
			2003	5.78	7.00	0.60	3.71	13.67		0.06	45.01		
			2004	4.92	6.29	0.66	4.79	20.79	0.36	0.07	27.39		
BELLEFIELD BOILER PLANT	BELLEFIELD BOILER PLANT	15213	1996	169.25	188.72		81.92	179.69		711.06	4.61	4961	Steam Supply
			1997	171.81	174.85		77.82	169.55		655.50	4.59		
			1998	157.09	164.48		77.72	171.37		575.80	4.45		
			1999	145.29	168.29	8.97	62.73	132.68	2.52	578.75	3.47		
			2000	157.44	197.64	7.72	69.06	138.01	2.90	601.16	3.66		
			2001	162.96	188.32	8.83	76.69	148.21	2.41	732.63	3.63		
			2002	176.10	197.30	16.39	80.30	158.51	2.61	722.02	4.03		
			2003	180.31	286.53	18.14	65.17	131.89	2.87	779.69	3.25		
			2004	172.78	272.02	32.08	53.22	116.72	27.84	760.03	2.72		
BEST FEEDS & FARM SUPPLIES, INC.	JOY DOG FOOD	15071	1998	1.18	1.40		3.30	6.44		0.01	0.08	2047	Dog Cat And Other Pet Food
			1999	1.51	1.80	3.89	3.51	6.95	0.10	0.01	0.10		
			2000	1.51	1.80	3.23	3.23	6.39	0.10	0.01	0.10		
			2001	1.48	1.76	2.88	2.88	5.70	0.10	0.01	0.10		
			2002	1.21	1.44	0.71	2.60	5.36	0.08	0.01	0.08		
			2003	1.21	1.44	0.73	2.60	5.36	0.08	0.01	0.08		
BETTIS ATOMIC POWER LABORATORY	NUCLEAR PROPULSION TEST	15122	1996	2.59	10.58		0.49	0.47		0.92	5.89	8731	Commercial Physical Research
			1997	4.60	6.59		0.21	0.33		2.38	1.92		
			1998	3.77	5.71		0.22	0.21		1.98	1.24		
			1999	3.69	5.18	0.08	0.12	0.11	3.25	0.93	1.53		
			2000	5.41	6.92	0.12	0.13	0.14	0.35	0.19	0.81		
			2001	3.34	4.65	0.10	0.12	0.19	0.20	0.06	1.00		
			2002	4.57	5.87	0.11	0.11	0.13	0.29	0.04	0.85		
			2003	3.74	4.87	0.08	0.09	0.11	0.23	0.05	0.67		
			2004	3.98	5.37	0.13	0.13	0.15	0.25	0.05	0.78		

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BFI - IMPERIAL LANDFILL	MSW LANDFILL	15126	1996	152.34	37.98		14.82	24.41		4.75	45.62	4953	Refuse Systems
			1997	194.62	50.17		23.53	40.17		6.16	29.33		
			1998	82.12	56.49		22.73	38.34		2.82	30.67		
			1999	139.97	76.61	18.05	48.74	89.24	2.18	8.43	35.65		
			2000	280.77	58.32	18.81	58.23	107.35	3.75	8.01	35.32		
			2001	13.77	56.24	19.86	86.21	207.21		15.98	10.84		
			2002	16.48	68.32	25.87	92.13	224.09		19.18	11.00		
			2003	15.94	66.15	50.93	85.30	254.80		18.54	10.60		
			2004	17.86	74.68	55.41	93.43	262.19		21.36	12.58		
BP PRODUCTS.		15108	1996	0.01	0.04		0.12	0.01		0.14	28.33	5171	Petroleum Bulk
NORTH AMERICA INC	BP CORAOPOLIS TERMINAL		1997	0.21	0.25		0.12	0.12		0.00	29.50	5171	Stations & Terminals
			1998	0.03	0.04		0.02	0.03		0.00	28.09		
			1999	0.05	0.06	0.04	0.02	0.01	0.05	0.00	28.38		
			2000	0.05	0.06	0.01	0.06	0.28	0.00	0.00	34.13		
			2001	0.04	0.05	0.01	0.07	0.30	0.00	0.00	18.41		
			2002	0.06	0.07	0.01	0.06	0.29	0.00	0.00	20.75		
			2003	0.06	0.07	0.01	0.06	0.28	0.00	0.00	16.79		
			2004	0.02	0.02	0.01	0.05	0.25		0.00	16.68		
BRADDOCK RECOVERY, INC.	BRADDOCK .	15104	1998	1.84	8.00		3.55	6.63		1.30	0.12	3399	Primary Metal
	RECOVERY, INC		1999	8.40	10.00	0.42	3.82	7.63	1.71	0.06	0.55		Products, Nec
			2000	1.84	8.00	0.14	1.29	2.92	0.33	2.72	0.12		
			2001	0.82	3.57	0.07	0.72	2.40	0.14	1.21	0.05		
			2002	0.82	3.57	1.30	1.30	4.32	0.14	1.21	0.05		
			2003	0.88	3.83	1.42	1.42	4.72	0.16	1.30	0.06		
			2004	1.04	4.50	1.71	1.71	5.70	0.32	1.53	0.07		
BUCKEYE CORAOPOLIS	REFINED PET.	15108	1998	2.00	4.90						37.45	4613	Refined Petroleum
PIPELINE FACILITY	PIPELINE FAC.	15108	1999	1.69	4.22						40.71		Pipe Lines
		15108	2000	0.49	1.21						33.58		
		15108	2001	0.78	1.96						31.05		
		15108	2002	1.76	4.39						33.61		
		15108	2003	2.77	6.93						34.79		
		15108	2004	2.38	5.94						27.81		

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CALGON CARBON CORP.	NEVILLE ISLAND PLANT	15225	1998	19.72	21.34		20.11	23.65		24.46	3.77	2819	Industrial Inorganic Chemicals
			1999	11.46	18.95	1.34	6.21	7.31		4.24	4.14		
			2000	11.21	19.81	3.25	4.78	5.63		1.79	5.56		
			2001	4.74	6.89	3.24	4.67	7.23		2.40	1.16		
			2002	4.29	6.49	3.19	4.58	7.06		2.54	1.18		
			2003	3.22	5.11	3.33	4.81	7.09		3.17	1.26		
			2004	4.36	6.05	2.89	4.68	7.43		2.42	1.16		
CARGILL, INC. SALT DIVISION	BULK PROCESSING	15136	1998				5.27	10.92				5169	Chemicals And Allied Products, Nec
			1999			0.31	5.19	6.55					
			2000			0.21	1.73	3.19					
			2001	0.32	1.48	0.34	1.75	4.52		0.10	0.10		
			2002	0.20	0.91	2.51	1.49	3.88		0.06	0.06		
CARRICK SCHOOL	CARRICK SCHOOL	15210	1998	0.67	0.80		0.02	0.02		0.00	0.04	8211	Elementary And Secondary Schools
			1999	0.52	0.61	0.01	0.01	0.01	0.04	0.00	0.03		
			2000	0.36	0.43	0.01	0.01	0.01	0.02	0.00	0.02		
			2001	0.52	0.62	0.01	0.01	0.01	0.04	0.00	0.03		
			2002	0.52	0.62	0.01	0.01	0.01	0.04	0.00	0.03		
			2003	0.47	0.56	0.01	0.01	0.01	0.03	0.00	0.03		
			2004	0.41	0.49	0.01	0.01	0.01	0.03	0.00	0.03		
CDC, NIOSH,. PITTSBURGH RESEARCH LAB	FEDERAL RESEARCH FACILITY	15236	1996	21.18	25.27		1.46	1.11		86.16	2.15	9199	General Government, Nec
			1997	17.10	21.38		0.90	1.98		73.46	1.15		
			1998	17.86	20.98		0.33	0.57		67.01	0.77		
			1999	18.93	22.32	0.11	0.34	0.78	0.11	71.60	0.51		
			2000	18.24	21.45	0.11	0.34	0.77	0.10	71.97	0.51		
			2001	16.02	20.72	0.21	0.56	1.25	0.17	77.17	0.22		
			2002	16.14	20.86	0.21	0.56	1.25	0.17	77.17	0.23		
			2003	16.07	20.54	0.19	0.54	1.23	0.15	78.14	1.26		
			2004	14.30	18.34	0.18	0.50	1.16	0.14	69.99	1.24		

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CENTRAL FOOD KITCHEN	CENTRAL FOOD KITCHEN	15203	1998	1.05	1.25		0.02	0.02		0.01	0.07	8211	Elementary And Secondary Schools
			1999	0.74	0.88	0.02	0.02	0.02	0.05	0.01	0.05		
			2000	0.64	0.76	0.01	0.01	0.01	0.04	0.00	0.04		
			2001	0.62	0.74	0.01	0.01	0.01	0.04	0.00	0.04		
			2002	1.08	1.29	0.02	0.02	0.02	0.07	0.01	0.07		
			2003	0.64	0.76	0.01	0.01	0.01	0.04	0.00	0.04		
			2004	0.76	0.90	0.02	0.02	0.02	0.05	0.01	0.05		
CHAMBERS DEVELOPMENT CO., INC.	CHAMBERS, DEVELOPMENT CO.	15146	1996	14.49	52.13		20.34	32.30		9.15	17.82	4953	Refuse Systems
			1997	10.74	41.22		16.87	28.83		5.98	11.13		
			1998	29.79	33.73		14.50	26.46		3.77	6.49		
			1999	13.79	60.55	19.50	97.94	203.06	1.17	5.29	8.06		
			2000	21.05	86.65	9.08	27.76	48.98	2.04	7.97	15.70		
			2001	16.32	69.26	8.39	17.10	31.17	1.05	16.19	11.85		
			2002	12.70	51.98	17.31	47.55	78.30	1.15	12.32	9.71		
			2003	13.96	57.86	9.57	40.43	78.10	1.15	13.65	13.87		
			2004	13.46	56.36	16.32	47.36	92.03	0.96	13.26	9.93		
CHILDRENS HOSPITAL OF PITTSBURGH (Lawrenceville)	HOSPITAL BOILERROOM	15201	1998	4.69	5.58		0.11	0.08		0.03	4.62	8062	General Medical & Surgical Hospitals
			1999	4.31	5.14	0.10	0.10	0.10	0.29	0.03	8.28		
			2000	5.41	6.44	0.12	0.12	0.12	0.37	0.04	3.60		
			2001	4.76	5.66	0.11	0.11	0.11	0.32	0.03	2.37		
			2002	4.76	5.66	0.11	0.11	0.11	0.32	0.03	1.86		
			2003	3.22	3.84	0.07	0.07	0.07	0.22	0.02	0.21		
			2004	1.12	1.34	0.03	0.03	0.03	0.08	0.01	0.07		
CLAIRTON SLAG, INC.	PAVING MATERIAL PLANT	15088	1996	7.51	1.70		15.92	18.46		1.66	1.35	2951	Paving Mixtures And Blocks
			1997	15.19	22.99		31.64	83.16		8.00	6.72		
			1998	17.72	22.54		37.07	97.30		12.27	7.49		
			1999	4.51	20.32	2.09	12.76	23.73	0.59	7.78	8.50		
			2000	18.50	20.69	1.66	12.93	23.35	0.01	4.41	6.74		
			2001	9.28	22.73	2.70	12.34	19.12	0.01	3.94	7.00		
			2002	14.33	17.51	10.46	9.80	15.11	0.01	3.08	4.80		
			2003	14.53	32.12	15.43	18.01	34.53	0.37	3.70	4.78		
			2004	12.05	16.27	3.85	4.31	12.89	0.37	1.14	1.59		

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CLEARWATER, INC.	CHEMICAL MANUFACTURER	15225	1998	0.25	0.30		0.01	0.01		0.00	0.25	2819	Industrial Inorganic Chemicals
CONNELLEY SCHOOL	SCHOOL	15219	1998	0.80	0.95		0.01	0.02		0.01	0.05	8249	Vocational School,
			1999	0.93	1.11	0.02	0.02	0.02	0.06	0.01	0.06		
			2000	0.93	1.11	0.02	0.02	0.02	0.06	0.01	0.06		
			2001	0.96	1.14	0.02	0.02	0.02	0.06	0.01	0.06		
			2002	1.05	1.25	0.02	0.02	0.02	0.07	0.01	0.07		
			2003	1.10	1.31	0.02	0.02	0.02	0.07	0.01	0.07		
			2004	1.02	1.22	0.02	0.02	0.02	0.07	0.01	0.07		
CP INDUSTRIES	METAL FABRICATOR	15132	1998	3.15	3.75		0.52	0.52		0.02	1.41	3499	Fabricated Metal Products, Nec
			1999	3.16	3.76	3.33	3.33	3.33	0.21	0.02	1.41		
			2000	3.16	3.76	2.49	3.33	3.43	0.21	0.02	2.46		
			2001	2.32	2.76	2.48	3.31	3.41	0.16	0.02	2.40		
			2002	1.24	1.48	1.05	10.27	21.30	0.08	0.01	0.50		
			2003	1.39	1.65	8.74	8.74	18.11	0.09	0.01	0.51		
			2004	1.24	1.48	1.05	10.27	21.30	0.08	0.01	0.50		
CREIGHTON STATION	COMPRESSOR STATION	15030	1998	0.72	2.45		0.08	0.08		0.00	0.98	4922	Natural Gas Transmission
			1999	5.95	20.49	0.61	0.61	0.61	0.36	0.01	8.29		
			2000	3.83	21.05	0.42	0.42	0.27	0.01	0.01	1.30		
			2001	5.45	9.82	1.10	1.10	1.10	0.29	0.02	16.29		
			2002	0.88	1.45	0.18	0.18	0.18	0.05	0.00	2.67		
			2003	1.43	4.21	0.18	0.18	0.18	0.05	0.00	0.77		
			2004	8.89	18.72	1.37	1.37	1.37	0.35	0.02	2.97		
DAILY JUICE PRODUCTS/DIV. AMERICAN BVG	MFGR OF JUICE PRODUCTS	15147	1998	0.37	2.68		0.05	0.05		0.18	1.85	2086	Bottled And s Canned Soft Drink

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DICE COMPRESSOR STATION	COMPRESSION OF L NG IN WEL	15239	1996	4.63	45.91		0.02	0.02		0.01	4.11	4924	Natural Gas Distribution
			1997	6.98	39.16		0.17	0.17		0.01	3.57		
			1998	4.69	29.73		0.01	0.01		0.01	2.52		
			1999	5.02	31.36	0.01	0.01	0.01	0.01	0.01	3.33		
			2000	6.88	24.00	0.53	0.53	0.75	0.55	0.01	3.55		
			2001	3.19	23.15	0.40	0.40	0.40	0.10	0.01	2.39		
			2002	3.55	19.84	0.44	0.44	0.44	0.12	0.01	2.60		
			2003	3.76	21.30	0.47	0.47	0.47	0.13	0.01	2.64		
			2004	5.67	35.96	0.72	0.72	0.72	0.20	0.01	2.51		
DLM FOODS	PITTSBURGH FACTORY	15212	1996	135.12	187.40		120.90	216.86		573.88	78.75	2032	Canned Specialties
			1997	146.38	198.91		130.47	234.16		669.83	163.04		
			1998	145.97	200.20		129.72	232.72		618.70	162.43		
			1999	162.69	285.65	39.72	109.25	166.16	1.41	677.88	267.67		
			2000	158.15	301.33	16.75	86.01	130.50	1.18	692.40	32.37		
			2001	142.10	267.32	13.89	74.90	114.10	1.12	617.15	10.04		
			2002	146.18	214.48	20.85	82.13	144.83	1.15	626.47	6.27		
			2003	145.89	215.62	20.87	80.37	141.26	1.14	622.86	5.68		
			2004	142.10	208.25	51.43	65.10	116.37	24.33	598.64	7.66		
DUQUESNE LIGHT CO., MANCHESTER FACILITY	DUQUESNE LIGHT CO.	15233	1998	1.56	1.85		1.48	3.94		0.01	0.47	4911	Electric Services
			1999	1.42	1.69	0.54	1.47	3.93	0.10	0.01	0.46		
			2000	1.34	1.60	0.54	1.47	3.93	0.09	0.01	0.30		
			2001	1.49	2.41	0.03	0.03	0.03	0.10	0.01	0.20		
DUQUESNE UNIVERSITY	EDUCATIONAL SERVICES	15282	1998	6.87	20.42		4.13	4.13		0.17	1.61	8221	Colleges And Universities, Nec
			1999	4.52	18.95		4.18	4.25		0.19	1.65		
			2000	6.76	29.36	0.54	0.54	0.54	1.29	0.81	0.82		
			2001	3.03	27.70	0.58	0.58	0.58	1.28	0.84	0.79		
			2002	3.75	24.65	0.59	0.59	0.59	1.20	0.26	0.78		
			2003	18.08	24.97	0.53	0.53	0.53	1.22	0.21	0.94		
			2004	12.76	26.14	0.55	0.55	0.55	1.29	0.225972	0.76		

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DURA - BOND INDUSTRIES INC.	PIPE COATINGS. FOR NG IND	15134	1996	0.18	0.90		2.51	5.78		0.00	0.43	3479	Metal Coating And Allied Services,nec
			1997	1.21	2.05		4.40	10.86		0.01	0.57		
			1998	1.66	1.98		0.47	0.90		0.01	0.18		
			1999	2.01	5.84	0.56	3.24	8.86	0.44	0.32	0.47		
			2000	2.05	5.93	1.17	2.11	3.63		0.32	0.46		
			2001	1.75	5.99	0.10	6.22	14.84	0.04	0.36	0.47		
			2002	2.04	7.10	7.34	6.38	14.92	0.04	0.42	0.55		
			2003	1.91	5.21	6.38	6.02	17.14	0.06	0.27	0.39		
			2004	2.11	6.13	5.82	5.70	16.07	0.06	0.33	0.48		
EASTMAN CHEMICAL RESINS, INC.	EASTMAN - JEFFERSON SITE	15088	2001	13.95	33.53	1.49	12.97	16.95	1.66	4.19	420.20	2821	Plastics Materials And Resins
			2002	36.14	34.79	13.04	14.27	19.24	1.83	4.92	425.84		
			2003	27.27	35.27	14.74	16.20	22.63	0.58	5.78	371.21		
			2004	75.73	92.77	20.91	22.45	29.10	3.80	6.10	370.46		
EDGEWATER STEEL LTD.	EDGEWATER STEEL LTD.	15139	1996	24.29	57.70		12.71	30.00		42.76	3.08	3462	Iron And Steel Forgings
			1997	26.38	27.39		8.35	37.00		15.55	1.99		
			1998	24.69	25.80		4.05	13.30		11.83	4.83		
			1999	19.37	20.82	0.43	1.68	7.61	1.18	0.13	4.26		
			2000	17.76	18.87	0.39	1.53	7.01	1.07	0.12	3.64		
			2001	10.66	11.33	0.24	1.00	5.06	0.64	0.07	2.18		
EPIC METALS CORP.	STEEL ROOF FABRICATION	15104	1998	0.03	0.04		0.00	0.00		0.00	20.09	3441	Fabricated Structural Metal
			1999			0.00	0.00	0.00	0.00	0.00	8.32		
			2000	0.15	0.18	0.00	0.00	0.00	0.01	0.00	4.32		
			2001	0.33	0.40	0.01	0.01	0.01	0.02	0.00	0.74		
			2002	0.45	0.53	0.01	0.01	0.01	0.03	0.00	0.97		
			2003	0.56	0.67	0.01	0.01	0.01	0.04	0.00	0.62		
			2004	0.57	0.68	0.01	0.01	0.01	0.01	0.00	0.69		

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FERRO CORP.	INORGANIC PIGMENTS	15204	1996	0.07	0.36		1.30	1.52		0.00	0.03	2816	Inorganic Pigments
			1997	0.10	0.20		0.83	0.98		0.00	0.03		
			1998	0.25	0.27		0.65	0.77		0.00	0.02		
			1999	0.17	0.20	0.01	0.55	0.65	0.17	0.00	0.01		
			2000	0.28	0.34	0.03	0.70	0.82	0.02	0.00	0.03		
			2001	0.21	0.25	0.07	0.62	0.70		0.00	0.03		
FOX CHAPEL SENIOR HIGH SCHOOL	FOX CHAPEL HIGH SCHOOL	15238	1998	0.84	1.00		0.12	0.54		0.01	0.06	8211	Elementary And Secondary Schools
			1999	1.03	1.23	0.03	0.12	0.54	0.07	0.01	0.07		
			2000	0.96	1.14	0.03	0.12	0.52	0.07	0.01	0.06		
			2001	1.01	1.20	0.03	0.12	0.51	0.07	0.01	0.07		
			2002	1.09	1.30	0.03	0.12	0.52	0.07	0.01	0.07		
			2003	1.16	1.38	0.04	0.13	0.53	0.08	0.01	0.08		
			2004	1.10	1.31	0.02	0.02	0.02	0.07	0.01	0.07		
GALVTECH	HOT DIP GALVANIZING-STRIP	15207	1999	23.47	27.95	0.41	0.68	1.31	1.59	0.17	2.53	3479	Metal Coating Andc Allied Services,ne
			2000	25.75	30.65	0.64	0.82	1.83	1.75	0.18	3.10		
			2001	22.72	27.05	0.57	0.75	1.76	1.54	0.16	2.37		
			2002	28.78	34.26	0.71	0.90	1.93	1.95	0.21	2.54		
			2003	22.49	26.78	0.57	0.74	1.71	1.53	0.16	1.87		
			2004	24.76	29.48	0.62	0.79	1.76	1.68	0.18	2.53		
GARDNER,DENVER,) NASH(FORMERLY NASH ELMO	ENGINEERED VACUUM SYST	15037	1998	0.22	0.27		0.01	0.01		0.16	3.17	3578	Air And Gas Compressors
			1999	0.22	0.27	0.01	0.01	0.01	0.21	0.15	1.90		
			2000	0.27	0.54	0.01	0.04	0.11	0.01	0.02	1.46		
			2001	0.83	1.18	0.02	0.05	0.12	0.05	0.02	4.61		
			2002	0.91	1.30	0.04	0.05	0.13	0.05	0.03	13.03		
			2003	0.80	1.10	0.19	0.19	1.32	0.05	0.02	3.40		
			2004	0.87	1.42	0.38	0.38	2.72	0.05	0.04	4.61		

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GE CONSUMER PRODUCTS, LIGHTING	BRIDGEVILLE T GLASS PLAN	15017	1996	8.73	232.41		22.20	27.80		4.10	1.52	3229	Pressed And Blown Glass, Nec
			1997	8.51	236.22		5.68	6.19		4.27	1.46		
			1998	6.33	210.80		4.40	4.58		4.12	1.37		
			1999	11.86	230.39	3.53	4.25	4.15		4.23	1.79		
			2000	12.87	210.61	2.03	18.65	18.86	0.47	2.94	1.41		
			2001	9.62	166.09	1.51	13.92	20.11	0.37	2.95	1.56		
			2002	12.31	161.22	2.88	27.27	27.53	0.11	0.09	1.03		
			2003	9.40	110.30	2.18	21.16	21.26		0.10	0.82		
			2004	12.21	0.03	25.98	138.67	26.05	2.88	0.09	0.84		
GENERAL ELECTRICE APPARATUS SERVICE	REPAIR ELECTR. POWER EQUP	15122	1996	0.15	0.76		1.68	1.23		0.00	2.48	7699	Repair Services, Nec
			1997	2.25	2.65		1.76	1.71		0.02	3.75		
			1998	0.63	0.76		0.30	0.32		0.00	0.38		
			1999	0.52	0.62	0.45	0.45	0.45		0.00	1.77		
			2000	0.28	0.34	0.64	0.64	0.64	0.02	0.00	2.99		
			2001	0.24	0.28	0.24	0.24	0.24	0.02	0.00	2.03		
			2002	0.29	0.34	0.30	0.30	0.30	0.02	0.00	0.97		
			2003	0.32	0.39	0.23	0.23	0.23	0.02	0.00	1.42		
			2004	0.35	0.41	0.33	0.37	0.43	0.02	0.00	0.81		
GENERAL MOTORS PITTSBURGH PLANT	GENERAL MOTORS PITTSBURGH	15122	1996	2.44	10.00		2.42	2.80		4.84	4.76	3465	Automotive Stampings
			1997	13.55	8.29		2.50	2.88		4.82	6.65		
			1998	13.25	7.09		2.41	2.60		3.31	12.65		
			1999	15.88	7.79	0.29	0.60	2.28	0.52	9.01	6.83		
			2000	15.94	8.75	0.45	0.81	2.67	0.56	10.47	4.31		
			2001	15.82	7.81	0.54	1.30	5.34	0.49	1.18	4.42		
			2002	6.11	7.62	0.53	1.29	5.32	0.48	1.12	2.67		
			2003	6.70	7.35	0.93	2.84	13.29	0.46	1.12	2.47		
			2004	6.12	7.14	0.89	2.79	13.19	0.44	0.79	2.20		

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GLENSHAW GLASS CO., INC.	GLASS CONTAINER MANU.	15116	1996	23.02	429.99		84.61	88.87		126.69	41.99	3221	Glass Containers
			1997	26.10	432.33		98.84	104.32		127.34	34.49		
			1998	27.17	436.48		96.48	101.60		127.93	34.75		
			1999	28.90	491.73	71.02	81.21	82.54	3.43	128.42	35.68		
			2000	129.34	444.50	66.28	76.10	78.33	3.21	117.22	32.46		
			2001	121.67	255.50	49.01	58.06	61.01	2.62	114.35	26.58		
			2002	117.77	233.96	53.79	54.96	59.76	2.55	106.53	24.71		
			2003	115.59	340.30	49.15	50.32	55.14	2.53	98.32	24.31		
			2004	58.05	258.46	32.27	36.32	44.18	2.03	76.88	19.10		
GOTTLIEB, INC.	SECONDARY ALUMINUM PROD.	15225	2003	1.66	20.46	0.73	1.27	3.47	0.04	2.02	4.33	3341	Secondary Aluminum Prod.
			2004	1.56	25.60	0.87	1.33	2.94	0.11	2.54	5.44		
GUARDIAN INDUSTRIES CORP. FLOREFFE	FLAT GLASS MANUFACTURING	15025	1996	6.09	655.91		57.60	67.20		220.41	6.75	3211	Flat Glass
			1997	7.09	717.42		62.33	72.05		240.15	7.16		
			1998	6.60	365.15		61.33	70.77		218.26	7.00		
			1999	7.03	377.09	41.69	63.03	74.74	0.06	227.10	17.23		
			2000	3.76	819.03	63.48	75.38	87.61	0.06	154.29	12.66		
			2001	7.01	1177.59	39.00	94.42	110.22	0.07	187.37	13.99		
			2002	7.90	1056.26	21.89	38.97	88.86	0.04	94.28	11.93		
			2003	6.57	1051.03	3.40	15.18	29.87	10.27	121.51	10.63		
			2004	7.72	996.64	3.53	15.22	29.80	19.71	109.89	12.74		
GULF OIL LIMITED PARTNERSHIP NEVILLE IS	GULF OIL LIMITED PARTNERS	15225	1996	0.05	0.19		0.02	0.02		4.00	32.72	5171	Petroleum Bulk Stations & Terminals
			1997	0.06	0.23		0.15	0.81		0.49	65.93		
			1998	0.03	0.11		0.01	0.00		0.23	34.65		
			1999	0.03	0.11	0.00	0.01	2.19	0.01	0.23	45.21		
			2000	7.63	7.69	0.00	0.00	1.98	0.00	0.49	45.02		
			2001	6.21	2.43	0.07	0.43	1.30	0.01	0.20	57.25		
			2002	6.00	2.39	0.07	0.44	1.31	0.01	0.26	58.74		
			2003	9.71	4.01	0.45	3.04	9.12	0.00	0.28	48.36		
			2004	10.59	4.42	0.49	3.32	9.97	0.00	0.40	42.70		

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HASKELL SENATOR INTERNATIONAL	HASKELL SENATOR INTL.	15147	1996	0.98	2.53		0.29	0.46		0.01	52.19	2522	Metal Office Furniture
			1997	2.51	2.93		0.22	0.40		0.02	53.16		
			1998	2.39	2.78		0.14	0.17		0.01	55.32		
			1999	2.31	2.68	0.13	0.16	0.18	0.12	0.01	58.41		
			2000	2.84	3.32	0.14	0.17	0.19	0.18	0.02	61.26		
			2001	2.72	2.19	0.12	0.13	0.15	0.12	0.02	35.21		
HEEKIN CAN, INC.	DIVISION OF BALL CORP.	15205	1996	0.18	0.71		0.07	0.07		0.00	10.53	3479	Metal Coating And Allied Services,nec
HENRY MILLER SPRING MANUFACTURING CO	SPRING MANUFACTURING	15125	1998	8.20	13.73		5.92	20.77		0.05	46.23	3493	Steel Springs, Except Wire
			1999	6.78	8.18	0.34	3.84	14.85	0.43	0.05	26.70		
			2000	0.52	0.63	0.02	0.23	0.88	0.03	0.00	1.12		
HERCULES INC.	HERCULES INC.	15088	1996	22.50	41.19		19.58	20.96		4.44	859.18	2821	Plastics Materials And Resins
			1997	28.44	36.12		15.18	22.09		6.52	563.32		
			1998	56.12	39.74		16.40	23.80		4.31	576.10		
			1999	16.39	37.81	0.31	12.42	14.07	1.89	4.57	651.08		
			2000	16.59	37.46	1.65	14.93	16.52	1.88	4.41	474.00		
HOECHSTETTER PRINTING	COMMERCIAL LITHO PRINTING	15143	2000	1.31	1.56	0.03	0.03	0.03	0.08	0.01	43.53	2752	Commercial Printing Lithograph
			2001	1.27	1.51	0.03	0.03	0.02	0.07	0.01	43.28		
			2002	0.23	0.27	0.01	0.01	0.01	0.02	0.00	42.99		
			2003	0.17	0.20	0.00	0.00	0.00	0.01	0.00	23.09		
			2004	0.37	0.45	0.01	0.01	0.01	0.03	0.00	18.65		

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HUSSEY COPPER LTD.	HUSSEY COPPER LTD.	15056	1996	8.73	26.49		31.19	54.34		0.26	27.59	3351	Copper Rolling
			1997	22.36	22.88		24.33	43.00		0.78	32.57		And Drawing
			1998	20.92	21.43		48.02	91.07		0.76	14.34		
			1999	22.74	23.46	37.25	52.51	110.50	1.33	0.78	14.48		
			2000	22.23	23.83	36.18	48.86	98.33	1.35	0.43	18.06		
			2001	19.77	21.00	17.07	34.34	61.38	1.19	0.28	13.10		
			2002	19.33	20.79	15.79	33.72	57.05	1.18	0.23	9.87		
			2003	20.11	21.55	15.56	33.51	55.24	1.22	0.25	10.43		
			2004	20.74	21.64	28.74	39.87	73.52	1.22	0.26	10.55		
IA CONSTRUCTION	HOT MIX	15044	1998	22.30	7.44		13.53	36.10		19.02	10.25	2951	Paving Mixtures
GIBSONIA	ASPHALT PLANT		1999	20.59	4.56	0.97	8.46	31.87	1.60	8.37	1.35		And Blocks
			2000	13.68	1.91	2.64	27.45	40.67	0.15	1.22	0.42		
			2001	19.41	2.65	2.01	14.57	52.39	0.20	1.32	0.58		
			2002	16.82	2.40	7.78	12.85	45.89	0.18	1.17	0.41		
			2003	7.37	1.13	3.57	5.77	20.47	0.12	0.27	0.19		
IDL INC.	IDL INC.	15239	1996	0.06	0.32		0.58	1.60		0.00	41.81	2752	
			1997	0.26	0.31		0.59	1.61		0.00	30.70		Commercial Printing Lith
			1998	0.29	0.34		0.58	1.61		0.00	29.56		
			1999	0.27	0.33	0.07	0.57	1.60	0.02	0.00	26.23		
			2000	0.32	0.38	0.07	0.56	1.56	0.02	0.00	22.52		
			2001	0.28	0.34	0.07	0.56	1.56	0.02	0.00	23.01		
			2002	0.28	0.34	0.07	0.56	1.56	0.02	0.00	13.25		
			2003	0.26	0.31	0.06	0.56	1.56	0.02	0.00	12.86		
			2004	0.26	0.31	0.06	0.56	1.56	0.02	0.00	11.14		
INTL PAPER	CORRUGATED .	15215	1998	1.39	1.65		5.72	5.72		0.01	0.57	2653	Corrugated
(formerly Box U.S.A.)	BOX MFG		1999	1.58	1.89	0.04	5.87	5.87	0.11	0.01	0.79		And Solid Fiber Box
			2000	1.13	1.35	3.48	3.48	3.48	0.08	0.01	0.35		
			2001	1.39	1.66	0.85	3.71	3.71	0.09	0.01	0.52		
			2002	1.38	1.64	5.23	5.23	5.23	0.09	0.01	0.91		
			2003	0.65	0.97	1.66	1.67	1.68	0.06	0.42	0.44		
			2004	0.28	0.64	1.84	1.86	1.88	0.04	0.63	0.42		

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IRON CITY. INDUSTRIAL CLEANING CORP	IRON CITY INDUSTRIAL CLEA	15206	1996	0.32	1.54		0.17	0.11		0.01	32.01	7218	Industrial Launderers
			1997	0.99	1.18		0.02	0.02		0.01	18.33		
			1998	0.84	1.00		0.02	0.02		0.01	10.85		
JEFFERSON REGIONAL MEDICAL CENTER	HEALTH CARE FACILITY	15236	1998	3.04	3.67		0.07	0.07		0.14	0.20	8062	General Medicals & Surgical Hospital
			1999	2.82	3.38	0.18	4.68	23.68	0.19	0.06	0.28		
			2000	2.79	3.45	0.11	1.25	6.07	0.20	1.09	0.28		
			2001	2.47	3.24	0.06	0.07	0.09	0.18	0.62	0.26		
			2002	3.12	3.75	0.07	0.07	0.07	0.21	0.08	0.26		
			2003	2.89	3.46	0.07	0.07	0.07	0.20	0.09	0.24		
			2004	2.97	3.58	0.07	0.07	0.07	0.20	0.09	0.24		
KELLY RUN SANITATION	MSW LANDFILL	15037	1996	91.56	9.61		16.52	31.72		2.01	4.39	4953	Refuse Systems
			1997	50.52	29.81		19.02	19.02		2.64	4.91		
			1998	55.21	30.66		19.58	19.72		2.77	6.58		
			1999	21.32	34.15	8.61	11.45	16.15	0.55	2.92	7.30		
			2001	22.83	33.38	7.65	9.46	16.02	0.49	2.96	6.73		
			2002	15.27	15.89	8.07	10.81	19.29	0.45	0.74	4.54		
			2003	10.69	9.22	4.16	6.00	10.65	0.33	0.38	1.10		
			2004	8.30	8.50	6.68	8.03	11.45	0.25	0.39	0.90		
KINDER MORGAN INDIANOLA PLANT	KINDER MORGAN	15051	1996	3.45	14.05		1.42	1.42		0.06	28.97	5171	Petroleum Bulk Stations & Terminals
			1997	7.19	9.18		0.25	0.70		0.73	29.84		
			1998	5.71	8.14		0.27	0.21		1.32	26.56		
			1999	6.07	7.46	0.14	0.16	0.16	0.42	0.25	36.98		
			2000	5.89	7.73	0.15	0.21	0.21	0.44	0.66	27.94		
			2001	4.51	7.53	0.15	0.33	0.33	0.42	1.93	30.49		
			2002	4.87	5.92	0.11	0.12	0.12	0.34	0.14	28.87		
			2003	5.51	10.03	0.20	0.29	0.49	0.56	3.06	29.34		
			2004	8.04	9.88	0.18	0.20	0.21	0.56	0.33	32.01		

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KINDER-MORGAN LIQUIDS TERMINAL LLC (formerly BOSWEL	PETROLEUM LIQUID STORAGE	15034	1998	1.70	3.50		0.02	0.22		3.74	5.22	4226	Services, Nec
			1999	1.76	2.22	0.04	0.05	0.06	1.76	0.02	2.00		
			2000	0.44	1.38	0.03	0.06	0.13	0.09	2.17	0.89		
			2001	1.49	7.15	0.16	0.39	0.63	0.06	4.31	0.26		
			2002	1.59	6.34	0.14	0.33	0.52	0.08	3.57	0.35		
			2003	1.64	6.19	0.29	0.43	0.50	0.21	3.40	0.44		
			2004	1.74	7.45	0.36	0.54	0.62	0.25	4.31	1.37		
KOPP GLASS, INC	MANUFACTURE GLASSWARE	15218	1998	5.67	7.22		0.14	0.14		0.04	4.27	3229	Pressed And Blown Glas
			1999	6.12	7.28	0.14	0.14	0.14	0.42	0.04	1.38	3229	And Blown Glass, Ne
			2000	5.90	7.02	0.13	0.13	0.13	0.40	0.04	1.91		
			2001	6.22	7.40	0.14	0.14	0.14	0.42	0.04	1.76		
			2002	4.83	5.75	0.11	0.13	0.11	0.33	0.03	0.61		
			2003	4.51	5.37	0.10	0.10	0.10	0.31	0.03	3.62		
			2004	3.56	4.24	0.08	0.08	0.08	0.24	0.03	2.65		
KOPPERS INDUSTRIES INC. CLAIRTON PLANT	KOPPERS IND. CLAIRTON	15025	1996	19.05	14.58		26.26	56.87		0.00	68.23	2865	Cyclic Crudes
			1997	20.96	12.50		11.78	32.33		39.19	57.20	2865	And Intermediate
			1998	22.88	15.11		13.32	54.47		44.10	50.16		
			1999	18.24	16.35	1.83	9.87	39.74	0.70	74.46	78.54		
			2000	14.37	13.96	6.21	15.63	57.05	0.55	0.35	66.10		
			2001	8.81	13.29	2.96	8.82	22.74	0.56	37.04	75.70		
			2002	18.61	13.88	6.71	9.25	23.79	0.60	1.35	76.52		
			2003	15.87	14.92	6.42	7.80	17.41	0.59	0.49	78.97		
			2004	18.74	15.42	5.98	7.39	16.77	0.91	0.92	96.10		
KOSMOS CEMENT CO.	KOSMOS CEMENT CO.	15225	1996	312.55	1519.32		238.51	395.16		559.50	29.03	5032	Cement, Hydraulic
			1997	344.42	1674.73		289.47	487.46		616.56	31.99		
			1998	324.73	962.87		188.30	346.70		232.33	22.86		
			1999	66.94	1018.82	135.55	252.44	422.82	13.83	245.31	24.14		
			2000	21.56	806.13	118.50	240.81	423.77		637.95	28.40		
			2001	1.67	114.25	12.75	71.50	133.65		90.50	4.03		
			2002			0.52	5.83	11.75					
			2003			0.53	5.90	11.89					
			2004			1.82	5.88	11.85					

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LAUREL MOUNTAIN WHIRLPOOLS, INC.	WHIRPOOL TUB PRODUCTION	15145	1996	0.04	0.20		0.01	0.01		0.00	4.03	3083	Laminated Plastics Plate And Sheet
			1997	0.21	0.25		0.00	0.00		0.00	4.79		
			1998	0.25	0.30		0.01	0.01		0.00	5.17		
			1999	0.18	0.22	0.00	0.00	0.00	0.01	0.00	4.47		
			2000	0.17	0.20	0.00	0.00	0.00	0.01	0.00	4.34		
			2001	0.13	0.15	0.00	0.00	0.00	0.01	0.00	3.70		
			2002	0.14	0.17	0.00	0.00	0.00	0.01	0.00	6.45		
			2003	0.17	0.20	0.00	0.00	0.00	0.01	0.00	26.24		
			2004	0.14	0.16	0.00	0.00	0.00	0.01	0.00	16.46		
LIBERTY POLYGLAS PULTRUSIONS	LIBERTY POLYGLAS PULTRUSIONS	15122	1996	0.04	0.39		0.02	0.03		0.00	18.24	3083	Laminated Plastics Plate And Sheet
			1997	0.26	0.31		0.02	0.03		0.00	22.40		
			1998	0.17	0.20		0.01	0.02		0.00	10.01		
			1999	0.24	0.28	0.02	0.04	0.08	0.02	0.00	9.85		
			2000	0.23	0.28	0.03	0.06	0.11	0.02	0.00	9.41		
			2001	0.23	0.28	0.03	0.06	0.11	0.02	0.00	6.29		
			2002	0.23	0.28	0.03	0.03	0.11	0.02	0.00	6.29		
			2003	0.23	0.28	0.01	0.98	6.20	0.02	0.00	6.02		
			2004	0.24	0.28	0.01	0.98	6.20	0.02	0.00	7.39		
LIBERTY-PITTSBURGH. SYSTEMS, INC	AN INDUSTRIAL BUILDING	15233	1998								9.73	2752	Commercial Printing Lithograph
			1999								14.99		
			2000								14.74		
			2001								12.97		
			2002	0.03	0.04	0.00	0.00	0.00	0.00	0.00	10.75		
LINDY PAVING (formerly Trumbull)	BITUMINOUS MFG. PLANT	15225	1996	0.02	0.01		0.00				0.01	2951	Paving Mixtures And Blocks
			1998	11.26	1.23		19.20	52.55		6.83	4.24		
			1999	0.45	2.02	2.44	22.94	61.35		0.13	0.14		
			2000	19.68	5.98	2.47	23.39	63.14	0.58	0.64	4.87		
			2001	17.86	6.28	10.97	13.68	48.43	2.27	0.64	4.48		
			2002	20.97	8.91	11.67	14.46	50.65	2.62	0.84	5.35		
			2003	17.36	6.86	11.94	14.24	45.79	2.47	0.66	4.40		
			2004	25.49	8.61	4.06	12.03	40.83	3.68	0.87	9.16		

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LOZIER CORP.	PARTS MANU	15234	1996	0.20	0.83		0.39	0.39		0.00	0.02	2542	Metal Partitions
	FOR STEEL FIX.		1997	0.50	0.60		0.35	0.35		0.00	0.03		And Fixtures
			1998	0.46	0.55		0.37	0.35		0.00	0.03		
			1999	0.71	0.85	0.72	0.72	0.72	0.05	0.01	0.05		
			2000	0.71	0.85	0.72	0.72	0.92	0.05	0.01	0.05		
			2001	0.63	0.75	0.01	0.01	0.01	0.04	0.00	0.04		
			2002	0.55	0.65	0.01	0.01	0.01	0.04	0.00	0.04		
			2003	0.55	0.65	0.01	0.01	0.01	0.04	0.00	0.04		
			2004	0.46	0.55	0.01	0.01	0.01	0.03	0.00	0.03		
LTV STEEL CO.	LTV STEEL CO.	15207	1996	650.63	2035.53		405.43	1043.90		1752.07	670.02	3312	Blast Furnaces
PITTSBURGH COKE PLANT			1997	642.28	1911.18		382.77	973.84		1469.15	623.53		And Steel Mills
			1998	84.88	249.26		76.04	183.07		322.71	81.18		
MARATHON ASHLAND	ASPHALT TERMINAL	15025	1996	1.09	4.34		0.09	0.09		0.02	9.47	5171	Petroleum Buls
PET. - FLOREFFE TERMINAL			1997	1.68	2.00		0.04	0.04		0.01	39.94		k Stations & Terminal
			1998	5.34	4.06		0.06	0.06		0.02	24.29		
			1999	5.91	4.95	0.07	0.07	0.07	3.27	0.02	23.40		
			2000	4.50	4.46	0.08	0.08	0.08		0.02	13.76		
			2001	4.07	4.85	0.09	0.09	0.09	0.28	0.03	2.31		
MARSH ASPHALT, INC.	ASPHALT PLANT	15304	1998	24.81	3.97		5.60	15.37		6.44	2.23	2951	Paving Mixtures
DRAVOSBURG PLAN			1999	13.84	3.01	1.30	4.79	12.79	0.20	2.92	0.88		And Blocks
			2000	16.99	2.91	0.37	4.99	13.45	0.53	0.62	0.68		
			2001	16.87	3.30	1.11	7.74	26.68	0.13	0.62	0.68		
			2002	7.75	3.07	4.66	6.45	22.53	0.10	0.55	1.37		
			2003	3.39	6.47	3.66	4.89	19.80	0.32	2.39	3.12		

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MAYVIEW STATE HOSPITAL	STATE HOSPITAL	15017	1998	6.21	7.42		0.14	0.14		0.05	0.41	8063	Psychiatric
			1999	6.27	7.59	0.16	0.16	0.16	0.43	0.06	0.41		
			2000	10.31	12.29	0.23	0.23	0.23	0.70	0.07	0.68		
			2001	5.93	7.06	0.13	0.13	0.13	0.40	0.04	0.39		
			2002	6.69	8.14	0.16	0.16	0.17	0.46	0.12	0.44		
			2003	6.81	8.56	0.16	0.18	0.21	0.49	0.28	0.45		
			2004	6.33	7.54	0.14	0.14	0.14	0.43	0.12	0.41		
MCCONWAY & TORLEY CORP.	STEEL CASTINGS MANUFACTURER	15201	1998	6.34	10.11		30.10	33.43		3.19	7.66	3325	Steel Foundries, Nec
			1999	13.40	10.54	48.57	59.74	67.83	1.78	3.05	14.05		
			2000	9.55	8.47	23.81	31.56	37.55	1.11	1.65	7.70		
			2001	7.43	5.82	48.36	57.49	65.67	1.00	1.63	2.61		
			2002	7.67	5.70	43.64	50.77	57.01	1.19	1.95	2.91		
			2003	12.97	9.26	56.70	70.34	79.11	2.16	3.36	5.08		
			2004	13.38	9.98	17.72	30.63	49.44	3.24	4.24	7.73		
MEDRAD, INC.	MEDICAL DEVICE MFGR	15051	1998									3841	Surgical & Medical Instruments
			1999										
MERCY HOSPITAL F PITTSBURGH	HOSPITAL	15219	1998	5.75	6.85		0.13	0.13		0.04	5.63	8062	General Medica l & Surgical Hospitals
			1999	6.14	7.31	0.14	0.14	0.14	6.14	0.04	2.99		
			2000	6.33	7.53	0.14	0.14	0.14	0.43	0.05	2.93		
			2001	6.18	7.36	0.14	0.14	0.14	0.42	0.04	2.89		
			2002	5.91	7.06	2.99	2.99	2.99	0.40	0.29	3.20		
			2003	6.16	7.36	2.99	3.00	3.00	0.42	0.39	3.13		
			2004	6.37	7.64	3.00	3.00	3.00	0.43	0.15	3.08		
METALTECH	HOT DIP GALVANIZING-STRIP	15219	1998	14.20	16.90		2.00	7.29		0.10	3.17	3479	Metal Coating And Allied Services,nec
			1999	14.91	17.75	0.64	1.56	6.59	1.01	0.11	3.22		
			2000	13.61	16.20	0.61	1.53	6.56	0.92	0.10	2.88		
			2001	14.68	17.48	0.64	1.55	6.60	1.00	0.10	3.13		
			2002	14.15	16.85	0.64	1.62	6.92	0.96	0.10	1.19		
			2003	13.19	15.70	0.62	1.48	6.30	0.89	0.09	2.70		
			2004	14.35	17.08	0.64	1.50	6.32	0.97	0.10	3.17		

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MID-CONTINENT COAL AND COKE	CLAIRTON SCREENING PLANT	15025	2000	0.10	0.41	0.48	4.79	10.44		0.15	0.00	5052	Coal & Other Minerals & Ores
			2001	0.09	0.37	0.48	4.48	8.32		0.13	0.00		
			2002	0.06	0.24	4.10	7.06	14.26		0.35	0.00		
MOTOR COILS MANUFACTURING COMPANY	BRADDOCK PLANT	15104	1998	0.00	0.00		0.00	0.19		0.00	15.83	3621	Motors And Generators
			1999	0.84	1.00	0.12	0.12	0.12	0.06	0.01	9.12		
			2000	0.50	0.60	0.05	0.05	0.05	0.03	0.00	2.80		
MT. LEBANON HIGH SCHOOL	EDUCATION INSTITUTION	15228	1998	0.50	0.60		0.01	0.01		0.00	0.03	8211	Elementary And Secondary Schools
			1999	1.26	1.50	0.09	1.31	6.52	0.09	0.01	0.08		
			2000	1.32	1.57	0.05	0.12	0.22	0.09	0.01	0.09		
			2001	1.77	2.11	0.06	0.13	0.23	0.12	0.01	0.12		
			2002	1.77	2.11	0.06	0.13	0.23	0.12	0.01	0.12		
			2003	1.62	1.93	0.04	0.04	0.05	0.11	0.01	0.11		
			2004	1.73	2.06	0.04	0.04	0.06	0.12	0.01	0.11		
MULTISERV	SLAG PROCESSING	15104	1998				39.14	103.95				3295	Special Trade Contractors Nec
			1999			8.97	37.24	189.08					
			2000			8.87	35.04	158.94					
			2001			4.85	23.03	78.42					
			2002			6.07	25.20	83.32					
			2003			5.34	26.47	87.85					
			2004			5.55	28.91	104.09					
NATIONAL ENERGY TECHNOLOGY LAB - PGH	NETL - NATIONAL ENERGY TECH	15236	1996	0.17	4.35		0.11	0.38		14.49	0.28	8731	Commercial Physical Research
			1997	0.59	3.30		0.14	0.55		14.49	0.04		
			1998	0.51	4.35		1.61	6.94		14.49	0.28		
			1999	0.82	2.45	0.02	0.11	0.37	0.06	8.75	0.07		
			2000	0.17	0.95	0.01	0.11	0.43	0.01	4.05	0.01		
			2001	0.34	0.89	0.26	1.49	5.43	0.01	3.40	0.02		
			2002	0.36	0.98	0.25	1.35	4.87	0.02	4.38	0.03		
			2003	0.30	1.12	0.34	1.55	5.69	0.01	5.65	0.02		
			2004	0.25	1.26	0.09	0.40	2.27	0.39	6.50	0.02		

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NEVILLE CHEMICAL CO.	NEVILLE CHEMICAL CO.	15225	1996	17.67	33.03		25.35	29.44		9.24	453.75	2821	Plastics Materials And Resins
			1997	19.21	55.90		13.67	21.26		9.99	756.94		
			1998	28.26	50.63		3.56	10.96		8.99	506.57		
			1999	28.61	51.97	2.25	3.43	10.88	2.00	6.02	397.89		
			2000	29.30	54.72	2.26	3.41	10.90	2.11	6.17	382.68		
			2001	28.35	51.11	2.39	3.43	10.98	2.06	6.55	317.68		
			2002	28.87	57.35	2.63	3.61	11.16	2.12	9.75	266.05		
			2003	31.36	37.61	2.29	3.97	10.72	2.31	4.72	241.06		
			2004	29.22	31.69	2.14	3.42	8.44	2.03	3.32	241.56		
NEVILLE PULVERIZED LIME	AGGREGATE PULVRIZING FCY	15056	1998	0.05	0.23		14.03	21.95		0.02	0.02	3295	Minerals, d Ground Or Treate
			1999	0.15	0.70	0.56	11.67	18.09		0.05	0.05		
			2000	0.21	0.96	0.42	14.13	21.18		0.06	0.07		
			2001	0.25	1.17	0.37	3.75	9.80		0.08	0.10		
			2002	0.25	1.18	4.12	4.12	10.71		0.08	0.09		
			2003	0.31	1.46	4.29	4.29	11.12		0.10	0.11		
			2004	0.41	1.94	5.68	5.68	14.73		0.13	0.14		
NEXTECH	HOT DIP GALVANIZING-STRIP	15145	1998	11.97	14.25		0.97	1.38		0.09	1.52	3479	Metal Coating And Allied Services,nec
			1999	13.49	16.07	0.31	0.31	0.31	0.92	0.10	1.61		
			2000	11.29	13.44	0.26	0.26	0.26	0.77	0.08	1.47		
			2001	10.79	12.84	0.24	0.24	0.24	0.73	0.08	1.04		
			2002	10.16	12.09	0.23	0.23	0.23	0.69	0.07	0.90		
			2003	10.45	12.44	0.24	0.24	0.24	0.71	0.07	0.99		
			2004	10.48	12.47	0.24	0.24	0.24	0.71	0.07	1.10		
NORTH COAST CALIG CORP	NORTH COAST CALIG CORP	15136	1996	0.52	2.46		0.44	1.09		0.01	76.47	3412	Metal Barrels,s Drums & Pail
			1997	2.24	2.66		0.05	0.05		0.02	64.00		
			1998	2.24	2.66		0.05	0.05		0.02	64.00		

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NRG ENERGY CENTER PITTSBURGH	NRG ENERGY CTR PITTSBURGH	15212	1996	19.74	76.39		2.54	2.58		1.94	0.74	4961	Steam Supply
			1997	44.27	67.06		1.00	1.00		0.32	2.90		
			1998	45.53	67.90		1.03	1.03		0.33	2.98		
			1999	46.74	70.29	1.06	1.06	1.06	3.17	0.38	3.06		
			2000	46.12	63.08	1.05	1.09	1.14	3.18	2.25	3.02		
			2001	33.73	47.25	0.78	0.84	0.93	2.37	3.43	2.21		
			2002	31.73	43.93	0.72	0.72	0.72	2.15	0.23	2.08		
			2003	30.76	43.88	1.10	1.11	1.12	2.10	0.59	2.01		
			2004	28.28	40.41	1.33	1.33	1.33	1.92	0.24	1.86		
O. HOMMEL CO.	CERAMIC COATING MANUFACTR	15106	1996	0.09	0.61		0.47	0.50		0.11	2.90	2899	Chemical Preparations, Nec
			1997	0.16	0.32		5.14	5.48		0.01	3.64		
			1998	0.30	0.49		0.79	0.84		0.01	4.12		
			1999	0.42	1.77	0.04	0.99	1.06	0.16	0.01	5.94		
			2000	0.54	0.85	0.10	0.93	0.99	0.03	0.01	7.82		
			2001	0.50	0.79	0.32	0.66	0.70	0.03	0.00	4.20		
ORION POWER MIDWEST BRUNOT ISLAND	ELECTRICAL GENERATING	15204	1996	1.08	15.65		0.85	0.85		4.53	0.50	4911	Electric Services
			1997	2.60	37.84		2.06	2.06		10.95	1.07		
			1998	7.20	104.69		5.70	5.70		18.18	2.99		
			1999	10.84	157.59	8.58	8.58	8.58	5.19	31.70	4.27		
			2000	0.44	116.94	0.57	0.57	0.57	0.96	16.38	0.07		
			2001	0.65	57.73	0.35	0.35	0.35	0.21	1.38	0.30		
			2002	31.92	18.82	0.33	1.72	1.72	0.75	1.14	38.44		
			2003	33.20	38.22	2.14	2.14	2.14	0.59	1.03	22.56		
			2004	23.83	23.02	1.44	1.44	1.44	0.50	3.50	26.04		

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ORION POWER MIDWEST, CHESWICK STATION	CHESWICK POWER STATION	15024	1996	1024.34	5957.35		291.02	1419.15		37094.67	4.37	4911	Electric Services
			1997	341.98	6906.84		449.69	897.28		42538.16	14.15		
			1998	761.84	4917.81		323.10	710.13		32421.78	9.98		
			1999	968.95	4762.75	196.38	342.89	679.22	450.96	38171.03	35.74		
			2000	840.56	6385.36	152.11	295.27	428.35	512.67	45143.45	39.45		
			2001	844.35	6751.05	116.64	307.66	887.02	438.68	49013.38	13.32		
			2002	298.92	5761.73	88.92	221.51	596.09	501.30	42018.35	10.69		
			2003	375.71	4704.70	186.51	394.44	935.06	430.07	45432.80	13.01		
			2004	322.77	4928.01	127.59	293.68	724.77	498.25	40982.82	11.32		
ORION POWER MIDWEST PHILLIPS STATION	ORION POWER MIDWEST, PHIL	15081	1996	0.31	1.24		0.12	0.12		1.76	0.06	4911	Electric Services
			1997	0.33	1.32		0.13	0.26		1.88	0.05		
			1998	0.21	0.84		0.08	0.17		1.75	0.10		
			1999	0.31	1.49	0.03	0.12	0.25	0.08	1.16	0.11		
			2000	0.21	1.00	0.02	0.08	0.17	0.05	0.78	0.02		
			2001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01		
			2002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01		
PANNIER CORP. GRAPHICS DIVISION	GRAPHIC SIGNAGE	15044	1999	0.10	0.12	0.00	0.00	0.00	0.01	0.00	9.13	3083	Laminated Plastics Plate And Shee
			2000	0.11	0.14	0.00	0.00	0.00	0.01	0.00	10.84		
			2001	0.10	0.12	0.00	0.00	0.00	0.01	0.00	7.94		
			2002	0.09	0.11	0.00	0.00	0.00	0.01	0.00	7.77		
			2003	0.09	0.11	0.00	0.00	0.00	0.01	0.00	8.64		
			2004	0.10	0.12	0.00	0.00	0.00	0.01	0.00	10.58		
PARC TECHNICAL SERVICES, INC.	FUEL & LUBRICANT RESEARCH	15238	1998	13.47	0.76		0.50			0.68	2.85	8734	Testing Laboratories
			1999	62.11	3.60	0.30	0.34	0.25		0.08	3.57		
			2000	3.97	6.44	0.20	0.20	0.24		0.15	4.24		
			2001	0.93	1.49	0.11	0.11	0.11		0.07	1.71		
			2002	0.24	1.50	1.01	1.01	1.01		0.08	4.15		
			2003	0.92	5.75	3.80	3.80	3.80		0.35	6.17		
			2004	1.44	1.64	0.12	0.12	0.12		0.08	4.36		

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PENN-RILLTON CO.	PENN-RILLTON CO.	15088	1998	0.08	0.10		0.23	0.23		0.00	0.01	3999	Manufacturing Industries, Nec
PENNSYLVANIA ELECTRIC COIL LTD	MFG MTR COILS & REP MTRS	15015	1996	0.21	1.05		0.97	1.78		0.01	5.77	7694	Electrical Equipment & Supply
			1997	1.02	1.23		0.33	0.33		0.01	14.69		
			1998	1.09	1.29		1.24	2.78		0.01	15.05		
			1999	1.30	1.65	0.14	0.33	0.85	1.28	0.01	10.40		
			2000	1.30	1.65	0.08	0.47	1.94	0.09	0.01	9.20		
			2001	0.36	0.43	0.01	0.01	0.01	0.02	0.00	0.74		
			2002	0.57	0.74	0.01	0.03	0.08	0.04	0.01	2.67		
			2003	0.57	0.68	0.01	0.01	0.01	0.04	0.00	2.38		
			2004	0.55	0.66	0.01	0.01	0.01	0.04	0.00	3.25		
PHILIP SERVICES DUQUESNE BRICKETTING	BRICKETTING MANUFACTURER	15110	1998	0.20	0.23		22.68	45.36		0.00	14.17	2819	Industrial Inorganic Chemicals
			1999	0.18	0.21	20.84	20.84	22.92	0.01	0.00	12.75		
PITT PENN OIL CO.	PITT PENN OIL CO.	15030	1996	0.03	0.11		0.76	0.76		0.00	15.53	2992	Lubricating Oils And Greases
			1997	0.05	0.21		0.98	2.75		0.00	19.35		
			1998	0.16	0.19		0.86	2.48		0.00	16.91		
			1999	1.30	1.82	0.06	0.63	3.05	0.01	0.00	20.12		
			2000	1.38	1.94	0.16	0.68	3.27	0.01	0.00	20.74		
			2001	1.05	1.47	0.05	0.38	1.17	0.01	0.00	14.51		
			2002	1.02	1.50	0.10	0.43	2.05	0.01	0.00	7.78		
			2003	0.92	1.35	0.01	0.05	0.05	0.01	0.00	4.83		
			2004	0.98	1.44	0.05	0.05	0.05	0.01	0.00	4.59		
PITTSBURGH ALLEGHENY COUNTY THERMAL, LTD	PITTSBURGH ALLEGHENY COUNTY	15222	1996	19.40	94.29		1.46	1.47		0.74	0.68	4961	Steam Supply
			1997	36.20	120.68		0.82	0.82		0.26	2.37		
			1998	31.96	106.55		0.72	0.72		0.25	2.09		
			1999	35.73	119.10	0.81	0.81	0.82	2.43	0.34	2.34		
			2000	36.40	121.39	0.83	0.84	0.85	2.48	0.54	2.38		
			2001	34.06	87.85	0.77	0.79	0.81	2.40	0.54	2.24		
			2002	35.53	91.04	0.80	0.80	0.80	2.41	0.25	2.33		
			2003	38.10	94.77	0.86	0.88	0.89	2.66	0.39	2.50		

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PITTSBURGH BREWING CO. PITTSBURGH	PITTSBURGH. BREWING CO	15201	1996	22.24	30.42		24.67	64.75		101.24	5.86	2082	Malt Beverages
			1997	12.91	16.00		12.89	33.81		50.46	3.96		
			1998	16.54	20.56		16.55	43.64		68.90	4.30		
			1999	11.83	17.80	2.79	12.03	31.50	2.03	42.28	4.26		
			2000	17.10	21.18	3.47	15.84	41.70	0.32	58.61	4.24		
			2001	16.62	20.55	3.09	14.37	37.77	0.35	45.60	3.39		
			2002	22.54	28.03	4.56	21.82	57.74	0.30	77.91	3.47		
			2003	24.54	30.63	5.09	25.45	67.44	0.21	114.92	3.57		
			2004	23.19	28.93	8.28	21.54	57.73	3.91	94.63	3.31		
PITTSBURGH ELECTRICAL INSULATION	MFG&DIST ELEC INSULATION	15120	1997	0.07	0.08		0.00	0.00		0.00	10.78	5065	Electronic Parts And Equipment
			1998	0.07	0.08		0.00	0.00		0.00	5.54		
			1999	0.07	0.08	0.00	0.00	0.00	0.00	0.00	5.54		
			2000	0.06	0.07	0.01	0.01	0.01		0.00	9.52		
			2001	0.15	0.18	0.00	0.00	0.00		0.00	0.62		
			2002	0.06	0.07	0.00	0.00	0.00		0.00	0.76		
			2003	0.07	0.09	0.00	0.00	0.00		0.00	0.31		
			2004	0.71	0.85	0.02	0.02	0.02		0.01	0.50		
PITTSBURGH IAP/ARS	National Security	15108	2004	8.08	10.95	1.94	2.00	2.41	0.10	0.39	1.89	9711	National Security
PITTSBURGH TERMINALS CORP NEVILLE ISLAND		15225	1996	0.09	0.39		4.62	7.82		0.03	59.71	5171	Petroleum Bulk Stations & Terminals
		15225	1997								66.07	5171	
			1998								63.64		
			1999	0.28	0.45		0.03	0.03		0.03	68.43		
			2000	0.28	0.45	0.00	0.03	0.03		0.03	59.60		
			2001	0.28	0.45	0.00	0.03	0.03		0.03	38.89		
			2002	0.28	0.45	0.03	0.03	0.03		0.03	39.87		
			2003	0.30	0.47	0.03	0.03	0.03		0.03	28.10		
			2004	0.30	0.47	0.03	0.03	0.03		0.03	23.30		

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PITTSBURGH TERMINALS CORP. - CORAOPOLIS	MOTIVA ENTERPRISES LLC	15108	1996	6.10	2.40			0.00		0.00	38.53	5171	Petroleum Bulk Stations & Terminals
			1997	2.46	6.18		0.00	0.01		0.02	68.25		
			1998	6.36	2.62		0.00	0.00		0.02	55.45		
			1999	6.32	2.63	0.00	0.00	0.00	0.01	0.02	46.24		
			2000	7.71	3.16	0.00	0.00	0.00	0.01	0.01	59.48		
			2001	7.83	3.22	0.00	0.00	0.01	0.01	0.03	58.78		
			2002	7.57	3.14	0.00	0.00	0.01	0.01	0.04	52.73		
			2003	8.27	3.42	0.00	0.00	0.00	0.01	0.04	37.11		
			2004	9.03	3.66	0.00	0.00	0.00	0.00	0.00	42.87		
PPG INDUSTRIES - CHEMICALS TECHNICAL CTR	CHEMICAL R&D FACILITY	15146	1998	1.68	2.00		0.04	0.04		0.01	9.82	2812	Alkalies And Chlorine
			1999	1.68	2.00	0.04	0.04	0.04	1.68	0.01	14.51		
			2000	1.68	2.00	0.04	0.04	0.04	0.11	0.01	8.17		
			2001	2.48	2.95	0.06	0.06	0.06	0.17	0.02	9.92		
			2002	1.97	2.35	0.04	0.04	0.04	0.13	0.01	12.72		
			2003	1.97	2.35	0.04	0.04	0.04	0.13	0.01	15.63		
			2004	1.97	2.35	0.04	0.04	0.04	0.13	0.01	15.47		
PPG INDUSTRIES, INC.	FIBER GLASS RESEARCH CTR.	15238	1998	6.25	40.07		5.38	5.55		5.92	0.36	3231	Products Of Purchased Glass
PPG INDUSTRIES, INC. SPRINGDALE	PPG INDUSTRIES, INC.	15144	1996	2.89	11.58		2.51	2.51		0.05	202.75	2851	Paints And Allied Products
			1997	6.12	7.95		1.74	1.74		0.05	312.41		
			1998	7.03	7.31		2.25	2.25		1.12	296.88		
			1999	6.74	6.94	2.09	2.09	2.09	4.38	1.13	254.16		
			2000	7.17	6.54	3.00	3.01	3.01	7.29	2.05	234.24		
			2001	6.36	5.61	0.36	2.67	2.67	6.49	2.00	200.10		
			2002	2.90	5.75	0.35	3.01	3.01	6.28	1.77	223.72		
			2003	4.52	3.96	2.33	2.33	2.33	5.18	1.46	165.09		
			2004	2.85	2.26	2.02	2.41	2.41	0.13	1.15	134.03		

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PRECOAT METALS, A DIV. OF SEQUA COATINGS	PRECOAT METALS	15132	1996	3.07	12.51		0.56	0.56		0.06	56.96	3479	Metal Coatingc And Allied Services,ne
			1997	10.04	11.95		0.23	0.23		0.07	68.42		
			1998	6.91	8.22		0.16	0.16		0.05	46.17		
			1999	8.72	10.39	0.20	0.20	0.20	0.59	0.06	48.54		
			2000	8.87	10.56	0.20	0.20	0.20	0.59	0.06	41.73		
			2001	12.24	14.57	0.28	0.28	0.28	0.81	0.09	47.35		
			2002	9.40	11.19	0.21	0.21	0.21	0.62	0.07	50.20		
			2003	12.16	14.47	0.27	0.27	0.27	0.81	0.09	56.59		
			2004	9.46	11.26	0.21	0.21	0.21	0.63	0.07	58.39		
PRESSURE CHEMICAL CO.	CHEMICAL PRODUCTION PLANT	15201	1996	0.09	0.41		0.02	0.02		0.00	14.80	2869	Industria l Organic Chemicals,nec
			1997	1.51	1.80		0.03	0.03		0.01	20.80		
			1998	0.34	0.40		0.01	0.01		0.00	26.12		
			1999	0.06	0.07	0.00	0.00	0.00	0.00	0.00	26.20		
			2000	0.40	0.48	0.01	0.01	0.01	0.03	0.00	29.73		
			2001	0.34	0.41	0.01	0.01	0.01	0.02	0.00	24.02		
			2002	0.42	0.50	0.01	0.01	0.01	0.03	0.00	22.03		
			2003	0.46	0.55	0.01	0.01	0.01	0.03	0.00	22.03		
			2004	0.48	0.58	0.01	0.01	0.01	0.03	0.00	18.82		
PRUETT-SCHAFFER . CHEMICAL CO., INC	PRUETT-SCHAFFER CHEMICAL CO., INC	15204	1996	0.01	0.07		1.01	1.19		0.00	3.52	2851	Paints And Allied Products
			1997	0.04	0.05		0.83	0.98		0.00	3.88		
			1998	0.04	0.05		1.02	1.20		0.00	3.70		
			1999	0.06	0.07	0.11	1.07	1.26	0.06	0.00	4.59		
			2000	0.05	0.06	0.11	1.03	1.22	0.00	0.00	6.82		
			2001	0.10	0.12	0.09	0.92	1.08	0.00	0.00	6.21		
			2002	0.12	0.14	0.76	0.76	0.89	0.01	0.00	3.89		
			2003	0.17	0.19	0.48	0.48	0.56	0.01	0.00	3.72		
			2004	0.18	0.20	0.55	0.55	0.65	0.01	0.00	4.11		

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RANBAR TECHNOLOGY INC.	RANBAR TECHNOLOGY INC.	15116	1996	0.29	1.40		2.06	2.06		0.00	17.96	2851	Paints And Allied Product
			1997	1.18	1.40		2.45	2.72		0.01	18.98		
			1998	1.01	1.20		0.92	0.92		0.01	15.10		
			1999	1.09	1.30	0.97	1.68	1.68	0.07	0.01	16.26		
			2000	1.08	1.28	0.09	0.64	0.65	0.07	0.01	16.61		
			2001	1.02	1.22	0.08	0.61	0.61	0.07	0.01	15.86		
			2002	1.09	1.30	0.66	0.66	0.66	0.07	0.01	18.90		
			2003	0.82	0.97	0.41	0.41	0.41	0.06	0.01	8.95		
			2004	0.20	0.24	0.01	0.01	0.01	0.01	0.00	0.57		
REDLAND BRICK INC HARMAR PLANT	BRICK MANUFACTURER	15024	1998	47.24	14.58		13.47	19.12		23.69	1.73	3251	Brick And Structural Clay Tile
			1999	21.72	8.79	1.21	9.91	12.37		57.32	1.57		
			2000	24.60	14.90	1.14	11.07	15.37	18.07	83.98	2.04		
			2001	25.21	12.76	1.19	11.33	18.50	11.57	41.69	1.82		
			2002	56.11	29.29	15.59	20.82	31.48	3.96	2.78	3.21		
			2003	58.81	31.52	17.07	19.38	27.76	5.30	38.31	3.32		
			2004	65.49	35.20	17.53	21.84	32.06	13.03	22.86	5.84		
REICHHOLD, INC.	REICHHOLD,INC.	15017	1996	5.20	20.79		0.93	0.96		0.47	14.85	2821	Plastics Materials And Resins
			1997	11.07	13.53		19.46	19.83		0.08	9.01		
			1998	10.58	12.60		27.26	27.69		0.08	7.66		
			1999	10.66	17.14	2.93	27.14	27.15	2.25	0.08	7.95		
			2000	10.65	12.75	2.14	19.18	19.18	0.72	0.08	4.91		
			2001	9.75	11.62	2.15	19.08	19.07	0.66	0.25	3.87		
			2002	9.93	11.83	19.20	19.20	19.20	0.67	0.07	12.32		
			2003	9.06	12.05	19.13	19.17	19.24	0.68	11.46	14.87		
			2004	22.60	20.78	12.06	12.06	12.06	0.59	0.783704	16.04		

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ROYSTON LABORATORIES DIVISION	COATING MANUFACTURER	15238	1996	0.05	0.27		0.04	0.03		0.00	7.09	2891	Adhesives And Sealants
			1997	0.01	0.01		0.03	0.05		0.00	6.22		
			1998	0.01	0.01		0.02	0.05		0.00	5.33		
			1999	0.04	0.04	0.02	0.02	0.04	0.00	0.00	4.78		
			2000	0.04	0.05	0.01	0.05	0.05	0.00	0.00	7.19		
			2001	0.03	0.04	0.01	0.10	0.10	0.00	0.00	9.60		
			2002	0.03	0.04	0.09	0.09	0.09	0.00	0.00	6.09		
			2003	0.04	0.05	3.14	3.14	3.14	0.00	0.00	6.38		
			2004	0.05	0.05	3.40	3.40	3.40	0.00	0.00	6.47		
SANYO . CHEMICAL & RESIN, INC	SANYO JEFFERSON SITE	15088	2001			0.02	0.25	0.25			3.40	2821	Plastics Materials And Resins
			2002			0.19	0.19	0.19			3.17		
			2003			0.12	0.12	0.16			3.60		
			2004			1.76	1.76	1.79			8.37		
SCHENLEY SCHOOL	SCHENLEY SCHOOL	15213	1998	0.84	1.00		0.02	0.02		0.01	0.06	8211	Elementary And Secondary Schools
			1999	0.91	1.08	0.02	0.02	0.02	0.06	0.01	0.06		
			2000	0.85	1.02	0.02	0.02	0.02	0.06	0.01	0.06		
			2001	0.77	0.91	0.02	0.02	0.02	0.05	0.01	0.05		
			2002	0.97	1.15	0.02	0.02	0.02	0.07	0.01	0.06		
			2003	1.02	1.21	0.02	0.02	0.02	0.07	0.01	0.07		
			2004	0.93	1.11	0.02	0.02	0.02	0.06	0.01	0.06		
SERVSTEEL, INC.	REFRACTORY MANUFACTURER	15064	1998	1.47	1.75		0.86	0.55		0.01	1.67	3255	Clay Refractories
			1999	1.34	1.59	0.53	0.53	0.53	2.02	2.26	1.93		
			2000	1.27	1.51	0.43	0.43	0.43	3.05	4.72	3.05		
			2001	1.16	1.38	0.42	0.42	0.42	2.78	3.01	2.77		

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SHALER AREAL INTERMEDIATE SCHOOL	EDUCATIONAL COMPLEX	15116	1998	0.42	0.50		0.01	0.01			0.03	8299	Schools & Educational Services
			1999	0.42	0.50	0.01	0.01	0.01	0.03		0.03		
			2000	0.42	0.50	0.01	0.01	0.01	0.03		0.03		
			2001	0.42	0.50	0.01	0.01	0.01	0.03	0.00	0.03		
			2002	0.42	0.50	0.01	0.01	0.01	0.03	0.00	0.03		
			2003	0.42	0.50	0.01	0.01	0.01	0.03	0.00	0.03		
			2004	0.42	0.50	0.01	0.01	0.01	0.03	0.00	0.03		
SHENANGO INC.	SHENANGO COKE PLANT	15225	1996	191.49	442.75		66.28	250.68		2192.73	38.87	3312	Blast Furnaces And Steel Mills
			1997	208.02	462.69		55.03	197.48		1030.02	44.49		
			1998	199.52	477.03		133.52	271.76		1092.19	44.30		
			1999	254.08	427.58	46.46	63.31	180.96		496.92	45.42		
			2000	390.61	454.38	46.13	71.02	244.29	14.48	493.29	43.93		
			2001	389.38	424.50	38.23	68.44	244.75	11.82	468.80	37.44		
			2002	364.95	465.20	38.96	63.56	252.98	29.94	307.78	27.39		
			2003	371.42	422.71	38.79	58.71	180.55	30.92	349.38	24.29		
			2004	433.21	385.52	39.98	61.75	187.41	30.20	447.13	39.41		
SOUTH HIGH SCHOOL	SOUTH HIGH SCHOOL	15203	1998	0.51	0.65		0.01	0.01		0.00	0.04	8211	Elementary Ands Secondary School
			1999	0.59	0.70	0.01	0.01	0.01	0.04	0.00	0.04		
			2000	0.71	0.85	0.02	0.02	0.02	0.05	0.01	0.05		
			2001	0.61	0.73	0.01	0.01	0.01	0.04	0.00	0.04		
			2002	0.69	0.83	0.02	0.02	0.02	0.05	0.00	0.05		
			2003	0.65	0.77	0.01	0.01	0.01	0.04	0.00	0.04		
			2004	0.66	0.78	0.01	0.01	0.01	0.04	0.00	0.04		
STATE CORRECTIONAL . INSTITUTION -- PGH	STATE CORRECTIONAL INSTIT	15233	1996	8.64	13.99		16.68	82.63		34.16	0.53	9223	Correctional Institutions
			1997	11.12	13.67		11.85	19.82		40.78	0.60		
			1998	11.12	13.77		3.63	4.92		40.78	0.60		
			1999	11.56	14.35	0.30	3.97	5.38	0.13	44.77	0.58		
			2000	10.97	13.82	0.30	3.79	5.13	0.12	42.55	0.78		
			2001	7.68	9.61	0.21	2.29	3.09	0.18	25.49	0.57		
			2002	6.83	8.56	0.19	2.03	2.74	0.13	22.59	5.23		
			2003	8.94	12.07	0.32	2.77	3.71	0.19	30.20	0.29		
			2004	12.52	15.74	0.34	4.87	6.61	2.12	55.28	0.12		

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SUBURBAN GENERAL HOSPITAL	HOSPITAL	15202	1996	1.57	3.89		0.81	1.47		0.66	2.28	8062	General Medical & Surgical Hospitals
			1997	2.70	3.23		0.73	1.44		0.66	1.83		
			1998	2.87	3.43		0.74	1.45		0.67	1.97		
			1999	1.80	2.15	0.06	0.10	0.16	0.12	0.07	1.07		
			2000	1.56	1.86	0.04	0.04	0.04	0.11	0.01	0.80		
SUN REFINING AND MARKETING, BLAWNOX	SUN REFINING AND MARKETING	15238	1996								29.42	5171	Petroleum Bulk Stations & Terminals
			1997	1.18	0.47		0.00	0.00		0.00	7.84		
			1998	0.03	0.03		0.00	0.00		0.00	2.48		
			1999	0.03	0.03	0.00	0.00	0.00	0.00	0.00	3.23		
			2000	0.03	0.03	0.00	0.00	0.00	0.00	0.00	3.08		
			2001	0.13	0.16	0.00	0.00	0.00	0.01	0.00	2.22		
			2002	0.13	0.16	0.00	0.00	0.00	0.01	0.00	3.01		
			2003	0.13	0.16	0.00	0.00	0.00	0.01	0.00	3.03		
			2004	0.12	0.15	0.00	0.00	0.00	0.01	0.00	3.35		
SUNOCO CHEMICALS INC.. NEVILLE ISLAND	MANUFACTURE OF PLASTICIZER	15225	1996	49.30	5.40		2.93	7.34		0.10	90.34	2869	Industrial Organic Chemicals,nec
			1997	44.80	5.10		3.56	3.56		0.03	68.39		
			1998	44.80	5.10		4.02	7.42		0.03	39.89		
			1999	44.80	5.10	3.19	3.81	7.28	0.22	0.03	37.10		
			2000	18.49	2.87	3.00	3.26	4.72	0.03	0.03	16.02		
			2001	0.05	0.00	0.24	2.56	2.60		0.00	8.01		
			2002	4.01	0.10	0.53	0.60	0.96		0.01	12.11		
			2003	7.64	0.20	2.64	2.71	3.10		0.01	11.00		
			2004	8.74	0.23	2.48	2.49	2.51		0.01	29.72		

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SUNOCO, INC -PGH TERMINAL	GASOLINE TERMINAL	15201	1996								38.27	5171	Petroleum Bulk Stations & Terminals
			1997								41.27		
			1998								45.44		
			1999								42.00		
			2000								46.13		
			2001								54.37		
			2002								50.21		
			2003								21.00		
			2004								24.24		
THE LANE CONSTRUCTION BRIDGEVILLE	BRIDGEVILLE PLANT	15017	1996	3.62	3.20		0.11	0.46		20.27	0.97	2951	Paving Mixtures And Blocks
			1997	2.58	15.47		27.78	102.78		93.23	7.55		
			1998	3.13	6.34		11.45	29.05		20.14	2.06		
			1999	3.42	8.84	1.01	9.96	24.79	2.47	36.93	2.12		
			2000	3.25	9.50	0.71	6.96	20.20	1.16	47.43	1.93		
			2001	1.11	11.82	1.44	14.27	34.84	1.60	73.75	0.87		
			2002	1.32	25.48	4.14	4.14	18.89	1.04	29.07	6.45		
			2003	1.24	25.42	3.67	3.67	17.98	1.04	28.87	6.38		
			2004	33.01	21.27	0.27	0.35	1.05	0.33	26.98	3.69		
THE LANE CONSTRUCTION CORF SPRINGDALE	CRUSHING AGGREGATES- RIVER	15144	1996				61.50	61.50				1442	Construction Sand And Gravel
			1997				3.20	13.53					
			1998				6.54	17.06			0.11		
			1999	5.33	13.05	0.74	9.13	27.09	0.49	0.10	0.20		
			2000	5.80	14.20	1.11	9.35	33.32	0.35	0.11	0.21		
			2001	0.12	0.29	0.15	1.18	2.61	0.05	0.00	0.09		

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THE LANE MCKEES ROCK ASPHALT PLANT	ASPHALT BATCH MIX PLANT	15136	1996	2.83	5.69		14.47	51.64		24.98	0.68	2951	Paving Mixtures And Blocks
			1997	114.48	6.18		82.21	537.32		79.19	15.63		
			1998	31.31	15.47		12.24	31.56		82.17	2.66		
			1999	6.24	16.12	1.45	11.27	15.16	4.32	90.88	3.45		
			2000	4.64	13.07	0.97	9.57	13.04	1.62	85.82	2.64		
			2001	2.66	18.74	2.06	20.23	27.48	3.52	146.76	5.65		
			2002	1.56	27.57	4.43	4.44	4.46	0.67	22.43	5.40		
			2003	1.48	36.60	4.94	4.95	27.99	0.67	29.22	6.90		
			2004	61.69	40.33	0.36	0.52	1.66	0.40	21.51	4.42		
THE VALSPAR CORPORATION	VALSPAR COATINGS	15233	1996	0.42	1.68		0.76	1.08		0.08	46.01	2851	Paints And Allied Products
			1997	1.26	1.50		0.72	0.72		0.01	46.82		
			1998	1.63	1.95		0.32	0.31		0.01	42.51		
			1999	1.80	2.14	0.50	2.54	2.98	0.05	0.01	47.93		
			2000	2.10	2.50	0.29	2.54	2.99	0.04	0.01	47.68		
			2001	1.58	1.88	0.43	4.00	4.70	0.03	0.01	18.45		
			2002	1.75	2.08	3.04	3.04	3.57	0.04	0.01	16.44		
			2003	1.81	2.15	2.80	2.80	3.29	0.04	0.01	17.47		
			2004	1.75	2.08	0.50	0.50	0.58	0.04	0.01	17.19		
TRINITY INDUSTRIES PLANT 112	RAILCAR AXLE FORGINGS	15136	1998	22.30	26.55		1.31	1.59		0.16	1.46	3462	Iron And Steel Forgings
			1999	21.46	25.55	1.29	1.29	1.29	1.46	0.15	1.41		
			2000	12.59	14.99	1.09	1.09	1.09	0.85	0.09	0.82		
			2001	4.16	4.94	0.09	0.09	0.09	0.28	0.03	0.27		
			2002	6.28	7.48	0.13	0.13	0.13	0.40	0.04	0.39		
			2003	17.39	20.70	0.39	0.39	0.39	1.11	0.12	1.14		
			2004	24.80	30.07	1.05	1.17	1.79	1.72	0.18	1.66		
TRINITY INDUSTRIES, INC. PLT # 441	RAILCAR MAINTENANCE	15136	1998	0.89	1.06		1.10	1.33		0.01	8.01	4789	Transportation Services, Nec
			1999	0.89	1.06	0.96	1.10	1.88	0.06	0.01	14.31		
			2000	0.89	1.06	1.02	1.16	1.94	0.06	0.01	14.88		
			2001	0.28	0.33	0.12	0.12	0.92	0.02	0.00	9.10		
			2002	0.28	0.33	0.12	0.12	0.92	0.02	0.00	9.10		

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TUBE CITY, INC.	SCRAP METAL PROCESSOR	15236	1998	0.11	0.40		5.80	13.15		0.00	0.25	5093	Scrap And Waste Materials
			1999	0.04	0.05	1.29	3.71	12.22	0.00	0.00	0.03		
			2000	0.04	0.05	1.29	3.71	12.22	0.00	0.00	0.03		
			2001	0.05	0.07	0.58	3.13	5.74	0.00	0.00	0.01		
			2002	0.05	0.07	0.65	3.08	5.72	0.00	0.00	0.01		
			2003	0.07	0.08	0.65	3.08	5.72	0.00	0.00	0.01		
			2004	0.15	0.17	1.17	7.73	15.99	0.01	0.00	0.01		
UNION ELECTRIC STEEL CORP.	HARDENING OF STEEL	15106	1998	4.16	4.95		0.09	0.09		0.03	1.45	3547	Rolling Mil l Machinery
			1999	3.38	4.02	0.08	0.08	0.08	0.23	0.02	3.94		
			2000	4.03	4.80	0.09	0.09	0.09	0.27	0.03	4.36		
			2001	3.69	5.89	0.08	0.08	0.08	0.25	0.03	5.54		
			2002	4.47	7.15	0.10	0.10	0.10	0.30	0.03	5.54		
			2003	5.06	6.02	0.11	0.11	0.11	0.34	0.04	5.15		
			2004	5.37	6.39	0.12	0.12	0.12	0.36	0.04	5.17		
UNITED REFINING CO. SPRINGDALE	ASPHALT STORAGE& TERMINAL	15144	1998	2.37	4.32		0.16	0.10		2.90	0.76	2951	Paving s Mixtures And Block
			1999	1.40	3.08	0.04	0.10	0.18	0.17	6.40	0.15		
			2000	0.87	1.20	0.02	0.03	0.04	0.07	0.67	0.13		
			2001	1.10	1.65	0.03	0.04	0.06	0.09	1.35	0.19		
			2002	0.59	0.70	0.01	0.01	0.01	0.04	0.00	0.11		
			2003	4.47	17.05	0.22	0.84	1.68	1.11	59.29	0.56		
			2004	0.33	0.54	0.01	0.02	0.02	0.03	0.58	0.07		
UNIV OF PITT APPLIED RESEARCH CTR- UPARC	OFFICE, LAB, INDUST. SITE	15238	1998	9.89	8.09		0.35	0.71		0.06	0.56	8741	Management Services
			1999	9.92	7.98	0.17	0.22	0.33	0.46	0.06	0.59		
			2000	9.07	8.64	0.18	0.21	0.27	0.49	0.06	0.56		
			2001	9.08	8.64	0.18	0.21	0.27	0.49	0.06	0.56		
			2002	9.11	8.71	0.18	0.21	0.27	0.49	0.06	0.57		
			2003	9.70	9.41	0.19	0.22	0.29	0.53	0.07	0.61		
			2004	7.25	8.65	0.17	0.17	0.17	0.49	0.05	0.48		

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UNIVERSAL STAINLESS & ALLOY PRODUCTS	UNIVERSAL STAINLESS	15017	1996	65.69	28.44		22.24	22.24		1.54	8.25	3312	Blast Furnaces And Steel Mills
			1997	130.57	34.01		44.91	69.54		0.49	13.53		
			1998	112.24	32.51		38.57	59.99		0.43	11.59		
			1999	112.67	32.52	14.20	36.02	55.27	1.71	0.43	11.48		
			2000	113.36	33.22	14.82	29.60	60.74	1.75	0.44	11.26		
			2001	124.17	52.43	13.01	23.27	30.23	1.80	4.58	13.36		
			2002	111.26	45.37	12.10	21.53	27.80	1.56	3.93	11.98		
			2003	104.04	45.59	11.70	20.76	31.00	1.62	3.79	11.14		
			2004	149.67	44.01	13.74	24.19	35.48	1.10	5.15	16.01		
UNIVERSITY OF PITTSBURGH (MAIN CAMPUS)	UNIVERSITY	15213	2002	4.08	5.70	0.17	0.17	0.17	0.34	0.10	6.10	8221	Colleges And Universities, Nec
			2003	3.60	4.93	0.14	0.14	0.14	0.29	0.22	4.99		
			2004	3.39	4.61	0.13	0.13	0.13	0.27	0.07	4.47		
UPMC MAGEE HOSPITAL	MED. SERVICES FOR WOMEN	15213	1998	4.59	5.18		0.12	0.12		0.10	1.70	8062	General Medical & Surgical Hospitals
			1999	5.14	6.05	0.12	0.08	0.12	0.34	0.07	1.69		
			2000	5.27	6.27	0.13	0.09	0.13	0.36	0.08	1.70		
			2001	5.31	6.55	0.14	0.14	0.14	0.36	0.14	1.72		
			2002	5.42	7.00	0.17	0.17	0.53	0.37	0.88	1.75		
			2003	5.40	6.94	0.16	0.17	0.17	0.36	0.66	1.75		
			2004	5.40	6.96	0.14	0.14	0.14	0.36	0.56	1.51		
UPMC MCKEESPORT	HOSPITAL	15132	1998	5.68	7.49		0.08	0.08		0.18	4.11	8062	General Medica l & Surgical Hospitals
			1999	5.55	7.59	0.11	0.11	0.11	0.20	0.13	3.53		
			2000	3.17	4.51	0.15	0.15	0.15	0.22	0.64	2.73		
			2001	3.46	8.78	0.24	0.28	0.36	0.30	3.90	4.43		
			2002	2.94	8.97	0.21	0.21	0.21	0.15	0.22	3.33		
			2003	4.70	13.64	0.29	0.32	0.35	0.27	1.28	3.15		
			2004	5.02	13.83	0.27	0.28	0.28	0.26	0.11	3.93		

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UPMC OAKLAND CAMPUS	HEALTH CARE FACILITY	15213	1998	6.13	7.31		0.12	1.11		0.48	2.22	8062	General Medical & Surgical Hospitals
			1999	6.61	7.89	0.13	0.13	1.56	0.38	0.68	2.35		
			2000	6.34	7.57	0.23	0.64	1.33	0.37	0.56	2.59		
			2001	6.03	7.50	0.27	0.88	1.65	0.34	0.74	2.76		
			2002	5.86	7.13	0.23	0.71	1.29	0.35	0.58	1.98		
			2003	5.45	6.63	0.12	0.14	0.15	0.37	0.07	1.55		
			2004	5.23	6.30	0.12	0.16	0.15	0.35	0.05	1.46		
UPMC SHADYSIDE	HOSPITAL & MEDICAL CENTER	15232	1998	8.36	24.06		0.92	0.92		0.43	4.35	8062	General Medica l & Surgical Hospitals
			1999	7.77	14.26	0.60	1.42	1.42	0.39	0.58	2.59		
			2000	7.43	11.46	0.42	0.50	0.61	0.44	0.38	2.53		
			2001	6.70	9.26	0.26	0.26	0.26	0.42	0.42	2.37		
			2002	10.18	13.44	0.33	0.33	0.33	0.65	0.45	1.51		
			2003	11.21	13.81	0.29	0.29	0.29	0.75	0.22	2.58		
			2004	11.65	14.53	0.31	0.31	0.32	0.78	0.17	2.63		
UPMC SOUTHSIDE	HOSPITAL	15203	1998	1.51	1.80		0.03	0.03		0.01	0.10	8062	General Medical & Surgical Hospitals
			1999	1.37	1.63	0.03	0.03	0.03	0.09	0.01	0.09		
			2000	1.38	1.64	0.03	0.03	0.03	0.09	0.01	0.09		
			2001	1.48	1.77	0.03	0.03	0.03		0.03	0.10		
			2002	1.79	2.48	0.07	0.07	0.07	0.12	0.06	0.15		
			2003	1.12	1.41	0.03	0.03	0.03	0.07	0.01	0.08		
			2004	1.30	1.57	0.03	0.03	0.03	0.09	0.02	0.09		
US AIRWAYS MAINTENANCE BASE	US AIRWAYS MTCE. BASE	15231	1996	6.07	10.17		1.40	1.39		0.44	43.03	4581	Airports, Flying Fields, And Services
			1997	8.91	9.68		1.23	1.14		0.24	44.03		
			1998	8.12	7.49		1.08	1.08		0.18	36.11		
			1999	10.48	8.66	0.30	1.06	1.04	0.29	0.21	39.23		
			2000	10.61	9.03	1.21	1.16	1.16		0.22	63.57		
			2001	13.99	7.15	0.38	0.38	0.38		0.17	63.65		
			2002	11.39	5.47		0.10	0.10			25.57		
			2003	4.30	6.05	0.12	0.13	0.16	0.26	0.07	44.08		
			2004	4.05	7.31	0.58	0.59	0.61	0.24	0.14	51.97		

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US STEEL CORPORATION IRVIN PLANT	USS IRVIN PLANT	15034	1996	148.25	1194.82		132.81	151.59		147.18	38.10	3312	Blast Furnaces And Steel Mills
			1997	335.00	647.04		129.61	142.04		90.56	76.19		
			1998	252.63	606.86		131.85	143.92		68.44	68.03		
			1999	216.67	638.30	29.33	31.19	43.37	63.28	69.65	97.56		
			2000	234.21	547.88	30.57	32.00	43.88	59.58	47.39	103.52		
			2001	188.85	431.10	25.92	27.04	36.65	86.47	219.84	117.94		
			2002	227.48	596.25	26.41	36.79	54.54	43.44	330.23	86.93		
			2003	204.30	563.25	24.36	34.14	51.31	40.89	384.04	80.75		
			2004	242.85	699.04	33.68	44.45	63.80	24.27	523.35	96.24		
USS - CLAIRTON WORKS	USS - CLAIRTON WORKS	15025	1996	3805.65	9079.76		1191.16	3571.49		1976.96	478.75	3312	Blast Furnaces And Steel Mills
			1997	3844.47	9362.46		1057.48	2830.71		1581.79	482.12		
			1998	3503.91	9230.27		945.31	2710.83		1338.93	413.11		
			1999	3186.76	8710.04	351.35	795.12	2481.13	174.26	1075.63	373.80		
			2000	3461.93	6767.39	330.50	707.99	2361.41	389.24	1040.41	377.37		
			2001	3959.10	6089.06	310.80	687.69	2274.36	344.87	1221.08	348.21		
			2002	4051.00	5764.22	319.04	740.52	2461.20	109.06	1356.39	352.99		
			2003	4141.76	4863.14	327.83	752.33	2528.66	114.19	1572.46	353.28		
			2004	3893.90	4367.92	306.32	711.93	2386.92	117.01	1653.76	448.60		
USS CORPORATION EDGAR THOMSON WORKS	USS EDGAR THOMSON PLANT	15104	1996	1621.75	572.09		426.07	590.06		886.33	89.42	3312	Blast Furnaces And Steel Mills
			1997	1398.93	295.42		311.54	417.53		685.80	24.04		
			1998	1484.43	294.88		316.84	420.68		695.43	25.83		
			1999	1563.63	312.99	266.28	330.54	453.94	700.30	745.74	28.28		
			2000	1482.74	290.60	257.34	315.68	426.43	674.37	715.52	26.60		
			2001	1057.23	285.11	193.75	245.28	355.48	468.05	954.58	20.88		
			2002	1493.84	298.17	291.23	359.47	494.71	671.03	1251.56	23.77		
			2003	1518.60	310.34	308.12	374.47	518.26	697.42	973.49	21.39		
			2004	1337.89	273.78	300.21	344.51	477.57	719.10	672.05	23.23		

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Facility Name	Description Line	ZIP	Year of Inventory	Facility Criteria Emissions CO	NOx	PM2.5	PM10	PT	PMCond	SO2	VOC	Standard Industrial Code	SIC Description
VA MEDICAL CENTER ASPINWAL FACILITY	HEALTH CARE FACILITY	15240	1998	1.64	1.95		0.04	0.04		0.01	0.23	8051	Skilled Nursings Care Facilitie
			1999	2.31	2.75	0.05	0.05	0.05	0.16	0.02	0.34		
			2000	1.67	2.33	0.08	0.08	0.08	0.14	1.38	0.21		
			2001	1.19	2.87	0.04	0.10	0.18	0.16	4.66	0.17		
			2002	1.75	2.08	0.04	0.04	0.04	0.12	0.01	0.21		
			2003	1.68	2.18	0.04	0.05	0.06	0.13	0.76	0.21		
			2004	1.76	2.10	0.04	0.04	0.04	0.12	0.01	0.22		
VA MEDICAL CENTER HIGHLAND DRIVE FAC	HEALTH CARE FACILITY	15206	1998	5.14	6.10		0.12	0.12		0.04	0.49	8062	General Medical & Surgical Hospitals
			1999	5.22	6.25	0.12	0.12	0.12	0.36	0.19	0.56		
			2000	5.16	7.05	0.24	0.24	0.24	0.41	7.23	0.54		
			2001	3.72	8.41	0.11	0.28	0.50	0.46	12.74	0.36		
			2002	2.17	2.59	0.05	0.05	0.05	0.15	0.05	0.42		
			2003	4.35	5.23	0.10	0.10	0.11	0.30	0.25	0.47		
			2004	5.08	6.05	0.11	0.11	0.11	0.34	0.04	0.42		
VA MEDICAL CENTER OAKLAND FACILITY	HEALTH CARE FACILITY	15240	1998	2.73	3.25		0.06	0.06		0.02	5.86	8062	General Medical & Surgical Hospitals
			1999	2.94	3.51	0.07	0.07	0.07	0.20	0.09	5.95		
			2000	2.82	3.69	0.11	0.11	0.11	0.21	1.38	5.74		
			2001	2.12	4.78	0.06	0.16	0.29	0.26	7.20	5.86		
			2002	3.23	3.85	0.07	0.07	0.07	0.22	0.02	6.63		
			2003	3.03	3.88	0.07	0.09	0.11	0.22	1.17	5.33		
			2004	3.32	3.95	0.08	0.08	0.08	0.22	0.02	6.55		
VALLEY PROTEINS (PA), INC.	RENDERING FACILITY	15225	1998	7.24	8.68		2.87	2.87		0.11	0.47	2077	Animal And Marine Fats And Oil
			1999	4.00	4.76	0.19	0.19	0.28	0.27	0.03	0.26		
			2000	3.94	4.69	0.19	0.49	0.80	0.27	0.03	0.26		
			2001	0.12	10.11	0.16	0.53	1.00	0.00	0.03	0.02		
			2002	0.11	9.16	0.15	0.50	0.94	0.35	0.01	0.02		
			2003	0.07	4.71	0.13	0.41	0.74	0.18	0.19	0.01		
			2004	0.00	0.00	0.02	0.02	0.03	0.00	0.00	0.00		

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Facility Name	Description Line	ZIP	Year of Inventory	Facility Criteria Emissions CO	NOx	PM2.5	PM10	PT	PMCond	SO2	VOC	Standard Industrial Code	SIC Description
VORTEC U-PARC	PROCESS	15238	1999	0.09	0.18	0.02	0.02	0.02		0.00		8731	Commercial
PROCESS TEST FACILITY	TESTING FACILITY		2000	0.03	0.04	0.00	0.00	0.00	0.00	0.00	0.00		Physical Research
			2001	0.02	0.03	0.00	0.00	0.00	0.00	0.00	0.00		
			2002	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00		
WATSON STD CO.	HARWICK PLANT	15049	1998				2.15	2.53			14.82	2851	Paints And
			1999			0.00	0.05	0.06			12.78		Allied Products
			2000			0.01	0.04	0.05			11.11		
			2001			0.04	0.10	0.20			11.25		
			2002			0.58	0.58	0.68			17.84		
			2003			0.63	0.63	0.75			15.57		
			2004			1.06	1.06	1.06			14.26		
WATSON STD CO.	NEVILLE ISLAND	15225	1998				6.51	7.66			5.74	2851	Paints Ands
NEVILLE ISLAND	PLANT		1999			0.14	1.35	1.58			7.48		Allied Product
			2000			0.01	0.14	0.17			6.81		
			2001			0.02	0.14	0.16			7.13		
			2002			0.00	0.00	0.00			9.78		
			2003			0.09	0.09	0.10			9.87		
			2004			0.10	0.10	0.10			9.44		
WESTINGHOUSE	WESTINGHOUSE	15208	1998	0.92	1.10		0.02	0.02		0.01	0.06	8211	Elementary
SCHOOL	SCHOOL		1999	0.81	0.97	0.02	0.02	0.02	0.06	0.01	0.05		And Secondary Schools
			2000	0.78	0.92	0.02	0.02	0.02	0.05	0.01	0.05		
			2001	0.51	0.61	0.01	0.01	0.01	0.03	0.00	0.03		
			2002	0.66	0.78	0.01	0.01	0.01	0.04	0.00	0.04		
			2003	0.67	0.80	0.02	0.02	0.02	0.05	0.00	0.04		
			2004	0.61	0.73	0.01	0.01	0.01	0.04	0.00	0.04		

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Facility Name	Description Line	ZIP	Year of Inventory	Facility Criteria Emissions CO	NOx	PM2.5	PM10	PT	PMCond	SO2	VOC	Standard Industrial Code	SIC Description
WHEMCO	METAL HEAT	15120	1998	4.33	4.17		0.60	0.60		0.03	0.28	3398	Metal Heat
HAYS PLANT	TREATING		1999	2.70	2.86	0.19	0.56	2.62	0.18	0.02	0.18		Treating
			2000	3.16	2.79	0.20	0.59	2.76	0.21	0.02	0.21		
			2001	2.26	2.00	0.09	0.20	0.82	0.15	0.02	0.15		
			2002	3.06	2.71	0.11	0.22	0.84	0.21	0.02	0.20		
			2003	3.51	3.34	0.12	0.23	0.85	0.24	0.03	0.23		
			2004	3.81	3.50	0.13	0.24	0.86	0.26	0.03	1.10		
WHEMCO	METAL	15120	1998	3.93	4.75		0.09	0.09		0.03	1.40	3547	Rolling Mill
WEST HOMESTEAD FACILITY	MACHINING/FINISHING		1999	3.54	4.21	0.08	0.08	0.08	0.24	0.03	1.38		Machinery
			2000	3.78	4.50	0.09	0.09	0.09	0.26	0.03	1.39		
			2001	2.08	2.48	0.05	0.05	0.05	0.14	0.01	2.39		
			2002	2.09	2.54	0.05	0.05	0.05	0.14	0.02	1.91		
			2003	2.51	3.00	0.06	0.06	0.06	0.17	0.02	1.49		
			2004	2.32	2.70	0.05	0.05	0.05	0.16	0.02	1.88		
WINTHROP	HIGH RISE	15219	1998	5.30	6.31		0.12	0.09		0.04	0.35	6512	Nonresidential
MANAGEMENT	OFFICE BLDG		1999	5.24	6.24	0.12	0.12	0.12	0.36	0.04	0.34		Building Operators
US STEEL TOWER			2000	5.73	6.82	0.13	0.13	0.13	0.39	0.04	0.38		
			2001	4.23	9.06	0.12	0.29	0.52	0.50	12.90	0.25		
			2002	5.88	7.00	0.13	0.13	0.13	0.40	0.04	0.39		
			2003	6.01	7.15	0.14	0.14	0.14	0.41	0.04	0.39		
			2004	5.17	6.15	0.12	0.12	0.12	0.35	0.04	0.34		
WOODLINE	PLASTICS	15084	2000	0.04	0.05	0.32	0.32	0.32		0.00	13.67	3087	Custom Compound
PRODUCTS INC.	MANUFACTURING		2001	0.03	0.04	0.24	0.24	0.24		0.00	7.97		Purchased Resins

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Air Quality Program

Point Source Criteria Air Emission Report 1996-2004

Facility Name	Description Line	ZIP	Year of Inventory	Facility Criteria Emissions CO	NOx	PM2.5	PM10	PT	PMCond	SO2	VOC	Standard Industrial Code	SIC Description
2004 Inventoried Point Source emissions		2004		8265.20	14092.73	1481.03	2548.46	5692.43	1626.94	46281.47	2586.53		
Emissions from plants actually inventoried during 1996 & 1997													
			1996	*9875*	*23747*		*3959*	*9202*		*46693*	*4462*	*Tons*	
			1997	*9660*	*24301*		*3932*	*8240*		*50241*	*4575*	*Tons*	
Sum of Emissions for Additional 1998 Plants.				*384*	*394*		*246*	*464*		*96*	*300*	*Tons*	
96 & 97 Emissions adjusted for Later Total Plant Inventory													
			1996	10259	24141		4205	9666		46789	4762	Tons	
			1997	10044	24695		4178	8704		50337	4875	Tons	

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Facility Name	Description Line	ZIP	Year of Inventory	Facility Criteria Emissions CO	NOx	PM2.5	PM10	PT	PMCond	SO2	VOC	Standard Industrial Code	SIC Description

Assessment Total of Criteria Point Source Emission Inventory in Allegheny County. Units are Tons per Year. 1996 & 1997 values were adjusted to

Year	CO	NOx	PM2.5	PM10	PT	PMCOND	SO2	VOC	
1996	10259	24141		4205	9666		46789	4762	Tons
1997	10044	24695		4178	8704		50337	4875	Tons
1998	9313	19806		3526	7016		38303	3799	Tons
1999	8960	19272	1768	3191	6591	1602	43028	3750	Tons
2000	9277	18908	1548	2848	5949	1842	50200	3289	Tons
2001	8700	17634	1218	2511	5798	1509	54271	2847	Tons
2002	8549	16225	1394	2518	5838	1471	47197	2640	Tons
2003	8792	14458	1551	2665	6179	1454	50874	2473	Tons
2004	8265	14093	1481	2548	5692	1627	46281	2587	Tons

Attachment B
Individual HAP Emissions from all Facilities

Attachment B

Total Point Source HAP Emissions Including Ammonia and HydrogenSulfide

		Total County Emissions of Chemical Compounds Tons per Year						
		1998	1999	2000	2001	2002	2003	2004
7647010	HYDROCHLORIC ACID	1013	1253	1377	1562	1260	1531	1328
7664417	AMMONIA	940	398	538	717	700	578	512
7783064	HYDROGEN SULFIDE	186	162	177	168	172	176	168
7664393	HYDROGEN FLUORIDE	90	116	125	138	107	141	118
108883	TOLUENE	137	158	183	120	103	95	109
71432	BENZENE	90	55	47	44	45	44	86
1330207	XYLENE (MIXED ISOMERS)	177	149	145	123	84	69	66
100425	STYRENE	51	54	53	53	45	63	56
78933	METHYL ETHYL KETONE	112.86	93.32	74.45	72.69	71.11	26.56	42.72
67561	METHANOL	57.66	97.28	97.86	95.39	81.01	85.16	40.09
CNC	CYANIDE COMPOUNDS	32.48	30.25	38.91	38.61	39.32	40.65	38.06
108952	PHENOL	25.25	15.90	24.75	23.46	23.10	23.61	22.52
110543	HEXANE	13.83	12.16	20.31	16.04	18.46	20.69	22.04
74873	METHYL CHLORIDE	0.32	0.34	0.37	3.18	2.97	3.09	20.81
75150	CARBON DISULFIDE	0.14	0.89	18.71	19.11	20.11	19.97	18.91
108101	METHYL ISOBUTYL KETONE	39.96	34.15	28.59	25.58	27.13	20.98	18.20
POM	POLYCYCLIC ORGANIC MATTER	39.43	23.02	25.37	14.62	15.95	14.88	15.32
91203	NAPHTHALENE	36.62	29.95	28.31	26.64	25.89	19.87	14.58
100414	ETHYL BENZENE	26.52	25.11	24.73	24.74	14.92	13.10	14.30
102409	GLYCOL ETHER 102409	0.00	3.62	2.40	6.97	8.38	8.50	9.63
PB	LEAD	3.91	6.30	8.26	6.22	6.71	9.35	8.99
1634044	METHYL TERT-BUTYL ETHER	7.04	13.14	5.65	8.77	11.01	9.90	8.59
108907	CHLOROBENZENE	1.25	0.93	2.69	3.39	3.07	2.98	8.25
50000	FORMALDEHYDE	8.33	4.38	5.71	6.05	4.61	4.79	7.25
77736	DICYCLOPENTADIENE	0.28	0.00	0.27	0.00	0.10	5.51	6.64
7782492	SELENIUM	19.85	37.56	46.94	46.74	6.10	6.58	6.31
98828	CUMENE	4.62	4.41	3.29	3.87	3.93	4.24	6.01
GLYET	GLYCOL ETHERS	24.79	13.09	9.83	2.70	2.14	1.02	5.96
7439965	MANGANESE	2.77	5.19	5.53	4.95	5.71	6.54	5.19
85018.000	PHENANTHRENE	0.72	2.04	3.53	4.15	4.68	4.47	4.90

Attachment B
Total Point Source HAP Emissions Including Ammonia and HydrogenSulfide

		Total County Emissions of Chemical Compounds Tons per Year						
		1998	1999	2000	2001	2002	2003	2004
75092	METHYLENE CHLORIDE	2.71	3.11	3.78	2.61	4.27	3.06	4.05
95636	1,2,4-TRIMETHYLBENZENE	4.68	4.55	4.71	6.76	8.29	3.72	3.93
78591	ISOPHORONE	1.67	5.53	3.76	4.84	2.84	3.25	3.59
111762	2-BUTOXY ETHANOL	0.00	0.00	0.00	0.00	19.98	17.28	3.56
80626	METHYL METHACRYLATE	0.16	2.27	3.90	4.09	3.08	2.97	3.46
75058	ACETONITRILE	0.00	0.40	0.09	0.00	1.40	0.74	3.01
7440020	NICKEL	1.61	2.05	2.36	2.51	2.41	2.39	2.89
CRC	CHROMIUM COMPOUNDS	10.69	16.12	4.11	9.61	8.08	8.28	2.75
7782505	CHLORINE	1.10	1.11	2.95	3.07	3.05	3.45	2.62
206440	FLUORANTHENE	0.17	0.02	0.00	0.57	2.57	2.46	2.54
127184	TETRACHLOROETHYLENE	0.43	1.55	1.37	1.52	1.31	1.24	2.17
85449	PHTHALIC ANHYDRIDE	8.22	2.57	1.43	2.05	3.51	2.09	2.11
67663	CHLOROFORM	0.80	0.94	0.58	0.68	0.99	2.36	2.10
1319773	CRESOLS (MIXED ISOMERS)	0.49	0.18	2.08	1.98	2.03	2.07	1.95
129000	PYRENE	0.15	0.00	0.13	0.57	1.91	1.84	1.90
83329	ACENAPHTHENE	0.00	0.00	0.00	0.00	1.08	1.81	1.71
2551137	TRIMETHYL BENZENE	0.77	0.37	0.00	0.04	0.05	0.98	1.69
107211	ETHYLENE GLYCOL	2.82	3.39	3.11	2.31	2.11	5.17	1.66
218019	CHRYSENE	0.00	0.00	0.03	0.19	1.70	1.68	1.64
56553	BENZ(A)ANTHRACENE	0.09	0.01	0.06	0.19	1.56	1.53	1.58
79345	1,1,2,2-TETRACHLOROETHANE	0.12	0.27	0.23	0.52	0.59	0.49	1.53
86737	FLUORENE	0.00	0.00	0.00	0.24	1.45	2.79	1.39
141786	ETHYL ACETATE	0.00	0.00	0.00	0.00	0.75	0.02	1.31
106887	1,2-EPOXYBUTANE	0.00	0.00	0.00	0.00	0.44	1.10	1.25
131113	DIMETHYL PHTHALATE	0.41	0.15	0.16	0.14	0.10	0.17	1.03
79016	TRICHLOROETHYLENE	3.14	1.41	0.49	0.59	0.70	0.78	1.02
142961	1,1-OXYBISBUTANE	0.00	0.00	0.00	0.00	0.26	0.15	0.98
75218	ETHYLENE OXIDE	6.89	6.00	4.67	2.86	3.22	1.22	0.96
120127	ANTHRACENE	0.03	0.80	0.29	0.78	0.82	0.71	0.94
10102439	NO	0.00	0.00	0.00	0.00	0.00	0.00	0.90
540841	2,2,4-TRIMETHYLPENTANE	1.02	0.74	0.93	0.97	1.23	0.95	0.89
109999	TETRAHYDROFURAN	0.00	0.00	0.18	0.71	0.49	4.59	0.87

Attachment B
Total Point Source HAP Emissions Including Ammonia and HydrogenSulfide

		Total County Emissions of Chemical Compounds Tons per Year						
		1998	1999	2000	2001	2002	2003	2004
108383	M-XYLENE	0.00	0.83	0.94	1.44	1.71	1.49	0.84
208968	ACENAPHTHYLENE	0.00	0.00	0.00	0.45	1.58	0.75	0.82
108316	MALEIC ANHYDRIDE	2.55	2.32	2.18	2.00	0.87	0.88	0.79
50328	BENZO(A)PYRENE	0.03	0.00	0.01	0.13	0.71	0.70	0.71
142825	HEPTANE	0.00	0.00	0.00	0.00	0.80	1.47	0.67
107028.000	ACROLIEN	0.13	0.17	0.19	0.55	0.51	0.57	0.65
7723140	PHOSPHORUS (YELLOW OR WHITE)	0.17	0.50	3.64	0.87	0.60	0.61	0.65
106423	P-XYLENE	0.00	0.63	0.66	0.76	0.88	0.92	0.62
7440360	ANTIMONY	1.00	0.98	0.38	0.81	0.72	0.70	0.61
106467	1,4-DICHLOROBENZENE	0.13	0.13	0.34	0.39	0.41	0.39	0.58
75070	ACETALDEHYDE	0.62	0.68	0.87	0.71	0.61	0.70	0.58
75014	VINYL CHLORIDE	0.29	0.69	0.55	0.63	0.80	0.49	0.56
108054	VINYL ACETATE	0.28	0.14	0.00	0.56	0.57	0.59	0.55
123911	1,4-DIOXANE	0.00	0.00	0.00	0.55	0.57	0.58	0.54
67630.000	**ISOPROPANOL**	0.00	0.00	0.00	0.00	0.00	0.00	0.53
100447	BENZYL CHLORIDE	0.32	0.42	0.46	0.53	0.42	0.53	0.45
95501	1,2-DICHLOROBENZENE	0.02	0.00	0.00	0.00	0.00	0.00	0.44
117817	BIS(2-ETHYLHEXYL)PHTHALATE	0.93	0.00	0.58	0.41	0.44	0.41	0.42
132649	DIBENZOFURAN	0.00	0.00	0.07	0.36	0.37	0.41	0.41
7664939.000	SULFURIC ACID	0.00	0.00	0.00	0.00	0.00	0.00	0.39
121448	TRIETHYLAMINE	0.09	0.26	0.09	0.14	0.11	0.14	0.38
108214	ISOPROPYL ACETATE	0.00	0.00	0.00	0.00	0.46	0.00	0.35
193395	INDENO(1,2,3-CD)PYRENE	0.13	0.34	0.06	0.35	0.35	0.35	0.35
207089	BENZO(K)FLUORANTHENE	0.03	0.00	0.00	0.08	0.35	0.32	0.33
56832736	BENZOFLUORANTHENES	0.03	0.00	0.00	0.08	0.35	0.32	0.33
86748	CARBAZOLE	0.00	0.00	0.00	0.00	0.38	0.34	0.33
64742525	DISTILLATES, (PETROLEUM), HYDROTRE	0.00	0.00	0.00	0.00	0.73	0.00	0.30
203645.000	PHENANTHRENE, CYCLOPENTA-,	0.00	0.00	0.00	0.00	0.25	0.25	0.29
191242	BENZO(G,H,I)PERYLENE	0.00	0.00	0.00	0.19	0.28	0.28	0.26
92524	BIPHENYL	0.33	0.39	0.20	0.33	0.30	0.27	0.26
7440382	ARSENIC	0.03	0.27	0.27	0.40	0.41	0.52	0.26
75003	ETHYL CHLORIDE	0.06	0.36	0.30	0.37	0.20	0.29	0.25

Attachment B
Total Point Source HAP Emissions Including Ammonia and HydrogenSulfide

		Total County Emissions of Chemical Compounds Tons per Year						
		1998	1999	2000	2001	2002	2003	2004
123386	PROPIONALDEHYDE	0.00	0.00	0.00	0.29	0.23	0.29	0.24
7440484	COBALT	1.97	0.20	0.14	0.53	0.31	0.32	0.23
872504	1-METHYL-2-PYRROLIDINONE	0.00	0.00	0.00	0.00	0.00	0.00	0.22
60297	1,1'-OXYBISETHANE	0.00	0.00	0.00	0.00	0.00	0.00	0.21
107879	2-PENTANONE	0.00	0.00	0.00	0.00	0.00	0.02	0.20
7439976	MERCURY	0.56	0.55	0.10	0.16	0.14	0.13	0.20
110805	2-ETHOXYETHANOL	0.00	0.00	0.00	0.00	0.00	0.00	0.17
64197	ACETIC ACID	0.00	0.00	0.00	0.00	0.12	0.00	0.17
31711532	METHYLPHENANTHRENES	0.00	0.00	0.00	0.14	0.15	0.16	0.16
25013154	METHYLSTYRENE	0.00	0.00	0.00	0.32	0.00	0.13	0.15
7440439	CADMIUM	0.07	0.19	0.36	0.04	0.30	0.17	0.14
71556	METHYL CHLOROFORM	9.91	1.35	0.08	0.08	0.07	0.08	0.13
95136	INDENE	0.00	0.00	0.00	0.00	0.00	0.00	0.12
71238	PROPANOL	0.00	0.00	0.00	0.00	0.17	0.00	0.12
60344	METHYLHYDRAZINE	0.08	0.10	0.11	0.13	0.10	0.13	0.11
74839	METHYL BROMIDE	1.00	0.10	0.11	6.12	0.10	0.12	0.10
53703	DIBENZ(A,H)ANTHRACENE	0.00	0.00	0.00	0.01	0.10	0.09	0.10
18540299	CHROMIUM (VI)	0.00	0.00	0.00	0.00	0.10	0.10	0.10
79005	1,1,2-TRICHLOROETHANE	0.05	0.05	0.05	0.05	0.05	0.05	0.10
1314563	PHOSPHOROUS OXIDE	0.03	0.00	0.02	0.02	0.03	0.03	0.09
107062	ETHYLENE DICHLORIDE	0.03	0.04	0.04	0.06	0.16	0.06	0.08
PNA	POLYNUCLEAR AROMATICS	0.00	0.00	0.00	0.03	0.03	0.06	0.08
108838	2,6 DIMETHYL-4-HEPTANONE	0.00	0.00	0.00	0.00	0.00	0.00	0.07
110861	PYRIDINE	0.00	0.00	0.00	0.04	0.06	0.07	0.07
106514	QUINONE	0.05	0.07	0.05	0.08	0.05	0.06	0.06
95487.000	O-CRESOL	0.00	0.03	0.02	0.05	0.05	0.07	0.06
95476	O-XYLENE	0.00	0.41	1.51	0.92	0.75	0.35	0.06
108394	M-CRESOL	0.00	0.06	0.05	0.06	0.05	0.06	0.05
106445	P-CRESOL	0.00	0.05	0.05	0.06	0.04	0.05	0.05
111466	BIS(2-HYDROXYETHYL) ETHER	0.00	0.00	0.00	0.00	0.01	0.01	0.03
PAH	PAH	0.00	0.00	0.00	0.00	0.11	0.09	0.03
77781	DIMETHYL SULFATE	0.11	0.11	0.10	0.15	0.03	0.04	0.03

Attachment B
Total Point Source HAP Emissions Including Ammonia and HydrogenSulfide

		Total County Emissions of Chemical Compounds Tons per Year						
		1998	1999	2000	2001	2002	2003	2004
75252	BROMOFORM	0.00	0.00	0.00	0.00	0.02	0.03	0.02
205992	BENZ(E)ACEPHENANTHRYLENE	0.16	0.00	0.00	0.11	0.10	0.11	0.02
107131.000	ACRYLONITRILE	0.18	0.17	0.00	0.15	0.16	0.03	0.02
106990	1,3-BUTADIENE	0.01	0.01	0.04	0.04	0.00	0.06	0.02
271896	BENZOFURAN	0.00	0.00	0.00	0.00	0.00	0.00	0.02
108703	1,3,5 TRICHLORBENZENE	0.00	0.00	0.00	0.00	0.00	0.00	0.02
540590	1,2 DICHLOROETHYLENE	0.00	0.00	0.00	0.00	0.00	0.00	0.02
7440417	BERYLLIUM	0.00	0.00	0.00	0.06	0.06	0.07	0.02
98862	ACETOPHENONE	0.03	0.01	0.01	0.01	0.01	0.01	0.01
110827	CYCLOHEXANE	0.00	0.00	0.00	0.00	0.23	0.01	0.01
84742	DIBUTYL PHTHALATE	0.02	0.07	0.02	0.00	0.00	0.01	0.01
100470	BENZONITRILE	0.00	0.00	0.00	0.00	0.00	0.01	0.01
532274	2-CHLOROACETOPHENONE	0.00	0.00	0.00	0.01	0.00	0.01	0.00
16065831	CHROMIUM (III)	0.18	0.29	0.27	0.20	0.02	0.00	0.00
75569	PROPYLENE OXIDE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
91576	2-METHYLNAPHTHALENE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
80057	BISPHENOL A	0.30	0.30	0.20	0.20	0.18	0.00	0.00
106934	ETHYLENE DIBROMIDE	0.00E+00	0.00E+00	0.00E+00	9.06E-04	7.13E-04	9.02E-04	7.64E-04
1333820	CHROMIC ACID	0.00E+00	1.38E-04	1.38E-04	2.20E-04	5.50E-04	3.42E-04	5.50E-04
111773	2-(2-METHOXYETHOXY) ETHANOL	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.50E-03	3.52E-04
121142	2,4-DINITROTOLUENE	0.00E+00	0.00E+00	0.00E+00	2.11E-04	1.66E-04	2.10E-04	1.78E-04
10035106	HYDROGEN BROMIDE	1.66E-02	2.27E-02	1.55E-02	1.41E-02	1.09E-02	1.71E-04	1.78E-04
140885	ETHYL ACRYLATE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.63E-05	8.97E-05
56235	CARBON TETRACHLORIDE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.55E-05
68476346	ALIPHATIC PETROLEUM DISTILLATE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.50E-05	4.55E-04	5.50E-05
112345	2-(2-BUTOXYETHOXY) ETHANOL	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.50E-03	3.52E-05
110009	FURAN	0.00E+00	0.00E+00	0.00E+00	1.33E-06	1.05E-06	1.32E-06	1.12E-06
57976	DIMETHYLBENZ(A)ANTHRACENE	0.00E+00	0.00E+00	0.00E+00	6.83E-07	1.89E-06	0.00E+00	8.65E-07
542756	1,3-DICHLOROPROPENE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.42E-07
51207310.000	2,3,7,8 TCDF	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00E-07
56495	3-METHYLCHOLANTHRENE	0.00E+00	0.00E+00	0.00E+00	7.68E-08	2.13E-07	0.00E+00	9.73E-08
205823	BENZO(J)FLUORANTHENE	0.00E+00	0.00E+00	0.00E+00	7.68E-08	1.31E-07	0.00E+00	9.73E-08

Attachment B
Total Point Source HAP Emissions Including Ammonia and HydrogenSulfide

		Total County Emissions of Chemical Compounds Tons per Year						
		1998	1999	2000	2001	2002	2003	2004
1746016	2,3,7,8-TETRACHLORODIBENZO-P-DIOXII	0.00E+00	8.51E-09	9.70E-09	3.90E-08	3.07E-08	5.00E-08	4.72E-08
34465468	HEXACHLORODIBENZODIOXIN,1,2,3,6,7,8	0.00E+00	1.71E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
107982	1-METHOXY-2-PROPANOL	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.10E-01	1.00E-02	0.00E+00
2807309	2-PROPOXYETHANOL	0.00E+00	7.53E-03	1.00E-02	0.00E+00	1.00E-02	1.00E-02	0.00E+00
534521	4,6-DINITRO-O-CRESOL	0.00E+00	0.00E+00	7.00E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00
123864	BUTYL ACETATE	0.00E+00	0.00E+00	1.50E-01	1.00E-01	3.24E-01	0.00E+00	0.00E+00
76131	CFC-113	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
121697	DIMETHYLANILINE, N,N-	2.00E-04	2.00E-04	2.00E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00
68122.000	DIMETHYLFORMAMIDE, N,N-	1.00E-02	9.80E-02	1.01E-01	4.46E-02	0.00E+00	0.00E+00	0.00E+00
75343	ETHYLIDENE DICHLORIDE	3.62E-01	8.29E-01	5.78E-02	3.60E-04	0.00E+00	0.00E+00	0.00E+00
111308	GLUTARALDEHYDE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
822060	HEXAMETHYLENE-1,6-DIISOCYANATE	0.00E+00	0.00E+00	5.00E-03	1.00E-04	0.00E+00	0.00E+00	0.00E+00
101688	METHYLENE DIPHENYL DIISOCYANATE	0.00E+00	0.00E+00	1.43E-01	8.00E-02	0.00E+00	0.00E+00	0.00E+00
64741668	NAPHTHA, (PETROLEUM), LIGHT ALKYLA	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
19089475	PROPYLENE GLYCOL ETHYL ETHER	5.30E-02	9.55E-02	6.00E-02	1.40E-01	2.00E-01	1.19E-01	0.00E+00
57117416	1,2,3,7,8-PENTACHLORODIBENZOFURAN	0.00E+00	2.10E-07	2.32E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
57117314	2,3,4,7,8-PENTACHLORODIBENZOFURAN	0.00E+00	2.66E-08	3.35E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00
51207319	2,3,7,8-TETRACHLORODIBENZOFURAN	0.00E+00	3.03E-08	3.35E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00
105679	2,4-DIMETHYLPHENOL	0.00E+00	0.00E+00	0.00E+00	3.00E-03	2.00E-03	1.00E-03	0.00E+00
122996	2-PHENOXYETHANOL	9.00E-02	4.69E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
101779	4,4'-METHYLENEDIANILINE	1.30E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
108247	ACETIC ANHYDRIDE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.47E-01	4.84E-01	0.00E+00
79061	ACRYLAMIDE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.85E-05	0.00E+00	0.00E+00
79107	ACRYLIC ACID	2.88E-01	2.86E-01	8.67E-01	7.80E-01	0.00E+00	0.00E+00	0.00E+00
192972.000	BENZO(E)PYRENE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.50E-09	0.00E+00	0.00E+00
74975	BROMOCHLOROMETHANE	9.58E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CE	COKE OVEN EMISSIONS	1.86E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
38998753	HEPTA CHLORO FURANS	0.00E+00	4.57E-08	5.48E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00
68476868	HYDROCARBON	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.53E-06	0.00E+00	0.00E+00
123319	HYDROQUINONE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.75E-01	0.00E+00
7440746	INDIUM	2.50E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
78831	ISOBUTYL ALCOHOL	0.00E+00	0.00E+00	0.00E+00	3.15E-02	4.25E-02	5.10E-02	0.00E+00

Attachment B
Total Point Source HAP Emissions Including Ammonia and HydrogenSulfide

		Total County Emissions of Chemical Compounds Tons per Year						
		1998	1999	2000	2001	2002	2003	2004
78795	ISOPRENE	3.00E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
10045940	MERCURIC NITRATE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
74884	METHYL IODIDE	0.00E+00	0.00E+00	0.00E+00	1.76E-03	0.00E+00	0.00E+00	0.00E+00
5124301	METHYLENE BIS(4-CYCLOHEXYLISOCYA	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.05E-01	0.00E+00
101688	METHYLENE DIPHENYL DIISOCYANATE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.05E-01	0.00E+00
17557232	NEOPENTYL GLYCOL DIGLYCIDYL ETHE	0.00E+00	1.55E-02	4.34E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00
39001020.000	OCTACHLORODIBENZOFURANS, TOTAL	0.00E+00	0.00E+00	3.95E-08	4.36E-08	0.00E+00	0.00E+00	0.00E+00
3268879.000	OCTACHLORODIBENZO-P-DIOXIN	0.00E+00	2.48E-07	2.73E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7697372	NITRIC ACID	1.31E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
103651	PROPYL BENZENE	6.00E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
78104	SILICIC ACID, TETRAETHYL ESTER	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.70E-01	0.00E+00	0.00E+00
681845	SILICIC ACID, TETRAMETHYL ESTER	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.47E-01	0.00E+00	0.00E+00
8052413	STODDARD SOLVENT	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.80E-02	0.00E+00	0.00E+00
Total Air Emissions HAPS including NH_3 AND H_2S		3216.96	2866.82	3179.14	3452.93	3018.54	3150.54	2870.94
Air Emissions HAPS only		2090.96	2306.82	2464.14	2567.93	2146.54	2396.54	2324.94

Previous emission inventory assessments are not normally recalculated when estimation are improved techniques or emission factors updated. Therefore, emissions may appear to increase or decrease, but such changes are not real. An exception has been made for the acid gases HCl and HF, and adjustments have been made to previous years' inventories.

Examples are the estimates of emissions of the two acid gasses from the Cheswick Power Station. Changes in the emission factors used for HCl and HF during 2002 produced estimates different enough to significantly affect the reported HAP emissions from this plant, total emissions of these pollutants and the total HAP emission inventory.

During 2000, source testing was performed for HCl emissions from coke oven stacks at the USS Clairton Coke Plant. This testing found HCl emissions not previously known. These emissions were included in the 2000 and later inventories.

Adjustments were made to previously reported Total Point Source HAP Emissions to account for these changes. Adjusted values are used for this comparison only. Agency emission inventory records have not been adjusted.

Emissions of hydrochloric acid (HCl) are about 40% of the total emissions in Attachment B. Emissions of ammonia (NH_3) contribute an additional 25%.

Attachment C
Hazardous Air Pollutant Emissions from Individual Facilities

Allegheny County Health Department
Air Quality Program
Estimated Point Source HAP+H2S & NH3 Emissions for 1998-2004

Company Name	ZIP	Pollutant CAS#	Pollutant Name	Emissions - Tons per Year						
				1998	1999	2000	2001	2002	2003	2004
ACN-Pittsburgh,LLC	15007	100414	ETHYL BENZENE		0.14	0.12	0.03	0.07	0.10	0.45
		108101	METHYL ISOBUTYL KETONE	0.62	0.45	0.52	0.11	0.00	0.00	0.02
		108883	TOLUENE	1.09	0.39	0.20	0.09	0.31	0.75	2.62
		108952	PHENOL	0.03	0.01	0.03	0.06	0.14	0.08	0.36
		111762	2-BUTOXY ETHANOL					3.22	5.97	2.34
		121448	TRIETHYLAMINE	0.09	0.09	0.09	0.10	0.11	0.14	0.16
		1330207	XYLENE (MIXED ISOMERS)	5.99	0.83	0.61	0.45	0.66	0.71	3.60
		50000	FORMALDEHYDE		0.03	0.03	0.03	0.06	0.02	0.01
		78933	METHYL ETHYL KETONE	0.53	0.97	1.13	0.53	1.41	1.00	1.50
		95487	O-CRESOL		0.01	0.01	0.00	0.00	0.00	0.00
		CDC	CADMIUM COMPOUNDS	0.00	0.12	0.01	0.01	0.00	0.00	0.00
		PBC	LEAD COMPOUNDS	6.32E-06	1.74	0.30	0.30	0.02	0.02	0.02
ALLDERDICE SCHOOL	15217	110543	HEXANE						0.02	0.025
ALLEGHENY ASPHALT MFG. INC.	15219	100414	ETHYL BENZENE		0.03	0.03	0.04	0.04	0.04	0.054
		108883	TOLUENE		0.02	0.02	0.02	0.02	0.03	0.034
		110543	HEXANE				0.14	0.14	0.17	0.209
		1330207	XYLENE (MIXED ISOMERS)		0.02	0.03	0.03	0.03	0.04	0.045
		18540299	CHROMIUM (VI)		4.91E-05	5.66E-05				0.000
		50000	FORMALDEHYDE	0.32	0.34	0.39	0.46	0.47	0.57	0.698
		71432	BENZENE	0.11	0.63	0.73	0.06	0.06	0.07	0.088
		71556	METHYL CHLOROFORM						0.01	0.011
		75070	ACETALDEHYDE	0.12	0.14	0.16				0.000
		CRC	CHROMIUM COMPOUNDS				0.00	0.00	0.00	0.001
		HGC	MERCURY COMPOUNDS		8.24E-07	9.50E-07	3.82E-05	3.93E-05	4.77E-05	0.072
		PBC	LEAD COMPOUNDS		3.88E-04	4.47E-04	9.87E-05	1.01E-04	1.24E-04	0.000
		PNA	POLYNUCLEAR AROMATICS						0.03	0.043
ALLEGHENY COUNTY AIRPORT AUTHORITY	15231	107211	ETHYLENE GLYCOL				0.05	0.00	4.17	0.102
		110543	HEXANE				0.28	0.16	0.18	0.183
		67561	METHANOL				2.26	3.10	3.00	3.72
		7647010	HYDROCHLORIC ACID			3.47E-06	0.22	0.26	0.01	0.04
		PB	LEAD							3.02E-08

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Estimated Point Source HAP+H2S & NH3 Emissions for 1998-2004

Company Name	ZIP	Pollutant CAS#	Pollutant Name	Emissions - Tons per Year						
				1998	1999	2000	2001	2002	2003	2004
ALLEGHENY COUNTY SANITARY AUTHOI	15233	100414	ETHYL BENZENE	0.34	0.34	0.32	0.32	0.32	0.32	0.32
AUTHORITY		100425	STYRENE	0.07	0.07	0.04	0.04	0.04	0.04	0.04
		106467	1,4-DICHLOROBENZENE	0.13	0.13	0.34	0.39	0.41	0.38	0.29
		107062	ETHYLENE DICHLORIDE	0.03	0.03	0.03	0.03	0.03	0.03	0.03
		108703	1,3,5-TRICHLOROBENZENE	0.00						
		108883	TOLUENE	1.18	1.19	1.11	1.11	1.11	1.11	1.80
		108907	CHLOROBENZENE	0.01	0.01	0.01	0.01	0.01	0.01	0.01
		110543	HEXANE				0.01	0.02	0.02	0.01
		117817	BIS(2-ETHYLHEXYL)PHTHALATE			0.04	0.05	0.05	0.05	0.03
		127184	TETRACHLOROETHYLENE		0.62	0.56	0.56	0.56	0.56	0.56
		1330207	XYLENE (MIXED ISOMERS)	1.47	1.47	1.39	1.39	1.39	1.39	1.39
		1746016	2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN			0.00	0.00	0.00	0.00	2.3E-10
		18540299	CHROMIUM (VI)		0.00	0.00	0.00	0.00	0.00	4.60E-05
		67663	CHLOROFORM	0.50	0.51	0.47	0.47	0.47	0.47	0.467
		71432	BENZENE	0.05	0.05	0.05	0.05	0.05	0.05	0.045
		71556	METHYL CHLOROFORM	0.05	0.05	0.05	0.05	0.05	0.05	0.050
		7439976	MERCURY	0.015	0.004	0.003	0.003	0.004	0.003	0.002
		7440020	NICKEL	8.9082E-05	9.71E-05	7.58E-05	9.07E-05	9.65E-05	8.98E-05	4.61E-05
		7440382	ARSENIC		3.13E-04	2.59E-04	3.09E-04	3.30E-04	3.06E-04	1.52E-04
		7440417	BERYLLIUM		4.30E-05	3.08E-05	3.69E-05	3.91E-05	3.66E-05	8.59E-06
		7440439	CADMIUM		3.78E-06	3.34E-05	3.99E-05	4.25E-05	3.95E-05	2.26E-05
		7440473	CHROMIUM		3.48E-04	2.72E-04	3.24E-04	3.45E-04	3.22E-04	1.44E-04
		74873	METHYL CHLORIDE	0.00162	0.002	0.001	0.001	0.001	0.001	0.00
		74975	BROMOCHLOROMETHANE	0.09578						
		75092	METHYLENE CHLORIDE	0.14159	0.14	0.14	0.14	0.14	0.14	0.14
		75150	CARBON DISULFIDE	0.0845	0.08	0.08	0.08	0.08	0.08	0.08
		76131	CFC-113					0.00	0.00	0.00
		7647010	HYDROCHLORIC ACID			0.54	0.96	1.02	0.95	0.62
		7782505	CHLORINE	0	0.00	0.00	0.00	0.00	0.00	0.00
		7783064	HYDROGEN SULFIDE	20.7565	22.55	17.47	17.47	17.47	17.47	17.47
		78933	METHYL ETHYL KETONE							0.18
		79005	1,1,2-TRICHLOROETHANE	0.04871	0.05	0.05	0.05	0.05	0.05	0.05
		79016	TRICHLOROETHYLENE		0.05	0.04	0.04	0.04	0.04	0.04
		91203	NAPHTHALENE	0.33999	0.34	0.43	0.45	0.46	0.45	0.41
		95501	1,2-DICHLOROBENZENE	0.01817						
		95636	1,2,4-TRIMETHYLBENZENE	0.6594						
		PB	LEAD	9.695E-05	1.55E-04	1.22E-04	1.45E-04	1.55E-04	1.44E-04	9.97E-05
		SEC	SELENIUM COMPOUNDS	0		0	0	0		0.00

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Company Name	ZIP	Pollutant CAS#	Pollutant Name	Emissions - Tons per Year						
				1998	1999	2000	2001	2002	2003	2004
ALLEGHENY ENERGY	15144	7664939	SULFURIC ACID			0	0			0.39
SPRINGDALE CGT		108883	TOLUENE						0.11	0.27
		1330207	XYLENE (MIXED ISOMERS)							0.13
		50000	FORMALDEHYDE			1.53E-04	1.68E-04	0.296516	0.33	0.63
		7664417	AMMONIA						3.25	8.65
ALLEGHENY LUDLUM CORP	15014	110543	HEXANE			3.8363	3.31712	3.0681	2.88	3.02
BRACKENRIDGE		7440622	VANADIUM					0		0.00
		7664393	HYDROGEN FLUORIDE	0.09	5.10	2.08	1.60	1.81	1.61	1.52
		7697372	NITRIC ACID	1.31						
		91203	NAPHTHALENE			6.50E-06				
		CRC	CHROMIUM COMPOUNDS	1.69	2.55	2.49	2.23	2.38	2.29	2.14
		MNC	MANGANESE COMPOUNDS	2.53	4.18	4.31	3.85	4.33	4.23	2.33
		NIC	NICKEL COMPOUNDS	1.15	1.62	1.58	1.28	1.28	1.28	1.81
		PBC	LEAD COMPOUNDS	1.76	2.24	2.38	1.81	1.83	1.78	1.82
		POM	POLYCYCLIC ORGANIC MATTER			0.00				
ALLEGHENY POWER	15144	PBC	LEAD COMPOUNDS	0.00	0.00	0.00	0.00			
SPRINGDALE STATION										
ALLEGHENY VALLEY HOSPITAL	15065	107211	ETHYLENE GLYCOL	0.00	0.00	0.00	0.00	0.00	0.00	
		110543	HEXANE			0.06	0.00	0.00	0.12	
		75218	ETHYLENE OXIDE	0.15	0.15	0.15	0.15	0.15	0.15	
AMERICAN BRIDGE	15108	100414	ETHYL BENZENE				0.61	0.22	0.31	0.40
MANUFACTURING		107211	ETHYLENE GLYCOL				0.17	0.04	0.00	0.00
		108101	METHYL ISOBUTYL KETONE				0.29	0.12	0.10	0.24
		108883	TOLUENE				2.55	0.84	1.39	0.79
		110543	HEXANE				0.00	0.01	0.01	0.01
		1330207	XYLENE (MIXED ISOMERS)				3.15	1.04	1.25	2.00
		67561	METHANOL				0.09	0.01	0.00	0.00
		78933	METHYL ETHYL KETONE				5.95	2.41	0.91	0.24
		91203	NAPHTHALENE				0.01	0.00	0.00	0.002
		95636	1,2,4-TRIMETHYLBENZENE				0.11	0.00	0.00	0.00
		CRC	CHROMIUM COMPOUNDS				6.97E-04	4.93E-05	1.44E-04	5.28E-05
		MNC	MANGANESE COMPOUNDS				9.03E-02	3.90E-03	6.57E-03	6.76E-04
		NIC	NICKEL COMPOUNDS				1.60E-03	1.19E-04	3.61E-04	1.57E-04
AMG RESOURCES CORPORATION	15225	PBC	LEAD COMPOUNDS	0.03	0.01	0.00	0.00	0.00		

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Company Name	ZIP	Pollutant CAS#	Pollutant Name	Emissions - Tons per Year						
				1998	1999	2000	2001	2002	2003	2004
ARISTECH CHEMICAL RESEARCH LAB	15146	100425	STYRENE	0.00	0.00	0.00				
		108883	TOLUENE	0.16	0.20	0.40				
		110543	HEXANE	4.38	0.07	0.10				
		80626	METHYL METHACRYLATE	0.01	0.01	0.01				
ARSENAL SCHOOL	15201	110543	HEXANE						0.01	9.61E-03
ASHLAND SPECIALTY CHEMICAL CO - NE	15225	7439976	MERCURY							1.05E-04
		7440439	CADMIUM							2.85E-05
		51207310	2,3,7,8 TCDF							1.00E-07
		100414	ETHYL BENZENE	10.13	8.06	11.10	7.05	0.00	0.00	0.00
		100425	STYRENE	12.69	11.47	12.57	10.76	4.10	3.54	3.93
		107211	ETHYLENE GLYCOL	0.04	0.01	0.01	0.06	0.08	0.08	0.07
		108316	MALEIC ANHYDRIDE	2.07	1.92	1.88	1.75	0.59	0.69	0.50
		110543	HEXANE			0.31	0.29	0.49	0.47	0.46
		121697	DIMETHYLANILINE, N,N-	2.00E-04	2.00E-04	2.00E-04	0.00	0.00	0.00	0.00
		1330207	XYLENE (MIXED ISOMERS)	38.11	30.33	41.74	26.50	0.02	0.00	0.03
		18540299	CHROMIUM (VI)						0.00	0.00
		25013154	METHYLSTYRENE				0.32	0.00	0.00	0.00
		67561	METHANOL	0.02	0.01	0.01	0.00	0.00	0.00	0.00
		7664417	AMMONIA	0.10	0.10	0.10	0.00	0.10	0.10	0.10
		77736	DICYCLOPENTADIENE	0.28		0.27	0.00	0.10	0.13	0.09
		79107	ACRYLIC ACID	0.29	0.29	0.87	0.78	0.00	0.00	0.00
		80626	METHYL METHACRYLATE	0.15	0.14	0.12	0.32	0.11	0.10	0.10
		85449	PHTHALIC ANHYDRIDE	0.26	0.22	0.18	0.17	0.90	0.98	0.82
		CRC	CHROMIUM COMPOUNDS			1.19E-04	0	0		0.00
		HGC	MERCURY COMPOUNDS			8.8001E-05	0	0	0	1.05E-04
		PBC	LEAD COMPOUNDS		1.2603E-05	3.404E-05	0	0	0	3.00E-05
AXIOM AUTOMOTIVE TECHNOLOGIES	15136	110543	HEXANE					0.0072	0.01	0.01
		7647010	HYDROCHLORIC ACID		0.051	0.051	4.31E-02	0.041496	0.10	0.07
		ASC	ARSENIC COMPOUNDS		6.69E-04	9.00E-04	5.67E-04	5.46E-04	0.00	
		BEC	BERYLLIUM COMPOUNDS		2.01E-05	2.70E-05	1.70E-05	1.64E-05	3.76E-05	
		CDC	CADMIUM COMPOUNDS		1.34E-04	1.80E-04	1.13E-04	1.09E-04	2.50E-04	
		COC	COBALT COMPOUNDS		5.80E-05	7.80E-05	4.91E-05	4.73E-05	1.09E-04	
		CRC	CHROMIUM COMPOUNDS		2.01E-03	2.70E-03	1.70E-03	1.64E-03	3.76E-03	
		MNC	MANGANESE COMPOUNDS		5.58E-04	7.50E-04	4.73E-04	4.55E-04	1.04E-03	
		NIC	NICKEL COMPOUNDS		0.00	2.40E-03	1.51E-03	1.46E-03	3.34E-03	
		PBC	LEAD COMPOUNDS	0.0073	6.70E-05	6.70E-05	1.08E-04	1.04E-04	2.38E-04	0.00
		SBC	ANTIMONY COMPOUNDS		5.02E-05	6.75E-05	4.25E-05	4.10E-05	9.39E-05	

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Company Name	ZIP	Pollutant CAS#	Pollutant Name	Emissions - Tons per Year 1998	1999	2000	2001	2002	2003	2004
BACHARACH INC. RIDC PARK. OHARA TV	15238	106990	1,3-BUTADIENE	0.001	0.001	0.001	0.0009			
		84742	DIBUTYL PHTHALATE	0.017	0.017	0.017	0			
BAKE- LINE GROUP LLC	15206	74839	METHYL BROMIDE	0	0	0	6	0	0	
		75070	ACETALDEHYDE	0.13	0.00	0.00	0.18	0.20	0.20	
		7664417	AMMONIA	18.94	0.00	0.00	0.03	0.10	0.10	
		PBC	LEAD COMPOUNDS	0						
BARBER SPRING	15201	1330207	XYLENE (MIXED ISOMERS)				0.121	0.244	0.244	2.79
		106423	P-XYLENE				0.14	0.28	0.28	
		108383	M-XYLENE				0.319	0.638	0.638	
		110543	HEXANE				0.09			0.10
		78933	METHYL ETHYL KETONE				0.10			
		PBC	LEAD COMPOUNDS		1.53E-05	2.46E-05	2.28E-05	2.19E-05	3.08E-05	0.00
BELLEFIELD BOILER PLANT	15213	110543	HEXANE				0.30	0.52	0.59	0.05
		18540299	CHROMIUM (VI)					0.10	0.10	0.10
		7647010	HYDROCHLORIC ACID	26.18	23.28	24.88	27.35	29.44	30.46	29.81
		7664393	HYDROGEN FLUORIDE	3.27	2.91	3.11	3.42	3.68	3.81	3.73
		91203	NAPHTHALENE					1.74E-04	1.98E-04	1.72E-04
		ASC	ARSENIC COMPOUNDS					7.54E-05	8.56E-05	5.64E-05
		BEC	BERYLLIUM COMPOUNDS					0.009	0.009	3.18E-03
		CDC	CADMIUM COMPOUNDS					0.003	0.003	0.02
		COC	COBALT COMPOUNDS					3.27E-05	3.72E-05	2.37E-05
		HGC	MERCURY COMPOUNDS					8.01E-05	9.12E-05	7.33E-05
		NIC	NICKEL COMPOUNDS					0.07	0.08	0.06
		PBC	LEAD COMPOUNDS	0.01	0.01	0.01	0.01	0.01	0.01	2.47E-03
BEST FEEDS & FARM SUPPLIES, INC.	15071	110543	HEXANE			0.03	0.03	0.03	0.03	
BETTIS ATOMIC POWER	15122	10045940	MERCURIC NITRATE					0	0	
LABORATORY		107211	ETHYLENE GLYCOL		0.136	0.108	0.352			
		110543	HEXANE						0.07	0.08
		16065831	CHROMIUM (III)		0.099				0.00	
		7647010	HYDROCHLORIC ACID		0.205					
		CRC	CHROMIUM COMPOUNDS		2.50E-06	0.04	0.02	0.001	0.002	
		HGC	MERCURY COMPOUNDS		0.008					
		PBC	LEAD COMPOUNDS	2.97E-05	4.65E-05	3.95E-05	1.92E-05	2.74E-05	2.25E-05	2.15E-05

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Company Name	ZIP	Pollutant CAS#	Pollutant Name	Emissions - Tons per Year						
				1998	1999	2000	2001	2002	2003	2004
BFI - IMPERIAL LANDFILL	15126	100414	ETHYL BENZENE	0.85	0.61					
		108101	METHYL ISOBUTYL KETONE	0	0.0159	0.016	0.013	0.12	0.11	0.153
		108883	TOLUENE	1.422	3.13	3.05	2.56	2.32	2.22	2.967
		110543	HEXANE	0	0.14	0.14	0.12	0.11	0.10	0.135
		127184	TETRACHLOROETHYLENE	0	0.53	0.52	0.44	0.4	0.38	0.507
		1330207	XYLENE (MIXED ISOMERS)	2.236	1.11	1.08	0.91	0.82	0.79	1.052
		75003	ETHYL CHLORIDE	0	0.2	0.2	0.16	0.15	0.14	0.191
		75014	VINYL CHLORIDE	0	0.4	0.39	0.32	0.29	0.28	0.376
		75092	METHYLENE CHLORIDE	0	1.05	1.02	0.86	0.78	0.75	0.995
		7647010	HYDROCHLORIC ACID	0.43	0.34	2.62	3.12	3.57	3.42	4.566
		7782505	CHLORINE	0						
		78933	METHYL ETHYL KETONE	0.134	0.44	0.43	0.36	0.33	0.31	0.419
		79016	TRICHLOROETHYLENE	0	0.32	0.31	0.26	0.24	0.23	0.304
		79345	1,1,2,2-TETRACHLOROETHAN	0	0.16	0.16	0.13	0.12	0.11	1.527
		PBC	LEAD COMPOUNDS	0	0	0	0	0	0	
BP EXPLORATION & OIL INC.	15108	100414	ETHYL BENZENE					0.01	0.00	0.004
		108883	TOLUENE	0.28	0.20	0.25	0.26	0.17	0.13	0.000
		110543	HEXANE	1.24	1.02	1.23	0.66	0.76	0.61	0.610
		1330207	XYLENE (MIXED ISOMERS)	0.11	0.08	0.11	0.08	0.09	0.07	0.072
		540841	2,2,4-TRIMETHYLPENTANE	0.24	0.00	0.26	0.13	0.15	0.12	0.120
		67561	METHANOL	0.11	0.10	0.05	0.11	0.09	0.00	0.000
		71432	BENZENE	0.12	0.12	0.12	0.07	0.08	0.06	0.062
		91203	NAPHTHALENE					2.00E-04		
BUCKEYE CORAOPOLIS PIPELINE FACILI	15108	100414	ETHYL BENZENE		0.00	0.04	0.03	0.03	0.08	0.03
FACILITY		100425	STYRENE			0.03	0.03	0.03	0.03	0.02
		108883	TOLUENE	0.38	0.37	0.36	0.35	0.36	0.37	0.31
		108952	PHENOL					0.00	0.00	1.30E-04
		110543	HEXANE	1.90	2.15	1.86	1.69	1.72	1.83	1.506
		1319773	CRESOLS (MIXED ISOMERS)		0.00	0.00	0.00	0.00	0.00	0.000
		1330207	XYLENE (MIXED ISOMERS)	0.13	0.13	0.12	0.12	0.12	0.12	0.107
		1634044	METHYL TERT-BUTYL ETHER	1.31	1.42	1.13	1.05	1.09	1.20	0.948
		540841	2,2,4-TRIMETHYLPENTANE	0.35	0.38	0.31	0.28	0.29	0.32	0.254
		71432	BENZENE	0.26	0.28	0.24	0.24	0.25	0.25	0.209
		91203	NAPHTHALENE		0.00	0.07	0.00	0.00	0.01	0.001
		98828	CUMENE			0.01	0.01	0.01	0.02	0.007

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Company Name	ZIP	Pollutant CAS#	Pollutant Name	Emissions - Tons per Year						
				1998	1999	2000	2001	2002	2003	2004
CALGON CARBON CORPORATION	15225	18540299	CHROMIUM (VI)						2.50E-05	2.00E-05
		7647010	HYDROCHLORIC ACID	0.1	0.12	0.13	0.24	0.19	0.26	1.40E-03
		7664393	HYDROGEN FLUORIDE	0.005	0.007	0.007	0.007	0.006	0.004	0.060
		7664417	AMMONIA	287.63	179.02	178.38	203.26	219.67	228.3	0.770
		7782505	CHLORINE						0.02	0.060
		CRC	CHROMIUM COMPOUNDS	0.07	0.09	0.09	0.10	0.12	0.16	169.98
		HGC	MERCURY COMPOUNDS	0.01	0.01	0.01	0.00	0.00	0.00	0.02
		PBC	LEAD COMPOUNDS	0.01	0.01	0.01	0.00	0.00	0.00	0.00
CARRICK SCHOOL	15203	110543	HEXANE						0.010	0.008
CDC, NIOSH, PITTSBURGH .	15236	108883	TOLUENE	0.02	0.02	0.02	0	0	0	0.000
RESEARCH LAB.		110543	HEXANE				0.004	0.007	0.007	0.004
		1330207	XYLENE (MIXED ISOMERS)	0.17	0.17	0.17	0	0	0	0.000
		64741668	NAPHTHA, (PETROLEUM), LIGHT ALKYLATE					0		0.000
		7647010	HYDROCHLORIC ACID	3.07	3.28	3.11	3.12	3.12	3.12	2.80
		PBC	LEAD COMPOUNDS	1.15E-05	1.24E-05	1.17E-05	2.34E-05	2.34E-05	2.34E-05	1.95E-05
CENTRAL FOOD KITCHEN	15203	110543	HEXANE						0.01	0.02
CHAMBERS DEVELOPMENT CO., INC.	15146	108101	METHYL ISOBUTYL KETONE	0.03	0.03	0.07	0.04	0.114	0.07	0.06
		108883	TOLUENE	0.57	0.48	1.28	0.87	2.20	1.37	1.15
		110543	HEXANE	0.03	0.02	0.06	0.04	0.1	0.06	0.05
		127184	TETRACHLOROETHYLENE	0.1	0.08	0.22	0.15	0.113	0.23	0.20
		1330207	XYLENE (MIXED ISOMERS)	0.2	0.17	0.45	0.31	0.781	0.48	0.41
		75003	ETHYL CHLORIDE	0.04	0.03	0.08	0.06	0	0.09	0.00
		75014	VINYL CHLORIDE	0.07	0.06	0.16	0.11	0.279	0.17	0.15
		75092	METHYLENE CHLORIDE	0.19	0.16	0.43	0.29	0.74	0.46	0.39
		7647010	HYDROCHLORIC ACID	0.97	0.82	1.42	1.47	1.61	1.61	1.37
		78933	METHYL ETHYL KETONE	0.08	0.07	0.18	0.12	0.311	0.19	0.16
		79016	TRICHLOROETHYLENE	0.06	0.05	0.13	0.09	0.225	0.14	0.12
		79345	1,1,2,2-TETRACHLOROETHAN	0.03	0.02	0.07	0.04	0.113	0.07	0.06

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Company Name	ZIP	Pollutant CAS#	Pollutant Name	Emissions - Tons per Year						
				1998	1999	2000	2001	2002	2003	2004
CHILDRENS HOSPITAL OF PITTSBURGH	15201	110543	HEXANE						0.07	0.02
		1330207	XYLENE (MIXED ISOMERS)	0.1						
		50000	FORMALDEHYDE	0.1						
		67561	METHANOL	0.4						
		75218	ETHYLENE OXIDE	2	3.577	3.25	2.06	1.55	0	0
		GLYET	GLYCOL ETHERS	0.25						
		PBC	LEAD COMPOUNDS	0						
CLAIRTON SLAG, INC.	15088	120127	ANTHRACENE		3.59E-05	3.31E-05				4.46E-06
		129000	PYRENE							1.32E-06
		7439976	MERCURY COMPOUNDS		2.19E-05	2.02E-04		1.17E-05	8.39E-06	8.71E-06
		100414	ETHYL BENZENE	0.13	0.15	0.14	0.01	0.01	0.04	0.046726
		108883	TOLUENE	0.07	0.08	0.07	0.01	0.00	0.02	0.02
		1330207	XYLENE (MIXED ISOMERS)	0.17	0.19	0.18	0.01	0.01	0.05	0.06
		18540299	CHROMIUM (VI)		4.37E-07	2.90E-07		1.27E-06	9.10E-07	1.02E-06
		191242	BENZO(G,H,I)PERYLENE		2.12e-8					2.12E-08
		193395	INDENO(1,2,3-CD)PYRENE		2.12e-8					2.12E-08
		205992	BENZ(E)ACEPHENANTHRYLENE		1.91e-7					1.91E-07
		206440	FLUORANTHENE		3.40e-6					3.40E-06
		207089	BENZO(K)FLUORANTHENE		2.76e-7					2.76E-07
		208968	ACENAPHTHYLENE		1.23e-5					1.23E-05
		218019	CHRYSENE		8.50e-8					8.50E-08
		50000	FORMALDEHYDE		0.04	0.04	0.11	0.08	0.01	0.05
		50328	BENZO(A)PYRENE		2.12e-8					2.12E-08
		53703	DIBENZ(A,H)ANTHRACENE		2.12e-8					2.12E-08
		56553	BENZ(A)ANTHRACENE		1.06e-7					1.06E-07
		71432	BENZENE		0.02	0.01	0.01	0.01	0.01	0.01
		71432	BENZENE		0.01					0.01
		7439976	MERCURY		8.71e-6					8.71E-06
		75070	ACETALDEHYDE		0.03	0.03				
		83329	ACENAPHTHENE		1.91e-5					1.91E-05
		85018	PHENANTHRENE		5.52e-5					5.52E-05
		86737	FLUORENE		3.40e-5					3.40E-05
		91203	NAPHTHALENE		0.002	0.002	0.003	0.002	0.001	7.65E-04
		91203	NAPHTHALENE		0.001					7.65E-04
		91576	2-METHYLNAPHTHALENE		0.002					0.002
		MNC	MANGANESE COMPOUNDS		0.000	0.000	0.000	0.021	0.017	0.007
CLEARWATER, INC.	15225	107211	ETHYLENE GLYCOL	0.004						
		108883	TOLUENE	0.020						
		67561	METHANOL	0.120						
		7664417	AMMONIA	0.028						
CONNELLEY SCHOOL	15219	110543	HEXANE						0.02	0.02

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Company Name	ZIP	Pollutant CAS#	Pollutant Name	Emissions - Tons per Year						
				1998	1999	2000	2001	2002	2003	2004
CP INDUSTRIES	15132	100414	ETHYL BENZENE	0.05	0.05	0.07	0.07	0.07	0.07	0.07
		107982	1-METHOXY-2-PROPANOL					0.01	0.01	
		108101	METHYL ISOBUTYL KETONE	0.02	0.01	0.01	0.01	0.01	0.01	0.01
		108883	TOLUENE	0.21	0.01	0.01	0.01	0.02	0.02	0.02
		110543	HEXANE				0.05	0.03	0.03	0.03
		111762	2-BUTOXY ETHANOL					0.07	0.07	
		1330207	XYLENE (MIXED ISOMERS)	0.14	0.09	0.11	0.11	0.17	0.17	0.17
		2807309	2-PROPOXYETHANOL					0.01	0.01	
		67561	METHANOL	0	0	0.01	0.01	0.01	0.01	0.01
		78933	METHYL ETHYL KETONE	0.05	0.05	0.06	0.06	0.1	0.1	0.10
CREIGHTON STATION	15030	75070	ACETAALDEHYDE							0.14
		107028	ACROLIEN							0.14
		50000	FORMALDEHYDE			0.59				1.01
		71432	BENZENE			0.02				
DICE COMPRESSOR STATION	15239	50000	FORMALDEHYDE	4.36	0.31	0.76	0.57	0.63	0.67	1.03
		71432	BENZENE	0.1	0.1	1.31E-05	0	0	0	0.00
DLM FOODS	15212	7647010	HYDROCHLORIC ACID	28.61	31.48	31.24	27.84	28.67	28.63	27.84
		7664393	HYDROGEN FLUORIDE	3.58	3.93	3.90	3.48	3.58	3.58	3.48
		PBC	LEAD COMPOUNDS	0.01	0.01	0.01	0.01	0.01	0.01	0.01
DUQUESNE LIGHT COMPANY	15233	1330207	XYLENE (MIXED ISOMERS)				0.008			
MANCHESTER FACILTY		50000	FORMALDEHYDE	0.001	0.001	0.001	0.001			

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Company Name	ZIP	Pollutant CAS#	Pollutant Name	Emissions - Tons per Year						
				1998	1999	2000	2001	2002	2003	2004
DUQUESNE UNIVERSITY	15282	108883	TOLUENE			0.03	0.03	0.00	0.03	
		110543	HEXANE	0.04	0.00	0.08	0.06	0.06	0.06	0.07
		121448	TRIETHYLAMINE				0.00	0.00		
		1330207	XYLENE (MIXED ISOMERS)						0.01	
		193395	INDENO(1,2,3-CD)PYRENE		5.94e-8					5.94E-08
		207089	BENZO(K)FLUORANTHENE		5.94e-8					5.94E-08
		218019	CHRYSENE		5.94e-8					5.94E-08
		50000	FORMALDEHYDE			0.16	0.16	0.00	0.15	0.15
		50328	BENZO(A)PYRENE		3.96e-8					3.96E-08
		53703	DIBENZ(A,H)ANTHRACENE		3.96e-8					3.96E-08
		56553	BENZ(A)ANTHRACENE		5.94e-8					5.94E-09
		67561	METHANOL	0.080	0.010	0.004				
		67663	CHLOROFORM	0.186	0.074	0.041	0.025	0.104	0.1202	0.06
		68476868	HYDROCARBON					4.53E-06		
		75058	ACETONITRILE					0.001		
		75058	ACETONITRILE		0.003	0.003				
		75092	METHYLENE CHLORIDE	0.1	0.008	0.003	0.001	0.003		
		7647010	HYDROCHLORIC ACID				0.002	0.000		
		79061	ACRYLAMIDE					1.85E-05		
		HGC	MERCURY COMPOUNDS						7.3748E-06	8.58E-06
	15282	PBC	LEAD COMPOUNDS				1.67E-05	1.43E-05	1.41E-05	1.65E-05
DURA - BOND INDUSTRIES INC.	15134	110543	HEXANE				0.013	0.014	0.022	0.020
		PBC	LEAD COMPOUNDS			6.58E-06	3.86E-06	4.29E-06	6.71E-06	6.27E-06

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				1998	1999	2000	2001	2002	2003	2004
EASTMAN CHEMICAL RESINS, INC.	15088	100414	ETHYL BENZENE				5.20	5.20	4.88	4.90
		100425	STYRENE				18.41	19.72	17.06	18.25
		103651	PROPYL BENZENE				0.01	0.01	0.18	0.24
		108883	TOLUENE				38.77	36.88	29.61	35.13
		108952	PHENOL				0.00	0.00		
		110543	HEXANE					0.02	0.19	0.17
		110827	CYCLOHEXANE						0.01	0.01
		1330207	XYLENE (MIXED ISOMERS)				13.51	10.82	9.94	10.72
		142290	CYCLOPENTENE						0.84	1.01
		25013154	METHYLSTYRENE						0.13	0.15
		2551137	TRIMETHYL BENZENE				0.01	0.01	0.01	0.01
		71432	BENZENE				1.94	1.96	2.06	2.05
		7647010	HYDROCHLORIC ACID				4.52	1.69	3.90	2.62
		7664393	HYDROGEN FLUORIDE				0.41	0.27	0.27	0.32
		7664417	AMMONIA				27.23	22.91	24.87	34.00
		7782505	CHLORINE				0.27	0.17	0.38	0.24
		91203	NAPHTHALENE				0.84	1.11	0.90	0.88
		95636	1,2,4-TRIMETHYLBENZENE						0.22	0.30
		98828	CUMENE				3.48	3.59	3.70	3.69
		PBC	LEAD COMPOUNDS						3.17	2.93
EDGEWATER STEEL LTD.	15139	PBC	LEAD COMPOUNDS	1.70E-04	1.11E-04	1.01E-04	6.0432E-05			
EPIC METALS CORPORATION	15104	100414	ETHYL BENZENE	0.38	0.05	0.02	0.02	0.02	0.02	0.03
		108101	METHYL ISOBUTYL KETONE	0.87	0.47	0.35	0.06	0.09	0.09	0.10
		108883	TOLUENE	2.66	0.69	0.25	0.01	0.02	0.01	0.01
		1330207	XYLENE (MIXED ISOMERS)	5.05	3.02	1.98	0.25	0.34	0.18	0.25
		19089475	PROPYLENE GLYCOL ETHYL	0.05	0.10	0.06	0.14	0.20	0.12	0.00
		2551137	TRIMETHYL BENZENE	0.77	0.37		0.02	0.03		
		67561	METHANOL		0.00					0.00
		78831	ISOBUTYL ALCOHOL				0.03	0.04	0.05	
		78933	1,2,4-TRIMETHYLBENZENE		0.01					0.00
		78933	METHYL ETHYL KETONE	6.08	2.47	0.75	0.10	0.13	0.05	0.10
		CDC	CADMIUM COMPOUNDS				0.000			
		GLYET	GLYCOL ETHERS						0.007	0.002
		PBC	LEAD COMPOUNDS				0.004			

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Company Name	ZIP	Pollutant CAS#	Pollutant Name	Emissions - Tons per Year						
				1998	1999	2000	2001	2002	2003	2004
FERRO CORP	15204	16065831	CHROMIUM (III)	0.03	0.03	0.11	0.03			
		67561	METHANOL	0.00	0.00	0.01	0.01			
		GLYET	GLYCOL ETHERS		0.00	0.00	0.00			
		PBC	LEAD COMPOUNDS	0.13	0.07	0.11	0.06			
FOX CHAPEL SENIOR HIGH SCHOOL	15238	110543	HEXANE		0.02					0.02
GALVTECH	15207	110543	HEXANE			0.55	0.49	0.62	0.48	0.53
		50000	FORMALDEHYDE			0.02	0.02	0.03	0.02	0.02
		PBC	LEAD COMPOUNDS		0.00	0.00	0.00	0.00	0.00	0.00
		SBC	ANTIMONY COMPOUNDS		0.00	0.00	0.00	0.00	0.00	0.00
GARDNER,DENVER,NASH LLC	15037	100414	ETHYL BENZENE			0.40	0.05	0.03	0.09	0.18
(FORMERLY NASH ELMO)		107879	2-PENTANONE				0.000	0.000	0.017	0.03
		108101	METHYL ISOBUTYL KETONE			0.010	0.009	0.007	0.047	0.01
		108883	TOLUENE	0.004	0.012	0.130	0.105	0.111	0.191	0.01
		111762	2-BUTOXY ETHANOL					0.08	0.09	0.00
		1330207	XYLENE (MIXED ISOMERS)	0.22	0.09	0.10	0.15	0.12	0.46	0.40
		2807309	2-PROPOXYETHANOL			0.01				
		67561	METHANOL	0.06	0.01	0.00	0.02	0.02	0.05	6.22E-04
		78933	METHYL ETHYL KETONE		0.00	0.03	0.03	0.03	0.40	0.37125
		822060	HEXAMETHYLENE-1,6-DIISOCYANATE				0.00	0.00	0.00	0
		84742	DIBUTYL PHTHALATE		0.00		0.00	0.00	0.00	0
		91203	NAPHTHALENE				0.00	0.01	0.03	0.00048

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Company Name	ZIP	Pollutant CAS#	Pollutant Name	Emissions - Tons per Year						
				1998	1999	2000	2001	2002	2003	2004
GE CONSUMER PRODUCTS, LIGHTING	15017	106990	1,3-BUTADIENE	0		2.61E-07	0	4.25E-07	1.35E-06	4.78E-07
		107028	ACROLEIN	0		5.88E-07	0	1.00E-06	3.19E-06	1.13E-06
		108883	TOLUENE	1.000E-05		2.68E-06	0	4.45E-06	1.41E-05	5.00E-06
		111308	GLUTARALDEHYDE					0.00	0.00	0.00
		1330207	XYLENE (MIXED ISOMERS)					3.09E-06	9.83E-06	3.48E-06
		50000	FORMALDEHYDE	4.000E-05		0.03	0.04	1.47E-03	8.05E-03	0.01
		71432	BENZENE	4.000E-05		6.07E-06	0	1.01E-05	3.22E-05	1.14E-05
		75070	ACETALDEHYDE	3.000E-05		5.03E-06	0	8.33E-06	2.65E-05	9.38E-07
		95476	O-XYLENE	1.000E-05		1.89E-06	0			
		CDC	CADMIUM COMPOUNDS	0.03	0.03	0.23	0.02	0.29	0.15	0.11
		COC	COBALT COMPOUNDS	0.02	0.03	0.05	0.04	0.04	0.03	
		CRC	CHROMIUM COMPOUNDS	2.45E-03	8.17E-04	1.60E-06		1.05E-06	3.79E-06	1.16E-06
		HGC	MERCURY COMPOUNDS	0.42	0.42	0	0	0	0	0
		NIC	NICKEL COMPOUNDS	0.04	0.04	0.15	0.06	0.05	0.03	
		PAH	PAH			1.11E-06	0	1.82E-06	5.80E-06	2.06E-06
		PBC	LEAD COMPOUNDS	0.58	0.58	4.13	3.13	3.90	3.16	3.20
		SBC	ANTIMONY COMPOUNDS	1.00	0.98	0.33	0.29	0.32	0.29	0.28
		SEC	SELENIUM COMPOUNDS	0.02	0.02	0.03	0.04	0.05	0.02	0.02
GENERAL ELECTRIC APPARATUS SERVICE	15122	100414	ETHYL BENZENE		0.006	0.011	0.009	0.006	0.001	0.002
		106467	1,4-DICHLOROBENZENE					0.003	0.009	0.008
		108101	METHYL ISOBUTYL KETONE		0.002	0.005	0.002	0.003	0.002	0.002
		108883	TOLUENE			0.001	0.001	0.003	0.009	0.022
		110543	HEXANE			0.006	0.005	0.006	0.007	0.007
		127184	TETRACHLOROETHYLENE		0.027	0.073	0.065			
		1330207	XYLENE (MIXED ISOMERS)		0.065	0.052	0.042	0.025	0.008	0.012
		67561	METHANOL		0.023	0.062	0.025	0.033	0.023	0.023
		71432	BENZENE					0.003	0.009	0.008
		7439965	MANGANESE		0.034	0.065	0.027	0.046	0.029	0.040
		7440020	NICKEL	0.028	0.007	0.014	0.003	0.003	0.002	0.004
		7440473	CHROMIUM		0.080	0.121	0.049	0.084	0.053	0.080
		7723140	PHOSPHORUS (YELLOW OR V	0.025	0.005	0.010	0.002	0.000	0.000	0.000
		78933	METHYL ETHYL KETONE		0.012	0.007	0.003	0.000	0.000	0.000
		GLYET	GLYCOL ETHERS	0.090	0.007	0.006	0.003	0.000	0.002	0.005

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				1998	1999	2000	2001	2002	2003	2004
GENERAL MOTORS PITTSBURGH PLANT	15122	100414	ETHYL BENZENE				4.90E-04	5.00E-04	5.00E-04	4.60E-03
		108883	TOLUENE				4.90E-04	5.00E-04	5.00E-04	5.03E-02
		110543	HEXANE			4.31E-02	4.69E-02	4.79E-02	4.01E-02	5.88E-02
		1330207	XYLENE (MIXED ISOMERS)				4.90E-04	5.00E-04	5.00E-04	2.99E-02
		1634044	METHYL TERT-BUTYL ETHER				2.48E-04	2.53E-04	2.53E-04	4.80E-02
		50000	FORMALDEHYDE		9.70E-03	1.13E-02	8.37E-03	7.95E-03	7.80E-03	5.21E-03
		71432	BENZENE				4.95E-04	5.05E-04	5.05E-04	9.10E-03
		91203	NAPHTHALENE				4.90E-05	5.00E-05	5.00E-05	2.50E-03
		PB	LEAD		7.96e-6	7.93E-06	9.38E-06	9.25E-06	8.05E-06	7.96E-06
		POM	POLYCYCLIC ORGANIC MATTER		6.67E-04	7.76E-04	5.76E-04	5.46E-04	5.36E-04	3.58E-04
GLENSHAW GLASS COMPANY, INC.	15116	16065831	CHROMIUM (III)	0.150	0.160	0.160	0.170	0.014	0.001	0.001
		7647010	HYDROCHLORIC ACID	5.566	5.722	5.213	4.267	3.950	3.878	2.437
		91203	NAPHTHALENE						0.000	0.002
		SEC	SELENIUM COMPOUNDS	1.640	1.688	7.290	2.390	1.963	2.230	2.290
GOTTLIEB, INC.	15225	110543	HEXANE						0.012	0.033
		1746016	2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN						1.13E-08	1.42E-08
		50000	FORMALDEHYDE		0.001389					0.001
		7647010	HYDROCHLORIC ACID						1.96	2.47
		7664393	HYDROGEN FLUORIDE						0.78	0.99
GUARDIAN INDUSTRIES CORP . FLOREFFE	15025	CDC	CADMIUM COMPOUNDS						0.004	7.96E-08
		COC	COBALT COMPOUNDS	1.87	0.08	0.00	0.00	0.00	0.00	0.00
		CRC	CHROMIUM COMPOUNDS	8.50	12.80	0.33	0.45	0.01	0.00	0.08
		SEC	SELENIUM COMPOUNDS	18.18	35.07	38.75	41.95	1.48	1.03	1.94
GULF OIL LIMITED PARTNERSHIP NEVILLE IS.	15225	100414	ETHYL BENZENE	1.01	0.85	0.86	0.82	1.01	0.45	0.17
		108883	TOLUENE	1.09	1.43	1.42	1.80	2.06	3.14	1.42
		110543	HEXANE	0.02	0.02	0.02	0.02	0.23	0.83	0.67
		1330207	XYLENE (MIXED ISOMERS)	1.09	0.72	0.85	0.82	1.09	2.43	0.24
		1634044	METHYL TERT-BUTYL ETHER	3.65	3.67	3.83	4.66	6.74	4.77	4.16
		540841	2,2,4-TRIMETHYLPENTANE					0.08	0.00	0
		71432	BENZENE	4.40	2.95	3.00	0.71	4.76	0.86	0.82
		91203	NAPHTHALENE	6.74	7.47	7.70	9.58	9.70	0.52	0.48
		95636	1,2,4-TRIMETHYLBENZENE					0.03	0.00	0
		98828	CUMENE					0.00	0.19	1.24

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Company Name	ZIP	Pollutant CAS#	Pollutant Name	Emissions - Tons per Year 1998	1999	2000	2001	2002	2003	2004
HASKELL SENATOR INTERNATIONAL	15147	100414	ETHYL BENZENE	1.00	1.33	1.35	1.00			
		108101	METHYL ISOBUTYL KETONE	0.35	0.44	0.45	0.28			
		108883	TOLUENE	8.35	7.44	7.49	4.68			
		110543	HEXANE	0.68	0.59	0.66	0.46			
		1330207	XYLENE (MIXED ISOMERS)	24.42	24.32	24.16	12.06			
		50000	FORMALDEHYDE	0.05	0.05	0.05	0.04			
		75092	METHYLENE CHLORIDE	0.15	0.18	0.33	0.21			
		78933	METHYL ETHYL KETONE	0.72	0.54	0.54	0.32			
		91203	NAPHTHALENE	0.26	0.37	0.37	0.24			
		98828	CUMENE	0.11	0.13	0.13	0.08			
		GLYET	GLYCOL ETHERS	0.79	0.97	0.99	0.62			
HEIGHTS PLAZA MATERIALS, INC	15065	110543	HEXANE			1.43E-04	1.29E-04			
HENRY MILLER SPRING & . MANUFACTURING CO	15125	1330207	XYLENE (MIXED ISOMERS)	0.17	0.06	0.00				
		CRC	CHROMIUM COMPOUNDS	0.07	0.01	0.00				
		MNC	MANGANESE COMPOUNDS	0	1.00E-07	1.04E-08				
		NIC	NICKEL COMPOUNDS	0.072	0.008	0.001				
		PBC	LEAD COMPOUNDS	3.06E-05	3.39E-05	2.67E-06				
HERCULES INCORPORATED	15088	100414	ETHYL BENZENE	3.73	3.69	3.56				
		100425	STYRENE	16.24	16.20	10.88				
		108883	TOLUENE	21.34	61.22	88.33				
		108952	PHENOL	0.00	0.00	0.00				
		1330207	XYLENE (MIXED ISOMERS)	13.04	12.72	7.18				
		71432	BENZENE	2.18	2.16	1.80				
		7647010	HYDROCHLORIC ACID	5.42	5.82	5.37				
		7664393	HYDROGEN FLUORIDE	0.43	0.44	0.43				
		7664417	AMMONIA			26.58				
		7782505	CHLORINE	0.28	0.29	0.29				
		91203	NAPHTHALENE			0.12				
		98828	CUMENE	4.19	4.08	2.86				
HOECHSTETTER PRINTING	15143	107211	ETHYLENE GLYCOL		0.34	0.39		0.48	0.24	0.74
		110543	HEXANE		0.14	0.13		0.23	0.00	
		111762	2-BUTOXY ETHANOL					8.05	2.74	
		123319	HYDROQUINONE						0.28	
		1330207	XYLENE (MIXED ISOMERS)		1.01	1.19		1.30	0.78	0.11
		91203	NAPHTHALENE						0.52	0.35
		GLYET	GLYCOL ETHERS						0.01	4.36
		PBC	LEAD COMPOUNDS		7.1743E-06	6.8942E-06		1.325E-07	4.9229E-07	

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Company Name	ZIP	Pollutant CAS#	Pollutant Name	Emissions - Tons per Year						
				1998	1999	2000	2001	2002	2003	2004
HUSSEY COPPER LTD.	15056	110543	HEXANE						0.39	0.39
		CRC	CHROMIUM COMPOUNDS				0.01	0.01	0.08	0.09
		PB	LEAD	0.093957						0.09
		PBC	LEAD COMPOUNDS	0.26716135	0.27	0.35	0.19	0.28	0.68	0.09
IA CONSTRUCTION GIBSONIA	15044	100414	ETHYL BENZENE	0.201835	0.18	0.11	0.11	0.09	0.04	
		108883	TOLUENE	0.110092	0.10	0.06	0.05	0.04	0.02	
		1330207	XYLENE (MIXED ISOMERS)	0.262997	0.24	0.14	0.13	0.11	0.05	
		18540299	CHROMIUM (VI)		5.34E-07	3.26E-07	2.30E-06	1.99E-06	8.67E-07	
		HGC	MERCURY COMPOUNDS		1.37E-05	8.35E-06	2.12E-05	1.84E-05	8.00E-06	
		PBC	LEAD COMPOUNDS		5.12E-05	2.68E-05	4.59E-05	3.97E-05	1.73E-05	
IDL INCORPORATED	15239	100414	ETHYL BENZENE						0.002	0.002
		108101	METHYL ISOBUTYL KETONE						0.061	0.061
		108883	TOLUENE	7.440	6.970	5.720	3.140	0.000	0.000	0.000
		110543	HEXANE				0.006	0.006	0.006	0.006
		1330207	XYLENE (MIXED ISOMERS)	0.242	0.159	2.560	1.400	0.000	0.009	0.009
		78933	METHYL ETHYL KETONE	6.830	6.490	4.480	2.450	0.000	0.000	0
		95636	1,2,4-TRIMETHYLBENZENE						0.044	0.044
		98828	CUMENE						0.010	0.010
		GLYET	GLYCOL ETHERS	3.969	3.320	1.990	0.460	1.387	0.152	0.868
INTERNATIONAL PAPER	15215	108054	VINYL ACETATE	0.280	0.141	0.000	0.000	0.000		
		108883	TOLUENE	0.003	0.001	0.000	0.000	0.000		
		110543	HEXANE						0.012	0.004
		50000	FORMALDEHYDE	0.011	0.011	0.006	0.000	0.000		
		71432	BENZENE	0.000	0.000	0.000	0.000	0.000		
		75070	ACETALDEHYDE	0.002	0.001	0.000	0.000	0.000		
		GLYET	GLYCOL ETHERS	0.148	0.481	0.000	0.000	0.000	0.025	0.019
JEFFERSON REGIONAL MEDICAL CENTER	15236	110543	HEXANE						0.062	0.064
		75218	ETHYLENE OXIDE	0.030	0.031	0.038	0.041	0.035	0.032	0.033
		PB	LEAD					1.96E-05	1.53E-05	1.73E-05

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Company Name	ZIP	Pollutant CAS#	Pollutant Name	Emissions - Tons per Year						
				1998	1999	2000	2001	2002	2003	2004
KELLY RUN SANITATION	15037	100414	ETHYL BENZENE	0.26	0.24		0.22	0.23	0.04	0.03
		107131	ACRYLONITRILE	0.18	0.17		0.15	0.16	0.03	0.02
		108101	METHYL ISOBUTYL KETONE	0.09	0.09		0.08	0.08	0.02	0.01
		108883	TOLUENE	1.76	1.78		1.62	1.76	0.33	0.24
		110543	HEXANE	0.08	0.08		0.07	0.08	0.05	0.04
		127184	TETRACHLOROETHYLENE	0.30	0.30		0.28	0.18	0.04	0.02
		1330207	XYLENE (MIXED ISOMERS)	0.62	0.63		0.57	0.63	0.12	0.09
		71432	BENZENE		0.07		0.07	0.08	0.01	0.01
		75003	ETHYL CHLORIDE		0.11		0.10	0.00	0.00	0.00
		75014	VINYL CHLORIDE	0.22	0.23		0.20	0.23	0.04	0.03
		75092	METHYLENE CHLORIDE	0.59	0.60		0.54	0.59	0.11	0.08
		75343	ETHYLIDENE DICHLORIDE	0.12						
		7647010	HYDROCHLORIC ACID	0.47	0.55		0.62	0.02	0.02	0.11
		78933	METHYL ETHYL KETONE	0.25	0.25		0.23	0.23	0.05	0.03
		79016	TRICHLOROETHYLENE	0.18	0.18		0.17	0.20	0.03	0.02
		79345	1,1,2,2-TETRACHLOROETHAN	0.09	0.09		0.08	0.08	0.02	0.01
KINDER MORGAN INDIANOLA PLANT	15051	100414	ETHYL BENZENE	0.23	0.02	0.02	0.02	0.02	0.02	0.02
		108883	TOLUENE	0.30	0.44	0.33	0.26	0.24	0.24	0.26
		110543	HEXANE	0.36	0.40	0.30	0.21	0.24	0.24	0.32
		127184	TETRACHLOROETHYLENE					0.029	1.45E-05	0.029
		1330207	XYLENE (MIXED ISOMERS)	0.13	0.07	0.05	0.17	0.13	0.14	0.14
		1634044	METHYL TERT-BUTYL ETHER		0.90	0.66	3.00	3.11	3.11	3.41
		71432	BENZENE	0.20	0.13	0.11	0.38	0.19	0.19	0.22
		91203	NAPHTHALENE						2.17E-04	1.95E-05
		95636	1,2,4-TRIMETHYLBENZENE					0.06	0.07	0.06
KINDER-MORGAN LIQUIDS TERMINAL LLC	15034	110543	HEXANE				0.02	0.02	0.02	0.02
		PB	LEAD					8.1115E-07	1.7774E-06	0.00000119
KOPP GLASS, INCORPORATED.	15218	110543	HEXANE			0.126	0.133	0.103	0.097	0.076
		67561	METHANOL	0.528	0.086	1.189	1.062	0.194	0.184	0.058
		7440746	INDIUM	0.025						
		7647010	HYDROCHLORIC ACID	0.007	0.006	0.014	0.013	0.013		
		79016	TRICHLOROETHYLENE	2.875	0.813	0.000	0.000	0.000		
		GLYET	GLYCOL ETHERS						0.023	0.003

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Company Name	ZIP	Pollutant CAS#	Pollutant Name	Emissions - Tons per Year						
				1998	1999	2000	2001	2002	2003	2004
KOPPERS INDUSTRIES INC. CLAIRTON P	15025	100414	ETHYL BENZENE	0.782	0.100	0.045	2.088	0.097	0.127	0.109
		100425	STYRENE	0.535	0.227	0.267	0.394	0.399	0.513	0.488
		100470	BENZONITRILE					0.00	0.01	0.01
		105679	2,4-DIMETHYLPHENOL					0.00	0.00	
		106423	P-XYLENE		0.51	0.50	0.43	0.47	0.59	0.56
		106445	P-CRESOL		0.05	0.05	0.06	0.04	0.05	0.05
		108383	M-XYLENE		0.53	0.48	0.43	0.45	0.58	0.55
		108394	M-CRESOL		0.06	0.05	0.06	0.05	0.06	0.05
		108883	TOLUENE	3.58	1.39	0.93	1.16	1.19	1.58	1.48
		108952	PHENOL	0.60	0.11	0.08	0.07	0.07	0.09	0.08
		110543	HEXANE				0.08	0.18	0.18	0.23
		110861	PYRIDINE				0.04	0.06	0.07	0.07
		120127	ANTHRACENE	0.01	0.75	0.26	0.74	0.78	0.67	0.66
		129000	PYRENE					1.30	1.19	1.18
		1319773	CRESOLS (MIXED ISOMERS)	0.25						
		132649	DIBENZOFURAN	0.04	0.65	0.88	0.73	0.66	0.56	0.55
		1330207	XYLENE (MIXED ISOMERS)	0.92						
		191242	BENZO(G,H,I)PERYLENE				0.19	0.28	0.27	0.26
		193395	INDENO(1,2,3-CD)PYRENE					0.29	0.29	0.28
		206440	FLUORANTHENE					1.97	1.80	1.81
		207089	BENZO(K)FLUORANTHENE					0.27	0.22	0.22
		208968	ACENAPHTHYLENE					1.10	0.22	0.22
		218019	CHRYSENE					1.50	1.47	1.42
		50000	FORMALDEHYDE					0.01	0.01	0.01
		50328	BENZO(A)PYRENE					0.58	0.56	
		53703	DIBENZ(A,H)ANTHRACENE					0.09	0.09	0.09
		56553	BENZ(A)ANTHRACENE					1.39	1.35	1.38
		71432	BENZENE	6.11	5.79	2.99	2.39	2.62	3.25	3.17
		83329	ACENAPHTHENE					1.08	1.81	1.71
		85018	PHENANTHRENE		1.96	2.98	2.75	3.32	2.98	3.21
		86737	FLUORENE					1.21	1.11	1.07
		86748	CARBAZOLE					0.38	0.34	0.33
		91203	NAPHTHALENE	17.09	13.97	10.85	8.11	8.16	9.19	8.44
		91225	QUINOLINE	0.01	0.17	0.14	0.23	0.22	0.20	0.19
		92524	BIPHENYL	0.13	0.19	0.15	0.28	0.26	0.22	0.21
		95476	O-XYLENE		0.31	0.50	0.41	0.27	0.31	0.29
		95487	O-CRESOL		0.02	0.02	0.04	0.05	0.07	0.06
		95636	1,2,4-TRIMETHYLBENZENE				0.19	0.09	0.13	0.13
		98828	CUMENE	0.122	0.008					
		PBC	LEAD COMPOUNDS				1.20E-05	1.53E-05	1.53E-05	
		POM	POLYCYCLIC ORGANIC MATT	19.62	5.27	9.04	11.94	15.95	14.85	8.44

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Company Name	ZIP	Pollutant CAS#	Pollutant Name	Emissions - Tons per Year						
				1998	1999	2000	2001	2002	2003	2004
KOSMOS CEMENT COMPANY	15225	7647010	HYDROCHLORIC ACID	7.97	9.06	9.60	1.36			
		7723140	PHOSPHORUS (YELLOW OR WHITE)			3.10	0.44			
		CRC	CHROMIUM COMPOUNDS			0.35	0.05			
		NIC	NICKEL COMPOUNDS			0.16	0.02			
		PBC	LEAD COMPOUNDS	0.01	0.14	0.02	0.00			
LAUREL MOUNTAIN WHIRLPOOLS, INC.	15145	100425	STYRENE	4.10	3.72	3.58	3.35	5.31	25.97	14.95
		110543	HEXANE				0.003	0.003	0.004	0.003
		131113	DIMETHYL PHTHALATE	0.05	0.04	0.04	0.03	0.07	0.00	0.86
		78933	METHYL ETHYL KETONE						0.13	0.13
		PB	LEAD			0.00	0.00	0.00	0.00	0.00
LIBERTY POLYGLAS PULTRUSIONS	15122	100425	STYRENE	10.00	9.83	9.39	6.27	5.76	6.00	7.378938
		110543	HEXANE							0.01
LIBERTY-PITTSBURGH SYSTEMS, INC.	15225	108101	METHYL ISOBUTYL KETONE	0.08	0.11	0.12	0.13	0.11		
		108883	TOLUENE				0.00	0.03		
		110543	HEXANE					0.00		
		1330207	XYLENE (MIXED ISOMERS)	0.00	0.03	0.01	0.02	0.02		
		67561	METHANOL	1.38	2.01	1.89	1.99	1.65		
		GLYET	GLYCOL ETHERS	0.03	0.03	0.06	0.10	0.09		
LINDY PAVING(TRUMBULL)	100414	100414	ETHYL BENZENE			0.04	0.03	0.04	0.03	0.04
		108883	TOLUENE			0.02	0.02	0.02	0.02	0.03
		110543	HEXANE			0.14	0.12	0.14	0.12	0.17
		1330207	XYLENE (MIXED ISOMERS)			0.03	0.03	0.03	0.03	0.04
		18540299	CHROMIUM (VI)			6.65E-05	7.29E-04	8.42E-04		8.27E-05
		193395	INDENO(1,2,3-CD)PYRENE							1.29E-06
		205992	BENZ(E)ACEPHENANTHRYLENE							1.84E-05
		207089	BENZO(K)FLUORANTHENE							7.53E-06
		218019	CHRYSENE							3.31E-05
		50000	FORMALDEHYDE			0.46	0.41	0.47	0.39	5.69E-01
		50328	BENZO(A)PYRENE							1.82E-06
		56553	BENZ(A)ANTHRACENE							3.86E-05
		71432	BENZENE			0.058	0.052	0.060	0.050	0.072
		71556	METHYL CHLOROFORM			0.007	0.006	0.007	0.006	0.009
		7439976	MERCURY		4.41e-5	3.82E-05	3.43E-05	3.96E-05	3.29E-05	4.41E-05
		7440473	CHROMIUM						0.001	0.001
		75070	ACETALDEHYDE			0.192				
		PB	LEAD		3.17e-5	9.87E-05	8.87E-05	1.36E-02	8.55E-05	3.17E-05
		PNA	POLYNUCLEAR AROMATICS				0.03	0.03	0.02	0.03

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Company Name	ZIP	Pollutant CAS#	Pollutant Name	Emissions - Tons per Year						
				1998	1999	2000	2001	2002	2003	2004
LTV STEEL COMPANY- PITTSBURGH COKE PLANT	15207	71432	BENZENE	2.46						
		7664417	AMMONIA	12.68						
		POM	POLYCYCLIC ORGANIC MATT	0.56						
MARATHON ASHLAND PETROLEUM LLC	15025	100414	ETHYL BENZENE	0.02	0.02	0.01				
		108883	TOLUENE	0.30	0.29	0.16				
		110543	HEXANE	0.36	0.35	0.19				
		1330207	XYLENE (MIXED ISOMERS)	0.12	0.11	0.06				
		540841	2,2,4-TRIMETHYLPENTANE	0.18	0.17	0.10				
		71432	BENZENE	0.20	0.20	0.11				
		PBC	LEAD COMPOUNDS			2.15E-05				
MARSH ASPHALT, INC. - DRAVOSBURG PLANT	15304	100414	ETHYL BENZENE	0.10	0.08	0.10	0.07	0.01	0.00	
		106514	QUINONE	0.01	0.01	0.01	0.01			
		108883	TOLUENE	0.05	0.05	0.05	0.03	0.00	0.00	
		110543	HEXANE					0.02	0.01	
		1330207	XYLENE (MIXED ISOMERS)	0.13	0.11	0.13	0.08	0.00	0.00	
		18540299	CHROMIUM (VI)		0.00	0.00	0.00	0.00	0.00	
		50000	FORMALDEHYDE	0.03	0.02	0.03	0.02	0.07	0.05	
		71432	BENZENE	0.01	0.01	0.01	0.01	0.01	0.01	
		75070	ACETALDEHYDE	0.02	0.02	0.02	0.01			
		HGC	MERCURY COMPOUNDS		1.25E-05	1.47E-05	1.32E-05	5.77E-06	4.17E-06	
		PBC	LEAD COMPOUNDS		2.05E-05	2.40E-05	2.87E-05			
MAYVIEW STATE HOSPITAL	15017	110543	HEXANE						0.14	0.14
		PB	LEAD	3.34E-05	3.36E-05	5.55E-05	3.20E-05	3.58E-05	3.59E-05	3.17E-05
MCCONWAY & TORLEY CORP.	15201	108952	PHENOL				0.01	0.01	0.01	0.06
		110543	HEXANE			0.13		0.08	0.12	0.13
		1314563	PHOSPHOROUS OXIDE	0.03		0.02	0.02	0.03	0.03	0.09
		50000	FORMALDEHYDE	0.00		0.01				
		71432	BENZENE				0.11	0.15	0.17	0.70
		7439965	MANGANESE			0.03	0.03	0.05	0.34	3.95E-04
		7440020	NICKEL	0.03		0.03	0.03	0.05	0.00	1.75E-05
		7440473	CHROMIUM							0.20
		ASC	ARSENIC COMPOUNDS	1.10E-05						
		CDC	CADMIUM COMPOUNDS	5.70E-05						
		COC	COBALT COMPOUNDS	0.01		0.00				
		CRC	CHROMIUM COMPOUNDS		0.04	0.02	0.02	0.03	0.10	1.38E-05
		PB	LEAD							7.19E-03
		PBC	LEAD COMPOUNDS	6.10E-05		0.01			0.00	0.00
		SEC	SELENIUM COMPOUNDS	2.00E-05						

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Company Name	ZIP	Pollutant CAS#	Pollutant Name	Emissions - Tons per Year						
				1998	1999	2000	2001	2002	2003	2004
MCKEES ROCKS FORGINGS	15136	110543	HEXANE		0.46	0.27	0.09	0.13		
MEDRAD, INC.	15051	75218	ETHYLENE OXIDE	0.67	1.03					
MERCY HOSPITAL OF PITTSBURGH	15219	110543	HEXANE				0.13	0.13	0.13	0.14
		1330207	XYLENE (MIXED ISOMERS)	0.1	0.10	0.10	0.10	0.01	0.01	0.01
		50000	FORMALDEHYDE	0.1	0.10	0.10	0.10	0.01	0.01	0.01
		67561	METHANOL	0.4	0.40	0.40	0.40	0.04	0.04	0.04
		74839	METHYL BROMIDE	1						
		75218	ETHYLENE OXIDE	3	0.34	0.27	0.23	0.56	0.48	0.40
		GLYET	GLYCOL ETHERS	0.25	0.25	0.25	0.25	0.25	0.25	0.25
		PB	LEAD				8.87E-06	1.45E-05	1.20E-05	1.76E-05
METALTECH	15219	110543	HEXANE			0.28	0.30	0.29	0.28	0.31
		PB	LEAD	6.46E-05	0	0	0	0	0	0
		SBC	ANTIMONY COMPOUNDS	0.00	0.00					
MOTOR COILS MANUFACTURING CO.	15104	100414	ETHYL BENZENE	0.07	0.05	0.02				
		107211	ETHYLENE GLYCOL			0.02				
		108883	TOLUENE	0.16	0.07	0.03				
		110543	HEXANE	1.27	0.75	0.05				
		1330207	XYLENE (MIXED ISOMERS)	0.17	0.17	0.08				
		18540299	CHROMIUM (VI)		0.00					
		67561	METHANOL	0.09	0.04	0.00				
		78933	METHYL ETHYL KETONE	0.29	0.42	0.19				
		COC	COBALT COMPOUNDS	0.02	0.03	7.90E-05				
		CRC	CHROMIUM COMPOUNDS			1.61E-04				
		GLYET	GLYCOL ETHERS	0.09	0.05					
		NIC	NICKEL COMPOUNDS		3.69E-04	1.40E-04				
		PBC	LEAD COMPOUNDS	3.99E-05	1.94E-05	7.56E-06				
NATIONAL ENERGY TECHNOLOGY LAB - PGH	15236	PBC	LEAD COMPOUNDS	5.56E-05	3.12E-05	1.56E-05	1.36E-05	1.51E-05	1.92E-05	5.86E-06

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Company Name	ZIP	Pollutant CAS#	Pollutant Name	Emissions - Tons per Year						
				1998	1999	2000	2001	2002	2003	2004
NEVILLE CHEMICAL COMPANY	15225	100414	ETHYL BENZENE	2.31	1.99	2.08	2.00	1.69	2.77	4.64
		100425	STYRENE	3.77	3.68	2.38	2.13	1.90	1.63	3.41
		106990	1,3-BUTADIENE	0.01	0.01	0.04	0.03	0.00	0.06	
		106990	1,3-BUTADIENE							0.02
		107211	ETHYLENE GLYCOL						5.05E-05	
		108316	MALEIC ANHYDRIDE	9.00E-05	9.00E-05	9.00E-05	9.00E-05	9.00E-05	8.61E-04	
		108883	TOLUENE	7.01	6.59	6.66	6.85	6.92	10.52	4.95
		108907	CHLOROBENZENE	0.01	0.01	0.01	0.00	0.01	0.01	4.95
		108952	PHENOL	0.00	0.00	0.00	0.00	0.00	0.05	0
		110543	HEXANE	0.01	0.01	0.19	0.16	0.16	0.22	0.16
		120127	ANTHRACENE	0	3.69E-06	1.35E-07	1.34E-07	0	0	
		120127	ANTHRACENE		0.01					0.01
		127184	TETRACHLOROETHYLENE	0	0	0	0	0	0	
		1319773	CRESOLS (MIXED ISOMERS)	0	0	0	0	0	0	
		1330207	XYLENE (MIXED ISOMERS)	6.27	5.62	5.33	5.08	4.81	5.25	8.65
		2551137	TRIMETHYL BENZENE						0.97	1.68
		271896	BENZOFURAN							0.02
		67561	METHANOL	0.00	0.00	0.00	0.00	0.00	0.00	
		71432	BENZENE	4.92	5.80	4.18	4.14	4.14	5.30	3.64
		75092	METHYLENE CHLORIDE			0.01	0.00	0.00	0.00	
		7664417	AMMONIA	8.04	7.52	11.57	7.70	7.53	3.86	
		7664417	AMMONIA							0.64
		77736	DICYCLOPENTADIENE						5.38	6.54
		7782492	SELENIUM						1.18E-07	0.002
		85449	PHTHALIC ANHYDRIDE						2.02E-04	
		91203	NAPHTHALENE	0.85	1.20	1.22	1.05	1.00	2.55	2.61
		92524	BIPHENYL	0.197	0.197	0.002	0.002	0.002	5.90E-08	0
		95136	INDENE							0.12
		95636	1,2,4-TRIMETHYLBENZENE	3.74	3.10	3.77	2.48	3.45	3.01	3.10
		98828	CUMENE	0.20	0.19	0.28	0.23	0.17	0.23	0.98
		ASC	ARSENIC COMPOUNDS						1.72E-08	
		BEC	BERYLLIUM COMPOUNDS						2.05E-08	
		CDC	CADMIUM COMPOUNDS						3.54E-07	
		COC	COBALT COMPOUNDS						4.63E-07	
		CRC	CHROMIUM COMPOUNDS	1.26E-03	1.10E-01	1.09E-02	1.34E-03	1.21E-02	1.29E-05	
		HGC	MERCURY COMPOUNDS			1.50E-04	5.07E-04	0.00E+00	9.20E-06	
		MNC	MANGANESE COMPOUNDS						5.06E-07	
		PB	LEAD	1.51E-04	1.52E-04	1.18E-04	9.54E-04	8.95E-04	2.78E-05	4.67E-04
		POM	POLYCYCLIC ORGANIC MATTER			3.40E-03	0.00	0.00	0.00	2.90E-03
		SBC	ANTIMONY COMPOUNDS						3.95E-08	

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Company Name	ZIP	Pollutant CAS#	Pollutant Name	Emissions - Tons per Year						
				1998	1999	2000	2001	2002	2003	2004
NEXTECH	15145	110543	HEXANE			0.24	0.23	0.22	0.22	0.22
		PBC	LEAD COMPOUNDS	1.07E-04	0	0	0	0		
		SBC	ANTIMONY COMPOUNDS	2.37E-04	0	0	0	0		
NORTH COAST CALIG CORP	15136	108101	METHYL ISOBUTYL KETONE	2.75						
		108883	TOLUENE	4.40						
		108952	PHENOL	0.23						
		1330207	XYLENE (MIXED ISOMERS)	4.33						
		50000	FORMALDEHYDE	0.18						
		78933	METHYL ETHYL KETONE	17.11						
		GLYET	GLYCOL ETHERS	11.84						
NRG ENERGY CENTER PITTSBURGH	15212	PB	LEAD	6.46E-07	1.83E-05	6.92E-05	1.15E-04	6.46E-13	1.31E-05	6.21E-05
O. HOMMEL COMPANY	15106	67561	METHANOL	4.10	4.60	6.49	4.17			
		PBC	LEAD COMPOUNDS		0.04	0.03	0.02			
ORION POWER MIDWEST - BRUNOT ISLAND	15204	100414	ETHYL BENZENE				3.86E-03	4.17E-03	2.67E-03	2.22E-03
		106990	1,3-BUTADIENE				5.28E-04	3.97E-04	4.50E-04	4.44E-04
		107028	ACROLEIN				7.45E-04	8.09E-04	5.08E-04	4.19E-04
		108383	M-XYLENE				2.46E-03	2.41E-03	2.46E-03	2.44E-03
		108883	TOLUENE				1.62E-02	1.75E-02	1.14E-02	9.52E-03
		110543	HEXANE				2.00E-05	2.00E-05	2.00E-05	2.00E-05
		1330207	XYLENE (MIXED ISOMERS)				7.45E-03	8.09E-03	5.09E-03	4.19E-03
		50000	FORMALDEHYDE			6.79E-04	0.091	0.127	0.092	0.069
		71432	BENZENE				0.003	0.003	0.003	0.002
		7439965	MANGANESE				0.037	0.027	0.037	0.021
		7439976	MERCURY				3.85E-05	2.77E-05	3.84E-05	3.15E-05
		7440020	NICKEL				1.74E-04	1.26E-04	1.74E-04	1.21E-04
		7440382	ARSENIC				4.33E-04	3.12E-04	4.32E-04	2.90E-04
		7440417	BERYLLIUM				2.57E-05	1.85E-05	2.56E-05	8.16E-06
		7440439	CADMIUM				1.63E-04	1.18E-04	1.63E-04	1.26E-04
		7440473	CHROMIUM				4.79E-04	3.45E-04	4.78E-04	2.90E-04
		75070	ACETALDEHYDE				0.005	0.005	0.003	0.003
		75569	PROPYLENE OXIDE				0.003	0.004	0.002	0.001
		75569	PROPYLENE OXIDE							0.002
		7664417	AMMONIA							0.720
		7782492	SELENIUM				1.05E-03	7.55E-04	1.05E-03	6.60E-04
		91203	NAPHTHALENE				1.20E-03	9.16E-04	1.15E-03	1.01E-03
		95636	1,2,4-TRIMETHYLBENZENE				1.84E-03	1.81E-03	1.84E-03	1.83E-03
		PB	LEAD	0.009	0.014	0.002	4.50E-04	3.23E-04	4.48E-04	3.69E-04
		POM	POLYCYCLIC ORGANIC MATTER				1.45E-03	1.14E-03	1.37E-03	1.20E-03

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Company Name	ZIP	Pollutant CAS#	Pollutant Name	Emissions - Tons per Year						
				1998	1999	2000	2001	2002	2003	2004
ORION POWER MIDWEST, CHESWICK STATION	15024	100414	ETHYL BENZENE				0.07	0.06	0.07	0.06
		100425	STYRENE				0.02	0.01	0.02	0.02
		100447	BENZYL CHLORIDE	0.32	0.42	0.46	0.53	0.42	0.53	0.45
		106934	ETHYLENE DIBROMIDE				0.00	0.00	0.00	0.00
		107028	ACROLEIN	0.13	0.17	0.19	0.22	0.17	0.22	0.18
		107062	ETHYLENE DICHLORIDE				0.03	0.02	0.03	0.03
		108054	VINYL ACETATE				0.01	0.00	0.01	0.00
		108383	M-XYLENE				6.10E-04	5.65E-04	5.95E-04	5.90E-04
		108883	TOLUENE				0.027	0.021	0.026	0.153
		108907	CHLOROBENZENE				0.017	0.013	0.017	0.014
		108952	PHENOL				0.012	0.010	0.012	0.010
		110009	FURAN				1.33E-06	1.05E-06	1.32E-06	1.12E-06
		110543	HEXANE				0.13	0.17	0.05	0.14
		117817	BIS(2-ETHYLHEXYL)PHTHALATE				0.06	0.04	0.05	0.05
		120127	ANTHRACENE				1.02E-07	1.74E-07		1.30E-07
		121142	2,4-DINITROTOLUENE				2.11E-04	1.66E-04	2.10E-04	1.78E-04
		123386	PROPIONALDEHYDE				0.287	0.226	0.286	0.242
		127184	TETRACHLOROETHYLENE				0.032	0.026	0.032	0.027
		129000	PYRENE				2.13E-07	3.63E-07		2.70E-07
		1330207	XYLENE (MIXED ISOMERS)				0.03	0.02	0.03	0.02
		1634044	METHYL TERT-BUTYL ETHER				0.03	0.02	0.03	0.02
		1746016	2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN		8.51E-09	9.4E-09	3.86E-08	3.03E-08	3.83E-08	3.25E-09
		191242	BENZO(G,H,I)PERYLENE				5.12E-08	8.71E-08		6.48E-08
		193395	INDENO(1,2,3-CD)PYRENE				7.68E-08	1.31E-07		9.73E-08
		205823	BENZO(J)FLUORANTHENE				7.68E-08	1.31E-07		9.73E-08
		205992	BENZ(E)ACEPHENANTHRYLENE				7.68E-08	1.31E-07		9.73E-08
		206440	FLUORANTHENE				1.28E-07	2.18E-07		1.62E-07
		208968	ACENAPHTHYLENE				7.68E-08	1.31E-07		9.73E-08
		218019	CHRYSENE				7.68E-08	1.31E-07		9.73E-08
		3268879	OCTACHLORODIBENZO-P-DIOXIN		2.48E-07	2.73E-07				
		34465468	HEXACHLORODIBENZODIOXIN,1,2,3,6,7,8-		1.71E-08	1.89E-08				
		38998753	HEPTA CHLORO FURANS		4.57E-08	5.48E-08				
		39001020	OCTACHLORODIBENZOFURANS, TOTAL		3.95E-08	4.36E-08				
		50000	FORMALDEHYDE	0.109651	0.14	0.16	0.06	0.05	0.06	0.16
		50328	BENZO(A)PYRENE				3.45E-05	2.71E-05	3.42E-05	2.90E-05
		51207319	2,3,7,8-TETRACHLORODIBENZOFURAN		3.03E-08	3.35E-08				
		532274	2-CHLOROACETOPHENONE				0.005	0.004	0.005	0.004
		53703	DIBENZ(A,H)ANTHRACENE				5.12E-08	8.71E-08		.
		56495	3-METHYLCHOLANTHRENE				7.68E-08	1.31E-07		9.73E-08
		56553	BENZ(A)ANTHRACENE				7.68E-08	1.31E-07		9.73E-08
		57117314	2,3,4,7,8-PENTACHLORODIBENZOFURAN		2.66E-08	3.35E-08				
		57117416	1,2,3,7,8-PENTACHLORODIBENZOFURAN		2.10E-07	2.32E-07				
		57976	DIMETHYLBENZ(A)ANTHRACENE				6.83E-07	1.16E-06		8.65E-07

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Company Name	ZIP	Pollutant CAS#	Pollutant Name	Emissions - Tons per Year						
				1998	1999	2000	2001	2002	2003	2004
ORION POWER MIDWEST, CHESWICK STATION		60344	METHYLHYDRAZINE	0.08	0.10	0.11	0.13	0.10	0.13	0.11
		67663	CHLOROFORM				0.04	0.04	0.04	0.04
		71432	BENZENE	0.59	0.77	0.85	0.07	0.06	0.07	0.83
		71556	METHYL CHLOROFORM				0.02	0.01	0.02	0.01
		7439965	MANGANESE		0.29	0.32	0.27	0.34	0.43	0.31
		7439976	MERCURY	0.04	0.05	0.05	0.12	0.10	0.13	0.10
		7440020	NICKEL	0.13	0.17	0.18	0.21	0.21	0.26	0.18
		7440360	ANTIMONY				0.01	0.01	0.01	0.01
		7440382	ARSENIC		0.24	0.27	0.39	0.41	0.52	0.26
		7440417	BERYLLIUM				0.06	0.05	0.06	0.01
		7440439	CADMIUM	0.02	0.03	0.03	0.01	0.01	0.01	0.03
		7440473	CHROMIUM		0.15	0.17	0.21	0.25	0.31	0.17
		7440484	COBALT	0.05	0.06	0.07	0.04	0.05	0.06	0.06
		74839	METHYL BROMIDE		0.10	0.11	0.12	0.10	0.12	0.10
		74873	METHYL CHLORIDE	0.24	0.32	0.35	0.40	0.31	0.40	0.34
		75003	ETHYL CHLORIDE				0.03	0.02	0.03	0.03
		75070	ACETALDEHYDE	0.26	0.34	0.37	0.43	0.34	0.43	0.36
		75092	METHYLENE CHLORIDE				0.22	0.17	0.22	0.18
		75150	CARBON DISULFIDE	0.06	0.08	0.09	0.10	0.08	0.10	0.08
		75252	BROMOFORM					0.02	0.03	0.02
		7647010	***HYDROCHLORIC ACID (adjus***	***785.84***	***1023.34***	***1130.43***	1298.42	1021.93	1292.45	1093.85
		7664393	***HYDROGEN FLUORIDE (adjus***	***74.47***	***96.98***	***107.13***	123.05	96.85	122.48	103.66
		7664417	AMMONIA	0.42	0.42	0.23	176.64	139.03	0.23	0.38
		77781	DIMETHYL SULFATE				0.04	0.03	0.04	0.03
		7782492	SELENIUM		0.77	0.85	2.35	2.60	3.28	1.98
		78591	ISOPHORONE	0.26	0.35	0.38	0.44	0.34	0.44	0.37
		78933	METHYL ETHYL KETONE	0.18	0.23	0.26	0.29	0.23	0.29	0.25
		80626	METHYL METHACRYLATE				0.02	0.01	0.02	0.01
		83329	ACENAPHTHENE				7.68E-08	1.31E-07		9.73E-08
		85018	PHENANTHRENE				7.25E-07	1.23E-06		9.19E-07
		86737	FLUORENE				1.19E-07	2.03E-07		1.51E-08
		91203	NAPHTHALENE				0.010	0.008	0.010	0.008
		91576	2-METHYLNAPHTHALENE				1.02E-06	1.74E-06		1.30E-06
		92524	BIPHENYL				0.001	0.001	0.001	0.001
		95636	1,2,4-TRIMETHYLBENZENE				0.000	0.000	0.000	0.000
		98828	CUMENE				0.004	0.003	0.004	0.003
		98862	ACETOPHENONE				0.011	0.009	0.011	0.010
		CNC	CYANIDE COMPOUNDS	1.14	1.49	1.64	1.89	1.49	1.88	1.59
		PB	LEAD	0.21	0.27	0.30	0.29	0.23	0.14	0.27

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				1998	1999	2000	2001	2002	2003	2004
ORION POWER MIDWEST, PHILLIPS STATION	15081	100414	ETHYL BENZENE				3.50E-05	3.50E-05		
		108383	M-XYLENE				6.15E-04	6.15E-04		
		108883	TOLUENE				2.55E-04	2.55E-04		
		110543	HEXANE				5.00E-06	5.00E-06		
		71432	BENZENE				2.50E-05	2.50E-05		
		95636	1,2,4-TRIMETHYLBENZENE				4.60E-04	4.60E-04		
		PBC	LEAD COMPOUNDS	5.43E-05	8.05E-05	6.80E-05	0	0		
PANNIER CORPORATION, GRAPHICS DIVISION	15044	100414	ETHYL BENZENE		0.001	0.002	0.002	0.001	0.004	
		100425	STYRENE		3.35	4.25	3.65	3.66	3.47	3.80
		108883	TOLUENE		0.55	0.77	0.33	0.12	0.54	0.42
		1330207	XYLENE (MIXED ISOMERS)		0.05	0.02	0.02	0.01	0.05	0.09
		78933	METHYL ETHYL KETONE		0.01	0.01	0.01	0.01	0.06	0.02
		80626	METHYL METHACRYLATE		2.13	2.69	2.31	2.31	2.20	2.40
		95636	1,2,4-TRIMETHYLBENZENE			0.05	0.02	0.04	0.04	0.06
		GLYET	GLYCOL ETHERS		0.14	0.57	0.29	0.20	0.42	0.29
		PB	LEAD		2.83E-07	3.37E-07	3.05E-07	2.75E-07	2.92E-07	3.03E-07
PARC TECHNICAL SERVICES, INC.	15238	108883	TOLUENE	0.65	0.41	0.14	0.64	0.41	0.64	0.65
		110543	HEXANE		0.02	0.02	0.02	0.01	0.01	0.01
		1330207	XYLENE (MIXED ISOMERS)		0.14	0.12	0.12	0.58	0.58	0.58
		71432	BENZENE			0.03	0.03	0.16	0.16	0.16
		7664417	AMMONIA		0.04	0.04	0.04	0.04	0.04	0.04
		7782505	CHLORINE			0.03	0.03	0.03	0.03	0.00
		7783064	HYDROGEN SULFIDE		0.34	0.34	0.34	0.34	0.34	0.34
		78933	METHYL ETHYL KETONE	0.5	0.25	5.00E-04	5.00E-04	5.00E-04	5.00E-04	0.3429
PENNSYLVANIA ELECTRIC COIL LTD	15015	100414	ETHYL BENZENE	0.10	0.36	0.38	0.02	0.05	0.16	0.00
		108101	METHYL ISOBUTYL KETONE		0.26	0.26				
		108883	TOLUENE	1.33	0.55	0.44	0.12	0.05	0.12	0.19
		108952	PHENOL		0.03	0.00		0.01	0.01	0.04
		110543	HEXANE				0.01	0.01	0.01	0.01
		1330207	XYLENE (MIXED ISOMERS)	1.51	1.93	2.02	0.18	0.76	0.71	1.12
		67561	METHANOL	2.36	0.50	0.50				
		71432	BENZENE	0.33	0.03	0.00				
		71556	METHYL CHLOROFORM	0.05	0.00	0.00				
		74873	METHYL CHLORIDE	0.06						
		78933	METHYL ETHYL KETONE	0.14	0.12	0.14		0.20	0.29	0.09
		PB	LEAD		0.2	0.2	0	2.74E-07	2.74E-07	2.54E-07

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Company Name	ZIP	Pollutant CAS#	Pollutant Name	Emissions - Tons per Year						
				1998	1999	2000	2001	2002	2003	2004
PITT PENN OIL COMPANY	15030	107211	ETHYLENE GLYCOL	1.93	1.69	1.75	0.94	0.59	0.35	0.31
		67561	METHANOL	12.80	12.73	12.74	9.49	5.39	3.64	3.53
		8052413	STODDARD SOLVENT					0.04		
PITTSBURGH ALLEGHENY COUNTY	15222	110543	HEXANE							0.85
THERMAL, LTD		PB	LEAD	8.13E-07	3.35E-06	1.04E-05	3.31E-05	0	2.47E-05	2.38E-05
PITTSBURGH BREWING CO.	15201	7647010	HYDROCHLORIC ACID	2.90	1.99	2.76	2.54	4.03	4.76	4.43
PITTSBURGH		7664393	HYDROGEN FLUORIDE	0.36	0.25	0.35	0.32	0.50	0.59	0.55
		7664417	AMMONIA	0.25	0.25	1.50	1.90	1.88	1.58	1.77
		PB	LEAD	2.60E-02	7.51E-04	1.04E-03	9.58E-04	1.52E-03	1.79E-03	1.55E-03
PITTSBURGH ELECTRICAL INSULATION	15120	108883	TOLUENE	3.22	3.22	5.45	0.34	0.49	0.16	0.24
		110543	HEXANE				0.00	0.00	0.00	0.02
		67561	METHANOL	2.12	2.12	3.34	0.23	0.23	0.13	0.17
		78933	METHYL ETHYL KETONE	0.18	0.18	0.73	0.04	0.03	0.03	0.04
		PB	LEAD					0	3.94E-07	4.24E-06
PITTSBURGH IAP/ARS	15108	100414	ETHYL BENZENE							2.11E-04
		100425	STYRENE							5.07E-07
		106934	ETHYLENE DIBROMIDE							9.08E-07
		106990	1,3-BUTADIENE							6.17E-05
		107028	ACROLEIN							1.92E-04
		108883	TOLUENE							3.87E-04
		108907	CHLOROBENZENE							5.50E-07
		110543	HEXANE							2.23E-02
		1330207	XYLENE (MIXED ISOMERS)							1.24E-03
		50000	FORMALDEHYDE							1.91E-03
		540841	2,2,4-TRIMETHYLPENTANE							0
		542756	1,3-DICHLOROPROPENE							5.42E-07
		56235	CARBON TETRACHLORIDE							7.55E-07
		67561	METHANOL							1.31E-04
		67663	CHLOROFORM							5.84E-07
		71432	BENZENE							8.83E-04
		75014	VINYL CHLORIDE							3.06E-07
		75070	ACETALDEHYDE							7.76E-04
		75092	METHYLENE CHLORIDE							1.76E-06
		78933	METHYL ETHYL KETONE							8.40E-04
		79005	1,1,2-TRICHLOROETHANE							6.52E-07
		79345	1,1,2,2-TETRACHLOROETHANE							1.08E-06
		91203	NAPHTHALENE							1.41E-04
		CRC	CHROMIUM COMPOUNDS							8.08E-05
		HGC	MERCURY COMPOUNDS							1.25E-06
		PAH	PAH							1.57E-04

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				1998	1999	2000	2001	2002	2003	2004
		PB	LEAD							8.60E-06
PITTSBURGH TERMINALS CORP	15225	100414	ETHYL BENZENE			0.07	0.05	0.06	0.03	0.02
NEVILLE ISLAND		108383	M-XYLENE				0.24	0.25	0.17	0.14
		108883	TOLUENE	0.16	0.34	0.78	0.56	0.53	0.37	0.30
		108952	PHENOL				0.00	0.00	0.00	0.00
		110543	HEXANE	1.66	1.99	0.95	0.62	0.60	0.44	0.36
		1319773	CRESOLS (MIXED ISOMERS)		0.00					
		1330207	XYLENE (MIXED ISOMERS)	0.12	0.12	0.35	0.01	0.00	0.00	
		1634044	METHYL TERT-BUTYL ETHER	1.39	1.68					
		534521	4,6-DINITRO-O-CRESOL			0.00	0.00	0.00	0.00	0.00
		540841	2,2,4-TRIMETHYLPENTANE				0.31	0.30	0.22	0.18
		71432	BENZENE	0.22	0.27	0.53	0.35	0.36	0.25	0.21
		91203	NAPHTHALENE		1.17E-04	2.70E-04	6.80E-04	5.20E-04	0.00	0.00
		92524	BIPHENYL				0.00	0.00	0.00	0.00
		95487	O-CRESOL				6.00E-05	0.00	0.00	0.00
		98828	CUMENE				5.00E-04	5.61E-04	0.00	0.00
		POM	POLYCYCLIC ORGANIC MATTER						0.01	0.01
PITTSBURGH TERMINALS CORP. -	15108	100414	ETHYL BENZENE	0.09	0.01	0.03	0.03	0.03	0.04	0.05
CORAOPOLIS		108883	TOLUENE	0.46	0.34	0.45	0.47	0.41	0.47	0.55
		110543	HEXANE	0.49	0.38	0.54	0.53	0.45	0.57	0.56
		1330207	XYLENE (MIXED ISOMERS)	0.16	0.11	0.17	0.18	0.15	0.20	0.34
		540841	2,2,4-TRIMETHYLPENTANE	0.25	0.18	0.26	0.25	0.41	0.29	0.33
		71432	BENZENE	0.28	0.20	0.29	0.28	0.47	0.32	0.38
		91203	NAPHTHALENE			1.91E-04				
		HGC	MERCURY COMPOUNDS			5.40E-07				
		POM	POLYCYCLIC ORGANIC MATTER						0.01	0.02
PPG INDUSTRIES -	15146	100414	ETHYL BENZENE				8.60E-04			
CHEMICALS TECHNICAL CTR		106423	P-XYLENE				0.02			
		107062	ETHYLENE DICHLORIDE	0.00	0.01	0.01		0.11		
		107211	ETHYLENE GLYCOL	0.13	0.24	0.31	0.05	0.14		
		107879	2-PENTANONE							0.17
		107982	1-METHOXY-2-PROPANOL					0.20		
		108101	METHYL ISOBUTYL KETONE	0.05	0.03		0.24	0.10		0.13
		108214	ISOPROPYL ACETATE					0.46		
		108247	ACETIC ANHYDRIDE					0.35	0.48	
		108883	TOLUENE	1.84	1.52		0.06	0.52	3.30	1.88
		108907	CHLOROBENZENE	0.45	0.12	0.07	0.63	0.25		
		108907	CHLOROBENZENE							0.95
		108952	PHENOL				0.002			
		109999	TETRAHYDROFURAN			0.18	0.71	0.49	4.59	0.87
		110543	HEXANE	0.18	0.62	0.12	0.65	0.49	0.41	0.24

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				1998	1999	2000	2001	2002	2003	2004
		110805	2-ETHOXYETHANOL							0.17
		110827	CYCLOHEXANE					0.23		
		117817	BIS(2-ETHYLHEXYL)PHTHALATE				0.01			
		121448	TRIETHYLAMINE	0.00	0.16		0.04			0.23
		122996	2-PHENOXYETHANOL	0.09	0.47					
		123864	BUTYL ACETATE					0.22		
		127184	TETRACHLOROETHYLENE							0.27
		1330207	XYLENE (MIXED ISOMERS)				0.004	0.12		0.97
		1330207	XYLENE (MIXED ISOMERS)	0.08	0.12		0.74	0.31		
		141786	ETHYL ACETATE					0.75	0.02	1.31
		142825	HEPTANE					0.80	1.47	0.67
		142961	1,1-OXYBISBUTANE					0.26	0.15	0.98
		1634044	METHYL TERT-BUTYL ETHER				0.002			
		50000	FORMALDEHYDE				0.08			
		5124301	METHYLENE BIS(4-CYCLOHEXYLISOCYANATE)						0.21	
		60297	1,1'-OXYBISETHANE							0.21
		64197	ACETIC ACID					0.12		0.17
		64742525	DISTILLATES, (PETROLEUM), HYDROTREATED H					0.73		
		67561	METHANOL	0.80	0.37	0.13	0.55	0.38	1.39	1.12
		67630	ISOPROPANOL							0.35
		67663	CHLOROFORM	0.11	0.36	0.08	0.14	0.39	1.73	1.07
		68122	DIMETHYLFORMAMIDE, N,N-	0.01	0.10	0.02	0.04			
		681845	SILICIC ACID, TETRAMETHYL ESTER					0.35		
		71238	PROPANOL					0.17		0.12
		74884	METHYL IODIDE				0.002			
		75058	ACETONITRILE		0.40	0.09		1.09	0.42	2.71
		75092	METHYLENE CHLORIDE					1.85	1.39	2.13
PPG INDUSTRIES -		75343	ETHYLIDENE DICHLORIDE	0.24	0.83	0.06	0.00			
CHEMICALS TECHNICAL CTR		7647010	HYDROCHLORIC ACID	0.74	0.56		0.16			
		7664393	HYDROGEN FLUORIDE	0.03	0.01					
		77781	DIMETHYL SULFATE	0.11	0.11	0.10	0.12			
		78104	SILICIC ACID, TETRAETHYL ESTER					0.27		
		78933	METHYL ETHYL KETONE	0.04	0.05		0.10			0.23
		79005	1,1,2-TRICHLOROETHANE				0.00			
		79016	TRICHLOROETHYLENE	0.02			0.02			
		84742	DIBUTYL PHTHALATE		0.05		8.00E-04			
		872504	1-METHYL-2-PYRROLIDINONE							0.22
		95501	1,2-DICHLOROBENZENE							0.44
		98828	CUMENE				0.003			
		98862	ACETOPHENONE	0.03	0.01	0.01				
		PB	LEAD	0	0	0	0	0	0	0

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Company Name	ZIP	Pollutant CAS#	Pollutant Name	Emissions - Tons per Year						
				1998	1999	2000	2001	2002	2003	2004
PPG INDUSTRIES, INC. SPRINGDALE	15144	110543	HEXANE							0.04
		100414	ETHYL BENZENE	1.53	1.10	0.44	0.35	0.40	0.24	0.32
		108101	METHYL ISOBUTYL KETONE	24.12	25.02	19.57	16.51	18.33	13.27	12.40
		108883	TOLUENE	33.52	36.60	31.94	28.22	30.41	24.45	17.47
		1330207	XYLENE (MIXED ISOMERS)	39.45	40.65	33.61	29.71	32.00	25.77	18.39
		78933	METHYL ETHYL KETONE	59.30	62.90	54.23	48.33	51.81	13.75	29.87
		PB	LEAD	0.50	0.23	0.07	0.04	0.05	0.04	0.01
PRECOAT METALS,	15132	100414	ETHYL BENZENE	0.32	1.90	0.01	1.09	1.34	0.93	0.89
A DIV. OF SEQUA COATINGS		102409	GLYCOL ETHER 102409		3.62	2.40	6.97	8.38	8.50	9.64
		107211	ETHYLENE GLYCOL		0.04	0.00	0.00	0.00	0.00	0.00
		108101	METHYL ISOBUTYL KETONE	0.60	1.37	0.44	1.65	1.25	1.54	1.14
		108883	TOLUENE	0.58	2.09	0.30	1.38	0.23	0.50	0.25
		131113	DIMETHYL PHTHALATE	0.24	0.05	0.01	0.08	0.03	0.17	0.17
		1330207	XYLENE (MIXED ISOMERS)	1.66	2.99	0.60	4.96	5.30	3.71	4.46
		50000	FORMALDEHYDE	0.09	0.26	0.00	0.04	0.07	0.04	0.03
		78591	ISOPHORONE	0.88	2.28	0.60	3.54	1.68	2.08	2.48
		78933	METHYL ETHYL KETONE	3.54	4.71	0.32	1.69	3.81	3.64	4.60
		79469	2-NITROPROPANE	0.00						
		91203	NAPHTHALENE	0.07	0.20	0.05	0.34	0.39	0.55	0.00
		95636	1,2,4-TRIMETHYLBENZENE	0.28	1.45	0.18	3.95	4.15	0.00	
		GLYET	GLYCOL ETHERS	2.17						
		PB	LEAD		1.01E-05	1.14E-05	1.79E-05	1.24E-05	1.83E-05	1.20E-05
PRESSURE CHEMICAL COMPANY	15201	108883	TOLUENE	6.60	1.10	8.30	0.28	1.55	0.31	0.48
		110543	HEXANE	0.70	2.10	3.60	1.40	2.19	2.60	2.60
		1330207	XYLENE (MIXED ISOMERS)					0.53	0.43	0.25
		1634044	METHYL TERT-BUTYL ETHER		2.70	0.00	0.00	0.00	0.00	0
		67561	METHANOL	9.40	6.40	5.80	10.00	3.10	12.00	10.72
		75092	METHYLENE CHLORIDE	0.80	0.53	1.70	0.36	0.00	0.00	0

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				1998	1999	2000	2001	2002	2003	2004
PRUETT-SCHAFFER CHEMICAL CO., INC.	15204	110543	HEXANE							0.00
		100414	ETHYL BENZENE		0.02	0.02	0.02	0.01	0.01	0.01
		106423	P-XYLENE		0.12	0.11	0.08	0.05	0.04	0.06
		108101	METHYL ISOBUTYL KETONE	0.04	0.04	0.56	0.55	0.09	0.11	0.10
		108383	M-XYLENE		0.30	0.26	0.17	0.09	0.10	0.14
		108883	TOLUENE	0.25	0.08	0.20	0.22	0.05	0.03	0.08
		111762	2-BUTOXY ETHANOL					0.42	0.59	0.58
		1330207	XYLENE (MIXED ISOMERS)	0.14						
		16065831	CHROMIUM (III)		4.15E-04	0.00	4.87E-04	1.59E-04	5.55E-05	1.29E-04
		2807309	2-PROPOXYETHANOL		0.01	0.00				
		78933	METHYL ETHYL KETONE	0.34	0.71	0.33	0.36	0.05	0.08	0.07
		95476	O-XYLENE		0.10	0.10	0.06	0.03	0.04	0.06
		CR	CHROMIUM (III)	0.002						
		GLYET	GLYCOL ETHERS	0.12						
		NIC	NICKEL	0.01	0.01	0	0.002	0.006	0.000	0.001
RANBAR TECHNOLOGY INC.	15116	100414	ETHYL BENZENE	1.70	1.96	1.83	1.91	2.47	1.00	0.02
		108101	METHYL ISOBUTYL KETONE	2.84	2.67	2.78	2.27	2.52	1.49	0.02
		108883	TOLUENE	1.20	0.83	0.78	0.68	1.17	0.81	0.01
		111762	2-BUTOXY ETHANOL						2.50E-03	3.52E-05
		112345	2-(2-BUTOXYETHOXY) ETHANOL						2.50E-03	3.52E-05
		1330207	XYLENE (MIXED ISOMERS)	6.77	7.85	7.51	7.62	9.87	4.01	0.10
		7647010	HYDROCHLORIC ACID		0.00	0.00	0.00	0.00	0.00	0.00
		78933	METHYL ETHYL KETONE	0.06	0.06	0.13	0.01	0.06	0.06	7.80E-04
		85449	PHTHALIC ANHYDRIDE	2.05	0.29	0.09	0.09	0.11	0.05	0.009
		PB	LEAD		0	0	0	0	0	0

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				1998	1999	2000	2001	2002	2003	2004
REDLAND BRICK INC. - HARMAR PLANT	15024	7782505	CHLORINE							0.072
		108883	TOLUENE	0.005	0.004	0.005	0.004	0.008	0.008	0.009
		16065831	CHROMIUM (III)				0.000	0.003	0.003	0.003
		71432	BENZENE	0.09	0.08	0.09	0.08	0.14	0.15	0.16
		7439965	MANGANESE						0.02	0.02
		7440382	ARSENIC		0.001	0.001	0.001	0.002	0.002	0.002
		7440417	BERYLLIUM		3.19E-05	3.58E-05	3.25E-05	5.77E-05	5.91E-05	2.32E-05
		7440473	CHROMIUM					2.05E-06	1.33E-06	1.13E-06
		74873	METHYL CHLORIDE	0.02	0.02	0.02	0.02	0.03	0.03	0.04
		75003	ETHYL CHLORIDE	0.02	0.02	0.02	0.02	0.03	0.03	0.03
		7647010	HYDROCHLORIC ACID	2.37	1.97	2.24	1.70	0.03	2.42	0.95
		7664393	HYDROGEN FLUORIDE	7.67	6.39	7.23	5.59	0.05	8.04	2.98
		7782492	SELENIUM	0.01	0.01	0.01	0.01	0.02	0.02	0.01
		7782505	CHLORINE	0.04	0.04	0.04	0.04	0.06	0.07	0.07
		78933	METHYL ETHYL KETONE	0.01	0.01	0.01	0.01	0.01	0.01	0.01
		86737	FLUORENE						1.42	
		HG	MERCURY	2.53E-04	2.20E-04	2.48E-04	2.26E-04	4.02E-04	4.10E-04	4.14E-04
		PB	LEAD	0.005	0.004	0.005	0.004	0.007	0.008	0.008
REICHHOLD, INC.	15017	100414	ETHYL BENZENE		0.21					
		100425	STYRENE	2.81	4.42	3.01	2.63	2.55	3.64	3.09
		106514	QUINONE		0.02					
		107211	ETHYLENE GLYCOL	0.098	0.094	0.001	0.001	0.001	0.001	0.001
		108316	MALEIC ANHYDRIDE	0.48	0.39	0.29	0.25	0.28	0.18	0.28
		108883	TOLUENE		0.11					
		110543	HEXANE				0.21	0.21	0.19	0.17
		111466	BIS(2-HYDROXYETHYL) ETHER					0.01	0.01	0.03
		1330207	XYLENE (MIXED ISOMERS)		0.27					
		17557232	NEOPENTYL GLYCOL DIGLYCIDYL ETHER		0.12	0.04	0	0		
		18540299	CHROMIUM (VI)		4.01E-05					
		50000	FORMALDEHYDE		0.05					
		71432	BENZENE		0.02					
		75070	ACETALDEHYDE		0.04					
		85449	PHTHALIC ANHYDRIDE	0.678	0.23	0.15	0.33	0.37	0.35	0.35
		ASC	ARSENIC COMPOUNDS		5.22E-05					
		BEC	BERYLLIUM COMPOUNDS		1.70E-04					
		CDC	CADMIUM COMPOUNDS		4.06E-05					
		GLYET	GLYCOL ETHERS	0.562	0.00	0	0	0	0	0
		HGC	MERCURY COMPOUNDS		6.92E-05					
		MNC	MANGANESE COMPOUNDS		1.24E-04					
		NIC	NICKEL COMPOUNDS		1.05E-04					
		PB	LEAD	0	7.54E-03	1.66E-05	1.48E-05	1.53E-05	4.47E-05	1.85E-05
		SEC	SELENIUM COMPOUNDS		4.99E-05					

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Company Name	ZIP	Pollutant CAS#	Pollutant Name	Emissions - Tons per Year						
				1998	1999	2000	2001	2002	2003	2004
ROYSTON LABORATORIES DIVISION	15238	108883	TOLUENE	3.17	3.07	4.66	6.08	2.34	2.43	5.81
		1330207	XYLENE (MIXED ISOMERS)	1.13	0.83	1.93	2.44	1.65	1.68	0.29
		78933	METHYL ETHYL KETONE	1.00	0.88	1.20	1.62	2.10	2.27	0.36
SANYO CHEMICAL & RESIN, INC.	15088	100414	ETHYL BENZENE				0.005	0.005		
		100425	STYRENE				0.82	0.86	0.64	0.72
		103651	PROPYL BENZENE				0.006	0.006		
		108883	TOLUENE				0.68	0.67	0.23	0.25
		110543	HEXANE							0.02
		1330207	XYLENE (MIXED ISOMERS)				0.36	0.32	0.32	0.69
		2551137	TRIMETHYL BENZENE				0.008	0.008		
		71432	BENZENE				0.001	0.001		
		91203	NAPHTHALENE				0.001	0.001		
		98828	CUMENE				0.03	0.03		
SCHENLEY SCHOOL	15203	110543	HEXANE						0.02	0.02
SERVSTEEL, INC.	15064	110543	HEXANE			0.03	0.02			
		50328	BENZO(A)PYRENE			0.006	0.006			
		56553	BENZ(A)ANTHRACENE			0.031	0.029			
		POM	POLYCYCLIC ORGANIC MATTER		1.9290	2.9310	2.6700			
SHALER AREA INTERMEDIATE SCHOOL	15116	110543	HEXANE						0.009	0.009
SHENANGO INC.	15225	100414	ETHYL BENZENE		0.008	0.006	0.009	0.007	0.006	0.006
		100425	STYRENE	0.04	0.03	0.03	0.04	0.03	0.03	0.02
		105679	2,4-DIMETHYLPHENOL				0.00			
		108054	VINYL ACETATE				0.04	0.04	0.04	0.04
		108883	TOLUENE	1.63	0.83	0.75	0.89	0.52	0.49	0.45
		108952	PHENOL	1.92	1.84	1.86	1.85	0.67	0.68	0.70
		110543	HEXANE			0.04	0.15	0.15	0.14	0.08
		120127	ANTHRACENE	0.02	0.05	0.03	0.04	0.04	0.04	0.05
		123911	1,4-DIOXANE				0.04	0.04	0.04	0.04
		129000	PYRENE	0.02	0.00	0.01	0.05	0.03	0.04	0.11
		1319773	CRESOLS (MIXED ISOMERS)	0.18	0.18	0.19	0.19	0.18	0.18	0.18
		132649	DIBENZOFURAN	0.01	0.01	0.01	0.03	0.03	0.03	0.06
		1330207	XYLENE (MIXED ISOMERS)	0.53	0.34	0.25	0.24	0.09	0.07	0.05
		193395	INDENO(1,2,3-CD)PYRENE				0.004	0.004	0.004	0.012
		203645	PHENANTHRENE, CYCLOPENTA-,					0.01	0.02	0.05
		205992	BENZ(E)ACEPHENANTHRYLE	0.044623			0.01	0.01	0.01	0.02
		206440	FLUORANTHENE		0.02		0.04	0.04	0.04	0.11
		207089	BENZO(K)FLUORANTHENE	0.006527	0.003	0.000	0.007	0.006	0.006	0.02

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Company Name	ZIP	Pollutant CAS#	Pollutant Name	Emissions - Tons per Year						
				1998	1999	2000	2001	2002	2003	2004
SHENANGO INC.		208968	ACENAPHTHYLENE				0.0343	0.0326	0.0332	0.0998
		218019	CHRYSENE			0.003	0.015	0.013	0.013	0.036
		31711532	METHYLPHENANTHRENES				0.0104	0.0094	0.01027	0.0104
		50000	FORMALDEHYDE	0.04	0.04	0.07	0.05	0.05	0.04	0.04
		50328	BENZO(A)PYRENE	0.01	0.00	0.00	0.01	0.01	0.01	0.03
		53703	DIBENZ(A,H)ANTHRACENE	0.001	0.001	0.000	0.001	4.64E-04	4.62E-04	0.002
		56553	BENZ(A)ANTHRACENE	0.02	0.01	0.00	0.01	0.01	0.01	0.03
		67561	METHANOL	0.94	3.07	0.83	0.45	1.86	1.19	2.64
		71432	BENZENE	11.03	7.29	8.01	6.51	2.85	2.62	2.96
		7439976	MERCURY				6.78E-04	1.44E-04	1.48E-04	1.37E-04
		7440020	NICKEL				0.19	0.04	0.04	0.03
		7440360	ANTIMONY				0.15	0.03	0.03	0.02
		7440473	CHROMIUM				1.77	0.35	0.36	0.25
		7440484	COBALT				0.08	0.02	0.02	0.01
		74873	METHYL CHLORIDE				0.23	0.00	0.00	0.00
		75058	ACETONITRILE					0.02	0.02	0.02
		75150	CARBON DISULFIDE				1.41	1.35	1.38	1.36
		7664417	AMMONIA	27.72	2.02	9.25	8.10	7.75	7.93	7.88
		7782505	CHLORINE	0.19	0.19	0.19	0.19	0.19	0.19	0.19
		7783064	HYDROGEN SULFIDE	2.56	2.16	9.24	9.02	8.64	8.47	8.43
		79345	1,1,2,2-TETRACHLOROETHANE				0.02	0.02	0.02	0.02
		80626	METHYL METHACRYLATE				0.04	0.04	0.04	0.05
		85018	PHENANTHRENE	0.06	0.08	0.05	0.16	0.14	0.17	0.32
		86737	FLUORENE		0.001	0.001	0.02	0.02	0.02	0.05
		91203	NAPHTHALENE	1.90	1.55	1.82	1.02	0.56	0.56	0.73
		91225	QUINOLINE	0.01	0.01	0.01	0.01	0.01	0.01	0.01
		92524	BIPHENYL	0.004	0.004	0.004	0.004	0.003	0.004	0.01
		ASC	ARSENIC COMPOUNDS	0.03	0.03	0.00				
		CDC	CADMIUM COMPOUNDS	0.01	0.01	0.00				
		CNC	CYANIDE COMPOUNDS	0.83	0.74	0.82	0.74	0.70	0.74	0.73
		MNC	MANGANESE COMPOUNDS	0.01	0.01	0.00				
		PAH	PAH					0.11	0.09	0.03
		PB	LEAD	0.23	0.19	0.00	0.002	0.006	0.004	0.005
		POM	POLYCYCLIC ORGANIC MATT	3.57	2.72	3.19				
SOUTH HIGH SCHOOL	15203	110543	HEXANE						0.01	0.01
STATE CORRECTIONAL.	15233	110543	HEXANE							0.01
INSTITUTION -- PGH		7647010	HYDROCHLORIC ACID	1.79	1.96	1.86	1.12	0.99	1.31	2.42
		7664393	HYDROGEN FLUORIDE	0.22	0.25	0.23	0.14	0.12	0.16	0.30
		PB	LEAD	6.74E-04	7.40E-04	7.03E-04	4.20E-04	3.73E-04	4.94E-04	8.48E-04

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Company Name	ZIP	Pollutant CAS#	Pollutant Name	Emissions - Tons per Year						
				1998	1999	2000	2001	2002	2003	2004
SUBURBAN GENERAL HOSPITAL	15202	1330207	XYLENE (MIXED ISOMERS)	0.007	0.000					
		50000	FORMALDEHYDE	0.041	0.010	0.000				
		67561	METHANOL	0.149	0.030	0.030				
		75218	ETHYLENE OXIDE	0.650	0.650	0.650				
		7647010	HYDROCHLORIC ACID	10.060	0.845					
		CDC	CADMIUM COMPOUNDS	0.002	0.000					
		GLYET	GLYCOL ETHERS	0.270	0.110					
		HGC	MERCURY COMPOUNDS	0.036	0.003					
		PBC	LEAD COMPOUNDS	0.024	0.002	0.000				
SUN REFINING AND MARKETING,	15238	100414	ETHYL BENZENE	0.100		0.007	0.003	0.006	0.001	0.018
BLAWNOX		108883	TOLUENE	0.100	0.042	0.086	0.055	0.066	0.018	0.078
		110543	HEXANE		0.034	0.033	0.006	0.030	0.027	0.036
		1330207	XYLENE (MIXED ISOMERS)	0.100	0.037	0.082	0.057	0.063	0.004	0.079
		1634044	METHYL TERT-BUTYL ETHER	0.130	0.005	0.008	0.003	0.009	0.005	0.006
		71432	BENZENE		0.059	0.059	0.011	0.050	0.021	0.066
		91203	NAPHTHALENE		0.000	0.001	0.001	0.002	0.000	0.001
		95636	1,2,4-TRIMETHYLBENZENE			0.035	0.000	0.003	0.000	2.00E-04
		98828	CUMENE			0.002	0.002	0.002	0.000	0.019
SUNOCO CHEMICALS INC.	15225	108316	MALEIC ANHYDRIDE	0.004	0.004	0.004	0.003	0.003	0.003	0.004
.NEVILLE ISLAND		108883	TOLUENE				0.22	0.06	0.00	
		117817	BIS(2-ETHYLHEXYL)PHTHALA	0.93		0.54	0.30	0.34	0.30	0.31
		80057	BISPHENOL A	0.30	0.30	0.20	0.20	0.18	0.00	0.00
		85449	PHTHALIC ANHYDRIDE	5.23	1.83	1.01	1.46	2.12	0.71	0.95
SUNOCO PARTNERS	15201	100414	ETHYL BENZENE		0.23	0.02	0.02	0.02	0.13	0.03
MARKETING $ TERMINALS		108883	TOLUENE	0.49	3.89	0.13	0.12	0.12	0.37	0.28
		110543	HEXANE	0.28	0.62	0.13	0.13	0.13	0.14	0.13
		1330207	XYLENE (MIXED ISOMERS)	0.28	0.22	0.15	0.13	0.14	0.68	0.69
		1634044	METHYL TERT-BUTYL ETHER	0.56	2.76	0.02	0.02	0.04	0.78	0.45
		71432	BENZENE	0.12	0.34	0.03	0.04	0.04	0.07	0.04
		91203	NAPHTHALENE		0.00	0.00	0.48	0.00	0.00	0.00
		95636	1,2,4-TRIMETHYLBENZENE			0.06	0.01	0.01	0.19	0.20
		98828	CUMENE		0	4.00E-04	4.00E-04	4.00E-04	4.00E-04	5.00E-04

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Company Name	ZIP	Pollutant CAS#	Pollutant Name	Emissions - Tons per Year						
				1998	1999	2000	2001	2002	2003	2004
THE LANE CONSTRUCTION	15017	100414	ETHYL BENZENE	0.23	0.21	0.14	0.29	0.29	0.18	0.18
BRIDGEVILLE		106514	QUINONE	0.02	0.02	0.02	0.02	0.02	0.02	0.02
		108883	TOLUENE	0.12	0.11	0.11	0.09	0.09	0.08	0.08
		110543	HEXANE						0.01	0.01
		1330207	XYLENE (MIXED ISOMERS)	0.30	0.27	0.27	0.23	0.23	0.22	0.22
		18540299	CHROMIUM (VI)		4.01E-05	4.85E-05	7.95E-05	7.73E-05	7.78E-05	3.93E-06
		193395	INDENO(1,2,3-CD)PYRENE							2.55E-08
		205992	BENZ(E)ACEPHENANTHRYLENE							7.65E-07
		207089	BENZO(K)FLUORANTHENE							1.06E-06
		218019	CHRYSENE							3.19E-07
		50000	FORMALDEHYDE	0.06	0.05	0.05	0.06	0.06	0.06	0.06
		50328	BENZO(A)PYRENE							2.55E-08
		53703	DIBENZ(A,H)ANTHRACENE							7.86E-10
		56553	BENZ(A)ANTHRACENE							3.82E-07
		71432	BENZENE	0.02	0.02	0.02	0.02	0.02	0.02	0.02
		7439976	MERCURY		6.92E-05	1.16E-04	1.73E-04	1.68E-04	1.67E-04	3.46E-05
		75070	ACETALDEHYDE	0.04	0.04	0.04	0.03	0.03	0.03	0.03
		7647010	HYDROCHLORIC ACID							1.30
		ASC	ARSENIC COMPOUNDS		5.22E-05	1.52E-04	2.39E-04	2.32E-04	2.35E-04	
		BEC	BERYLLIUM COMPOUNDS		1.70E-04	5.80E-04	8.58E-04	8.33E-04	8.38E-04	
		CDC	CADMIUM COMPOUNDS		4.06E-05	4.91E-05	7.73E-05	7.51E-05	7.59E-05	
		MNC	MANGANESE COMPOUNDS		1.24E-04	0.004	0.006	0.006	0.006	
		NIC	NICKEL COMPOUNDS		1.05E-04	0.02	0.03	0.03	0.03	
		PB	LEAD	2.03E-03	0.008	0.01	0.01	0.01	0.01	7.44E-05
		SEC	SELENIUM COMPOUNDS		4.99E-05	0.00	0.00	0.00	0.00	

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Company Name	ZIP	Pollutant CAS#	Pollutant Name	Emissions - Tons per Year						
				1998	1999	2000	2001	2002	2003	2004
THE LANE MCKEES ROCK ASPHALT PLANT	15136	100414	ETHYL BENZENE	0.29	0.38	0.29	0.42	0.25	0.30	0.34
		106514	QUINONE	0.02	0.03	0.02	0.05	0.03	0.04	0.04
		108883	TOLUENE	0.16	0.21	0.16	0.19	0.11	0.14	0.15
		110543	HEXANE							0.02
		1330207	XYLENE (MIXED ISOMERS)	0.38	0.49	0.37	0.52	0.30	0.37	0.42
		18540299	CHROMIUM (VI)		1.06E-04	8.96E-05	1.57E-04	8.19E-05	0.00E+00	7.38E-06
		193395	INDENO(1,2,3-CD)PYRENE							4.61E-08
		205992	BENZ(E)ACEPHENANTHRYLENE							1.45E-06
		207089	BENZO(K)FLUORANTHENE							2.00E-06
		218019	CHRYSENE							5.84E-07
		50000	FORMALDEHYDE	0.08	0.10	0.07	0.14	0.08	0.10	0.11
		50328	BENZO(A)PYRENE							4.92E-09
		53703	DIBENZ(A,H)ANTHRACENE							1.48E-08
		56553	BENZ(A)ANTHRACENE							7.07E-07
		71432	BENZENE	0.03	0.04	0.03	0.05	0.03	0.04	0.04
		7439976	MERCURY		2.42E-04	2.00E-04	3.48E-04	1.86E-04	2.45E-04	6.46E-05
		75070	ACETALDEHYDE	0.06	0.07	0.06	0.06	0.04	0.04	0.05
		7647010	HYDROCHLORIC ACID							1.69
		ASC	ARSENIC COMPOUNDS		3.33E-04	2.83E-04	4.71E-04	2.43E-04	3.29E-04	
		BEC	BERYLLIUM COMPOUNDS		0.001	0.001	0.002	0.001	0.001	
		MNC	MANGANESE COMPOUNDS		0.008	0.006	0.013	0.007	0.009	
		NIC	NICKEL COMPOUNDS		0.04	0.04	0.06	0.03	0.04	
		PB	LEAD	0.02	0.01	0.01	0.02	0.01	0.01	1.37E-04
		SEC	SELENIUM COMPOUNDS		0.002	0.002	0.003	0.002	0.002	

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Company Name	ZIP	Pollutant CAS#	Pollutant Name	Emissions - Tons per Year						
				1998	1999	2000	2001	2002	2003	2004
THE VALSPAR CORPORATION	15233	100414	ETHYL BENZENE			0.65	0.49	0.53	0.47	0.47
		108054	VINYL ACETATE					0.003	0.003	0.003
		108101	METHYL ISOBUTYL KETONE	6.13	1.92	1.90	2.53	3.00	2.96	2.91
		108883	TOLUENE	5.73	2.24	2.19	2.45	0.59	0.61	0.59
		108952	PHENOL					0.00	0.00	0.00
		110543	HEXANE					0.03	0.04	0.04
		111762	2-BUTOXY ETHANOL					0.37	0.42	0.39
		131113	DIMETHYL PHTHALATE						8.74E-06	2.16E-05
		1330207	XYLENE (MIXED ISOMERS)	9.81	2.90	2.84	2.90	2.35	2.08	2.03
		140885	ETHYL ACRYLATE						3.63E-05	8.97E-05
		50000	FORMALDEHYDE					0.04	0.22	0.20
		67561	METHANOL					9.93E-04	2.10E-04	2.00E-04
		78591	ISOPHORONE		2.24	2.25	0.24	0.05	0.03	0.10
		78933	METHYL ETHYL KETONE	12.85	3.77	3.57	3.69	2.34	2.48	2.61
		91203	NAPHTHALENE	0.12	0.22	0	0.007	0.007	0.021	0.063
		95636	1,2,4-TRIMETHYLBENZENE						0.022	0.026
		98828	CUMENE					0.04	0.04	0.04
		GLYET	GLYCOL ETHERS		4.12	4.12	0.06	0.03	0.07	0.12
TRINITY INDUSTRIES PLANT 112	15136	110543	HEXANE						0.35	0.54
		PB	LEAD							1.14E-04

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Company Name	ZIP	Pollutant CAS#	Pollutant Name	Emissions - Tons per Year						
				1998	1999	2000	2001	2002	2003	2004
TRINITY INDUSTRIES, INC. PLT # 441	15136	100414	ETHYL BENZENE	0.29	0.04	0.07	0.13	0.13		
		100425	STYRENE				0.38	0.38		
		101688	METHYLENE DIPHENYL DIISOCYANATE			0.04	0.00	0.00		
		101779	4,4'-METHYLENEDIANILINE	0.13	0.00	0.00	0.00	0.00		
		106423	P-XYLENE			0.05	0.09	0.09		
		107982	1-METHOXY-2-PROPANOL					0.20		
		108101	METHYL ISOBUTYL KETONE	0.64	0.30	0.42	0.05	0.05		
		108383	M-XYLENE			0.20	0.28	0.28		
		108883	TOLUENE	1.10		0.86	1.73	0.21		
		108952	PHENOL	0.11	0	9.00E-05	0	0		
		111762	2-BUTOXY ETHANOL					0.01		
		111773	2-(2-METHOXYETHOXY) ETHANOL					0		
		112345	2-(2-BUTOXYETHOXY) ETHANOL					0		
		123864	BUTYL ACETATE			0.15	0.1	0.1		
		1330207	XYLENE (MIXED ISOMERS)	1.58	0.83	0.483	0.23	0.23		
		50000	FORMALDEHYDE	0.05	0	3.00E-05	0	0		
		67561	METHANOL	0.04	0.02	0.08	0.01	0.01		
		78933	METHYL ETHYL KETONE	1.61	6.52	3.84	5.32	5.32		
		91203	NAPHTHALENE	0.08	0.000	0.002	0.000	0.000		
		95476	O-XYLENE			0.90	0.45	0.45		
		98828	CUMENE			0.02	0.01	0.01		

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Company Name	ZIP	Pollutant CAS#	Pollutant Name	Emissions - Tons per Year						
				1998	1999	2000	2001	2002	2003	2004
TUBE CITY, INC.	15236	110543	HEXANE			9.00E-04	9.00E-04		0.001	0.003
		PBC	LEAD COMPOUNDS				1.10E-04	6.30E-05	1.42E-04	0.000
UNION ELECTRIC STEEL CORP.	15106	110543	HEXANE			0.09	0.08	0.10	0.11	0.12
		PBC	LEAD COMPOUNDS		5.40E-06	5.50E-06	5.19E-06	6.10E-06	6.95E-06	
UNITED REFINING CO.E	15144	110543	HEXANE			0.02	0.02	0.01	0.006	0.006
SPRINGDALE ASPHALT TERMINAL		50000	FORMALDEHYDE							2.69E-04
		7439976	MERCURY							2.53E-05
		7440473	CHROMIUM							2.53E-05
		PB	LEAD	2.39E-05	0	0	0	0	0	3.44E-06
UNIV OF PITT APPLIED RESEARCH	15238	110543	HEXANE			0.15	0.15	0.15	0.17	0.16
CTR- UPARC		120127	ANTHRACENE					9.35E-09		
		129000	PYRENE					3.47E-08		
		191242	BENZO(G,H,I)PERYLENE					5.73E-09		
		192972	BENZO(E)PYRENE					3.28E-09		
		193395	INDENO(1,2,3-CD)PYRENE					1.88E-09		
		206440	FLUORANTHENE					4.69E-08		
		207089	BENZO(K)FLUORANTHENE					7.8E-10		
		208968	ACENAPHTHYLENE					6.91E-08		
		218019	CHRYSENE					7.25E-09		
		50328	BENZO(A)PYRENE					9.4E-10		
		53703	DIBENZ(A,H)ANTHRACENE					2.92E-09		
		56553	BENZ(A)ANTHRACENE					8.4E-09		
		56832736	BENZOFLUORANTHENES					1.31E-09		
		83329	ACENAPHTHENE					1.70E-08		
		85018	PHENANTHRENE					2.29E-07		
		86737	FLUORENE					1.91E-07		
		91203	NAPHTHALENE					1.01E-06		
		91576	2-METHYLNAPHTHALENE					2.63E-07		
		92524	BIPHENYL					1.68E-06		
		PB	LEAD			3.77E-05	3.79E-05	4.54E-05	4.13E-05	3.85E-05
UNIVERSAL STAINLESS & ALLOY	15017	CRC	CHROMIUM COMPOUNDS	0.35	0.35	0.35	0.36	0.35	0.34	0.38
PRODUCTS		NIC	NICKEL COMPOUNDS	0.15	0.15	0.15	0.16	0.15	0.15	0.17
		PB	LEAD	0.02	0.02	0.02	0.02	0.02	0.02	0.02

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Company Name	ZIP	Pollutant CAS#	Pollutant Name	Emissions - Tons per Year						
				1998	1999	2000	2001	2002	2003	2004
UNIVERSITY OF PITTSBURGH	15213	100414	ETHYL BENZENE						2.25E-04	1.35E-04
(MAIN CAMPUS)		108101	METHYL ISOBUTYL KETONE						0.008	0.004
		108883	TOLUENE					0.07		0.08
		110543	HEXANE					0.08		0.07
		111762	2-BUTOXY ETHANOL						0.004	0.002
		120127	ANTHRACENE					5.81E-07		
		129000	PYRENE					1.45E-06		
		1330207	XYLENE (MIXED ISOMERS)					0.05		0.02
		1330207	XYLENE (MIXED ISOMERS)						0.02	
		18540299	CHROMIUM (VI)					7.50E-07		
		191242	BENZO(G,H,I)PERYLENE					1.83E-07		
		192972	BENZO(E)PYRENE					5.22E-09		
		193395	INDENO(1,2,3-CD)PYRENE					1.77E-07		
		206440	FLUORANTHENE					2.07E-06		
		207089	BENZO(K)FLUORANTHENE					1.21E-07		
		208968	ACENAPHTHYLENE					1.42E-06		
		218019	CHRYSENE					1.80E-07		
		50000	FORMALDEHYDE					0.003		
		50328	BENZO(A)PYRENE					1.02E-07		
		53703	DIBENZ(A,H)ANTHRACENE					2.02E-07		
		56495	3-METHYLCHOLANTHRENE					8.21E-08		
		56553	BENZ(A)ANTHRACENE					5.05E-07		
		56832736	BENZOFLUORANTHENES					2.09E-09		
		57976	DIMETHYLBENZ(A)ANTHRACENE					7.30E-07		
		67561	METHANOL					0.05	0.04	0.04
		71432	BENZENE					0.01		
		7723140	PHOSPHORUS (YELLOW OR WHITE)						0.000035	0
		83329	ACENAPHTHENE					4.55E-07		
		84742	DIBUTYL PHTHALATE						0.006	0.005
		85018	PHENANTHRENE					8.31E-06		
		86737	FLUORENE					7.55E-06		
		91203	NAPHTHALENE					5.01E-05		
		91576	2-METHYLNAPHTHALENE					1.51E-06		
		92524	BIPHENYL					2.67E-06		
		95636	1,2,4-TRIMETHYLBENZENE					0.46		
		98828	CUMENE					0.04	0.02	0.02
		COC	COBALT COMPOUNDS					1.02E-06		
		CRC	CHROMIUM COMPOUNDS					9.87E-06	1.95E-04	1.60E-04
		GLYET	GLYCOL ETHERS						0.001	0.002
		MNC	MANGANESE COMPOUNDS					0.002		
		NIC	NICKEL COMPOUNDS					5.73E-06		
		PB	LEAD					2.46E-05	1.8313E-05	1.61E-05

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Company Name	ZIP	Pollutant CAS#	Pollutant Name	Emissions - Tons per Year						
				1998	1999	2000	2001	2002	2003	2004
UPMC - OAKLAND CAMPUS	15213	10035106	HYDROGEN BROMIDE	0.01	0.02	0.01	0.01	0.01	0.00	0.00
		110543	HEXANE						0.12	0.11
		75218	ETHYLENE OXIDE	0.00	0.00	0.17	0.22	0.45	0.11	0.06
		7647010	HYDROCHLORIC ACID	1.71	9.70	7.90	10.94	8.42	0.13	0.14
		7664393	HYDROGEN FLUORIDE	0.03	0.05	0.05	0.05	0.04	5.87E-04	6.12E-04
		HGC	MERCURY COMPOUNDS	0.02	0.03	0.03	0.04	0.03	0.000	0.001
		PB	LEAD	0.02	0.03	0.02	0.04	0.03	0.009	0.002
		SBC	ANTIMONY COMPOUNDS	0.003	0.004	0.004	0.004	0.003	5.04E-05	5.26E-05
UPMC MAGEE HOSPITAL	15213	110543	HEXANE						0.11	0.11
		1330207	XYLENE (MIXED ISOMERS)	0.33	0.33	0.33	0.33	0.33	0.33	0.33
		67561	METHANOL	0.10	0.10	0.10	0.10	0.10	0.10	0.10
		7439976	MERCURY					3.41E-05	2.05E-05	1.40E-04
		7440473	CHROMIUM					2.52E-05	1.51E-05	1.40E-04
		75218	ETHYLENE OXIDE	0.04	0	0	0			
		PB	LEAD	6.46E-07	4.05E-07	6.08E-07	6.08E-07	9.69E-06	6.83E-06	6.81E-06
UPMC MCKEESPORT	15132	107211	ETHYLENE GLYCOL					1.20E-05	1.10E-05	1.10E-05
		110543	HEXANE						0.06	0.07
		1333820	CHROMIC ACID		1.38E-04	1.38E-04	2.20E-04	5.50E-04	3.42E-04	5.50E-04
		50000	FORMALDEHYDE	0.07	0.07	0.11	0.92	0.14	0.18	0.12
		68476346	ALIPHATIC PETROLEUM DISTILLATE					3.50E-05	4.55E-04	5.50E-05
		75218	ETHYLENE OXIDE	0.17	0.07	0.03	0.03	0.07	0.05	0.07
		PB	LEAD	2.45E-06	3.25E-06	2.61E-05	4.48E-05	2.99E-06	5.08E-05	8.00E-07
UPMC SHADYSIDE	15232	10035106	HYDROGEN BROMIDE	0.007	0.008	0.002				
		110543	HEXANE						0.24	0.24
		1330207	XYLENE (MIXED ISOMERS)	0.99	0.99	1.00	1.00	1.00	1.00	1.00
		50000	FORMALDEHYDE	0.74	0.74	0.75	0.75	0.75	0.75	0.75
		75218	ETHYLENE OXIDE	0.0005	0.0005					
		7647010	HYDROCHLORIC ACID	1.32	5.92	1.55				
		7664393	HYDROGEN FLUORIDE	0.02	0.03	0.007				
		7782505	CHLORINE	0.02	0.03	0.007				
		ASC	ARSENIC COMPOUNDS	5.02E-05	5.65E-05	1.48E-05				
		BEC	BERYLLIUM COMPOUNDS	2.72E-06	3.08E-06	8.02E-07				
		CDC	CADMIUM COMPOUNDS	9.82E-04	1.11E-03	2.90E-04				
		CRC	CHROMIUM COMPOUNDS	1.22E-04	1.37E-04	3.59E-05				
		HGC	MERCURY COMPOUNDS	0.02	0.02	0.005				
		MNC	MANGANESE COMPOUNDS	8.90E-05	1.00E-04	2.63E-05				
		NIC	NICKEL COMPOUNDS	9.26E-05	1.04E-04	2.73E-05				
		PB	LEAD	0.01	0.01	0.00		5.99E-06	3.06E-05	2.03E-05
		SBC	ANTIMONY COMPOUNDS	0.002	0.003	0.001				
		110543	HEXANE						0.02	0.03

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Company Name	ZIP	Pollutant CAS#	Pollutant Name	Emissions - Tons per Year						
				1998	1999	2000	2001	2002	2003	2004
UPMC SHADYSIDE		PBC	LEAD COMPOUNDS					9.46E-06	5.95E-06	6.92E-06
US AIRWAYS MAINTENANCE BASE	15231	100414	ETHYL BENZENE	0.20	0.26	0.26				
		100425	STYRENE	0.96	0.41	0.70				
		106887	1,2-EPOXYBUTANE					0.44	1.10	1.25
		107062	ETHYLENE DICHLORIDE			0.003				
		107211	ETHYLENE GLYCOL			0.004				
		108101	METHYL ISOBUTYL KETONE	0.12	0.15	0.20				
		108883	TOLUENE	1.10	0.90	1.06	0.38	0.11	0.41	0.15
		108952	PHENOL			0.02				
		110543	HEXANE	0.16	0.20	0.18	0.08			0.08
		111762	2-BUTOXY ETHANOL						0.22	0.24
		123911	1,4-DIOXANE			0.002				
		131113	DIMETHYL PHTHALATE	0.12	0.07	0.08				
		1330207	XYLENE (MIXED ISOMERS)	0.98	1.11	1.14	0.54	0.00	0.28	
		50000	FORMALDEHYDE			0.00				
		67561	METHANOL	0.29	0.54	0.66	0.40	0.36	0.42	0.59
		68122	DIMETHYLFORMAMIDE, N,N-			0.09				
		71432	BENZENE			3.00E-04				
		71556	METHYL CHLOROFORM	9.81	1.29	0.01				
		75014	VINYL CHLORIDE			0.00				
		75092	METHYLENE CHLORIDE	0.74	0.44	0.15				
		7664393	HYDROGEN FLUORIDE			3.00E-04				
		7723140	PHOSPHORUS (YELLOW OR WHITE)			0				
		78933	METHYL ETHYL KETONE	1.05	1.22	1.90	0.97	0.19	0.48	0.84
		79016	TRICHLOROETHYLENE			0.00			0.34	0.48
		79107	ACRYLIC ACID			0				
		822060	HEXAMETHYLENE-1,6-DIISOCYANATE			0.005				
		84742	DIBUTYL PHTHALATE			0.008				
		CDC	CADMIUM COMPOUNDS			0.10				
		COC	COBALT COMPOUNDS			0.02				
		CRC	CHROMIUM COMPOUNDS			0.12				
		GLYET	GLYCOL ETHERS	1.5348	1.7945	1.80	0.87	0.19		
		MNC	MANGANESE COMPOUNDS			0.09				
		NIC	NICKEL COMPOUNDS			0.03				
		PBC	LEAD COMPOUNDS			0.02				
		SBC	ANTIMONY COMPOUNDS			0.04				

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Company Name	ZIP	Pollutant CAS#	Pollutant Name	Emissions - Tons per Year						
				1998	1999	2000	2001	2002	2003	2004
US STEEL CORPORATION - IRVIN PLANT	15034	107211	ETHYLENE GLYCOL	0.41	0.41	0.08	0.36	0.47	0.06	0.09
		108883	TOLUENE	0.13	0.13	0.06	0.26	0.35	0.04	0.07
		110543	HEXANE			1.33	1.02	1.63	1.55	2.26
		127184	TETRACHLOROETHYLENE	0.00	0.00	0.00	0.00	0.00		
		1330207	XYLENE (MIXED ISOMERS)	0.58	0.58	0.18	0.77	1.02	0.12	0.20
		67561	METHANOL	0.52	0.52	0.28	1.18	1.55	0.19	0.31
		75150	CARBON DISULFIDE				0.14	0.18	0.17	0.18
		7647010	HYDROCHLORIC ACID	18.88	17.94	16.00	47.32	29.67	31.03	32.73
		7664417	AMMONIA				0.64	0.86	0.79	0.85
		7782505	CHLORINE				0.27	0.36	0.33	0.36
		GLYET	GLYCOL ETHERS	0.13	0.13	0.05	0.05	0.00	0.05	0.05
		NIC	NICKEL COMPOUNDS		0	0	0	0	0	0
		PB	LEAD		0.008	0.02	0.02	0.02	0.02	0.01
		SBC	ANTIMONY COMPOUNDS		0	0.00	0.00	0.00	0.00	0.00

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Company Name	ZIP	Pollutant CAS#	Pollutant Name	Emissions - Tons per Year						
				1998	1999	2000	2001	2002	2003	2004
USS - CLAIRTON WORKS	15025	100414	ETHYL BENZENE	0.05	0.19	0.03	0.03	0.03	0.03	0.03
		100425	STYRENE	0.04	0.25	0.15	0.30	0.32	0.33	0.32
		107028	ACROLEIN				0.33	0.34	0.35	0.33
		107211	ETHYLENE GLYCOL		0.22	0.22	0.15	0.15	0.15	0.15
		108054	VINYL ACETATE				0.51	0.53	0.54	0.51
		108883	TOLUENE	9.36	4.12	2.83	5.22	5.37	5.50	23.84
		108952	PHENOL	22.36	13.89	22.77	21.45	22.18	22.67	21.26
		110543	HEXANE			0.78	0.31	0.57	0.75	1.22
		120127	ANTHRACENE	0.16		0.34	0.22	0.23	0.24	0.22
		123911	1,4-DIOXANE				0.51	0.53	0.54	0.51
		129000	PYRENE	0.13		0.11	0.53	0.58	0.61	0.61
		1319773	CRESOLS (MIXED ISOMERS)	0.06		1.89	1.79	1.85	1.89	1.77
		132649	DIBENZOFURAN			0.07	0.36	0.37	0.41	0.41
		1330207	XYLENE (MIXED ISOMERS)	2.84	1.39	0.91	0.76	0.77	0.67	0.67
		193395	INDENO(1,2,3-CD)PYRENE				0.05	0.05	0.06	0.06
		203645	PHENANTHRENE, CYCLOPENTA-,					0.24	0.23	0.24
		205992	BENZ(E)ACEPHENANTHRYLE	0.11			0.10	0.10	0.10	0.11
		206440	FLUORANTHENE	0.17			0.52	0.56	0.62	0.62
		207089	BENZO(K)FLUORANTHENE	0.02			0.08	0.08	0.09	0.09
		208968	ACENAPHTHYLENE				0.41	0.46	0.50	0.51
		218019	CHRYSENE			0.02	0.18	0.19	0.20	0.18
		31711532	METHYLPHENANTHRENES				0.13	0.14	0.15	0.15
		50328	BENZO(A)PYRENE	0.03			0.12	0.12	0.13	0.13
		53703	DIBENZ(A,H)ANTHRACENE				0.01	0.01	0.01	0.01
		56553	BENZ(A)ANTHRACENE	0.07		0.02	0.15	0.16	0.17	0.17
		67561	METHANOL	20.08	62.75	62.33	62.10	62.10	62.10	15.98
		71432	BENZENE	55.99	27.78	24.03	25.90	26.85	27.77	69.70
		7439976	MERCURY				0.002	0.002	0.002	0.002
		7440020	NICKEL				0.46	0.47	0.48	0.35
		7440360	ANTIMONY				0.35	0.37	0.37	0.29
		7440473	CHROMIUM				4.32	4.46	4.56	2.93
		7440484	COBALT				0.36	0.21	0.22	0.15
		74873	METHYL CHLORIDE				2.53	2.62	2.66	20.44
		75058	ACETONITRILE					0.29	0.30	0.28
		75150	CARBON DISULFIDE		0.72	18.42	17.26	18.31	18.13	17.04
		7647010	***HYDROCHLORIC ACID (adjus***	***108.50***	***108.50***	112.83	106.88	105.70	105.24	101.79
		7664417	AMMONIA	584.51	208.39	310.01	290.99	299.71	306.33	286.63
		7782505	CHLORINE			1.58	1.45	1.44	1.46	1.43
		7783064	HYDROGEN SULFIDE	162.61	137.22	149.50	141.27	145.47	149.71	141.28

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Company Name	ZIP	Pollutant CAS#	Pollutant Name	Emissions - Tons per Year						
				1998	1999	2000	2001	2002	2003	2004
		79345	1,1,2,2-TETRACHLOROETHANE				0.25	0.26	0.27	0.25
USS - CLAIRTON WORKS		80626	METHYL METHACRYLATE				0.58	0.60	0.62	0.58
		85018	PHENANTHRENE	0.66		0.50	1.24	1.23	1.32	1.37
		86737	FLUORENE				0.22	0.23	0.24	0.26
		91203	NAPHTHALENE	9.17	4.52	5.57	4.14	4.28	4.39	4.65
		91225	QUINOLINE			0.13	0.12	0.12	0.13	0.12
		92524	BIPHENYL			0.04	0.04	0.04	0.04	0.04
		CE	COKE OVEN EMISSIONS	1.86						
		CNC	CYANIDE COMPOUNDS	30.51	28.02	36.45	35.98	37.13	38.02	35.74
		PB	LEAD	0.00		0.05	0.06	0.06	0.07	0.06
		POM	POLYCYCLIC ORGANIC MATT	15.68	13.10	10.20				
USX CORPORATION -	15104	100414	ETHYL BENZENE	0.03						
EDGAR THOMSON WORKS		107211	ETHYLENE GLYCOL	0.21	0.21	0.22	0.17	0.16	0.12	0.19
		108883	TOLUENE	0.11	0.11	0.17	0.12	0.12	0.09	0.14
		108952	PHENOL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		110543	HEXANE			1.02	0.78	1.14	0.77	0.74
		127184	TETRACHLOROETHYLENE	0.03						
		1330207	XYLENE (MIXED ISOMERS)	0.45	0.45	0.50	0.36	0.36	0.27	0.41
		50000	FORMALDEHYDE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		67561	METHANOL	0.68	0.68	0.76	0.56	0.54	0.54	0.63
		7439965	MANGANESE							0.96
		7439976	MERCURY							2.57E-04
		7440020	NICKEL							0.009
		7440473	CHROMIUM							0.02
		75150	CARBON DISULFIDE			0.13	0.13	0.12	0.11	0.09
		7647010	HYDROCHLORIC ACID			17.61	17.62	16.08	15.74	13.11
		7664417	AMMONIA			0.60	0.60	0.55	0.54	0.45
		7723140	PHOSPHORUS (YELLOW OR V	0.15	0.50	0.54	0.43	0.60	0.61	0.65
		7782505	CHLORINE			0.25	0.25	0.23	0.22	0.19
		CRC	CHROMIUM COMPOUNDS		0.008	0.007	0.007	0.009	0.014	
		HGC	MERCURY COMPOUNDS		1.71E-04	1.66E-04	1.50E-04	2.05E-04	2.22E-04	
		MNC	MANGANESE COMPOUNDS	0.22	0.70	0.70	0.63	0.88	1.40	0.00
		PB	LEAD	0.03	0.18	0.16	0.17	0.19	0.18	0.42

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				1998	1999	2000	2001	2002	2003	2004
VA MEDICAL CENTER -	15240	110543	HEXANE						0.03	0.04
ASPINWAL FACILITY		1330207	XYLENE (MIXED ISOMERS)	0.00	0.00					
		50000	FORMALDEHYDE	0.00	0.00					
		67561	METHANOL	0.02	0.00					
		7647010	HYDROCHLORIC ACID	3.80E-04	8.38E-04	0	0			
		PB	LEAD	0.00	1.96E-04	0	0			
VA MEDICAL CENTER -	15206	110543	HEXANE						0.09	0.11
HIGHLAND DRIVE FACILITY		50000	FORMALDEHYDE				0.003	0	0.00	0.00
		67561	METHANOL	0.05	0.05	0.07	0.03	0.01	0.05	0.05
		PB	LEAD			3.10E-05	1.68E-05	1.39E-05	2.34E-05	2.62E-05
VA MEDICAL CENTER -	15240	110543	HEXANE						0.06	0.07
OAKLAND FACILITY		1330207	XYLENE (MIXED ISOMERS)	0.07	0.15	0.06	0.09	0.06	0.06	0.04
		50000	FORMALDEHYDE	1.90	2.00	1.80	1.90	1.10	1.00	1.50
		67561	METHANOL		0.09	0.10	0.13	0.18	0.07	0.36
		75218	ETHYLENE OXIDE	0.18	0.16	0.11	0.13	0.40	0.40	0.40
		7647010	HYDROCHLORIC ACID	0.015	0.010	0.002	0.015	0.009	0.009	0.008
		7664393	HYDROGEN FLUORIDE			8.25E-06	6.53E-05	4.05E-05	4.05E-05	3.60E-05
		HGC	MERCURY COMPOUNDS			6.05E-06	4.79E-05	2.97E-05	2.97E-05	2.64E-05
		PB	LEAD	3.23E-05	2.35E-05	2.54E-05	6.40E-05	4.19E-05	4.03E-05	3.56E-05
VALLEY PROTEINS (PA), INC.	15225	110543	HEXANE			0.08	9.36E-06	2.30E-05	4.14E-05	1.02E-05
		7782505	CHLORINE	0.57	0.57	0.57	0.57	0.57	0.73	0.06
		PB	LEAD	5.17E-06	0	0	1.05E-06	1.58E-07	5.81E-06	
VORTEC U-PARC PROCESS	15238	7647010	HYDROCHLORIC ACID			2.80E-06	0	0		
TEST FACILITY		7664393	HYDROGEN FLUORIDE		0.006	0.002	0.003	0.003		
		PBC	LEAD COMPOUNDS			2.40E-06	0	0		
WATSON STANDARD COMPANY -	15049	100414	ETHYL BENZENE	0.007	0.001	0.001	0.001	0.001	8.50E-04	
HARWICK		108101	METHYL ISOBUTYL KETONE	0.19	0.24	0.66	0.35	0.67	0.69	0.59
		108883	TOLUENE	0.004				0.002	0.002	0.001
		111762	2-BUTOXY ETHANOL					3.93	3.05	
		1330207	XYLENE (MIXED ISOMERS)	0.14	0.03	0.09	0.25	0.42	0.40	0.38
		50000	FORMALDEHYDE	0.004	0.002	0.001	0.006	0.01	8.80E-04	
		78591	ISOPHORONE	0.19	0.23	0.27	0.28	0.45	0.44	0.41
		91203	NAPHTHALENE	0.01		0.06	0.27	0.16	0.13	0.15
		95636	1,2,4-TRIMETHYLBENZENE	0.007		0.61				
		GLYET	GLYCOL ETHERS	1.69	0.55					

Allegheny County Health Department
Air Quality Program
Estimated Point Source HAP+H2S & NH3 Emissions for 1998-2004

Company Name	ZIP	Pollutant CAS#	Pollutant Name	Emissions - Tons per Year						
				1998	1999	2000	2001	2002	2003	2004
WATSON STANDARD COMPANY - NEVILLE ISLAND	15225	100414	ETHYL BENZENE	0.01	0.24	0.03	0.03	0.04	0.05	
		108101	METHYL ISOBUTYL KETONE	0.42	0.54	0.26	0.40	0.47	0.40	0.30
		108883	TOLUENE		0.02	0.003	8.00E-04	0.01	0.03	
		111762	2-BUTOXY ETHANOL					3.83	4.11	
		1319773	CRESOLS (MIXED ISOMERS)		5.00E-04	3.00E-04	0	0	0	
		1330207	XYLENE (MIXED ISOMERS)	0.24	0.30	0.12	0.11	0.20	0.25	0.16
		78591	ISOPHORONE	0.33	0.43	0.26	0.34	0.31	0.25	0.23
		78795	ISOPRENE	0.003						
		91203	NAPHTHALENE		0.11	0.06	0.09	0.03	0.02	
		98828	CUMENE				0.02	0.03	0.03	
		GLYET	GLYCOL ETHERS	0.87	1.14					
WESTINGHOUSE SCHOOL	15208	110543	HEXANE						0.01	0.01
		PB	LEAD			1.21E-06	8.68E-07	2.65E-06	2.31E-06	1.89E-06
WHEMCO - HAYS PLANT	15120	110543	HEXANE			0.07	0.05	0.07	0.08	0.08
WHEMCO - WEST HOMESTEAD FACILITY	15120	108883	TOLUENE				0.07	0.00	0.00	0.00
		110543	HEXANE			0.08		0.05	0.05	0.05
		PB	LEAD				3.03E-07	3.67E-07	3.65E-07	9.77E-07
WINTHROP MANAGEMENT - ``		110543	HEXANE						0.13	0.11
WOODLINE PRODUCTS INC.	15084	100425	STYRENE			5.29	4.15			
		101688	METHYLENE DIPHENYL DIISOCYANATE			0.10	0.08			
		107211	ETHYLENE GLYCOL			0.001	7.50E-04			
		108883	TOLUENE			1.75	1.31			
		131113	DIMETHYL PHTHALATE			0.04	0.03			
		1330207	XYLENE (MIXED ISOMERS)			0.03	0.03			
		71556	METHYL CHLOROFORM			0.006	0.005			
		80626	METHYL METHACRYLATE			1.08	0.81			
				---	---	---	---	---	---	---
				3214.60792	2866.64797	3177.04575	3450.86612	3016.66908	3149.13782	2855.405

Allegheny County Health Department
Air Quality Program
301 39th St., Bldg. #7
Pittsburgh, PA 15201

$PM_{2.5}$ Chemical Speciation and Related Comparisons at Lawrenceville and Liberty: 18-Month Results

June 7, 2005

Prepared By
Jason Maranche

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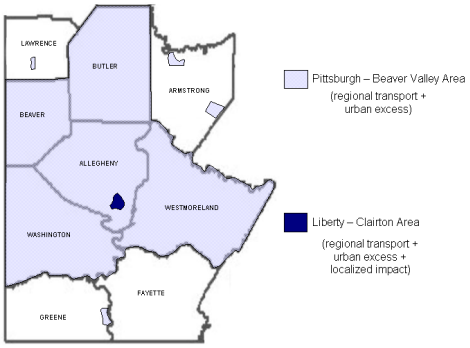
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1. Introduction



Allegheny County has operated two particulate matter – 2.5microns or less ($PM_{2.5}$) – chemical speciation monitors as part of EPA's STN network since 2001. Lawrenceville and Hazelwood were the initial sites of deployment, and species concentrations from these sites were nearly equal. The Hazelwood monitor was then moved to Liberty Borough in October 2003 to better ascertain $PM_{2.5}$ in Liberty-Clairton area.

Allegheny County was designated nonattainment for $PM_{2.5}$ as part of the Pittsburgh-Beaver Valley area in December 2004. At the same time, the Liberty Borough-Clairton area was designated a separate nonattainment area within Allegheny County.

Major species concentrations at Lawrenceville parallel those sampled at other Eastern U.S. metropolitan areas, while the concentrations at Liberty follow their own course. The differences in concentrations of many elements may provide clues to the regional, urban excess, and localized river valley components of $PM_{2.5}$ in Allegheny County.

This report shows species and pollutant comparisons between the two sites over the timeframe of October 2003-March 2005. All figures and tables represent 18-month data unless otherwise noted.

2. Sites

The Lawrenceville monitor site is an urban residential site, downwind from the Pittsburgh Central Business District (Downtown). Elevation is 918 feet above mean sea level (MSL), about 200 feet above river level.

The Liberty Borough monitor site is located in the Monongahela Valley, which contains a mix of urban residential, heavy industrial, and rural areas. The elevation is 1100 feet MSL, and the predominant winds are southwesterly.

Average temperature and pressure are lower at Liberty, coinciding with higher elevation. Elevation alone does not appear to play a role in $PM_{2.5}$ concentrations at Liberty, as other sites such as South Fayette measure lower concentrations at higher elevations than Liberty.

The speciation sampling frequency is higher at Lawrenceville (1-in-3) than at Liberty (1-in-6), so averages at Lawrenceville represent a larger array of values. For some figures in this report, dates have been matched to compare concurrent sampling days only.

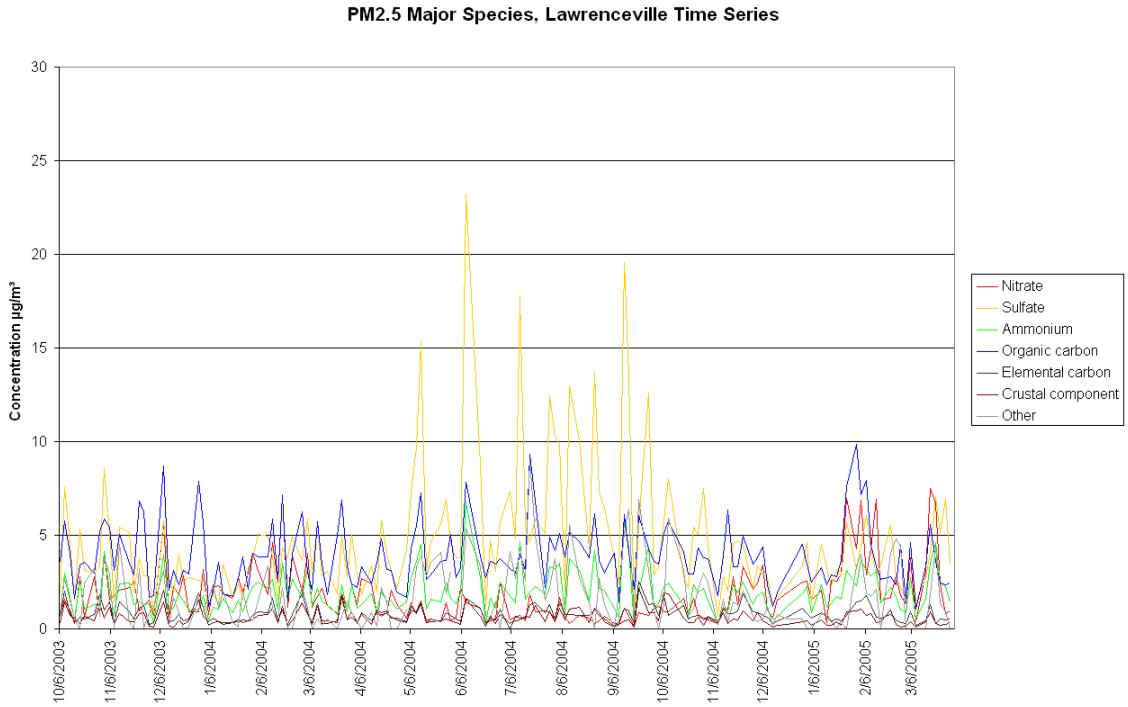
Both sites are collocated with other monitors, including daily $PM_{2.5}$ filter-based (FRM) and hourly continuous $PM_{2.5}$ monitors. Additionally, Lawrenceville measures ozone and NO_x, and Liberty measures PM_{10}, SO_2, H_2S, and benzene.

Sites near Liberty include Glassport (PM_{10}, SO_2) and Lincoln (PM_{10}). These nearby sites have been included in this analysis for possible correlation to Liberty.

3. Major Species

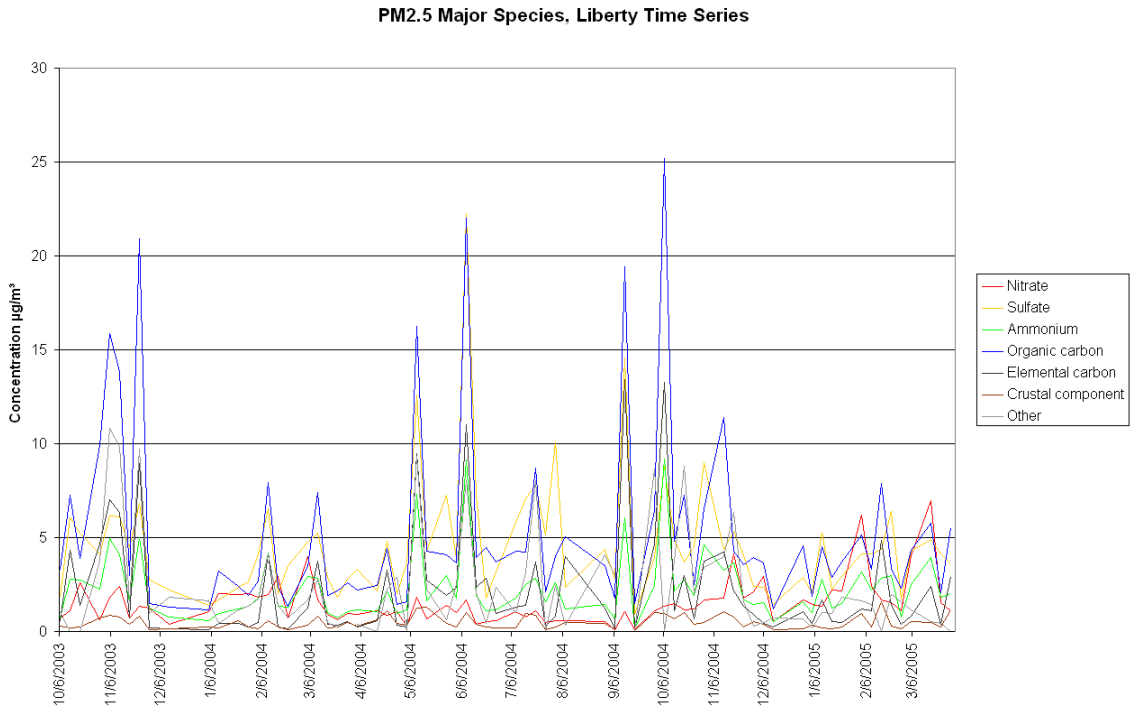
Below are time series plots for Lawrenceville and Liberty $PM_{2.5}$ major species over the 18-month timeframe.

Lawrenceville is dominated by sulfates during summer months. In colder months, nitrates and organics tend to dominate.

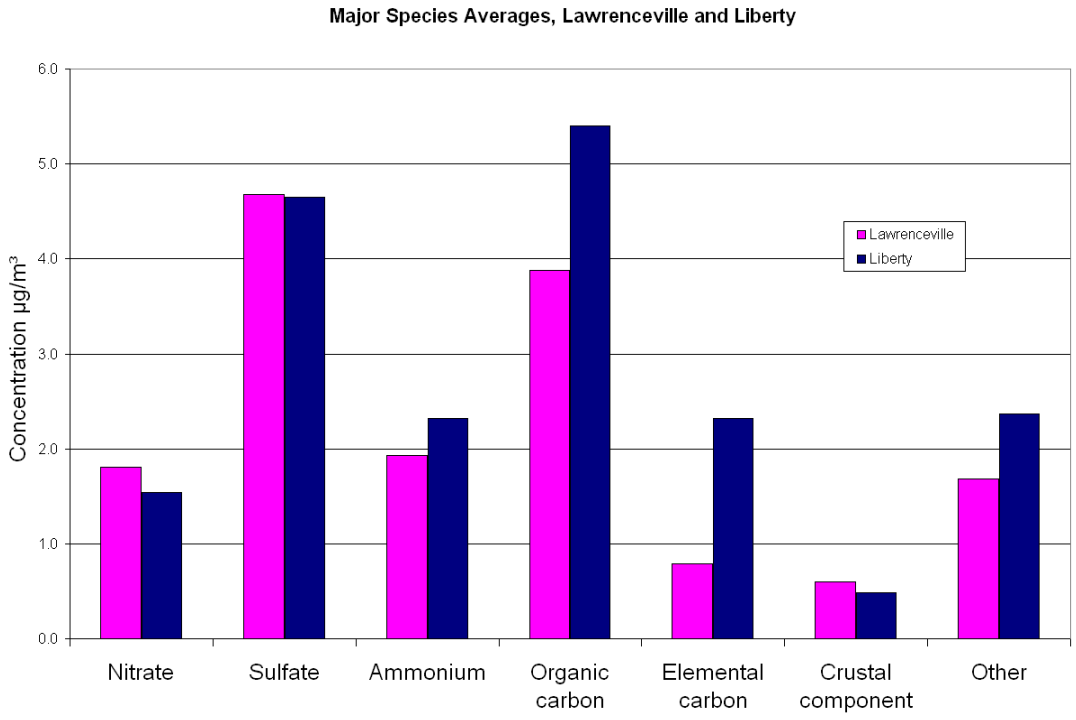


In late January and early February 2005, an anomaly is evident by the exaggerated organic carbon and nitrate peaks. This is likely due to an exceptional high-pressure meteorological system that led to high $PM_{2.5}$ throughout the Midwest and Northeast U.S.

Liberty shows a much different pattern of major $PM_{2.5}$ species over time. While it shows similar levels of sulfates and nitrates to Lawrenceville, it is dominated by organic and elemental carbon year-round.



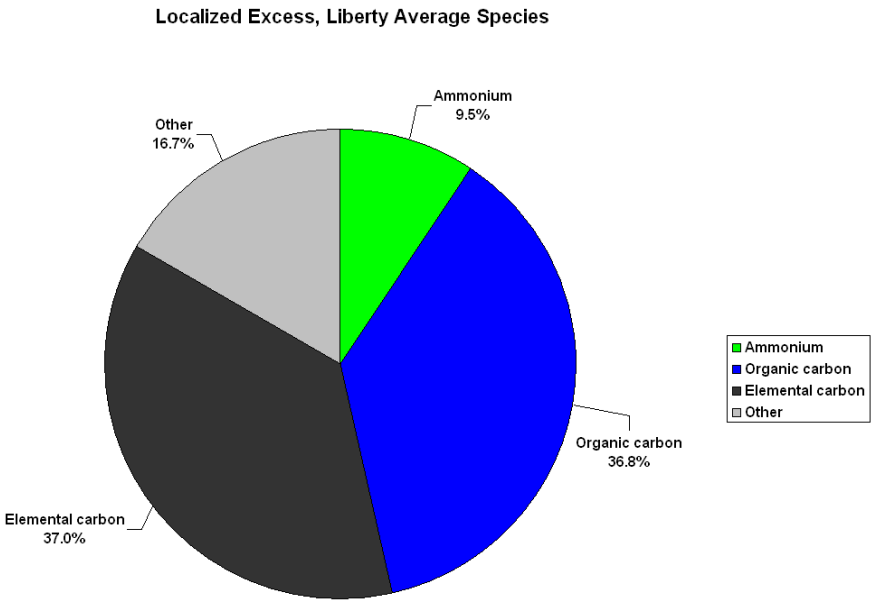
The differences in average carbon levels, as well as ammonium and the "other" component, are shown below.



Sulfates, nitrates, and crustal component are slightly lower at Liberty than at Lawrenceville.

Crustal component is a weighted average of the aluminum, silicon, calcium, iron, and titanium concentrations, representative of fine soil.

By calculating the differences of the average major species, localized excess at Liberty is given by the pie chart below. This excess represents the difference between the Lawrenceville and Liberty sites for species that are greater at Liberty.

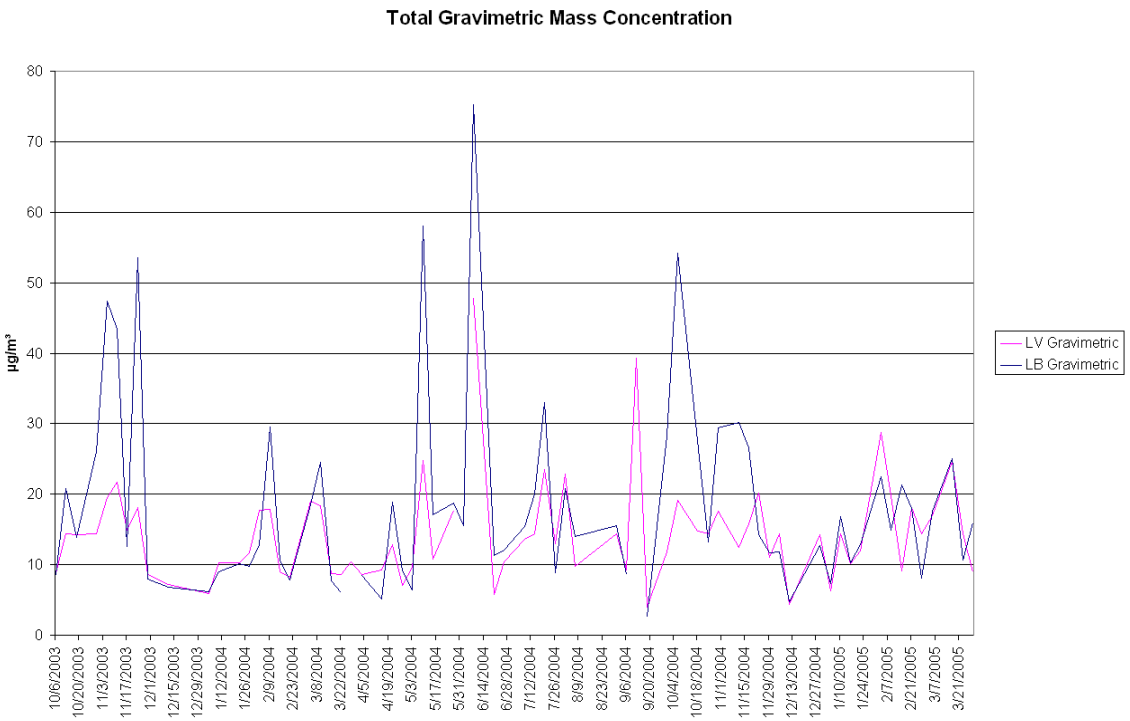


The “other” component is defined as the difference between the gravimetric (weighed) mass concentration and the sum of the major species. It can include the following:

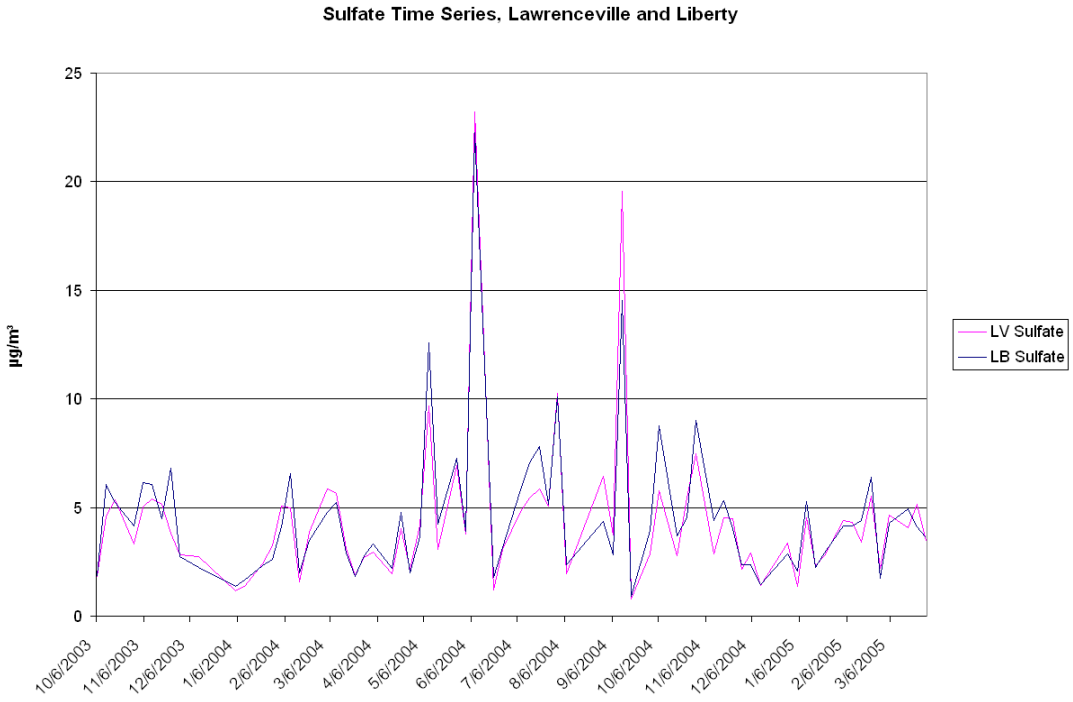
- Non-crustal, non-sulfur trace elements
- Water
- Non-organic, non-elemental carbon
- Unknown species

4. Matched Time Series, by Species

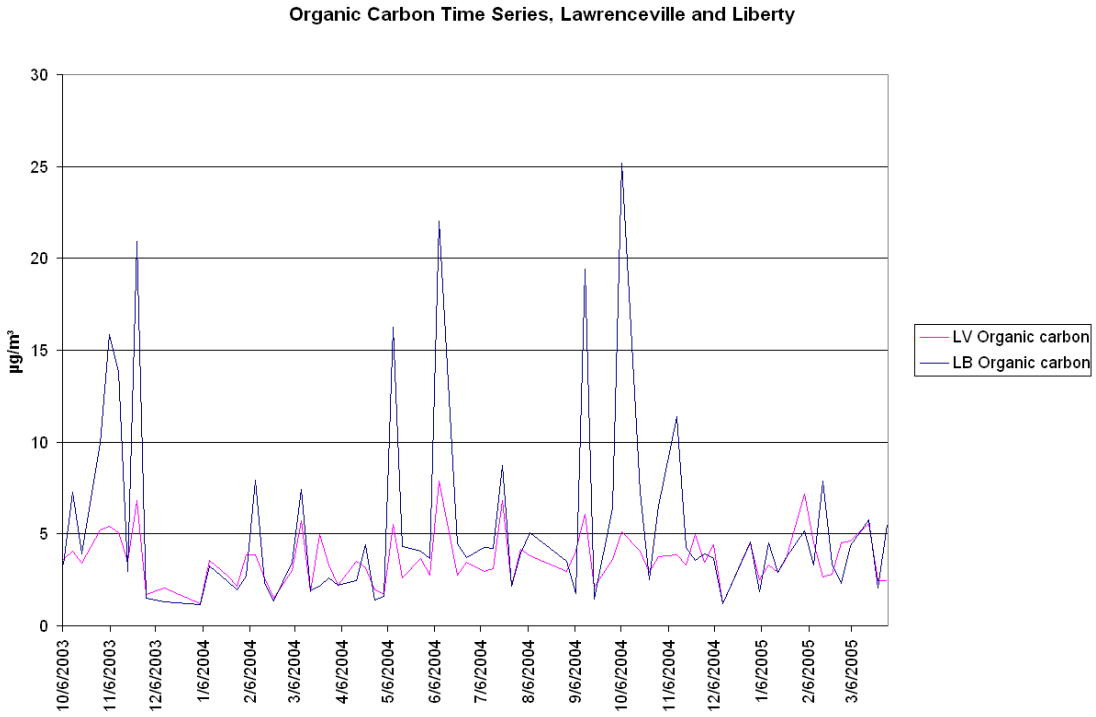
Concurrent sampling at Lawrenceville (LV) and Liberty (LB) occurs every 6 days. Plots of these date-matched samples reveal direct comparisons of species at the two sites. Plots for major species are given below.



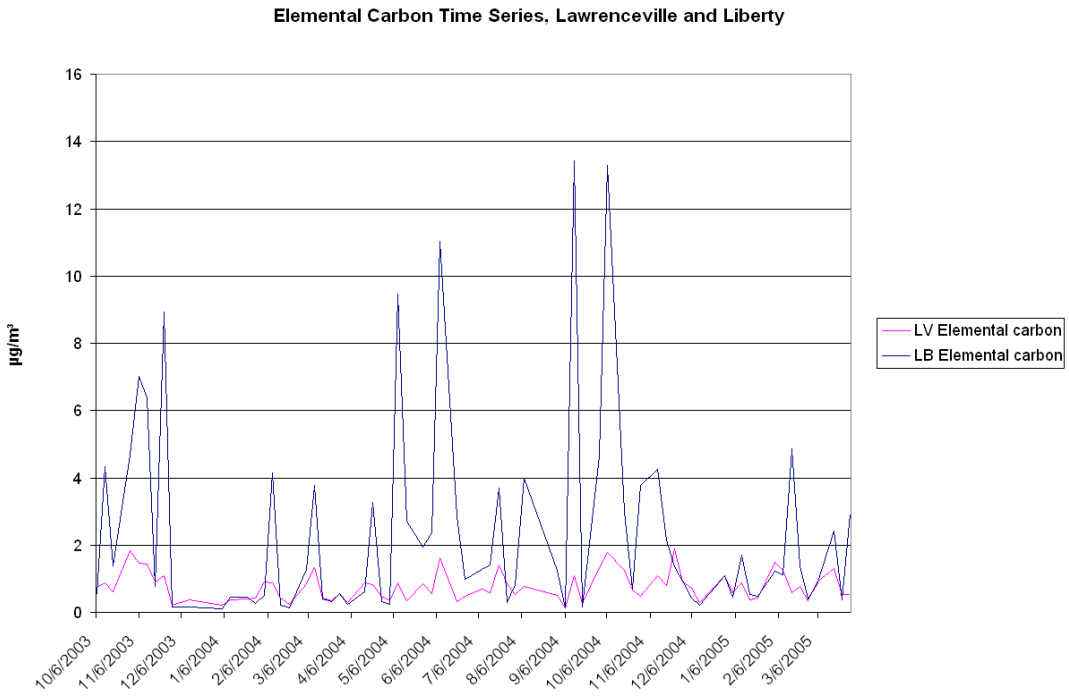
Total $PM_{2.5}$ at Lawrenceville and Liberty show similar peaks at the same times, but to varying extents at each site. Liberty is generally the highest site on peak days, but can be lower for some peaks. On average or low $PM_{2.5}$ days, Liberty and Lawrenceville are often nearly equal. This indicates that regional flow and meteorology may be the primary controlling factors in the formation of $PM_{2.5}$ on low and average days. Wind speed aloft (upper air), relative humidity, and temperature can affect both sites on a broad-scale. Additional accumulation at Liberty may be dependent on local conditions such as surface wind and temperature.



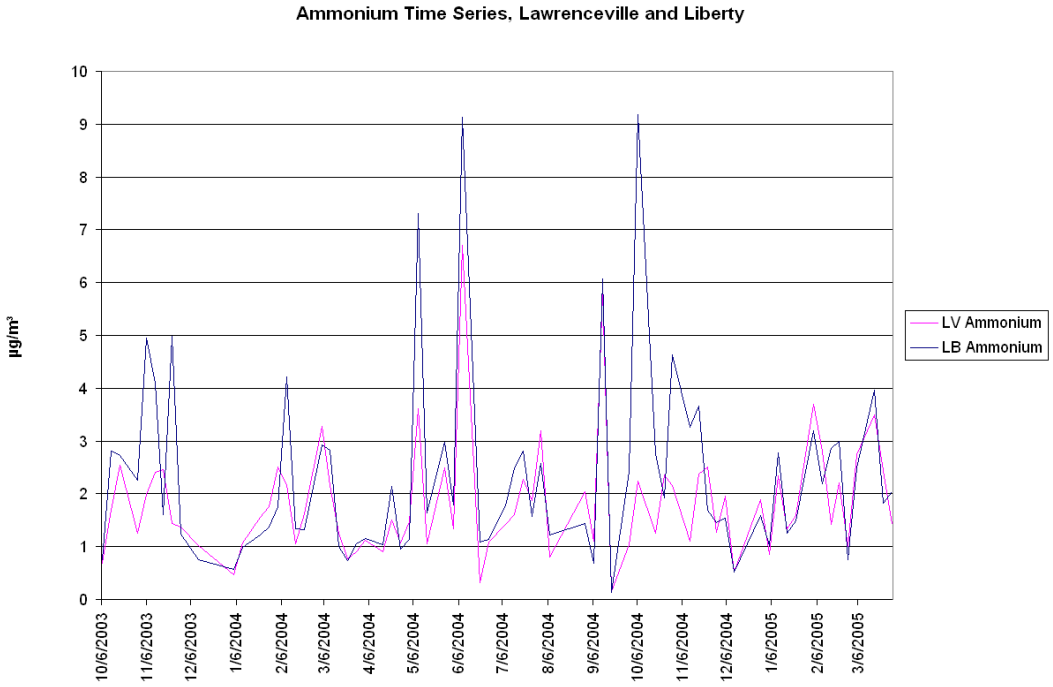
Sulfate is nearly identical at both sites year-round. This indicates that sulfate is primarily affected by regional flow upwind of Allegheny County. Minor differences in peaks may be indicative of local meteorology or minor source impacts.



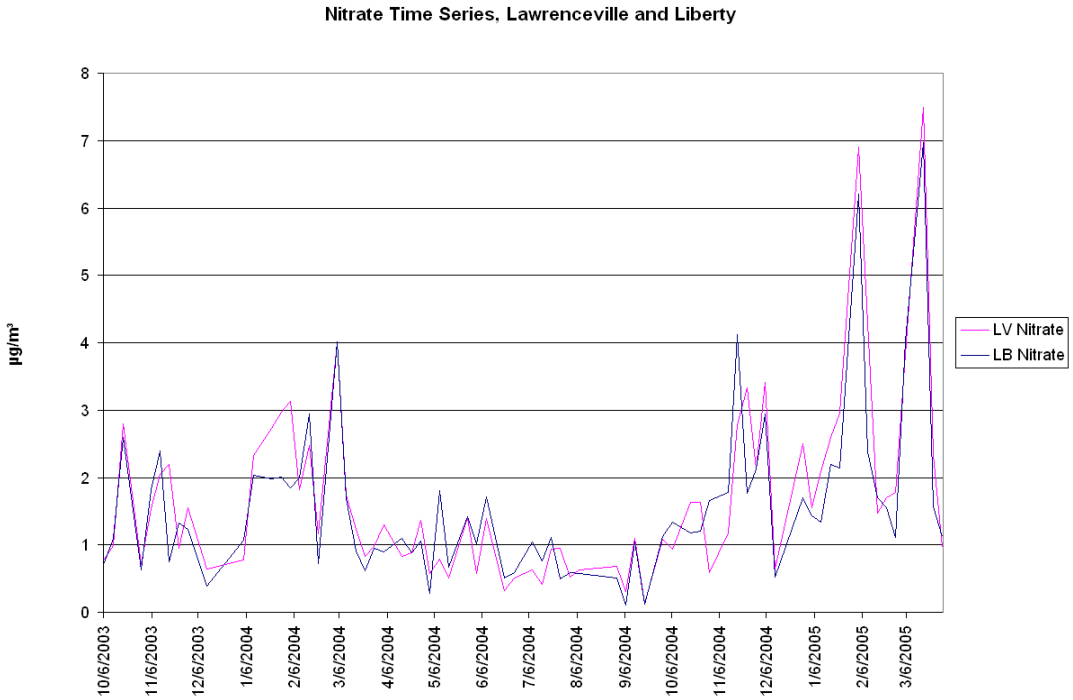
Organic carbon is similar to total mass concentration in that the peaks occur at the same times at both sites but to varying degrees. The peak discrepancies are higher for organic carbon than for total concentration, however, indicating that localized factors may be more controlling for organic carbon.



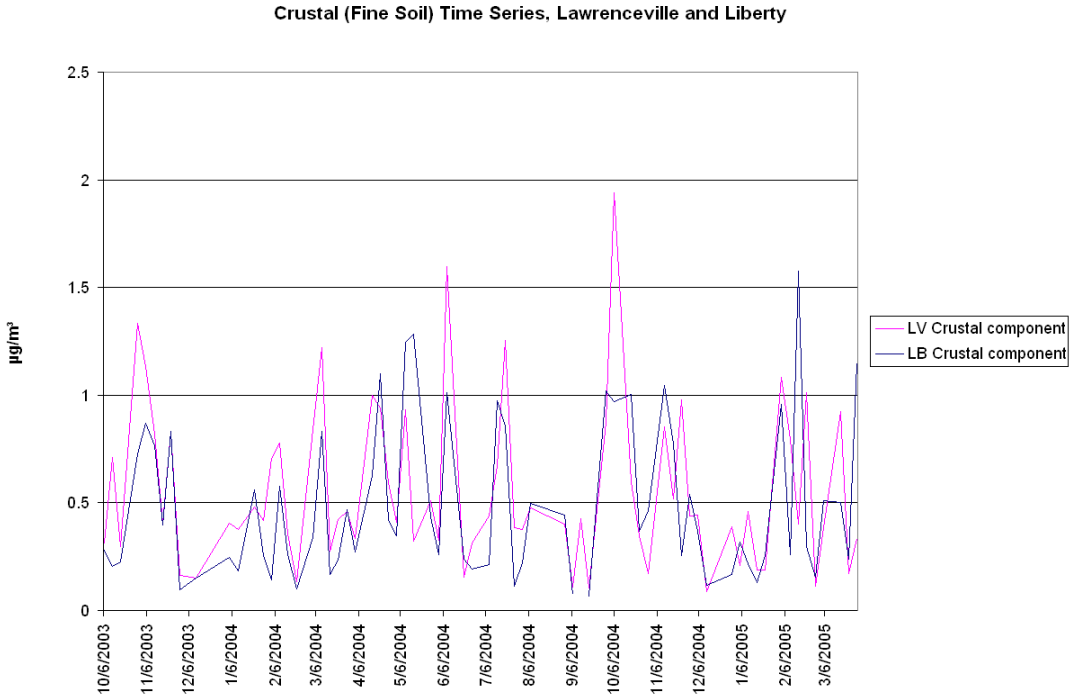
Similar to organic carbon, elemental carbon shows a localized influence at Liberty.



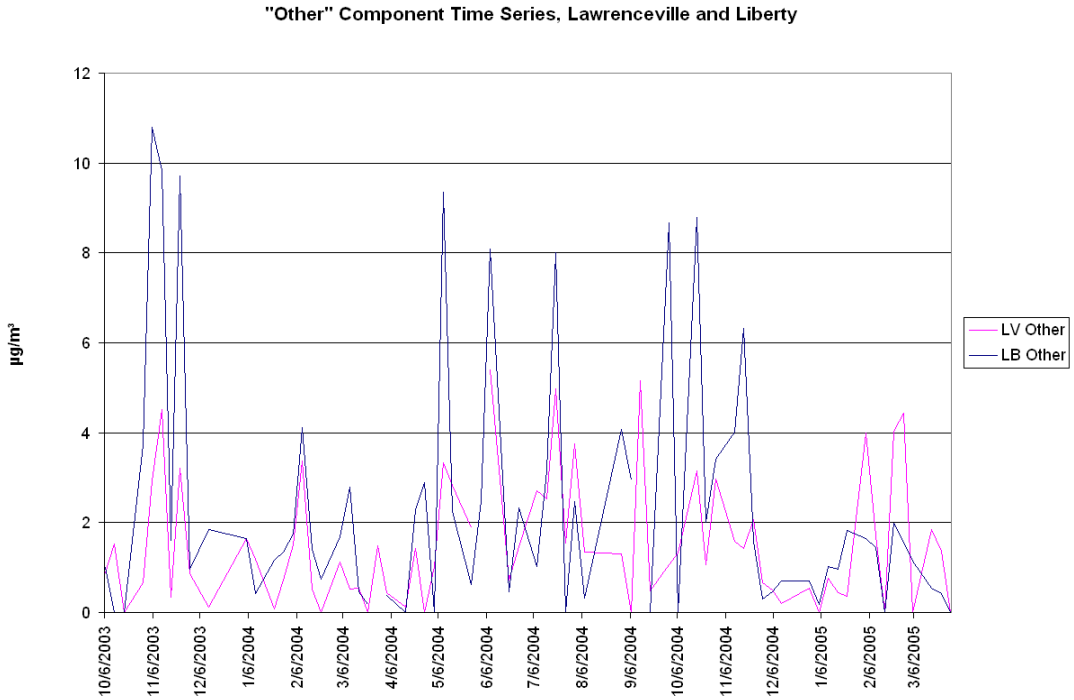
Ammonium can be higher at Liberty on certain days, but not as frequently as organic and elemental carbon.



Nitrate appears to be a regional species like sulfate, although nitrate differences between Lawrenceville and Liberty can be more pronounced than sulfate differences.



The crustal component appears to be a regional-only species. Liberty crustal component is actually lower for many days, suggesting rural behavior for some crustal elements at Liberty.



The “other” component shows similar trends to organic carbon, with Liberty showing much greater concentrations than Lawrenceville on peak days.

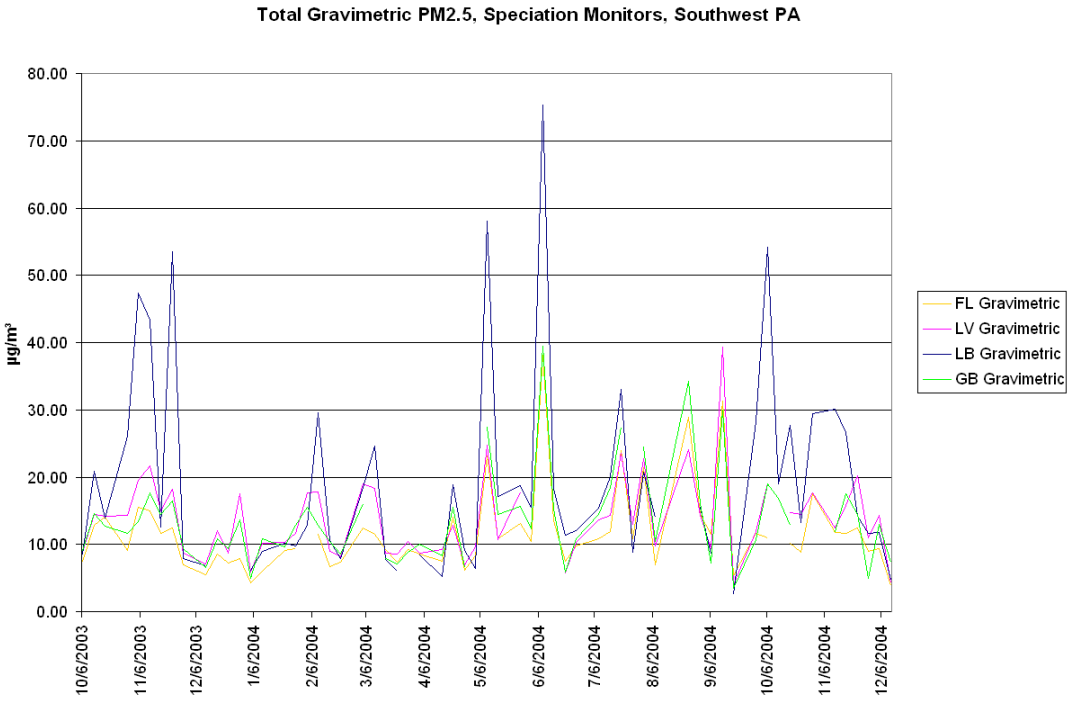
5. Matched Time Series, Southwest PA Sites, by Species

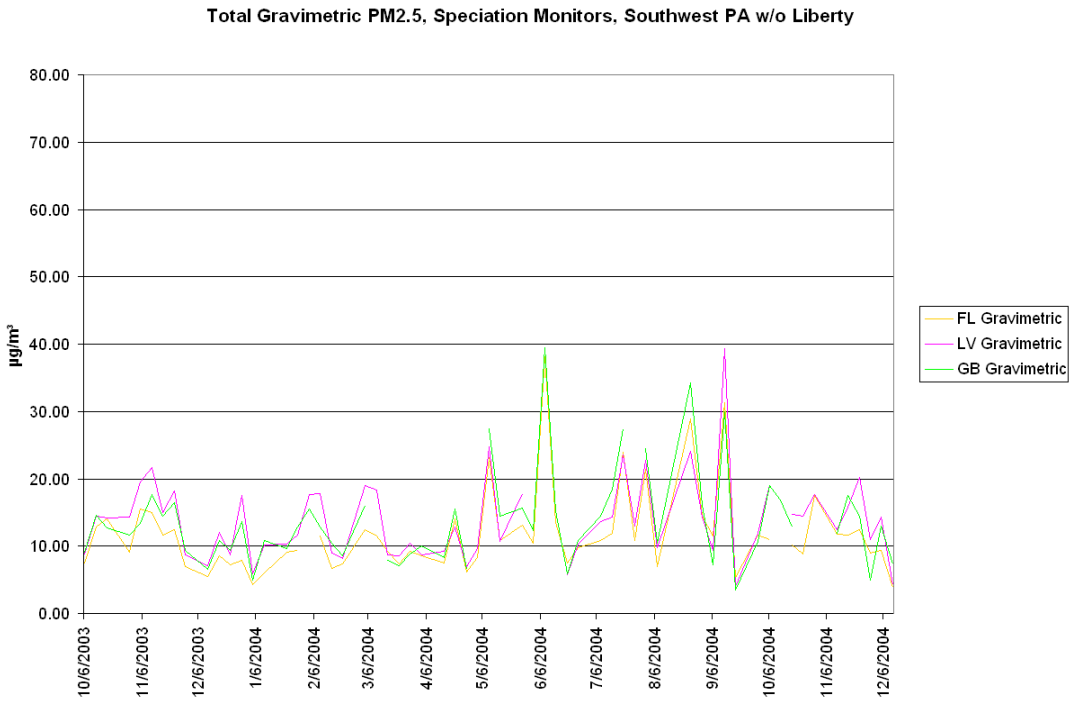
On a regional level, the Pennsylvania Dept. of Environmental Protection (PA DEP) operates two additional $PM_{2.5}$ speciation monitors in Southwest PA: Florence and Greensburg.

Florence (FL) is upwind from Allegheny County, located in Hillman State Park in Washington County, about halfway between Weirton, WV and the Pittsburgh International Airport. It presumably monitors regional flow of particulates into the Southwest PA region from upwind sources primarily in the Ohio Valley and WV Northern Panhandle.

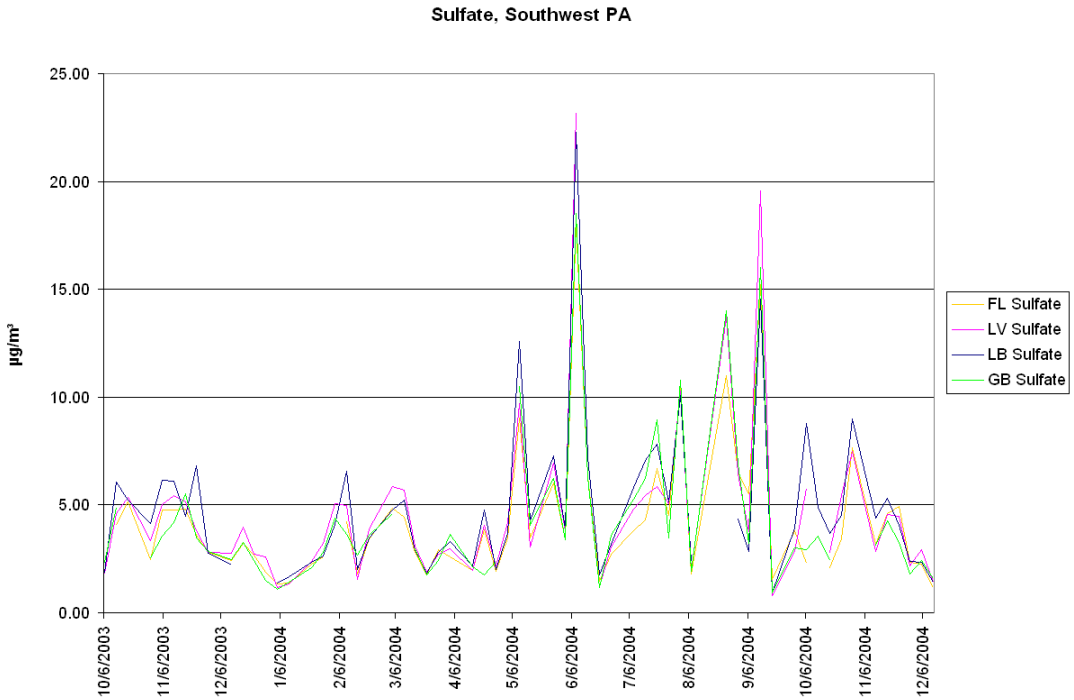
Greensburg (GB) is downwind from Allegheny County, situated east of Greensburg near the Westmoreland Mall. It presumably monitors outgoing regional flow from Southwest PA, in addition to some urban excess from Pittsburgh and/or Greensburg.

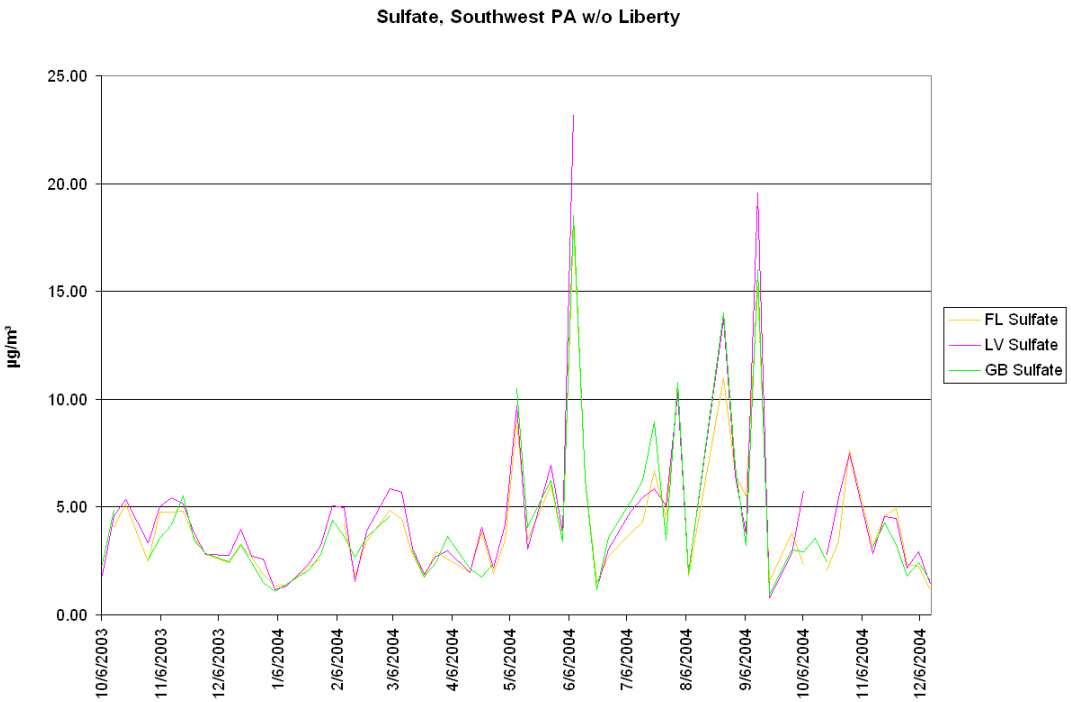
For the following plots, matched time series plots for major species are first given for all four sites in Southwest PA, and then without Liberty. Data is shown over the timeframe of Oct. 2003 – Dec. 2004.



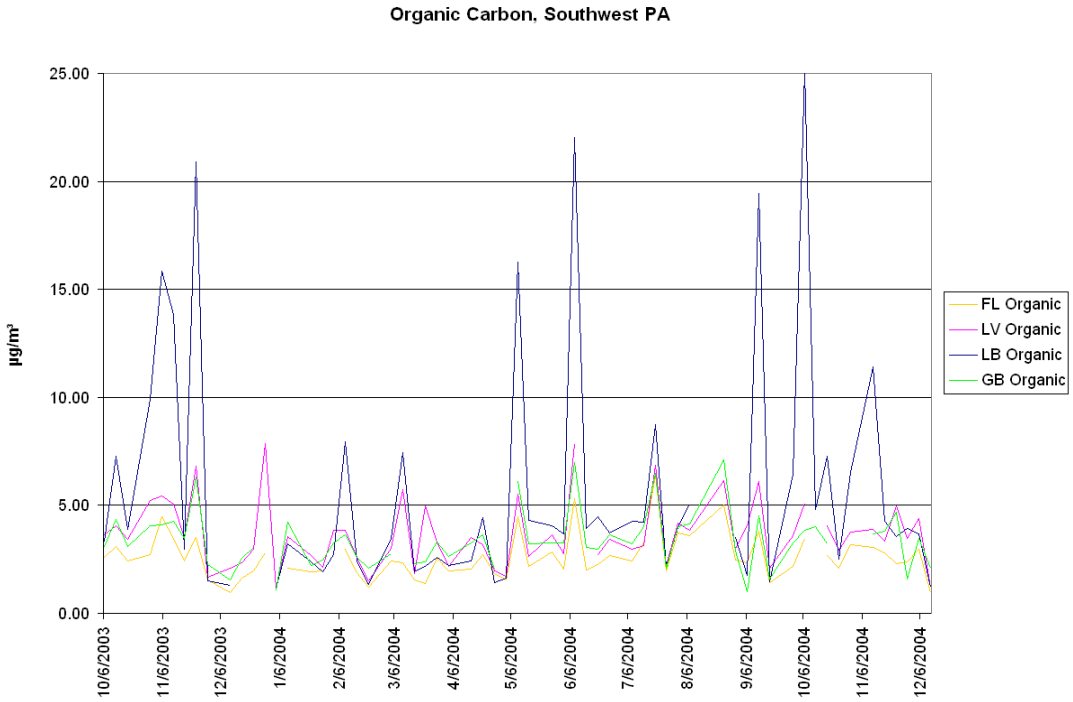


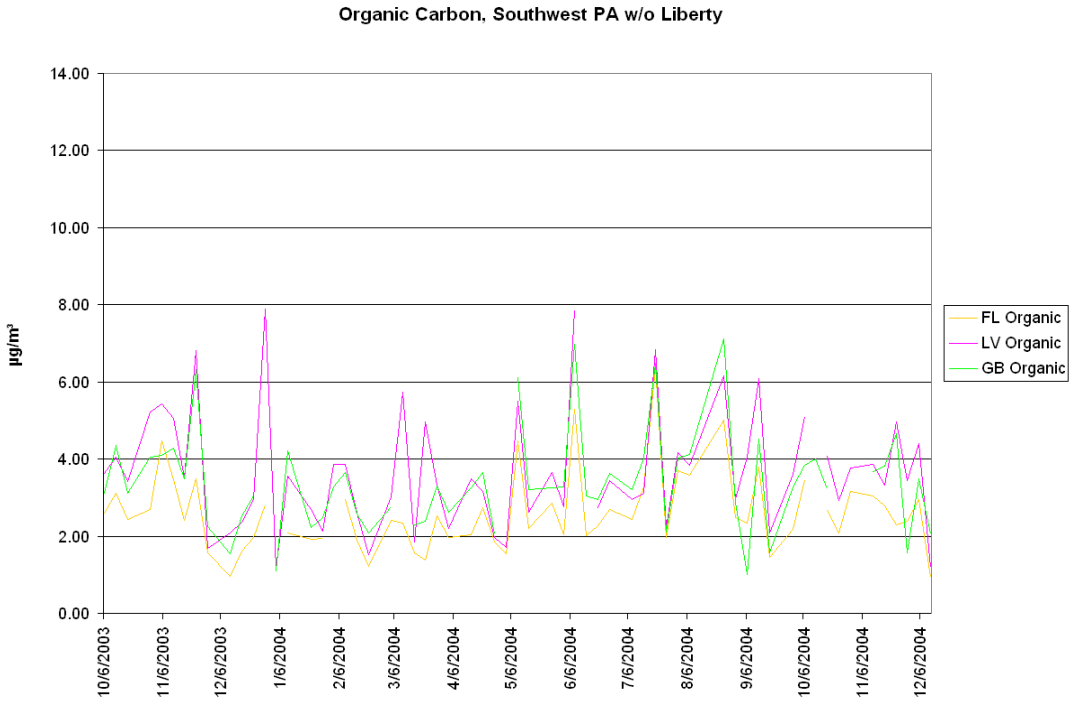
By total gravimetric (weighed) mass concentration, Florence, Lawrenceville, and Greensburg match well, indicative of the regional flow through the multi-county area. Liberty shows the highest mass concentrations, due to the regional flow plus localized excess. Lawrenceville and Greensburg show the next highest concentrations, due to gained urban excess. Accordingly, Florence is usually the lowest by total mass, since it reflects regional flow without localized urban excess.



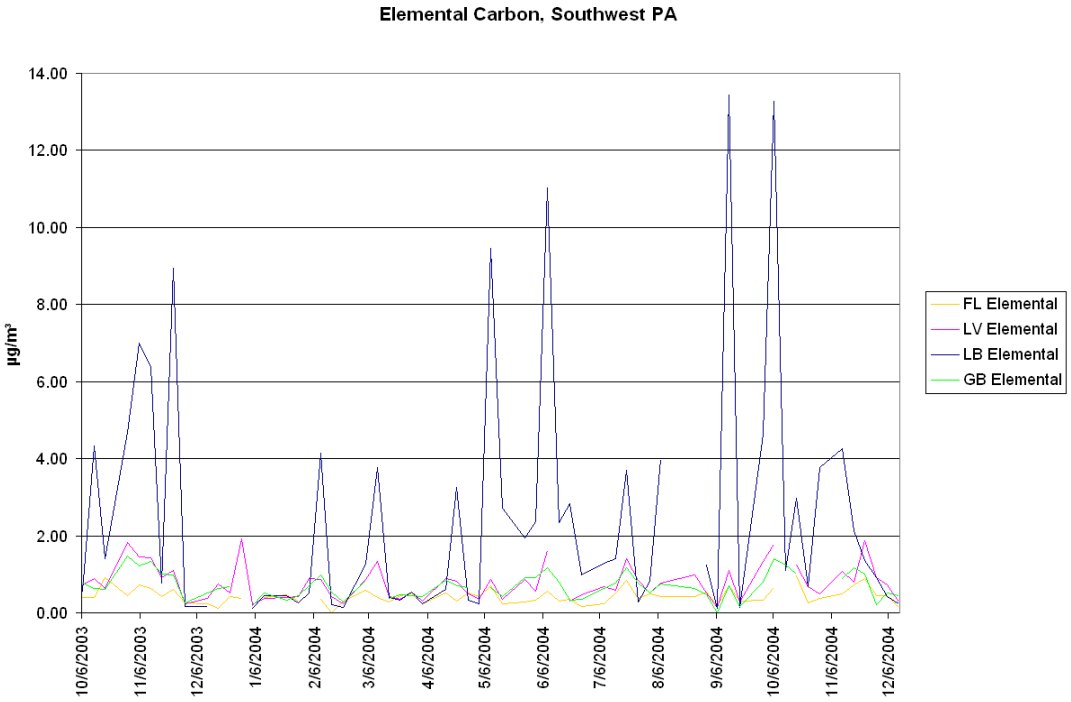


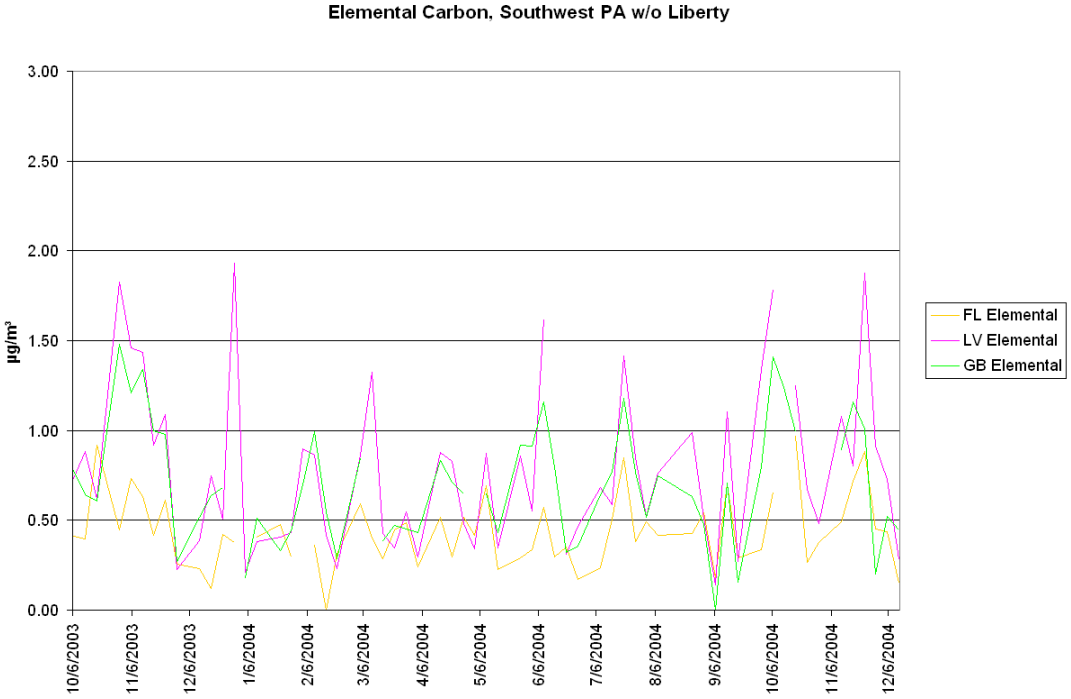
Sulfate time series plots strongly suggest that it is the result of regional flow for Southwest PA, as it is nearly equal at all sites.



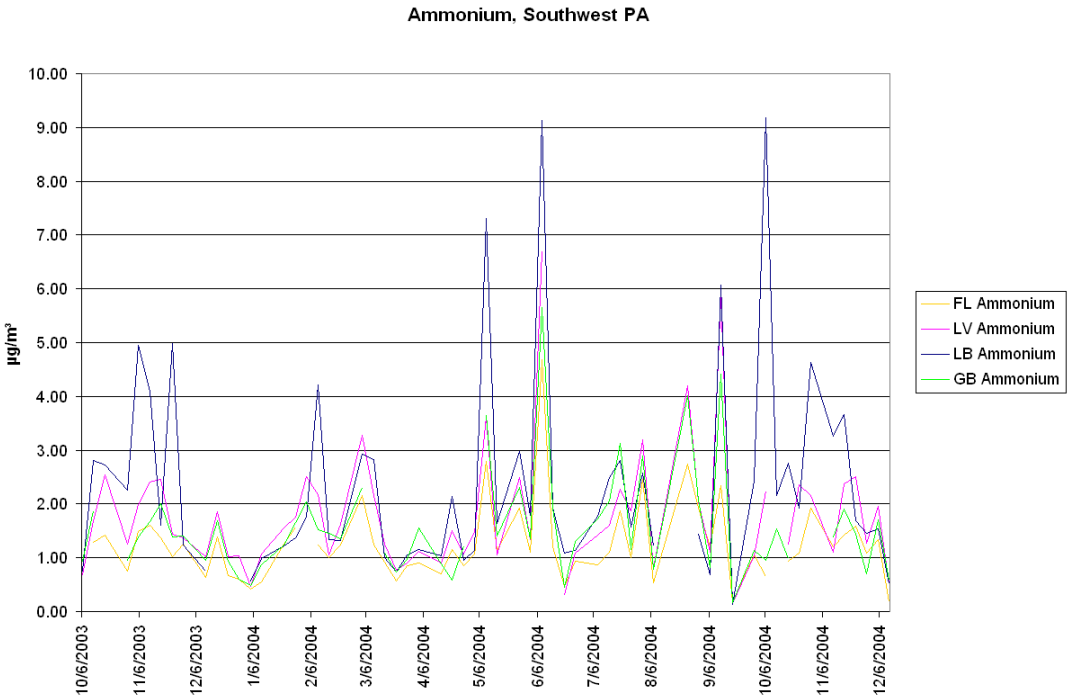


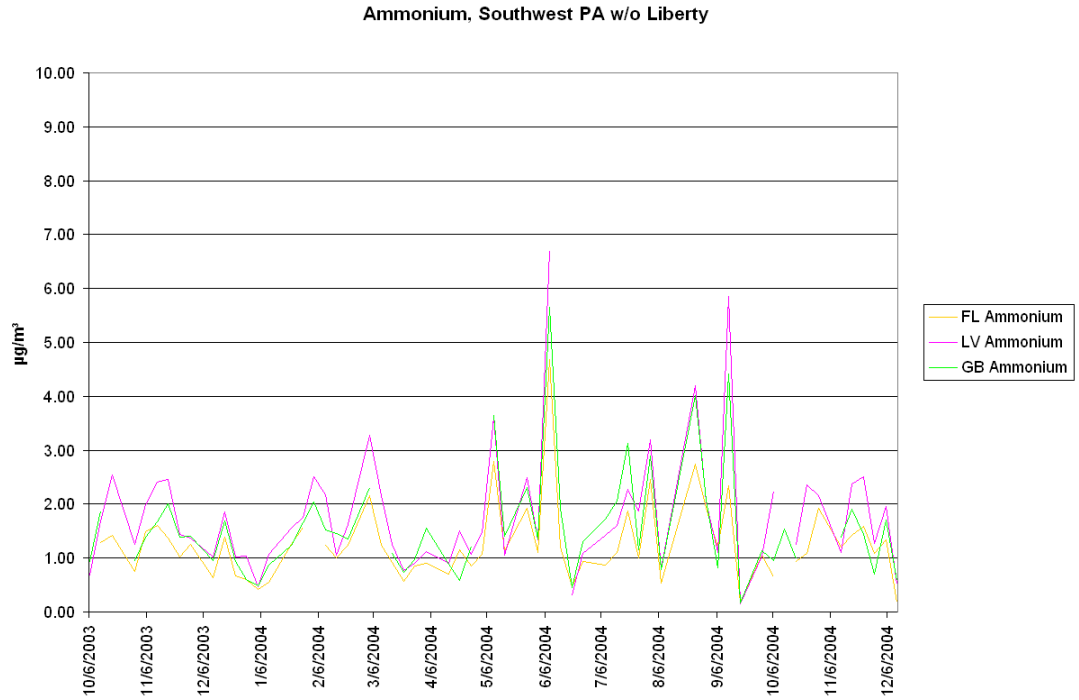
Organic carbon shows similar patterns to total mass in Southwest PA. Liberty is highest overall, with Lawrenceville and Greensburg showing urban influence.



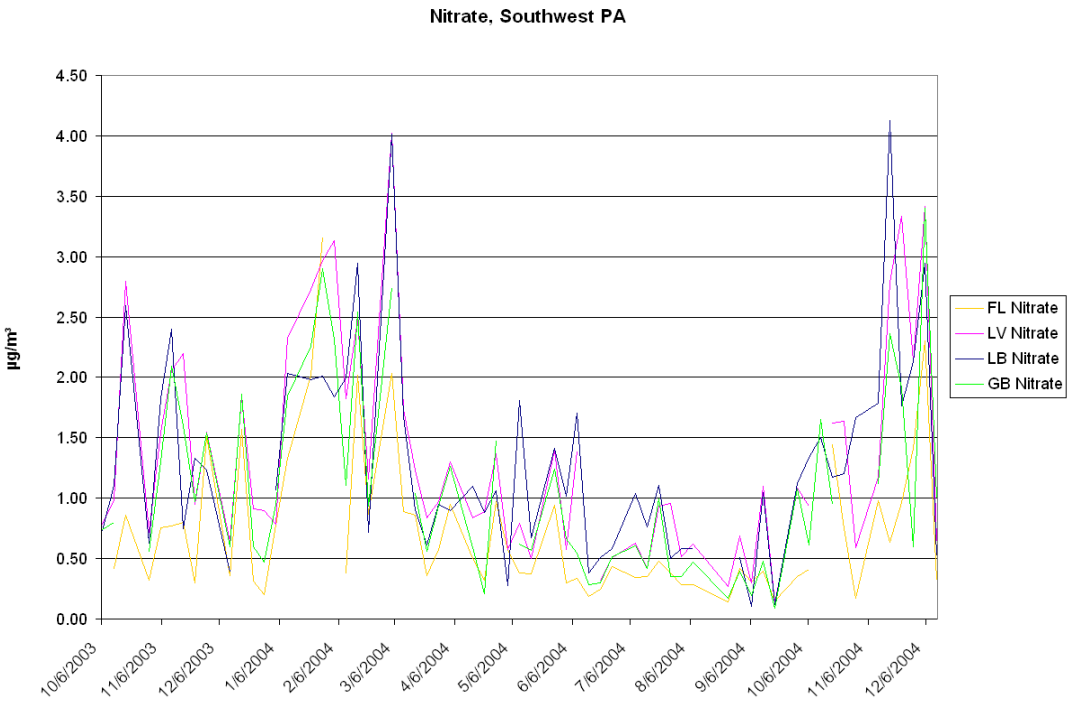


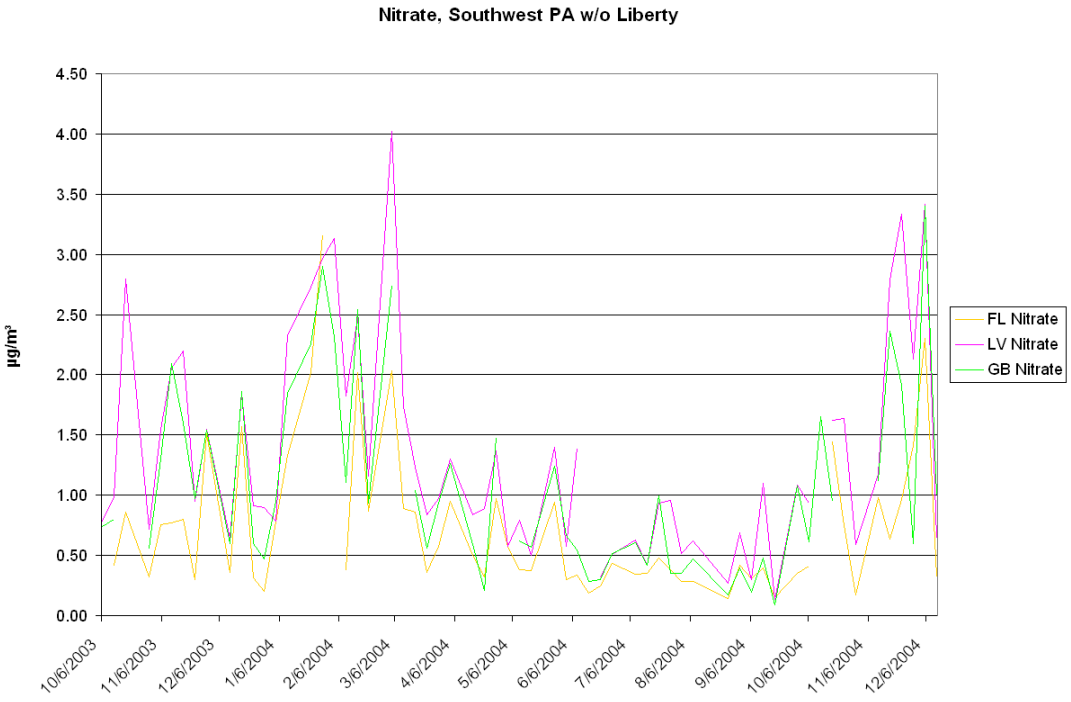
Elemental carbon is similar to organic carbon for Southwest PA. Higher concentrations at Lawrenceville for elemental carbon may be due to mobile source emissions.





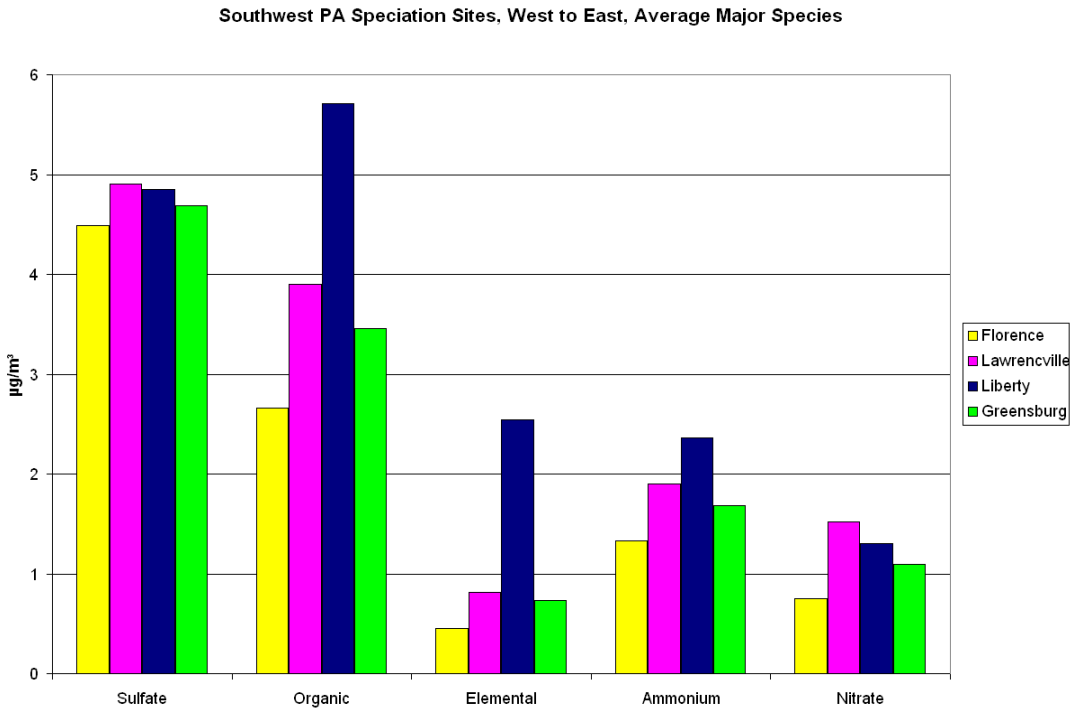
Ammonium is part of the localized excess at Liberty, although to a lesser extent than organic and elemental carbon. Excluding Liberty, ammonium appears to be both regional and urban, as it is highest at Lawrenceville.





Nitrate appears to be regional, like sulfates, but with increased concentrations at Liberty and Lawrenceville. So, urban sources may have an influence on nitrate levels.

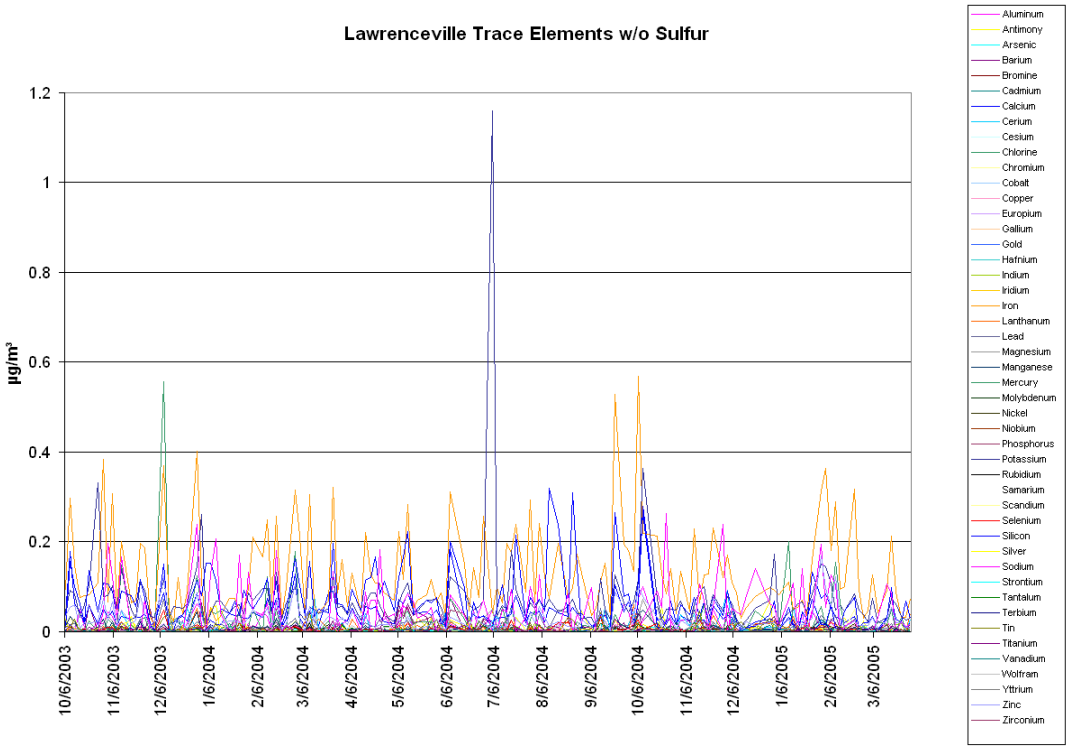
Below are averages for the southwest PA sites by major species, given in column clusters. Left-to-right in the column clusters is analogous to west-to-east geographically.



Florence can be considered the most rural of the sites, as average concentrations are lowest there for all species. A noticeable increase can be seen for all species from Florence to Lawrenceville, and a large increase is seen from Lawrenceville to Liberty for the localized Liberty-excess species. Greensburg is lower than the two Allegheny County sites but higher than Florence for all species, so it is appears to be impacted by urban excess to a limited extent.

6. Trace Elements

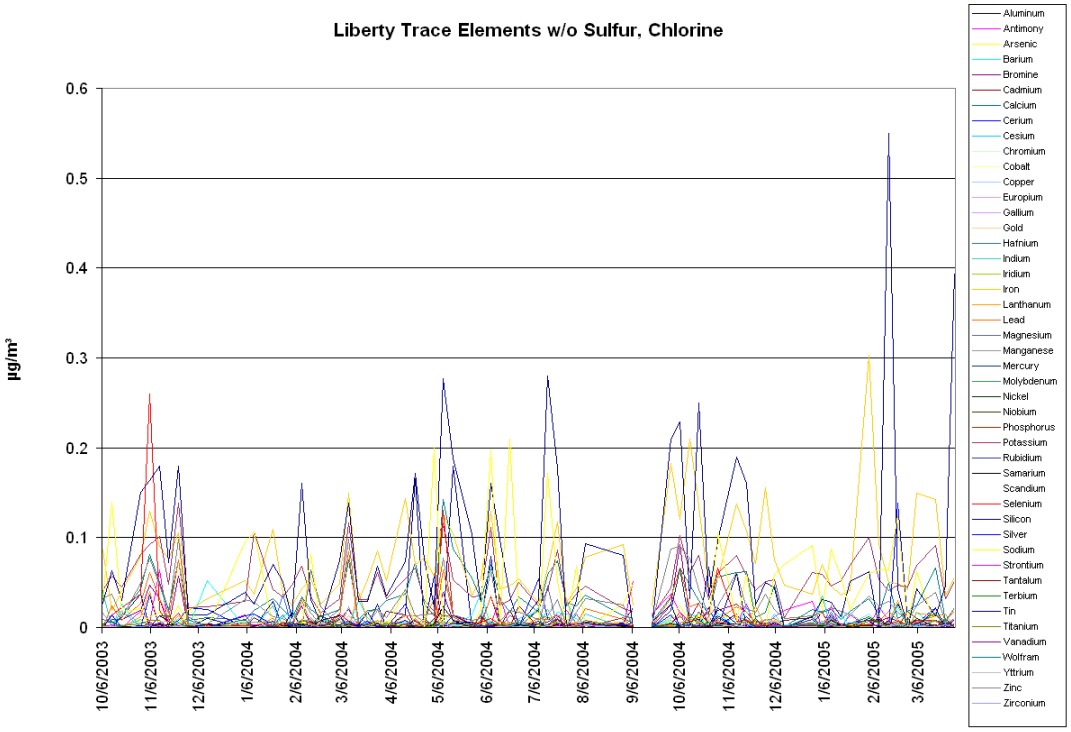
In addition to major species, 48 trace elements are analyzed from the speciation sites. Below are time series plots for Lawrenceville and Liberty trace elements. Sulfur, which is always much higher than the other elements, is excluded from these plots to allow for improved y-axis scaling.



Lawrenceville trace elements are generally dominated by crustal elements such as iron and silicon. The noticeable peak in the center is for potassium (date: 7/5/04) and is likely due to fireworks on the previous day. The Lawrenceville site is 2½ miles downwind of a large fireworks display that takes place annually in the downtown area on the 4th of July.

Small chlorine peaks can occur at Lawrenceville during winter months (example: 12/8/03), most likely due to the presence of road (rock) salt on streets near the monitor.

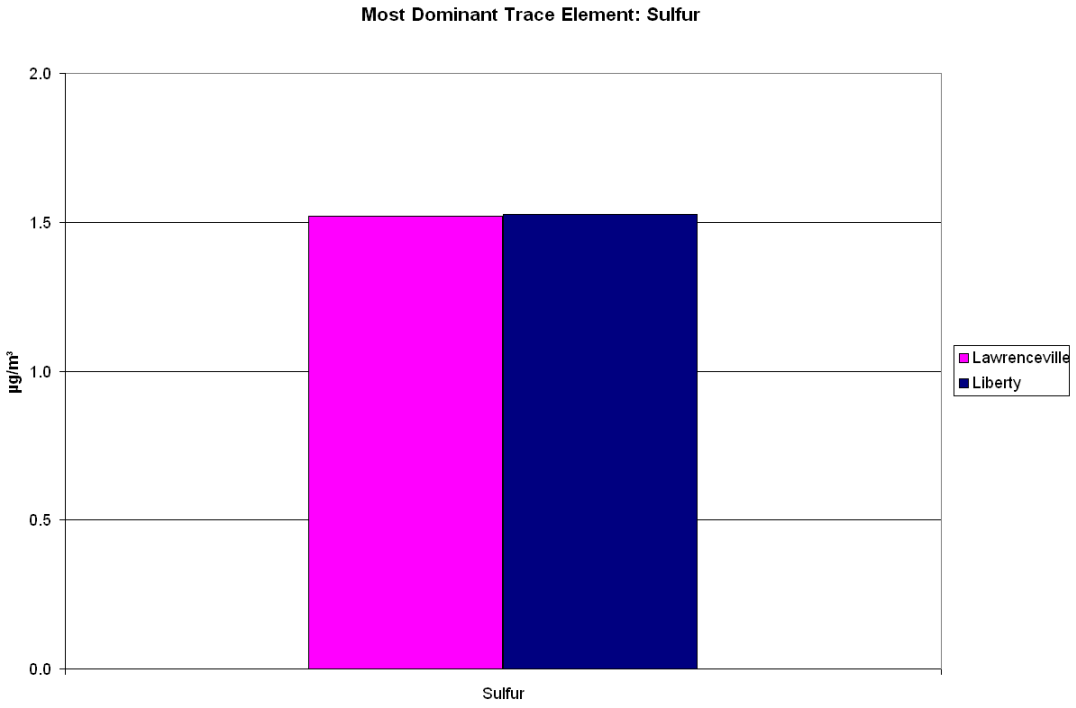
At Liberty, chlorine dominates the trace elements in addition to sulfur and therefore has been excluded from the graph below.



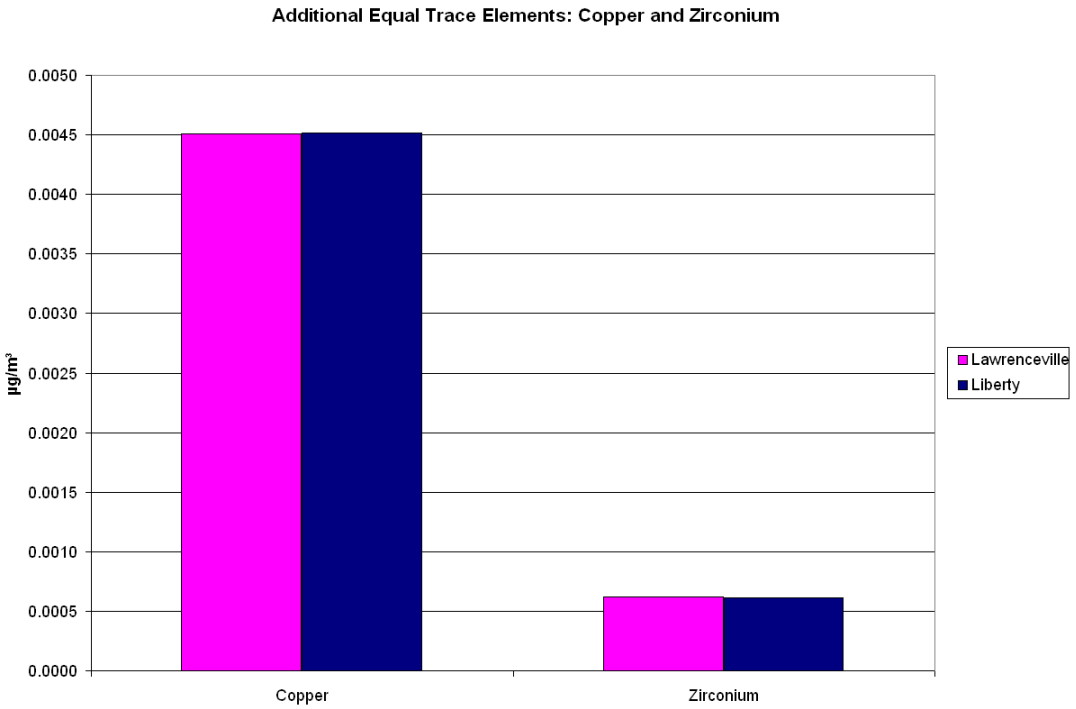
[Note: scale is different than Lawrenceville graph.]

Many elements such as crustal elements are present at Liberty like at Lawrenceville, but elements such as selenium and bromine show peaks that do not coincide with Lawrenceville. Similar to carbon and ammonium, many trace elements are part of the localized excess at Liberty. Comparing differences of each trace element should reveal dominant elements at each site.

Below are average column graphs for each trace element.

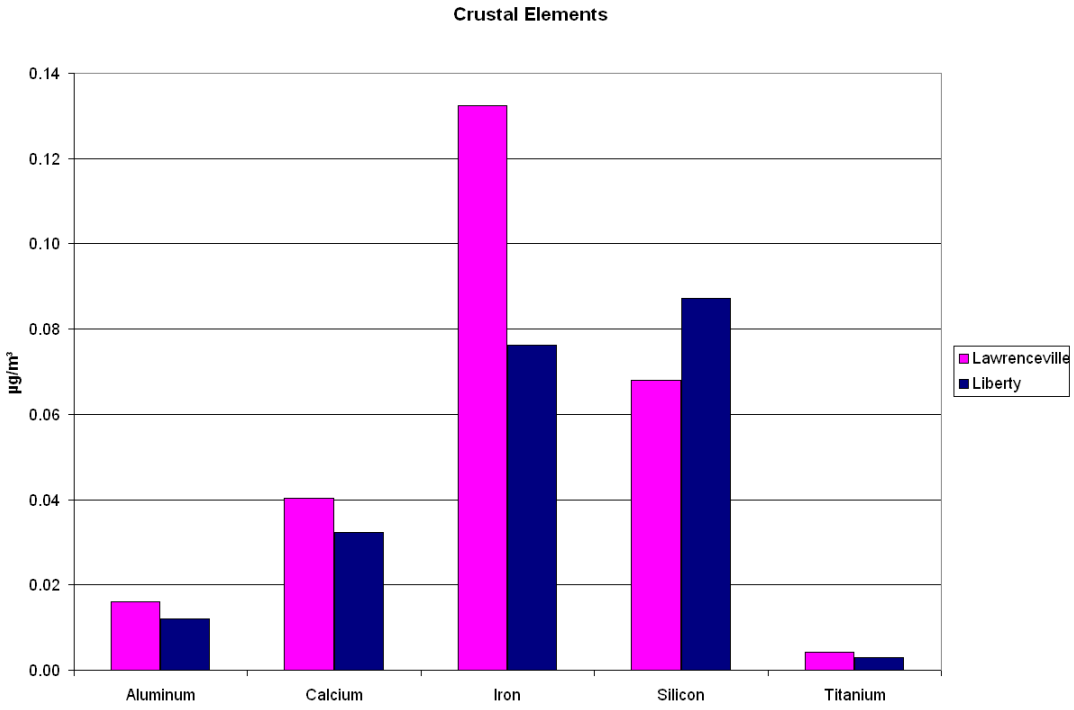


Sulfur is the most dominant element and is nearly equal for the sites. This follows the pattern of sulfate, which is also nearly equal on an average basis.

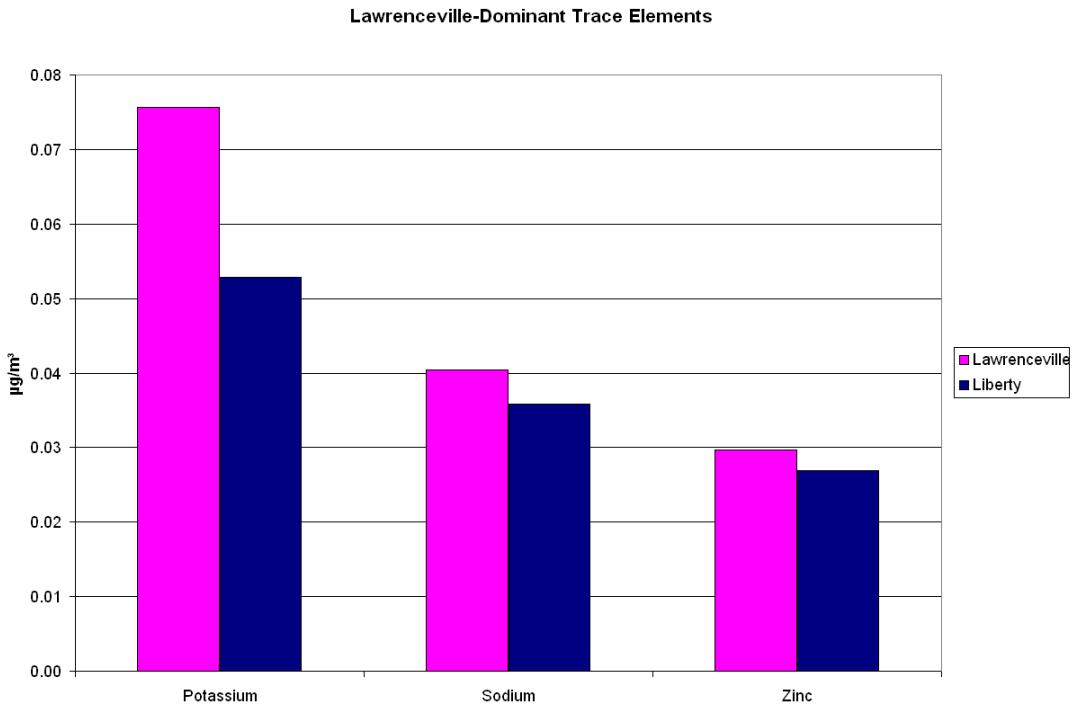


Although not as prevalent as sulfur, copper and zirconium are also nearly equal. Hence, these elements can be classified as regional-only trace elements.

The crustal elements in the chart below are constituents of fine soil. Collectively as a weighted sum, they compose the crustal component.



The crustal component is higher at Lawrenceville, and this holds true for each crustal element except silicon. As an individual element, silicon could be classified as Liberty-dominant. For this report, silicon will be grouped with the crustal component as a whole.



Potassium, sodium, and zinc are the most common Lawrenceville-dominant non-crustal trace elements. [Potassium and sodium are also measured as ions using the same analytical method by which the major species ammonium, nitrate, and sulfate are measured, but since the ionic concentrations of potassium and sodium are minute compared to the major ionic species, their trace element concentrations are given in this report.]

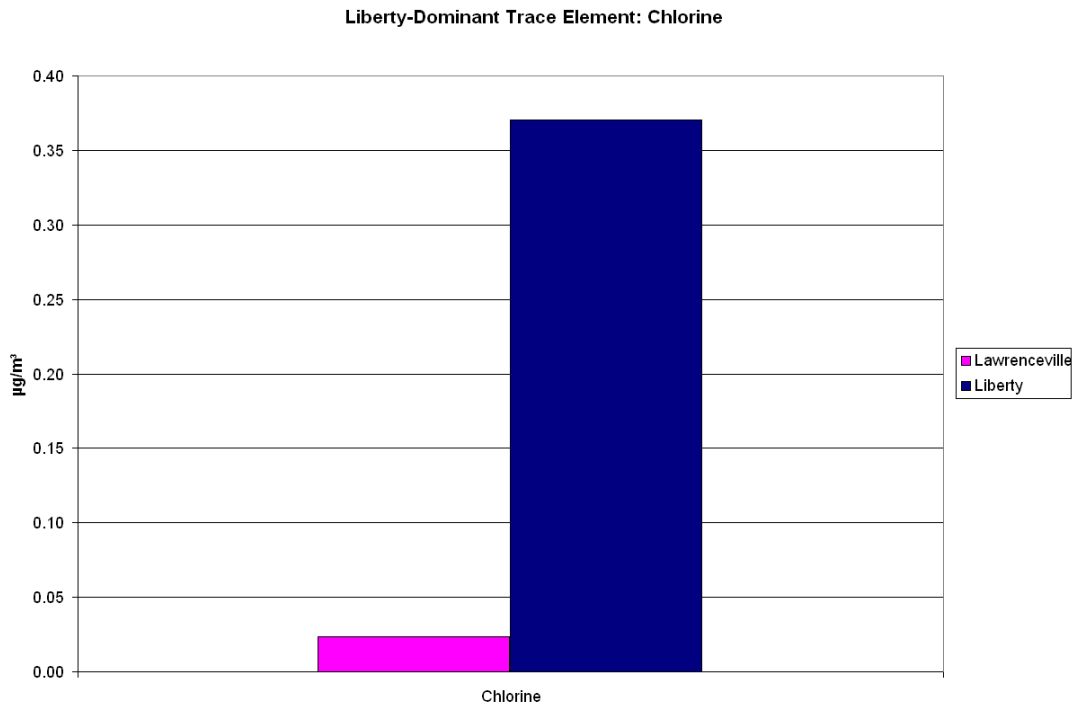
Potassium is a major ingredient in fireworks, and 4th of July fireworks near downtown Pittsburgh are the likely cause of the larger concentration of potassium at Lawrenceville. The higher sodium concentration at Lawrenceville may be due to airborne road salt from more heavily traveled streets than at Liberty. Possible sources of additional zinc at Lawrenceville may be urban sources.

Additional Lawrenceville-dominant trace elements are shown in the charts to follow.

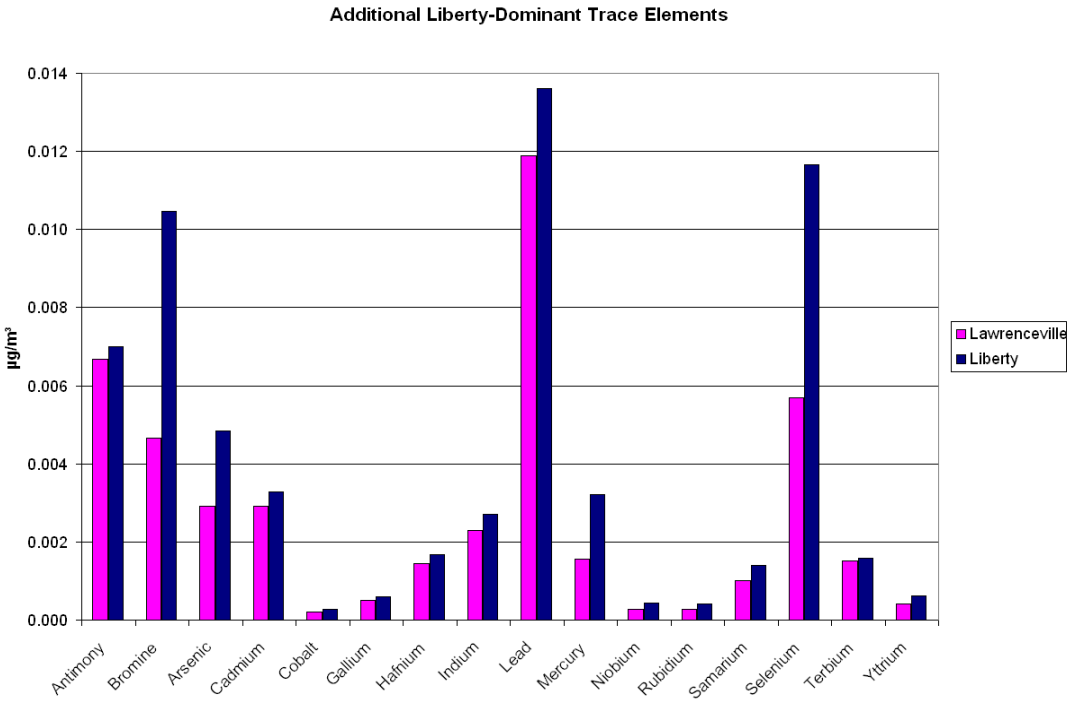


These Lawrenceville-dominant trace elements are likely urban and/or regional in nature. Barium, chromium, manganese, phosphorus, and tin show the most noticeable differences for these elements.

Liberty-dominant trace elements are given below.

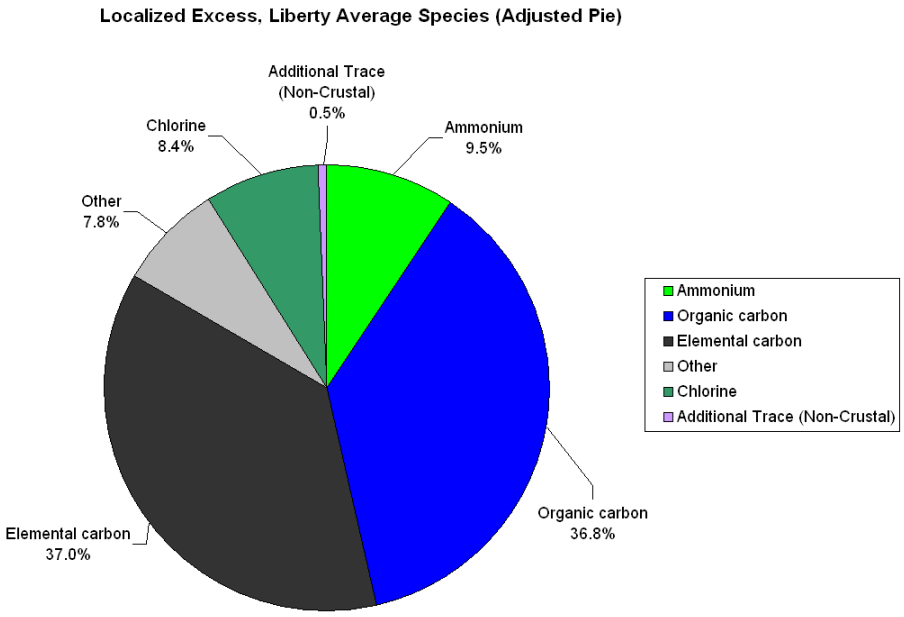


Chlorine is the most common Liberty-dominant trace element. While chlorine is a component of road salt, the amount of excess chlorine is unlikely due to airborne road salt alone.



Bromine is a halogen, like chlorine, although it is present at much smaller concentrations than chlorine. Arsenic, lead, mercury, and selenium are also noticeably higher trace elements at Liberty than at Lawrenceville, indicating possible local influences.

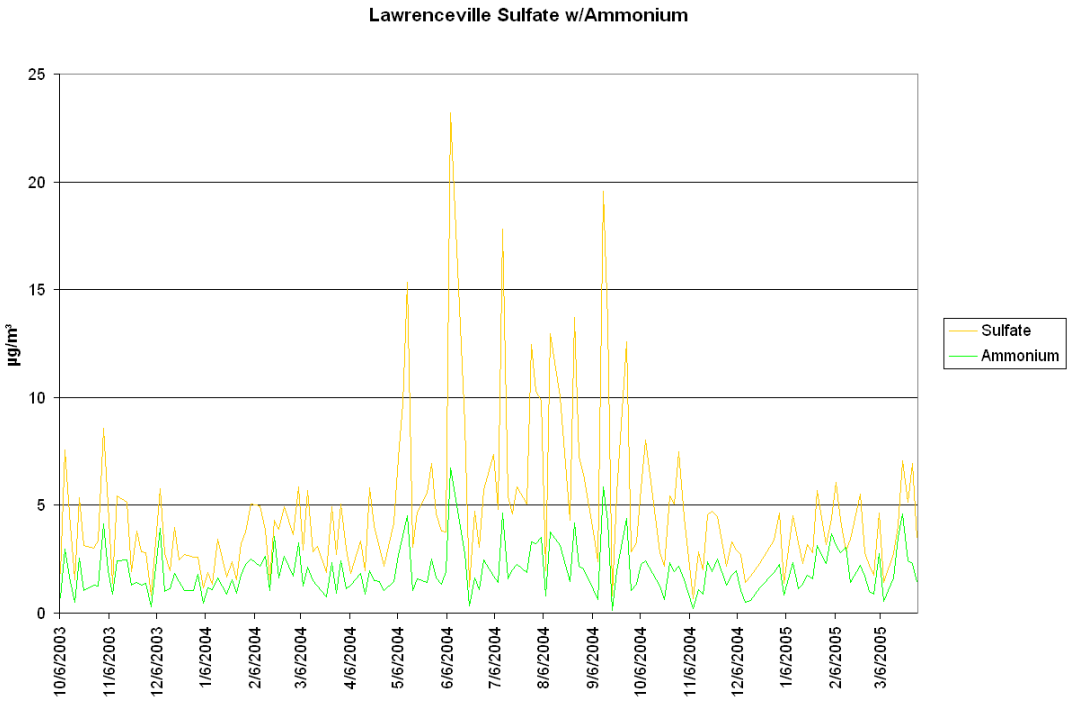
Taking the Liberty-dominant trace elements into account, the Liberty localized excess pie chart can be adjusted to include chlorine and additional non-crustal trace elements in place of a portion of the "other" component.

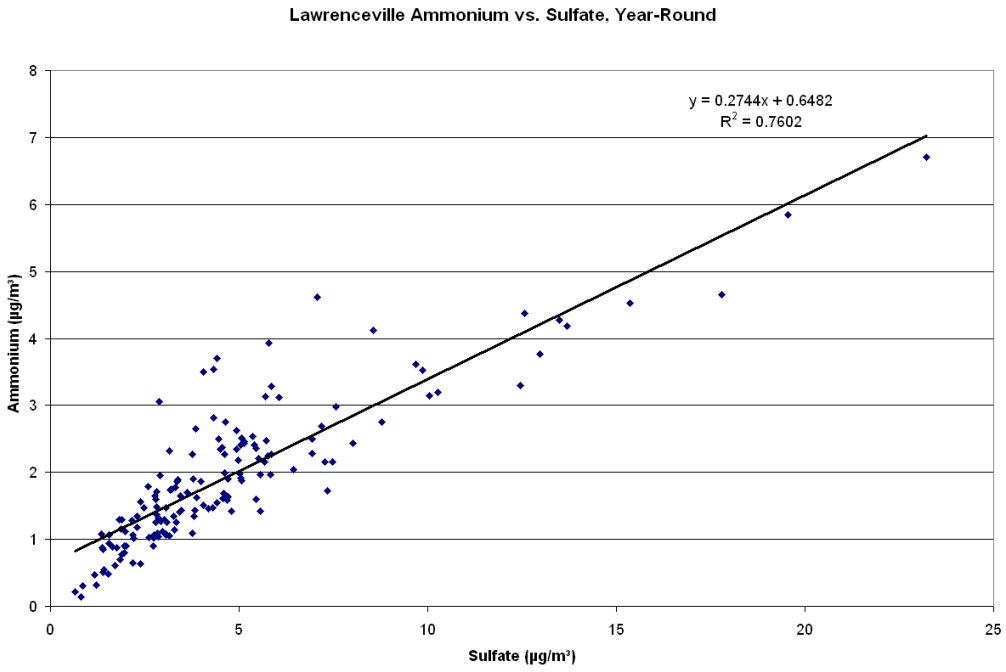


This adjusted localized excess pie chart represents the speciation of the Liberty excess, creating a $PM_{2.5}$ fingerprint for the Liberty monitor. Without the excess $PM_{2.5}$ components shown in the chart, Liberty would match Lawrenceville and be similar to other Eastern U.S. metropolitan sites.

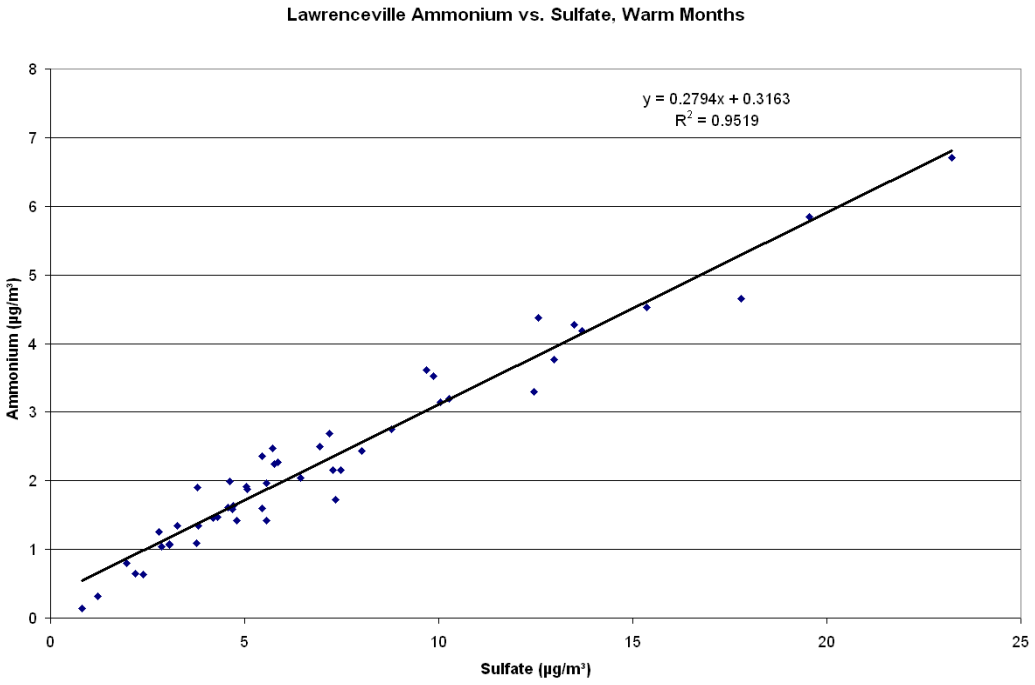
7. Species Correlations

Sulfate and nitrate generally exist as ammonium salts in $PM_{2.5}$. Hence, correlations can be drawn between ammonium, nitrate, and sulfate, varying by season.

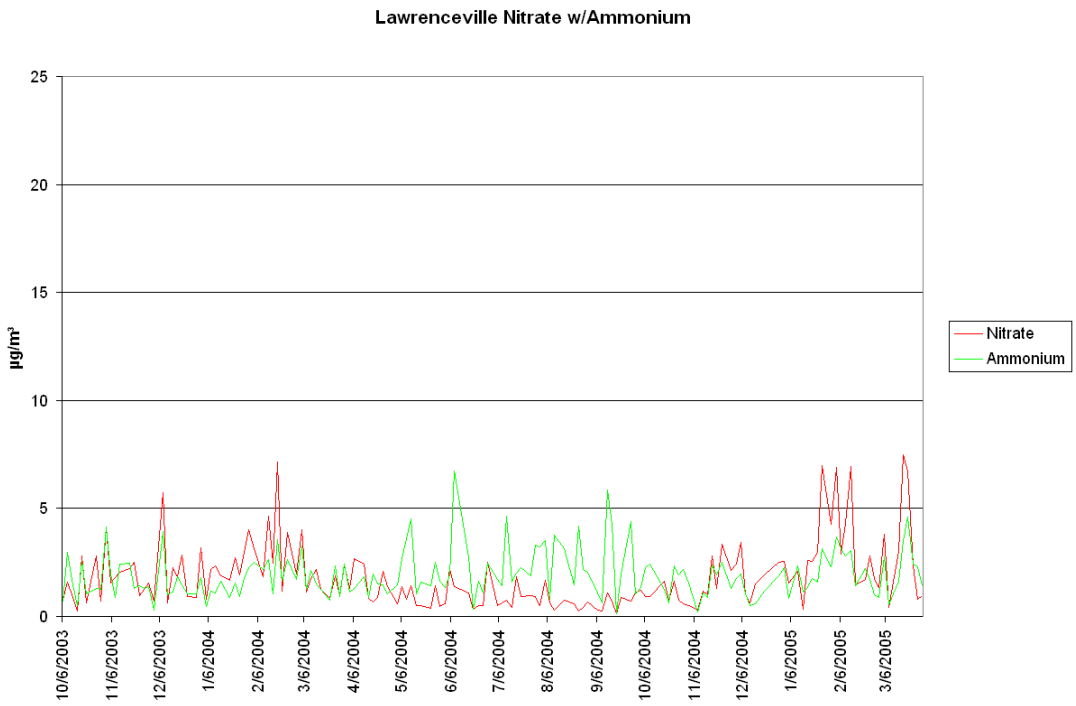




The time series and regression plots for Lawrenceville sulfate and ammonium show a moderate correlation year-round. During warm months when sulfate is most prevalent, the correlation between ammonium and sulfate increases, but the slope of the regression line is similar to that of the year-round basis. A Lawrenceville ammonium and sulfate regression plot for May through October is given below.



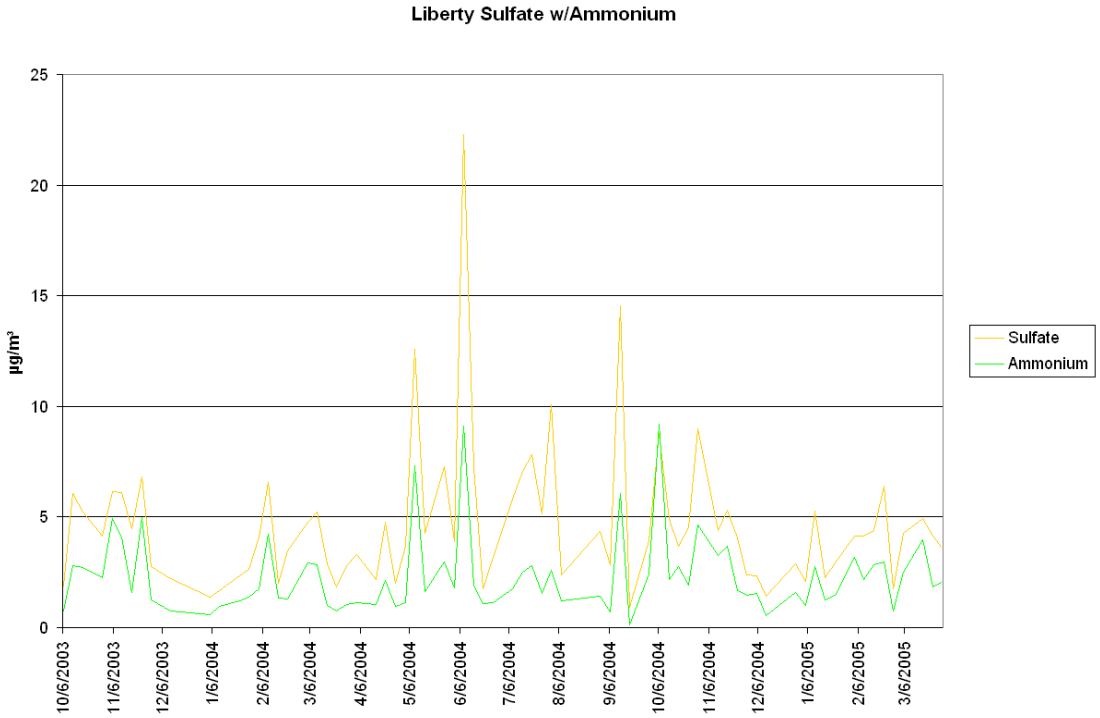
Sulfate commonly exists in two forms: ammonium sulfate and ammonium bisulfate. The slopes of the regression lines for Lawrenceville (0.274 – 0.279) are between that of a perfect ammonium sulfate regression (0.375) and a perfect ammonium bisulfate regression (0.188). So, a mixture of sulfate/bisulfate appears to be evident for Lawrenceville on a year-round basis.

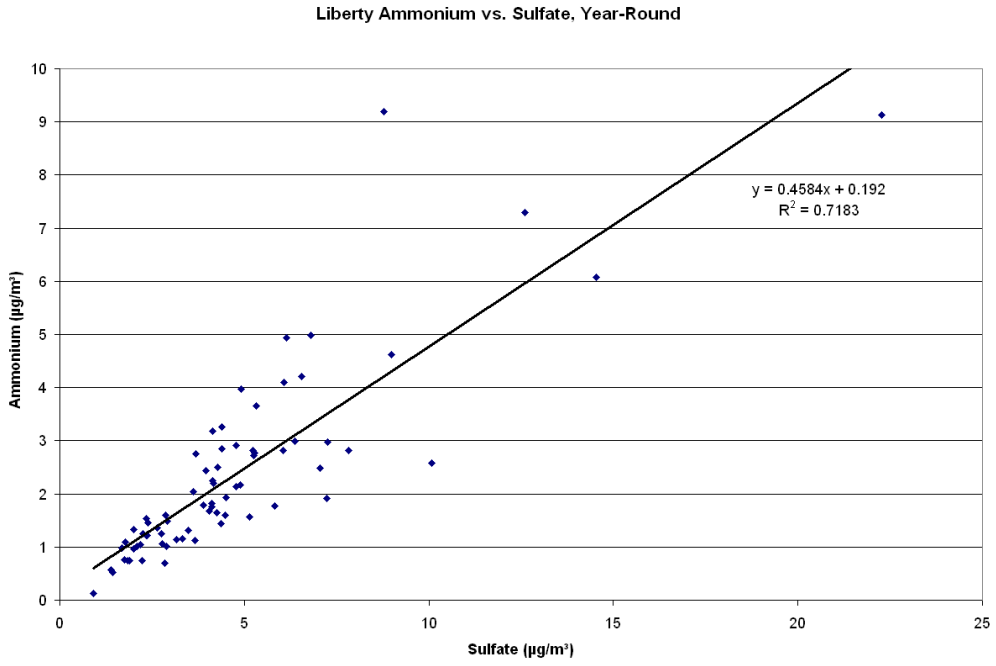


The times series plot for nitrate and ammonium shows the best correlation during winter when nitrates are more prevalent. The worst correlation occurs during warmer months when sulfates are more dominant.

These trends for ammonium sulfate and ammonium nitrate salts are regional and are common to most speciation sites in the Eastern U.S.

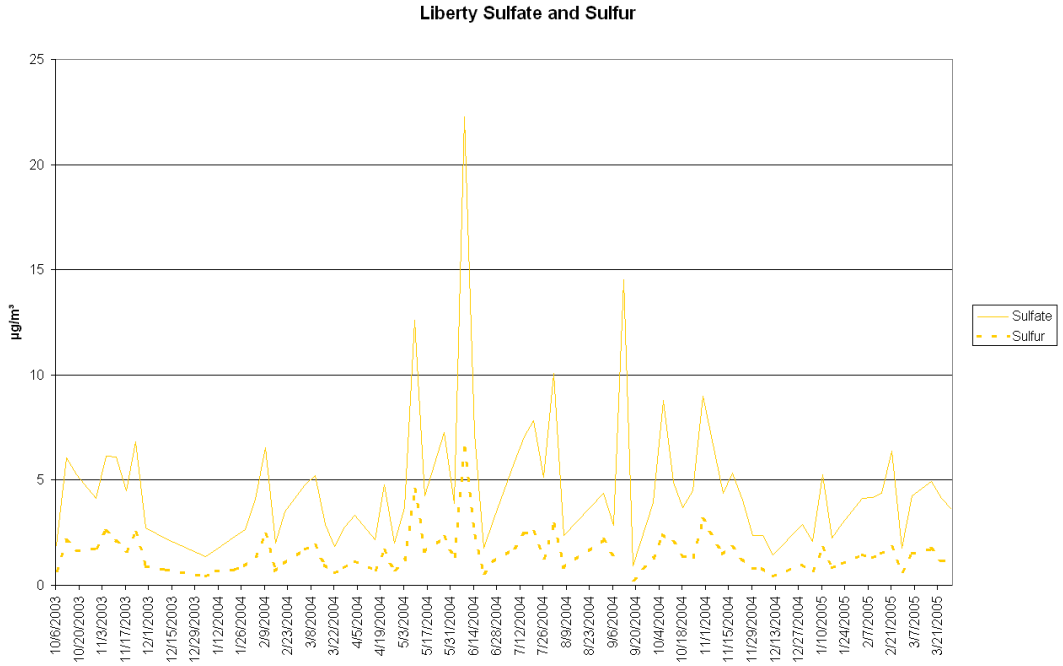
Trends for sulfate and ammonium at Liberty are given in the charts below.

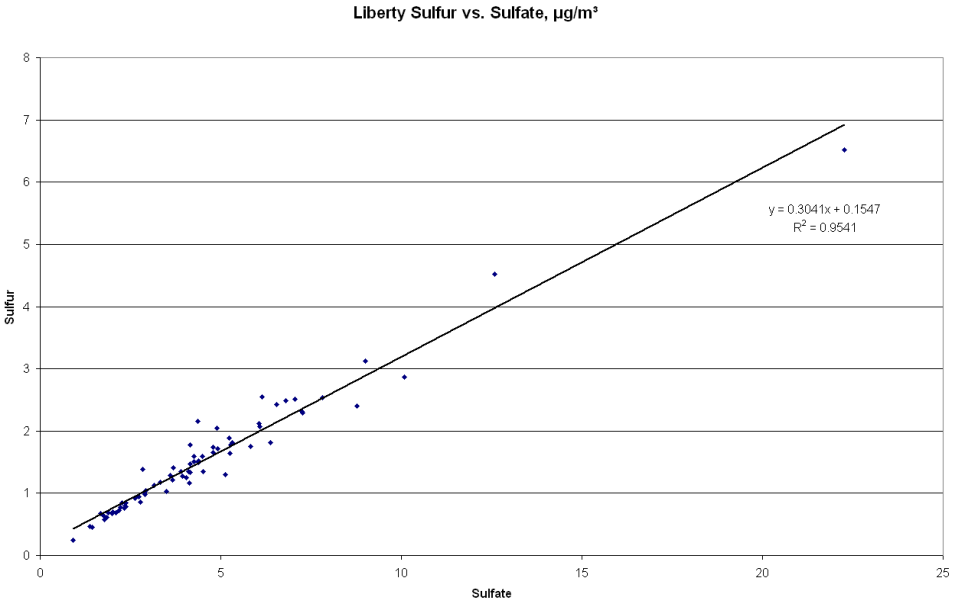




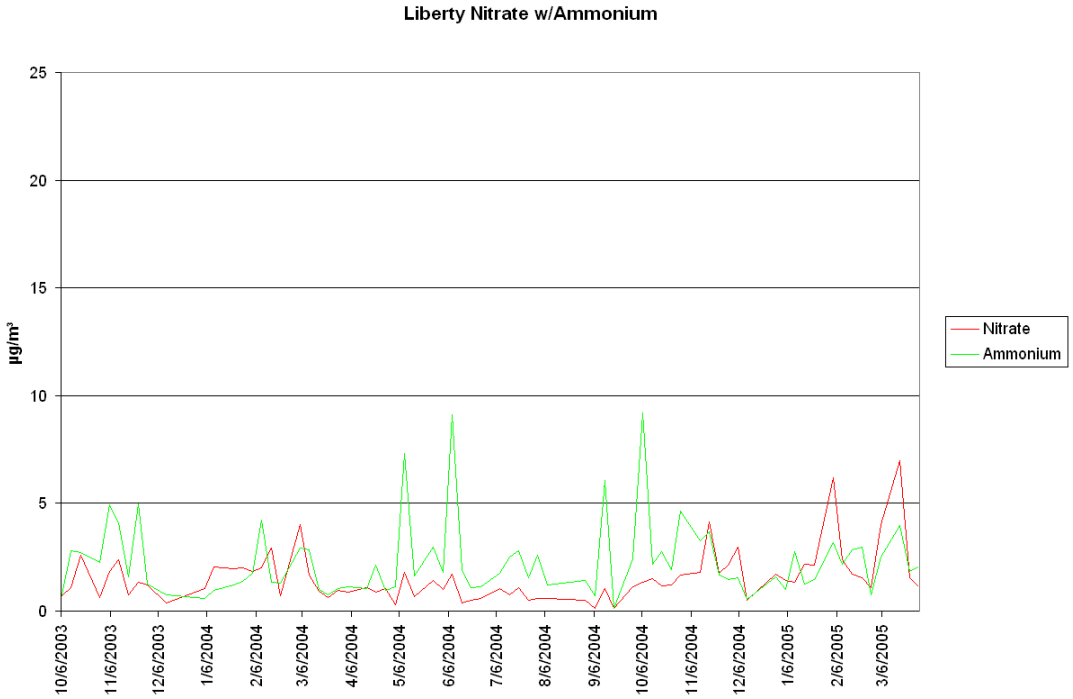
Liberty shows less of a year-round correlation for ammonium and sulfate than Lawrenceville, as the R^2 (0.718) value is lower for the Liberty regression. Also, the slope is considerably greater for the Liberty regression line (0.458), due to the higher concentrations of ammonium at Liberty.

To examine if sulfur is present as an element in any form other than sulfate at Liberty, time series and regression plots for Liberty sulfur and sulfate are shown below.



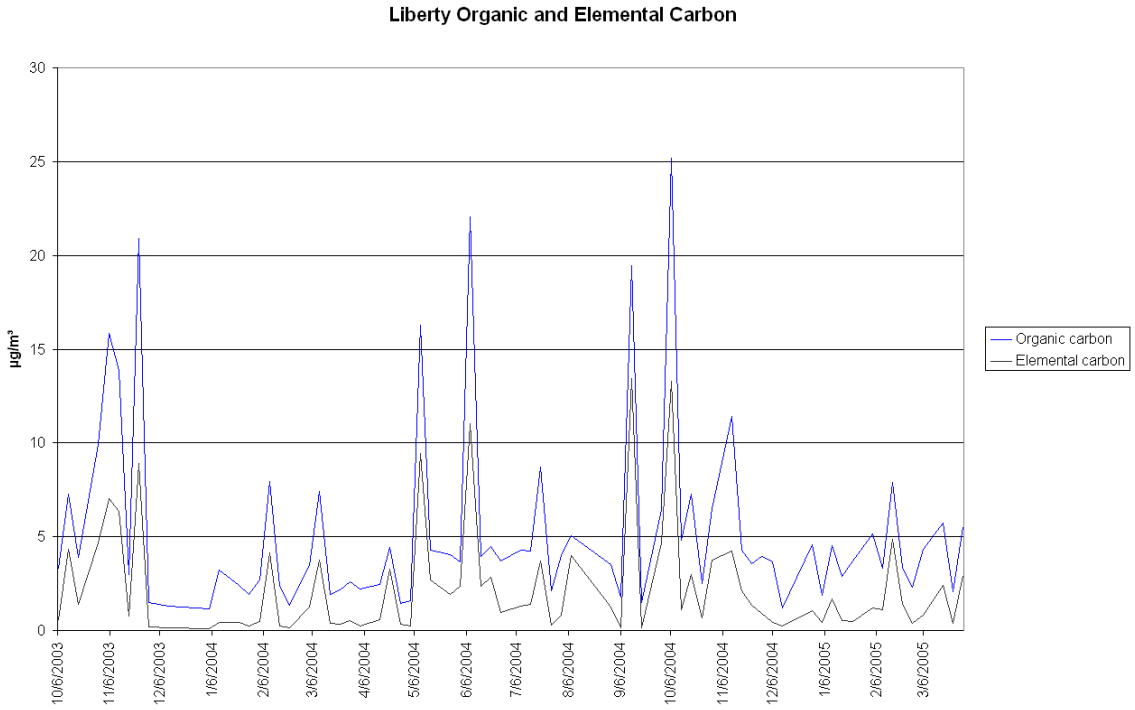


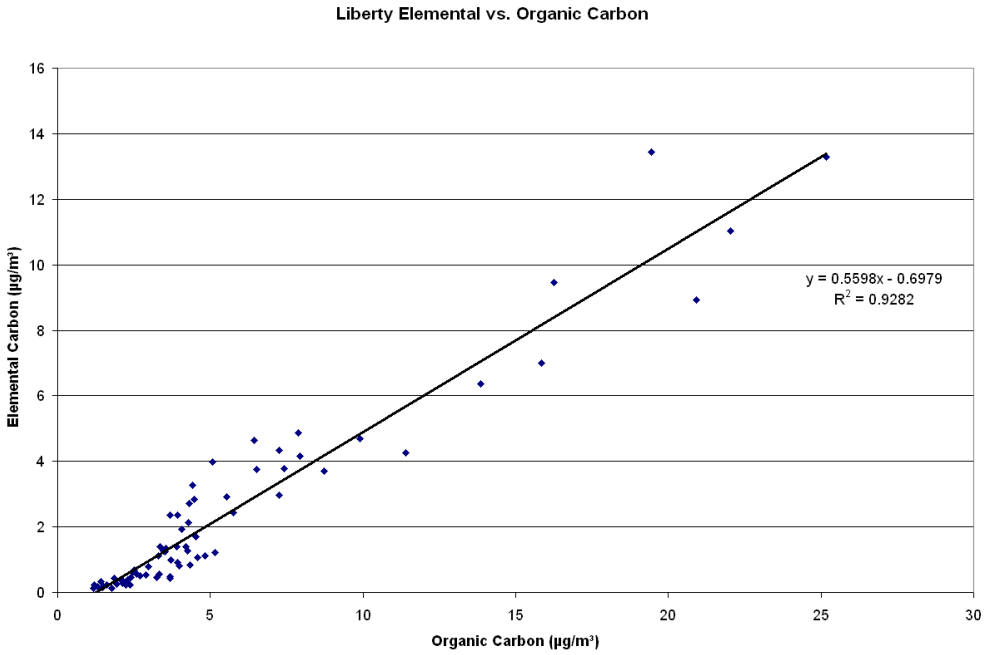
Liberty sulfur and sulfate show an excellent correlation (0.954), so it can be assumed that very few additional forms of sulfur are present.



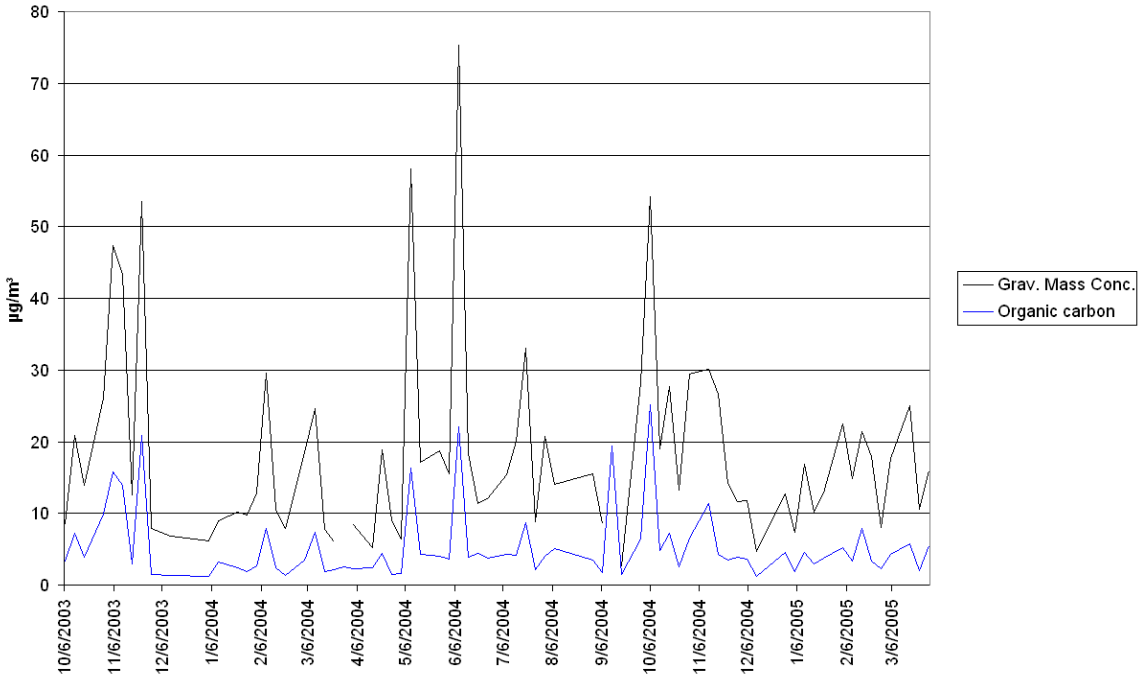
Liberty behaves similarly to Lawrenceville for nitrate and ammonium, but with higher overall concentrations for ammonium at Liberty. Ammonium is likely present in other forms than just ammonium sulfate and nitrate salts at Liberty.

One of the best correlations between species at either site is for organic carbon and elemental carbon at Liberty (R^2 = 0.928). Organic and elemental carbons also show strong correlations with total mass concentration at Liberty. Plots and correlations are shown below for organic carbon, elemental carbon, and total $PM_{2.5}$.

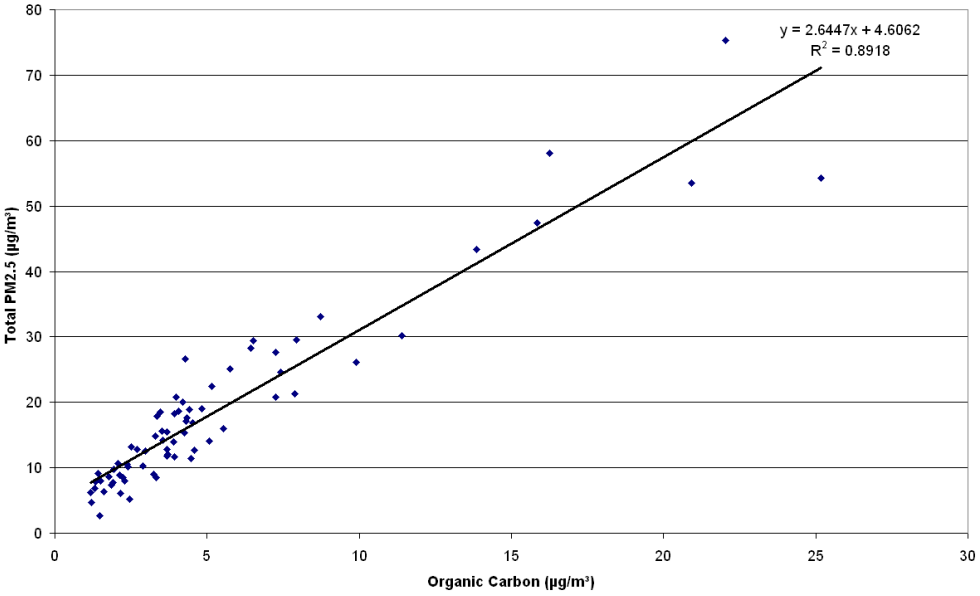




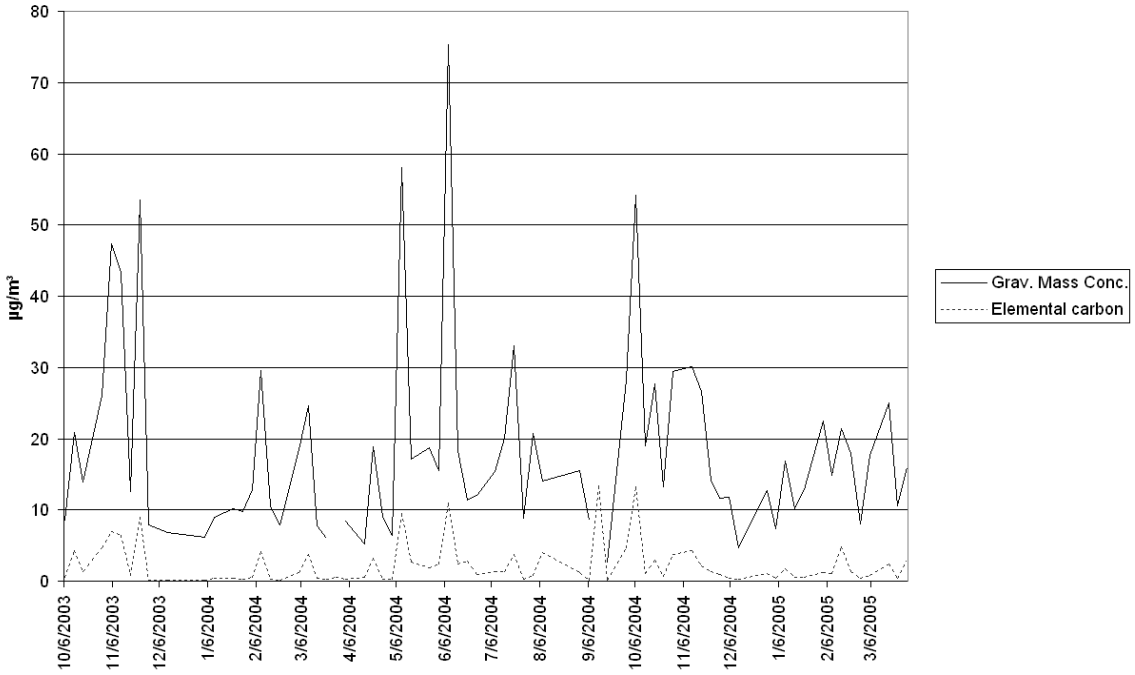
Liberty Total Gravimetric PM2.5 and Organic Carbon



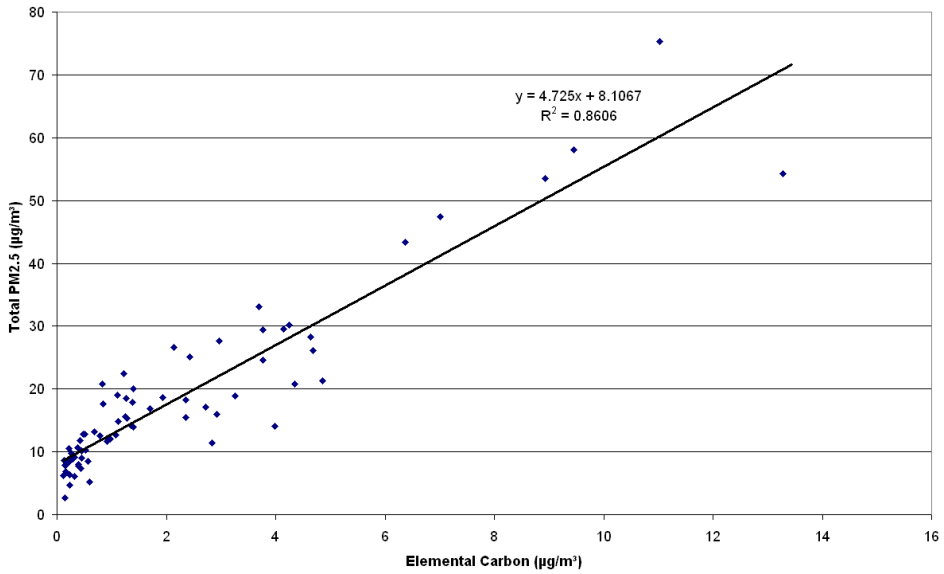
Liberty Total Gravimetric PM2.5 vs. Organic Carbon



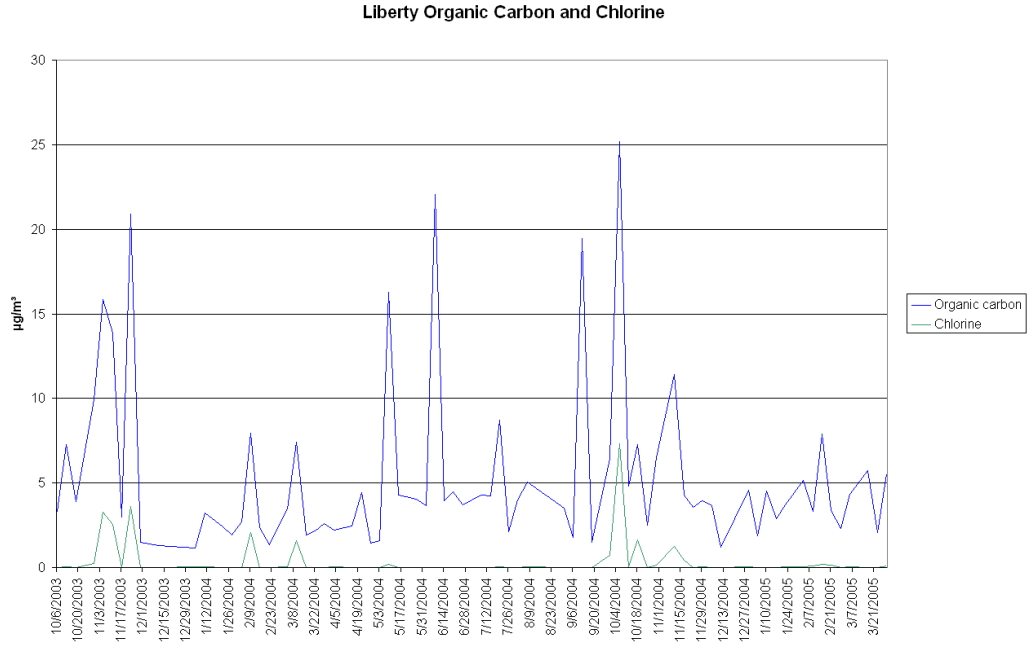
Liberty Total Gravimetric PM2.5 and Elemental Carbon

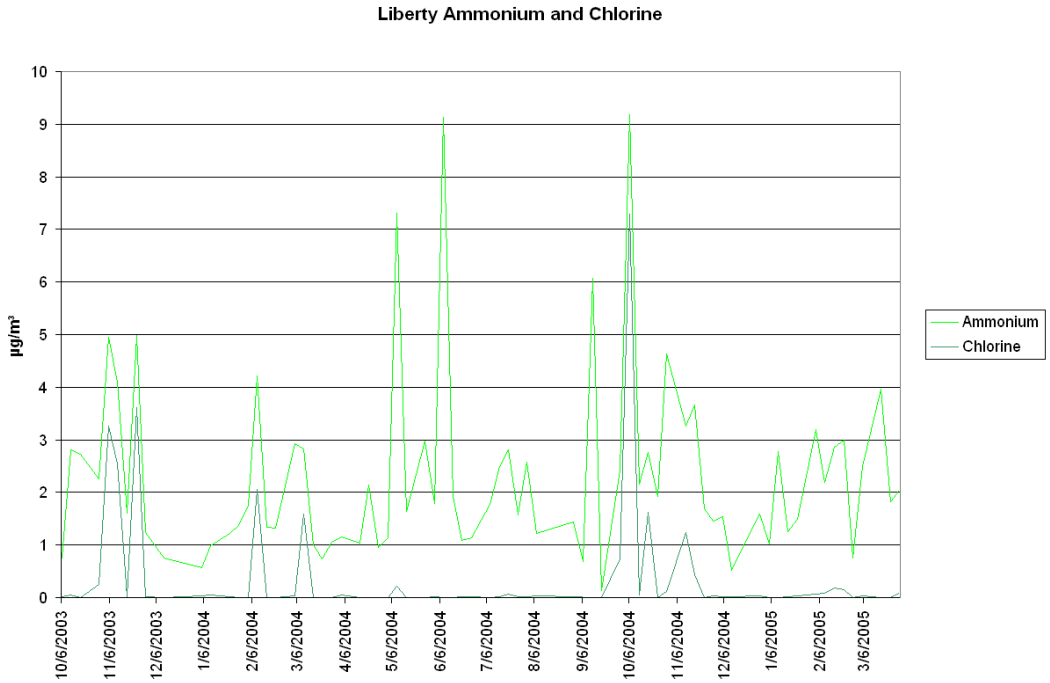


Liberty Total Gravimetric PM2.5 vs. Elemental Carbon



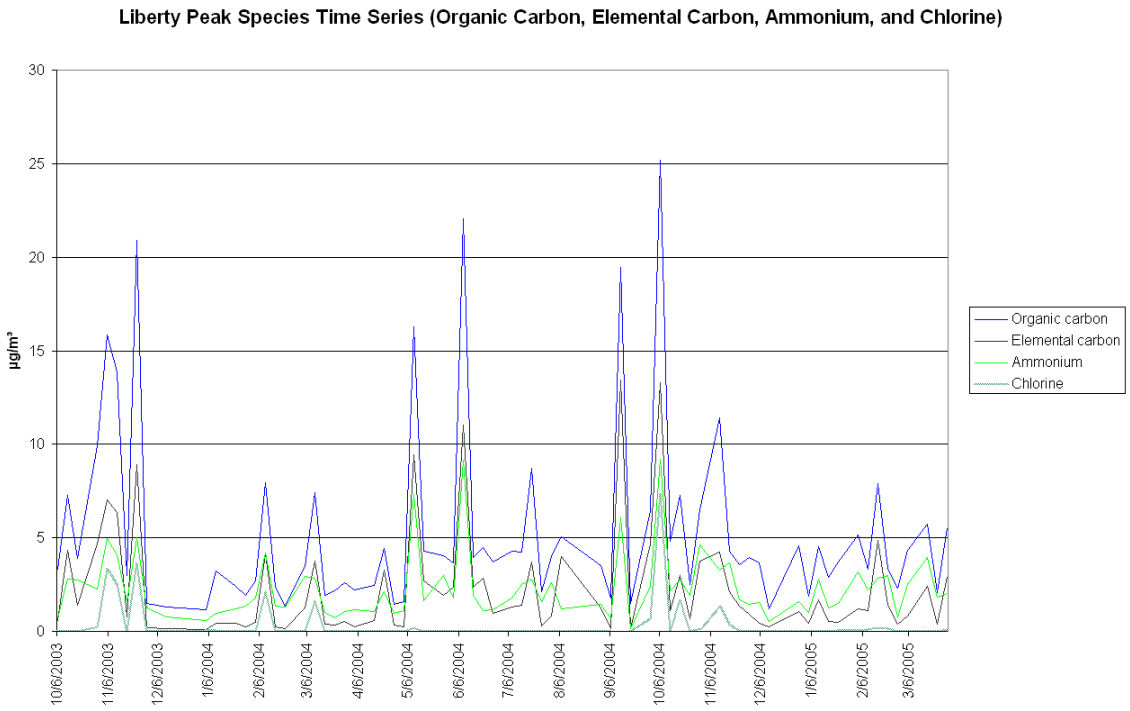
Additionally, chlorine can track organic carbon and ammonium in winter. Time series plots for chlorine with organic carbon and ammonium are given below.



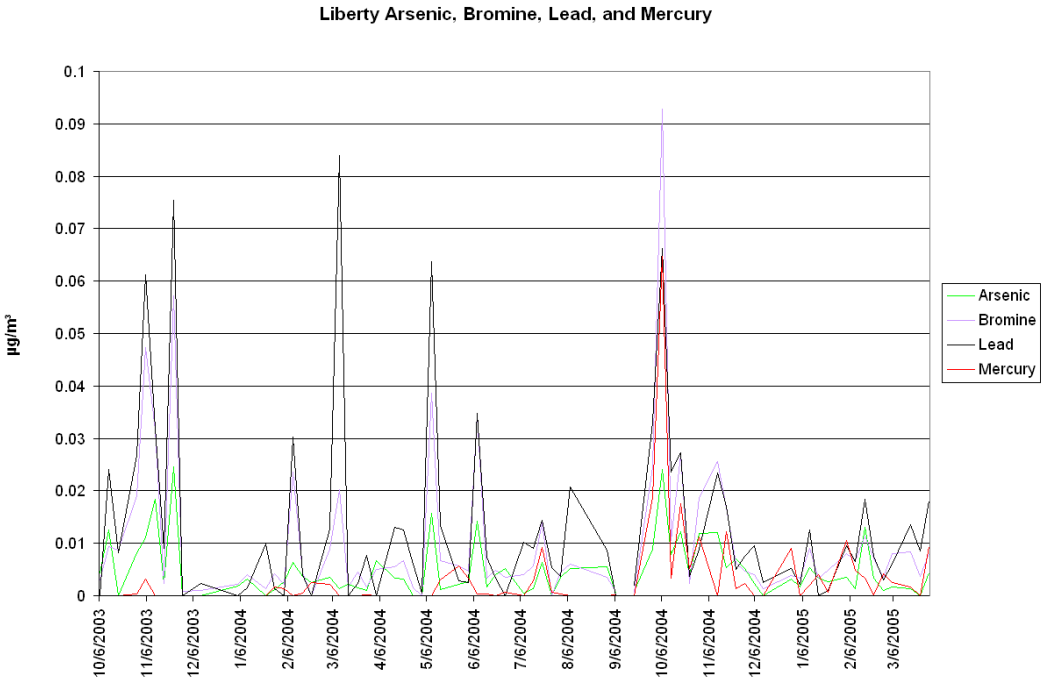


These plots suggest that chlorinated organic compounds and/or ammonium chloride salt may be a component of Liberty $PM_{2.5}$ during cold months.

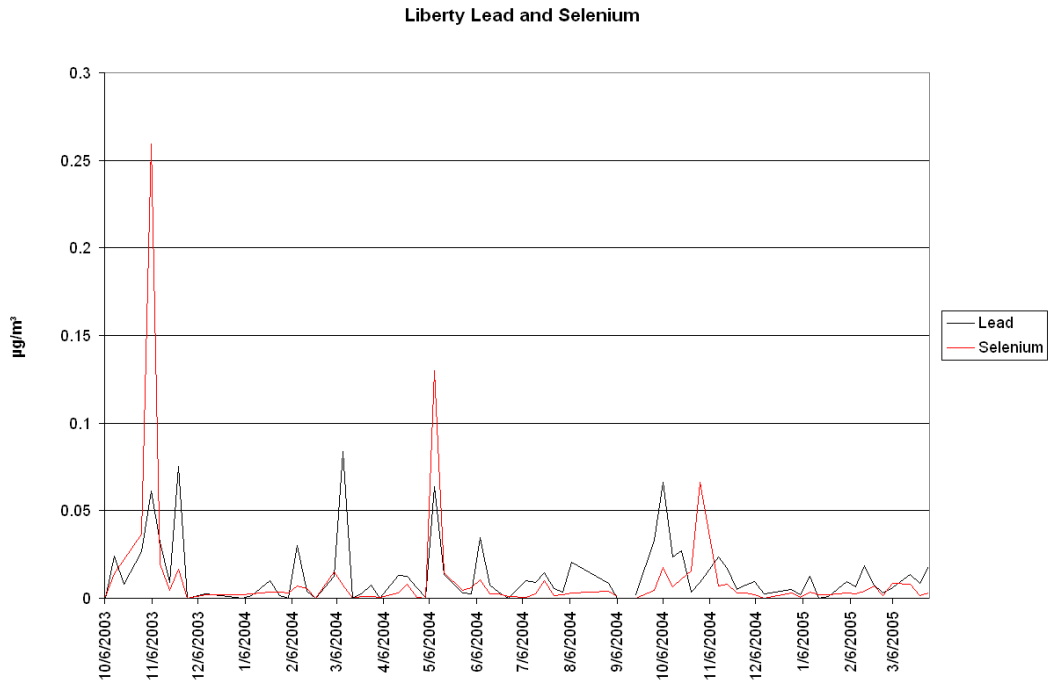
Ammonium can also track the carbons on some days, specifically on peak days. Carbons, ammonium, and chlorine are shown on the following plot as "peak species." These species correlate well on peak days, but not necessarily year-round.



On a smaller scale, some Liberty-dominant trace elements also appear to correlate with one another. Liberty arsenic, bromine, lead, and mercury are shown in the time series plot below.

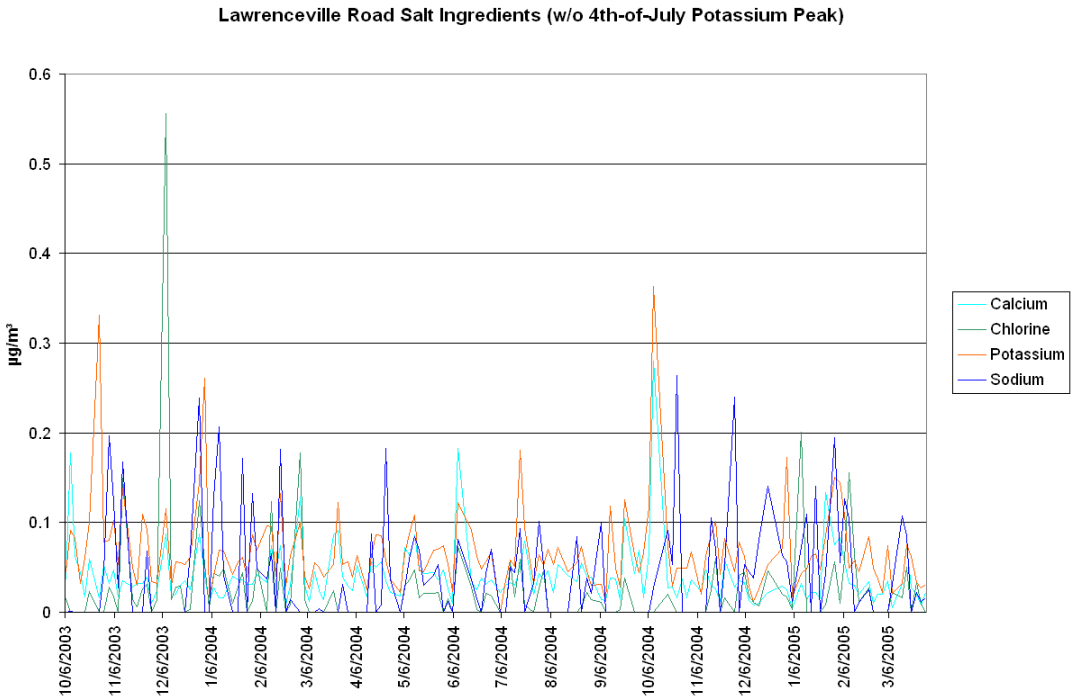


Lead may also correlate with selenium sometimes at Liberty, as shown in the plot below.



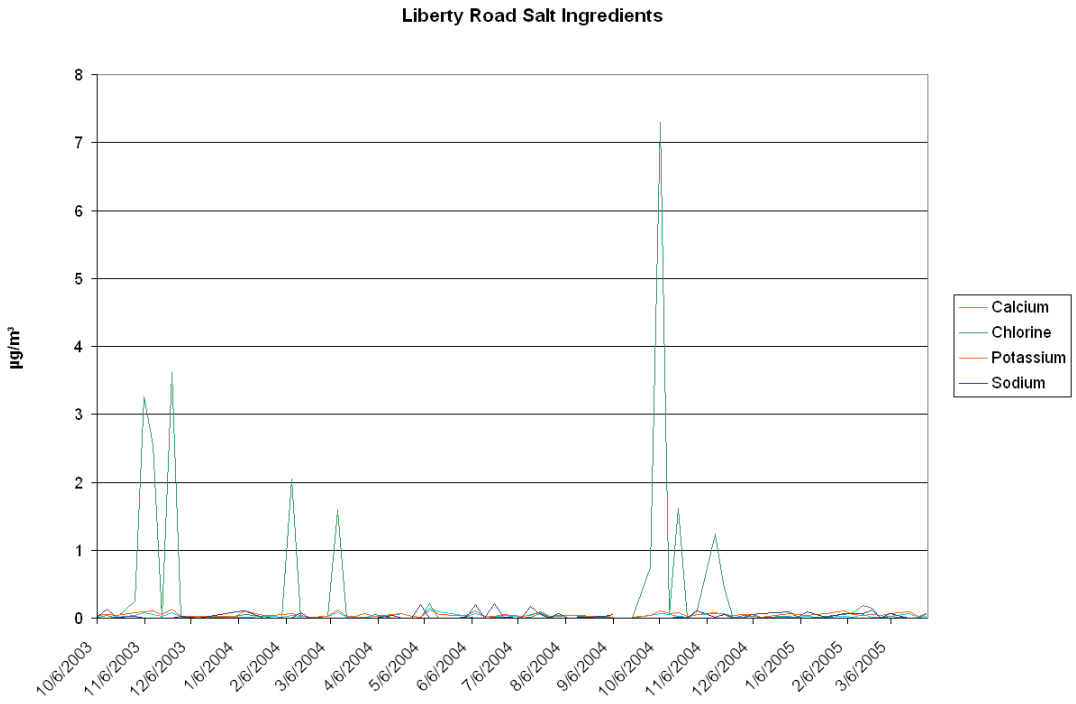
Correlations of possible road (rock) salt trace elements at each site are shown next. Different forms of road (rock) salt can be used as ice-melting material. Sodium chloride is the cheapest, most common form and is the same chemical formula as table salt. Potassium chloride and calcium chloride can also be used as ice-melters, although calcium chloride is the most expensive salt and is generally used only on walkways.

Mass ratios of the cation portion of each salt (sodium, potassium, calcium) are roughly 1:1 to the anionic portion (chloride). Plots of these elements should therefore show similar concentrations to one another if airborne road salt is a source of $PM_{2.5}$.



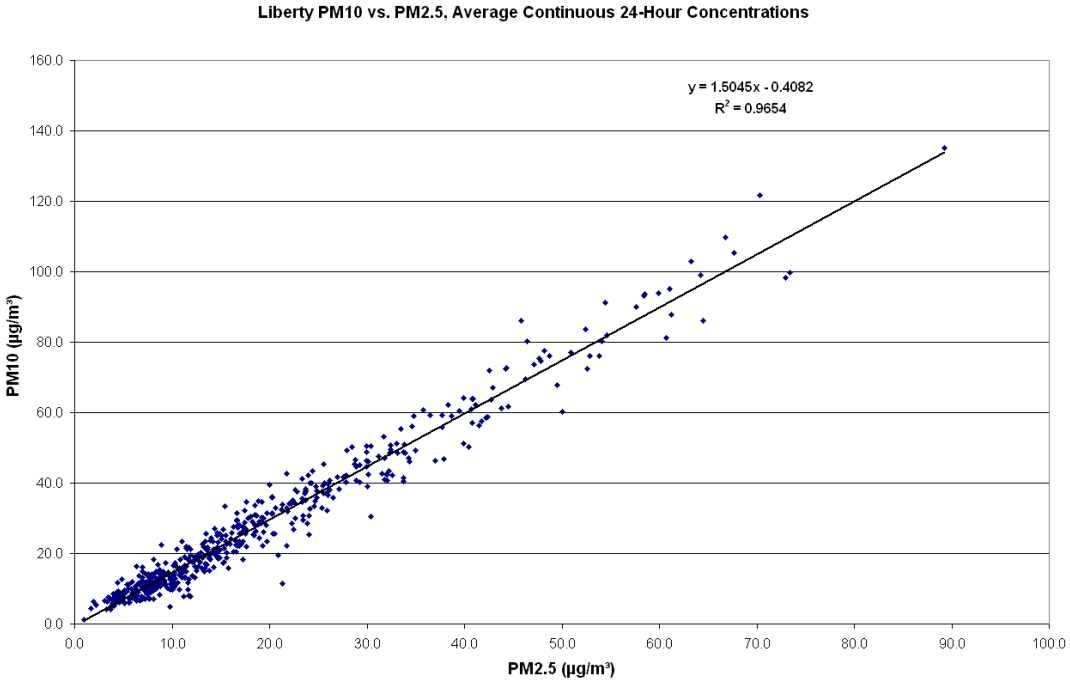
Road salt ingredients show similar concentration levels at Lawrenceville, signifying that one or more of the possible cations may be present with chloride as road salt. The highest chlorine peak (date: 12/8/03) may represent a combination of all three types of salt.

Road salt ingredients at Liberty are shown in the plot below.



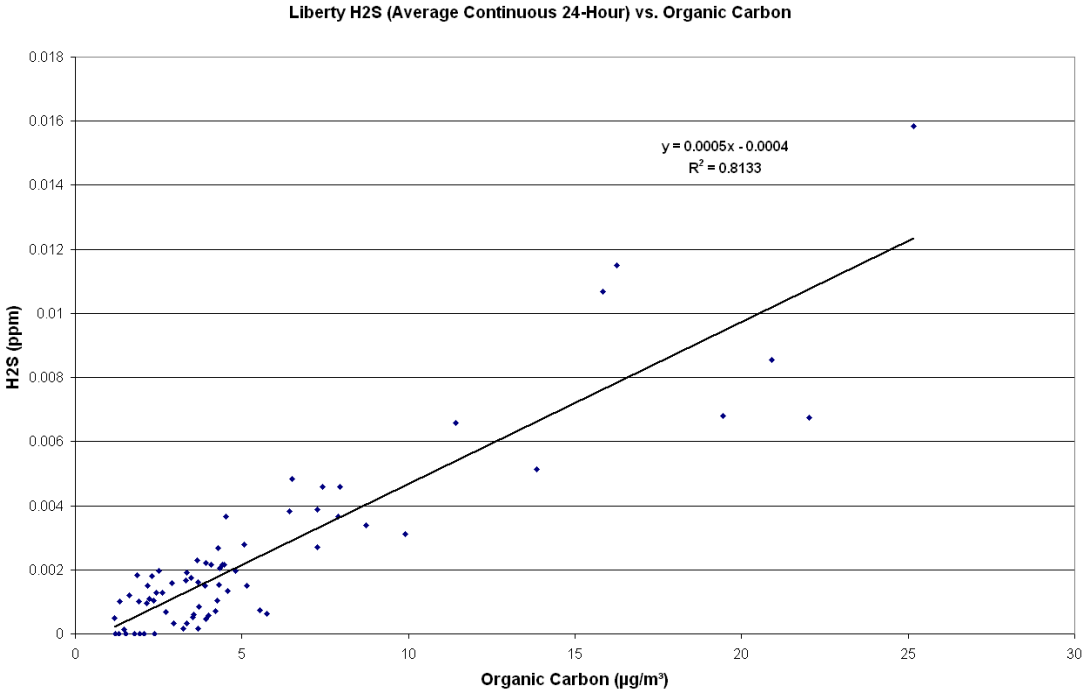
At Liberty, road salt may be present as $PM_{2.5}$, but only a small portion of the total chlorine concentrations can be attributed to road salt. The cation concentrations are much lower than chlorine on the peak days. Therefore, the source of chlorine is not entirely from road salt at Liberty.

The Liberty site is collocated with several continuous monitors. Liberty continuous PM_{10} and $PM_{2.5}$ are plotted below.

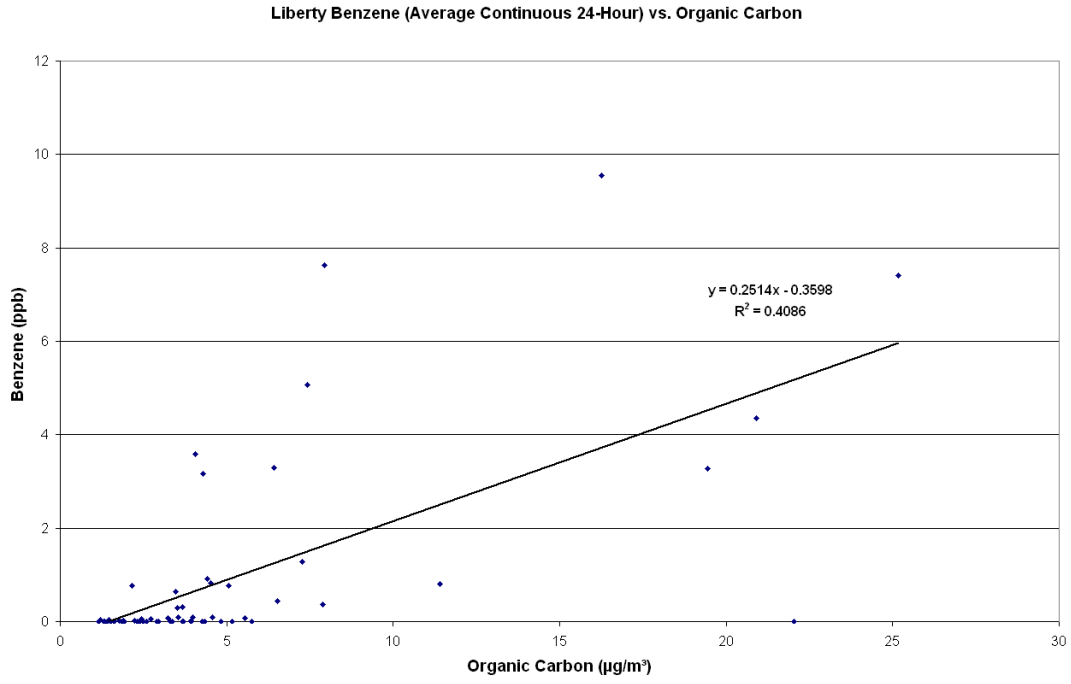


The Liberty PM_{10} and $PM_{2.5}$ continuous monitors correlate extremely well, with $PM_{2.5}$ constituting two-thirds of the PM_{10} concentration.

Regression plots for continuous gaseous pollutants and organic carbon (the most dominant $PM_{2.5}$ species) are given below for Liberty.



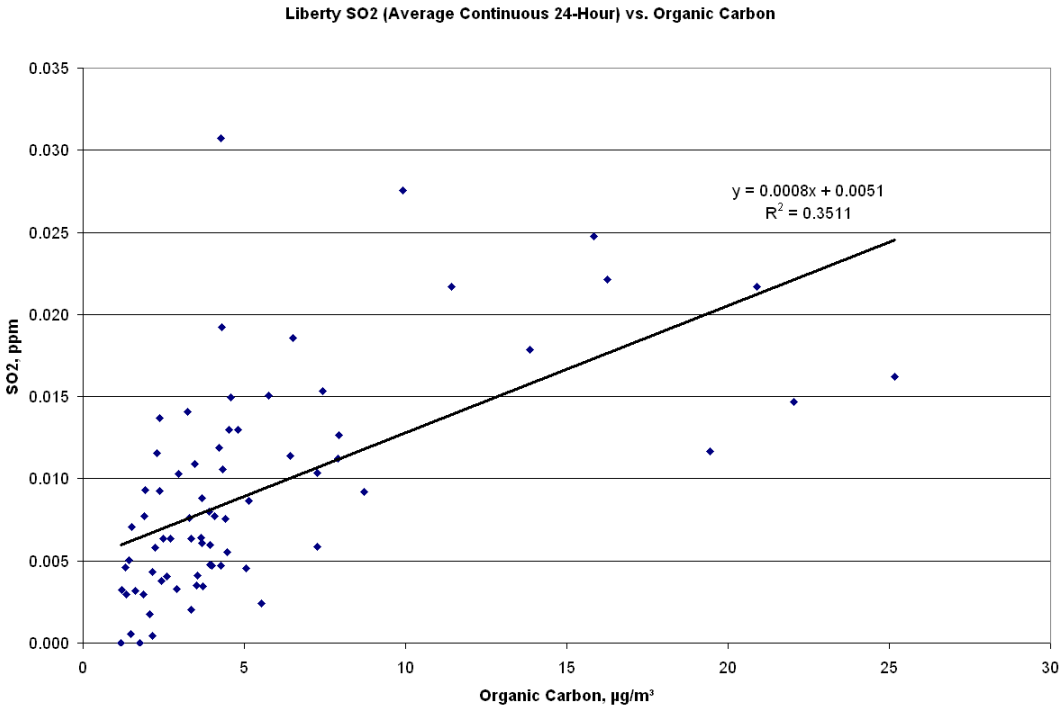
Hydrogen sulfide (H_2S) 24-hour averages appear to correlate well with organic carbon at Liberty. Liberty benzene and organic carbon are shown next.



Benzene itself is an organic carbon, but benzene 24-hour averages do not correlate well with organic carbon at Liberty. This is due to the different phases in which benzene and organic carbon are being sampled. The benzene monitor measures continuous gas-phase benzene, while the speciation monitor measures solid-phase organic carbon deposited over a 24-hour period. Gaseous benzene appears to behave differently than particulate-phase organic carbon on a 24-hour basis.

[Benzene appears to follow organic carbon better on an hourly level. Hourly plots for continuous monitors are shown later in this report in the Peak Days section.]

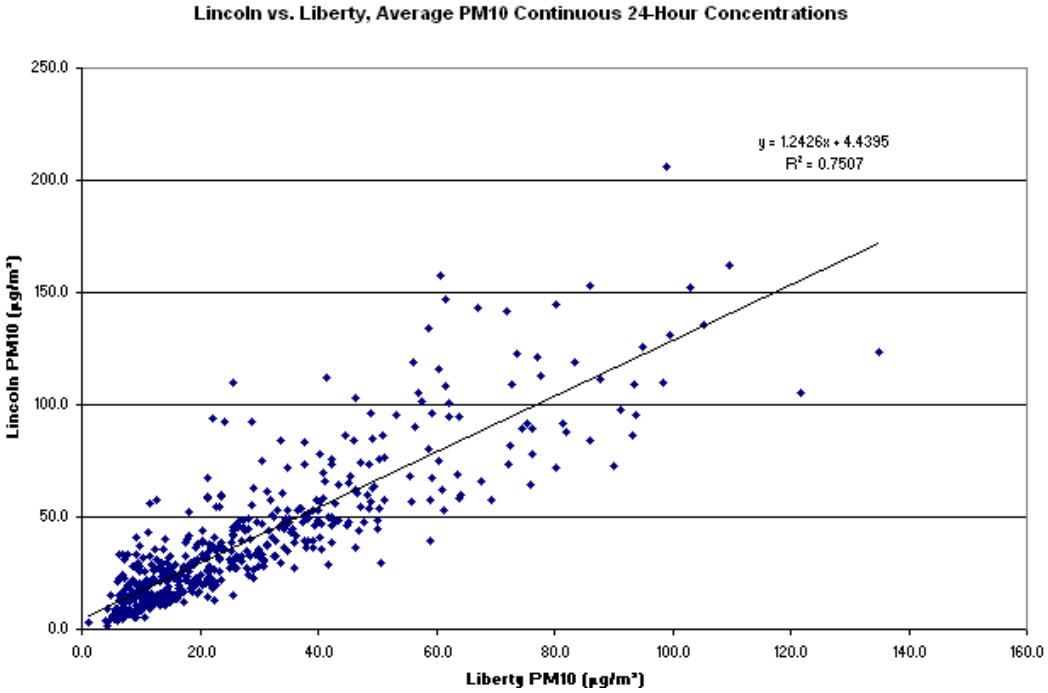
Liberty sulfur dioxide (SO_2) and organic carbon are shown below.

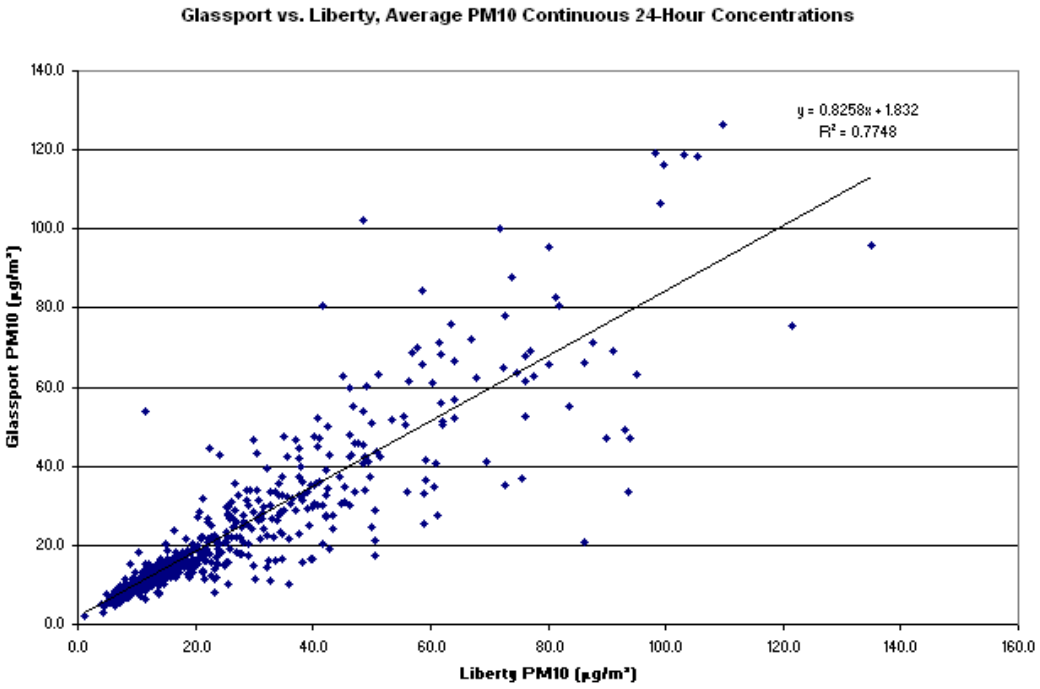


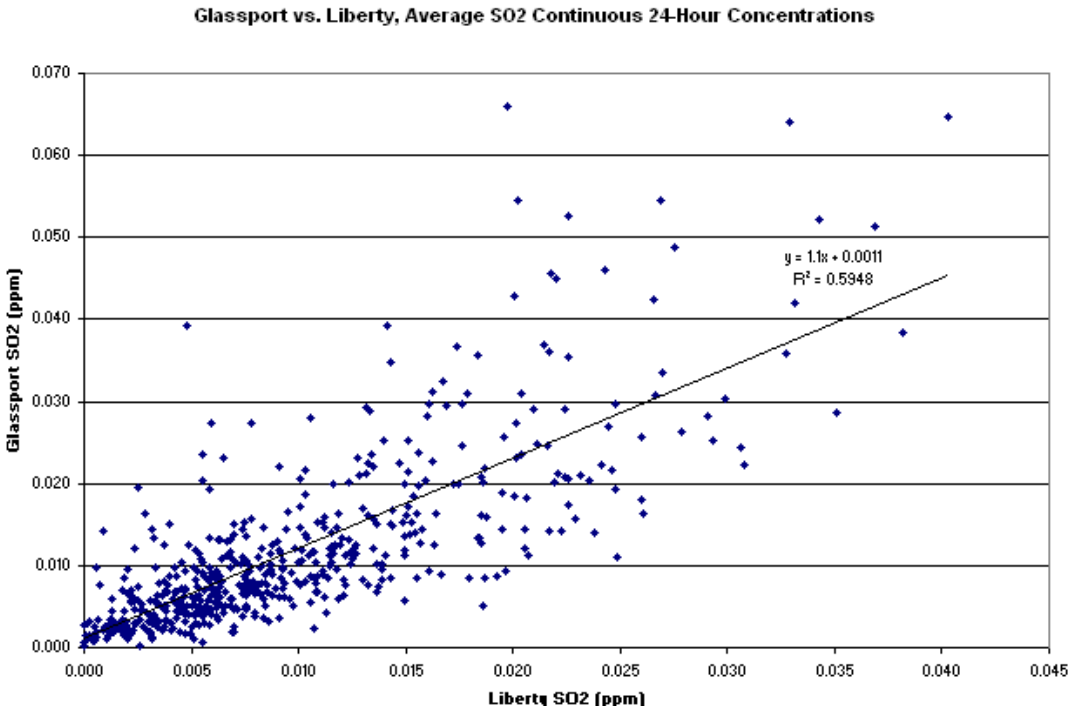
Sulfur dioxide, like benzene, does not correlate well with organic carbon on a 24-hour basis.

8. Site Correlations

Liberty is located near two additional sites with PM_{10} and SO_2 monitors: Lincoln and Glassport. Regression plots for these sites with Liberty are given below.





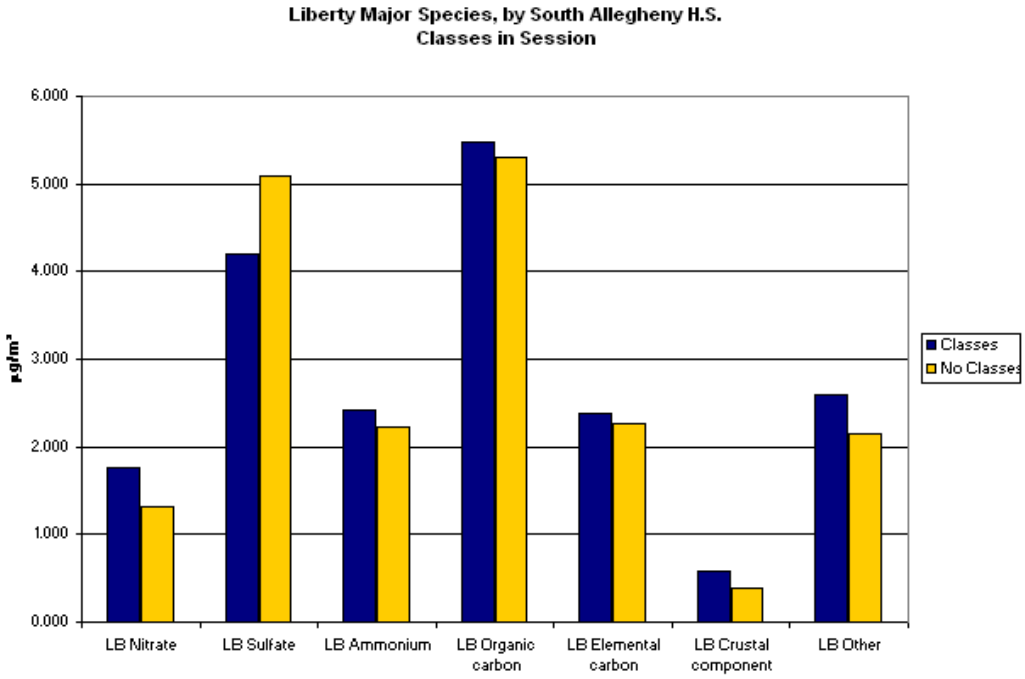


These plots reveal that Liberty can correlate moderately with Glassport and Lincoln for PM_{10} on a 24-hour average basis. Liberty is more site-specific for SO_2, however, as Glassport and Liberty do not correlate well.

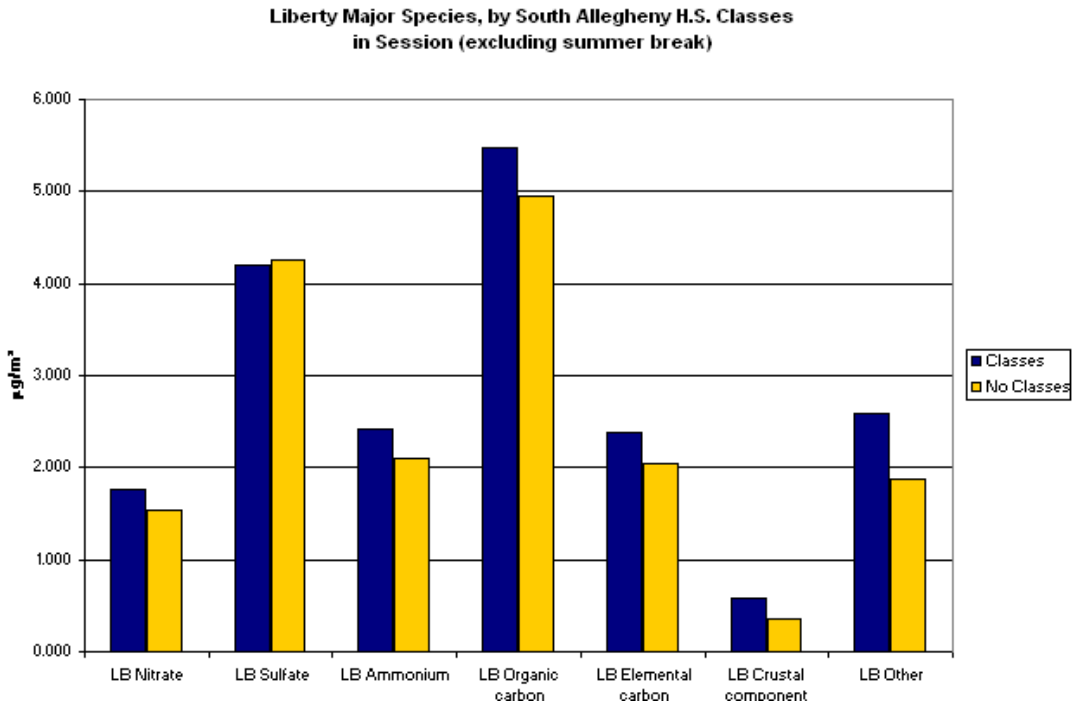
9. Liberty School Buses

The Liberty site is located on the roof of South Allegheny High School, and school bus diesel emissions are a possible source of $PM_{2.5}$ for that monitor. School buses line up on both sides of the high school in the morning and afternoon; the Liberty monitor is located near the center of the roof.

The column chart below shows average concentrations of major species on a classes-in-session basis. On a day when classes are not in session and school buses are not present, diesel emissions from buses are not impacting the speciation monitor.



This above chart represents year-round averages. However, $PM_{2.5}$ can show a seasonal bias for certain species, such as sulfate in summer. To eliminate bias for summer days when classes are never in session, summer days can be removed from the averaging in order to show a more specific breakdown of species collected during the school year only.

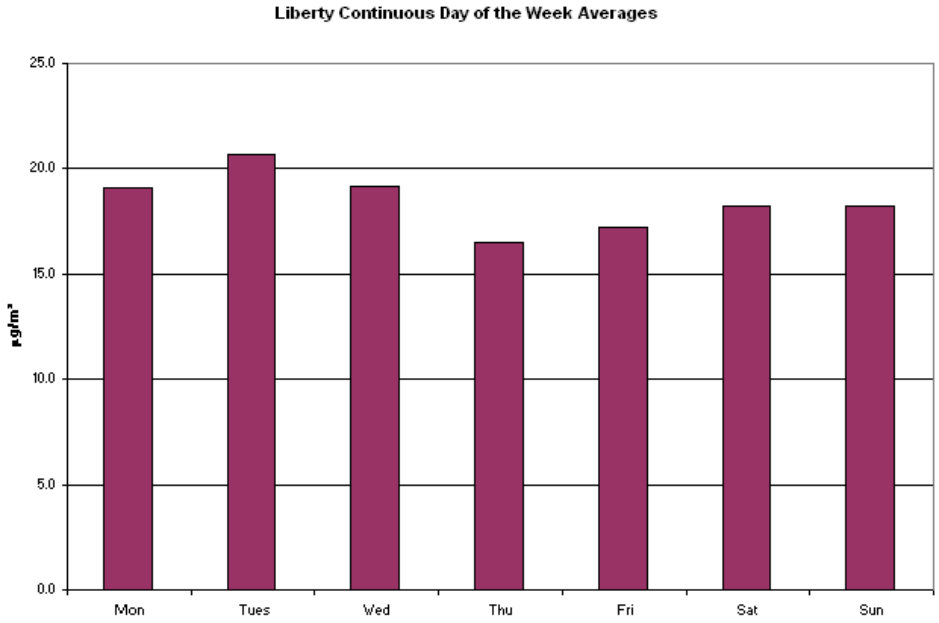


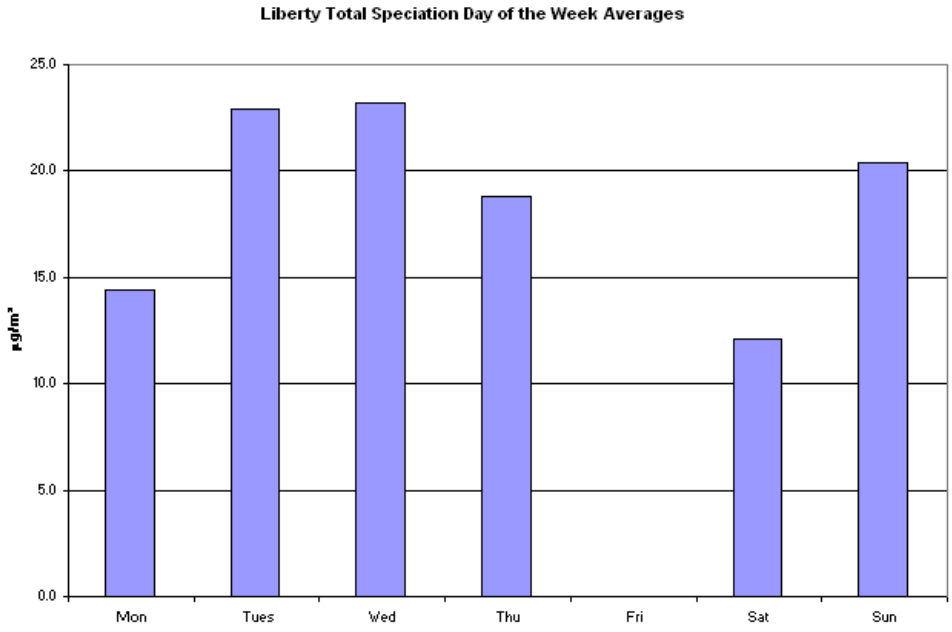
The adjusted column chart above represents a more specific analysis of days with or without school bus emissions during the course of a school year (autumn through spring).

It can be seen on the chart that all species except sulfate are higher during days when classes are in session. Diesel emissions are most commonly associated with elemental carbon. Since elemental carbon is indeed higher on class-days, school buses emissions may be impacting the Liberty monitor. However, higher concentrations for the additional species on class-days may suggest that the concentration differences are statistically random.

10. Days of the Week

Below are column charts of average total $PM_{2.5}$ concentrations for the continuous and speciation monitors.

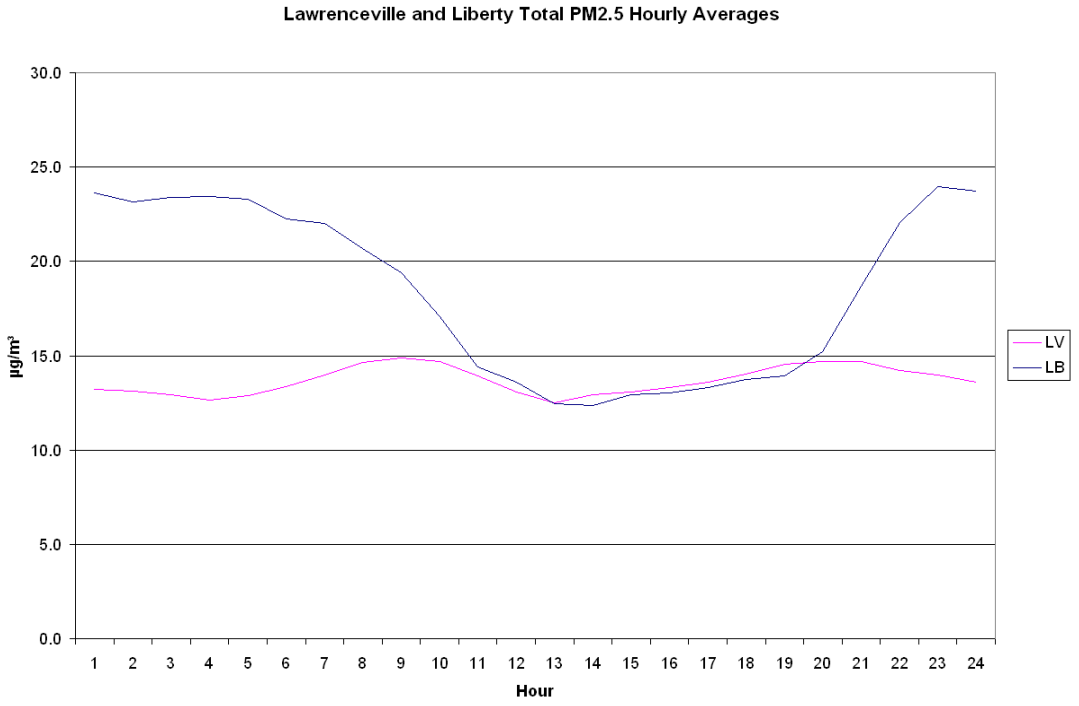




Total $PM_{2.5}$ concentrations show some variance by day of the week. For the speciation monitor, there are no Friday samples on account of invalid retrieval times following a weekend.

11. Liberty Peak Days

Peak $PM_{2.5}$ days usually occur simultaneously at Lawrenceville and Liberty, but the peaks have different species compositions and concentrations. Simultaneous peaking may be due to broad-scale inversions or other regional events. Liberty is much more greatly affected by inversions, however, as evident by the average hourly plot shown below.



Liberty $PM_{2.5}$ levels are highly influenced by nocturnal temperature inversions, when warmer upper-air layers trap pollutants close to surface level. Lawrenceville is moderately influenced by inversions near daybreak, but overall the levels remain steadier at Lawrenceville on a diurnal basis.

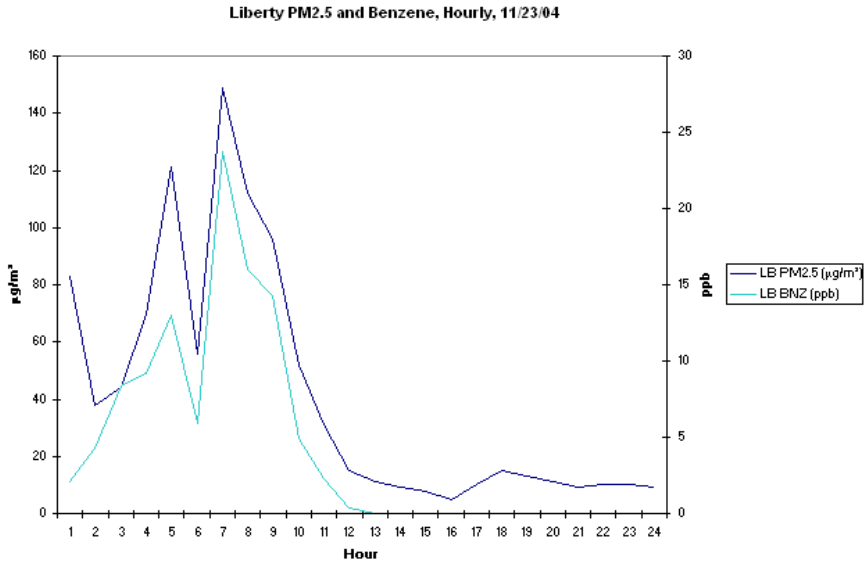
Meteorological parameters and hourly multi-pollutant plots are shown on the following pages for selected peak days at Liberty. These peak days coincide with high carbon and ammonium concentrations. Additionally, high chlorine concentrations are present on cold-weather peak days.

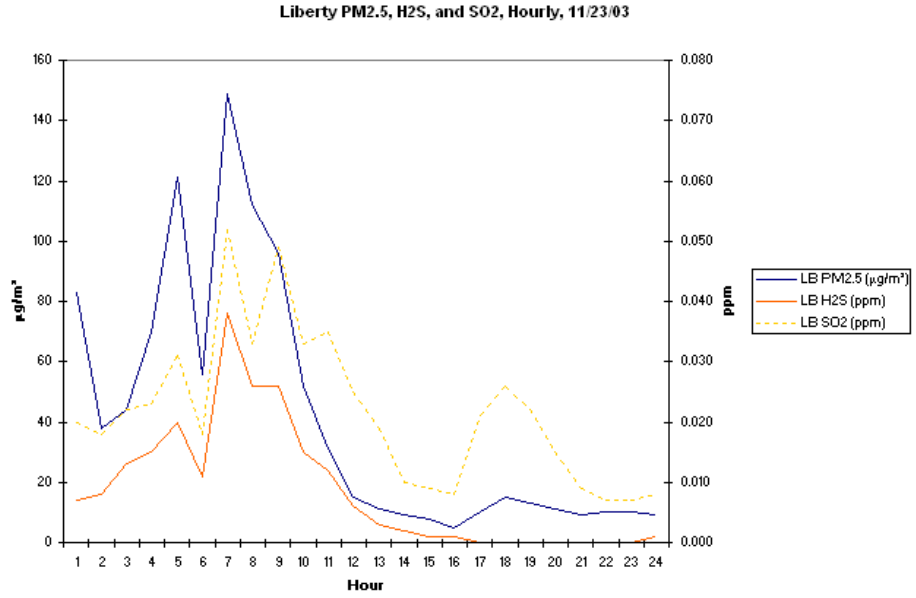
Benzene concentrations on the hourly plots represent gaseous benzene only.

Resultant wind parameters represent the sum of the vector components. Persistence is the ratio of resultant wind speed to scalar mean (average) wind speed.

SAMPLING DATE: 11/23/03

Total $PM_{2.5}$ Speciation ..... 53.5 µg/m³
Resultant wind speed ..... 3.1 mph
Resultant wind direction 164º
Wind persistence 0.89

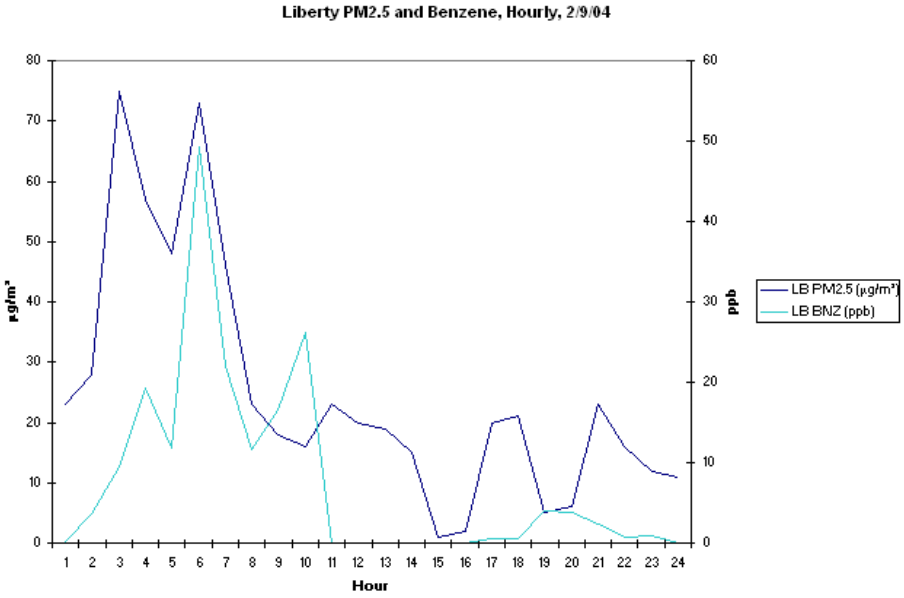


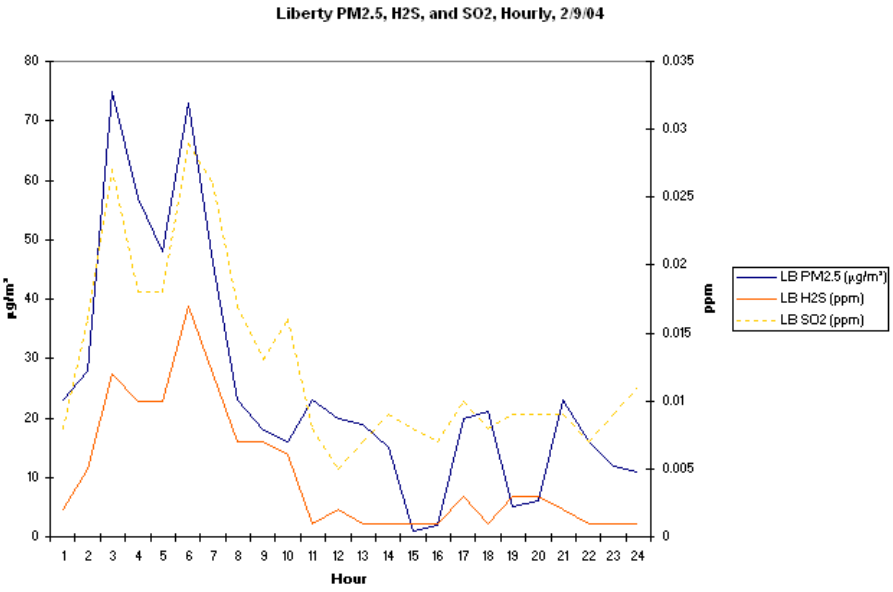


On this date, a morning inversion led to high total $PM_{2.5}$, benzene, and H_2S. Winds were persistent and from the south-southeast.

SAMPLING DATE: 2/9/04

Total $PM_{2.5}$ Speciation ..... 29.5 µg/m³
Resultant wind speed ..... 8.0 mph
Resultant wind direction 216º
Wind persistence 0.98

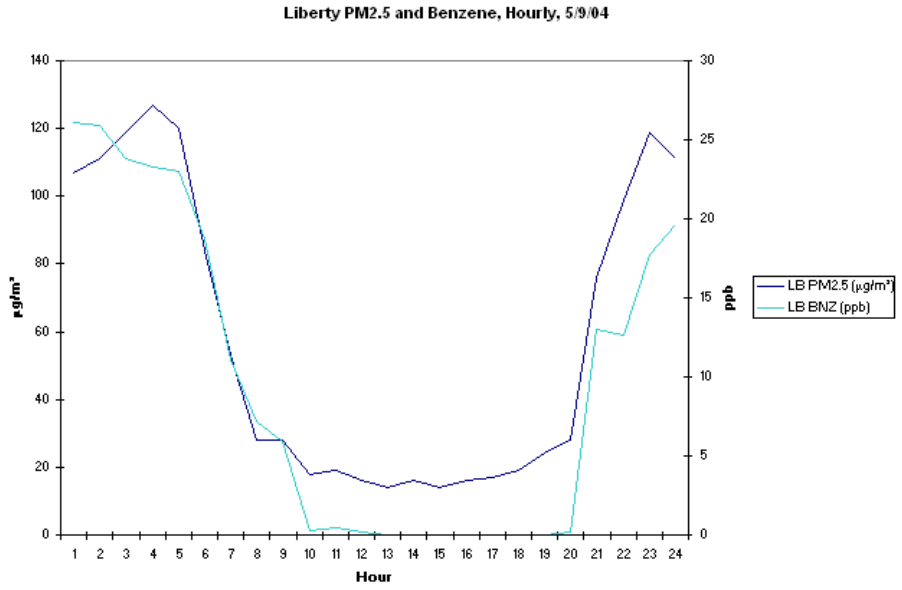


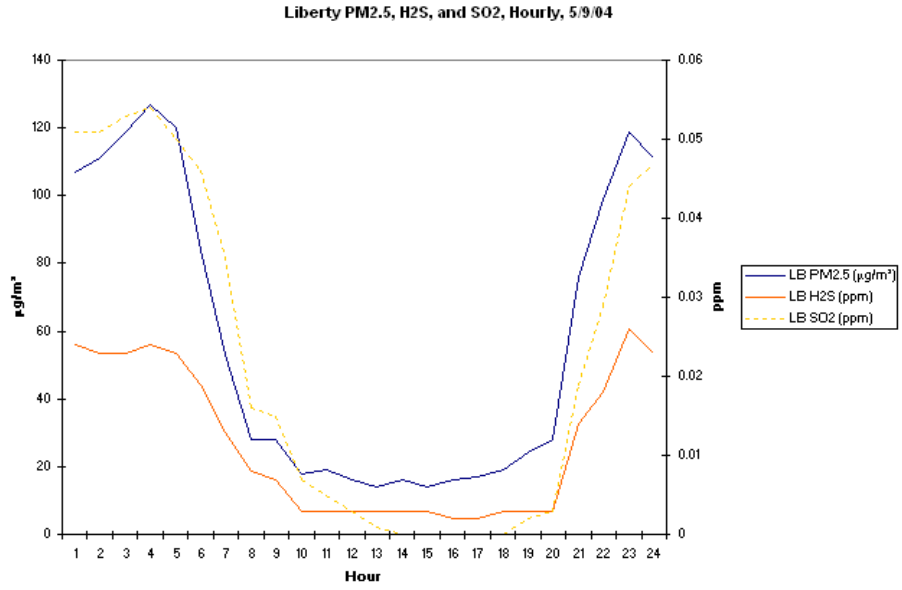


On 2/9/04, a morning inversion led to high total $PM_{2.5}$, benzene, and H_2S. Winds were persistent, strong, and from the south-southwest.

SAMPLING DATE: 5/9/04

Total $PM_{2.5}$ Speciation ..... 58.0 µg/m³
Resultant wind speed ..... 5.1 mph
Resultant wind direction ..... 227°
Wind persistence 0.95

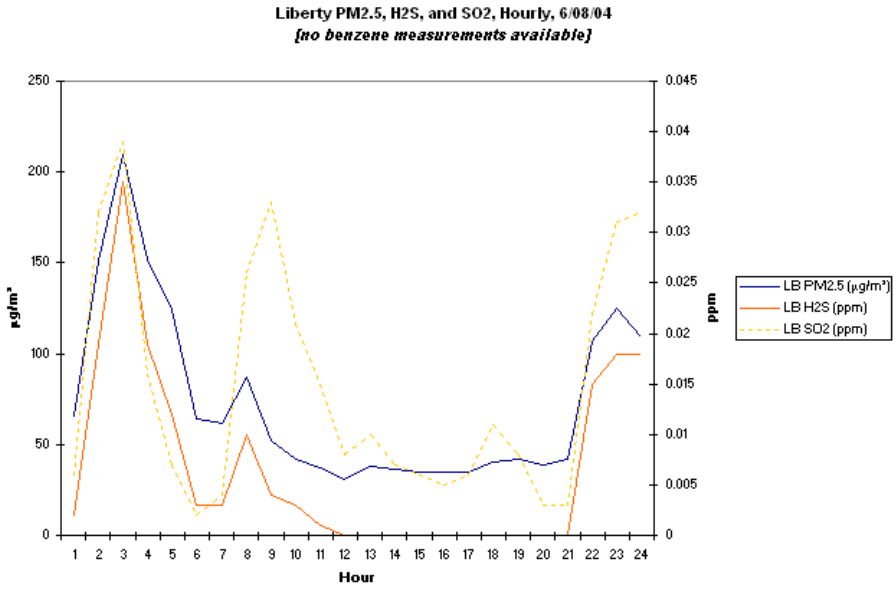




On this date, nighttime inversions led to high total $PM_{2.5}$, benzene, and H_2S. Winds were persistent, strong, and from the southwest. All pollutants track together.

SAMPLING DATE: 6/8/04

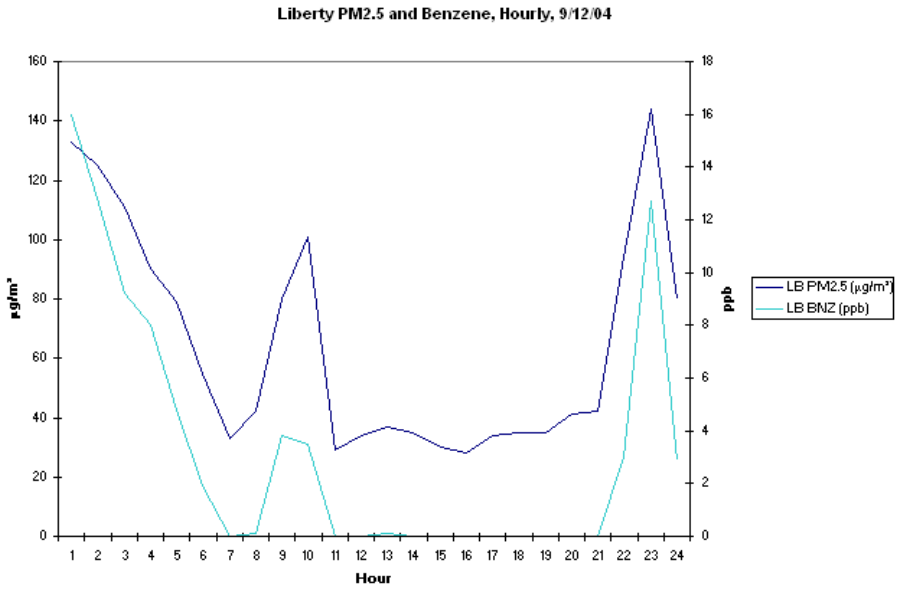
Total $PM_{2.5}$ Speciation ..... 75.0 µg/m³
Resultant wind speed ..... 2.8 mph
Resultant wind direction 212º
Wind persistence 0.97

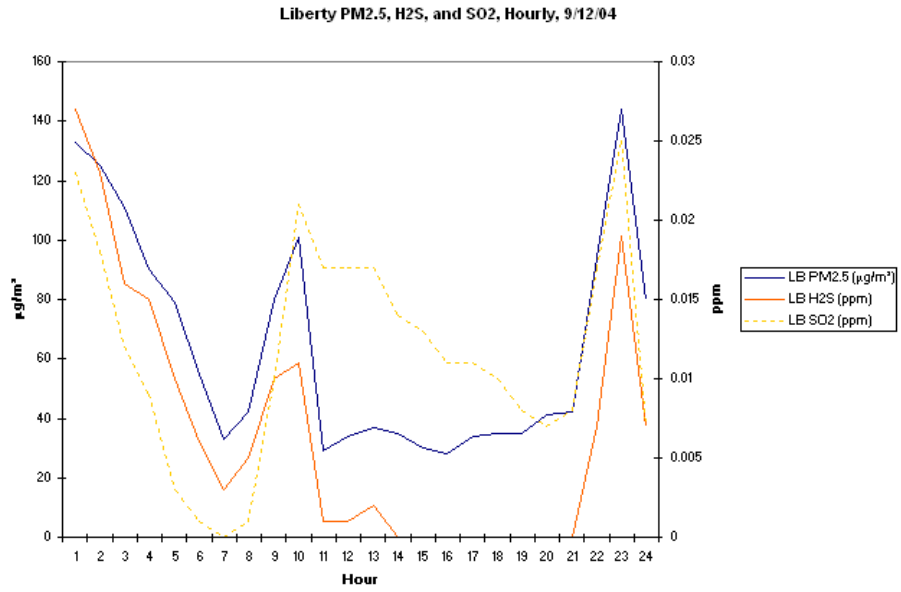


On 6/8/04, nighttime inversions led to very high total $PM_{2.5}$ and H_2S concentrations. Winds were persistent and from the south-southwest.

SAMPLING DATE: 9/12/04

Total $PM_{2.5}$ Speciation ..... 64.2 µg/m³
Resultant wind speed ..... 1.2 mph
Resultant wind direction 216º
Wind persistence 0.85

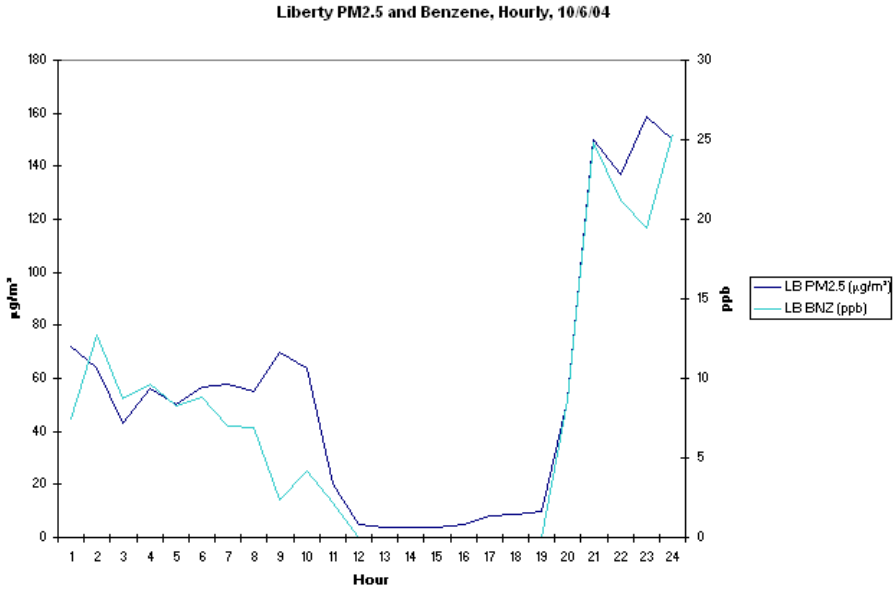


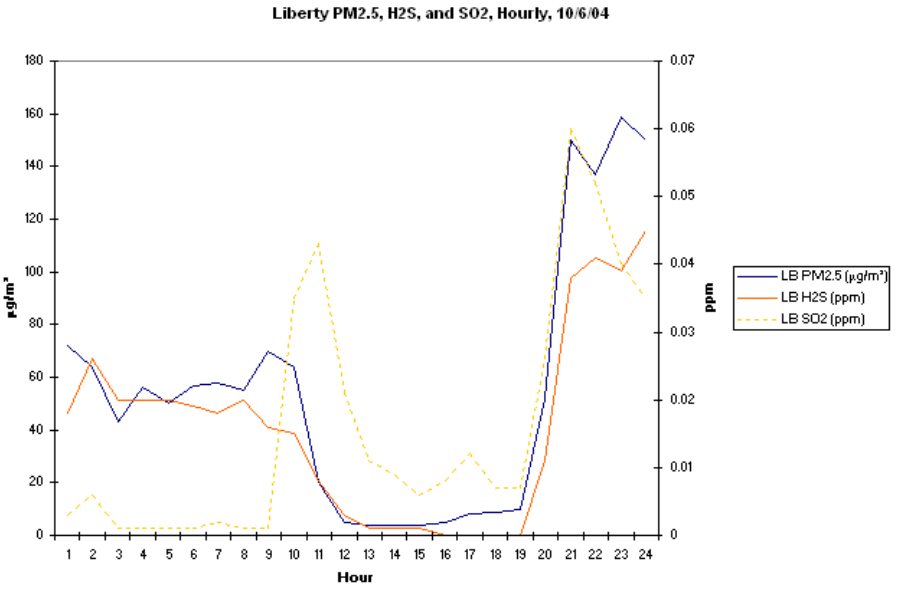


On this date, nighttime inversions led to high total $PM_{2.5}$, benzene, and H_2S concentrations. Winds were fairly persistent, weak, and from the south-southwest.

SAMPLING DATE: 10/6/04

Total $PM_{2.5}$ Speciation ..... 54.2 µg/m³
Resultant wind speed ..... 1.4 mph
Resultant wind direction 219º
Wind persistence 0.95

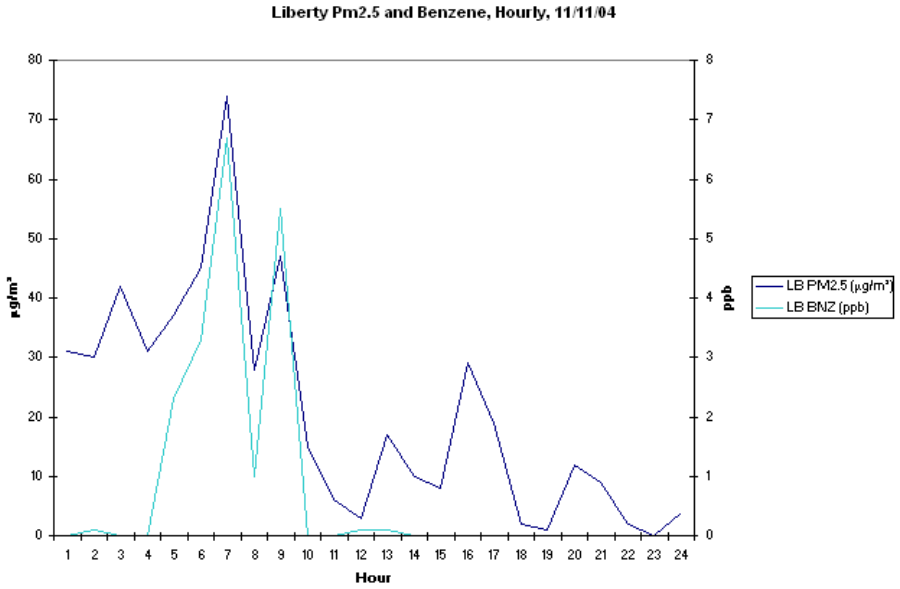


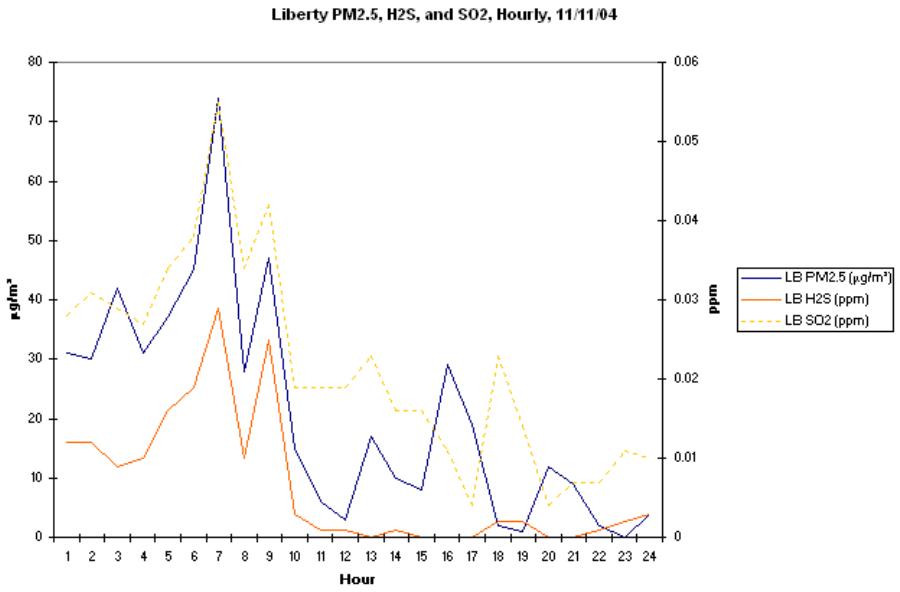


On 10/6/04, nighttime inversions led to high total $PM_{2.5}$, benzene, and H_2S concentrations. Winds were persistent, weak, and from the south-southwest.

DATE: 11/11/04

Total $PM_{2.5}$ Speciation ..... 30.1 µg/m³
Resultant wind speed ..... 2.0 mph
Resultant wind direction 125º
Wind persistence 0.34





On 11/11/04, a morning inversion led to high total $PM_{2.5}$, benzene, and H_2S concentrations. Winds were not persistent and were from the southeast.

12. Conclusion

Lawrenceville is affected by both regional flow and urban excess for $PM_{2.5}$. The primary sources of the urban excess are from anthropogenic sources such as from light industry, residential and commercial heating, and mobile source emissions. The regional flow contribution is mostly attributed to upwind power plant emissions, but may also include $PM_{2.5}$ from biogenic sources such as trees.

At Liberty, regional flow is evident for some $PM_{2.5}$ species, while concentrations of other species do not follow regional flow. It is assumed that species that do not follow regional flow may be attributed to sources resident to the area, both stationary and mobile. Liberty is more highly influenced by inversions than Lawrenceville. Carbons and ammonium are prominent species on peak days at Liberty. Chorine is also prominent on cold-weather peak days.

To gain further understanding of $PM_{2.5}$ in Allegheny County, future analysis may include the following:

- Additional correlations
- Deployment of additional monitors
- Source testing
- Dispersion modeling
- Wind or other meteorological studies

13. Additional Information

For more information concerning Allegheny County speciation monitoring and analysis, contact Jason Maranche at the ACHD Air Quality Program at 412-578-8104 or jmaranche@achd.net.

For general information about $PM_{2.5}$ and air quality, visit EPA's web site: www.epa.gov.

For information concerning PA DEP Air Quality, visit: http://www.dep.state.pa.us/dep/deputate/airwaste/aq/default.htm.

For information about $PM_{2.5}$ speciation collection and analysis methods, visit RTI's web site: www.rti.org.

EPA Technical Analysis for the Pennsylvania and Delaware portion of the Philadelphia-Wilmington Area

Introduction

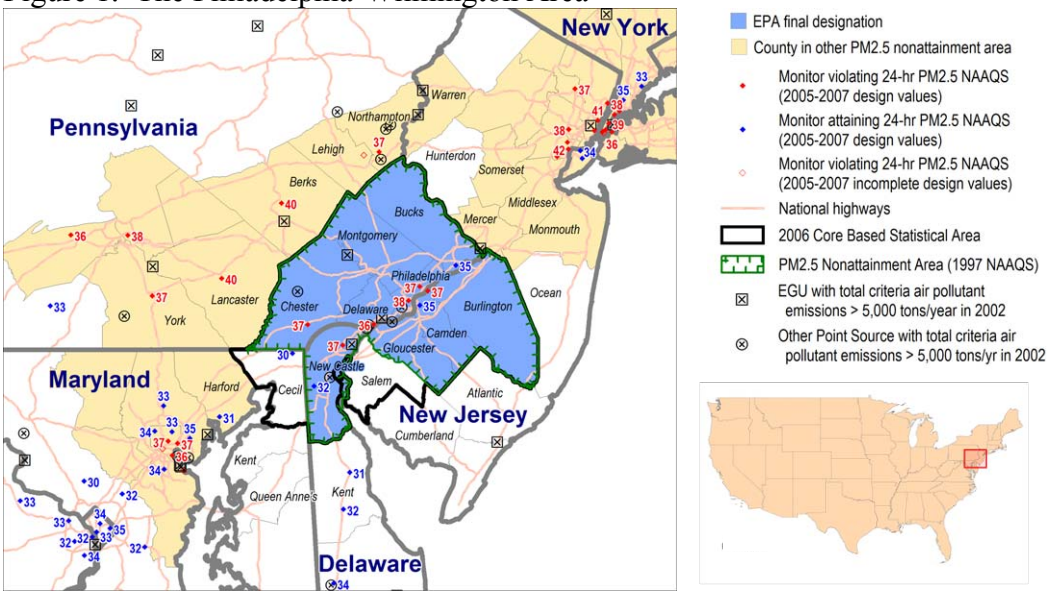
Pursuant to section 107(d) of the Clean Air Act, EPA must designate as nonattainment those areas that violate the NAAQS and those nearby areas that contribute to violations. This technical analysis for the Philadelphia-Wilmington area identifies the counties with monitors that violate the 2006 24-hour $PM_{2.5}$ standard and evaluates nearby counties for contributions to fine particle concentrations in the area. EPA has evaluated these counties based on the weight of evidence of the following nine factors recommended in EPA guidance and any other relevant information:

- pollutant emissions
- air quality data
- population density and degree of urbanization
- traffic and commuting patterns
- growth
- meteorology
- geography and topography
- jurisdictional boundaries
- level of control of emissions sources

We also used analytical tools and data such as pollution roses, fine particle composition monitoring data, back trajectory analyses, and the contributing emission score (CES) to evaluate these areas. (See additional discussion of the CES under Factor 1 below.)

Figure 1 is a map of the counties in the Philadelphia-Wilmington nonattainment area and other relevant information such as the locations and design values of air quality monitors, and the metropolitan area boundary.

Figure 1. The Philadelphia-Wilmington Area



For this area, EPA previously established $PM_{2.5}$ nonattainment boundaries for the 1997 $PM_{2.5}$ NAAQS that included nine full counties, with five counties in Pennsylvania, one county in Delaware, and three counties in New Jersey.

In December 2007, the Commonwealth of Pennsylvania recommended that Bucks, Chester, Delaware, Montgomery, and Philadelphia Counties be designated as "nonattainment" for the 2006 24-hour $PM_{2.5}$ standard based on air quality data from 2004-2006. These data are from Federal Reference Method (FRM) monitors located in the state. (See the December 28, 2007 letter from the Pennsylvania Department of Environmental Protection to EPA, received on January 3, 2008.)

In December 2007, the State of Delaware recommended that New Castle County be designated as "nonattainment" for the 2006 24-hour $PM_{2.5}$ standard based on air quality data from 2004-2006. However, the State of Delaware requested that New Castle County be a separate nonattainment area, and not included in the Philadelphia-Wilmington area. This recommendation deviates from the previously established nonattainment boundaries for the 1997 $PM_{2.5}$ NAAQS. These data are from FRM monitors located in the state. (See the December 18, 2007 letter from Ruth Ann Minner, Governor of Delaware to EPA, received on December 19, 2007.)

In August 2008, EPA notified the Commonwealth of Pennsylvania and the States of Delaware of its intended designations. In these letters, EPA also requested that if the Commonwealth of Pennsylvania and the State of Delaware wished to provide comments on EPA's intended designation, it should do so by October 20, 2008. EPA stated that it would consider any additional information (e.g., on power plants or partial county areas) provided by the state in making final decisions on the designations. In response, the State of Delaware provided additional technical data and comments to EPA in a letter dated October 15, 2008 and in person at a meeting held at EPA Region III in Philadelphia on November 20, 2008. These comments and the additional information were submitted to support Delaware's recommendation that New Castle County should be designated as a single-county nonattainment area, separate from the Philadelphia-Wilmington nonattainment area. For further discussion addressing Delaware's response that New Castle County should not be included in the Philadelphia-Wilmington nonattainment area, see our State and Tribal Comment Summary and Response Document in the Docket for this action.

Based on EPA's technical analysis described below, EPA has designated the same counties as previously designated for $PM_{2.5}$ as nonattainment for the 2006 24-hour $PM_{2.5}$ air-quality standard as part of the Philadelphia-Wilmington nonattainment area, based upon currently available information. These counties are listed in the table below.

Philadelphia-Wilmington Area	State-Recommended Nonattainment Counties	EPA-Final Designated Nonattainment Counties within Region III
Pennsylvania	Bucks County Chester County Delaware County Montgomery County Philadelphia County	Bucks County Chester County Delaware County Montgomery County Philadelphia County
Delaware	None	New Castle County

The following is a technical analysis for the EPA Region III portion of the Philadelphia-Wilmington area. The New Jersey portion of the Philadelphia-Wilmington Area is analyzed in a separate technical support document.

Factor 1: Emissions data

For this factor, EPA evaluated county level emission data for the following $PM_{2.5}$ components and precursor pollutants: $PM_{2.5}$ emissions total, $PM_{2.5}$ emissions carbon, $PM_{2.5}$ emissions other, sulfur dioxide (SO_2), nitrogen oxides (NO_x), volatile organic compounds (VOCs), and ammonia (NH_3). "$PM_{2.5}$ emissions total" represents direct emissions of $PM_{2.5}$ and includes: "$PM_{2.5}$ emissions carbon," "$PM_{2.5}$ emissions other", primary sulfate (SO_4), and primary nitrate. (Although primary sulfate and primary nitrate, which are emitted directly from stacks rather than forming in atmospheric reactions with SO_2 and NO_x, are part of "$PM_{2.5}$ emissions total," they are not shown in Table 1 as separate items). "$PM_{2.5}$ emissions carbon" represents the sum of organic carbon (OC) and elemental carbon (EC) emissions, and "$PM_{2.5}$ emissions other" represents other inorganic particles (crustal). Emissions of SO_2 and NO_x, which are precursors of the secondary $PM_{2.5}$ components sulfate and nitrate, are also considered. VOCs and NH_3 are also potential $PM_{2.5}$ precursors and are included for consideration.

Emissions data were derived from the 2005 National Emissions Inventory (NEI), version 1. See http://www.epa.gov/ttn/naaqs/pm/pm25_2006_techinfo.html.

EPA also considered the Contributing Emissions Score for each county. The CES is a metric that takes into consideration emissions data, meteorological data, and air quality monitoring information to provide a relative ranking of counties in and near an area. Note that this metric is not the exclusive manner for considering data for these factors. A summary of the CES is included in attachment 2, and a more detailed description can be found at http://www.epa.gov/ttn/naaqs/pm/pm25_2006_techinfo.html#C.

Table 1 shows emissions of $PM_{2.5}$ and precursor pollutants components (given in tons per year) and the CES for violating and potentially contributing counties in the Philadelphia-Wilmington area. Counties that are part of the Philadelphia-Wilmington nonattainment area for the 1997 $PM_{2.5}$ NAAQS are shown in boldface. Counties are listed in descending order by CES.

Table 1. $PM_{2.5}$ Related Emissions and Contributing Emissions Score

County	State Recommended Nonattainment?	CES	$PM_{2.5}$ emissions total (tpy)	$PM_{2.5}$ emissions carbon (tpy)	$PM_{2.5}$ emissions other (tpy)	SO_2 (tpy)	NOx (tpy)	VOCs (tpy)	NH_3 (tpy)
New Castle, DE	**Yes - other area**	**100**	**2,394**	**891**	**1,504**	**50,955**	**28,291**	**19,269**	**1,699**
Philadelphia, PA	**Yes**	**100**	**2,506**	**1,248**	**1,258**	**11,293**	**38,733**	**35,230**	**1,299**
Delaware, PA	**Yes**	**89**	**2,454**	**865**	**1,589**	**20,356**	**32,904**	**20,250**	**956**
Gloucester, NJ	**Yes**	**85**	**1,607**	**677**	**930**	**7,116**	**12,711**	**14,140**	**813**
Camden, NJ	**Yes**	**68**	**971**	**597**	**374**	**1,839**	**13,852**	**14,126**	**780**
Burlington, NJ	**Yes**	**32**	**1,960**	**1,137**	**822**	**3,368**	**15,570**	**20,312**	**980**
Chester, PA	**Yes**	**26**	**2,124**	**799**	**1,325**	**7,990**	**16,507**	**19,666**	**2,563**
Montgomery, PA	**Yes**	**24**	**2,597**	**1,118**	**1,477**	**5,411**	**23,306**	**37,216**	**1,535**
Bucks, PA	**Yes**	**11**	**2,022**	**876**	**1,146**	**3,951**	**16,792**	**26,241**	**1,834**
York, PA	Yes - other area	33	7,614	1,217	6,396	118,621	32,214	18,478	3,913
Salem, NJ	No	28	1,233	314	919	5,947	7,241	4,062	828
Atlantic, NJ	No	14	1,664	1,045	619	752	7,310	19,538	564
Cecil, MD	No	13	870	446	425	1,298	3,962	5,853	749
Cumberland, NJ	No	12	952	440	513	3,196	6,526	6,758	483
Lancaster, PA	Yes - other area	11	3,258	1,159	2,099	4,017	16,396	26,407	16,486
Mercer, NJ	Yes - other area	10	1,658	579	1,079	17,891	17,640	9,278	475
Berks, PA	Yes - other area	9	3,378	922	2,456	18,874	18,086	19,117	4,653
Harford, MD	Yes - other area	9	1,769	879	890	2,307	7,310	10,512	967
Kent, DE	No	7	1,014	435	580	4,478	9,088	6,301	1,803
Ocean, NJ	No	5	1,540	993	547	1,060	9,578	25,720	569
Northampton, PA	Yes - other area	4	5,222	665	4,556	60,396	24,620	10,960	807
Middlesex, NJ	Yes - other area	3	1,549	951	598	3,129	29,172	28,056	1,257
Kent, MD	No	2	443	162	282	471	1,002	2,225	1,050
Lehigh, PA	Yes - other area	2	1,328	501	828	3,749	11,503	13,369	904
Monmouth, NJ	Yes - other area	2	1,506	989	517	1,789	16,771	20,744	1,345
Queen Anne's, MD	No	2	659	261	398	479	2,076	3,290	1,365
Hunterdon, NJ	No	1	769	454	316	556	3,882	5,053	395
Somerset, NJ	Yes - other area	1	801	451	349	577	7,886	9,823	532
Warren, NJ	Yes - other area	0	1,105	588	517	563	5,088	5,468	747

As shown above in Table 1, both New Castle County, DE and Philadelphia County, PA have CES values of 100. While in 2005 these counties had similar $PM_{2.5}$ emissions, New Castle had much higher SO_2 emissions. York County, PA has the highest SO_2 emissions, but a moderate CES of 33. In addition, York County is part of the York nonattainment area for the 1997 $PM_{2.5}$ NAAQS and the 2006 $PM_{2.5}$ NAAQS. Northampton County, PA also has relatively high SO_2 emissions, but a low CES of four. This low CES is due partly to the fact that the prevailing winds in this part of Pennsylvania are from the southwest, and Northampton County is north of the Philadelphia-Wilmington area. Northampton County is part of the Allentown-Bethlehem-Easton nonattainment area for the 2006 $PM_{2.5}$ NAAQS.

Delaware County, PA and Gloucester County, NJ have the next highest CESs, at eighty-nine and eighty-five, respectively. Delaware County's emissions are considerably higher than Gloucester Counties. However, as shown in Figure 1, large point sources are located in Gloucester County, directly upwind of the violating monitors in Camden and Philadelphia Counties.

Camden County has a CES of sixty-eight. Of the counties in the Philadelphia-Wilmington nonattainment area, Camden County has the lowest emissions. However, it has a violating monitor.

Burlington and Salem Counties in New Jersey and Chester and Montgomery Counties in Pennsylvania have CES values between twenty and thirty-two. Of those four counties, Salem County has the second highest SO_2 emissions, but the lowest $PM_{2.5}$ total, $PM_{2.5}$ carbon, NOx, VOC, and NH_3 emissions. Burlington, Chester, and Montgomery Counties are in the Philadelphia-Wilmington nonattainment areas for the 1997 $PM_{2.5}$ NAAQS and the 2006 $PM_{2.5}$ NAAQS.

Of the remaining counties with CESs greater than ten, Lancaster County, PA and Mercer County, NJ are part of exiting nonattainment areas for the 1997 $PM_{2.5}$ NAAQS, the Lancaster and New York areas, respectively. Those counties are included in the same nonattainment areas for the 2006 $PM_{2.5}$ NAAQS.

Cecil County, MD (CES = 13) has lower total $PM_{2.5}$, carbon $PM_{2.5}$, SO_2, NOx, VOC, and NH_3 emissions than the counties in the Philadelphia-Wilmington nonattainment area for the 1997 $PM_{2.5}$ NAAQS and the 2006 $PM_{2.5}$ NAAQS. Atlantic County, NJ (CES = 14) has lower SO_2, NOx, and NH_3 emissions than the counties in the 1997 $PM_{2.5}$ NAAQS and the 2006 $PM_{2.5}$ NAAQS Philadelphia-Wilmington nonattainment area, but mid-range total $PM_{2.5}$ and VOC emissions, and high carbon $PM_{2.5}$ emissions.

Factor 2: Air quality data

This factor considers the 24-hour $PM_{2.5}$ design values micrograms per cubic meter (in $\mu g/m^3$) for air quality monitors in counties in the Philadelphia-Wilmington area based on data for the 2005-2007 period. A monitor's design value indicates whether that monitor attains a specified air quality standard. The 2006 24-hour $PM_{2.5}$ standard is met when the 3-year average of a monitor's 98^{th} percentile values is 35 $\mu g/m^3$ or less. A design value is only valid if minimum data completeness criteria are met.

The 24-hour $PM_{2.5}$ design values for counties in the Philadelphia-Wilmington area are shown in Table 2.

Table 2. Air Quality Data

County	State Recommended Nonattainment?	24-hr $PM_{2.5}$ Design Values, 2003-2005 ($\mu g/m^3$)	24-hr $PM_{2.5}$ Design Values, 2004-2006 ($\mu g/m^3$)	24-hr $PM_{2.5}$ Design Values, 2005-2007 ($\mu g/m^3$)
New Castle, DE	**Yes - other area**	**37**	**37**	**37**
Philadelphia, PA	**Yes**	**38**	**36**	**38**
Delaware, PA	**Yes**	**35**	**35**	**36**
Gloucester, NJ	**Yes**	**32**		
Camden, NJ	**Yes**	**39**	**37**	**38**
Burlington, NJ	**Yes**	**No monitor**		
Chester, PA	**Yes**			**37**
Montgomery, PA	**Yes**	**Incomplete data**		
Bucks, PA	**Yes**		**33**	**35**
York, PA	Yes - other area	41	37	37
Salem, NJ	No	No monitor		
Atlantic, NJ	No	No monitor		
Cecil. MD	No	33	30	30
Cumberland, NJ	No	No monitor		
Lancaster. PA	Yes - other area	44	39	40

Mercer, NJ	Yes - other area	36	34	
Berks, PA	Yes - other area	39	37	40
Harford, MD	Yes - other area	34	31	31
Kent, DE	No	32	32	32
Ocean, NJ	No	34	31	
Northampton, PA	Yes - other area	36	37	37
Middlesex, NJ	Yes - other area	38	34	
Kent, MD	No	No monitor		
Lehigh, PA	Yes - other area	36		
Monmouth, NJ	Yes - other area	No monitor		
Queen Anne's, MD	No	No monitor		
Hunterdon, NJ	No	No monitor		
Somerset, NJ	Yes - other area	No monitor		
Warren, NJ	Yes - other area		34	

New Castle County in Delaware and Philadelphia, Chester and Delaware Counties in Pennsylvania show violations of the 2006 24-hour $PM_{2.5}$ standard. Therefore, these counties are included in the Philadelphia-Wilmington nonattainment area for the 2006 $PM_{2.5}$ NAAQS. York County, Lancaster County, Berks County, and Northampton County in Pennsylvania also show a violation of the 2006 24-hour $PM_{2.5}$ standard. However, these counties are included in the other nonattainment areas for the 2006 $PM_{2.5}$ NAAQS.

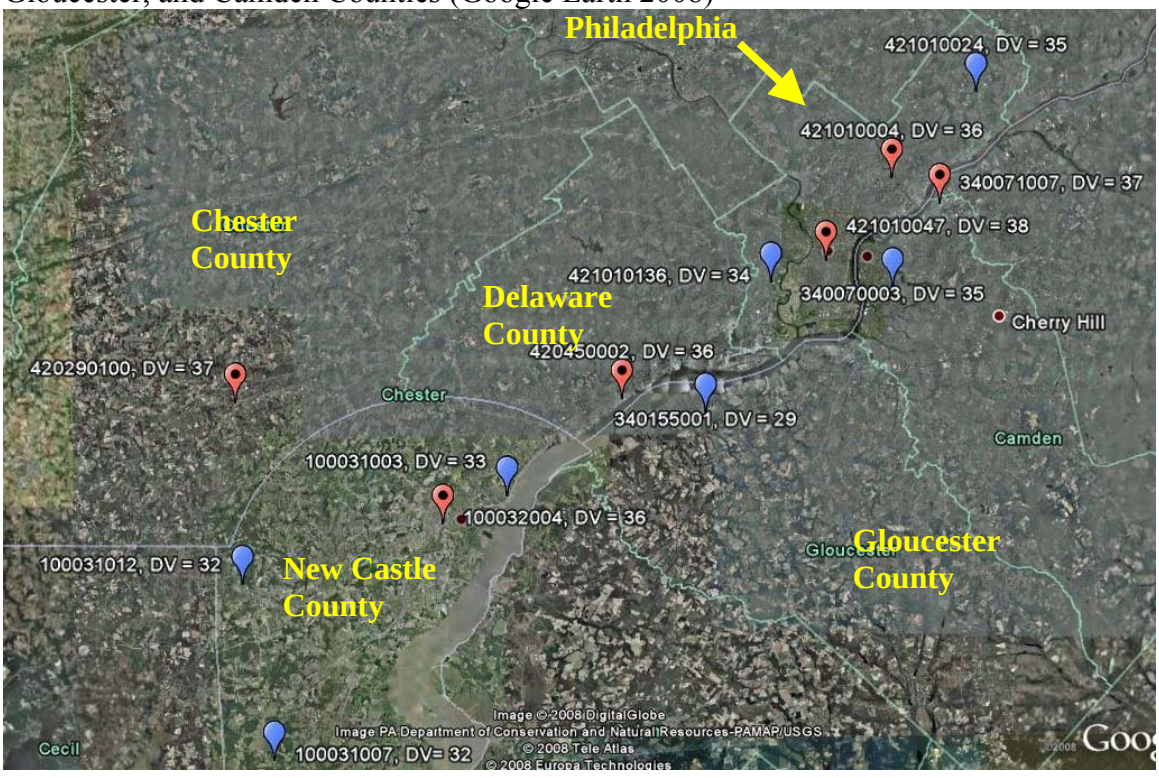
The State of Delaware recommended that New Castle County, which was included in the Philadelphia-Wilmington nonattainment area for the 1997 $PM_{2.5}$ NAAQS, not be included in the Philadelphia-Wilmington nonattainment area for the 2006 $PM_{2.5}$ NAAQS. Delaware's recommendation was based, in part, on monitoring data from counties surrounding New Castle County. In her December 18, 2007 recommendation letter, Governor Minner states that only one of the three monitors in New Castle County, the downtown Wilmington monitor known as the MLK monitor (located on Martin Luther King Boulevard in downtown Wilmington), shows a violation of the standard, and that monitors in Pennsylvania, Maryland, and New Jersey near New Castle County are not monitoring violations. "These other monitors are placed in areas which represent most of the compass, thereby "encircling" the MLK monitor with "clean" ones. Moreover, the closest monitor above the standard is in Center City Philadelphia (Broad Street), which is about 30 miles away from the MLK monitor."

Using 2004-2006 data, the monitors near New Castle County did meet the standard. However, considering 2005-2007 data, monitors in Chester and Delaware Counties in Pennsylvania, which border New Castle County, are violating the standard. Table 2.1 shows the 2004-2006 and 2005-2007 design values and locations for the air quality monitors in New Castle, Chester, Philadelphia, Gloucester, and Camden Counties. Figure 2 maps out the locations of those air quality monitors.

Table 2.1. Design Values in New Castle, Chester, Philadelphia, Gloucester & Camden Counties

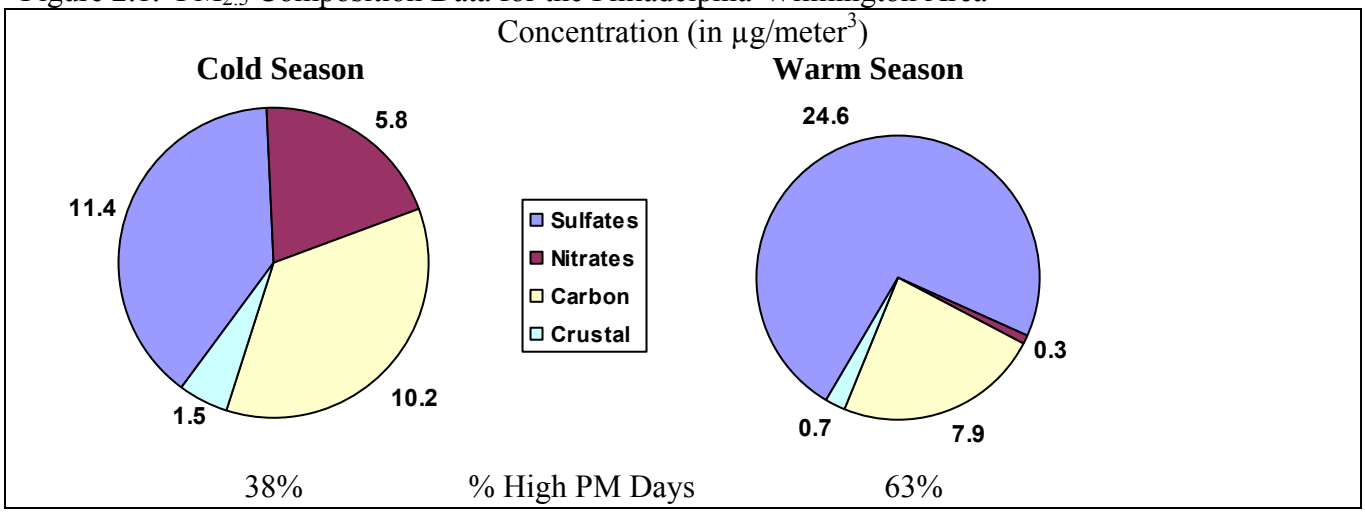
County, State	Monitor AQS ID	Location	2004 – 2006 Design Value µg/m^3	2005 – 2007 Design Value µg/m^3
New Castle, DE	100031003	River Road Park, Bellefonte	33	33
	100031007	Lums Pond State Park, Lums Pond	32	32
	100031012	Univ. De North Campus, Newark	32	32
	100032004	Mlk Blvd And Justison St., Wilmington	36	36
Chester, PA	420290100	New Garden Airport, Toughkenamon	35	37
Delaware, PA	420450002	Front St & Norris St, Chester	35	36
Philadelphia, PA	421010004	1501 E Lycoming Ave, Philadelphia	36	36
	421010024	Grant Ave & Ashton Rd, Philadelphia	35	35
	421010047	500 South Broad Street, Philadelphia	37	38
	421010136	5917 Elmwood Avenue, Philadelphia	33	34
Camden, NJ	340070003	Copewood & E. Davis Sts, Camden	36	35
	340071007	Morris-Delair Water Treatment Plant, Pennsauken	37	37
Gloucester, NJ	340155001	Gibbstown Municipal Bldg, 5, Gibbstown	29	29

Figure 2. Air Quality Monitors and 2005-2007 Design Values in New Castle, Chester, Philadelphia, Gloucester, and Camden Counties (Google Earth 2008)



Under this factor, we also consider fine particle composition monitoring data. Air quality monitoring data on the composition of fine particle mass are available from the EPA Chemical Speciation Network and the IMPROVE monitoring network. Analysis of these data indicates that the days with the highest fine particle concentrations occur in both the cold and warm seasons, but more often in the warm season. Figure 2.1 illustrates average concentrations of $PM_{2.5}$ components for both warm and cold season high $PM_{2.5}$ days. This data indicates that sources of SO_2, direct $PM_{2.5}$ carbon, and NOx emissions are key contributors to exceedances in the area.

Figure 2.1. $PM_{2.5}$ Composition Data for the Philadelphia-Wilmington Area



Note: Eligible monitors for providing design value data generally include State and Local Air Monitoring Stations (SLAMS) at population-oriented locations with an FRM monitor. All data from Special Purpose Monitors (SPM) using an FRM is eligible for comparison to the relevant NAAQS, subject to the requirements given in the October 17, 2006 Revision to Ambient Air Monitoring Regulations (71 FR 61236). All monitors used to provide data must meet the monitor siting and eligibility requirements given in 71 FR 61236 to 61328 in order to be acceptable for comparison to the 2006 24-hr $PM_{2.5}$ NAAQS for designation purposes.

Additionally, it is EPA's position that emissions from sources in New Castle County contribute to the nonattainment problem throughout the Philadelphia-Wilmington nonattainment area and therefore New Castle County should be included in the nonattainment area. *See, also*, our State and Tribal Comment Summary and Response Document in the Docket for this action.

Factor 3: Population density and degree of urbanization (including commercial development)

Table 3 shows the 2005 population for each county in the area being evaluated, as well as the population density for each county in that area. Population data gives an indication of whether it is likely that population-based emissions might contribute to violations of the 2006 24-hour $PM_{2.5}$ standard.

Table 3. Population

County	State Recommended Nonattainment?	2005 Population	2005 Population Density (pop/sq mi)
New Castle, DE	**Yes - other area**	**522,094**	**1077**
Philadelphia, PA	**Yes**	**1,456,350**	**10220**
Delaware, PA	**Yes**	**554,393**	**2910**
Gloucester, NJ	**Yes**	**277,037**	**823**
Camden, NJ	**Yes**	**515,381**	**2272**
Burlington, NJ	**Yes**	**449,148**	**548**
Chester, PA	**Yes**	**473,723**	**624**
Montgomery, PA	**Yes**	**774,666**	**1591**
Bucks, PA	**Yes**	**619,772**	**998**

York, PA	Yes - other area	408,182	449
Salem, NJ	No	66,054	190
Atlantic, NJ	No	270,318	444
Cecil, MD	No	97,474	257
Cumberland, NJ	No	152,905	304
Lancaster, PA	Yes - other area	489,936	499
Mercer, NJ	Yes - other area	366,070	1601
Berks, PA	Yes - other area	396,236	458
Harford, MD	Yes - other area	238,850	519
Kent, DE	No	143,462	240
Ocean, NJ	No	558,170	738
Northampton, PA	Yes - other area	287,334	762
Middlesex, NJ	Yes - other area	789,283	2487
Kent, MD	No	19,908	67
Lehigh, PA	Yes - other area	330,168	948
Monmouth, NJ	Yes - other area	634,841	1308
Queen Anne's, MD	No	45,469	115
Hunterdon, NJ	No	130,042	297
Somerset, NJ	Yes - other area	319,830	1049
Warren, NJ	Yes - other area	110,317	305

In general, the data above in Table 3 shows that the counties in the Philadelphia-Wilmington nonattainment area for the 1997 and 2006 $PM_{2.5}$ NAAQS have higher populations and population densities than the other counties in this analysis. Some exceptions are several counties that were included in other nonattainment areas for the 1997 $PM_{2.5}$ NAAQS and are included in those same nonattainment areas for the 2006 $PM_{2.5}$ NAAQS. Other counties with populations comparable to the counties in the existing Philadelphia-Wilmington $PM_{2.5}$ nonattainment area are Lehigh and Northampton Counties in Pennsylvania and Ocean County in New Jersey. Lehigh and Northampton Counties are included in the Allentown-Bethlehem-Easton nonattainment area for the 2006 $PM_{2.5}$ NAAQS.

In the December 18, 2007 recommendation letter, Governor Minner states that in 2006, Philadelphia's population density, 10,729, is almost nine times that of New Castle County, 1,234, and that population density does not necessarily reflect ambient concentrations of $PM_{2.5}$. Governor Minner goes on to compare population density in New Castle County with that of Philadelphia, Delaware, and Montgomery Counties where, considering 2004-2006 data, certain monitors were showing attainment. Delaware believes that based on this, population and population density data should not be given much weight in determining nonattainment area boundaries. It is important to note that EPA uses population data as one indicator of population-based emissions (i.e. area sources) that might contribute to nonattainment, including downwind nonattainment. As is clearly demonstrated in Factor 6, below, New Castle County is upwind of monitors in the Philadelphia area that have recorded violations of the 2006 24-hour $PM_{2.5}$ NAAQS.

Factor 4: Traffic and commuting patterns

This factor considers the number of commuters in each county who drive to another county within the Philadelphia-Wilmington area, the percent of total commuters in each county who commute to other counties within the Philadelphia-Wilmington area, as well as the total Vehicle Miles Traveled (VMT) for each county in millions of miles (see Table 4). A county with numerous commuters is generally an integral part of an urban area and is likely contributing to fine particle concentrations in the area.

Table 4. Traffic and Commuting Patterns

County	State Recommended Nonattainment?	2005 VMT (millions)	Number Commuting to any violating counties	Percent Commuting to any violating counties	Number Commuting into and within statistical area	Percent Commuting into and within statistical area
New Castle, DE	**Yes - other area**	**5,674**	**228,630**	**93**	**237,010**	**97**
Philadelphia, PA	**Yes**	**6,499**	**469,300**	**82**	**558,270**	**98**
Delaware, PA	**Yes**	**4,011**	**216,560**	**85**	**249,130**	**98**
Gloucester, NJ	**Yes**	**2,621**	**42,160**	**35**	**111,620**	**92**
Camden, NJ	**Yes**	**4,669**	**162,290**	**71**	**215,780**	**94**
Burlington, NJ	**Yes**	**4,902**	**46,850**	**23**	**174,000**	**84**
Chester, PA	**Yes**	**4,414**	**184,920**	**85**	**207,990**	**96**
Montgomery, PA	**Yes**	**7,527**	**101,460**	**27**	**365,750**	**96**
Bucks, PA	**Yes**	**5,250**	**44,390**	**15**	**261,390**	**86**
York, PA	Yes - other area	3,333	148,290	77	730	0
Salem, NJ	No	1,013	5,450	19	24,900	87
Atlantic, NJ	No	3,234	4,700	4	8,310	7
Cecil, MD	No	1,193	15,970	38	34,590	83
Cumberland, NJ	No	1,264	2,020	4	6,820	12
Lancaster, PA	Yes - other area	4,392	217,820	94	9,110	4
Mercer, NJ	Yes - other area	2,668	2,700	2	11,100	7
Berks, PA	Yes - other area	3,320	159,000	90	20,450	12
Harford, MD	Yes - other area	2,068	1,920	2	3,030	3
Kent, DE	No	1,435	6,370	11	6,710	11
Ocean, NJ	No	3,367	1,460	1	5,520	3
Northampton, PA	Yes - other area	2,399	99,860	80	3,730	3
Middlesex, NJ	Yes - other area	8,014	970	0	2,250	1
Kent, MD	No	219	680	8	970	11
Lehigh, PA	Yes - other area	3,374	133,030	90	10,210	7
Monmouth, NJ	Yes - other area	6,230	1,190	0	2,410	1
Queen Anne's, MD	No	758	230	1	260	1
Hunterdon, NJ	No	929	840	1	1,710	3
Somerset, NJ	Yes - other area	2,702	450	0	1,050	1
Warren, NJ	Yes - other area	1,342	2,450	5	230	1

The listing of counties on Table 4 reflects a ranking based on the number of people commuting to other counties. The counties that are in the nonattainment area for the 1997 $PM_{2.5}$ NAAQS are shown in boldface.

The above data in Table 4 indicates that the counties in the Philadelphia-Wilmington nonattainment area for the 1997 and 2006 $PM_{2.5}$ NAAQS have considerably more commuters into and within the Philadelphia-Wilmington area than all other counties in this analysis. For the most part, those counties also have higher VMT. Some exceptions are several counties that were included in other nonattainment areas for the 1997 $PM_{2.5}$ NAAQS and the 2006 $PM_{2.5}$ NAAQS. Other counties with VMT comparable to the counties in the existing Philadelphia-Wilmington $PM_{2.5}$ nonattainment area are Lehigh and Northampton Counties in Pennsylvania and Atlantic and Ocean Counties in New Jersey. Lehigh and Northampton Counties are included in the Allentown-Bethlehem-Easton nonattainment area for the 2006 $PM_{2.5}$ NAAQS. Atlantic and Ocean Counties have very few commuters into the Philadelphia-Camden-Wilmington metropolitan statistical area (MSA). (See Table 4.)

In her December 18, 2007 recommendation letter, Governor Minner states that in less than one percent of the commuters into Philadelphia-Wilmington area from New Castle County, and that many of these commuters are likely to use public transportation. The Southeastern Pennsylvania Transportation Authority (SEPTA) serves commuters from the Bucks, Chester, Delaware, Montgomery, Philadelphia and New Castle Counties, and brings many of them into Center City Philadelphia. The Port Authority Transit Corporation (PATCO) brings commuters from southern New Jersey into Center City Philadelphia. EPA believes that, as a general matter, it is likely that commuters from most counties in the Philadelphia-Wilmington nonattainment area rely heavily on public transportation. Over 237,000 New Castle County commuters work within the Philadelphia statistical area, including New Castle County. Of the nine counties in the Philadelphia-Wilmington nonattainment, New Castle County has the fifth highest number of commuters into and within the statistical area. Therefore, this commuting data did not weigh heavily in EPA's decision to include New Castle County in the Philadelphia-Wilmington nonattainment area for the 2006 $PM_{2.5}$ NAAQS.

Governor Minner goes on to compare VMT in New Castle County with that of Philadelphia, stating that VMT are similar, yet New Castle County has three of its four monitors showing attainment. As with population data, EPA considers VMT as one indicator of emissions that might contribute to nonattainment, including downwind nonattainment. As shown in Factor 6, below, New Castle County is directly upwind of monitors in the Philadelphia area that have recorded violations of the 2006 24-hour $PM_{2.5}$ NAAQS.

Note: The 2005 VMT data used for Tables 4 and 5 of the technical analysis have been derived using methodology such as that described in "Documentation for the 2005 Mobile National Emissions Inventory, Version 2," December 2008, prepared for the Emission Inventory Group, U.S. EPA. This document may be found at: ftp://ftp.epa.gov/EmisInventory/2005_nei/mobile_sector/documentation/2005_mobile_nei_version_2_report.pdf

Factor 5: Growth rates and patterns

This factor considers population growth for 2000-2005 and growth in vehicle miles traveled for 1996-2005 for counties in the Philadelphia-Wilmington area, as well as patterns of population and VMT growth. A county with rapid population or VMT growth is generally an integral part of an urban area and likely to be contributing to fine particle concentrations in the area.

Table 5 below shows population, population growth, VMT and VMT growth for counties that are included in the Philadelphia-Wilmington area.

Table 5. Population and VMT Values and Percent Change

Location	Population (2005)	Population % change (2000 - 2005)	2005 VMT (1000s mi)	VMT % change (1996 - 2005)
New Castle, DE	**522,094**	**4**	**5,674**	**25**
Philadelphia, PA	**1,456,350**	**(4)**	**6,499**	**(31)**
Delaware, PA	**554,393**	**1**	**4,011**	**24**
Gloucester, NJ	**277,037**	**8**	**2,621**	**26**
Camden, NJ	**515,381**	**2**	**4,669**	**17**
Burlington, NJ	**449,148**	**6**	**4,902**	**43**
Chester, PA	**473,723**	**9**	**4,414**	**54**

Montgomery, PA	**774,666**	**3**	**7,527**	**73**
Bucks, PA	**619,772**	**3**	**5,250**	**49**
York, PA	408,182	7	3,333	6
Salem, NJ	66,054	3	1,013	50
Atlantic, NJ	270,318	7	3,234	54
Cecil, MD	97,474	13	1,193	10
Cumberland, NJ	152,905	4	1,264	24
Lancaster, PA	489,936	4	4,392	21
Mercer, NJ	366,070	4	2,668	(22)
Berks, PA	396,236	6	3,320	11
Harford, MD	238,850	9	2,068	0
Kent, DE	143,462	13	1,435	5
Ocean, NJ	558,170	9	3,367	5
Northampton, PA	287,334	7	2,399	21
Middlesex, NJ	789,283	5	8,014	56
Kent, MD	19,908	3	219	42
Lehigh, PA	330,168	6	3,374	34
Monmouth, NJ	634,841	3	6,230	37
Queen Anne's, MD	45,469	11	758	81
Hunterdon, NJ	130,042	6	929	(42)
Somerset, NJ	319,830	7	2,702	39
Warren, NJ	110,317	7	1,342	2

The data above in Table 5 show that while most counties in this analysis have experienced modest increases in population from 2000 to 2005, only Philadelphia has lost population in that same time period. Philadelphia's population is still much higher than any other county in this analysis. Similarly, most counties saw increased VMT from 1996 to 2005. VMT decreased in only three counties, Philadelphia County, PA, Mercer County, NJ and Hunterdon County, NJ. Philadelphia County's VMT is still higher than most counties in this analysis.

In Delaware's December 18, 2007 designation recommendation letter, Governor Minner states that New Castle County has a "moderate" population growth rate, and compares that rate to counties such as Gloucester which are monitoring attainment. Governor Minner also compares New Castle County's VMT growth to that of Gloucester County, which is monitoring attainment. While population in Gloucester County has increased at a similar rate to New Castle County from 2002 to 2006, the 2005 population in New Castle County is nearly twice that of Gloucester County. From 2002 to 2005, VMT increased in Gloucester County has by a greater percentage than in New Castle County. However, in 2005, New Castle County's VMT is more than twice that of Gloucester County. (See Tables 5.2 and 5.3, below.) Further discussion in response to Delaware's position that New Castle County should not be included in the Philadelphia-Wilmington nonattainment area is included in our State and Tribal Comment Summary and Response Document in the Docket for this action.

Table 5.2. Population Growth 2002-2006, from Delaware's 12/18/2007 recommendation letter

County	2006 pop	Pop 02-06 (% change)[14]	Design Value
Chester	482,112	11.2	35
Gloucester	282,031	10.3	28
Burlington	450,627	6.4	Na
New Castle	525,587	5.4	36
Bucks	623,205	4.3	33
Montgomery	775,688	3.6	32
Camden	517,001	1.8	36
Delaware	555,996	0.7	35
Philadelphia	1,448,394	-4.6	38

Table 5.3. VMT Growth 2002-2005, from Delaware's 12/18/2007 recommendation letter

County	2005	2002	02-'05 % Increase
Gloucester	7,431	6,956	6.4%
Burlington	13,365	12,582	5.9%
New Castle	15,286	14,626	4.3%
Delaware	10,181	9,746	4.3%
Philadelphia	16,316	15,775	3.3%
Camden	10,855	10,543	2.9%
Montgomery	19,110	18,675	2.3%
Bucks	13,696	13,487	1.5%
Chester	11,832	11,653	1.5%

Factor 6: Meteorology (weather/transport patterns)

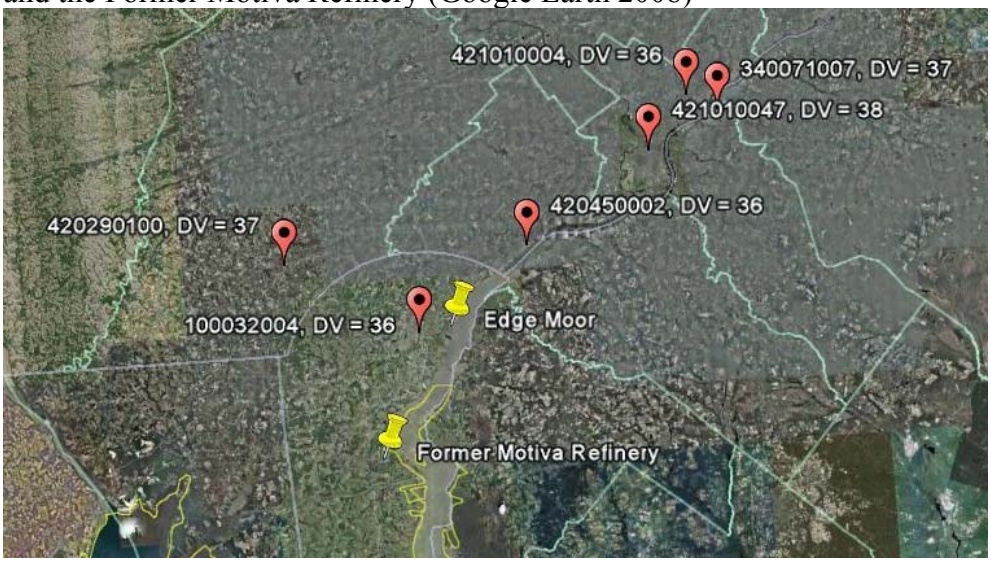
For this factor, EPA considered data from National Weather Service instruments and other meteorological monitoring sites in the area. Wind direction and wind speed data for 2005-2007 were analyzed, with an emphasis on "high $PM_{2.5}$ days" for each of two seasons (an October-April "cold" season and a May-September "warm" season). These high days are defined as days where any FRM air quality monitors had 24-hour $PM_{2.5}$ concentrations above 95% on a frequency distribution curve of $PM_{2.5}$ 24-hour values.

For each air quality monitoring site, EPA developed a "pollution rose" to understand the prevailing wind direction and wind speed on the days with highest fine particle concentrations. The figures identify 24-hour $PM_{2.5}$ values by color; days exceeding 35 ug/m3 are denoted with a red or black icon. A dot indicates the day occurred in the warm season; a triangle indicates the day occurred in the cool season. The center of the figure indicates the location of the air quality monitoring site, and the location of the icon in relation to the center indicates the direction from which the wind was blowing on that day. An icon that is close to the center indicates a low average wind speed on that day. Higher wind speeds are indicated when the icon is further away from the center.

In Delaware's December 18, 2007 designation recommendation letter, Governor Minner stated that wind roses show Philadelphia's upwind sources come from southern New Castle County, where one significant source (the former Motiva refinery) has been controlled. (See Factor 9)
Governor Minner also stated that the Delaware Department of Natural Resources and Environmental Protection (DNREC) believes that the monitored nonattainment at the New Castle, Camden, and Philadelphia monitors is due to long range transport and local sources, and not transport within the Philadelphia MSA. In other words, it is the State of Delaware's position that emissions from New Castle County do not contribute to nonattainment in other parts of the Philadelphia-Wilmington area.

Figure 6 shows the six violating monitors in the Philadelphia-Wilmington area, and includes two sources of SO_2 and NOx in New Castle County: the former Motiva refinery in Delaware City and the Edge Moor power plant in Wilmington. As shown in Factor 9, emissions from the former Motiva refinery have been greatly reduced since 2005, but in 2007 the facility still emitted close to 3000 tons of SO_2 and 3000 tons NO_2. The Edge Moor power plant had nearly 8000 tons of SO_2 emissions and over 2,200 tons of NOx emissions in 2006.

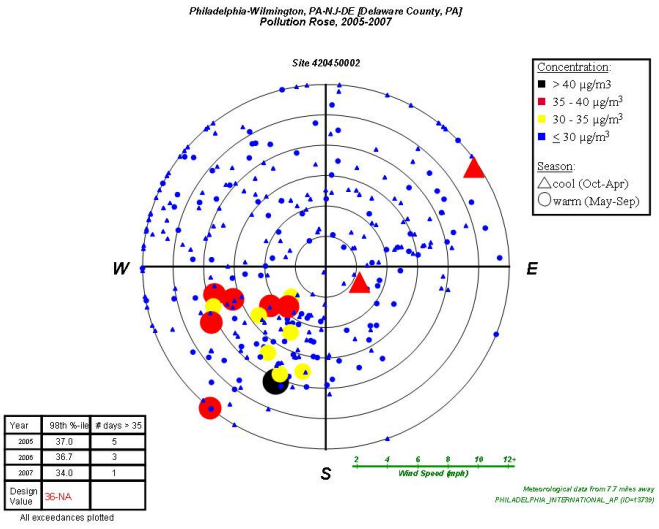
Figure 6. Violating Monitors in the Philadelphia-Wilmington Area and the Edge Moor Power Plant and the Former Motiva Refinery (Google Earth 2008)



The pollution roses below for Delaware, Chester, Camden, and Philadelphia Counties show that, on high $PM_{2.5}$ days (days with monitored $PM_{2.5}$ values greater than 35 $\mu g/m^3$), winds are generally from the southwest. These pollution roses indicate that violating monitors in the Philadelphia-Wilmington area are downwind of both northern and southern New Castle County. (See Figures 6.1 through 6.7)

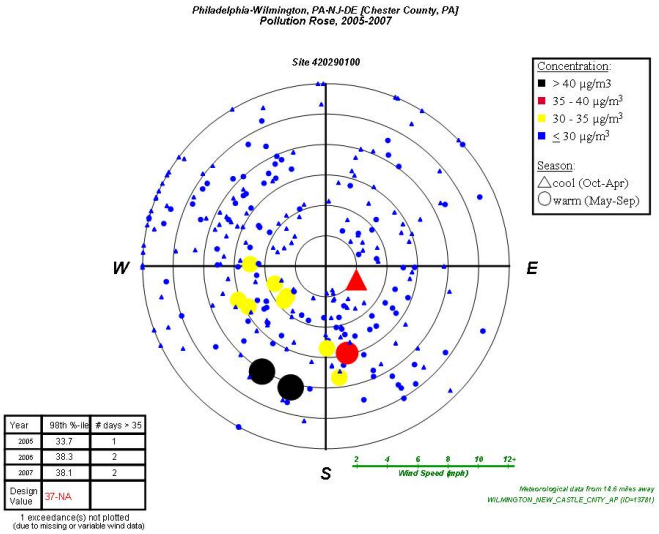
The pollution rose below for the Delaware County monitor, Figure 6.1, indicates that for most high $PM_{2.5}$ days, winds are from the southwest, demonstrating an influence from northern New Castle County and other areas further southwest. Occasional high days show winds from the east and northeast.

Figure 6.1. Pollution Trajectory Plot for Delaware County, PA
(Site 42-045-0002)



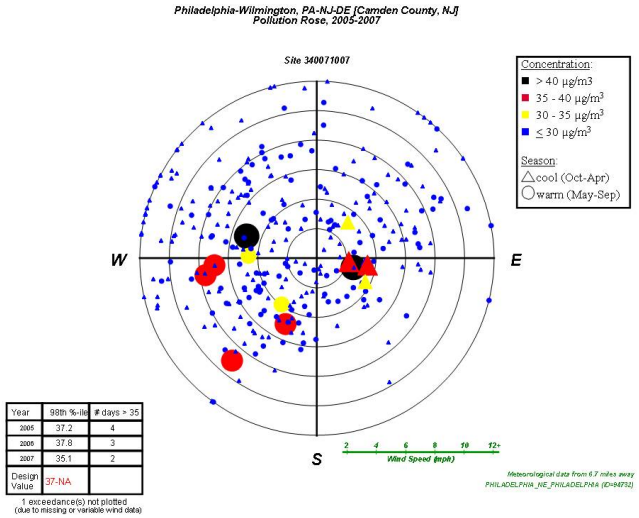
High $PM_{2.5}$ days at the Chester County monitor are from the south-southwest, southeast, and south-southeast. Winds from the southeast and south-southeast would pass through New Castle County. (See Figure 6.2.)

Figure 6.2. Pollution Trajectory Plot for Chester County, PA
(Site 42-029-0100)



The following pollution rose, Figure 6.3, shows that high $PM_{2.5}$ days at the Camden County monitor are from the predominantly from the west and southwest, indicating that Philadelphia, Delaware, and New Castle Counties are impacting this monitor. Occasional high days show winds from the east.

Figure 6.3. Pollution Trajectory Plot for Camden County, NJ
(Site 34-007-1007)



The two Philadelphia monitors below show winds from the southwest and west on most high $PM_{2.5}$ days. However, the Center City Philadelphia monitor (421010047, 500 South Broad Street) shows occasional high days from the east. The monitor further north in Philadelphia (421010004, 1501 E Lycoming Ave.) shows occasional high days with winds from the west. (See Figures 6.4 and 6.5.)

Figure 6.4. Pollution Trajectory Plot for Philadelphia County, PA
(Site 42-101-0047)

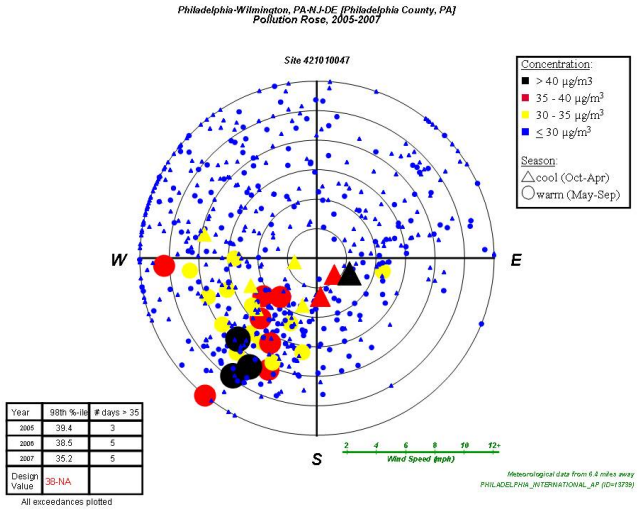
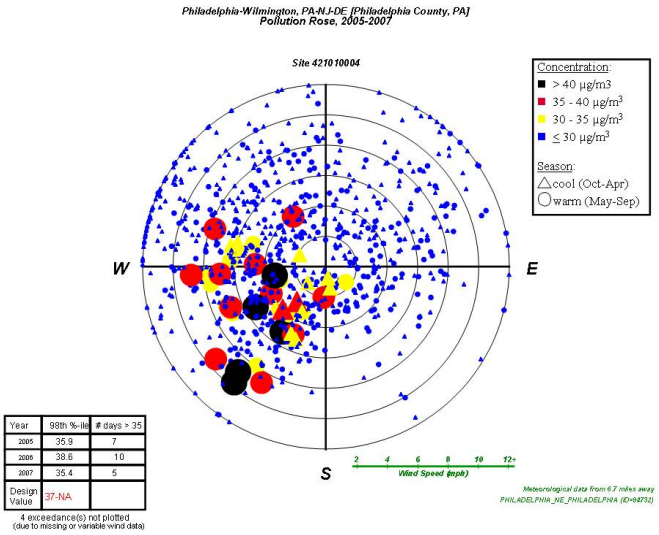


Figure 6.5. Pollution Trajectory Plot for Philadelphia County, PA
(Site 42-101-0004)



In her December 18, 2007 designation recommendation letter, Governor Minner of Delaware stated that nonattainment in New Castle County is a localized issue, within the county itself. Local mobile source emissions near the downtown Wilmington monitor (the MLK monitor), including traffic on MLK Boulevard and Interstate I-95, a large bus depot, and the CSX/Norfolk Southern Railroad, are cited the cause of the nonattainment problem. (See Figure 6.6.) A local component is evident in the pollution rose for the downtown Wilmington monitor, which shows some high $PM_{2.5}$ days with low to moderate speed winds from all points of the compass. (See Figure 6.7.)

However, the similar local emission sources can be cited for the violating monitors in Philadelphia, Chester, and Camden Counties, which are also located near interstate highways. The Philadelphia monitors are located in highly urbanized areas, with traffic congestion. Furthermore, Figure 6.7 also shows prevailing southwesterly winds, which are typical in the Philadelphia-Wilmington area and also imply that this air quality monitor is also affected by regional transport.

Figure 6.6. Photo of the Downtown Wilmington Monitor from Delaware's December 18, 2007 designation recommendation letter

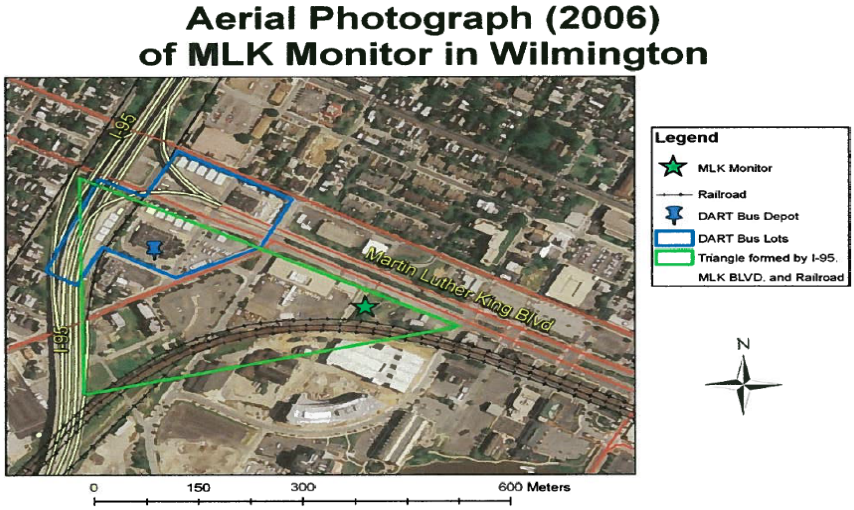
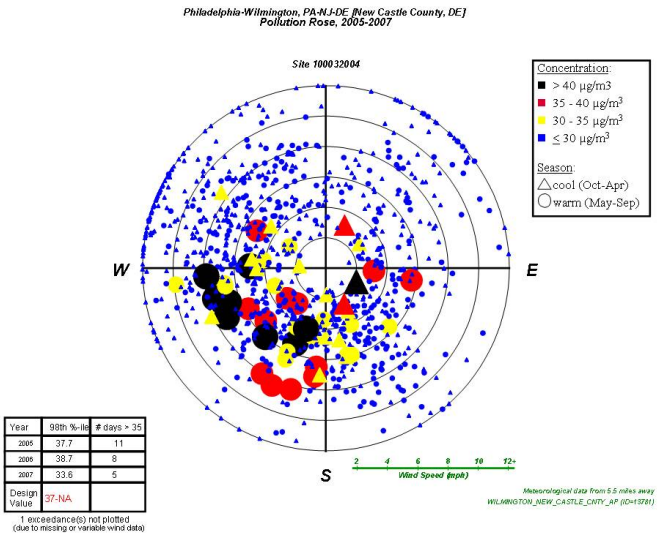


Figure 6.7. Pollution Trajectory Plot for Wilmington, New Castle County, DE (Site 10-003-2004)



In her recommendation letter, Governor Minner also stated that studies indicate that long range interstate transport of power plants sulfate emissions is the most significant contributor to $PM_{2.5}$ concentrations in Delaware and the Philadelphia MSA, and that emissions from the entire state of Delaware contribute little to concentrations in the Philadelphia area. EPA agrees that power plant emissions are a major contributor. In fact, there is a large power plant in New Castle County. In 2006, the Edge Moor facility in New Castle County had SO_2 emissions of nearly 8,000 tons and NOx emissions of over 2,200 tons.

Considering all the information set out above as well as in our State and Tribal Comment Summary and Response Document in the Docket for this action. EPA has determined that New Castle County contributes to the nonattainment problem at downwind monitors in the Philadelphia-Wilmington area.

Note: The meteorology factor is also considered in each county's Contributing Emissions Score because the method for deriving this metric included an analysis of trajectories of air masses for high $PM_{2.5}$ days.

Factor 7: Geography/topography (mountain ranges or other air basin boundaries)

The geography/topography analysis evaluates the physical features of the land that might have an effect on the air shed and, therefore, on the distribution of $PM_{2.5}$ over the Philadelphia-Wilmington area.

The Philadelphia-Wilmington area does not have any geographical or topographical barriers significantly limiting air-pollution transport within its air shed. Therefore, this factor did not play a significant role in the decision-making process.

Factor 8: Jurisdictional boundaries (e.g., existing $PM_{2.5}$ areas)

In evaluating the jurisdictional boundary factor, EPA gave special consideration to areas that were already designated nonattainment in 2005 for violating the 1997 fine particle standards. Analysis of chemical composition data in these areas indicates that the same components that make up most of the $PM_{2.5}$ mass in the area on an annual average basis (such as sulfate and direct $PM_{2.5}$ carbon in many eastern areas) also are key contributors to the $PM_{2.5}$ mass on days exceeding the 2006 24-hour $PM_{2.5}$ standard. These data indicate that in many cities, the same source categories that contribute to violations of the annual standard also contribute to exceedances of the 2006 24-hour standard.

Most areas that were originally designated nonattainment for the $PM_{2.5}$ standards still have not attained the standards. Thus, EPA has generally concluded that counties that were designated as having emissions sources contributing to fine particle concentrations which continue to exceed the 1997 standards (all areas violated the annual standard, three also violated the previous 24-hour standard) also contribute to fine particle concentrations on the highest days. For this reason, EPA believes that for most existing nonattainment areas, the nonattainment area for the 2006 24-hour standard should be the same. Consideration also should be given to existing boundaries and organizations as they may facilitate air quality planning and the implementation of control measures to attain the standard. Areas already designated as nonattainment represent important boundaries for state air quality planning.

The major jurisdictional boundaries in the Philadelphia-Wilmington area are the state lines between Pennsylvania, Delaware, and New Jersey. Air-quality monitors that violate the 2006 $PM_{2.5}$ NAAQS in the Philadelphia-Wilmington area are located in Pennsylvania, Delaware, and New Jersey. However, the Delaware Valley Regional Planning Commission (DVRPC), the metropolitan planning organization (MPO) in the Philadelphia area, serves Bucks, Chester, Delaware, Montgomery, and Philadelphia Counties in Pennsylvania, and Burlington, Camden, Gloucester, and Mercer Counties in New Jersey. New Castle County, DE is in a separate MPO, the Wilmington Area Planning Council (WILMAPCO). WILMAPCO is the Metropolitan Planning Organization for New Castle County, Delaware and Cecil County, Maryland.

On the other hand, areas designated as 8-hour ozone nonattainment areas are also important boundaries for state air quality planning. Bucks, Chester, Delaware, Montgomery, and Philadelphia Counties in Pennsylvania; New Castle, Kent, and Sussex Counties in Delaware; Cecil County, Maryland; and Atlantic, Burlington, Camden, Cape May, Cumberland, Gloucester, Mercer, Ocean, and Salem Counties in New Jersey were included in the Philadelphia-Wilmington-Atlantic City 8-hour ozone nonattainment area. Other counties included in this technical analysis are also designated as 8-hour ozone nonattainment areas, but are not associated with the Philadelphia-Wilmington area. To the degree appropriate, based upon violations and contributions to violations of the ozone and $PM_{2.5}$ NAAQS in a particular area, EPA believes it may be helpful for air planning purposes and for attainment of both NAAQS, for there to be some consistency between ozone and $PM_{2.5}$ nonattainment area boundaries. Comparison of ozone areas with potential $PM_{2.5}$ nonattainment areas, therefore, gives added weight to inclusion of New Castle County, DE in the Philadelphia-Wilmington nonattainment area.

In her December 18, 2007 designation recommendation letter, Governor Minner of Delaware states that New Castle County should be a nonattainment area separate from the Philadelphia area because Delaware did not develop a joint air quality plan for the 1997 $PM_{2.5}$ standard, and does not anticipate the need to do so for the 2006 $PM_{2.5}$ standard. Furthermore, Governor Minner states the regional planning organizations (RPOs) which include Delaware, Pennsylvania, and New Jersey are already

working together regarding visibility planning (regional haze) to reduce SO_2, NOx, and PM, and that joint efforts among the states would increase the administrative burden. Finally, Governor Minner states that Delaware will continue to actively interact with EPA and its RPOs, the Ozone Transport Commission (OTC), and the Mid-Atlantic/Northeast Visibility Union (MANE-VU).

New Castle County has historically been part of the Philadelphia nonattainment area for ozone (1-hour and 8-hour) and $PM_{2.5}$. Delaware, Pennsylvania, and New Jersey have a long history of working cooperatively through the OTC and MANE-VU and with ozone attainment planning. Therefore, EPA does not anticipate that including New Castle County as part of the Philadelphia nonattainment area for the 2006 $PM_{2.5}$ NAAQS will be an undue burden on Delaware. *See, also* our State and Tribal Comment Summary and Response Document in the Docket for this action

Factor 9: Level of control of emission sources

Under this factor, the existing level of control of emission sources is taken into consideration. The emissions data used by EPA in this technical analysis and provided in Table 1 (under Factor 1) represent emissions levels taking into account any control strategies implemented in the Philadelphia-Wilmington area before 2005 on stationary, mobile, and area sources. Data are presented for $PM_{2.5}$ components that are directly emitted (carbonaceous $PM_{2.5}$ and crustal $PM_{2.5}$) and for pollutants which react in the atmosphere to form fine particles (e.g. SO_2, NOx, VOC, and ammonia).

In considering county-level emissions, EPA used data from the 2005 National Emissions Inventory, the most updated version of the national inventory available at the beginning of the designations process in late 2007. However, EPA recognized that for certain counties, emissions may have changed since 2005. For example, certain power plants or large sources of emissions in or near this area may have installed emission controls or otherwise significantly reduced emissions since 2005. Some States provided updated information on emissions and emission controls in their comments to EPA. EPA considered such additional information in making final designation decisions.

With regard to nearby power plants, EPA considered information about whether a specific plant installed federally enforceable emission controls by December 2008 resulting in significant emissions reductions. A control requirement is considered to be federally-enforceable if it is required by a State regulation adopted in a State implementation plan, if it is included in a federally-enforceable Title V operating permit, or if it is required by a consent decree which also requires the controls to be included in federally enforceable permit upon termination of the consent decree. In making final decisions, EPA also considered whether a facility would continue to emit pollutants which contribute to $PM_{2.5}$ exceedances even after emission controls are operational.

In her December 18, 2007 recommendation letter, Governor Minner of Delaware stated that between 2000 and 2012, New Castle County will achieve a 75% reduction in SO_2 emissions and a 62% reduction in NOx emissions due to state and federal programs, and projects that in 2012 the county will have the second highest emissions in the Philadelphia-Wilmington area. However, EPA is only considering controls in place and federally enforceable at the time of designation, i.e., by 2008. Therefore, these planned controls are not being considered in this analysis. *See, also* our State and Tribal Comment Summary and Response Document in the Docket for this action.

In New Castle County, DE, the former Motiva Enterprises' Delaware City Refinery has reduced its emissions since 2005. (See Table 9) Under a 2001 consent decree (CD), Motiva Enterprises'

Delaware City Refinery was required to install emission controls on two if its processes, a fluid catalytic cracking unit, which breaks apart petroleum molecules so they can be refined into fuels, and the fluid coker unit, which then captures dirty, heavier materials for secondary processing into products like asphalt. Scrubbers were required on both units to reduce SO_2 emissions. The CD required Motiva to have the controls in place by 2006. Regenerative wet gas scrubbers are currently operating on the fluid catalytic cracking unit and fluid coker unit.

Table 9. Former Motiva Refinery Emissions, 2002 to 2007

Year	SO_2	NO_2	PM-Con	$PM_{2.5}$-Fil	PM_{10}-Fil	CO	VOC	NH_3
2002	34,096.5	3,534.8	89.9	1,218.2	1,291.3	3,857.9	829.9	43.0
2003	34,149.7	3,403.8	94.7	1,008.3	1,037.5	6,448.1	596.3	19.9
2004	27,533.8	3,459.6	417.3	5.6	1,187.1	9,692.6	698.1	102.4
2005	26,476.1	2,954.3	430.2	32.9	640.4	4,021.4	662.9	28.1
2006	25,988.6	2,921.6	91.2	0.4	849.6	3,048.2	334.5	7.8
2007	2,937.9	2,838.9	98.7	-	399.5	2,612.4	266.8	17.4

Note: Data was rounded to the nearest tenth

Source: This data was obtained from the following letters, which DNREC supplied to EPA.

- 5/6/2003 letter from Franklin R. Wheeler, Refinery Manager, Motiva Enterprises LLC to the DNREC Air Quality Management Section, transmitting the Annual Emissions Inventory for 2002 summarizing emissions from the Motiva Enterprises' Delaware City Refinery, modified by letter dated 1/8/2004 from E.M, Piovoso, Motiva Enterprises LLC
- 10/26/2004 letter from Berta Molina, Manager, Regulatory Affairs, Motiva Enterprises LLC to the DNREC Air Quality Management Section, transmitting the Annual Emissions Inventory for 2003 summarizing emissions from the former Motiva Enterprises' Delaware City Refinery
- 4/27/2005 letter from Cathe Kalisz, Environmental Manager, Premcor Refining Group, Inc., to the DNREC Air Quality Management Section, transmitting the 2004 Annual Air Emissions Inventory and Emissions Statement Report for the Premcor Refining Group Inc. – Delaware City Refinery and modified by hand on 9/8/2005 per "Data Base"
- 5/31/2006 letter from Cathe Kalisz, Staff Environmental Engineer, Valero Delaware City Refinery, to the DNREC Air Quality Management Section, transmitting the 2005 Annual Air Emissions Inventory and Emissions Statement Report for the Premcor Refining Group Inc. – Delaware City Refinery
- 4/30/2007 letter from Scott Mesavitz, Associate Environmental Engineer, Valero Delaware City Refinery, to the DNREC Air Quality Management Section, transmitting the 2006 Annual Air Emissions Inventory and Emissions Statement Report for the Premcor Refining Group Inc. – Delaware City Refinery
- 4/29/2008 letter from Cathe Kalisz, Staff Environmental Engineer, Valero Delaware City Refinery, to the DNREC Air Quality Management Section, transmitting the 2007 Annual Air Emissions Inventory and Emissions Statement Report for the Premcor Refining Group Inc. – Delaware City Refinery

Note: In 2004, Premcor Inc. purchased the Delaware City refining complex from Motiva Enterprises LLC. In 2005, Valero Energy Corporation purchased Premcor, Inc.

As shown above in Table 9, SO_2 emissions at the former Motiva refinery were reduced from 26,476.1 tons in 2005 to 2,937.9 tons in 2007. This 23,538.2 ton reduction brings the New Castle County emissions in Table 1 (Factor 1) from 50,955 tons to 27,417 tons. Thus, even with this reduction, New Castle County's SO_2 emissions are still the highest of all the counties in the Philadelphia-Wilmington nonattainment area for the 1997 $PM_{2.5}$ NAAQS. Furthermore, in 2007, the former Motiva refinery still emitted had 2,937.9 tons of SO_2 emissions (more than all of Camden County) and 2,838.9 tons of NO_2.

Table 9.1, below, shows emissions and controls (current and projected) for EGUs with SO_2 plus NO_x emissions greater than 5000 tons. Data was obtained from the 2006 National Electric Energy Data System (NEEDS) database. With the exception of the Brunner Island facility in York County, which

has a projected date of 2008 for a scrubber on one of its three units, none of the EGUs in the counties in the Philadelphia-Wilmington nonattainment area for the 1997 $PM_{2.5}$ NAAQS put control in place between 2005 and 2008. Therefore, the level of control of EGUs is not a major factor in this analysis.

Table 9.1. EGUs with SO_2 plus NO_x emissions > 5000 tons, from the 2006 NEEDS EGU database

County	Plant Name	Plant Type	Unique ID Final	2006 SO_2	2006 NOx	Scrubber Online Year	Scrubber Efficiency	SCR Online Year	Capacity MW
New Castle, DE	Edge Moor	Coal Steam	593_B_4	5,671	1,485				174.0
			593_B_3	2,072	600				86.0
			593_B_5	239	179				445.0
Philadelphia, PA	Schuylkill Generating Station	Oil/Gas Steam	3169_B_1	95	43				166.0
Delaware, PA	Chester Operations	Coal Steam	50410_B_10						
	Eddystone Generating Station	Coal Steam	3161_B_2	2,811	2,519		91.6		36.0
			3161_B_1	3,240	2,701	1983	93.2		309.0
			3161_B_3	217	101	1982	93.2		279.0
			3161_B_4	186	88				380.0
Gloucester, NJ	Logan Generating Plant	Coal Steam	10043_B_B01	0	1,169	1994	93.0	2000	219.0
Chester, PA	Cromby Generating Station	Coal Steam	3159_B_1	3,435	1,581	1982	93.8		48.0
			3159_B_2	178	112				201.0
			3159_B_FB1	3,435	1,581		89.0		48.0
			3159_B_FB2	3,435	1,581		89.0		48.0
York, PA	P H Glatfelter	Coal Steam	50397_B_5PB036				91.6		36.1
	PPL Brunner Island	Coal Steam	3140_B_3	45,447	6,288	2008	95.0		749.0
			3140_B_2	26,606	3,600	2009	95.0		378.0
			3140_B_1	21,492	2,866	2009	95.0		321.0
Salem, NJ	Chambers Cogeneration LP	Coal Steam	10566_B_BOIL2	0	771	1994	87.6	1994	131.0
			10566_B_BOIL1	0	758	1994	93.0	1994	131.0
	Deepwater	Coal Steam	2384_B_8	1,503	732				80.0
		Oil/Gas Steam	2384_B_1	0	18				86.0
Mercer, NJ	PSEG Mercer Generating Station	Coal Steam	2408_B_1	7,520	1,695	2010	90.0	2004	315.3
			2408_B_2	6,997	2,196	2010	90.0	2004	309.9
Berks, PA	Titus	Coal Steam	3115_B_3	4,718	708				81.0
			3115_B_1	4,666	699				81.0
			3115_B_2	3,954	589				81.0
Kent, DE	McKee Run	Oil/Gas Steam	599_B_3	51	40				103.0
Northampton, PA	Northampton Generating Company	Coal Steam	50888_B_BLR1	0	422		91.6		112.0
	Portland	Coal Steam	3113_B_2	18,187	2,207				243.0
			3113_B_1	12,497	1,144				157.0

County	Plant Name	Plant Type	Unique ID Final	2006 SO_2	2006 NOx	Scrubber Online Year	Scrubber Efficiency	SCR Online Year	Capacity MW
	PPL Martins Creek	Oil/Gas Steam	3148_B_3	502	434				850.0
			3148_B_4	351	261				820.0
	Foster Wheeler Mt Carmel Cogen	Coal Steam	10343_B_SG-101	492	246	1990	88.0		43.0
Middlesex, NJ	PSEG Sewaren Generating Station	Oil/Gas Steam	2411_B_4	29	66				116.0
			2411_B_3	26	33				105.0
			2411_B_2	13	17				101.0
			2411_B_1	12	9				95.0

Conclusion

Bucks, Chester, Delaware, Montgomery, and Philadelphia Counties in Pennsylvania and New Castle County in Delaware were included in the Philadelphia-Wilmington nonattainment area for the 1997 $PM_{2.5}$ NAAQS, along with Camden, Burlington, and Gloucester Counties in New Jersey. These counties (plus additional counties in Delaware, Maryland, and New Jersey) are also included in the Philadelphia-Wilmington-Atlantic City 8-hour ozone nonattainment area.

Air quality monitors in Philadelphia, Chester, Delaware, and New Castle Counties show violations of the 2006 24-hour $PM_{2.5}$ NAAQS, based on 2005-2007 data. Meteorological data shows that the predominant wind direction in the Philadelphia-Wilmington nonattainment area is from the southwest. This means that pollution from New Castle County, DE; Delaware County, PA; and Chester County, PA, as well as other areas further southwest, contribute to violations at the Philadelphia County, PA and Camden County, NJ air quality monitors, which are downwind, to their northeast.

Bucks, Chester, Delaware, Montgomery, Philadelphia, and New Castle Counties have higher emissions than most other nearby counties. One notable exception is York County, which is part of the York nonattainment area for the 1997 $PM_{2.5}$ NAAQS and the 2006 $PM_{2.5}$ NAAQS. Bucks, Chester, Delaware, Montgomery, Philadelphia, and New Castle Counties also contribute to the particulate matter concentrations in the Philadelphia-Wilmington nonattainment area through population-based emissions (e.g., vehicle emissions and other small area sources). These counties have higher populations, population densities, and VMT than the most other nearby counties. Bucks, Chester, Delaware, Montgomery, Philadelphia, and New Castle Counties also have considerably more commuters into and within the Philadelphia area than other nearby counties.

In December 2007, the State of Delaware recommended that New Castle County be a separate nonattainment area, and not be included in the Philadelphia-Wilmington area. However, in August 2008, based on EPA's technical analysis of the area, EPA recommended that New Castle County be designated as part of the Philadelphia-Wilmington nonattainment area. In response, the State of Delaware provided additional technical data and comments to EPA in a letter dated October 15, 2008 and in person at a meeting held at EPA Region III in Philadelphia on November 20, 2008. These comments and the additional information were submitted to support Delaware's recommendation that New Castle County should be designated as a single-county nonattainment area, separate from the Philadelphia-Wilmington nonattainment area. EPA evaluated this information and determined that the inclusion of New Castle County in the Philadelphia-Wilmington nonattainment area is appropriate.

For a more full response to each of the points raised by Delaware subsequent to our August 2008 technical analysis, see our State and Tribal Comment Summary and Response Document in the Docket for this action.

For the above stated reasons, EPA has designated Bucks, Chester, Delaware, Montgomery, and Philadelphia Counties in Pennsylvania and New Castle County in Delaware as part of the Philadelphia-Wilmington nonattainment area for the 2006 $PM_{2.5}$ NAAQS.

Additional information regarding responses to specific State comments can be found in EPA's Response to Comments document at http://www.epa.gov/pmdesignations/2006standards/tech.htm.

Attachments to the EPA Technical Analysis for the Philadelphia-Wilmington Area

- 5/6/2003 letter from Franklin R. Wheeler, Refinery Manager, Motiva Enterprises LLC to the DNREC Air Quality Management Section, transmitting the Annual Emissions Inventory for 2002 summarizing emissions from the Motiva Enterprises' Delaware City Refinery, modified by letter dated 1/8/2004 from E.M. Piovoso, Motiva Enterprises LLC

- 10/26/2004 letter from Berta Molina, Manager, Regulatory Affairs, Motiva Enterprises LLC to the DNREC Air Quality Management Section, transmitting the Annual Emissions Inventory for 2003 summarizing emissions from the former Motiva Enterprises' Delaware City Refinery

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Franklin R. Wheeler
Refinery Manager

MOTIVA
ENTERPRISES LLC

MAY 0 9 2003
1463

May 6, 2003
CMRRR# 7000 0600 0029 2933 6645

The Air Quality Management Section, DNREC
Attn: Emission Inventory Department
156 S. State St.
Dover, Delaware 19901

Dear Sirs/Madams:

This submittal represents the Annual Emission Inventory for 2002 summarizing emissions from Motiva Enterprises' Delaware City Refinery. Included, as part of the submittal, is one disk labeled as follows:

- Motiva Enterprises – Delaware City Refinery - Emission Inventory 2002, Tanks and Water8

Attachment 1 is a summary of the facility emissions including the signed certification statement.

Starting in 1999, the Department requested that HAP emissions be included as part of the Annual Emission Inventory. This type of information is reported as part of the TRI submittal for the Delaware City refinery. The TRI must be submitted by July 1, 2003 for the year 2002. When the HAP emissions estimates are completed for TRI reporting this information will also be supplied to you.

The following comments are offered regarding the 2002 submittal;

Flaring emissions – The refinery flare gas system is equipped with two flare gas recovery compressors. Gases that are vented to the flare system are recovered and returned to the refinery fuel gas system. When the amount of material vented to the flare system exceeds the capacity of the flare gas recovery compressors, a flaring event occurs. Emissions from the pilot gases on the flares are included under the process "Flare". Emissions associated with the gases flared are included under the process "Accidental Releases"

NO_X Controls on the Repowering Combustion Turbines (CTs) – The method of controlling NO_X on the CTs is dependent on the type of fuel combusted. Steam injection is used for NO_X control for operation on low sulfur diesel. Nitrogen quench is used for NO_X control for syn gas operation.

Ammonia Emissions – The major sources of ammonia emissions are the Fluid Coker and the Fluid Catalytic Cracker. Although these emissions have been reported in the TRI for previous years, ammonia emissions are included for the first time in the 2002 emission inventory.

Several additional potential sources of ammonia emissions were reviewed and were not included because they are relatively insignificant. The Precombustor combusts waste gas ammonia. It is equipped with SNCR controls. The exhaust from the Precombustor goes to process heater 21-H-701. Based on in-house technical guidance for combustion equipment, a combustion efficiency of 99% is applied to this process heater. Potential ammonia emissions are estimated to be approximately 25 pounds per year.

Evaporative ammonia emissions at the Waste Water Treatment Plant (WWTP) were also evaluated. These emissions are estimated to be approximately 18 pounds per year. Due to the low level of these ammonia emissions, neither source was included in the emission inventory.

Ammonia is injected into Crude Unit distillation column 21-C-2, and into various heat exchangers for pH control. The condensate containing ammonia is treated in the foul water system. There are no air emissions associated with this process.

Emission Factors - It appears that the emission factors used by the i-Steps software for the automatic calculation of pollutants for certain sources have changed from those used in past years. For VOC, PT, and CO emissions, these updated factors are 2 to 3 times greater than past factors. Motiva is concerned that the use of these revised factors may result in perceived non-compliances with annual permit limits for some sources due purely to a change in the method of calculation. Until this matter can be fully evaluated, Motiva will continue to use emission factors consistent with past emission inventory submittals.

Constant Information in i-Steps - Most information is erased by the Department each year prior to releasing the i-Steps software to reporting facilities. Some information such as tank capacities does not change from year to year. If this information were left intact, it would result in a substantial time saving.

If you have any questions regarding this information, please contact Ms. Betty Piovoso at (302) 834-6305.

Sincerely,

Franklin R. Wheeler
Refinery Manager

EMP/
Attachments

MOTIVA
ENTERPRISES LLC

RECEIVED
JAN 12 2004
5218
AIR QUALITY MGT.

January 8, 2004
CMRRR# 7003 0500 0000 8487 0330

The Air Quality Management Section, DNREC
Attn: Emission Inventory Department
156 S. State St.
Dover, Delaware 19901

Dear Sirs/Madams:

Motiva Enterprises submitted the Annual Emission Inventory for 2002 in a letter to you dated May 6, 2003. Based on a review of emissions associated with the power plant boilers 1, 2, 3 and 4, revised SO_2 emissions are provided as follows;

	Boiler 1	Boiler 2	Boiler 3	Boiler 4
SO_2 Emissions, tons				
Gas	0.9 334.7	0.9	0.9	0.8
Oil	641.2 646	0	621.2	972.0
Fuel Usage				
Gas, MMSCF	2140	2150	2035	1933
Oil, Mgallons	9014	0	8706	13726
Fuel Wt % Sulfur				
Gas	0.0009	0.0009	0.0009	0.0009
Oil	0.89	0.89	0.89	0.89
Emission Factors				
Gas	950*Wt % Sulfur			
Oil	159.3*Wt % Sulfur			

If you have any questions regarding this information, please contact me at (302) 834-6305.

Sincerely,

E. M. Piovoso

EMP/

Delaware City Refinery 2000 Wrangle Hill Road Delaware City, DE 19706 Phone: (302) 834-6000 Fax: (302) 834-6498

Attachment 1

05/05/2003 2002 ANNUAL AIR EMISSION INVENTORY AND EMISSIONS STATEMENT REPORT

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: MOTIVA ENTERPRISES, LLC - DELAWARE CITY

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM	PM10	PM25	NH3
001	COKER W/O COB W/ INCINRTR	5.4	13.7	65.9	1133.3	69.2	69.2		
002	FLUID COKER CO BOLER 22H3	91.4368	610.1	1142.96	18327.6	236.8	111.1		3.3
003	HEATER 22-H-2	0.1442	7.21	1.8025	0.04892	0.1545	0.1545		
004	COKE HANDLING EQUIPMENT					37.5			
005	CRUDE UNIT								
006	HEATER #1 FOR UNIT 21-H-1								
007	HEATER #2 FOR UNIT 21-H-2	2.1224	87.6	0.9	0.7201	2.274	2.274		
008	FOUL WATER TREATMENT SYS.								
009	2 SOLUTIZER PLANTS								
010	COKER GASOLINE MEROX PLT				13.1				
011	CRACKER W/O CO BOILER								
012	CRACKER CO BOILER	121.886	738.8	1523.58	11420.4	1019.42	765.022		4.2
013	TETRA HEATER 32-H-101	0.3682	15.2	4.6025	0.12492	0.3945	0.3945		
014	TETRA HEATER 32-H-102								
015	TETRA HEATER 32-H-103								
016	ALKYLATION FEED MEROX PLT				113.9				
017	POLYMERIZATION MEROX PLT				74.5				
018	ALKY & POLY UNITS								
019	REFORMER, HEATER 25-H-1A								
020	REFORMER, HEATER 25-H-1B								
021	CATALYTIC REFORMER UNIT								
022	EMERGENCY TAIL GAS TREATR								
023	NAPHTHALENE PLANT								
024	NAPTHALENE PLT HTR 33-H-1								
025	NAPTHALENE PLT HTR 33-H-2								
027	SULFUR RECOVERY UNIT 1	0.1	4.5	1.1	20.9864	0.6	0.6		
028	SULFUR RECOVERY UNIT 2	0.1	4.8	1.2	26.8106	0.7	0.7		
029	HYDROCRACKER								

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: MOTIVA ENTERPRISES, LLC - DELAWARE CITY

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM	PM10	PM25	NH3
030	HYDROCRACKER HTR 36-H-1	0.3682	18.41	4.6025	0.12492	0.3945	0.3945		
031	HYDROCRACKER HTR 36-H-3	0.2058	10.29	2.5725	0.06982	0.2205	0.2205		
032	HYDROCRACKER HTR 36-H-2	0.133	6.65	1.6625	0.04512	0.1425	0.1425		
033	HYDROCRACKER HYDROGEN PLT								
✓034	HYDROCRACKER H2 HTR 37-H1	3.2676	79.3	13.7	1.10865	3.501	3.501		
040	TOLUENE FACILITY								
043	BENZENE EXTRACTION FAC.								
044	AROMATICS FACT. FACILITY								
050	CPI&API SEPARATOR, TANKS	199.5							
051	WASTEWATER TREATMNT PLANT	820.1 4.2	3.7	0.9					
052	OIL RECOVERY SYSTEM								
066	TRASH INCINERATOR								
067	BOILER 4	6.61512	418.9	46.9	973.792	82.2943	61.5299		
068	BOILER 1	0.1	369.8	7.5	1147.3	48.2	65.8		
069	BOILER 2	3	204.9	NC	1.4	3.8	8.2		
070	BOILER 3		341.7	0.5	1108.1	55.5	61.3		
071	METHANOL PLANT								
✓072	METHANOL PLT HTR 41-H-1	0.4	NC 1/15	4.5	0.12207	0.4	0.3855		
073	NEW CCR REFORMER #1								
✓074	NEW CCR REF. HTR 42-H-1	1.6394	82.2	0.4	0.55622	1.7565	1.7565		
✓075	NEW CCR REF. HTR 42-H-2	1.5792	79.2	0.4	0.5358	1.692	1.692		
✓076	NEW CCR REF. HTR 42-H-3	0.6846	34.3	0.2	0.23227	0.7335	0.7335		
077	NEW CCR REF. HTR 42-H-7	0.6216	25.6	0.3	0.2109	0.666	0.666		
078	OLEFINS PLANT								
080	FLARE SYSTEM	0.3	2.6	18.9					
081	BARGE LOADING	9.0715	5.2	13.2					
082	LAND TREATMENT (TSDF)								
083	VALVE MAINTENANCE	41.1							

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: MOTIVA ENTERPRISES, LLC - DELAWARE CITY

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM	PM10	PM25	NH3
084	HYDROD TRAIN HTR 29-H-101	0.4	23.5	6	0.13775	0.4	0.435		
085	HYDRODS. TRAIN HTR 29-H-8	0.6	24.5	1.5	0.20045	0.6	0.633		
086	HYDRODS. TRAIN HTR 29-H-1								
088	HYDRODESULFURIZER TRAIN 1								
089	HYDRODESULFURIZER TRAIN 2								
090	HYDRODS. TRAIN HTR 29-H-2	0.4242	21.21	5.3025	0.14392	0.4545	0.4545		
091	HYDRODS. TRAIN HTR 29-H-3	0.0728	3.64	0.91	0.0247	0.078	0.078		
092	HYDRODS. TRAIN HTR 29-H-9	0.2212	11.06	2.765	0.07505	0.237	0.237		
093	HYDRODESULFURIZER TRAIN 3								
094	HYDRODESULFURIZER TRAIN 4								
095	HYDRODS. TRAIN HTR 29-H-4	0.1834	11.8	0.3	0.06222	0.1965	0.1965		
096	HYDRODS. TRAIN HTR 29-H-7	0.2002	10.01	2.5025	0.06792	0.2145	0.2145		
097	HYDRODESULFURIZER TRAIN 5								
098	HYDRODS. TRAIN HTR 29-H-5	0.35	22.1	1.5	0.11875	0.375	0.375		
099	HYDRODS. TRAIN HTR 29-H-6	0.3598	10.7	45.4	0.12207	0.3855	0.3855		
100	STACK GAS SCRUBBER								
101	H2 CARBON DRUM VENT								
102	NAPHTHA TREATER				201.5				
105	CRUDE UNIT HEATR 21-H-701	0.9	73.1		23.2189	18.4	18.4		
106	HTR FOR COKER SHU UNIT	0.4606	23.03	5.7575	0.15627	0.4935	0.4935		
110	CRACKER REGEN BYPASS								
125	CNHTU HEATR 25-H-401		1.97	0.052	0.06555	0.315	0.315		
126	CNHTU HTR 25-H-402	0.01	3.24		0.14012	0.56	0.56		
130	ACID PLANT								
135	PROD TANK #135	2.24							
136	PROD TANK #136	2.38							
137	PROD TANK #137	2.28							
139	PROD TANK #139	1.64							

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: MOTIVA ENTERPRISES, LLC - DELAWARE CITY

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM	PM10	PM25	NH3
145	PROD TANK #145	2.16							
146	PROD TANK #146	2.36							
147	PROD TANK #147	2.72							
149	PROD TANK #149	1.22							
150	PROD TANK #150	2.7							
161	PROD TANK #161	2.85							
162	PROD TANK #162	2.84							
163	PROD TANK #163	3.03							
165	PROD TANK #165	1.89							
166	PROD TANK #166	2.95							
167	PROD TANK #167	1.38							
181	PROD TANK #181	2.65							
182	PROD TANK #182	2.73							
183	PROD TANK #183	3.85							
185	PROD TANK #185	1.88							
186	PROD TANK #186	0.51							
187	PROD TANK #187	1.5							
201	PROD TANK #203	2.15							
202	PROD TANK #202	0.12							
203	PROD TANK #203								
204	PROD TANK #204	1.2							
205	PROD TANK #205	0.17							
206	PROD TANK #206	0.49							
223	PROD TANK #223	2.21							
224	PROD TANK #224	1.77							
225	PROD TANK #225	0.42							
227	PROD TANK #227	0.1							
241	PROD TANK #241	0.38							

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: MOTIVA ENTERPRISES, LLC - DELAWARE CITY

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM	PM10	PM25	NH3
242	PROD TANK #242	0.35							
243	PROD TANK #243	0.24							
244	PROD TANK #244	3.27							
245	PROD TANK #245	1.67							
246	PROD TANK #246	4.61							
248	PROD TANK #248	0.13							
250	HYDROGEN PLANT VENT	22.4							
261	PROD TANK #261	0.29							
262	PROD TANK #262								
263	PROD TANK #263								
264	PROD TANK #264	2.75							
265	PROD TANK #265	1.78							
266	PROD TANK #266	0.67							
268	PROD TANK #268	0.15							
281	PROD TANK #281	0.03							
282	PROD TANK #282	0.04							
283	PROD TANK #283	0.22							
284	PROD TANK #284	0.25							
285	PROD TANK #285	0.16							
286	PROD TANK #286	0.16							
331	BENZENE TANK T 331								
332	BENZENE TANK T 332								
401	TOLUENE TANK #401								
402	TOLUENE TANK #402								
405	TANK #405	0.01							
406	TANK #406	0.01							
407	TANK #407	0.2							
408	TANK #408								

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: MOTIVA ENTERPRISES, LLC - DELAWARE CITY

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM	PM10	PM25	NH3
470	TANK #470								
471	TANK #471								
481	TANK #481								
500	TANK #500								
502	TANK #502								
503	TANK #503								
504	TANK #504								
505	TANK #505								
520	PROPANE PIT FLARE	0.2	0.2	1.6					
521	RFG COOLING TOWER	0.1				2.8	2.8		
523	REPOWERING COOLING TOW					2.23	2.23		
527	REPOWERING CT1	4.31	63.2	5.7	46.2	5.82	5.82		
528	REPOWERING CT2	1.79	34	1.3	15.1	2.38	2.38		
530	REPOWER - RAW GAS FLARE		2.1	112.4	222.5				
532	REPOWER - CLEAN GAS FLARE		202	798.3	15.5				
550	TANK #550								
551	TANK #551								
552	TANK #552								
553	TANK #553								
560	TANK #560	1.72							
561	TANK #561								
562	TANK #562								
563	TANK #563	0.08							
564	TANK #564								
565	TANK #565								
566	TANK #566	0.04							
570	BENZENE TANK T 570								
571	AROMATICS TANK T 571								

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: MOTIVA ENTERPRISES, LLC - DELAWARE CITY

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM	PM10	PM25	NH3
572	AROMATICS TANK T 572								
580	TANK #580	0.57							
581	TANK #581	1.31							
582	TANK #582	0.1							
583	TANK #583	0.09							
584	TANK #584	0.42							
901	CRUDE TANK #1 F-SS	1.07							
902	CRUDE TANK #2 F-SS	1.85							
903	CRUDE TANK #3 F-SS	1.72							
904	CRUDE TANK #4 F-SS	1.58							
905	CRUDE TANK #5 F-SS	1.7							
906	CRUDE TANK #6 F-SS	1.96							
907	CRUDE TANK #7 F-SS	1.69							
908	CRUDE TANK #8 F-SS	1.39							
909	CRUDE TANK #9 F-DS	1.56							
910	CRUDE TANK #10 F-SS	2.25							
911	CRUDE TANK #11	2.11							
912	CRUDE TANK #12	2.36							
944	INTER. TANK #44	0.87							
945	INTER. TANK #45	8.73							
947	INTER. TANK # 47	0.21							
948	INTER. TANK #48	0.47							
950	INTER. TANK #50	0.5							
951	INTER. TANK #51	0.39							
960	INTER. TANK #60	0.02							
961	INTER. TANK #61								
962	INTER. TANK #62	0.01							
965	INTER. TANK #65	0.02							

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: MOTIVA ENTERPRISES, LLC - DELAWARE CITY

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM	PM10	PM25	NH3
966	INTER. TANK #66	12.1							
971	INTER. TANK #71								
972	INTER. TANK #72	1.15							
973	INTER. TANK #73	0.48							
974	INTER. TANK #74								
975	INTER. TANK #75	0.02							
976	INTER. TANK #76	0.01							
977	INTER. TANK #77	0.06							
978	INTER. TANK #78	0.08							
999	ACCIDENTAL RELEASES		9.1		18.7				
	Grp 530 + 532		+ 223	+910.4					

GROUP LEVEL AIR EMISSION INVENTORY SUMMARY

	VOC	NO2	CO	SO2	PT	PM10	PM25	NH3
Total Emissions	651.7758	~~3511.02~~ 3533.32*	~~2938.879~~ 3849.579*	34909.12	1602.283	1191.774		7.5

Pursuant to Regulation No. 30, I, the undersigned, am a Responsible Official and I have personally examined and am familiar with the information submitted in this document and all of its attachments. I certify, based on information and belief formed after reasonable inquiry the statements and information in the document are true, accurate and complete.

Responsible Official: F.R. WHEELER (Please Print)

Title: REFINERY MANAGER

Signature: F.R. Wheeler Date 5/6/03

* See facility letter 6/9/03

Data Base Final

VOC	NO2	CO	SO2	PM-CON
829.909 (+178.212)	3534.82	3857.94	3496.48	89.917

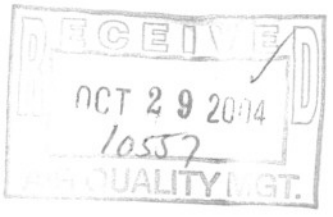
Waste Water Treatment

PM10-FIL	PM25-FIL	NH3
1291.343	1218.249	43.017

Bert Molina
Manager - Regulatory Affairs

MOTIVA
ENTERPRISES LLC

Certified Mail 7002 3150 0004 6783 4547
Return Receipt Requested



October 26, 2004

Air Quality Management Section, DNREC
156 S. State St.
Dover, Delaware 19901

Attn: Emission Inventory Department

This submittal represents the Annual Emission Inventory for 2003 summarizing emissions from the former Motiva Enterprises LLC Delaware City Refinery.

Included as part of the submittal are:

- ❑ I-Steps summary report of the facility emissions including the signed certification statement
- ❑ Disk labeled Motiva Enterprises LLC– Delaware City Refinery - Emission Inventory 2003 - Tanks
- ❑ HAP emissions summary. Table 1 summarizes speciation data for emissions from non-combustion sources. Table 2 summarizes all TRI air emissions.
- ❑ Summary of emission factors and calculation methodologies

Please note the following:

Flaring emissions – The refinery flare gas system is equipped with two flare gas recovery compressors. Gases that are vented to the flare system are recovered and returned to the refinery fuel gas system. When the amount of material vented to the flare system exceeds the capacity of the flare gas recovery compressors, a flaring event occurs. Emissions from the pilot gases on the flares are included under the process group "Flare". Emissions associated with the gases flared are included under the process group "Accidental Releases"

Particulate Emissions – The condensable and filterable portions of PM-10 emissions were reported where data was available from stack testing. No data is available on PM2.5 emissions. SCC factors used for estimating particulate emissions from combustion sources were assumed to be PM-10 filterable material.

If you have any questions regarding this information, please contact me at (713) 546-8485.

Bert Molina

Enclosures

P.O. Box 4540 Houston, Texas 77210-4540 Phone: (713) 277-8000

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: MOTIVA ENTERPRISES LLC

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
031	HYDROCRACKER HTR 36-H-3	0.17	8.72	2.18	0.04		0.1875		
032	HYDROCRACKER HTR 36-H-2	0.09849	4.9245	1.23112	0.02		0.10552		
033	HYDROCRACKER HYDROGEN PLT								
034	HYDROCRACKER H2 HTR 37-H1	2.44606	70.57	10.46	0.51		2.62078		
040	TOLUENE FACILITY								
043	BENZENE EXTRACTION FAC.								
044	AROMATICS FACT. FACILITY								
050	CPI&API SEPARATOR, TANKS	209.1							0.01
051	WASTEWATER TREATMNT PLANT	4.14	3.66	0.91					
052	OIL RECOVERY SYSTEM	0.21							
066	TRASH INCINERATOR								
067	BOILER 4	2.97858	208.03	31.71	293.01		20.4346		
068	BOILER 1	0.14	269	7.86	234.84	19.33	12.98		
069	BOILER 2	3.69	220.33	0.02	0.76	6.7	3.45		
070	BOILER 3	0.04	249.18	0.27	294.84	24.38	10.88		
071	METHANOL PLANT								
072	METHANOL PLT HTR 41-H-1								
073	NEW CCR REFORMER #1								
074	NEW CCR REF. HTR 42-H-1	1.45759	69.99	0.37	0.3		1.56171		
075	NEW CCR REF. HTR 42-H-2	1.39478	66.97	0.36	0.29		1.49441		
076	NEW CCR REF. HTR 42-H-3	0.6524	31.36	0.17	0.14		0.699		
077	NEW CCR REF. HTR 42-H-7	0.52635	22.05	0.22	0.11		0.56394		
078	OLEFINS PLANT								
080	FLARE SYSTEM	0.31	2.66	19.18					
081	BARGE LOADING	7.72989	3.92	9.89					
082	LAND TREATMENT (TSDF)								
083	VALVE MAINTENANCE	31.29							
084	HYDROD TRAIN HTR 29-H-101	0.29	16.83	4.27	0.0612		0.31		

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: MOTIVA ENTERPRISES LLC

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
085	HYDRODS. TRAIN HTR 29-H-8	0.57	24.09	1.46	0.12198		0.61		
086	HYDRODS. TRAIN HTR 29-H-1								
088	HYDRODESULFURIZER TRAIN 1								
089	HYDRODESULFURIZER TRAIN 2								
090	HYDRODS. TRAIN HTR 29-H-2	0.43815	21.9079	5.47699	0.09		0.46945		
091	HYDRODS. TRAIN HTR 29-H-3	0.077	3.86	0.9625	0.02		0.0825		
092	HYDRODS. TRAIN HTR 29-H-9	0.2114	10.55	2.6425	0.04		0.2265		
093	HYDRODESULFURIZER TRAIN 3								
094	HYDRODESULFURIZER TRAIN 4								
095	HYDRODS. TRAIN HTR 29-H-4	0.02948	1.93	0.05	0.01000		0.03158		
096	HYDRODS. TRAIN HTR 29-H-7	0.0392	1.93	0.48	0.01		0.042		
097	HYDRODESULFURIZER TRAIN 5								
098	HYDRODS. TRAIN HTR 29-H-5	0.4298	27.74	1.84	0.09		0.4605		
099	HYDRODS. TRAIN HTR 29-H-6	0.36182	10.98	46.55	0.08		0.38767		
100	STACK GAS SCRUBBER								
101	H2 CARBON DRUM VENT								
102	NAPHTHA TREATER				201.48				
105	CRUDE UNIT HEATR 21-H-701	0.83	75.48		17.97				0.01
106	HTR FOR COKER SHU UNIT	0.3584	17.92	4.48	0.07		0.384		
110	CRACKER REGEN BYPASS								
125	CNHTU HEATR 25-H-401		2.39	0.05	0.04				
126	CNHTU HTR 25-H-402	0.01	4.17		0.05				
130	ACID PLANT								
135	PROD TANK #135	2.2							
136	PROD TANK #136	2.6							
137	PROD TANK #137	2.5							
139	PROD TANK #139	1							
145	PROD TANK #145	2.3							

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: MOTIVA ENTERPRISES LLC

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
146	PROD TANK #146	2.4							
147	PROD TANK #147	2.3							
149	PROD TANK #149	1.2							
150	PROD TANK #150	2.5							
161	PROD TANK #161	2.45							
162	PROD TANK #162	3							
163	PROD TANK #163	3.79							
165	PROD TANK #165	1.8							
166	PROD TANK #166	2.8							
167	PROD TANK #167	1.6							
181	PROD TANK #181	3.4							
182	PROD TANK #182	2.5							
183	PROD TANK #183	3.3							
185	PROD TANK #185	2.58							
186	PROD TANK #186	0.5							
187	PROD TANK #187	1.3							
201	PROD TANK #203	3.07							
202	PROD TANK #202	0.1							
203	PROD TANK #203								
204	PROD TANK #204	1							
205	PROD TANK #205	0.2							
206	PROD TANK #206	0.4							
223	PROD TANK #223	2.19							
224	PROD TANK #224	2.03							
225	PROD TANK #225	0.5							
227	PROD TANK #227								
241	PROD TANK #241	0.9							
242	PROD TANK #242	0.3							

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: MOTIVA ENTERPRISES LLC

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
243	PROD TANK #243	0.22							
244	PROD TANK #244	2.13							
245	PROD TANK #245	2.24							
246	PROD TANK #246	2.5							
248	PROD TANK #248	0.2							
250	HYDROGEN PLANT VENT	14.57							
261	PROD TANK #261	0.3							
262	PROD TANK #262								
263	PROD TANK #263	0.1							
264	PROD TANK #264	2.5							
265	PROD TANK #265	1.5							
266	PROD TANK #266	0.7							
268	PROD TANK #268	0.17							
281	PROD TANK #281								
282	PROD TANK #282	0.1							
283	PROD TANK #283	0.2							
284	PROD TANK #284	0.2							
285	PROD TANK #285	0.2							
286	PROD TANK #286	0.2							
331	BENZENE TANK T 331								
332	BENZENE TANK T 332								
401	TOLUENE TANK #401								
402	TOLUENE TANK #402								
405	TANK #405								
406	TANK #406								
407	TANK #407	0.2							
408	TANK #408								
470	TANK #470	0.023							

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: MOTIVA ENTERPRISES LLC

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
580	TANK #580	0.6							
581	TANK #581	1.2							
582	TANK #582	0.1							
583	TANK #583	0.1							
584	TANK #584	0.4							
901	CRUDE TANK #1 F-SS	1.75							
902	CRUDE TANK #2 F-SS	1.9							
903	CRUDE TANK #3 F-SS	1.73							
904	CRUDE TANK #4 F-SS	1.4							
905	CRUDE TANK #5 F-SS	2							
906	CRUDE TANK #6 F-SS	1.9							
907	CRUDE TANK #7 F-SS	1.7							
908	CRUDE TANK #8 F-SS	1.3							
909	CRUDE TANK #9 F-DS	1.54							
910	CRUDE TANK #10 F-SS	1.9							
911	CRUDE TANK #11	1.5							
912	CRUDE TANK #12	1.8							
944	INTER. TANK #44	0.7							
945	INTER. TANK #45	7.4							
947	INTER. TANK # 47	0.2							
948	INTER. TANK #48	0.4							
950	INTER. TANK #50	0.8							
951	INTER. TANK #51	0.3							
960	INTER. TANK #60								
961	INTER. TANK #61								
962	INTER. TANK #62								
965	INTER. TANK #65								
966	INTER. TANK #66	10.9							

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: MOTIVA ENTERPRISES LLC

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
471	TANK #471	0.005							
481	TANK #481								
500	TANK #500								
502	TANK #502								
503	TANK #503								
504	TANK #504								
505	TANK #505								
520	PROPANE PIT FLARE	1.09	1.06	7.64					
521	RFG COOLING TOWER	4.15					1.12		
523	REPOWERING COOLING TOW						0.55		
527	REPOWERING CT1	0.38	52	5	65				
528	REPOWERING CT2	0.5	80	6	81				
530	REPOWER - RAW GAS FLARE		1.03	40.7	282.6				
532	REPOWER - CLEAN GAS FLARE		12.7	501.8	26.9				
550	TANK #550								
551	TANK #551								
552	TANK #552								
553	TANK #553								
560	TANK #560	1.7							
561	TANK #561								
562	TANK #562								
563	TANK #563	0.1							
564	TANK #564								
565	TANK #565								
566	TANK #566								
570	BENZENE TANK T 570								
571	AROMATICS TANK T 571								
572	AROMATICS TANK T 572								

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: MOTIVA ENTERPRISES LLC

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
971	INTER. TANK #71								
972	INTER. TANK #72	1.2							
973	INTER. TANK #73	0.36							
974	INTER. TANK #74								
975	INTER. TANK #75								
976	INTER. TANK #76								
977	INTER. TANK #77	0.06							
978	INTER. TANK #78	0.1							
998	TANK FUGITIVE								
999	ACCIDENTAL RELEASES	0.25	0.36	2842.58	155.17				2.44

GROUP LEVEL AIR EMISSION INVENTORY SUMMARY Page 8

	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
Total Emissions	596.251	3403.77	6448.084	34149.66	~~71.67~~ 9466	~~948.5885~~ 1037.51	1008.32	19.87

Pursuant to Regulation No. 30, I, the undersigned, am a Responsible Official and I have personally examined and am familiar with the information submitted in this document and all of its attachments. I certify, based on information and belief formed after reasonable inquiry the statements and information in the document are true, accurate and complete.

Responsible Official: Humberto Molina, Sr. (Please Print)

Title: Manager Regulatory Affairs - Motiva

Signature: 

Date 10/26/04

Premcor

Premier People,
Products and Service

The Premcor Refining Group, Inc.
Delaware City Refinery
P.O. Box 7000
Delaware City, DE 19706-7000
302/834-6000

CMRRR# 7003 3110 0002 6805 5661

April 27, 2005

Attn: Emission Inventory Department
Air Quality Management Section
DNREC
156 S. State St.
Dover, Delaware 19901

RECEIVED
APR 29 2005
13916
AIR QUALITY MGT. SEC.

RE: 2004 Annual Air Emission Inventory and Emissions Statement Report
The Premcor Refining Group Inc. – Delaware City Refinery

Dear Sir or Madam:

Enclosed is the 2004 Annual Air Emission Inventory and Emissions Statement Report for The Premcor Refining Group Inc.'s (Premcor) Delaware City Refinery. Because Premcor purchased the facility from Motiva Enterprises LLC (Motiva) on May 1, 2004, the I-STEPS Summary Report includes separate certification statements for the Motiva and Premcor periods of operation. Emissions data were filed online using the Satellite I-STEPS software through the DNREC Air Quality Management Emissions Inventory Development Terminal Server.

As requested by the Emissions Inventory Department, this submittal also includes the following:

- A disk containing 2004 storage tank emissions information in TANKS 4.0 output format.
- A document summarizing emission factors and calculation methodologies. The condensable and filterable portions of PM-10 emissions were reported where data was available from stack testing. No data is available on PM2.5 emissions. SCC factors used for estimating particulate emissions from combustion sources were assumed to be PM-10 filterable material

If you have any questions regarding this submittal, please contact me at (302) 834-6408.

Sincerely,

Cathe Kalisz

Cathe Kalisz
Environmental Engineer

Enclosures

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: THE PREMCOR REFINING GROUP INC

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
001	COKER W/O COB W/ INCINRTR	8.49	55.79	106.16	1315.11		114.28		0.5
002	FLUID COKER CO BOLER 22H3	90.13	616.59	1126.72	15693.8		106.56		5.96
003	HEATER 22-H-2	0.13	6.34	1.59	0.05		0.14		
004	COKE HANDLING EQUIPMENT								
005	CRUDE UNIT								
006	HEATER #1 FOR UNIT 21-H-1								
007	HEATER #2 FOR UNIT 21-H-2	1.83	88.56	0.78	0.73		1.96		
008	FOUL WATER TREATMENT SYS.								
009	2 SOLUTIZER PLANTS								
010	COKER GASOLINE MEROX PLT				13.1				
011	CRACKER W/O CO BOILER – DOWN	10.25	89.84	33.5	974.75	35.68	100.83		0.91
012	CRACKER CO BOILER	92.59	903.93	966.99	8152.24	298.34	822.22		8.92
013	TETRA HEATER 32-H-101	0.36	13.93	4.47	0.14		0.38		
014	TETRA HEATER 32-H-102								
015	TETRA HEATER 32-H-103								
016	ALKYLATION FEED MEROX PLT				109.06				
017	POLYMERIZATION MEROX PLT				63.38				
018	ALKY & POLY UNITS								
019	REFORMER, HEATER 25-H-1A								
020	REFORMER, HEATER 25-H-1B								
021	CATALYTIC REFORMER UNIT								
022	EMERGENCY TAIL GAS TREATR								
023	NAPHTHALENE PLANT								
024	NAPTHALENE PLT HTR 33-H-1								
025	NAPTHALENE PLT HTR 33-H-2								
027	SULFUR RECOVERY UNIT 1	0.12	2.6	0.12	111.25	6.62	2.48		
028	SULFUR RECOVERY UNIT 2	0.13	2.79	0.13	80.45	7.1	2.65		
029	HYDROCRACKER								

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: THE PREMCOR REFINING GROUP INC

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
030	HYDROCRACKER HTR 36-H-1	0.41	20.71	5.18	0.16		0.44		
031	HYDROCRACKER HTR 36-H-3	0.23	11.38	2.84	0.09		0.24		
032	HYDROCRACKER HTR 36-H-2	0.16	8.07	2.02	0.06		0.17		
033	HYDROCRACKER HYDROGEN PLT								
034	HYDROCRACKER H2 HTR 37-H1	3.51	102.36	14.84	1.4		3.76		
040	TOLUENE FACILITY								
043	BENZENE EXTRACTION FAC.								
044	AROMATICS FACT. FACILITY								
050	CPI&API SEPARATOR, TANKS	245.97							0.16
051	WASTEWATER TREATMNT PLANT	4.19	6.14	1.54					
052	OIL RECOVERY SYSTEM	0.21							
066	TRASH INCINERATOR								
067	BOILER 4	3.71	211.82	31.45	36.09				
068	BOILER 1	0.13	201.95	7.89	31.89				
069	BOILER 2	1.42	96.23	5.92	12.72				
070	BOILER 3	0.05	193.69		63.63				
071	METHANOL PLANT								
072	METHANOL PLT HTR 41-H-1								
073	NEW CCR REFORMER #1								
074	NEW CCR REF. HTR 42-H-1	1.59	66.46	0.4	0.63		1.7		
075	NEW CCR REF. HTR 42-H-2	1.66	69.6	0.42	0.66		1.78		
076	NEW CCR REF. HTR 42-H-3	0.61	25.66	0.16	0.24		0.66		
077	NEW CCR REF. HTR 42-H-7	0.62	25.59	0.26	0.25		0.66		
078	OLEFINS PLANT								
080	FLARE SYSTEM	0.31	2.66	19.23	0.06				
081	BARGE LOADING	7.71	3.27	8.73					
082	LAND TREATMENT (TSDF)								
083	VALVE MAINTENANCE	32.68							

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: THE PREMCOR REFINING GROUP INC

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
084	HYDROD TRAIN HTR 29-H-101	0.25	14.83	3.76	0.1		0.27		
085	HYDRODS. TRAIN HTR 29-H-8	0.71	29.8	1.81	0.28		0.76		
086	HYDRODS. TRAIN HTR 29-H-1								
088	HYDRODESULFURIZER TRAIN 1								
089	HYDRODESULFURIZER TRAIN 2								
090	HYDRODS. TRAIN HTR 29-H-2	0.42	21.02	5.26	0.17		0.45		
091	HYDRODS. TRAIN HTR 29-H-3	0.09	4.31	1.08	0.03		0.09		
092	HYDRODS. TRAIN HTR 29-H-9	0.21	10.26	2.57	0.08		0.22		
093	HYDRODESULFURIZER TRAIN 3								
094	HYDRODESULFURIZER TRAIN 4								
095	HYDRODS. TRAIN HTR 29-H-4	0.03	1.64	0.04	0.01		0.03		
096	HYDRODS. TRAIN HTR 29-H-7	0.04	2.09	0.52	0.02		0.04		
097	HYDRODESULFURIZER TRAIN 5								
098	HYDRODS. TRAIN HTR 29-H-5	0.44	28.41	1.88	0.18		0.48		
099	HYDRODS. TRAIN HTR 29-H-6	0.39	11.84	50.18	0.16		0.42		
100	STACK GAS SCRUBBER								
101	H2 CARBON DRUM VENT								
102	NAPHTHA TREATER				173.41				
105	CRUDE UNIT HEATR 21-H-701	0.85	81.58	1.7	38.28	19.26	2.83		0.02
106	HTR FOR COKER SHU UNIT	0.48	23.76	5.94	0.19		0.51		
110	CRACKER REGEN BYPASS								
125	CNHTU HEATR 25-H-401		0.28	0.03	0.05				
126	CNHTU HTR 25-H-402	0.01	1.27		0.11				
130	ACID PLANT								
135	PROD TANK #135	2.28							
136	PROD TANK #136	2.71							
137	PROD TANK #137	2.8							
139	PROD TANK #139	1.67							

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: THE PREMCOR REFINING GROUP INC

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
145	PROD TANK #145	1.67							
146	PROD TANK #146	2.78							
147	PROD TANK #147	2.9							
149	PROD TANK #149	1.52							
150	PROD TANK #150	2.79							
161	PROD TANK #161	2.12							
162	PROD TANK #162	3.35							
163	PROD TANK #163	4.12							
165	PROD TANK #165	1.4							
166	PROD TANK #166	1.51							
167	PROD TANK #167	1.08							
181	PROD TANK #181	2.23							
182	PROD TANK #182	3.18							
183	PROD TANK #183	4.09							
185	PROD TANK #185	1.63							
186	PROD TANK #186	0.16							
187	PROD TANK #187	1.23							
201	PROD TANK #203								
202	PROD TANK #202	0.1							
203	PROD TANK #203	2.22							
204	PROD TANK #204	1.07							
205	PROD TANK #205	0.35							
206	PROD TANK #206	0.53							
223	PROD TANK #223	2							
224	PROD TANK #224	1.57							
225	PROD TANK #225	0.28							
227	PROD TANK #227	0.14							
241	PROD TANK #241	0.17							

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: THE PREMCOR REFINING GROUP INC

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
242	PROD TANK #242	0.32							
243	PROD TANK #243	0.23							
244	PROD TANK #244	3.94							
245	PROD TANK #245	2.08							
246	PROD TANK #246	4.06							
248	PROD TANK #248	0.14							
250	HYDROGEN PLANT VENT	3.31							
261	PROD TANK #261	0.15							
262	PROD TANK #262								
263	PROD TANK #263	0.05							
264	PROD TANK #264	2.97							
265	PROD TANK #265	2.06							
266	PROD TANK #266	0.61							
268	PROD TANK #268	0.14							
281	PROD TANK #281	0.09							
282	PROD TANK #282	0.16							
283	PROD TANK #283	0.25							
284	PROD TANK #284	0.16							
285	PROD TANK #285	0.16							
286	PROD TANK #286	0.09							
331	BENZENE TANK T 331								
332	BENZENE TANK T 332								
401	TOLUENE TANK #401								
402	TOLUENE TANK #402								
405	TANK #405	0.18							
406	TANK #406	0.24							
407	TANK #407	0.39							
408	TANK #408								

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: THE PREMCOR REFINING GROUP INC

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
470	TANK #470	0.026							
471	TANK #471	0.013							
481	TANK #481								
500	TANK #500								
502	TANK #502								
503	TANK #503								
504	TANK #504								
505	TANK #505								
520	PROPANE PIT FLARE	1.08	1.05	7.53					
521	RFG COOLING TOWER	0.37					0.72		
523	REPOWERING COOLING TOW						0.55		
527	REPOWERING CT1	0.63	76.39	15.65	142.87				
528	REPOWERING CT2	0.41	50.61	3	63.41				
530	REPOWER - RAW GAS FLARE		1.28	54.18	257.39				
532	REPOWER - CLEAN GAS FLARE		10.01	422.21	8.94				
550	TANK #550								
551	TANK #551								
552	TANK #552								
553	TANK #553								
560	TANK #560								
561	TANK #561								
562	TANK #562								
563	TANK #563								
564	TANK #564								
565	TANK #565								
566	TANK #566	0.04							
570	BENZENE TANK T 570								
571	AROMATICS TANK T 571								

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: THE PREMCOR REFINING GROUP INC

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
572	AROMATICS TANK T 572								
580	TANK #580	0.57							
581	TANK #581	1.71							
582	TANK #582	0.07							
583	TANK #583	0.07							
584	TANK #584	0.44							
901	CRUDE TANK #1 F-SS	1.51							
902	CRUDE TANK #2 F-SS	1.48							
903	CRUDE TANK #3 F-SS	1.4							
904	CRUDE TANK #4 F-SS	1.38							
905	CRUDE TANK #5 F-SS	1.4							
906	CRUDE TANK #6 F-SS	1.43							
907	CRUDE TANK #7 F-SS	0.08							
908	CRUDE TANK #8 F-SS	0.85							
909	CRUDE TANK #9 F-DS	1.77							
910	CRUDE TANK #10 F-SS	1.46							
911	CRUDE TANK #11	1.49							
912	CRUDE TANK #12	1.38							
944	INTER. TANK #44	1.03							
945	INTER. TANK #45	8.5							
947	INTER. TANK # 47	0.42							
948	INTER. TANK #48	0.41							
950	INTER. TANK #50	0.65							
951	INTER. TANK #51	0.29							
960	INTER. TANK #60	0.04							
961	INTER. TANK #61								
962	INTER. TANK #62	0.01							
965	INTER. TANK #65	0.01							

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: THE PREMCOR REFINING GROUP INC

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
966	INTER. TANK #66	11.01							
971	INTER. TANK #71	0.01							
972	INTER. TANK #72	0.97							
973	INTER. TANK #73	0.9							
974	INTER. TANK #74								
975	INTER. TANK #75	0.04							
976	INTER. TANK #76	0.03							
977	INTER. TANK #77	0.06							
978	INTER. TANK #78	0.09							
998	TANK FUGITIVE								
999	ACCIDENTAL RELEASES	58.42	0.38	6706.6	206.13				85.93

GROUP LEVEL AIR EMISSION INVENTORY SUMMARY

	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
Total Emissions	694.499	3196.77	9625.28	27553.75	367	1168.28		102.4
9/8/05 Data Base	698.085	3459.55	9692.56	27553.81	417.299	1187.11	5.63	102.4

Pursuant to Regulation No. 30, I, the undersigned, am a Responsible Official and I have personally examined and am familiar with the information submitted in this document and all of its attachments. I certify, based on information and belief formed after reasonable inquiry the statements and information in the document are true, accurate and complete.

Responsible Official: _____ (Please Print)

Title: _____

Signature: _____ Date ____/____/____

See attachments

FACILITY ID NO. 00016
DELWARE CITY REFINERY

EMISSIONS FOR THE OPERATING PERIOD 1/1/04 – 4/30/04
MOTIVA ENTERPRISES LLC

Pursuant to Regulation No. 30, I, the undersigned, am a Responsible Official and I have personally examined and am familiar with the information submitted in this document and all of its attachments. I certify, based on information and belief formed after reasonable inquiry, that the statements and information in the document are true, accurate, and complete.

Responsible Official: Bert Molina (Please Print)

Title: Regulatory Affairs Manager

Signature: _____ Date: 4 / 27 / 05

FACILITY ID NO. 00016
DELWARE CITY REFINERY

EMISSIONS FOR THE OPERATING PERIOD 5/1/04 – 12/31/04
THE PREMCOR REFINING GROUP INC.

Pursuant to Regulation No. 30, I, the undersigned, am a Responsible Official and I have personally examined and am familiar with the information submitted in this document and all of its attachments. I certify, based on information and belief formed after reasonable inquiry, that the statements and information in the document are true, accurate, and complete.

Responsible Official: Michael J. Pollauf (Please Print)

Title: Refinery Manager

Signature: [signature] Date: 04/27/05

VALERO
DELAWARE CITY REFINERY
4550 Wrangle Hill Road • Delaware City, Delaware 19706-7000

JUN 0 2 2006
2370

CMRRR# 7005 1160 0004 2622 2255

HAND DELIVERED

May 31, 2006

Attn: Emission Inventory Department
Air Quality Management Section
DNREC
156 S. State St.
Dover, Delaware 19901

RE: 2005 Annual Air Emission Inventory and Emissions Statement Report
The Premcor Refining Group Inc. – Delaware City Refinery

Dear Sir or Madam:

Enclosed is the 2005 Annual Air Emission Inventory and Emissions Statement Report for The Premcor Refining Group Inc.'s (Premcor) Delaware City Refinery. Emissions data were filed online using the DNREC I-STEPS software. The electronic data submitted included carbon dioxide, nitrous oxide, and methane greenhouse gas emissions.

As requested by the Emissions Inventory Department, this submittal also includes the following:

- A disk containing 2005 storage tank emissions information in TANKS 4.09 output format.
- Tanks 4.09 printouts for a refinery fixed roof, internal floating roof and external floating roof tank. This is to document that the in the refinery's OpsEnvironmental software, which uses AP-42, Chapter 7 tank emissions equations, provides results consistent with Tank 4.09 software.
- A document summarizing emission factors and calculation methodologies. The condensible and filterable portions of PM-10 emissions were reported where data was available from stack testing. SCC factors used for estimating particulate emissions from refinery heaters were assumed to be PM-10 and PM-2.5 filterable material, in accordance with the draft proposed revisions to AP-42 emission factors for estimating PM2.5 emissions from gas-fired combustion units. The draft revisions indicate that all PM emissions from gas-fired combustion units are assumed to be PM2.5 and that condensible PM from gas-fired combustion units is negligible.

If you have any questions regarding this submittal, please contact me at (302) 834-6408.

Sincerely,

Cathe Kalisz

Cathe Kalisz
Staff Environmental Engineer

Enclosures

RECEIVED
JUN 01 2006
2474
STATE OF DELAWARE
AIR QUALITY MGMT.
NEW CASTLE OFFICE

bcc: Andrew Kenner
Gerry Forstell
Pat Covert
Heather Chelpaty
Mary Jen Beach

FILE: 110(k)-1-R-5

V:\env\Emission Inventory\2005\DNREC Submittal\2005 EI Transmittal Letter.doc

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: THE PREMCOR REFINING GROUP INC

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
001	COKER INCINERATOR STACK	2.63	36.94	32.82	346.16		22.22		0.16
002	FLUID COKER CO BOLER 22H3	82.19	576.4	613.91	14671.9		90.18		4.89
003	HEATER 22-H-2	0.1	6	1.5	0.1		0.1	0.1	
004	COKE HANDLING EQUIPMENT						31.78		
005	CRUDE UNIT								
007	HEATER #2 FOR UNIT 21-H-2	2.1	101.1	0.9	2		2.2	2.2	
008	FOUL WATER TREATMENT SYS.								
010	COKER GASOLINE MEROX PLT				13.14				
011	CRACKER BYPASS STACK	4.57	45.14	15.01	394.18	14.43	19.33		0.46
012	CRACKER CO BOILER MAIN ST	107.59	900.18	716.74	9683.19	354.4	446.01		11.19
013	TETRA HEATER 32-H-101	0.3	11.9	4.1	0.3		0.4	0.4	
014	TETRA HEATER 32-H-102								
015	TETRA HEATER 32-H-103								
016	ALKYLATION FEED MEROX PLT				113.88				
017	POLYMERIZATION MEROX PLT				74.46				
018	ALKY & POLY UNITS								
020	REFORMER, HEATER 25-H-1B								
021	CATALYTIC REFORMER UNIT								
024	NAPTHALENE PLT HTR 33-H-1								
025	NAPTHALENE PLT HTR 33-H-2								
027	SULFUR RECOVERY UNIT 1	0.2	1.5		33	3.94	0.3	4.2	
028	SULFUR RECOVERY UNIT 2	0.2	4.1	0.1	119.4	2.95	0.16	3.1	
029	HYDROCRACKER								
030	HYDROCRACKER HTR 36-H-1	0.3	16.9	4.2	0.2		0.4	0.4	
031	HYDROCRACKER HTR 36-H-3	0.2	8.3	2.1	0.1		0.2	0.2	
032	HYDROCRACKER HTR 36-H-2	0.1	5.3	1.3			0.1	0.1	
033	HYDROCRACKER HYDROGEN PLT	2.44							
034	HYDROCRACKER H2 HTR 37-H1	2.6	72.2	11	0.9		2.8	2.8	

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: THE PREMCOR REFINING GROUP INC

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
040	CLOSED TOLUENE FACILITY								
043	BENZENE EXTRACTION FAC.								
044	AROMATICS FACT. FACILITY								
050	CPI&API SEPARATOR, TANKS	243.74							
051	WASTEWATER TREATMNT PLANT	4.2	6.35	1.59					0.15
052	OIL RECOVERY SYSTEM								
066	CLOSED TRASH INCINERATOR								
067	BOILER 4	1.63	174.85	25.18	46.31	2.63	0.87		
068	BOILER 1	0.13	189.11	7.66	25.14	10.54	3.5		
069	BOILER 2	0.5	28.23	1.02	4.77	2.88	0.95		
070	BOILER 3	0.04	186.81		56.75	5.65	1.87		
071	CLOSED METHANOL PLANT								
072	CLOSED METHANOL PLT HTR 4								
073	NEW CCR REFORMER #1								
074	NEW CCR REF. HTR 42-H-1	1.6	74.5	0.4	1.6		1.7	1.7	
075	NEW CCR REF. HTR 42-H-2	1.7	76.9	0.4	1.7		1.8	1.8	
076	NEW CCR REF. HTR 42-H-3	0.8	37.7	0.2	0.8		0.9	0.9	
077	NEW CCR REF. HTR 42-H-7	0.6	23.8	0.2	0.6		0.6	0.6	
078	OLEFINS PLANT								
080	FLARE SYSTEM	8.9	4.32	23.52	0.16				
081	BARGE LOADING	8.16	2.92	7.84					
082	CLOSED LAND TREATMENT (TS								
083	VALVE MAINTENANCE	32.3							
084	HYDROD TRAIN HTR 29-H-101	0.4	23.9	6.1	0.6		0.5	0.5	
085	HYDRODS. TRAIN HTR 29-H-8	0.6	23.9	1.4	0.5		0.6	0.6	
086	HYDRODS. TRAIN HTR 29-H-1								
088	HYDRODESULFURIZER TRAIN 1								
089	HYDRODESULFURIZER TRAIN 2								

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: THE PREMCOR REFINING GROUP INC

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
090	HYDRODS. TRAIN HTR 29-H-2	0.5	23.7	5.9	0.4		0.5	0.5	
091	HYDRODS. TRAIN HTR 29-H-3	0.1	5.1	1.3	0.1		0.1	0.1	
092	HYDRODS. TRAIN HTR 29-H-9	0.2	10.9	2.7	0.2		0.2	0.2	
093	HYDRODESULFURIZER TRAIN 3								
094	HYDRODESULFURIZER TRAIN 4								
095	HYDRODS. TRAIN HTR 29-H-4		1.6						
096	HYDRODS. TRAIN HTR 29-H-7		2.2	0.5					
097	HYDRODESULFURIZER TRAIN 5								
098	HYDRODS. TRAIN HTR 29-H-5	0.3	17.6	1.2	0.1		0.3	0.3	
099	HYDRODS. TRAIN HTR 29-H-6	0.3	9.9	41.9	0.2		0.3	0.3	
100	CLOSED STACK GAS SCRUBBER								
101	H2 CARBON DRUM VENT								
102	NAPHTHA TREATER				191.54				
105	CRUDE UNIT HEATR 21-H-701	0.1	78.8	1.8	30.5	9.9	0.61	10.5	0.02
106	HTR FOR COKER SHU UNIT		21.6	5.4	0.2		0.5	0.5	
125	CNHTU HEATR 25-H-401		2.8	0.1	0.1		0.4	0.4	
126	CNHTU HTR 25-H-402		4.3		0.1		0.5	0.5	
130	CLOSED ACID PLANT								
135	PROD TANK #135	2.06							
136	PROD TANK #136	2.45							
137	PROD TANK #137	4.13							
139	PROD TANK #139	1.75							
145	PROD TANK #145	2.17							
146	PROD TANK #146	2.63							
147	PROD TANK #147	2.39							
149	PROD TANK #149	1.33							
150	PROD TANK #150	2.9							
161	PROD TANK #161	2							

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: THE PREMCOR REFINING GROUP INC

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
162	PROD TANK #162	3.27							
163	PROD TANK #163	4.3							
165	PROD TANK #165	1.49							
166	PROD TANK #166	4.54							
167	PROD TANK #167	0.72							
181	PROD TANK #181	2.59							
182	PROD TANK #182	3							
183	PROD TANK #183	4.13							
185	PROD TANK #185	1.84							
186	PROD TANK #186	0.18							
187	PROD TANK #187	1.47							
201	PROD TANK #203								
202	PROD TANK #202	0.09							
203	PROD TANK #203	2.24							
204	PROD TANK #204	0.59							
205	PROD TANK #205	0.41							
206	PROD TANK #206	0.48							
223	PROD TANK #223	2.2							
224	PROD TANK #224	1.76							
225	PROD TANK #225	0.2							
227	PROD TANK #227	0.21							
241	PROD TANK #241	0.42							
242	PROD TANK #242	0.39							
243	PROD TANK #243	0.26							
244	PROD TANK #244	3.44							
245	PROD TANK #245	2.06							
246	PROD TANK #246	1.55							
248	PROD TANK #248	0.12							

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: THE PREMCOR REFINING GROUP INC

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
250	HYDROGEN PLANT VENT								
261	PROD TANK #261	0.24							
262	PROD TANK #262								
263	PROD TANK #263	0.1							
264	PROD TANK #264	2.63							
265	PROD TANK #265	2.15							
266	PROD TANK #266	1.01							
268	PROD TANK #268	0.18							
281	PROD TANK #281	0.33							
282	PROD TANK #282	0.18							
283	PROD TANK #283	0.18							
284	PROD TANK #284	0.1							
285	PROD TANK #285	0.17							
286	PROD TANK #286	0.13							
331	BENZENE TANK T 331								
332	BENZENE TANK T 332								
401	TOLUENE TANK #401								
402	TOLUENE TANK #402								
405	TANK #405	0.06							
406	TANK #406	0.06							
407	TANK #407	0.16							
408	TANK #408								
470	TANK #470	0.02							
471	TANK #471	0.01							
481	TANK #481								
500	TANK #500								
502	TANK #502								
503	TANK #503								

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: THE PREMCOR REFINING GROUP INC

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
504	TANK #504								
505	TANK #505								
520	PROPANE PIT FLARE	1.08	1.04	7.51					
521	RFG COOLING TOWER								
523	REPOWERING COOLING TOW						1.77		
527	REPOWERING CT1	1.25	51.76	14.87	155.97	11.07	2.87		
528	REPOWERING CT2	1.19	69.09	10.92	45.88	11.76	2.91		
530	REPOWER - RAW GAS FLARE								
532	REPOWER SYNGAS FLARE		14.39	613.68	435.5				
550	TANK #550								
551	TANK #551								
552	TANK #552								
553	TANK #553								
560	TANK #560								
561	TANK #561								
562	TANK #562								
563	TANK #563								
564	TANK #564								
565	TANK #565								
566	TANK #566								
570	BENZENE TANK T 570								
571	AROMATICS TANK T 571								
572	AROMATICS TANK T 572								
580	TANK #580								
581	TANK #581								
582	TANK #582								
583	TANK #583								
584	TANK #584								

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: THE PREMCOR REFINING GROUP INC

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
901	CRUDE TANK #1 F-SS	1.16							
902	CRUDE TANK #2 F-SS	1.57							
903	CRUDE TANK #3 F-SS	1.5							
904	CRUDE TANK #4 F-SS	1.51							
905	CRUDE TANK #5 F-SS	1.28							
906	CRUDE TANK #6 F-SS	1.47							
907	CRUDE TANK #7 F-SS	0.4							
908	CRUDE TANK #8 F-SS	1.13							
909	CRUDE TANK #9 F-DS	1.87							
910	CRUDE TANK #10 F-SS	1.63							
911	CRUDE TANK #11	1.63							
912	CRUDE TANK #12	1.52							
944	INTER. TANK #44	0.97							
945	INTER. TANK #45	7.68							
947	INTER. TANK # 47	0.53							
948	INTER. TANK #48	0.15							
950	INTER. TANK #50	0.53							
951	INTER. TANK #51	0.38							
960	INTER. TANK #60	0.05							
961	INTER. TANK #61	0.04							
962	INTER. TANK #62	0.02							
965	INTER. TANK #65	0.89							
966	INTER. TANK #66	11.85							
971	INTER. TANK #71	0.06							
972	INTER. TANK #72	1.27							
973	INTER. TANK #73	0.63							
974	INTER. TANK #74								
975	INTER. TANK #75	0.08							

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: THE PREMCOR REFINING GROUP INC

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
976	INTER. TANK #76	0.02							
977	INTER. TANK #77	3.83							
978	INTER. TANK #78	0.07							
998	TANK FUGITIVE								
999	ACCIDENTAL RELEASES	25.86	0.27	1834.39	23.46				11.19

GROUP LEVEL AIR EMISSION INVENTORY SUMMARY

	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
Total Emissions	662.89	2954.3	4021.36	26476.09	430.15	640.43	32.9	28.06

Pursuant to Regulation No. 30, I, the undersigned, am a Responsible Official and I have personally examined and am familiar with the information submitted in this document and all of its attachments I certify, based on information and belief formed after reasonable inquiry the statements and information in the document are true, accurate and complete.

Responsible Official: Andrew Kenner (Please Print)

Title: Vice President & General Manager

Signature: Andrew Kenner **Date** 5/31/06

2005 EMISSION FACTOR SUMMARY

Group ID	UNIT	SULFUR DIOXIDE	NITROGEN OXIDE	CARBON MONOXIDE	VOC	TSP / PM10	AMMONIA
105	21-H-701 FUEL GAS	1/1-9/30/05: SCC Factor: 950 x Wt % S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS. Starting 10/1 - material balance using TRS from fuel gas CEMS.	NOx CEMS	0.001 lb/MMBTU 4/26 -4/27/05 stack test	0.0001 lb/MMBTU 4/26 -4/27/05 stack test	0.00597 lb/MMBTU PM10-PRI PM10 primary from 4/26-27/05 stack test.	
	21-H-701 AMMONIA	SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S in ammonia stream from sour water stripper design data.					Precombustor design efficiency and estimated NH3 combustion efficiency of 21-H-701
7	21-H-2 GAS	1/1-9/30/05: SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS. Starting 10/1 - material balance using TRS from fuel gas CEMS.	NOx CEMS	0.001 lb/MMBTU 1993 source test	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
2	COKER COB FUEL GAS	SO2 CEMS and stack flow monitor	NOx CEMS and stack flow monitor	SCC Factor: 35 lb. CO /MMSCF through 4/30/05; CO CEMS 5/1/05 forward	SCC Factor: 2.8 lb. VOC/MMSCF	Use of 1992 stack test factor, ratioed for actual feed rate to stack test feed rate, less fuel gas emissions. 46.8% of TSP is PM-10.	
	COKER COB PROCESS GAS			SCC Factor: 35 lb. CO /MMSCF through 4/30/05; CO CEMS 5/1/05 forward	SCC Factor: 2.8 lb. VOC/MMSCF		Based on 4/04 process data
1	COKER INCINERATOR - FURL GAS	1/1-9/30/05: SCC Factor: 950 x Wt % S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS. Starting 10/1 - material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
	COKER INCINERATOR - PROCESS GAS	Total SO2 emissions (presumed at monthly average for COB operation) less SO2 emissions from fuel gas	Total NOx emissions presumed at monthly average rate for COB operation	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	6/5/95 test data. 0.0074 lb/hr per BPD FF	
3	COKER SEALAS	1/1-9/30/05: SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS. Starting 10/1 - material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
12	FCCU COB MAIN STACK - GAS	SO2 CEMS and stack flow monitor	NOx CEMS and stack flow monitor	CO CEMS and stack flow monitor	SCC Factor: 2.8 lb. VOC/MMSCF	February and March 2005 stack test results for filterable fraction; SO3 and H2SO4 condensibles estimated from SO2 emissions.	
	FCCU COB MAIN STACK - PROCESS GAS				SCC Factor: 2.8 lb. VOC/MMSCF		Based on 4/04 process data
11	FCCU BYPASS STACK - PROCESS GAS	Total SO2 emissions presumed at monthly average rate for COB operation	Total NOx emissions presumed at monthly average rate for COB operation	Total CO emissions presumed at monthly average rate for COB operation	SCC Factor: 2.8 lb. VOC/MMSCF	February and March 2005 stack test results for filterable fraction; SO3 and H2SO4 condensibles estimated from SO2 emissions.	
84	29-H-101	1/1-9/30/05: SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS. Starting 10/1 - material balance using TRS from fuel gas CEMS.	0.138 lb/ MMBTU 1993 stack test factor	0.035 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
85	29-H-8	1/1-9/30/05: SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS. Starting 10/1 - material balance using TRS from fuel gas CEMS.	0.099 lb/ MMBTU 1993 stack test factor	0.006 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
13	32-H-101	1/1-9/30/05: SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS. Starting 10/1 - material balance using TRS from fuel gas CEMS.	0.087 lb/ MMBTU 8/31/05 stack test factor	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
90	29-H-2	1/1-9/30/05: SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS. Starting 10/1 - material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	

2005 EMISSION FACTOR SUMMARY

Group ID	UNIT	SULFUR DIOXIDE	NITROGEN OXIDE	CARBON MONOXIDE	VOC	TSP / PM10	AMMONIA
91	29-H-3	1/1-9/30/05: SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS. Starting 10/1 - material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
92	29-H-9	1/1-9/30/05: SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS. Starting 10/1 - material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
95	29-H-4	1/1-9/30/05: SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS. Starting 10/1 - material balance using TRS from fuel gas CEMS.	0.15 lb/ MMBTU 1993 stack test factor	0.004 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
96	29-H-7	1/1-9/30/05: SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS. Starting 10/1 - material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
98	29-H-5	1/1-9/30/05: SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS. Starting 10/1 - material balance using TRS from fuel gas CEMS.	0.15 lb/ MMBTU 1993 stack test factor	0.01 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
99	29-H-6	1/1-9/30/05: SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS. Starting 10/1 - material balance using TRS from fuel gas CEMS.	0.07 lb/ MMBTU 1993 stack test factor	0.301 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
34	H2 PLANT 37-H-1	1/1-9/30/05: SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS. Starting 10/1 - material balance using TRS from fuel gas CEMS.	NOx CEMS	0.01 lb/ MMBTU 1994 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
30	36-H-1	1/1-9/30/05: SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS. Starting 10/1 - material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
32	36-H-2	1/1-9/30/05: SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS. Starting 10/1 - material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
31	36-H-3	1/1-9/30/05: SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS. Starting 10/1 - material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
27	SRU I	SO2 CERMS	0.015 lb/ MMBTU 8/1-2/05 testing	0.0004 lb/ MMBTU 8/1-2/05 testing	0.002 lb/ MMBTU 8/1-2/05 testing	0.0430 lb/MMBTU PM-10 8/1-2/05 testing 93% of PM-PRI is condensable	
28	SRU II	SO2 CERMS	0.0240 lb/ MMBTU 8/1-2/05 testing	0.0005 lb/ MMBTU 8/1-2/05 testing	0.001 lb/ MMBTU 8/1-2/05 testing	0.018 lb/MMBTU PM-10 8/1-2/05 testing 95% of PM-PRI is condensable	
74	42-H-1	SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS.	NOx CEMS	0.0006 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
75	42-H-2	SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS.	NOx CEMS	0.0006 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
76	42-H-3	SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS.	NOx CEMS	0.0006 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	

2005 EMISSION FACTOR SUMMARY

Group ID	UNIT	SULFUR DIOXIDE	NITROGEN OXIDE	CARBON MONOXIDE	VOC	TSP / PM10	AMMONIA
77	42-H-7	SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS.	0.10 lb/ MMBTU 2001 stack test factor	0.001 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
80	FLARE PILOT/PURGE GAS	1/1-9/30/05: SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS. Starting 10/1 - material balance using TRS from fuel gas CEMS.	0.068 lb/MMBTU AP-42 Factor for Industrial Flares	0.37 lb/MMBTU AP-42 Factor for Industrial Flares	0.14 lb/MMBTU AP-42 Factor for Industrial Flares	N/A	
68	DCPP 1 GAS	SO2 CEMS	NOx CEMS	0.006 lb/MMBTU October 2001 stack test factor	0.0001 lb/MMBTU October 2001 stack test factor	0.011 lb/MMBTU July and Sept. 2004 stack tests	
69	DCPP 2 GAS	SO2 CEMS	NOx CEMS	CO CEMS	0.0003 lb/MMBTU 6/15/04 stack test	0.0023 lb/MMBTU 6/15/04 stack test	
70	DCPP 3 GAS	SO2 CEMS	NOx CEMS	0.000 lb/MMBTU October 2001 stack test factor	0.00003 lb/MMBTU October 2001 stack test factor	0.0056 lb/MMBTU October 2001 stack test factor	
67	DCPP 4 GAS	SO2 CEMS	NOx CEMS	0.02 lb/MMBTU 1993 stack test factor	SCC Factor: 1.4 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
106	COKER SHU HTR	1/1-9/30/05: SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS. Starting 10/1 - material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
125	25-H-401	1/1-9/30/05: SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS. Starting 10/1 - material balance using TRS from fuel gas CEMS.	0.0028 lb/ MMBTU 3/30/05 stack test factor	0.075 lb/ MMSCF 2/01 stack test factor	0.0 lb/ MMSCF 2/01 stack test factor	4.56 lb/ MMSCF 2/01 stack test factor	
126	25-H-402	1/1-9/30/05: SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS. Starting 10/1 - material balance using TRS from fuel gas CEMS.	0.027 lb/ MMBTU 3/29/05 stack test factor	0.0 lb/ MMSCF 2/01 stack test factor	0.07 lb/ MMSCF 2/01 stack test factor	3.82 lb/ MMSCF 2/01 stack test factor	
4	COKER BAG HOUSE	N/A	N/A	N/A	N/A	Emission Factor 0.2 Grains/SCF. Design flow of 5000 SCF/MIN. TSP not PM-10.	
51	WWTP	N/A	N/A	N/A	1992 estimate of VOC emissions following NESHAPS controls	N/A	Estimate - amount evaporated from wastewater
	WWTP VCU	N/A	Permit Factor: 12.8 lb NOx /M Gal	Permit Factor: 3.2 lb. CO / Mgal	Permit Factor: 0.26 lb VOC /Mgal	N/A	
50	WWTP DOWNSTREAM (CPI @ API SEP. TANKS)	N/A	N/A	N/A	WATER 9 model	N/A	
520	PROPANE PIT FLARE PILOT	N/A	4.089 lb/M Gal - TNRCC guidance document for flares and 99.9% flare efficiency	29.5 lb/M Gal - TNRCC guidance document for flares and 99.9% flare efficiency	4.23 lb/M Gal - TNRCC guidance document for flares and 99.9% flare efficiency	N/A	
	PROPANE PIT FLARE PRODUCT	N/A	4.089 lb/M Gal - TNRCC guidance document for flares and 99.9% flare efficiency	29.5 lb/M Gal - TNRCC guidance document for flares and 99.9% flare efficiency	4.23 lb/M Gal - TNRCC guidance document for flares and 99.9% flare efficiency	N/A	

2005 EMISSION FACTOR SUMMARY

Group ID	UNIT	SULFUR DIOXIDE	NITROGEN OXIDE	CARBON MONOXIDE	VOC	TSP / PM10	AMMONIA
52	OIL RECOVERY SYS	N/A	N/A	N/A	Permit limit	N/A	
17	POLY MEROX	17 lb/hr limit from air permit	N/A	N/A	N/A	N/A	
16	ALKY MEROX	26 lb/hr limit from air permit	N/A	N/A	N/A	N/A	
10	COKER MEROX	3 lb/hr limit from air permit	N/A	N/A	N/A	N/A	
102	NAPHTHA TREATER	46 lb/hr limit from air permit	N/A	N/A	N/A	N/A	
83	FUGITIVES (VALVE MAINTENANCE)	N/A	N/A	N/A	Use of EPA correlation equations and monitoring data	N/A	
81	BARGE LOADING GASOLINE	N/A	0.000581 lb/BBL 10/24/04 source testing	0.00156 lb/BBL 10/24/04 source testing	0.000646 lb/BBL 10/24/04 source testing	N/A	
81	BARGE LOADING METHANOL	N/A	2002 source testing	2002 source testing	2002 source testing	N/A	
81	BARGE LOADING DISTILLATE	N/A	N/A	N/A	AP-42 factor: 0.012 lb/1000 Gal Loaded	N/A	
999	ACCIDENTAL RELEASES	Varies depending on type of release.	Varies depending on type of release.	Varies depending on type of release.	Varies depending on type of release.	Varies depending on type of release.	Varies depending on type of release.
Various	TANK FARM	N/A	N/A	N/A	EPA AP-42 Equations	0.0	
521	RFG COOLING TOWER	N/A	N/A	N/A	Periodic sampling of VOC concentrations in influent/recycle/effluent streams	Periodic sampling of TDS in influent	
527	REPOWERING CT 1 SYNGAS	SO2 CEMS	NOx CEMS	CO CEMS	0.0002 lb/MMBTU - w/out duct firing 0.0031 lb/MMBTU with duct firing 2003 stack testing	0.0094 lb/MMBTU - w/out duct firing 0.0125 lb/MMBTU with duct firing 2003 stack testing	
	REPOWERING CT 1 LSDF	SO2 CEMS	NOx CEMS	CO CEMS	0.0002 lb/MMBTU - w/out duct firing 0.0036 lb/MMBTU with duct firing 2003 stack testing	0.0176 lb/MMBTU - w/out duct firing 0.0165 lb/MMBTU with duct firing 2003 stack testing	

2005 EMISSION FACTOR SUMMARY

Group ID	UNIT	SULFUR DIOXIDE	NITROGEN OXIDE	CARBON MONOXIDE	VOC	TSP / PM10	AMMONIA
528	REPOWERING CT 2 SYNGAS	SO2 CEMS	NOx CEMS	CO CEMS	0.0002 lb/MMBTU - w/out duct firing 0.0031 lb/MMBTU with duct firing 2003 stack testing	0.0094 lb/MMBTU - w/out duct firing 0.0125 lb/MMBTU with duct firing 2003 stack testing	
	REPOWERING CT 2 LSDF	SO2 CEMS	NOx CEMS	CO CEMS	0.0002 lb/MMBTU - w/out duct firing 0.0036 lb/MMBTU with duct firing 2003 stack testing	0.0065 lb/MMBTU - w/out duct firing 0.0165 lb/MMBTU with duct firing 2003 stack testing	
523	REPOWERING COOLING TOWER	N/A	N/A	N/A	N/A	Calculated from flow and TSS concentration	
530	REPOWERING RAW GAS FLARE	Material balance based on sulfur content	Prorated emissions from design feed rate and AP-42 emission factor - 0.068 lb/MMBTU	Prorated emissions from design feed rate and design CO destruction effciency of 98%.	N/A	N/A	
532	REPOWERING CLEAN GAS FLARE	Material balance based on sulfur content	Prorated emissions from design feed rate and AP-42 emission factor - 0.068 lb/MMBTU	Prorated emissions from design feed rate and design CO destruction effciency of 98%.	N/A	N/A	
250	HYDROGEN PLANT VENT - DEAERATOR	N/A	N/A	N/A	6/3/04 source test	N/A	
250	HYDROGEN PLANT VENT - CO2 VENTED	N/A	N/A	N/A	6/3/04 source test	N/A	

VALERO
DELAWARE CITY REFINERY
4550 Wrangle Hill Road • Delaware City, Delaware 19706-7000

April 30, 2007
CMRRR# 7006 3450 0003 6308 4582

RECEIVED
MAY 01 2007
24914
AIR QUALITY MGT.

Attn: Emission Inventory Department
Air Quality Management Section
DNREC
156 S. State St.
Dover, DE 19901

RE: 2006 Annual Air Emission Inventory and Emissions Statement Report
The Premcor Refining Group, Inc. – Delaware City Refinery

Dear Sir or Madam:

Enclosed is the 2006 Annual Air Emission Inventory and Emissions Statement Report for The Premcor Refining Group Inc.'s (Premcor) Delaware City Refinery. Emissions data were filed online using the DNREC i-STEPS software. The electronic data submitted included greenhouse gas emissions calculated using SANGEA software and hazardous air pollutants (HAPs) of interest by the Department.

Also enclosed is a summary of emission factors and calculation methodologies for criteria pollutants (including criteria pollutant precursors). Please note that Premcor has not conducted any stack testing for source-specific PM2.5 factors. PM10 condensibles have been reported as PM2.5-PRI where PM10 breakdowns were available from actual stack testing data.

Should you have any questions, please call me at (302) 836-6652.

Sincerely,

Scott Mesavitz
Associate Environmental Engineer

\Enclosures

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: PREMCOR DELAWARE CITY REFINERY

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
001	COKER INCINERATOR STACK	3.4	131.6	41.9	2817.5		143.22		0.049
002	FLUID COKER CO BOLER 22H3	13.1	501.5	426.6	13348.5		81.21		0.546
003	HEATER 22-H-2	0.1	7.3	1.8	0.7		0.2		0.0181
004	COKE HANDLING EQUIPMENT						37.5		
005	CRUDE UNIT								
007	HEATER #2 FOR UNIT 21-H-2	2.3	115.8	0.9	11.1		2.5		0.287
008	FOUL WATER TREATMENT SYS.								
010	COKER GASOLINE MEROX PLT								
011	CRACKER BYPASS STACK	6.7	28.7	21.5	593.3	1.24	25.67		0.078
012	CRACKER CO BOILER MAIN ST	104.7	740.3	466.6	7993.7	25.34	517.65		1.1169
013	TETRA HEATER 32-H-101	0.3	6.5	4.3	1.6		0.4		0.0427
014	TETRA HEATER 32-H-102								
015	TETRA HEATER 32-H-103								
016	ALKYLATION FEED MEROX PLT								
017	POLYMERIZATION MEROX PLT								
018	ALKY & POLY UNITS								
020	REFORMER, HEATER 25-H-1B								
021	CATALYTIC REFORMER UNIT								
024	NAPTHALENE PLT HTR 33-H-1								
025	NAPTHALENE PLT HTR 33-H-2								
027	SULFUR RECOVERY UNIT 1	0.1	4.6	1.1	66.3	1.27	4		0.0478
028	SULFUR RECOVERY UNIT 2		2.4	0.7	89.5	0.87	0.43		0.0379
029	HYDROCRACKER								
030	HYDROCRACKER HTR 36-H-1	0.4	17.7	4.4	1.7		0.4		0.0437
031	HYDROCRACKER HTR 36-H-3	0.2	12	3	1.1		0.3		0.0296
032	HYDROCRACKER HTR 36-H-2	0.1	4.9	1.2	0.5		0.1		0.012
033	HYDROCRACKER HYDROGEN PLT								
034	HYDROCRACKER H2 HTR 37-H1	3.1	96.7	12.1	14.9		3.3		0.383

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: PREMCOR DELAWARE CITY REFINERY

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
040	CLOSED TOLUENE FACILITY								
043	BENZENE EXTRACTION FAC.								
044	AROMATICS FACT. FACILITY								
050	CPI&API SEPARATOR, TANKS	2.64							2.59
051	WASTEWATER TREATMNT PLANT	4.3	6.3	1.6					
052	OIL RECOVERY SYSTEM								
066	CLOSED TRASH INCINERATOR								
067	BOILER 4	1.7	185.6	26	54.5	2.72	0.9		
068	BOILER 1	0.1	178.7	7.4	39	10.25	3.4		
069	BOILER 2	0.5	29.2	2.6	5.6	2.63	0.87		
070	BOILER 3		157.7		46.7	5	1.66		
071	CLOSED METHANOL PLANT								
072	CLOSED METHANOL PLT HTR 4								
073	NEW CCR REFORMER #1								
074	NEW CCR REF. HTR 42-H-1	1.8	71.2	0.4	8.4		1.9		0.218
075	NEW CCR REF. HTR 42-H-2	2	78.9	0.5	9.3		2.1		0.242
076	NEW CCR REF. HTR 42-H-3	0.9	37.1	0.2	4.4		1		0.114
077	NEW CCR REF. HTR 42-H-7	0.6	22.6	0.2	2.8		0.6		0.0729
078	OLEFINS PLANT								
080	FLARE SYSTEM	8.4	4.1	22.2	0.7				
081	BARGE LOADING	6.2	2.1	2.7					
082	CLOSED LAND TREATMENT (TS								
083	VALVE MAINTENANCE	25.3							
084	HYDROD TRAIN HTR 29-H-101	0.5	27	6.8	2.4		0.5		0.0616
085	HYDRODS. TRAIN HTR 29-H-8	0.6	22	1.3	2.7		0.6		0.0705
086	HYDRODS. TRAIN HTR 29-H-1								
088	HYDRODESULFURIZER TRAIN 1								
089	HYDRODESULFURIZER TRAIN 2								

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: PREMCOR DELAWARE CITY REFINERY

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
090	HYDRODS. TRAIN HTR 29-H-2	0.5	25.7	6.4	2.5		0.6		0.0635
091	HYDRODS. TRAIN HTR 29-H-3	0.1	6.6	1.7	0.7		0.1		0.0163
092	HYDRODS. TRAIN HTR 29-H-9	0.2	11.3	2.8	1.1		0.2		0.028
093	HYDRODESULFURIZER TRAIN 3								
094	HYDRODESULFURIZER TRAIN 4								
095	HYDRODS. TRAIN HTR 29-H-4		1.9		0.2				0.00392
096	HYDRODS. TRAIN HTR 29-H-7		1.8	0.4	0.2				0.00433
097	HYDRODESULFURIZER TRAIN 5								
098	HYDRODS. TRAIN HTR 29-H-5	0.4	21.7	1.4	1.7		0.4		0.046
099	HYDRODS. TRAIN HTR 29-H-6	0.4	12.2	51.6	2.1		0.5		0.0541
100	CLOSED STACK GAS SCRUBBER								
101	H2 CARBON DRUM VENT								
102	NAPHTHA TREATER								
105	CRUDE UNIT HEATR 21-H-701		74.3		18.9	5.05	4.51	0.3987	0.013
106	HTR FOR COKER SHU UNIT	0.5	24.6	6.2	2.4		0.5		0.0608
125	CNHTU HEATR 25-H-401		2.5		1.3				0.0349
126	CNHTU HTR 25-H-402		6		2.7		0.1		0.0704
130	CLOSED ACID PLANT								
135	PROD TANK #135	1.89							
136	PROD TANK #136	1.9							
137	PROD TANK #137	1.7							
139	PROD TANK #139	1.68							
145	PROD TANK #145	1.75							
146	PROD TANK #146	1.92							
147	PROD TANK #147	1.82							
149	PROD TANK #149	1.27							
150	PROD TANK #150	3.19							
161	PROD TANK #161	2.04							

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: PREMCOR DELAWARE CITY REFINERY

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
162	PROD TANK #162	2.46							
163	PROD TANK #163	2.83							
165	PROD TANK #165	1.31							
166	PROD TANK #166	3.28							
167	PROD TANK #167	1.07							
181	PROD TANK #181	2.03							
182	PROD TANK #182	1.77							
183	PROD TANK #183	2.99							
185	PROD TANK #185	2.48							
186	PROD TANK #186	0.33							
187	PROD TANK #187	1.35							
201	PROD TANK #203	2.09							
202	PROD TANK #202	0.1							
203	PROD TANK #203								
204	PROD TANK #204	1.77							
205	PROD TANK #205	1.73							
206	PROD TANK #206	0.42							
223	PROD TANK #223	1.59							
224	PROD TANK #224	1.67							
225	PROD TANK #225	1.22							
227	PROD TANK #227	0.21							
241	PROD TANK #241	2.58							
242	PROD TANK #242	0.38							
243	PROD TANK #243	0.14							
244	PROD TANK #244	3.26							
245	PROD TANK #245	1.85							
246	PROD TANK #246	2.27							
248	PROD TANK #248	0.06							

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: PREMCOR DELAWARE CITY REFINERY

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
250	HYDROGEN PLANT VENT	0.6							
261	PROD TANK #261	1.25							
262	PROD TANK #262								
263	PROD TANK #263	0.14							
264	PROD TANK #264	2.1							
265	PROD TANK #265	2.18							
266	PROD TANK #266	0.61							
268	PROD TANK #268	0.18							
281	PROD TANK #281	0.05							
282	PROD TANK #282	0.18							
283	PROD TANK #283	0.26							
284	PROD TANK #284	0.2							
285	PROD TANK #285	0.23							
286	PROD TANK #286	0.12							
331	BENZENE TANK T 331								
332	BENZENE TANK T 332								
401	TOLUENE TANK #401								
402	TOLUENE TANK #402								
405	TANK #405								
406	TANK #406								
407	TANK #407	0.13							
408	TANK #408								
470	TANK #470								
471	TANK #471								
481	TANK #481								
500	TANK #500								
502	TANK #502								
503	TANK #503								

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: PREMCOR DELAWARE CITY REFINERY

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
504	TANK #504								
505	TANK #505								
520	PROPANE PIT FLARE	1.1	1	7.5					
521	RFG COOLING TOWER						1.2		
523	REPOWERING COOLING TOW								
527	REPOWERING CT1	0.43	96.1	10	154	16.08	4.68		
528	REPOWERING CT2	0.57	130.65	7.33	229.24	20.81	6.39		
530	REPOWER - RAW GAS FLARE								
532	REPOWER SYNGAS FLARE		12.6	545.1	374.4				
550	TANK #550								
551	TANK #551								
552	TANK #552								
553	TANK #553								
560	TANK #560								
561	TANK #561								
562	TANK #562								
563	TANK #563								
564	TANK #564								
565	TANK #565								
566	TANK #566								
570	BENZENE TANK T 570								
571	AROMATICS TANK T 571								
572	AROMATICS TANK T 572								
580	TANK #580								
581	TANK #581								
582	TANK #582								
583	TANK #583								
584	TANK #584								

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: PREMCOR DELAWARE CITY REFINERY

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
901	CRUDE TANK #1 F-SS	1.33							
902	CRUDE TANK #2 F-SS	0.42							
903	CRUDE TANK #3 F-SS	1.31							
904	CRUDE TANK #4 F-SS	1.41							
905	CRUDE TANK #5 F-SS	1.38							
906	CRUDE TANK #6 F-SS	1.31							
907	CRUDE TANK #7 F-SS	1.44							
908	CRUDE TANK #8 F-SS	1.44							
909	CRUDE TANK #9 F-DS	1.74							
910	CRUDE TANK #10 F-SS	1.59							
911	CRUDE TANK #11	1.57							
912	CRUDE TANK #12	1.5							
944	INTER. TANK #44	0.88							
945	INTER. TANK #45	7.64							
947	INTER. TANK # 47	0.35							
948	INTER. TANK #48	0.53							
950	INTER. TANK #50	0.91							
951	INTER. TANK #51	0.36							
960	INTER. TANK #60	0.21							
961	INTER. TANK #61	0.03							
962	INTER. TANK #62	0.02							
965	INTER. TANK #65	1.03							
966	INTER. TANK #66	2.55							
971	INTER. TANK #71	0.07							
972	INTER. TANK #72	0.96							
973	INTER. TANK #73	0.63							
974	INTER. TANK #74								
975	INTER. TANK #75	0.09							

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: PREMCOR DELAWARE CITY REFINERY

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
976	INTER. TANK #76	0.01							
977	INTER. TANK #77	4.75							
978	INTER. TANK #78	8.84							
998	TANK FUGITIVE								
999	ACCIDENTAL RELEASES	23.3	0.1	1349.8	80.3				1.3

GROUP LEVEL AIR EMISSION INVENTORY SUMMARY

	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
Total Emissions	334.47	2921.55	3048.23	25988.64	91.26	849.59	0.3987	7.75595

Pursuant to Regulation No. 30, I, the undersigned, am a Responsible Official and I have personally examined and am familiar with the information submitted in this document and all of its attachments. I certify, based on information and belief formed after reasonable inquiry the statements and information in the document are true, accurate and complete.

Responsible Official: Andrew Kenner (Please Print)

Title: Vice President and General Manager

Signature: Andrew Kenner **Date** 4/30/07

2006 EMISSION FACTOR SUMMARY

Group ID	UNIT	SULFUR DIOXIDE	NITROGEN OXIDE	CARBON MONOXIDE	VOC	TSP / PM10	AMMONIA
105	21-H-701 FUEL GAS	Material balance using TRS from fuel gas CEMS.	NOx CEMS	0.000 lb/MMBTU 3/06 stack test	0.000 lb/MMBTU 3/06 stack test	0.006 lb/MMBTU PM10-PRI PM10 primary from 3/06 stack test.	
	21-H-701 AMMONIA	SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S in ammonia stream from sour water stripper design data.					Precombustor design efficiency and estimated NH3 combustion efficiency of 21-H-701
7	21-H-2 GAS	Material balance using TRS from fuel gas CEMS.	NOx CEMS	0.001 lb/MMBTU 1993 source test	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
2	COKER COB FUEL GAS	SO2 CEMS and stack flow monitor	NOx CEMS and stack flow monitor	CO CEMS and stack flow monitor	Pre-WGS: SCC Factor: 2.8 lb. VOC/MMSCF Post-WGS: 1/18/07 stack testing	Use of 1995 stack test factor, ratioed for actual feed rate to stack test feed rate, less fuel gas emissions. 46.8% of TSP is PM-10.	Pre-WGS: 5/25/06 stack testing Post-WGS: 1/18/07 stack testing
	COKER COB PROCESS GAS				Pre-WGS: SCC Factor: 2.8 lb. VOC/MMSCF Post-WGS: 1/18/07 stack testing		
1	COKER INCINERATOR - FUEL GAS	Material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
	COKER INCINERATOR - PROCESS GAS	Total SO2 emissions (presumed at monthly average for COB operation) less SO2 emissions from fuel gas	Total NOx emissions presumed at monthly average rate for COB operation	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	6/5/95 test data 0.0074 lb/hr per BPD FF	Based on 4/04 process data
3	COKER SEALAS	Material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
12	FCCU COB MAIN STACK - GAS	SO2 CEMS and stack flow monitor	NOx CEMS and stack flow monitor	CO CEMS and stack flow monitor	SCC Factor: 2.8 lb. VOC/MMSCF		
	FCCU COB MAIN STACK - PROCESS GAS				SCC Factor: 2.8 lb. VOC/MMSCF	Pre-WGS: 7/19-20/06 stack test Post-WGS: limit from air permit	Based on 4/04 process data
11	FCCU BYPASS STACK - PROCESS GAS	Total SO2 emissions presumed at monthly average rate for COB operation	Total NOx emissions presumed at monthly average rate for COB operation	SCC Factor: 13700 lb/MBBL FF with applied control efficiency of 99.7%	SCC Factor: 2.8 lb. VOC/MMSCF	February and March 2005 stack test results for filterable fraction; SO3 and H2SO4 condensibles estimated from SO2 emissions.	
84	29-H-101	Material balance using TRS from fuel gas CEMS.	0.138 lb/ MMBTU 1993 stack test factor	0.035 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
85	29-H-8	Material balance using TRS from fuel gas CEMS.	0.099 lb/ MMBTU 1993 stack test factor	0.006 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
13	32-H-101	Material balance using TRS from fuel gas CEMS.	0.048 lb/ MMBTU 10/16/06 stack test factor	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
90	29-H-2	Material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06

2006 EMISSION FACTOR SUMMARY

Group ID	UNIT	SULFUR DIOXIDE	NITROGEN OXIDE	CARBON MONOXIDE	VOC	TSP / PM10	AMMONIA
91	29-H-3	Material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
92	29-H-9	Material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
95	29-H-4	Material balance using TRS from fuel gas CEMS.	0.15 lb/ MMBTU 1993 stack test factor	0.004 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
96	29-H-7	Material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
98	29-H-5	Material balance using TRS from fuel gas CEMS.	0.15 lb/ MMBTU 1993 stack test factor	0.01 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
99	29-H-6	Material balance using TRS from fuel gas CEMS.	0.07 lb/ MMBTU 1993 stack test factor	0.301 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
34	H2 PLANT 37-H-1	Material balance using TRS from fuel gas CEMS.	NOx CEMS	0.01 lb/ MMBTU 1994 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
30	36-H-1	Material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
32	36-H-2	Material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
31	36-H-3	Material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
27	SRU I	SO2 CERMS	0.03 lb/ MMBTU 10/17-19/06 testing	0.0071 lb/ MMBTU 10/17-19/06 testing	0.0005 lb/ MMBTU 10/17-19/06 testing	1.33 lb/hr PM-10 10/17-19/06 testing 24% of PM-PRI is condensable	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
28	SRU II	SO2 CERMS	0.02 lb/ MMBTU 10/17-19/06 testing	0.006 lb/ MMBTU 10/17-19/06 testing	0.0003 lb/ MMBTU 10/17-19/06 testing	0.32 lb/hr PM-10 10/17-19/06 testing 67% of PM-PRI is condensable	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
74	42-H-1	Material balance using TRS from fuel gas CEMS.	NOx CEMS	0.0006 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
75	42-H-2	Material balance using TRS from fuel gas CEMS.	NOx CEMS	0.0006 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
76	42-H-3	Material balance using TRS from fuel gas CEMS.	NOx CEMS	0.0006 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06

2006 EMISSION FACTOR SUMMARY

Group ID	UNIT	SULFUR DIOXIDE	NITROGEN OXIDE	CARBON MONOXIDE	VOC	TSP / PM10	AMMONIA
77	42-H-7	Material balance using TRS from fuel gas CEMS.	0.10 lb/ MMBTU 2001 stack test factor	0.001 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
80	FLARE PILOT/PURGE GAS	Material balance using TRS from fuel gas CEMS.	0.068 lb/MMBTU AP-42 Factor for Industrial Flares	0.37 lb/MMBTU AP-42 Factor for Industrial Flares	0.14 lb/MMBTU AP-42 Factor for Industrial Flares	N/A	
68	DCPP 1 GAS	SO2 CEMS	NOx CEMS	0.006 lb/MMBTU October 2001 stack test factor	0.0001 lb/MMBTU October 2001 stack test factor	0.011 lb/MMBTU July and Sept. 2004 stack tests	
69	DCPP 2 GAS	SO2 CEMS	NOx CEMS	CO CEMS	0.0003 lb/MMBTU 6/15/04 stack test	0.0023 lb/MMBTU 6/15/04 stack test	
70	DCPP 3 GAS	SO2 CEMS	NOx CEMS	0.000 lb/MMBTU October 2001 stack test factor	0.00003 lb/MMBTU October 2001 stack test factor	0.0056 lb/MMBTU October 2001 stack test factor	
67	DCPP 4 GAS	SO2 CEMS	NOx CEMS	0.02 lb/MMBTU 1993 stack test factor	SCC Factor: 1.4 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
106	COKER SHU HTR	Material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
125	25-H-401	Material balance using TRS from fuel gas CEMS.	0.023 lb/ MMBTU 3/14/06 stack test factor	0.0571 lb/ MMSCF 2/01 stack test factor	0.0 lb/ MMSCF 2/01 stack test factor	0.359 lb/ MMSCF 2/01 stack test factor	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
126	25-H-402	Material balance using TRS from fuel gas CEMS.	0.027 lb/ MMBTU 3/15/06 stack test factor	0.0 lb/ MMSCF 2/01 stack test factor	0.002 lb/ MMSCF 2/01 stack test factor	0.301 lb/ MMSCF 2/01 stack test factor	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
4	COKER BAG HOUSE	N/A	N/A	N/A	N/A	Emission Factor 0.2 Grains/SCF. Design flow of 5000 SCF/MIN. TSP not PM-10.	
51	WWTP	N/A	N/A	N/A	1992 estimate of VOC emissions following NESHAPS controls	N/A	Estimate - amount evaporated from wastewater
	WWTP VCU	N/A	Permit Factor: 12.8 lb NOx /M Gal	Permit Factor: 3.2 lb. CO / Mgal	Permit Factor: 0.26 lb VOC /Mgal	N/A	
50	WWTP DOWNSTREAM (CPI @ API SEP. TANKS)	N/A	N/A	N/A	WATER 9 model	N/A	WATER 9 model
520	PROPANE PIT FLARE PILOT	N/A	4.089 lb/M Gal - TNRCC guidance document for flares and 99.9% flare efficiency	29.5 lb/M Gal - TNRCC guidance document for flares and 99.9% flare efficiency	4.23 lb/M Gal - TNRCC guidance document for flares and 99.9% flare efficiency	N/A	
	PROPANE PIT FLARE PRODUCT	N/A	4.089 lb/M Gal - TNRCC guidance document for flares and 99.9% flare efficiency	29.5 lb/M Gal - TNRCC guidance document for flares and 99.9% flare efficiency	4.23 lb/M Gal - TNRCC guidance document for flares and 99.9% flare efficiency	N/A	

2006 EMISSION FACTOR SUMMARY

Group ID	UNIT	SULFUR DIOXIDE	NITROGEN OXIDE	CARBON MONOXIDE	VOC	TSP / PM10	AMMONIA
52	OIL RECOVERY SYS	N/A	N/A	N/A	Permit limit	N/A	
17	POLY MEROX	Assumed same as Naphtha Treater	Assumed same as Naphtha Treater	Assumed same as Naphtha Treater	Assumed same as Naphtha Treater	Assumed same as Naphtha Treater	
16	ALKY MEROX	Assumed same as Naphtha Treater	Assumed same as Naphtha Treater	Assumed same as Naphtha Treater	Assumed same as Naphtha Treater	Assumed same as Naphtha Treater	
10	COKER MEROX	61.9 ppmv from analytical data	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
102	NAPHTHA TREATER	0.026 lb/MMBTU - based on max. 162 ppmv H2S	0.035 lb. NOx/MMBTU	0.074 lb. CO /MMBTU - Current permit limit in APC-95/0570 - CON (Amend 2)	0.003 lb. VOC/MMBTU - Current permit limit in APC-95/0570 - CON (Amend 2)	SCC Factor: 3 lb PM-10/MMSCF	
83	FUGITIVES (VALVE MAINTENANCE)	N/A	N/A	N/A	Use of EPA correlation equations and monitoring data	N/A	
81	BARGE LOADING GASOLINE	N/A	0.000617 lb/BBL 10/31-11/2/06 source testing	0.000803 lb/BBL 10/31-11/2/06 source testing	0.00023 lb/BBL 10/31-11/2/06 source testing	N/A	
81	BARGE LOADING METHANOL	N/A	2002 source testing	2002 source testing	2002 source testing	N/A	
81	BARGE LOADING DISTILLATE	N/A	N/A	N/A	AP-42 factor: 0.012 lb/1000 Gal. Loaded	N/A	
999	ACCIDENTAL RELEASES	Varies depending on type of release.	Varies depending on type of release.	Varies depending on type of release.	Varies depending on type of release.	Varies depending on type of release.	Varies depending on type of release.
Various	TANK FARM	N/A	N/A	N/A	EPA AP-42 Equations	0.0	
521	RFG COOLING TOWER	N/A	N/A	N/A	Periodic sampling of VOC concentrations in influent/recycle/effluent streams	Periodic sampling of TDS in influent	
521	ETHER PLANT COOLING TOWER	N/A	N/A	N/A	Used same analytical data as RFG cooling tower	Used same analytical data as RFG cooling tower	
527	REPOWERING CT 1 SYNGAS	SO2 CEMS	NOx CEMS	CO CEMS	0.0002 lb/MMBTU - w/out duct firing 0.0031 lb/MMBTU with duct firing 2003 stack testing	0.0094 lb/MMBTU - w/out duct firing 0.0125 lb/MMBTU with duct firing 2003 stack testing	
	REPOWERING CT 1 LSDF	SO2 CEMS	NOx CEMS	CO CEMS	0.0002 lb/MMBTU - w/out duct firing 0.0036 lb/MMBTU with duct firing 2003 stack testing	0.0176 lb/MMBTU - w/out duct firing 0.0165 lb/MMBTU with duct firing 2003 stack testing	

2006 EMISSION FACTOR SUMMARY

Group ID	UNIT	SULFUR DIOXIDE	NITROGEN OXIDE	CARBON MONOXIDE	VOC	TSP / PM10	AMMONIA
528	REPOWERING CT 2 SYNGAS	SO2 CEMS	NOx CEMS	CO CEMS	0.0002 lb/MMBTU - w/out duct firing 0.0031 lb/MMBTU with duct firing 2003 stack testing	0.0094 lb/MMBTU - w/out duct firing 0.0125 lb/MMBTU with duct firing 2003 stack testing	
	REPOWERING CT 2 LSDF	SO2 CEMS	NOx CEMS	CO CEMS	0.0002 lb/MMBTU - w/out duct firing 0.0036 lb/MMBTU with duct firing 2003 stack testing	0.0065 lb/MMBTU - w/out duct firing 0.0165 lb/MMBTU with duct firing 2003 stack testing	
523	REPOWERING COOLING TOWER	N/A	N/A	N/A	N/A	Calculated from flow and TSS concentration	
530	REPOWERING RAW GAS FLARE	Material balance based on sulfur content	Prorated emissions from design feed rate and AP-42 emission factor - 0.068 lb/MMBTU	Prorated emissions from design feed rate and design CO destruction effciency of 98%.	N/A	N/A	
532	REPOWERING CLEAN GAS FLARE	Material balance based on sulfur content	Prorated emissions from design feed rate and AP-42 emission factor - 0.068 lb/MMBTU	Prorated emissions from design feed rate and design CO destruction effciency of 98%.	N/A	N/A	
250	HYDROGEN PLANT VENT - DEAERATOR	N/A	N/A	N/A	1/24-25/06 source test	N/A	
250	HYDROGEN PLANT VENT - CO2 VENTED	N/A	N/A	N/A	1/24-25/06 source test	N/A	

VALERO
DELAWARE CITY REFINERY
4550 Wrangle Hill Road • Delaware City, Delaware 19706-7000

RECEIVED
APR 30 2008
29640
AIR QUALITY MGT.

CMRRR# 7006 3450 0003 6313 4973

April 29, 2008

Air Quality Management Section, DNREC
Emission Inventory Development Program
156 South State St.
Dover, DE 19901

RE: 2007 Annual Air Emission Inventory and Emissions Statement Report
The Premcor Refining Group, Inc. – Delaware City Refinery

Dear Sir or Madam:

Enclosed are the following documents for the Premcor Refining Group Inc.'s Delaware City Refinery:

- 2007 Annual Air Emission Inventory and Emissions Statement Summary Report
- CD containing a copy of the Detail Emissions Report and a signed Optical Media Certification Form
- A summary of emission factors and calculation methodologies for criteria pollutants

The electronic data submitted included greenhouse gas emissions and hazardous air pollutants (HAPs) of interest by the Department. If you have any questions or need additional information, please contact me at (302) 834-6408.

Sincerely,

Cathe Kalisz

Cathe Kalisz
Staff Environmental Engineer

\Enclosures

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

RECEIVED
APR 30 2008
AIR QUALITY MGT.

Facility Name: PREMCOR DELAWARE CITY REFINERY

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
001	COKER INCINERATOR STACK	4.73	52.21	59.2	847.93		60.94		0.05
002	FLUID COKER CO BOLER 22H3	3.06	526.68	121.45	75.17	10.51	128.82		0.17
003	HEATER 22-H-2	0.14	7.03	1.76	1.27		0.15		0.018
004	COKE HANDLING EQUIPMENT						37.54		
005	CRUDE UNIT								
007	HEATER #2 FOR UNIT 21-H-2	2.21	97.37	0.9	20.7		2.37		0.283
008	FOUL WATER TREATMENT SYS.								
010	COKER GASOLINE MEROX PLT								
011	CRACKER BYPASS STACK	0.4	21.06	18.44	404.97	1.11	22.94		0.312
012	FCCU COB WGS STACK	10.02	629.31	375.8	101.25	10.67	62.68		7.8
013	TETRA HEATER 32-H-101	0.34	12.13	4.23	3.24		0.36		0.0434
014	TETRA HEATER 32-H-102								
015	TETRA HEATER 32-H-103								
016	ALKYLATION FEED MEROX PLT								
017	POLYMERIZATION MEROX PLT								
018	ALKY & POLY UNITS								
020	REFORMER, HEATER 25-H-1B								
021	CATALYTIC REFORMER UNIT								
024	NAPTHALENE PLT HTR 33-H-1								
025	NAPTHALENE PLT HTR 33-H-2								
027	SULFUR RECOVERY UNIT 1	0.07	4.46	1.05	71.09	1.39	4.38		0.0471
028	SULFUR RECOVERY UNIT 2	0.03	2.21	0.67	94.11	0.8	0.4		0.0348
029	HYDROCRACKER								
030	HYDROCRACKER HTR 36-H-1	0.33	16.41	4.1	3.42		0.35		0.0421
031	HYDROCRACKER HTR 36-H-3	0.21	10.26	2.57	2.1		0.22		0.0263
032	HYDROCRACKER HTR 36-H-2	0.1	5.09	1.27	1.06		0.11		0.0131
033	HYDROCRACKER HYDROGEN PLT								
034	HYDROCRACKER H2 HTR 37-H1	3.3	105.76	13.45	31.81		3.53		0.423
040	CLOSED TOLUENE FACILITY								

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: PREMCOR DELAWARE CITY REFINERY

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
043	BENZENE EXTRACTION FAC.								
044	AROMATICS FACT. FACILITY								
050	CPI&API SEPARATOR, TANKS	22.08							0.03
051	WASTEWATER TREATMNT PLANT	4.2	6.35	1.59					
052	OIL RECOVERY SYSTEM								
066	CLOSED TRASH INCINERATOR								
067	BOILER 4	1.42	176.91	23.87	65.65	2.29	0.76		0.36
068	BOILER 1	1.27	216.12	15.44	59.27	9.21	2.12		0.426
069	BOILER 2	0.6	38.38	2.01	25.63	9.01	6.06		0.455
070	BOILER 3	0.97	200.62	1.81	61.13	2.76	7.45		0.424
071	CLOSED METHANOL PLANT								
072	CLOSED METHANOL PLT HTR 4								
073	NEW CCR REFORMER #1								
074	NEW CCR REF. HTR 42-H-1	1.53	64.21	0.37	15.09		1.64		0.196
075	NEW CCR REF. HTR 42-H-2	1.71	71.86	0.42	17.04		1.83		0.22
076	NEW CCR REF. HTR 42-H-3	0.87	36.57	0.21	8.55		0.93		0.112
077	NEW CCR REF. HTR 42-H-7	0.52	20.75	0.21	5.08		0.56		0.0666
078	OLEFINS PLANT								
080	FLARE SYSTEM	8.74	4.24	23.09	1.45				
081	BARGE LOADING	10.23	1.15	1.5					
082	CLOSED LAND TREATMENT (TS								
083	VALVE MAINTENANCE	33.7							
084	HYDROD TRAIN HTR 29-H-101	0.36	20.32	5.15	4.13		0.38		0.0461
085	HYDRODS. TRAIN HTR 29-H-8	0.58	23.22	1.41	5.5		0.62		0.0738
086	HYDRODS. TRAIN HTR 29-H-1								
088	HYDRODESULFURIZER TRAIN 1								
089	HYDRODESULFURIZER TRAIN 2								
090	HYDRODS. TRAIN HTR 29-H-2	0.51	25.29	6.32	4.67		0.54		0.0649
091	HYDRODS. TRAIN HTR 29-H-3	0.12	5.84	1.46	1.21		0.13		0.015

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: PREMCOR DELAWARE CITY REFINERY

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
092	HYDRODS. TRAIN HTR 29-H-9	0.23	11.36	2.84	2.13		0.24		0.0292
093	HYDRODESULFURIZER TRAIN 3								
094	HYDRODESULFURIZER TRAIN 4								
095	HYDRODS. TRAIN HTR 29-H-4	0.04	2.6	0.07	0.39		0.05		0.00539
096	HYDRODS. TRAIN HTR 29-H-7	0.04	1.78	0.44	0.35		0.04		0.00457
097	HYDRODESULFURIZER TRAIN 5								
098	HYDRODS. TRAIN HTR 29-H-5	0.37	22.88	1.52	3.55		0.4		0.0477
099	HYDRODS. TRAIN HTR 29-H-6	0.38	11.02	46.7	3.62		0.41		0.0488
100	CLOSED STACK GAS SCRUBBER								
101	H2 CARBON DRUM VENT								
102	NAPHTHA TREATER			0.01					
105	CRUDE UNIT HEATR 21-H-701		55.23		35.24	4.89	4.36		0.486
106	HTR FOR COKER SHU UNIT	0.44	22.04	5.51	4.1		0.47		0.0566
125	CNHTU HEATR 25-H-401		2.41	0.01	2.88		0.04		0.0399
126	CNHTU HTR 25-H-402		6.01		5.05		0.06		0.0702
130	CLOSED ACID PLANT								
134	PROD TANK FARM HAPS								
135	PROD TANK #135	1.66							
136	PROD TANK #136	1.83							
137	PROD TANK #137	1.41							
139	PROD TANK #139	1.59							
145	PROD TANK #145	1.81							
146	PROD TANK #146	2							
147	PROD TANK #147	1.82							
149	PROD TANK #149	1.21							
150	PROD TANK #150	2.25							
161	PROD TANK #161	2.3							
162	PROD TANK #162	2.39							
163	PROD TANK #163	3.02							

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: PREMCOR DELAWARE CITY REFINERY

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
165	PROD TANK #165	0.89							
166	PROD TANK #166	1.12							
167	PROD TANK #167	1.39							
181	PROD TANK #181	2.35							
182	PROD TANK #182	2.44							
183	PROD TANK #183	3.11							
185	PROD TANK #185	0.83							
186	PROD TANK #186	0.32							
187	PROD TANK #187	1.29							
201	PROD TANK #203	2.47							
202	PROD TANK #202	0.1							
203	PROD TANK #203								
204	PROD TANK #204	1.82							
205	PROD TANK #205	1.62							
206	PROD TANK #206	0.38							
223	PROD TANK #223	2.17							
224	PROD TANK #224	1.68							
225	PROD TANK #225	0.93							
227	PROD TANK #227	0.17							
241	PROD TANK #241	0.96							
242	PROD TANK #242	0.39							
243	PROD TANK #243	0.19							
244	PROD TANK #244	2.41							
245	PROD TANK #245	2.11							
246	PROD TANK #246	2.2							
248	PROD TANK #248	0.08							
250	HYDROGEN PLANT VENT	1.98							
261	PROD TANK #261	0.98							
262	PROD TANK #262								

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: PREMCOR DELAWARE CITY REFINERY

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
263	PROD TANK #263	0.07							
264	PROD TANK #264	2.01							
265	PROD TANK #265	1.89							
266	PROD TANK #266	0.69							
268	PROD TANK #268	0.17							
281	PROD TANK #281	0.05							
282	PROD TANK #282	0.17							
283	PROD TANK #283	0.26							
284	PROD TANK #284	0.21							
285	PROD TANK #285	0.14							
286	PROD TANK #286	0.11							
331	BENZENE TANK T 331								
332	BENZENE TANK T 332								
401	TOLUENE TANK #401								
402	TOLUENE TANK #402								
405	TANK #405								
406	TANK #406								
407	TANK #407	0.17							
408	TANK #408								
470	TANK #470	0.02							
471	TANK #471	0.01							
481	TANK #481								
500	TANK #500								
502	TANK #502								
503	TANK #503								
504	TANK #504								
505	TANK #505								
520	PROPANE PIT FLARE	0.17	0.17	1.21					
521	RFG COOLING TOWER						2.5		

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: PREMCOR DELAWARE CITY REFINERY

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
523	REPOWERING COOLING TOW						2.17		
527	REPOWERING CT1	1.62	136.17	14.35	233.37	25.84	16.65		
528	REPOWERING CT2	2	157.01	10.66	309.7	20.23	24.31		
530	REPOWER - RAW GAS FLARE								
532	REPOWER SYNGAS FLARE		8.3	356.87	242.71				
550	TANK #550								
551	TANK #551								
552	TANK #552								
553	TANK #553								
560	TANK #560								
561	TANK #561								
562	TANK #562								
563	TANK #563								
564	TANK #564								
565	TANK #565								
566	TANK #566								
570	BENZENE TANK T 570								
571	AROMATICS TANK T 571								
572	AROMATICS TANK T 572								
580	TANK #580								
581	TANK #581								
582	TANK #582								
583	TANK #583								
584	TANK #584								
900	CRUDE TANK FARM HAPS								
901	CRUDE TANK #1 F-SS	1.52							
902	CRUDE TANK #2 F-SS	0.44							
903	CRUDE TANK #3 F-SS	1.48							
904	CRUDE TANK #4 F-SS	1.49							

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: PREMCOR DELAWARE CITY REFINERY

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
905	CRUDE TANK #5 F-SS	1.44							
906	CRUDE TANK #6 F-SS	1.56							
907	CRUDE TANK #7 F-SS	1.38							
908	CRUDE TANK #8 F-SS	1.54							
909	CRUDE TANK #9 F-DS	1.56							
910	CRUDE TANK #10 F-SS	1.49							
911	CRUDE TANK #11	1.46							
912	CRUDE TANK #12	1.51							
943	INTER. TANK FARM HAPS								
944	INTER. TANK #44	0.77							
945	INTER. TANK #45	7.33							
947	INTER. TANK # 47	0.39							
948	INTER. TANK #48	0.45							
950	INTER. TANK #50	0.74							
951	INTER. TANK #51	0.35							
960	INTER. TANK #60	0.13							
961	INTER. TANK #61	0.02							
962	INTER. TANK #62	0.01							
965	INTER. TANK #65	1							
966	INTER. TANK #66	8.61							
971	INTER. TANK #71	0.07							
972	INTER. TANK #72	0.76							
973	INTER. TANK #73	0.62							
974	INTER. TANK #74								
975	INTER. TANK #75	0.09							
976	INTER. TANK #76	0.01							
977	INTER. TANK #77	4.91							
978	INTER. TANK #78	6.19							
998	TANK FUGITIVE								

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: PREMCOR DELAWARE CITY REFINERY

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
999	ACCIDENTAL RELEASES	32.21	0.12	1482.44	162.29				4.87

GROUP LEVEL AIR EMISSION INVENTORY SUMMARY

	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
Total Emissions	266.81	2838.91	2612.38	2937.9	98.71	399.51		17.41056

Pursuant to Regulation No. 30, I, the undersigned, am a Responsible Official and I have personally examined and am familiar with the information submitted in this document and all of its attachments I certify, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate and complete.

Responsible Official: Andrew Kenner (Please Print)

Title: Vice President and General Manager

Signature: Andrew Kenner **Date** 4/28/08

Department of Natural Resources and Environmental Control
Division of Air and Waste Management
Air Quality Management Section
156 South State Street
Dover, DE 19901

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CLEAN AIR DEPENDS ON YOU
DEPEND ON CLEAN AIR

2007 Annual Air Emission Inventory

Optical Media Certification Form

The requirement of EPA's Cross-Media Electronic Reporting Rule (CROMERR), applies to States that choose to receive reports and documents from facilities through the Internet. The requirements of the rule provide for electronic reporting under authorized state and local government programs, apply to the governmental entities administering the authorized programs, and to facilities that submit data through the Internet to those governmental entities. If on-line reporting is offered by the state, an EPA-approved electronic signature process must be in place. Alternatively, on-line reporting can be followed up by the submission of a certified document (on diskette, compact disk, or digital video disk, or by facsimile, or paper report) containing the same information that was submitted on-line.

Currently, the Air Quality Management Section's (AQMS) on-line reporting system does not have an approved electronic signature system. Therefore, we are required to receive from reporting facilities a certified document in addition to the data submitted on-line. AQMS has created a detailed report that can be easily created in pdf format for use by a facility as the certified document of their on-line submission. The pdf file can be burned to a CD or DVD and sent to AQMS to meet the CROMERR requirements.

AQMS continues to explore the option of developing an electronic signature for the on-line reporting system. In our judgment, however, the creation, administering and maintenance of that system will entail more work for both AQMS and reporting facilities, than submitting the detailed report on a CD/DVD. We would appreciate any feedback you may have on this issue.

By having to submit the detail report on CD or DVD, you can also submit your supporting documentation along with the detailed report. We hope you take advantage of this option.

Please sign the certification statement below and mail this form with the CD or DVD to:

Air Quality Management Section, DNREC
Emission Inventory Development Program
156 South State Street
Dover, Delaware 19901

Pursuant to Regulation No. 30, I, the undersigned, am the Responsible Official and that I have personally examined and am familiar with the information submitted in this document and all of its attachments. I certify, based on information and belief formed after reasonable inquiry, the statements and information in the attached optical media document are true, accurate, and complete.

Facility Name: Premcor Refining Group Inc. – Delaware City Refinery

Responsible Official: Andrew Kenner (Please Print)

Title: Vice President and General Manager

Signature: Andrew Kenner **Date** 4/28/08

Blue Skies Delaware; Clean Air for Life

2007 EMISSION FACTOR SUMMARY - DELAWARE CITY REFINERY

Group ID	UNIT	SULFUR DIOXIDE	NITROGEN OXIDE	CARBON MONOXIDE	VOC	TSP / PM10	AMMONIA
105	21-H-701	Material balance using TRS from fuel gas CEMS.	NOx CEMS	0.000 lb/MMBTU 3/06 stack test	0.000 lb/MMBTU 3/06 stack test	0.006 lb/MMBTU PM10-PRI 3/06 stack test.	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
7	21-H-2	Material balance using TRS from fuel gas CEMS.	NOx CEMS	0.001 lb/MMBTU 1993 source test	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
2	COKER COB WGS STACK	SO2 CEMS and stack flow monitor	NOx CEMS and stack flow monitor	CO CEMS and stack flow monitor	6.60 E-8 lb/dscf Average of 1/07 and 4/07 stack test results	3.0003E-6 lb/dscf PM10-PRI 1/07 stack test	3.7E-9 lb/dscf 1/07 stack test
1	COKER INCINERATOR - FUEL GAS	Material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
	COKER INCINERATOR - PROCESS GAS	SO2 determined from algorithm using Coker fresh feed rate and feed sulfur concentration	Estimated based on historical data for COB NOx prior to SNCR installation	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	0.0074 lb/hr per BPD FF 6/5/95 test data	6.3661E-3 lb/M Lbs coke burn 5/06 stack testing pre-WGS installation
3	COKER SEALAS	Material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
12	FCCU COB MAIN STACK - GAS	SO2 CEMS and stack flow monitor	NOx CEMS and stack flow monitor	CO CEMS and stack flow monitor	0.043 lb/Mlbs coke burn 4/07 stack test	0.316 lb/Mlbs coke burn - PM10-PRI 4/07 stack test	0.0336 lb/Mlbs coke burn 7/06 stack test
11	FCCU BYPASS STACK - PROCESS GAS	SO2 determined from algorithm using FCCU fresh feed rate and feed sulfur concentration	Estimated from COB NOx emissions at similar feed rates	SCC Factor: 13700 lb/MBBL FF with applied control efficiency of 99.7%	SCC Factor: 2.8 lb. VOC/MMSCF	2.594lb/Mlbs coke burn - PM10-PRI 7/06 stack test	0.0336 lb/Mlbs coke burn 7/06 stack test
84	29-H-101	Material balance using TRS from fuel gas CEMS.	0.138 lb/ MMBTU 1993 stack test factor	0.035 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
85	29-H-8	Material balance using TRS from fuel gas CEMS.	0.099 lb/ MMBTU 1993 stack test factor	0.006 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
13	32-H-101	Material balance using TRS from fuel gas CEMS.	0.088 lb/ MMBTU 11/6/07 stack test factor	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
90	29-H-2	Material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06

2007 EMISSION FACTOR SUMMARY - DELAWARE CITY REFINERY

Group ID	UNIT	SULFUR DIOXIDE	NITROGEN OXIDE	CARBON MONOXIDE	VOC	TSP / PM10	AMMONIA
91	29-H-3	Material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
92	29-H-9	Material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
95	29-H-4	Material balance using TRS from fuel gas CEMS.	0.153 lb/ MMBTU 1993 stack test factor	0.004 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
96	29-H-7	Material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
98	29-H-5	Material balance using TRS from fuel gas CEMS.	0.151 lb/ MMBTU 1993 stack test factor	0.01 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
99	29-H-6	Material balance using TRS from fuel gas CEMS.	0.07 lb/ MMBTU 1993 stack test factor	0.301 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
34	H2 PLANT 37-H-1	Material balance using TRS from fuel gas CEMS.	NOx CEMS	0.01 lb/ MMBTU 1994 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
30	36-H-1	Material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
32	36-H-2	Material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
31	36-H-3	Material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
27	SRU I	SO2 CERMS	0.03 lb/ MMBTU 10/17-19/06 testing	0.0071 lb/ MMBTU 10/17-19/06 testing	0.0005 lb/ MMBTU 10/17-19/06 testing	1.33 lb/hr PM-10 10/17-19/06 testing 24% of PM-PRI is condensable	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
28	SRU II	SO2 CERMS	0.02 lb/ MMBTU 10/17-19/06 testing	0.006 lb/ MMBTU 10/17-19/06 testing	0.0003 lb/ MMBTU 10/17-19/06 testing	0.32 lb/hr PM-10 10/17-19/06 testing 67% of PM-PRI is condensable	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06

2007 EMISSION FACTOR SUMMARY - DELAWARE CITY REFINERY

Group ID	UNIT	SULFUR DIOXIDE	NITROGEN OXIDE	CARBON MONOXIDE	VOC	TSP / PM10	AMMONIA
74	42-H-1	Material balance using TRS from fuel gas CEMS.	NOx CEMS	0.0006 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
75	42-H-2	Material balance using TRS from fuel gas CEMS.	NOx CEMS	0.0006 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
76	42-H-3	Material balance using TRS from fuel gas CEMS.	NOx CEMS	0.0006 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
77	42-H-7	Material balance using TRS from fuel gas CEMS.	0.10 lb/ MMBTU 2001 stack test factor	0.001 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
80	FLARE PILOT/PURGE GAS	Material balance using TRS from fuel gas CEMS.	0.068 lb/MMBTU AP-42 Factor for Industrial Flares	0.37 lb/MMBTU AP-42 Factor for Industrial Flares	0.14 lb/MMBTU AP-42 Factor for Industrial Flares	N/A	
68	DCPP 1	SO2 CEMS	NOx CEMS	0.0109 lb/MMBTU 6/20/07 stack test factor	0.0009 lb/MMBTU 6/20/07 stack test factor	0.011 lb/MMBTU July and Sept. 2004 stack tests	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
69	DCPP 2	SO2 CEMS	NOx CEMS	CO CEMS	0.0004 lb/MMBTU 6/6/07 stack test	0.01005 lb/MMBTU PM10-PRI 6/5/07 stack test	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
70	DCPP 3	SO2 CEMS	NOx CEMS	0.0012 lb/MMBTU w/syngas 6/8/07 stack test factor	0.0005 lb/MMBTU w/syngas 6/8/07 stack test factor	0.001189 lb/MMBTU w/syngas PM10-PRI 1/10/08 stack test factor	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
67	DCPP 4	SO2 CEMS	NOx CEMS	0.02 lb/MMBTU 1993 stack test factor	SCC Factor: 1.4 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
106	COKER SHU HTR	Material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
125	25-H-401	Material balance using TRS from fuel gas CEMS.	0.019 lb/ MMBTU 4/25/07 stack test factor	0.0571 lb/ MMSCF 2/01 stack test factor	0.0 lb/ MMSCF 2/01 stack test factor	0.359 lb/ MMSCF 2/01 stack test factor	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
126	25-H-402	Material balance using TRS from fuel gas CEMS.	0.027 lb/ MMBTU 4/25/07 stack test factor	0.0 lb/ MMSCF 2/01 stack test factor	0.002 lb/ MMSCF 2/01 stack test factor	0.301 lb/ MMSCF 2/01 stack test factor	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06

2007 EMISSION FACTOR SUMMARY - DELAWARE CITY REFINERY

Group ID	UNIT	SULFUR DIOXIDE	NITROGEN OXIDE	CARBON MONOXIDE	VOC	TSP / PM10	AMMONIA
4	COKER BAG HOUSE	N/A	N/A	N/A	N/A	Emission Factor 0.2 Grains/SCF. Design flow of 5000 SCF/MIN. TSP not PM-10.	
51	WWTP	N/A	N/A	N/A	1992 estimate of VOC emissions following NESHAPS controls	N/A	
	WWTP VCU	N/A	Permit Factor: 12.8 lb NOx /M Gal	Permit Factor: 3.2 lb. CO / Mgal	Permit Factor: 0.26 lb VOC /Mgal	N/A	
50	WWTP DOWNSTREAM (CPI @ API SEP. TANKS)	N/A	N/A	N/A	WATER 9 model	N/A	WATER 9 model
520	PROPANE PIT FLARE	N/A	4.089 lb/M Gal - TNRCC guidance document for flares and 99.9% flare efficiency	29.5 lb/M Gal - TNRCC guidance document for flares and 99.9% flare efficiency	4.23 lb/M Gal - TNRCC guidance document for flares and 99.9% flare efficiency	N/A	
17	POLY MEROX	Assumed same as Naphtha Treater	Assumed same as Naphtha Treater	Assumed same as Naphtha Treater	Assumed same as Naphtha Treater	Assumed same as Naphtha Treater	
16	ALKY MEROX	Assumed same as Naphtha Treater	Assumed same as Naphtha Treater	Assumed same as Naphtha Treater	Assumed same as Naphtha Treater	Assumed same as Naphtha Treater	
10	COKER (CRUDE) MEROX	61.9 ppmv from analytical data	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
102	NAPHTHA TREATER	0.026 lb/MMBTU - based on max. 162 ppmv H2S	0.035 lb. NOx/MMBTU	0.074 lb. CO /MMBTU - Current permit limit in APC-95/0570 - CON (Amend 2)	0.003 lb. VOC/MMBTU - Current permit limit in APC-95/0570 - CON (Amend 2)	SCC Factor: 3 lb PM-10/MMSCF	
83	FUGITIVES (VALVE MAINTENANCE)	N/A	N/A	N/A	Use of EPA correlation equations and monitoring data	N/A	
81	BARGE LOADING GASOLINE	N/A	0.000617 lb/BBL 10/31-11/2/06 source testing	0.000803 lb/BBL 10/31-11/2/06 source testing	0.00023 lb/BBL 10/31-11/2/06 source testing	N/A	
81	BARGE LOADING DISTILLATE and REFORMATE	N/A	N/A	N/A	*Distillate* AP-42 factor: 0.012 lb/1000 Gal *Reformate* - AP-42 5.2 (1/95) - Equation (1)	N/A	

2007 EMISSION FACTOR SUMMARY - DELAWARE CITY REFINERY

Group ID	UNIT	SULFUR DIOXIDE	NITROGEN OXIDE	CARBON MONOXIDE	VOC	TSP / PM10	AMMONIA
999	ACCIDENTAL RELEASES	Varies depending on type of release.	Varies depending on type of release.	Varies depending on type of release	Varies depending on type of release	Varies depending on type of release	Varies depending on type of release
Various	TANK FARM	N/A	N/A	N/A	EPA AP-42 Equations	0.0	
521	RFG COOLING TOWER	N/A	N/A	N/A	Periodic sampling of VOC concentrations in influent/recycle/effluent streams	Periodic sampling of TDS in influent	
527	REPOWERING CT 1 SYNGAS	SO2 CEMS	NOx CEMS	CO CEMS	0.00094 lb/MMBTU - w/out duct firing 8/7/07 stack testing 0.00102 lb/MMBTU - w/duct firing 11/06 stack teseting	0.02588 lb/MMBTU - w/out duct firing 8/7/07 stack testing 0.01645 lb/MMBTU w/duct firing 11/06 stack tetsing	
	REPOWERING CT 1 LSDF	SO2 CEMS	NOx CEMS	CO CEMS	0.00134 lb/MMBTU - w/duct firing 11/06 stack testing	0.00160 lb/MMBTU - w/duct firing 11/06 stack testing	
528	REPOWERING CT 2 SYNGAS	SO2 CEMS	NOx CEMS	CO CEMS	0.0010 lb/MMBTU - w/out duct firing 6/27/07 stack testing 0.00098 lb/MMBTU w/duct firing 11/06 stack testing	0.02105 lb/MMBTU - w/out duct firing 6/27/07 stack testing 0.13848 lb/MMBTU w/duct firing 6/27/07 stack testing	
	REPOWERING CT 2 LSDF	SO2 CEMS	NOx CEMS	CO CEMS	0.00087 lb/MMBTU - w/duct firing 11/06 stack testing	0.00457 lb/MMBTU - w/duct firing 11/06 stack testing	
523	REPOWERING COOLING TOWER	N/A	N/A	N/A	N/A	Calculated from flow and TSS concentration	
530	REPOWERING RAW GAS FLARE	Material balance based on sulfur content	Prorated emissions from design feed rate and AP-42 emission factor - 0.068 lb/MMBTU	Prorated emissions from design feed rate and design CO destruction effciency of 98%.	N/A	N/A	
532	REPOWERING CLEAN GAS FLARE	Material balance based on sulfur content	Prorated emissions from design feed rate and AP-42 emission factor - 0.068 lb/MMBTU	Prorated emissions from design feed rate and design CO destruction effciency of 98%.	N/A	N/A	
250	HYDROGEN PLANT VENT - DEAERATOR	N/A	N/A	N/A	0.288 lb/MMSCF H2 produced 3/8/07 stack test	N/A	
250	HYDROGEN PLANT VENT - CO2 VENTED	N/A	N/A	N/A	0.347 lb/MMSCF H2 produced 3/8/07 stack test	N/A	

EPA Technical Analysis for the Pittsburgh-Beaver Valley area

Introduction

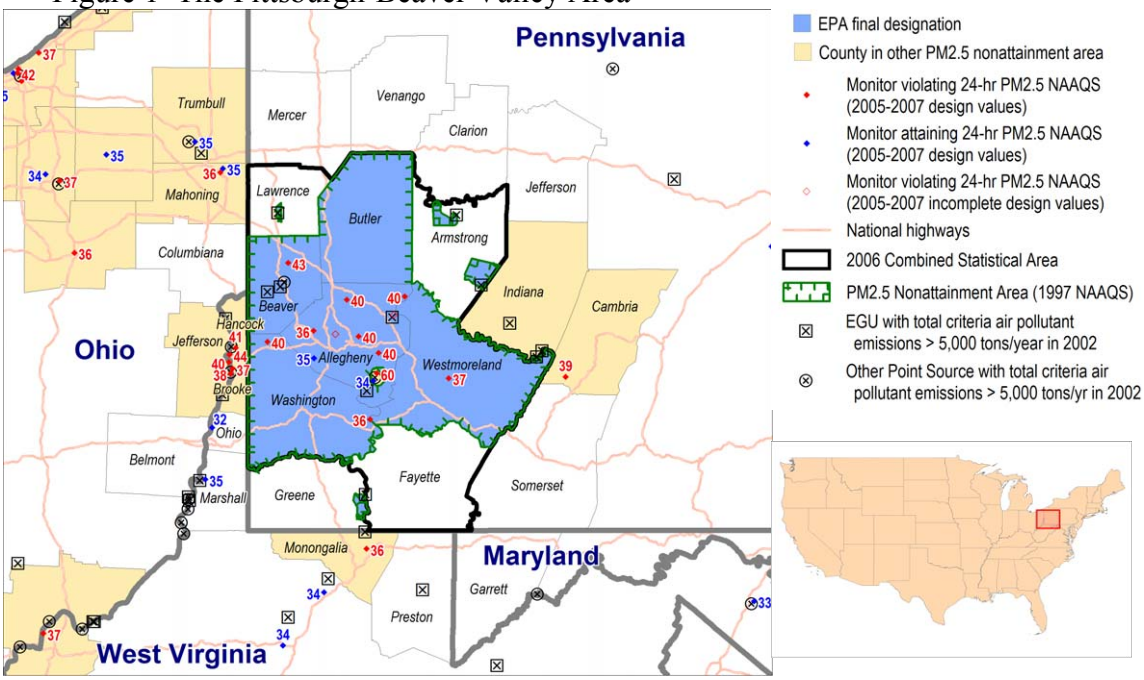
Pursuant to section 107(d) of the Clean Air Act, EPA must designate as nonattainment those areas that violate the NAAQS and those nearby areas that contribute to violations. This technical analysis for the Pittsburgh-Beaver Valley area identifies the counties with monitors that violate the 2006 24-hour $PM_{2.5}$ standard and evaluates nearby counties for contributions to fine particle concentrations in the area. EPA has evaluated these counties based on the weight of evidence of the following nine factors recommended in EPA guidance and any other relevant information:

- pollutant emissions
- air quality data
- population density and degree of urbanization
- traffic and commuting patterns
- growth
- meteorology
- geography and topography
- jurisdictional boundaries
- level of control of emissions sources

We also used analytical tools and data such as pollution roses, fine particle composition monitoring data, back trajectory analyses, and the contributing emission score (CES) to evaluate these areas. (See additional discussion of the CES under Factor 1 below.)

Figure 1 is a map of the counties in the Pittsburgh-Beaver Valley area and other relevant information such as the locations and design values of air quality monitors, and the metropolitan area boundary.

Figure 1 The Pittsburgh-Beaver Valley Area



For this area, EPA previously established $PM_{2.5}$ nonattainment boundaries for the 1997 $PM_{2.5}$ NAAQS that included 4 full and 4 partial counties, with all being located in Pennsylvania.

In December 2007, the Commonwealth of Pennsylvania recommended that Allegheny County (except the Liberty-Clairton area), Beaver, Butler, Washington, and Westmoreland Counties, and portions of Armstrong and Lawrence Counties be designated "nonattainment" for the 2006 24-hour $PM_{2.5}$ standard, based on air quality data from 2004-2006. Pennsylvania specifically recommended the exclusion of all of Greene County from this nonattainment area. These data are from Federal Reference Method (FRM) monitors located in the state. (See the December 28, 2008 letter from the Pennsylvania Department of Environmental Protection to EPA, received on January 3, 2008.)

In August 2008, EPA notified the Commonwealth of Pennsylvania of its intended designations. In this letter, EPA also requested that if the Commonwealth of Pennsylvania wished to provide comments on EPA's intended designation, it should do so by October 20, 2008. EPA stated that it would consider any additional information (e.g., on power plants or partial county areas) provided by the state in making final decisions on the designations.

In its December 2007 recommendation letter, Pennsylvania did not recommend the inclusion of any part of Greene County in the Pittsburgh-Beaver Valley area. Monongahela Township in Greene County is in the Pittsburgh-Beaver Valley nonattainment area for the 1997 $PM_{2.5}$ NAAQS. In August 2008, EPA notified Pennsylvania that it intended to include Monongahela Township in the Pittsburgh-Beaver Valley nonattainment area. By letter dated October 20, 2008, Pennsylvania concurred with EPA's recommendation to include part of Greene County (Monongahela Township) in the Pittsburgh-Beaver Valley nonattainment area for the 2006 24-hour $PM_{2.5}$ NAAQS.

Based on EPA's technical analysis described below, EPA has designated the same counties as previously designated for $PM_{2.5}$ as nonattainment for the 2006 4-hour $PM_{2.5}$ air-quality standard as part of the Pittsburgh-Beaver Valley nonattainment area, based upon currently available information. These counties are listed in the table below.

Pittsburgh-Beaver Valley Area	State-Recommended Nonattainment Counties	EPA-Final Designated Nonattainment Counties
Pennsylvania	Allegheny County (partial) Beaver County Butler County Washington County Westmoreland County Armstrong County (partial) Lawrence County (partial)	Allegheny County (partial) Beaver County Butler County Greene County (partial) Washington County Westmoreland County Armstrong County (partial) Lawrence County (partial)

The following is a technical analysis for the Pittsburgh-Beaver Valley area.

Factor 1: Emissions data

For this factor, EPA evaluated county level emission data for the following $PM_{2.5}$ components and precursor pollutants: $PM_{2.5}$ emissions total, $PM_{2.5}$ emissions carbon, $PM_{2.5}$ emissions other, sulfur dioxide (SO_2), nitrogen oxides (NO_x), volatile organic compounds (VOCs), and ammonia (NH_3). "$PM_{2.5}$ emissions total" represents direct emissions of $PM_{2.5}$ and includes: "$PM_{2.5}$ emissions carbon," "$PM_{2.5}$ emissions other", primary sulfate (SO_4), and primary nitrate. (Although primary sulfate and primary nitrate, which are emitted directly from stacks rather than forming in atmospheric reactions with SO_2 and NO_x, are part of "$PM_{2.5}$ emissions total," they are not shown in Table 1 as separate items). "$PM_{2.5}$ emissions carbon" represents the sum of organic carbon (OC) and elemental carbon (EC) emissions, and "$PM_{2.5}$ emissions other" represents other inorganic particles (crustal). Emissions of SO_2 and NO_x, which are precursors of the secondary $PM_{2.5}$ components sulfate and nitrate, are also considered. VOCs and NH_3 are also potential $PM_{2.5}$ precursors and are included for consideration.

Emissions data were derived from the 2005 National Emissions Inventory (NEI), version 1. See http://www.epa.gov/ttn/naaqs/pm/pm25_2006_techinfo.html.

EPA also considered the Contributing Emissions Score for each county. The CES is a metric that takes into consideration emissions data, meteorological data, and air quality monitoring information to provide a relative ranking of counties in and near an area. Note that this metric is not the exclusive manner for considering data for these factors. A summary of the CES is included in Attachment 2, and a more detailed description can be found at http://www.epa.gov/ttn/naaqs/pm/pm25_2006_techinfo.html#C.

Table 1 shows emissions of $PM_{2.5}$ and precursor pollutants components (given in tons per year) and the CES for violating and potentially contributing counties in the Pittsburgh-Beaver Valley area. Counties that are part of the Pittsburgh-Beaver Valley nonattainment area for the 1997 $PM_{2.5}$ NAAQS are shown in boldface. Counties are listed in descending order by CES.

Table 1. $PM_{2.5}$ Related Emissions and Contributing Emissions Score

County	State Recommended Nonattainment?	CES	$PM_{2.5}$ emissions total (tpy)	$PM_{2.5}$ emissions carbon (tpy)	$PM_{2.5}$ emissions other (tpy)	SO_2 (tpy)	NOx (tpy)	VOCs (tpy)	NH_3 (tpy)
Allegheny, PA	**Yes - partial**	**100**	**5,221**	**2,245**	**2,975**	**51,471**	**63,290**	**46,690**	**2,249**
Greene, PA	**No**	**39**	**8,873**	**592**	**8,280**	**146,554**	**20,374**	**2,642**	**350**
Beaver, PA	**Yes**	**25**	**2,909**	**451**	**2,457**	**45,452**	**33,400**	**7,424**	**450**
Washington, PA	**Yes**	**17**	**1,683**	**514**	**1,170**	**6,318**	**16,311**	**9,297**	**919**
Westmoreland, PA	**Yes**	**18**	**1,779**	**798**	**981**	**3,506**	**16,655**	**15,073**	**1,175**
Armstrong, PA	**Yes - partial**	**14**	**11,962**	**780**	**11,182**	**209,910**	**20,352**	**3,417**	**844**
Butler, PA	**Yes**	**3**	**1,232**	**441**	**791**	**3,359**	**7,549**	**8,805**	**771**
Lawrence, PA	**Yes - partial**	**3**	**2,046**	**313**	**1,733**	**22,900**	**9,001**	**4,234**	**692**
Jefferson, OH	Yes - other area	33	11,409	722	10,686	224,025	46,158	3,693	297
Monongalia, WV	No*	19	5,105	469	4,636	84,301	12,953	5,081	211
Marshall, WV	No	19	4,604	309	4,295	118,021	39,932	3,230	146
Hancock, WV	Yes - other area	14	3,781	704	3,077	2,039	4,404	2,298	830
Indiana, PA	Yes - other area	12	12,409	851	11,558	147,536	42,777	4,693	706
Brooke, WV	Yes - other area	5	579	192	388	1,349	2,131	3,436	210

Belmont, OH	No	5	2,976	392	2,583	38,026	9,991	4,762	668
Fayette, PA	No	4	657	298	360	1,291	4,064	5,377	521
Ohio, WV	No	3	303	147	157	541	3,326	2,633	108
Columbiana, OH	No	2	805	366	441	525	4,377	4,933	1,956
Preston, WV	No	2	1,219	162	1,057	17,171	3,968	1,610	260
Somerset, PA	No	2	903	425	479	1,844	4,654	5,591	1,596
Cambria, PA	Yes - other area	1	844	324	520	7,752	6,177	5,363	494
Garrett, MD	No	1	552	288	264	858	2,499	3,527	556
Mahoning, OH	Yes - other area	1	722	338	384	1,927	10,086	10,416	1,415
Trumbull, OH	Yes - other area	1	1,730	625	1,105	18,501	13,373	12,098	881
Clarion, PA	No	0	535	233	303	1,542	3,203	3,272	417
Jefferson, PA	No	0	526	245	281	943	2,999	2,694	339
Mercer, PA	No	0	793	290	503	1,042	6,010	7,028	1,210
Venango, PA	No	0	522	235	287	1,919	2,757	3,476	286

Based upon the data set forth in Table 1, Armstrong and Greene Counties have the highest emissions of all counties in this area. Allegheny County has the highest CES for this area, reflecting that it is the location of the design monitor in an area with many contributing counties. Emissions from Armstrong and Greene Counties have further to travel to reach the design monitor than emissions from Allegheny County, but nevertheless contribute markedly to violations in Allegheny based upon their emissions, their locations, and the meteorology in this area. All counties in the Pittsburgh-Beaver Valley area, even the counties with CESs of three, have $PM_{2.5}$ emissions greater than 1000 tons per year (tpy), SO_2 emissions greater than 3000 (tpy), and NOx emissions greater than 7000 tpy.

Most other counties with CES values over ten are located in other designated nonattainment areas. Jefferson, OH and Hancock, WV, along with Brooke, WV, are part of the Steubenville-Weirton nonattainment area for the 1997 $PM_{2.5}$ NAAQS, and are designated as part of that nonattainment area for the 2006 $PM_{2.5}$ NAAQS. Marshall, WV is part of the Wheeling nonattainment area for the 1997 $PM_{2.5}$ NAAQS. However, Wheeling area is not violating the 2006 $PM_{2.5}$ NAAQS. Monongalia, WV is not part of a nonattainment area for the 1997 $PM_{2.5}$ NAAQS, but is designated as the Morgantown nonattainment area for the 2006 24-hour $PM_{2.5}$ NAAQS.

Factor 2: Air quality data

This factor considers the 24-hour $PM_{2.5}$ design values in micrograms per cubic meter ($\mu g/m^3$) for air quality monitors in counties in the Pittsburgh-Beaver Valley area based on data for the 2005-2007 period. A monitor's design value indicates whether that monitor attains a specified air quality standard. The2006 24-hour $PM_{2.5}$ standard is met when the 3-year average of a monitor's 98^{th} percentile values is 35 $\mu g/m^3$ or less. A design value is only valid if minimum data completeness criteria are met.

The 2006 24-hour $PM_{2.5}$ design values for counties in the Pittsburgh-Beaver Valley area are shown in Table 2.

Table 2. Air Quality Data

County	State Recommended Nonattainment?	24-hr PM2.5 Design Values, 2004-2006 ($\mu g/m^3$)	24-hr PM2.5 Design Values, 2005-2007 ($\mu g/m^3$)
Allegheny, PA	**Yes - partial** +	**45**	**40**
	Yes - other area partial*	65*	60*
Greene, PA	**No**	No Monitor	
Beaver, PA	**Yes**	**45**	**43**
Washington, PA	**Yes**	**38**	**40**
Westmoreland, PA	**Yes**	**37**	**37**
Armstrong, PA	**Yes - partial**	No Monitor	
Butler, PA	**Yes**	No Monitor	
Lawrence, PA	**Yes - partial**	No Monitor	
Jefferson, OH	Yes - other area	43	40
Monongalia, WV	No	34	36
Marshall, WV	No	34	35
Hancock, WV	Yes - other area		41
Indiana, PA	Yes - other area	No Monitor	
Brooke, WV	Yes - other area	40	44
Belmont, OH	No	No Monitor	
Fayette, PA	No	No Monitor	
Ohio, WV	No		32
Columbiana, OH	No	No Monitor	
Preston, WV	No	No Monitor	
Somerset, PA	No	No Monitor	
Cambria, PA	Yes - other area	39	39
Garrett, MD	No	No Monitor	
Mahoning, OH	Yes - other area	37	36
Trumbull, OH	Yes - other area	36	35
Clarion, PA	No	No Monitor	
Jefferson, PA	No	No Monitor	
Mercer, PA	No	Inc	Inc
Venango, PA	No	No Monitor	

Notes:
1. *Design values for the Liberty-Clairton area, located within Allegheny County.
2. "Inc: denotes incomplete data. The design value cannot be confidently calculated.

Allegheny, Beaver, Washington, and Westmoreland Counties in Pennsylvania and show violations of the 2006 24-hour $PM_{2.5}$ standard. Therefore, these counties are included in the Pittsburgh-Beaver valley nonattainment area. Cambria County, PA and Brooke, Hancock, and Monongalia Counties in West Virginia also show violations of the 2006 24-hour $PM_{2.5}$ standard. However, Cambria County, PA is part of the Johnstown nonattainment area for both the 1997 $PM_{2.5}$ NAAQS and the 2006 24-hour $PM_{2.5}$ NAAQS. Also, Brooke and Hancock Counties are part of the Steubenville-Weirton nonattainment area for the both 1997 $PM_{2.5}$ NAAQS and the 2006 24-hour $PM_{2.5}$ NAAQS.

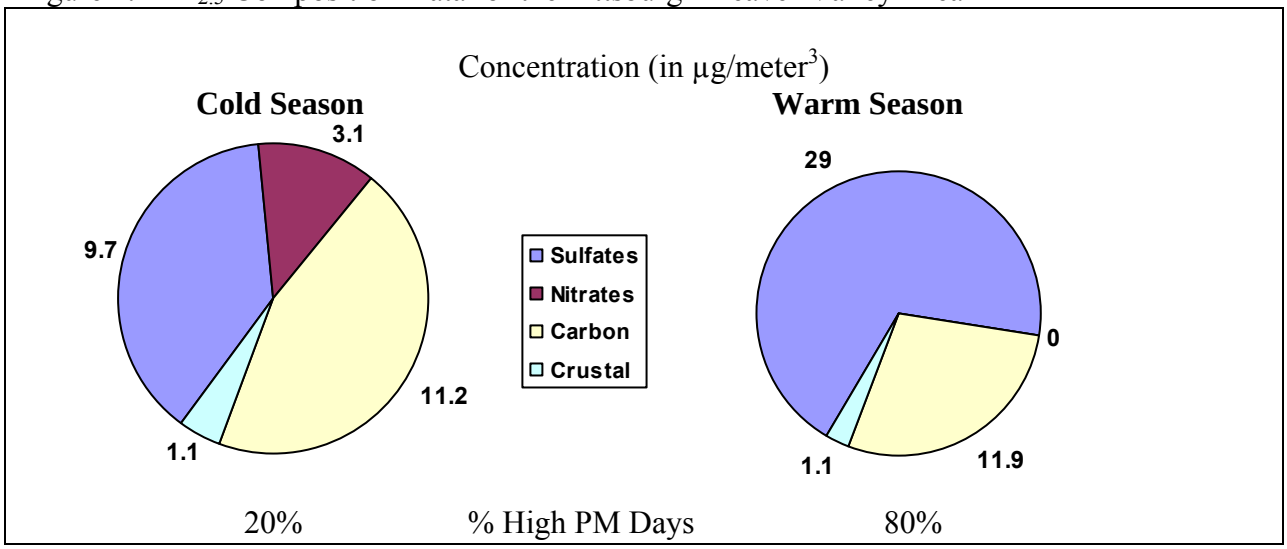
Note that the absence of a violating monitor is not a sufficient reason to eliminate counties as candidates for nonattainment status based upon contribution to violations in other nearby areas. Each county has been evaluated based on the weight of evidence of all nine factors and other relevant information.

The Liberty-Clairton area, in Allegheny County, is a separate nonattainment area for both the 1997 and 2006 $PM_{2.5}$ NAAQS. The Liberty-Clairton area is separate and distinct from the

Pittsburgh-Beaver Valley area that surrounds it. One indication is that $PM_{2.5}$ design values at seven of the eight air quality monitors in Allegheny County correlate well. However, the $PM_{2.5}$ design value in Liberty Borough in the Liberty-Clairton area is considerably higher. The 2005 - 2007 design value at the Liberty Borough monitor is 60.9 µg/m^3, while the design values at the other seven monitors in Allegheny County are between 34 and 40 µg/m^3. The large local source in the area, the U.S. Steel Clairton Coke Works, plus topographical features that contain emissions in the area, results in higher $PM_{2.5}$ monitored values at the Liberty Borough monitor than the other monitors in Allegheny County. For more information please see EPA's Technical Analysis for the Liberty-Clairton Area.

Under this factor, we also consider fine particle composition monitoring data. Air quality monitoring data on the composition of fine particle mass are available from the EPA Chemical Speciation Network and the IMPROVE monitoring network. Analysis of these data indicates that the days with the highest fine particle concentrations in the Pittsburgh-Beaver Valley area occur predominantly in the summer. The average chemical composition of the highest days is illustrated in Figure 2, below.

Figure 2. $PM_{2.5}$ Composition Data for the Pittsburgh-Beaver Valley Area



Fine particle composition monitoring data for the Liberty-Clairton area is also quite different from the data for the Pittsburgh-Beaver Valley area. On peak PM days, organic carbon is anywhere from a few µg/m^3 higher at Liberty Borough to nearly 20 µg/m^3 higher. Similarly, elemental carbon is from a few µg/m^3 higher at Liberty Borough to about 12 µg/m^3 higher. The differences in ammonium concentrations are much smaller, from 1 or 2 µg/m^3 to about 7 µg/m^3. The additional concentrations of organic carbon, elemental carbon, and ammonium account for the more than 20 µg/m^3 difference between Liberty Borough and the other monitors in Southwester Pennsylvania. For more information please see EPA's Technical Analysis for the Liberty-Clairton Area.

Note: Eligible monitors for providing design value data generally include State and Local Air Monitoring Stations (SLAMS) at population-oriented locations with an FRM monitor. All data from Special Purpose Monitors (SPM) using an FRM is eligible for comparison to the relevant NAAQS, subject to the requirements given in the October 17, 2006 Revision to Ambient Air Monitoring Regulations (71 FR 61236). All monitors used to provide data must meet the

monitor siting and eligibility requirements given in 71 FR 61236 to 61328 in order to be acceptable for comparison to the 2006 24-hr $PM_{2.5}$ NAAQS for designation purposes.

Factor 3: Population density and degree of urbanization (including commercial development)

Table 3 shows the 2005 population for each county in the area being evaluated, as well as the population density for each county in that area. Population data gives an indication of whether it is likely that population-based emissions might contribute to violations of the 2006 24-hour $PM_{2.5}$ standard.

Table 3. Population

County	State Recommended Nonattainment?	2005 Population	2005 Population Density (pop/sq mi)
Allegheny, PA	**Yes**	**1,233,036**	**1658**
Greene, PA	**No**	**40,408**	**70**
Beaver, PA	**Yes**	**176,825**	**399**
Washington, PA	**Yes**	**206,418**	**240**
Westmoreland, PA	**Yes**	**367,133**	**355**
Armstrong, PA	**Yes - partial**	**70,527**	**106**
Butler, PA	**Yes**	**181,526**	**229**
Lawrence, PA	**Yes - partial**	**92,412**	**255**
Jefferson, OH	Yes - other area	70,631	172
Monongalia, WV	No	84,592	231
Marshall, WV	No	34,250	110
Hancock, WV	Yes - other area	31,191	354
Indiana, PA	Yes - other area	88,481	106
Brooke, WV	Yes - other area	24,474	265
Belmont, OH	No	69,089	128
Fayette, PA	No	146,206	183
Ohio, WV	No	44,958	414
Columbiana, OH	No	110,636	207
Preston, WV	No	30,052	46
Somerset, PA	No	78,796	73
Cambria, PA	Yes - other area	147,804	214
Garrett, MD	No	29,863	46
Mahoning, OH	Yes - other area	253,181	599
Trumbull, OH	Yes - other area	218,672	345
Clarion, PA	No	40,388	66
Jefferson, PA	No	45,716	70
Mercer, PA	No	119,115	175
Venango, PA	No	55,938	82

Allegheny County has the highest population and population density, by far, due to the City of Pittsburgh. Considering counties that are not included in other nonattainment areas for the 2006 standard, Ohio County, WV has the next highest population density. However, Ohio County's population is much lower than all but one county in the Pittsburgh-Beaver Valley area, less than 50,000. Furthermore, it has low emissions and a very low CES of three. Other counties with population densities over 200 are Beaver, PA, Westmoreland, PA, Lawrence, PA, Washington,

PA, Monongalia, WV, Butler, PA, and Columbiana, OH. Beaver, Westmoreland, Lawrence, Washington, and Butler Counties are part of the Pittsburgh-Beaver Valley nonattainment area for the 1997 $PM_{2.5}$ NAAQS and the 2006 $PM_{2.5}$ NAAQS. Monongalia County is a newly violating area, and is part of the Morgantown nonattainment area for the 2006 $PM_{2.5}$ NAAQS. Columbiana County has low emissions and a very low CES of two.

Factor 4: Traffic and commuting patterns

This factor considers the number of commuters in each county who drive to another county within the Pittsburgh-Beaver Valley area, the percent of total commuters in each county who commute to other counties within the Pittsburgh-Beaver Valley area, as well as the total Vehicle Miles Traveled (VMT) for each county in millions of miles (see Table 4). A county with numerous commuters is generally an integral part of an urban area and is likely contributing to fine particle concentrations in the area.

Table 4. Traffic and Commuting Patterns

County	State Recommended Nonattainment?	2005 VMT (millions)	Number Commuting to any violating counties	Percent Commuting to any violating counties	Number Commuting into & within statistical area	Percent Commuting into & within statistical area
Allegheny, PA	**Yes**	**10,003**	**564,260**	**97**	**573,120**	**99**
Greene, PA	**No**	**367**	**4,240**	**29**	**3,610**	**25**
Beaver, PA	**Yes**	**1,522**	**72,520**	**90**	**78,710**	**97**
Washington, PA	**Yes**	**2,399**	**85,250**	**96**	**85,970**	**96**
Westmoreland, PA	**Yes**	**3,583**	**154,650**	**94**	**159,570**	**97**
Armstrong, PA	**Yes – partial**	**565**	**7,590**	**26**	**26,420**	**89**
Butler, PA	**Yes**	**1,669**	**25,780**	**32**	**77,510**	**96**
Lawrence, PA	**Yes – partial**	**769**	**9,520**	**24**	**34,860**	**87**
Jefferson, OH	Yes - other area	684	24,420	85	1,430	5
Monongalia, WV	No	727	32,470	89	600	2
Marshall, WV	No	217	830	6	480	4
Hancock, WV	Yes - other area	187	12,960	92	2,290	16
Indiana, PA	Yes - other area	696	5,610	15	4,830	13
Brooke, WV	Yes - other area	210	9,340	89	1,280	12
Belmont, OH	No	1,111	1,700	6	380	1
Fayette, PA	No	927	18,890	33	53,460	93
Ohio, WV	No	514	1,710	8	850	4
Columbiana, OH	No	872	13,900	28	2,740	6
Preston, WV	No	293	3,240	28	170	2
Somerset, PA	No	997	6,320	19	1,670	5
Cambria, PA	Yes - other area	1,029	49,080	82	1,010	2
Garrett, MD	No	487	140	1	130	1
Mahoning, OH	Yes - other area	2,666	97,290	89	1,550	1
Trumbull, OH	Yes - other area	2,153	85,780	88	490	1
Clarion, PA	No	579	490	3	1,420	8
Jefferson, PA	No	550	5,610	15	4,830	13
Mercer, PA	No	1,302	45,040	89	3,840	8
Venango, PA	No	596	1,130	5	1,100	5

The listing of counties on Table 4 reflects a ranking based on the number of people commuting to other counties. The counties that are in the nonattainment area for the 1997 $PM_{2.5}$ NAAQS are shown in boldface.

As shown in Table 4, above**,** Allegheny County has the highest VMT, the largest number of commuters into violating counties, and the largest number of commuters into and within the Pittsburgh metropolitan statistical area (MSA). Westmoreland, Washington, Butler, Beaver, Mercer, and Belmont Counties have VMT over 1000. Westmoreland, Washington, Butler, and Beaver Counties are part of the Pittsburgh-Beaver Valley nonattainment area for the 1997 $PM_{2.5}$ NAAQS and the 2006 $PM_{2.5}$ NAAQS. Compared with most other counties in the Pittsburgh-Beaver Valley nonattainment area, Mercer County has a low number of commuters into the metropolitan statistical area (MSA) and low emissions. Furthermore, Mercer County's CES is zero. Belmont County is further away from the existing Pittsburgh-Beaver Valley nonattainment area. In addition, Belmont County has less than 400 commuters into the Pittsburgh MSA and a CES of two.

Note: The 2005 VMT data used for Tables 4 and 5 of the 9-factor analysis has been derived using methodology similar to that described in "Documentation for the final 2002 Mobile National Emissions Inventory, Version 3, September 2007, prepared for the Emission Inventory Group, U.S. EPA. This document may be found at: ftp://ftp.epa.gov/EmisInventory/2002finalnei/documentation/mobile/2002_mobile_nei_version_3_report_092807.pdf
The 2005 VMT data were taken from documentation which is still draft, but which should be released in 2008.

Factor 5: Growth rates and patterns

This factor considers population growth for 2000-2005 and growth in vehicle miles traveled for 1996-2005 for counties in the Pittsburgh-Beaver Valley area, as well as patterns of population and VMT growth. A county with rapid population or VMT growth is generally an integral part of an urban area and likely to be contributing to fine particle concentrations in the area.

Table 5 below shows population, population growth, VMT, and VMT growth for counties that are included in the Pittsburgh-Beaver Valley area.

Table 5. Population and VMT Values and Percent Change.

Location	Population (2005)	Population Density (2005)	Population % change (2000 - 2005)	2005 VMT (millions)	VMT % change (1996 to 2005)
Allegheny, PA	**1,233,036**	**1658**	**(4)**	**10,003**	**(3)**
Greene, PA	**40,408**	**70**	**(1)**	**367**	**(26)**
Beaver, PA	**176,825**	**399**	**(2)**	**1,522**	**0**
Washington, PA	**206,418**	**240**	**2**	**2,399**	**25**
Westmoreland, PA	**367,133**	**355**	**(1)**	**3,583**	**17**
Armstrong, PA	**70,527**	**106**	**(2)**	**565**	**(2)**
Butler, PA	**181,526**	**229**	**4**	**1,669**	**10**
Lawrence, PA	**92,412**	**255**	**(2)**	**769**	**(1)**
Jefferson, OH	70,631	172	(4)	684	(6)
Monongalia, WV	84,592	231	3	727	(18)

Marshall, WV	34,250	110	(3)	217	(11)
Hancock, WV	31,191	354	(4)	187	(32)
Indiana, PA	88,481	106	(1)	696	2
Brooke, WV	24,474	265	(4)	210	0
Belmont, OH	69,089	128	(1)	1,111	13
Fayette, PA	146,206	183	(2)	927	(14)
Ohio, WV	44,958	414	(5)	514	5
Columbiana, OH	110,636	207	(1)	872	(2)
Preston, WV	30,052	46	3	293	(19)
Somerset, PA	78,796	73	(2)	997	19
Cambria, PA	147,804	214	(3)	1,029	(8)
Garrett, MD	29,863	46	0.2	487	(35)
Mahoning, OH	253,181	599	(2)	2,666	9
Trumbull, OH	218,672	345	(3)	2,153	8
Clarion, PA	40,388	66	(3)	579	5
Jefferson, PA	45,716	70	(1)	550	4
Mercer, PA	119,115	175	(1)	1,302	(0)
Venango, PA	55,938	82	(3)	596	15

Most counties in the Pittsburgh-Beaver Valley nonattainment area for the 1997 $PM_{2.5}$ NAAQS have lost population from 2000 to 2005. Only Washington and Butler and Washington Counties increased in population during that same period. From 1996 to 2005, VMT decreased in half the counties in the current Pittsburgh-Beaver Valley nonattainment, while VMT increased or remained unchanged in the other half.

Factor 6: Meteorology (weather/transport patterns)

For this factor, EPA considered data from National Weather Service instruments and other meteorological monitoring sites in the area. Wind direction and wind speed data for 2005-2007 were analyzed, with an emphasis on "high $PM_{2.5}$ days" for each of two seasons (an October-April "cold" season and a May-September "warm" season). These high days are defined as days where any FRM or FEM air quality monitors had 24-hour $PM_{2.5}$ concentrations above 95% on a frequency distribution curve of $PM_{2.5}$ 24-hour values.

For each air quality monitoring site, EPA developed a "pollution rose" to understand the prevailing wind direction and wind speed on the days with highest fine particle concentrations. The figure identifies 24-hour $PM_{2.5}$ values by color; days exceeding 35 ug/m3 are denoted with a red or black icon. A dot indicates the day occurred in the warm season; a triangle indicates the day occurred in the cool season. The center of the figure indicates the location of the air quality monitoring site, and the location of the icon in relation to the center indicates the direction from which the wind was blowing on that day. An icon that is close to the center indicates a low average wind speed on that day. Higher wind speeds are indicated when the icon is further away from the center.

As stated above, Pennsylvania had originally has recommended that the portion of Greene County, PA (Monongahela Township) which was included in the Pittsburgh-Beaver Valley nonattainment area for the 1997 $PM_{2.5}$ NAAQS not be included in the Pittsburgh-Beaver Valley nonattainment area for the 2006 $PM_{2.5}$ NAAQS. However, the pollution roses show that the predominant winds in southwestern Pennsylvania are from the south, with southwesterly and southeasterly components. Therefore, it is very likely that the emissions from the Hatfield's Ferry power plant in Monongahela Township, Greene County are affecting the monitors in

Washington and Westmoreland Counties. Please see the pollution roses for Washington and Westmoreland Counties, Figures 6 - 6.3.

Figure 6. Pollution Trajectory Plot for Westmoreland County, PA
(Site 42-129-0008)

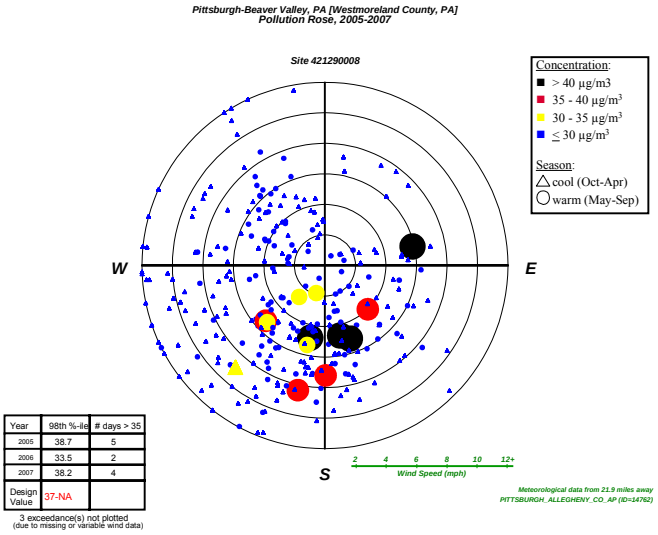


Figure 6.1. Pollution Trajectory Plot for Washington County, PA
(Site 42-125-0005)

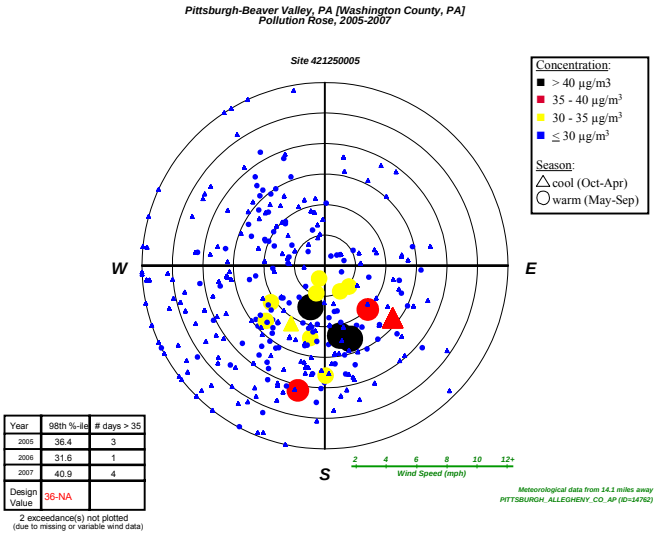


Figure 6.2. Pollution Trajectory Plot for Washington County, PA
(Site 42-125-0200)

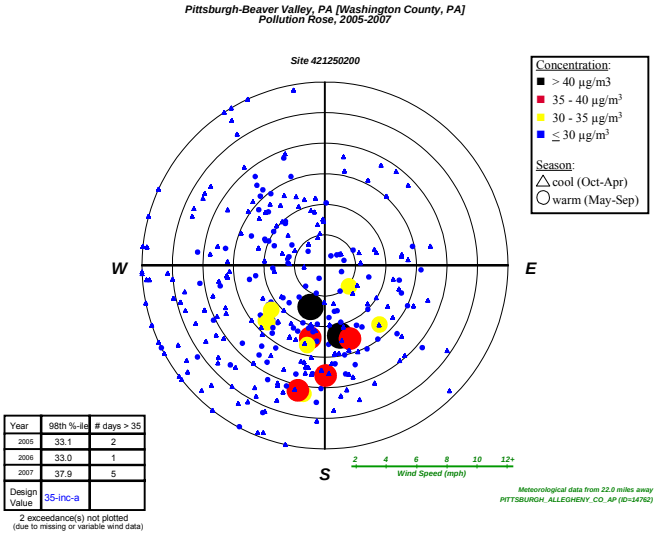
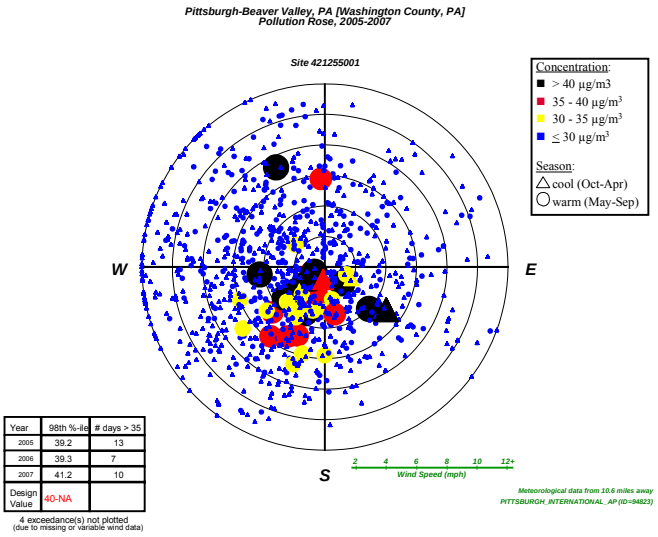


Figure 6.3. Pollution Trajectory Plot for Washington County, PA
(Site 42-125-5001)



Pollution roses for Allegheny County show that on high $PM_{2.5}$ days (>35 µg/m^3), winds are predominantly from the south, southwest, and southeast. However, some very high $PM_{2.5}$ days (>40 µg/m^3) show winds from the northwest or west. In other words, Allegheny County monitors are influenced by all that surrounds it. See Figure 6.4 - 6.8.

Figure 6.4. Pollution Trajectory Plot for Allegheny County, PA (Site 42-003-0008)

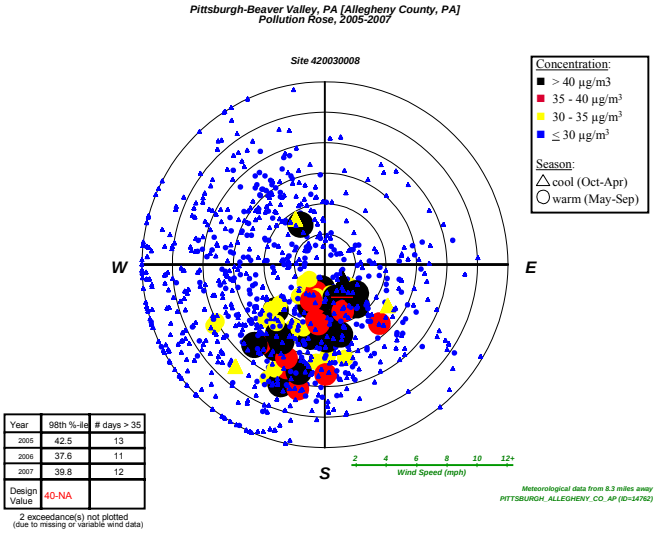


Figure 6.5. Pollution Trajectory Plot for Allegheny County, PA (Site 42-003-0093)

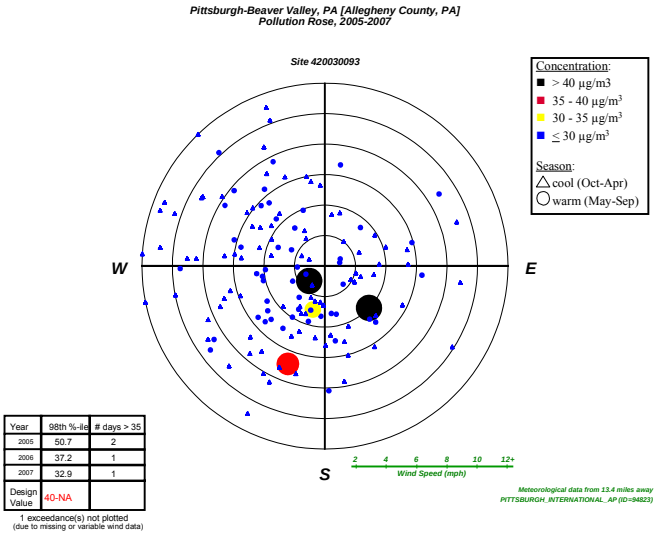


Figure 6.6. Pollution Trajectory Plot for Allegheny County, PA (Site 42-003-0095)

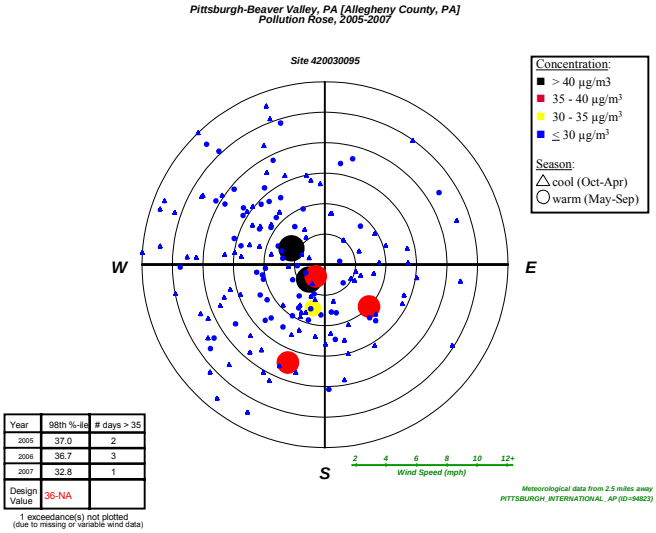


Figure 6.7. Pollution Trajectory Plot for Allegheny County, PA (Site 42-003-1008)

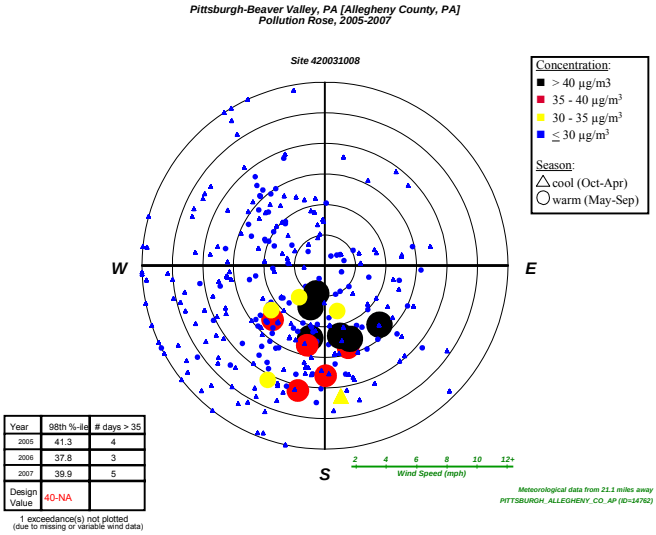
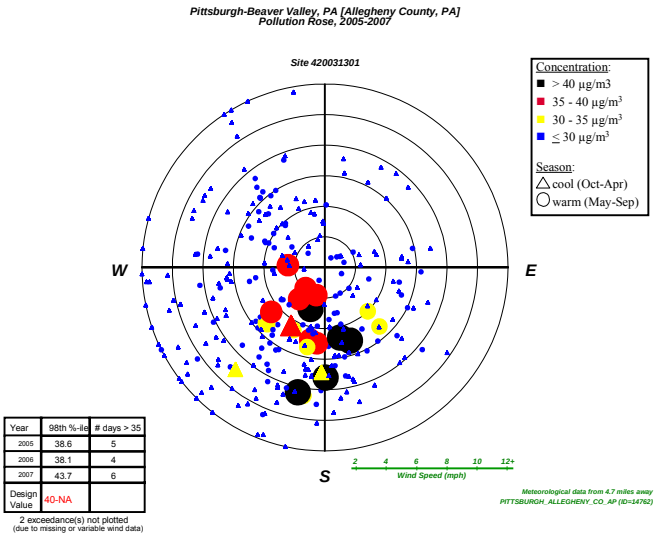
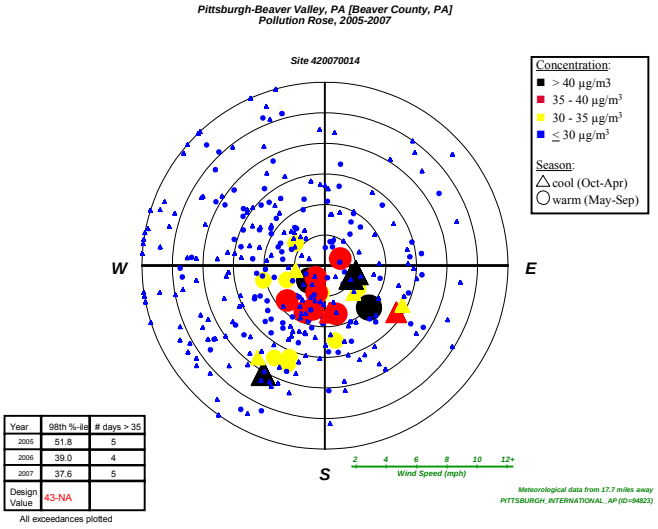


Figure 6.8. Pollution Trajectory Plot for Allegheny County, PA
(Site 42-003-1301)



The pollution rose for Beaver County shows a similar pattern to Allegheny County. Winds on high $PM_{2.5}$ (>35 µg/m^3) days are predominantly from the south, southwest, and southeast See Figure 6.9.

Figure 6.9. Pollution Trajectory Plot for Beaver County, PA
(Site 42-007-0014)



Note: The meteorology factor is also considered in each county's Contributing Emissions Score because the method for deriving this metric included an analysis of trajectories of air masses for high $PM_{2.5}$ days.

Factor 7: Geography/topography (mountain ranges or other air basin boundaries)

The geography/topography analysis evaluates the physical features of the land that might have an effect on the air shed and, therefore, on the distribution of $PM_{2.5}$ over the Pittsburgh-Beaver Valley area.

The Pittsburgh-Beaver Valley area, except for the Liberty-Clairton area, does not have any geographical or topographical barriers significantly limiting air pollution transport within its airshed. Therefore, this factor did not play a significant role in the decision-making process.

In Pennsylvania's December 28, 2007 designation recommendation letter, in order to justify inclusion of Allegheny County (except Liberty-Clairton), Beaver, Butler, Washington, and Westmoreland Counties and parts of Armstrong and Lawrence Counties, Pennsylvania used a topography argument. Pennsylvania stated that:

> "This region of Pennsylvania is dominated by relatively high terrain cut by numerous river valleys. While these features tend to trap local emissions overall, the monitors within this proposed nonattainment area tend to correlate well with one another.[2] This suggests that while the proposed nonattainment area is quite extensive, it can be grouped together as one nonattainment area."
>
> [2] Summary of Pennsylvania's $PM_{2.5}$ Nonattainment Analysis, Appendix C, Department of Environmental Protection"

EPA believes that since the same topography exists in Greene County, which is just south of Washington County, this argument could also be used to further justify the inclusion of part of Greene County in the Pittsburgh-Beaver Valley nonattainment area.

The unique topography in the Liberty-Clairton area distinguishes it from the rest of the Pittsburgh area. The Clairton Coke Works is at the base of the Monongalia River Valley, on the west bank of the Monongahela River. On the east bank, the terrain rises sharply reaching elevations more than 300 feet above the coke works within a thousand feet of the plant. The Liberty Borough monitor is about 1100 feet above MSL, to the northeast of the coke works.

In its October 20, 2008 letter to EPA regarding boundary recommendations for the 2006 $PM_{2.5}$ NAAQS, the Pennsylvania Department of Environmental Protection (PADEP) stated that the U.S. Steel Clairton Coke Works facility has stack heights that are lower than normal power plant stacks. This means that the effects of a source like the coke works would impact the ground at a much closer location locally than a power plant. PADEP's October 20, 2008 letter also explained that the highest fine particulate concentrations occur at the Liberty Borough monitor when there are south-southwesterly winds along with a morning inversion. A morning inversion occurs when the ground is cooler than the air above it; normally at night, the area is under the control of high pressure and clear skies. With the warmer air being above the cooler air, vertical mixing is at a minimum. These conditions tend to trap local emissions, and fine particulate levels can become very high near the surface. This tendency to trap local emissions, combined with large local emissions, would explain why the monitored values at the Liberty Borough monitor are so much higher than at the other monitors in the Pittsburgh-Beaver Valley area. For more information please see EPA's Technical Analysis for the Liberty-Clairton Area.

Factor 8: Jurisdictional boundaries (e.g., existing $PM_{2.5}$ areas)

In evaluating the jurisdictional boundary factor, EPA gave special consideration to areas that were already designated nonattainment in 2005 for violating the 1997 fine particle standards. Analysis of chemical composition data in these areas indicates that the same components that make up most of the $PM_{2.5}$ mass in the area on an annual average basis (such as sulfate and direct $PM_{2.5}$ carbon in many eastern areas) also are key contributors to the $PM_{2.5}$ mass on days exceeding the 2006 24-hour $PM_{2.5}$ standard. These data indicate that in many cities, the same source categories that contribute to violations of the annual standard also contribute to exceedances of the 2006 24-hour standard.

Most areas that were originally designated nonattainment for the $PM_{2.5}$ standards still have not attained the standards. Thus, EPA has generally concluded that counties that were designated as having emissions sources contributing to fine particle concentrations which continue to exceed the 1997 standards (all areas violated the annual standard, two also violated the previous 24-hour standard) also contribute to fine particle concentrations on the highest days. For this reason, EPA believes that for most existing nonattainment areas, the nonattainment area for the 2006 24-hour standard should be the same. Consideration also should be given to existing boundaries and organizations as they may facilitate air quality planning and the implementation of control measures to attain the standard. Areas already designated as nonattainment represent important boundaries for state air quality planning.

There are no jurisdiction issues in the Pittsburgh-Beaver Valley area. The Pennsylvania Department of Environmental Protection (PADEP) does the $PM_{2.5}$ planning for the entire Pittsburgh-Beaver Valley nonattainment area. PADEP works in cooperation with the Allegheny County Health Department (ACHD), which does the air quality planning for the Liberty-Clairton area. These two agencies have a long history of cooperation. Furthermore, one metropolitan planning organization (MPO), the Southwestern Pennsylvania Commission, does transportation planning for the entire area (Allegheny, Beaver, Butler, Washington, Westmoreland Armstrong County, Lawrence, and Greene Counties). This MPO also covers Indiana and Fayette Counties.

Factor 9: Level of control of emission sources

Under this factor, the existing level of control of emission sources is taken into consideration. The emissions data used by EPA in this technical analysis and provided in Table 1 (under Factor 1) represent emissions levels taking into account any control strategies implemented in the Pittsburgh-Beaver Valley area before 2005 on stationary, mobile, and area sources. Data are presented for $PM_{2.5}$ components that are directly emitted (carbonaceous $PM_{2.5}$ and crustal $PM_{2.5}$) and for pollutants which react in the atmosphere to form fine particles (e.g. SO_2, NOx, VOC, and ammonia).

In considering county-level emissions, EPA used data from the 2005 National Emissions Inventory, the most updated version of the national inventory available at the beginning of the designations process in late 2007. However, EPA recognized that for certain counties, emissions may have changed since 2005. For example, certain power plants or large sources of emissions in or near this area may have installed emission controls or otherwise significantly reduced emissions since 2005. Some States provided updated information on emissions and emission

controls in their comments to EPA. EPA considered such additional information in making final designation decisions.

With regard to nearby power plants, EPA considered information about whether a specific plant installed federally enforceable emission controls by December 2008 resulting in significant emissions reductions. A control requirement is considered to be federally-enforceable if it is required by a State regulation adopted in a State implementation plan, if it is included in a federally-enforceable Title V operating permit, or if it is required by a consent decree which also requires the controls to be included in federally enforceable permit upon termination of the consent decree. In making final decisions, EPA also considered whether a facility would continue to emit pollutants which contribute to $PM_{2.5}$ exceedances even after emission controls are operational.

Table 9 shows emissions and controls (current and projected) for electric generating units (EGUs) with SO_2 plus NO_x emissions greater than 5000 tons. Data was obtained from the 2006 National Electric Energy Data System (NEEDS) database. Table 9.1 shows emissions for the same EGUs for the years 2002 through 2007. The data was obtained from the emissions section of EPA's Clean Air Markets Division (CAMD) website: http://camddataandmaps.epa.gov/gdm/index.cfm?fuseaction=emissions.wizard.

As can be seen from Tables 9 and 9.1, since 2005, these new controls have resulted in significant reductions at the Mitchell power plant in Marshall County, WV. In 2005, the Mitchell plant emitted 53,765 tons of SO_2 and 20,026 tons of NOx, when the annual heat input was 64,325,953 million British Thermal Units (mmBTUs). In 2007, the Mitchell plant emitted 6,084 tons of SO_2 and 14,682 tons of NOx when the annual heat input was higher, 88,045,916 mmBTUs. This reduction of 47,681 tons of SO_2 and 5,344 tons of NOx from 2005 to 2007 is significant, compared to the county's total emissions in 2005, 118,021 tons of SO_2 and 39,932 tons of NOx.

New controls also resulted in modest emission reductions at the Fort Martin Power Station in Monongalia County, WV and the Bruce Mansfield facility in Beaver County, PA. However, these reductions are not nearly as substantial as those described above for the Mitchell plant.

Some EGUs are expected to put controls in place in the future. The Hatfield's Ferry Power Station in Greene County, PA, the Cheswick plant in Allegheny County, PA and the Keystone facility in Armstrong County, PA are expected to install scrubbers in 2009. As stated above, Pennsylvania recommended that the portion of Greene County, PA (Monongahela Township) that was included in the Pittsburgh-Beaver Valley nonattainment area for the 1997 $PM_{2.5}$ NAAQS not be included in the Pittsburgh-Beaver Valley nonattainment area for the 2006 $PM_{2.5}$ NAAQS. Pennsylvania's argument to exclude Greene County from the Pittsburgh area was based, in part, on future control of the emissions from the Hatfield's Ferry plant. Pennsylvania's December 28, 2007 designation recommendation letter states that PADEP approved the installation of flue-gas desulfurization (FGD) units "within the next few years." In a press release, the facility's owner, Allegheny Energy, stated that plans to spend $650 million to install the FGD system at its Hatfield's Ferry Power, and that:

> "When completed in 2009, the "scrubbers" will remove approximately 95 percent of the sulfur dioxide (SO_2) emissions and significantly reduce mercury emissions from the station." (See http://www.alleghenyenergy.com/Newsroom/Scrubber.Hat.2page.pdf.)

However, based upon current information, these emissions reductions have not yet occurred at the Hatfield's Ferry plant, and thus the emissions from this source remain high and continue to contribute to violations in the Pittsburgh area.

Table 9 EGUs with SO_2 plus NO_x emissions > 5000 tons, from the 2006 NEEDS EGU database

County	Plant Name	Plant Type	Unique ID Final	2006 SO2	2006 NOx	Scrubber Online Year	Scrubber Efficiency	SCR Online Year	Capacity MW
Allegheny, PA	Cheswick	Coal Steam	8226_B_1	32,373	4,221	2009	95.0	2003	580.0
Greene, PA	Hatfield's Ferry Power Station	Coal Steam	3179_B_1	55,558	8,901	2009	95.0		530.0
			3179_B_2	45,405	6,701	2009	95.0		530.0
			3179_B_3	34,119	4,453	2009	95.0		530.0
Beaver, PA	AES Beaver Valley Partners Beaver Valley	Coal Steam	10676_B_4	0	277	1980	92.0		43.0
			10676_B_2	0	261	1980	92.0		43.0
			10676_B_3	0	250	1980	92.0		43.0
	Bruce Mansfield	Coal Steam	6094_B_3	13,307	9,055	1977	98.0	2004	850.0
			6094_B_2	6,984	7,349	1973	98.0	2003	830.0
			6094_B_1	3,140	9,321	1973	98.0	2003	830.0
	G F Weaton Power Station	Coal Steam	50130_B_BLR1				28.6		56.0
			50130_B_BLR2				28.6		56.0
Washington, PA	Elrama	Oil/Gas Steam	3098_B_4	2,096	2,730	1975	89.0		173.5
			3098_B_3	922	1,218	1975	89.0		103.0
			3098_B_1	906	1,179	1975	89.0		94.0
			3098_B_2	896	1,169	1975	89.0		94.0
	Mitchell Power Station Elrama	Oil/Gas Steam	3181_B_33	923	2,735	1980	96.9		277.0
			3181_B_3	5	3				27.3
			3181_B_1	2	1				27.3
			3181_B_2	1	0				27.3
	Beech Hollow Power Project - new plant on line 2011	Coal Steam	82704_B_1			2011	95.0	2011	272.0
Armstrong, PA	Armstrong Power Station	Coal Steam	3178_B_1	12,955	1,507				172.0
			3178_B_2	14,155	1,589				171.0
	Keystone	Coal Steam	3136_B_2	86,809	7,349	2009	95.0	2003	850.0
			3136_B_1	77,544	5,434	2009	95.0	2003	850.0
Lawrence, PA	New Castle	Coal Steam	3138_B_5	6,116	1,116				134.0
			3138_B_4	3,870	566				98.0
			3138_B_3	3,586	539				94.0
Jefferson, OH	Cardinal	Coal Steam	2828_B_3	25,320	6,715	2010	95.0	2003	630.0
			2828_B_1	37,115	4,190	2007	95.0	2003	600.0
			2828_B_2	24,445	6,243	2007	95.0	2003	600.0
	W H Sammis	Coal Steam	2866_B_7	25,739	6,714	2011	95.0		630.0
			2866_B_6	26,028	6,292	2011	95.0		630.0

			2866_B_5	10,021	2,453		50.0		300.0
			2866_B_1	6,679	1,478		50.0		180.0
			2866_B_2	6,339	1,391		50.0		180.0
			2866_B_3	5,956	1,166		50.0		180.0
			2866_B_4	5,629	1,098		50.0		180.0
Monongalia, WV	Fort Martin Power Station	Coal Steam	3943_B_2	42,296	4,771	2006	95.0		555.0
			3943_B_1	45,269	5,319	2006	95.0		552.0
	Longview Power - new plant on line 2011	Coal Steam	82702_B_1			2011	95.0	2011	695.0
	Morgantown Energy Facility	Coal Steam	10743_B_CFB2	0	157		91.6		25.0
			10743_B_CFB1	0	154		91.6		25.0
Marshall, WV	Mitchell	Coal Steam	3948_B_1	26,240	8,798	2007	95.0	1993	800.0
			3948_B_2	25,766	7,596	2006	95.0	1994	800.0
	Kammer	Coal Steam	3947_B_1	14,251	3,858				210.0
			3947_B_3	14,002	3,748				210.0
			3947_B_2	12,497	3,193				210.0
Indiana, PA	Conemaugh	Coal Steam	3118_B_1	4,201	12,710	1994	96.9		850.0
			3118_B_2	3,836	10,660	1995	98.0		850.0
	Homer City Station	Coal Steam	3122_B_3	2,598	4,533	2001	97.7	2001	650.0
			3122_B_1	53,168	4,929			2001	620.0
			3122_B_2	51,006	5,559			2000	614.0
	Seward	Coal Steam	3130_B_2	3,735	874	2004	95.0		260.5
			3130_B_1	3,623	846	2004	95.0		260.5
Belmont, OH	R E Burger	Coal Steam	2864_B_7	8,730	1,720	2010	95.0		156.0
			2864_B_8	8,565	1,685	2010	95.0		156.0
			2864_B_5	0	0				47.0
			2864_B_6	0	0				47.0
Preston, WV	Albright	Coal Steam	3942_B_3	8,469	979				137.0
			3942_B_2	3,660	608				73.0
			3942_B_1	3,100	663				73.0
Cambria, PA	Cambria Cogen	Coal Steam	10641_B_B2	0	530		91.6		44.0
			10641_B_B1	0	498		91.6		44.0
	Colver Power Project	Coal Steam	10143_B_ABB01	0	678		91.6		110.0
	Ebensburg Power	Coal Steam	10603_B_031	0	260		91.6		49.5
Clarion, PA	Piney Creek Project	Coal Steam	54144_B_BRBR1	0	236		91.1		32.5
Venango, PA	Scrubgrass Generating	Coal Steam	50974_B_UNIT2	0	332		91.6		42.5
			50974_B_UNIT1	0	294		91.6		42.5

Table 9.1. Selected EGU Emissions (2002-2007) from EPA's Clean Air Markets Division

Cheswick, Allegheny County, PA, Facility ID: 8226

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	42,017.9	5,761.2	3,376,491.2	32,977,678
2003	12	45,432.8	4,704.7	3,727,784.1	36,352,654
2004	12	40,982.1	4,926.8	3,198,899.6	31,220,642
2005	12	37,320.1	3,913.6	2,921,151.9	28,510,285
2006	12	32,372.6	4,220.7	2,818,930.7	27,498,505
2007	12	34,088.9	4,455.0	2,903,425.1	28,314,056

Hatfield's Ferry Power Station , Greene County, PA, Facility ID: 3179

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	158,712.6	23,064.7	10,043,621.5	97,891,124
2003	12	139,423.9	17,642.8	8,566,912.0	83,503,429
2004	12	148,458.6	19,198.8	9,130,158.0	88,987,877
2005	12	145,621.2	17,449.6	8,768,387.5	85,461,894
2006	12	135,082.2	20,055.6	9,139,990.4	89,083,716
2007	12	144,929.7	23,671.5	10,173,087.9	99,152,896

AES Beaver Valley Partners, Beaver County, PA, Facility ID: 10676

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	No Data	No Data	No Data	No Data	No Data
2003	6		964.7		4,966,487
2004	6		940.4		5,151,622
2005	6		885.5		4,703,946
2006	6		933.3		4,802,489
2007	6		1,098.8		5,363,531

Bruce Mansfield, Beaver County, PA, Facility ID: 6094

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	30,312.6	29,868.7	15,411,598.8	150,210,585
2003	12	31,923.0	23,500.8	15,265,479.0	148,786,383
2004	12	37,987.8	24,077.3	17,654,260.5	172,068,960
2005	12	33,122.6	23,453.0	17,290,117.2	168,519,577
2006	12	23,431.0	25,724.6	17,375,622.9	169,353,166
2007	12	20,546.2	24,859.0	17,387,361.0	169,467,508

GF Weaton, Beaver County, PA, Facility ID: 50130

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	No Data	No Data	No Data	No Data	No Data
2003	12		1,395.6		7,092,743
2004	9		914.0		5,043,710
2005	6		546.9		3,301,642
2006	6		521.8		3,742,986
2007	6		567.7		3,813,510

Elrama, Washington County, PA, Facility ID: 3098

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	5,395.2	8,078.7	3,469,030.9	33,811,222
2003	12	3,563.2	5,874.7	2,687,750.0	26,196,355
2004	12	3,645.0	5,520.9	2,500,488.4	24,371,235
2005	12	3,216.0	4,686.0	2,009,719.2	19,587,977
2006	12	4,821.1	6,295.9	2,671,698.0	26,039,969
2007	12	4,267.4	6,027.7	2,343,388.4	22,840,062

Mitchell Power Station, Washington County, PA, Facility ID: 3181

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	1,164.3	2,275.2	1,288,266.5	12,598,036
2003	12	1,442.9	2,269.3	1,675,735.1	16,377,269
2004	12	1,268.2	1,859.1	1,520,854.4	14,830,174
2005	12	1,519.8	2,439.9	1,772,999.4	17,290,962
2006	12	930.3	2,739.7	1,734,947.8	16,921,756
2007	12	633.6	1,491.6	908,844.8	8,869,946

Armstrong Power Station, Armstrong County, PA, Facility ID: 3178

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	32,499.9	4,128.0	2,198,944.0	21,432,172
2003	12	34,141.1	3,976.2	2,260,344.4	22,030,631
2004	12	32,945.2	3,931.2	2,143,760.5	20,894,414
2005	12	30,655.9	3,521.2	2,064,813.7	20,124,906
2006	12	27,110.0	3,096.4	1,855,594.1	18,085,696
2007	12	31,562.1	3,763.9	2,200,730.6	21,449,670

Keystone, Armstrong County, PA, Facility ID: 3136

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	150,619.5	18,203.0	11,522,016.1	112,300,339
2003	12	163,493.5	11,425.3	11,916,373.8	116,144,099
2004	12	171,309.1	13,575.7	11,756,542.8	114,586,217
2005	12	178,767.2	13,998.3	12,950,676.6	126,224,864
2006	12	164,353.5	12,783.6	12,271,116.4	119,601,524
2007	12	171,081.1	12,267.2	11,898,614.3	115,970,886

New Castle, Lawrence County, PA, Facility ID: 3138

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	25,551.2	3,503.9	1,949,030.2	18,996,021
2003	12	20,851.2	3,106.6	1,618,414.3	15,774,068
2004	12	22,590.6	3,246.0	1,704,761.0	16,615,571
2005	12	18,954.7	2,531.6	1,497,798.9	14,598,390
2006	12	13,571.6	2,220.7	1,286,902.3	12,542,940
2007	12	18,510.9	3,046.9	1,570,506.9	15,307,090

Cardinal, Jefferson County, OH, Facility ID: 2828

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	74,750.6	23,378.8	8,409,740.2	81,967,531

2003	12	96,928.5	20,742.0	9,961,957.8	97,095,065
2004	12	100,134.6	17,494.5	10,258,034.7	99,980,929
2005	12	115,847.6	15,849.9	10,874,807.3	105,992,276
2006	12	86,879.5	17,148.1	10,985,695.2	107,073,045
2007	12	81,288.3	15,595.6	10,598,681.6	103,301,042

WH Sammis, Jefferson County, OH, Facility ID: 2866

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	145,113.8	38,623.2	15,854,575.9	154,533,809
2003	12	164,397.8	40,369.2	16,694,526.2	162,714,725
2004	12	127,113.9	29,626.0	14,196,168.4	138,364,289
2005	12	106,566.1	25,155.7	15,401,305.9	150,110,208
2006	12	86,391.7	20,591.8	15,761,761.9	153,623,312
2007	12	101,788.8	19,957.9	15,677,290.8	152,800,149

Fort Martin Power Station, Monongalia County, WV, Facility ID: 3943

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	91,119.3	11,235.7	7,551,652.1	73,602,855
2003	12	102,522.3	11,582.1	7,693,243.9	74,982,901
2004	12	99,869.0	10,889.8	7,461,624.9	72,725,403
2005	12	82,820.5	9,089.0	6,729,296.8	65,587,709
2006	12	87,565.1	10,090.0	7,726,961.8	75,311,502
2007	12	88,031.6	8,995.3	6,726,766.8	65,563,012

Morgantown Energy Facility, Monongalia County, WV, Facility ID: **10743**

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	No data	No data	No data	No data	No data
2003					
2004	6		370.5		2,916,246
2005	6		336.5		2,719,561
2006	6		310.7		2,710,964
2007	6		299.9		2,540,377

Mitchell, Marshall County, WV, Facility ID: 3948

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	56,009.2	29,593.1	8,641,347.9	84,222,423
2003	12	59,330.9	29,660.9	8,991,537.2	87,636,839
2004	12	62,617.0	23,575.2	8,627,594.8	84,089,902
2005	12	53,765.1	20,026.4	6,599,845.3	64,325,953
2006	12	52,005.5	16,394.6	7,076,633.7	68,972,995
2007	12	6,084.4	14,682.4	9,033,512.4	88,045,916

Kammer, Marshall County, WV, Facility ID: 3947

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	39,096.2	13,173.9	3,694,205.5	36,005,906
2003	12	42,216.1	11,968.5	3,562,163.2	34,718,914
2004	12	40,016.3	10,883.3	3,320,586.7	32,364,383
2005	12	42,574.0	11,516.3	3,722,892.7	36,285,498
2006	12	40,750.2	10,798.1	3,464,587.1	33,767,863

2007	12	43,126.6	11,100.7	3,991,447.0	38,902,989

Conemaugh, Indiana County, PA, Facility ID: 3118

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	5,936.4	19,460.9	11,603,127.7	113,132,105
2003	12	7,373.3	21,508.4	12,871,213.1	125,449,777
2004	12	7,204.2	19,741.3	12,336,450.1	120,259,118
2005	12	7,177.1	19,663.3	12,609,081.9	122,906,774
2006	12	8,036.9	23,369.4	13,991,064.0	136,378,534
2007	12	6,783.3	20,124.6	12,124,918.8	118,215,814

Homer City, Indiana County, PA, Facility ID: 3122

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	105,784.4	25,164.6	11,709,766.6	114,082,529
2003	12	151,677.6	21,330.1	13,993,063.1	136,384,703
2004	12	149,956.9	20,123.9	13,052,616.6	127,218,463
2005	12	132,022.8	18,256.1	13,408,986.7	130,691,897
2006	12	106,772.1	15,021.1	11,970,802.0	116,674,489
2007	12	120,767.8	17,444.1	13,576,987.3	132,329,347

Seward, Indiana County, PA, Facility ID: 3130

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	10,737.5	1,751.6	903,787.8	8,808,855
2003	12	9,192.2	1,462.4	757,575.7	7,383,784
2004	12	2,801.0	1,971.9	1,274,765.8	24,896,699
2005	12	7,618.9	1,446.0	3,128,927.5	30,496,421
2006	12	7,358.0	1,720.6	3,446,385.4	33,631,632
2007	12	8,096.0	1,739.2	3,731,173.7	36,400,512

R E Burger, Belmont County, OH, Facility ID: 2864

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	35,453.7	6,757.9	2,175,988.7	21,208,479
2003	12	29,929.8	3,603.4	1,783,723.4	17,385,166
2004	12	26,774.5	3,178.5	1,677,688.8	16,351,747
2005	12	37,598.3	5,358.6	2,465,490.1	24,031,261
2006	12	17,295.4	3,405.5	1,950,259.7	19,008,416
2007	12	22,508.5	3,403.3	2,038,237.3	19,865,844

Albright Power Station, Preston County, WV, Facility ID: 3942

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	20,560.1	4,672.3	1,702,180.5	16,590,381
2003	12	25,424.6	5,599.6	2,138,410.0	20,842,162
2004	12	15,984.9	2,725.0	1,230,785.0	11,995,936
2005	12	16,922.8	2,495.6	1,290,853.3	12,581,428
2006	12	15,228.9	2,249.7	1,168,370.4	11,387,612
2007	12	20,792.9	3,185.7	1,610,136.3	15,693,371

Cambria Cogen, Cambria County, PA, Facility ID: 10641

Year	# of Months	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input

	Reported				(mmBtu)
2002	12	No data	No data	No data	No data
2003	12		779.9		7,265,580
2004	12		1,016.2		9,485,877
2005	12		945.9		9,315,832
2006	12		1,027.9		9,729,467
2007	12		1,026.0		9,585,889

Colver Power Project, Cambria County, PA, Facility ID: 10143

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	No data	No data	No data	No data
2003	12		746.9		9,172,828
2004	12		799.8		9,254,990
2005	12		745.5		9,494,657
2006	12		677.9		9,093,178
2007	12		817.2		10,256,283

Ebensburg Power, Cambria County, PA, Facility ID: 10603

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	No data	No data	No data	No data
2003	12		234.6		6,037,721
2004	12		285.1		6,097,638
2005	12		256.2		5,750,605
2006	12		260.0		6,044,791
2007	12		290.5		6,347,609

Piney Creek Project, Clarion County, PA, Facility ID: 54144

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	No data	No data	No data	No data
2003	12		229.6		3,374,392
2004	12		213.4		3,099,551
2005	12		227.0		3,243,152
2006	12		235.8		3,410,731
2007	12		261.9		3,557,966

Scrubgrass Generating, Venango County, PA, Facility ID: 50974

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	No data	No data	No data	No data
2003	12		625.3		9,877,959
2004	12		594.0		10,757,492
2005	12		514.8		9,360,405
2006	12		626.1		9,781,159
2007	12		736.7		10,384,742

Conclusion

The Pittsburgh-Beaver Valley nonattainment area for the 1997 $PM_{2.5}$ NAAQS was defined as Allegheny County (except the Liberty-Clairton area), Beaver, Butler, Washington, Westmoreland Counties, and portions of Green, Armstrong, and Lawrence Counties. EPA has

determined that the same boundary is appropriate for the Pittsburgh-Beaver Valley nonattainment area under the 2006 $PM_{2.5}$ NAAQS. The Pittsburgh-Beaver Valley area is affected by long-range transport generally from the direction of the southwest, but from other directions as well. Sulfate emissions from large power plants located nearby in Greene, Armstrong, and Lawrence Counties also contribute to the area's nonattainment problem. In addition, population-based local emissions such as those from vehicles and other smaller area sources in Allegheny, Beaver, Butler, Washington, and Westmoreland Counties contribute to the nonattainment problem in the Pittsburgh-Beaver Valley area.

Because of a localized source of emissions and topography which contains these emissions in the area, EPA determined that it was appropriate to establish Liberty-Clairton as a separate nonattainment area from the Pittsburgh-Beaver Valley nonattainment area for the 1997 and 2006 $PM_{2.5}$ NAAQS. The Liberty-Clairton area, which is comprised of the City of Clairton and the Boroughs of Glassport, Liberty, Lincoln, and Port View, is fully surrounded by the Pittsburgh-Beaver Valley nonattainment area. For more information please see EPA's Technical Analysis for the Liberty-Clairton Area.

EPA Technical Analysis for the Reading Area

Introduction

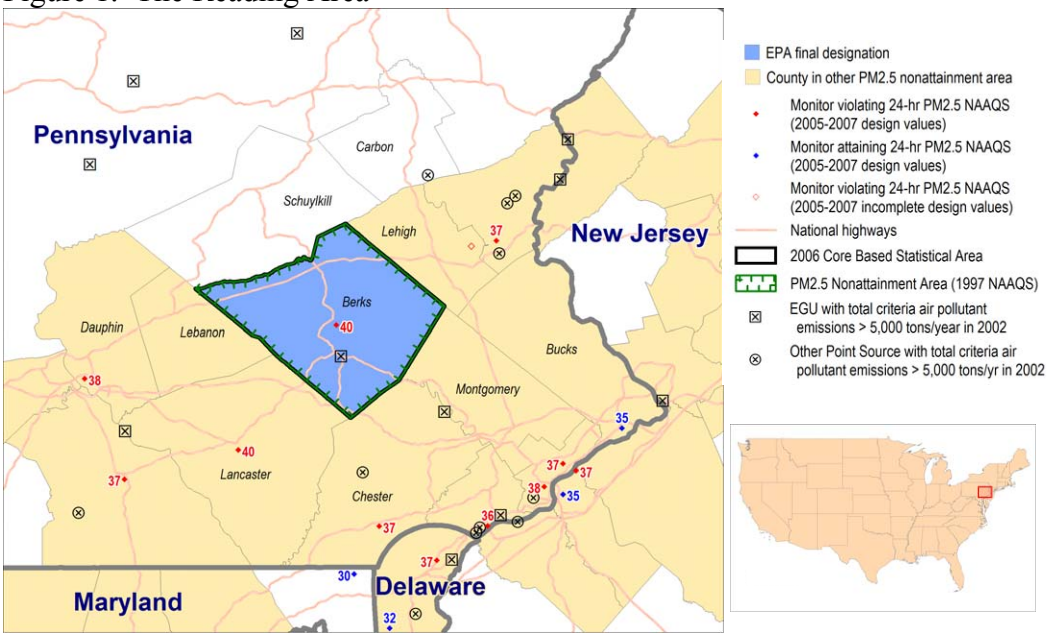
Pursuant to section 107(d) of the Clean Air Act, EPA must designate as nonattainment those areas that violate the NAAQS and those nearby areas that contribute to violations. This technical analysis for the Reading area identifies the counties with monitors that violate the 2006 24-hour $PM_{2.5}$ standard and evaluates nearby counties for contributions to fine particle concentrations in the area. EPA has evaluated these counties based on the weight of evidence of the following nine factors recommended in EPA guidance and any other relevant information:

- pollutant emissions
- air quality data
- population density and degree of urbanization
- traffic and commuting patterns
- growth
- meteorology
- geography and topography
- jurisdictional boundaries
- level of control of emissions sources

We also used analytical tools and data such as pollution roses, fine particle composition monitoring data, back trajectory analyses, and the contributing emission score (CES) to evaluate these areas. (See additional discussion of the CES under Factor 1 below.)

Figure 1 is a map of the counties in the Reading area and other relevant information such as the locations and design values of air quality monitors, and the metropolitan area boundary.

Figure 1. The Reading Area



For this area, EPA previously established $PM_{2.5}$ nonattainment boundaries for the 1997 $PM_{2.5}$ NAAQS that included one full county located in Pennsylvania.

In December 2007, the Commonwealth of Pennsylvania recommended that the same county be designated as "nonattainment" for the 2006 24-hour $PM_{2.5}$ standard based on air quality data from 2004-2006. These data are from Federal Reference Method (FRM) monitors located in the state. (See the December 28, 2007 letter from the Pennsylvania Department of Environmental Protection to EPA.)

In August 2008, EPA notified the Commonwealth of Pennsylvania of its intended designations. In this letter, EPA also requested that if the Commonwealth of Pennsylvania wished to provide comments on EPA's intended designation, it should do so by October 20, 2008. EPA stated that it would consider any additional information (e.g., on power plants or partial county areas) provided by the state in making final decisions on the designations.

Based on EPA's technical analysis described below, EPA has designated the same county as previously designated for $PM_{2.5}$ as nonattainment for the 2006 24-hour $PM_{2.5}$ air-quality standard as part of the Reading nonattainment area, based upon currently available information. This county is listed in the table below.

Reading Area	State-Recommended Nonattainment Counties	EPA-Final Designated Nonattainment Counties
Pennsylvania	Berks County	Berks County

The following is a technical analysis for the Reading area.

Factor 1: Emissions data

For this factor, EPA evaluated county level emission data for the following $PM_{2.5}$ components and precursor pollutants: $PM_{2.5}$ emissions total, $PM_{2.5}$ emissions carbon, $PM_{2.5}$ emissions other, sulfur dioxide (SO_2), nitrogen oxides (NO_x), volatile organic compounds (VOCs), and ammonia (NH_3). "$PM_{2.5}$ emissions total" represents direct emissions of $PM_{2.5}$ and includes: "$PM_{2.5}$ emissions carbon," "$PM_{2.5}$ emissions other," primary sulfate (SO_4), and primary nitrate. (Although primary sulfate and primary nitrate, which are emitted directly from stacks rather than forming in atmospheric reactions with SO_2 and NO_x, are part of "$PM_{2.5}$ emissions total," they are not shown in Table 1 as separate items). "$PM_{2.5}$ emissions carbon" represents the sum of organic carbon (OC) and elemental carbon (EC) emissions, and "$PM_{2.5}$ emissions other" represents other inorganic particles (crustal). Emissions of SO_2 and NO_x, which are precursors of the secondary $PM_{2.5}$ components sulfate and nitrate, are also considered. VOCs and NH_3 are also potential $PM_{2.5}$ precursors and are included for consideration.

Emissions data were derived from the 2005 National Emissions Inventory (NEI), version 1. See http://www.epa.gov/ttn/naaqs/pm/pm25_2006_techinfo.html.

EPA also considered the Contributing Emissions Score for each county. The CES is a metric that takes into consideration emissions data, meteorological data, and air quality monitoring information to provide a relative ranking of counties in and near an area. Note that this metric is not the exclusive manner for considering data for these factors. A summary of the CES is

included in Attachment 2, and a more detailed description can be found at http://www.epa.gov/ttn/naaqs/pm/pm25_2006_techinfo.html#C.

Table 1 shows emissions of $PM_{2.5}$ and precursor pollutants components (given in tons per year) and the CES for violating and potentially contributing counties in the Reading area. Counties that are part of the Reading nonattainment area for the 1997 $PM_{2.5}$ NAAQS are shown in boldface. Counties are listed in descending order by CES.

Table 1. $PM_{2.5}$ Related Emissions and Contributing Emissions Score

County, State	State Recommended Nonattainment?	CES	$PM_{2.5}$ emissions total (tpy)	$PM_{2.5}$ emissions carbon (tpy)	$PM_{2.5}$ emissions other (tpy)	SO_2 (tpy)	NOx (tpy)	VOCs (tpy)	NH_3 (tpy)
Berks, PA	**Yes**	**100**	**3,378**	**922**	**2,456**	**18,874**	**18,086**	**19,117**	**4,653**
York, PA	Yes- other area	76	7,614	1,217	6,396	118,621	32,214	18,478	3,913
Lancaster, PA	Yes - other area	57	3,258	1,159	2,099	4,017	16,396	26,407	16,486
Chester, PA	Yes - other area	43	2,124	799	1,325	7,990	16,507	19,666	2,563
Montgomery, PA	Yes - other area	40	2,597	1,118	1,477	5,411	23,306	37,216	1,535
Delaware, PA	Yes - other area	38	2,454	865	1,589	20,356	32,904	20,250	956
New Castle, DE	Yes - other area	35	2,394	891	1,504	50,955	28,291	19,269	1,699
Baltimore, MD	Yes - other area	29	6,437	1,892	4,547	44,626	34,467	31,163	1,266
Philadelphia, PA	Yes - other area	28	2,506	1,248	1,258	11,293	38,733	35,230	1,299
Northampton, PA	Yes - other area	23	5,222	665	4,556	60,396	24,620	10,960	807
Schuylkill, PA	No	22	1,247	547	700	7,239	6,219	6,873	1,137
Lehigh, PA	Yes - other area	21	1,328	501	828	3,749	11,503	13,369	904
Lebanon, PA	Yes - other area	19	855	338	516	1,778	5,876	5,924	4,445
Montour, PA	No	19	2,022	876	1,146	3,951	16,792	26,241	1,834
Bucks, PA	Yes - other area	15	1,074	528	546	2,443	12,548	12,569	1,664
Dauphin, PA	Yes - other area	14	1,247	547	700	7,239	6,219	6,873	1,137
Harford, MD	Yes - other area	13	1,769	879	890	2,307	7,310	10,512	967
Anne Arundel, MD	Yes - other area	12	4,874	1,311	3,563	70,568	33,573	20,421	979
Montgomery, MD	Yes - other area	12	7,031	2,095	4,937	41,801	26,763	28,692	1,090
Gloucester, NJ	Yes - other area	11	1,607	677	930	7,116	12,711	14,140	813

Berks County has a CES of one-hundred, indicating that of all the counties in the analysis, it has the greatest influence on its own nonattainment. However, a number of counties in this analysis have higher emissions than Berks County. York County has the next highest CES, seventy-six. York County is separated from the Reading area by Lancaster County. York County has, by far, the highest SO_2 emissions of all the counties in the analysis. York County also has the highest $PM_{2.5}$ total emissions and the third highest NOx emissions. York County is its own nonattainment area for the 1997 $PM_{2.5}$ NAAQS. Pennsylvania has recommended that York County be a separate nonattainment area for the 2006 $PM_{2.5}$ NAAQS. Lancaster County has the third highest CES, fifty-seven. Like York County, Lancaster County is its own nonattainment area for the 1997 $PM_{2.5}$ NAAQS. Pennsylvania has recommended that Lancaster County be a separate nonattainment area for the 2006 $PM_{2.5}$ NAAQS. Lancaster County has total $PM_{2.5}$ and NOx emissions comparable to Berks County, but much lower SO_2 emissions.

As explained in detail in Factor 8, below, the York and Lancaster areas are distinct from the Reading area. They are in separate metropolitan statistical areas (MSAs) and are served by separate metropolitan planning organizations. Furthermore, for air quality planning purposes,

Pennsylvania defined separate air basins for these areas. Therefore, EPA has determined that it is appropriate to include York, Lancaster, and Berks Counties in separate nonattainment areas for the 2006 24-hour $PM_{2.5}$ NAAQS. To the extent that emissions from the York and Lancaster Counties may contribute to the Reading nonattainment area, that contribution will be lessened by emission controls put in place in those separate nonattainment areas.

The four counties with the next highest CESs, forty-three to thirty-five, are Chester, Montgomery, Delaware, and New Castle Counties. These counties are part of the Philadelphia-Wilmington nonattainment area for the 1997 $PM_{2.5}$ NAAQS and the 2006 $PM_{2.5}$ NAAQS. Of these four counties, Delaware and New Castle Counties have the highest SO_2 and NOx emissions. All four have comparable $PM_{2.5}$ emissions.

Five counties have CESs between thirty and twenty. Of these five, Baltimore and Northampton Counties have the highest $PM_{2.5}$ and SO_2 emissions. Philadelphia County has the highest NOx emissions. For the 1997 and 2006 $PM_{2.5}$ NAAQS, Baltimore and Philadelphia Counties are part of the Baltimore and Philadelphia-Wilmington nonattainment areas, respectively.

Of the remaining counties, with CESs between twenty and ten, Ann Arundel and Montgomery Counties in Maryland have the highest $PM_{2.5,}$ $SO_{2,}$ and NOx emissions. Ann Arundel County is part of the Baltimore nonattainment area for the 1997 and 2006 $PM_{2.5}$ NAAQS. Montgomery County is part of the Washington nonattainment area for the 1997 $PM_{2.5}$ NAAQS, and EPA intends to include it in the Baltimore nonattainment area for the 2006 $PM_{2.5}$ NAAQS.

Factor 2: Air quality data

This factor considers the 24-hour $PM_{2.5}$ design values in micrograms per cubic meter ($\mu g/m^3$) for air quality monitors in counties in the Reading area based on data for the 2005-2007 period. A monitor's design value indicates whether that monitor attains a specified air quality standard. The 2006 24-hour $PM_{2.5}$ standard is met when the 3-year average of a monitor's 98^{th} percentile values is 35 $\mu g/m^3$ or less. A design value is only valid if minimum data completeness criteria are met.

The 24-hour $PM_{2.5}$ design values for counties in the Reading area are shown in Table 2.

Table 2. Air Quality Data County, State	State Recommended Nonattainment?	24-hr $PM_{2.5}$ Design Values, 2003-2005 ($\mu g/m^3$)	24-hr PM2.5 Design Values, 2004-2006 ($\mu g/m^3$)	24-hr $PM_{2.5}$ Design Values, 2005-2007 ($\mu g/m^3$)
Berks, PA	**Yes**	**39**	**37**	**40**
York, PA	Yes - other area	41	37	37
Lancaster, PA	Yes - other area	44	39	40
Chester, PA	Yes - other area			37
Montgomery, PA	Yes - other area		Inc	Inc
Delaware, PA	Yes - other area	35	35	36
New Castle, DE	Yes - other area	37	37	37
Baltimore, MD	Yes - other area	37	36	35
Philadelphia, PA	Yes - other area	38	36	38
Northampton, PA	Yes - other area	36	37	37

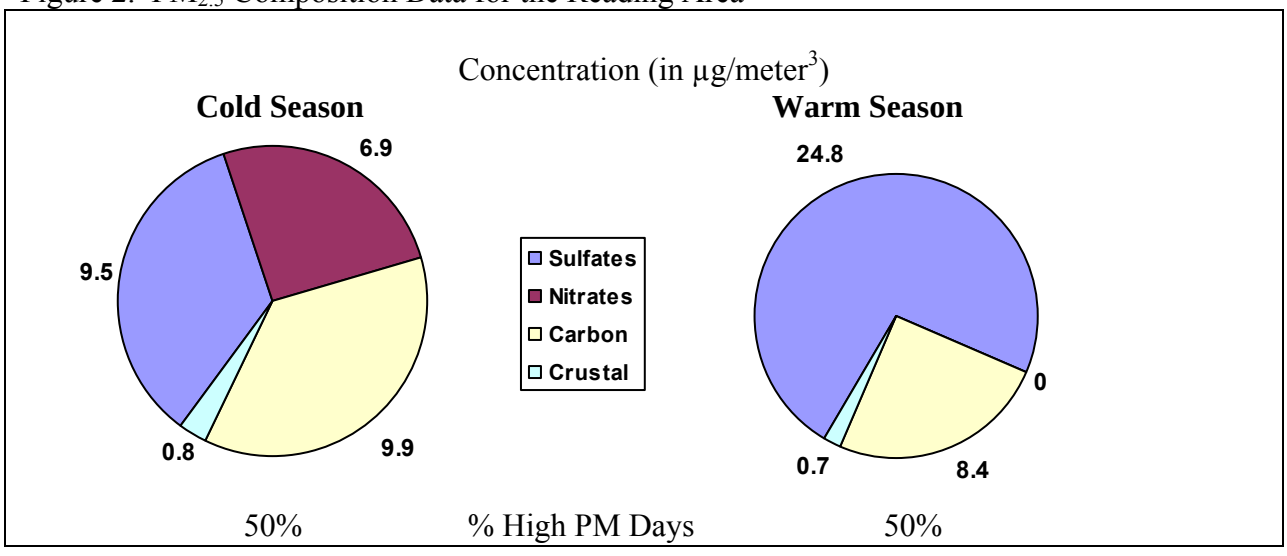
Schuylkill, PA	No	No Monitior		
Lehigh, PA	Yes - other area	36		
Lebanon, PA	Yes - other area	No Monitor		
Montour, PA	No	No Monitor		
Bucks, PA	Yes - other area		33	35
Dauphin, PA	Yes - other area	39	38	38
Harford, MD	Yes - other area	34	31	31
Anne Arundel, MD	Yes - other area	37	35	34
Montgomery, MD	Yes - other area	32	31	30
Gloucester, NJ	Yes - other area	32		

Berks County shows violations of the 2006 24-hour $PM_{2.5}$ standard. Therefore, this county is included in the Reading nonattainment area. York, Lancaster, Chester, Delaware, Philadelphia, Northampton, and Dauphin Counties in Pennsylvania and New Castle, Delaware also show violations of the 2006 24-hour $PM_{2.5}$ standard. However, York, Lancaster, Chester, Delaware, Philadelphia, Dauphin and New Castle Counties are in other nonattainment areas for the 1997 and 2006 $PM_{2.5}$ NAAQS. Northampton and Lehigh Counties are designated nonattainment for the 2006 $PM_{2.5}$ NAAQS as part of the Allentown nonattainment area.

Note that the absence of a violating monitor is not a sufficient reason to eliminate counties as candidates for nonattainment status based upon contribution to violations in other nearby areas. Each county has been evaluated based on the weight of evidence of all nine factors and other relevant information.

Under this factor, we also consider fine particle composition monitoring data. Air quality monitoring data on the composition of fine particle mass are available from the EPA Chemical Speciation Network and the IMPROVE monitoring network. Analysis of these data indicates that the days with the highest fine particle concentrations in the Reading area occur in both cool and warm seasons. The average chemical composition of the highest days in the cold season and warm seasons is illustrated in Figure 2. This data indicates that sources of SO_2, direct $PM_{2.5}$ carbon, and NOx emissions are key contributors to exceedances in the area.

Figure 2. $PM_{2.5}$ Composition Data for the Reading Area



Note: Eligible monitors for providing design value data generally include State and Local Air Monitoring Stations (SLAMS) at population-oriented locations with an FRM monitor. All data from Special Purpose Monitors (SPM) using an FRM is eligible for comparison to the relevant NAAQS, subject to the requirements given in the October 17, 2006 Revision to Ambient Air Monitoring Regulations (71 FR 61236). All monitors used to provide data must meet the monitor siting and eligibility requirements given in 71 FR 61236 to 61328 in order to be acceptable for comparison to the 2006 24-hr $PM_{2.5}$ NAAQS for designation purposes.

Factor 3: Population density and degree of urbanization (including commercial development)

Table 3 shows the 2005 population for each county in the area being evaluated, as well as the population density for each county in that area. Population data gives an indication of whether it is likely that population-based emissions might contribute to violations of the 2006 24-hour $PM_{2.5}$ standard.

Table 3. Population

County	State Recommended Nonattainment?	2005 Population	2005 Population Density (pop/sq mi)
Berks, PA	**Yes**	**396,236**	**458**
York, PA	Yes - other area	408,182	449
Lancaster, PA	Yes - other area	489,936	499
Chester, PA	Yes - other area	473,723	624
Montgomery, PA	Yes - other area	774,666	1591
Delaware, PA	Yes - other area	554,393	2910
New Castle, DE	Yes - other area	522,094	1077
Baltimore, MD	Yes - other area	783,405	1255
Philadelphia, PA	Yes - other area	1,456,350	10220
Northampton, PA	Yes - other area	287,334	762
Schuylkill, PA	No	146,996	188
Lehigh, PA	Yes - other area	330,168	948
Lebanon, PA	Yes - other area	125,429	346
Montour, PA	No	18,032	138
Bucks, PA	Yes - other area	619,772	998
Dauphin, PA	Yes - other area	252,949	454
Harford, MD	Yes - other area	238,850	519
Anne Arundel, MD	Yes - other area	509,397	1127
Montgomery, MD	Yes - other area	927,405	1834
Gloucester, NJ	Yes - other area	277,037	823

In general, counties that are part of nonattainment areas other than the Reading area for the 1997 and 2006 $PM_{2.5}$ NAAQS and/or are beyond the contiguous ring of counties around the Reading area have the highest populations and population densities. Of the remaining counties, Berks County has the highest 2005 population. However, Lehigh County's population density is twice that of Berks County. Lehigh County is designated nonattainment for the 2006 $PM_{2.5}$ NAAQS as part of the Allentown nonattainment area.

The data in Table 3 indicates a number of counties which are in separate nonattainment areas rank high for this factor. However, as explained in detail in Factor 8, below, these counties are in areas that are distinct from the Reading area. They are in separate MSAs and are served by

separate metropolitan planning organizations. In addition, for air quality planning purposes, Pennsylvania defined separate air basins for the Pennsylvania counties surrounding the Reading area. Therefore, EPA has determined that it is appropriate to include these counties in separate nonattainment areas for the 2006 24-hour $PM_{2.5}$ NAAQS. To the extent that population-based emissions from these counties may impact the Reading nonattainment area, that contribution will be lessened by controls put in place in those separate nonattainment areas.

Factor 4: Traffic and commuting patterns

This factor considers the number of commuters in each county who drive to another county within the Reading area, the percent of total commuters in each county who commute to other counties within the Reading area, as well as the total Vehicle Miles Traveled (VMT) for each county in millions of miles (see Table 4). A county with numerous commuters is generally an integral part of an urban area and is likely contributing to fine particle concentrations in the area.

Table 4. Traffic and Commuting Patterns

County, State	State Recommended Nonattainment?	2005 VMT (millions of miles)	Number Commuting to Any Violating Counties	Percent Commuting to Any Violating Counties	Number Commuting into and within Statistical Area*	Percent Commuting into and within Statistical Area*
Berks, PA	**Yes**	**3,320**	**157,470**	**89**	**140,820**	**79**
York, PA	Yes - other area	3,333	177,150	92	240	0
Lancaster, PA	Yes - other area	4,392	218,910	95	4,070	2
Chester, PA	Yes - other area	4,414	142,950	66	1,920	1
Montgomery, PA	Yes - other area	7,527	31,840	8	4,230	1
Delaware, PA	Yes - other area	4,011	216,560	85	187	0
New Castle, DE	Yes - other area	5,674	228,630	93	4	0
Baltimore, MD	Yes - other area	8,032	307,530	82	8	0
Philadelphia, PA	Yes - other area	6,499	469,300	82	243	0
Northampton, PA	Yes - other area	2,399	99,230	79	605	1
Schuylkill, PA	No	1,353	9,890	16	5,790	9
Lehigh, PA	Yes - other area	3,374	114,320	77	3,270	2
Lebanon, PA	Yes - other area	1,133	19,610	33	2,800	5
Montour, PA	No				20	0
Bucks, PA	Yes - other area	5,250	6,310	2	410	0
Dauphin, PA	Yes - other area	3,413	96,850	80	180	0
Harford, MD	Yes - other area	2,068	44,070	40	33	0
Anne Arundel, MD	Yes - other area	5,572	36,370	14	37	0
Montgomery, MD	Yes - other area	7,606	4,800	1	8	0
Gloucester, NJ	Yes - other area	2,621	42,160	35	16	0

*Note: The statistical area considered in this table is the Reading metropolitan statistical area (MSA), which consists of Berks county. In November 2007, the Office of Management and Budget (OMB) included Berks County in the Philadelphia Combined Statistical Area.

The listing of counties on Table 4 reflects a ranking based on the number of people commuting to other counties. The counties that are in the nonattainment area for the 1997 $PM_{2.5}$ NAAQS are shown in boldface.

In general, counties that are part of nonattainment areas other than the Reading area and/or that are beyond the contiguous ring of counties around the Reading area have the highest VMT. Of the remaining counties, Lehigh and Berks Counties have the highest 2005 VMT. However,

Berks County has far more commuters (140,820) into and within the Reading MSA than any other county in this analysis. Schuylkill County has the next highest number of commuters into the Reading area, only 5,790.

The data in Table 4 indicates that a number of counties in separate nonattainment areas for the 1997 $PM_{2.5}$ NAAQS rank high for this factor as far as VMT. However, there is very little commuting between those counties and the Reading area. Furthermore, those counties are in separate MSAs and are served by separate metropolitan planning organizations. In addition, for air quality planning purposes, Pennsylvania defined separate air basins for the Pennsylvania counties surrounding the Reading area. Therefore, EPA has determined that it is appropriate to include these counties in separate nonattainment areas for the 2006 24-hour $PM_{2.5}$ NAAQS. To the extent that vehicle-based emissions from these counties may impact the Reading nonattainment area, that contribution will be lessened by controls put in place in those separate nonattainment areas.

Note: The 2005 VMT data used for Table 4 and 5 of the 9-factortechnical analysis has been derived using methodology similar to that described in "Documentation for the final 2002 Mobile National Emissions Inventory, Version 3, September 2007, prepared for the Emission Inventory Group, U.S. EPA. This document may be found at: ftp://ftp.epa.gov/EmisInventory/2002finalnei/documentation/mobile/2002_mobile_nei_version_3_report_092807.pdf
The 2005 VMT data were taken from documentation which is still draft, but which should be released in 2008. Note: The 2005 VMT data used for Tables 4 and 5 of the technical analysis have been derived using methodology such as that described in "Documentation for the 2005 Mobile National Emissions Inventory, Version 2," December 2008, prepared for the Emission Inventory Group, U.S. EPA. This document may be found at: ftp://ftp.epa.gov/EmisInventory/2005_nei/mobile_sector/documentation/2005_mobile_nei_version_2_report.pdf

Factor 5: Growth rates and patterns

This factor considers population growth for 2000-2005 and growth in vehicle miles traveled for 1996-2005 for counties in the Reading area, as well as patterns of population and VMT growth. A county with rapid population or VMT growth is generally an integral part of an urban area and likely to be contributing to fine particle concentrations in the area.

Table 5 below shows population, population growth, VMT, and VMT growth for counties that are included in the Reading area.

Table 5. Population and VMT Values and Percent Change.

Location	Population (2005)	Population Density (2005)	Population % change (2000 - 2005)	2005 VMT (millions of miles)	VMT % change (1996 - 2005)
Berks, PA	**396,236**	**458**	**6**	**3,320**	**11**
York, PA	408,182	449	7	3,333	6
Lancaster, PA	489,936	499	4	4,392	21
Chester, PA	473,723	624	9	4,414	54
Montgomery, PA	774,666	1591	3	7,527	73
Delaware, PA	554,393	2910	0	4,011	24
New Castle, DE	522,094	1077	4	5,674	25

Baltimore, MD	783,405	1255	4	8,032	32
Philadelphia, PA	1,456,350	10220	(4)	6,499	(31)
Northampton, PA	287,334	762	7	2,399	21
Schuylkill, PA	146,996	188	(2)	1,353	(1)
Lehigh, PA	330,168	948	6	3,374	34
Lebanon, PA	125,429	346	4	1,133	7
Montour, PA	18,032	138	(1)		
Bucks, PA	619,772	998	3	5,250	49
Dauphin, PA	252,949	454	0	3,413	27
Harford, MD	238,850	519	9	2,068	0
Anne Arundel, MD	509,397	1127	4	5,572	45
Montgomery, MD	927,405	1834	6	7,606	16
Gloucester, NJ	277,037	823	8	2,621	26

Berks County has experienced a modest increase in population from 2000 to 2005, six percent. Most other counties in the analysis have experience similar moderate increases. However, Philadelphia, Schuylkill and Montour Counties have seen a small decrease in population during the same time period.

VMT in Berks County has increased moderately from 1996 to 2005, eleven percent. However, VMT has increased considerably in Montgomery and Chester Counties and other counties that are in separate nonattainment areas for the 1997 $PM_{2.5}$ NAAQS. The counties with high VMT growth are in separate MSAs from the Reading area. As shown in Factor 4, above, there is little commuting from these areas into the Reading area. Therefore, EPA has determined that it is appropriate to include these counties in separate nonattainment areas for the 2006 24-hour $PM_{2.5}$ NAAQS. To the extent that vehicle and population-based emissions from these counties may impact the Reading nonattainment area, that contribution will be lessened by controls put in place in those separate nonattainment areas

Factor 6: Meteorology (weather/transport patterns)

For this factor, EPA considered data from National Weather Service instruments and other meteorological monitoring sites in the area. Wind direction and wind speed data for 2005-2007 were analyzed, with an emphasis on "high $PM_{2.5}$ days" for each of two seasons (an October-April "cold" season and a May-September "warm" season). These high days are defined as days where any FRM air quality monitors had 24-hour $PM_{2.5}$ concentrations above 95% on a frequency distribution curve of $PM_{2.5}$ 24-hour values.

For each air quality monitoring site, EPA developed a "pollution rose" to understand the prevailing wind direction and wind speed on the days with highest fine particle concentrations. The figure identifies 24-hour $PM_{2.5}$ values by color; days exceeding 35 ug/m3 are denoted with a red or black icon. A dot indicates the day occurred in the warm season; a triangle indicates the day occurred in the cool season. The center of the figure indicates the location of the air quality monitoring site, and the location of the icon in relation to the center indicates the direction from which the wind was blowing on that day. An icon that is close to the center indicates a low average wind speed on that day. Higher wind speeds are indicated when the icon is further away from the center.

As can be seen from the pollution roses for Berks County, (Figures 6 and 6.1, below) the average prevailing surface wind direction for high $PM_{2.5}$ days in Berks County is from the southwest and

west-southwest. The pollution roses show that 24-hour $PM_{2.5}$ concentrations influenced by emissions from nearly any direction at various times. However, these data also suggest that emissions from the southwest, west-southwest, and to a lesser extent from the east and east-southeast are more likely to contribute to the violation at the Berks County monitor than emissions from other directions. Long-range transport from the southwest is likely one component of the nonattainment problem in the Reading area. Numerous nonattainment areas are upwind from Berks County, including the Lancaster, York, and Baltimore nonattainment areas.

Figure 6. Pollution Trajectory Plot for Berks County, PA
(Site 42-011-0010)

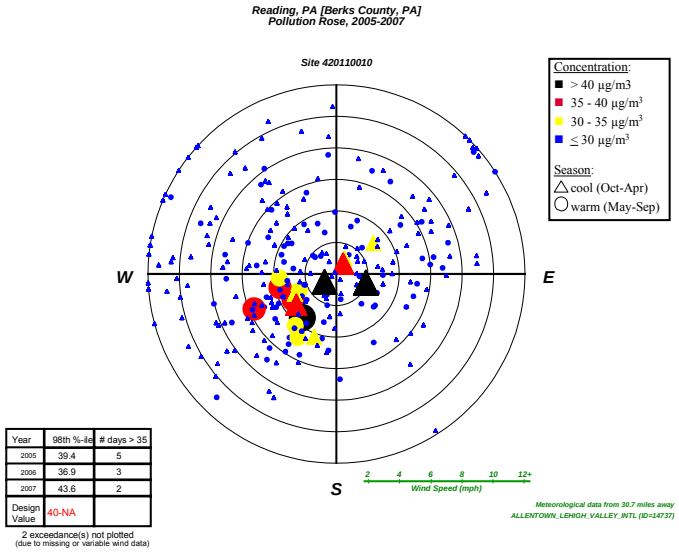
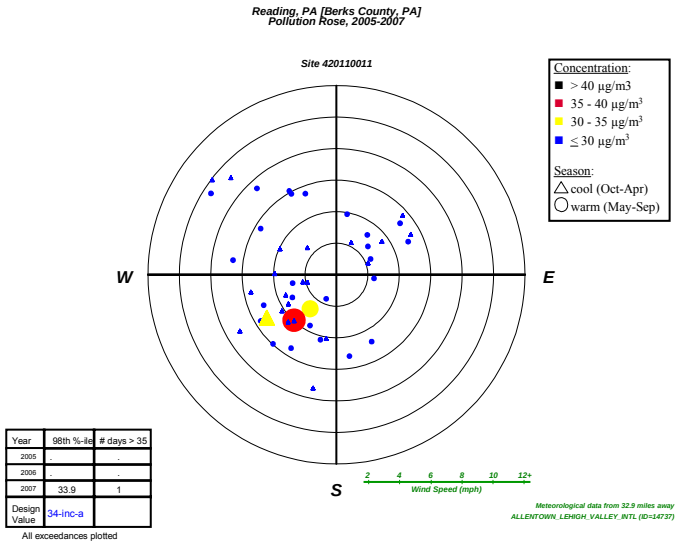


Figure 6.1. Pollution Trajectory Plot for Berks County, PA
(Site 42-011-0011)

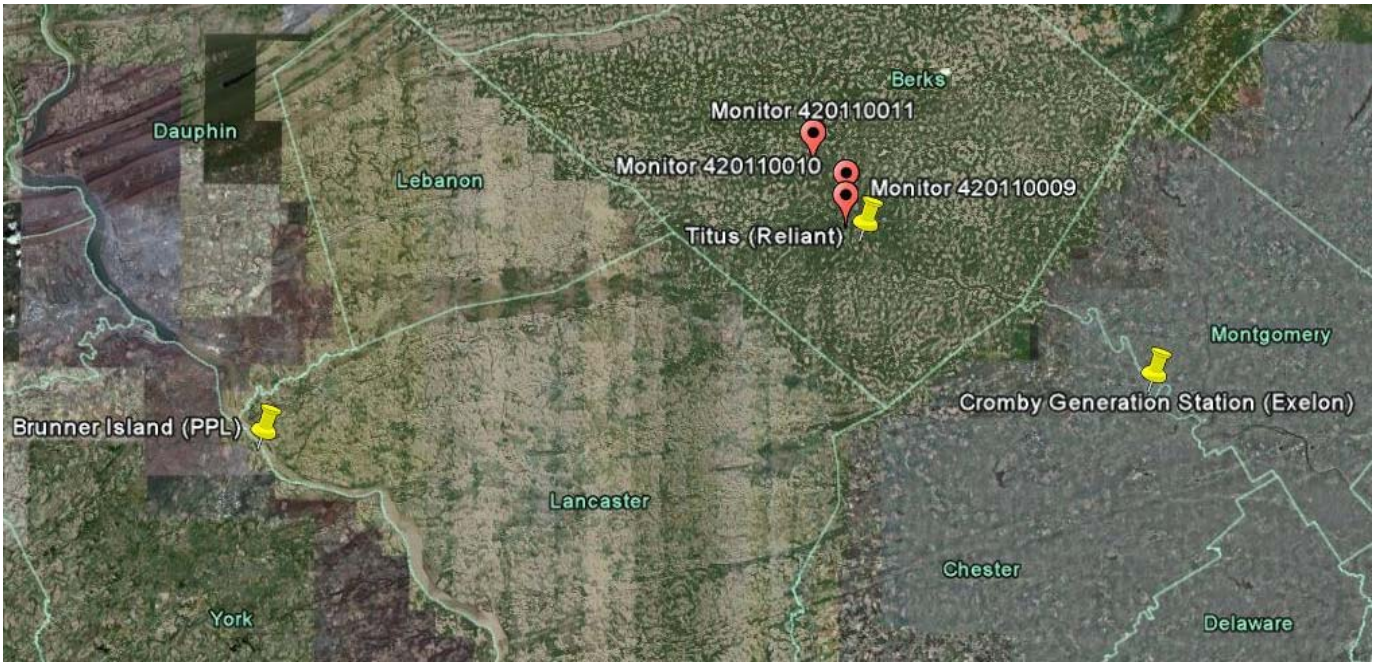


As can be seen in Figure 6.2, the Brunner Island facility, a large electric generating unit (EGU) in York County, on the border with Lancaster County, is west-southwest of the monitoring locations in Berks County. It is likely that emissions from Brunner Island impact the monitor in Berks County. York County's high emissions and location upwind of Berks County explain its high CES value, seventy-six. (See Table 1 in Factor 1.) However, York County is in separate nonattainment area for the 1997 $PM_{2.5}$ NAAQS. Furthermore, as explained in detail in Factor 8, below, the York area is distinct from the Reading area. Lancaster and York Counties are in separate MSAs and are served by separate metropolitan planning organizations. Furthermore, for air quality planning purposes, Pennsylvania defined separate air basins for these areas. Therefore, EPA has determined that it is appropriate to include York County in separate nonattainment area for the 2006 24-hour $PM_{2.5}$ NAAQS. To the extent that there is any contribution of transported pollution from York County to the Reading nonattainment area, that contribution will be lessened by emission controls put in place in that separate nonattainment area.

Figure 6.1 shows two high $PM_{2.5}$ days with low-speed winds from the east and east-southeast. This indicates that the Titus facility in Berks likely also impacts the monitor in Berks County.

The Pennsylvania Department of Environmental Protection (PADEP) moved the Berks County monitor twice between 2005 and 2007. The first location, (AQS monitor # 420110009) was located at Morgantown Road and Prospect Street in Reading. PADEP lost the lease for that location, and in 2006 moved the monitor to a temporary location, 503 North 6th Street in Reading (AQS monitor # 420110010). Finally, in 2007, the monitor was moved to its new permanent location, 1059 Arnold Road, also in Reading (AQS monitor # 420110011). For calculating design values, EPA considers these monitoring locations to be one and the same. Figure 6.2 shows the monitors' locations as well as the Titus, Brunner Island, and Cromby facilities.

Figure 6.2. Berks County Air Quality Monitor Locations and Nearby Large EGUs



Note: The meteorology factor is also considered in each county's Contributing Emissions Score because the method for deriving this metric included an analysis of trajectories of air masses for high $PM_{2.5}$ days.

Factor 7: Geography/topography (mountain ranges or other air basin boundaries)

The geography/topography analysis evaluates the physical features of the land that might have an effect on the air shed and, therefore, on the distribution of $PM_{2.5}$ over the Reading area.

The Reading area does not have any geographical or topographical barriers significantly limiting air-pollution transport within its air shed. Therefore, this factor did not play a significant role in the decision-making process.

Factor 8: Jurisdictional boundaries (e.g., existing $PM_{2.5}$ areas)

In evaluating the jurisdictional boundary factor, EPA gave special consideration to areas that were already designated nonattainment in 2005 for violating the 1997 fine particle standards. Analysis of chemical composition data in these areas indicates that the same components that make up most of the $PM_{2.5}$ mass in the area on an annual average basis (such as sulfate and direct $PM_{2.5}$ carbon in many eastern areas) also are key contributors to the $PM_{2.5}$ mass on days exceeding the 2006 24-hour $PM_{2.5}$ standard. These data indicate that in many cities, the same source categories that contribute to violations of the annual standard also contribute to exceedances of the 2006 24-hour standard.

Most areas that were originally designated nonattainment for the $PM_{2.5}$ standards still have not attained the standards. Thus, EPA has generally concluded that counties that were designated as having emissions sources contributing to fine particle concentrations which continue to exceed the 1997 standards (all areas violated the annual standard, two three also violated the previous 24-hour standard) also contribute to fine particle concentrations on the highest days. For this reason, EPA believes that for most existing nonattainment areas, the nonattainment area for the 2006 24-hour standard should be the same. Consideration also should be given to existing boundaries and organizations as they may facilitate air quality planning and the implementation of control measures to attain the standard. Areas already designated as nonattainment represent important boundaries for state air quality planning.

Counties around the Reading area were designated as separate nonattainment areas for the 1997 $PM_{2.5}$ standard and the 1997 8-hour ozone standard. York, Lancaster, Chester, Montgomery (PA), Delaware, New Castle, Philadelphia, Bucks, Gloucester, Baltimore, Harford, Anne Arundel, Lebanon, Dauphin, and Montgomery (MD) Counties are in separate nonattainment areas for the 1997 $PM_{2.5}$ NAAQS, the York, Lancaster, Philadelphia-Wilmington, Baltimore, Harrisburg-Lebanon-Carlisle, and Washington, DC nonattainment areas, respectively. York County was part of the York Subpart 1 ("Basic") 8-hour ozone nonattainment area. Lancaster County was designated as the Lancaster marginal 8-hour ozone nonattainment area. Lebanon and Dauphin Counties were part of the Harrisburg-Lebanon-Carlisle Subpart 1 ("Basic") 8-hour ozone nonattainment area. Northampton County was part of the Allentown Subpart 1 ("Basic") 8-hour ozone nonattainment area. These areas have all been re-designated to attainment for the 1997 8-hour ozone standard.

Chester, Montgomery (PA), Delaware, New Castle, Philadelphia, Bucks, Gloucester Counties are part of the Philadelphia-Wilmington-Atlantic City moderate 8-hour ozone nonattainment area. Baltimore, Harford, Anne Arundel Counties are part of the Baltimore moderate 8-hour ozone nonattainment area, and Montgomery County, MD is part of the Washington, DC moderate 8-hour ozone nonattainment area.

The Berks County Planning Commission is the metropolitan planning organization (MPO) for Berks County. The counties surrounding Berks County are members of other MPOs, including the Lehigh Valley Planning Commission, the Delaware Valley Regional Planning Commission, the Lancaster County Transportation Coordinating Committee, the Northeastern Pennsylvania Alliance Rural Planning Organization, and the Lebanon County MPO.

EPA has designated Berks County as the Reading nonattainment area for the 2006 $PM_{2.5}$ NAAQS. The air quality planning for the area will be conducted by the PADEP. Transportation planning is covered by one MPO, the Berks County Planning Commission. Furthermore, PADEP's Reading Air Basin covers portions of Berks County, and no other county. The Air Basin is defined in 25 Pa Code § 121.1. Controls on sulfur compounds for the Reading Air Basin are listed in 25 Pa Code § 123.22.

The definitions of the air basins, as they appear in 25 *Pa Code* § 121.1 appear below:

> *Air basin*—A geographic area of this Commonwealth as delimited in this section.
>
> *Allentown, Bethlehem, Easton air basin*—The following political subdivisions in Lehigh County: City of Allentown, City of Bethlehem, Catasauqua Borough, Coplay Borough, Emmaus Borough, Fountain Hill Borough, Hanover Township, Salisbury Township, South Whitehall Township, and Whitehall Township, and the following political subdivisions in Northampton County: Allen Township, Bath Borough, City of Bethlehem, Bethlehem Township, East Allen Township, City of Easton, Freemansburg Borough, Glendon Borough, Hanover Township, Hellertown Borough, Lower Nazareth Township, Lower Saucon Township, Nazareth Borough, North Catasauqua Borough, Northampton Borough, Palmer Township, Stockertown Borough, Tatamy Borough, Upper Nazareth Township, West Easton Borough, and Wilson Borough.
>
> *Lancaster air basin*—The political subdivisions in Lancaster County of East Petersburg Borough, City of Lancaster, Lancaster Township, Manheim Township, and Millersville Borough.
>
> *Reading air basin*—The political subdivisions in Berks County of Bern Township, Cumru Township, Kenhorst Borough, Laureldale Borough, Leesport Borough, Lower Alsace Township, Mohnton Borough, Mt. Penn Borough, Muhlenberg Township, City of Reading, Shillington Borough, Sinking Spring Borough, Spring Township, St. Lawrence Borough, Temple Borough, West Lawn Borough, West Reading Borough, Wyomissing Borough, and Wyomissing Hills Borough.
>
> *Harrisburg air basin*—The following political subdivisions in Cumberland County: Camp Hill Borough, East Pennsboro Township, Lemoyne Borough, New

Cumberland Borough, West Fairview Borough, Wormleysburg Borough, and the political subdivisions in Dauphin County of the City of Harrisburg, Highspire Borough, Lower Swatara Township, Middletown Borough, Paxtang Borough, Royalton Borough, Steelton Borough, Susquehanna Township, and Swatara Township.

Southeast Pennsylvania air basin— The counties of Bucks, Chester, Delaware, Montgomery and Philadelphia.

York air basin—The political subdivisions in York County of Manchester Township, North York Borough, Spring Garden Township, Springettsbury Township, West Manchester Township, West York Borough, and City of York.

Berks County was added to the Philadelphia Combined Statistical Area in November 2007. However, as stated by PADEP in its December 28, 2007 designation recommendation letter, Berks County . . .

". . . traditionally has its own planning functions and should not be included in the Philadelphia area."

EPA aggress that this factor therefore supports a separate nonattainment area for Berks County.

Factor 9: Level of control of emission sources

Under this factor, the existing level of control of emission sources is taken into consideration. The emissions data used by EPA in this technical analysis and provided in Table 1 (under Factor 1) represent emissions levels taking into account any control strategies implemented in the Reading area before 2005 on stationary, mobile, and area sources. Data are presented for $PM_{2.5}$ components that are directly emitted (carbonaceous $PM_{2.5}$ and crustal $PM_{2.5}$) and for pollutants which react in the atmosphere to form fine particles (e.g. SO_2, NOx, VOC, and ammonia).

In considering county-level emissions, EPA used data from the 2005 National Emissions Inventory, the most updated version of the national inventory available at the beginning of the designations process in late 2007. However, EPA recognized that for certain counties, emissions may have changed since 2005. For example, certain power plants or large sources of emissions in or near this area may have installed emission controls or otherwise significantly reduced emissions since 2005. Some States provided updated information on emissions and emission controls in their comments to EPA. EPA considered such additional information in making final designation decisions.

With regard to nearby power plants, EPA considered information about whether a specific plant installed federally enforceable emission controls by December 2008 resulting in significant emissions reductions. A control requirement is considered to be federally-enforceable if it is required by a State regulation adopted in a State implementation plan, if it is included in a federally-enforceable Title V operating permit, or if it is required by a consent decree which also requires the controls to be included in federally enforceable permit upon termination of the consent decree. In making final decisions, EPA also considered whether a facility would

continue to emit pollutants which contribute to $PM_{2.5}$ exceedances even after emission controls are operational.

Table 9, below, shows emissions and controls (current and projected) for EGUs with SO_2 plus NO_x emissions greater than 5000 tons. Data was obtained from the 2006 National Electric Energy Data System (NEEDS) database. As seen in Table 9, two EGUs in this analysis are scheduled to install controls between 2005 and 2008, PPL Brunner Island in York County, and PPL Montour in Montour County. York County is a separate MSA as well as a separate nonattainment area for the 1997 $PM_{2.5}$ NAAQS and the 2006 $PM_{2.5}$ NAAQS. Furthermore, only one of the three units at the Brunner Island facility is scheduled to be controlled by the end of 2008. The other two units are not projected to be controlled until 2009. The Montour facility is scheduled to control both its units by 2008. However, as shown above in Factor 6, the Reading area is predominantly affected by emissions from the southwest and west-southwest and occasionally from the east and east-southeast. Montour County is north of the Reading area. Therefore, emissions from Montour County have a relatively small impact on the Reading area's nonattainment. Thus, controls on this facility will not affect the designation for the Reading area.

Table 9. EGUs with SO_2 plus NO_x emissions > 5000 tons, from the 2006 NEEDS EGU database

County, State	Plant Name	Unique ID Final	2006 SO_2	2006 NOx	Scrubber Online Year	Scrubber Efficiency	SCR Online Year	Capacity MW
Berks, PA	Titus	3115_B_3	4,718	708				81.0
		3115_B_1	4,666	699				81.0
		3115_B_2	3,954	589				81.0
York, PA	P H Glatfelter	50397_B_5PB036				91.6		36.1
	PPL Brunner Island	3140_B_3	45,447	6,288	2008	95.0		749.0
		3140_B_2	26,606	3,600	2009	95.0		378.0
		3140_B_1	21,492	2,866	2009	95.0		321.0
Chester, PA	Cromby Generating Station	3159_B_1	3,435	1,581	1982	93.8		48.0
		3159_B_2	178	112				201.0
		3159_B_FB1	3,435	1,581		89.0		48.0
		3159_B_FB2	3,435	1,581		89.0		48.0
Delaware, PA	Chester Operations	50410_B_10						
	Eddystone Generating Station	3161_B_2	2,811	2,519		91.6		36.0
		3161_B_1	3,240	2,701	1983	93.2		309.0
		3161_B_3	217	101	1982	93.2		279.0
		3161_B_4	186	88				380.0
New Castle, DE	Edge Moor	593_B_4	5,671	1,485				174.0
		593_B_3	2,072	600				86.0
		593_B_5	239	179				445.0
Baltimore, MD	C P Crane	1552_B_1	14,770	2,898				200.0
		1552_B_2	13,111	2,410				200.0
	Riverside	1559_B_4	0	40				78.0
Philadelphia, PA	Schuylkill Generating Station	3169_B_1	95	43				166.0

County, State	Plant Name	Unique ID Final	2006 SO_2	2006 NOx	Scrubber Online Year	Scrubber Efficiency	SCR Online Year	Capacity MW
Northampton, PA	Northampton Generating Company	50888_B_BLR1	0	422		91.6		112.0
	Portland	3113_B_2	18,187	2,207				243.0
		3113_B_1	12,497	1,144				157.0
	PPL Martins Creek	3148_B_3	502	434				850.0
		3148_B_4	351	261				820.0
	Foster Wheeler Mt Carmel Cogen	10343_B_SG-101	492	246	1990	88.0		43.0
Schuylkill, PA	Gilberton Power Co, John B. Rich Memorial Power Station	10113_B_CFB1	0	101		91.6		40.0
		10113_B_CFB2	0	100		91.6		40.0
	Northeastern Power Co, Kline Township Cogen Facility	50039_B_1	0	161		91.6		50.0
	St Nicholas Cogen Project	54634_B_1	0	241		91.6		88.0
	Wheelabrator Frackville Energy	50879_B_BLR1	0	316		91.6		44.5
	WPS Westwood Generation LLC	50611_B_031	300	289		91.6		30.0
Montour, PA	PPL Montour	3149_B_1	62,315	6,532	2008	95.0	2001	774.0
		3149_B_2	67,041	7,126	2008	95.0	2000	766.0
Anne Arundel, MD	Brandon Shores	602_B_1	20,498	5,867	2010	95.0	2000	643.0
		602_B_2	19,969	6,097	2010	95.0	2000	643.0
	Herbert A Wagner	1554_B_3	12,860	2,075			2002	324.0
		1554_B_2	6,492	2,015				135.0
		1554_B_4	340	158				400.0
		1554_B_1	76	51				131.0
Montgomery, MD	Dickerson	1572_B_3	13,763	1,926	2010	95.0		182.0
		1572_B_1	11,888	1,649	2010	95.0		182.0
		1572_B_2	10,301	1,401	2010	95.0		182.0
Gloucester, NJ	Logan Generating Plant	10043_B_B01	0	1,169	1994	93.0	2000	219.0

Conclusion

The Reading nonattainment area for the 1997 $PM_{2.5}$ NAAQS was defined as Berks County, PA. EPA has determined that the same boundary is appropriate for the Reading nonattainment area under the 2006 $PM_{2.5}$ annual NAAQS. The Reading area is affected by long-range transport from the southwest. Numerous nonattainment areas are upwind from Berks County, including the Lancaster, York, and Baltimore nonattainment areas. In addition, local emissions such as those from vehicles and other small area sources, and emissions from one large local source, Reliant Energy Inc.'s Titus Power Plant just southeast of the City of Reading, also contribute significantly to the local nonattainment problem.

The Reading area is surrounded by other $PM_{2.5}$ nonattainment areas. York, Lancaster, Chester, Montgomery (PA), Delaware, New Castle, Philadelphia, Bucks, Gloucester, Baltimore, Harford, Anne Arundel, Lebanon, Dauphin, and Montgomery (MD) Counties are in separate nonattainment areas for the 1997 $PM_{2.5}$ NAAQS, the York, Lancaster, Philadelphia-Wilmington, Baltimore, Harrisburg-Lebanon-Carlisle, and Washington, D.C. nonattainment areas, respectively. Very few commuters from these separate nonattainment areas travel into the Reading area compared to the commuters from Berks County who travel within the Reading MSA. EPA has determined that it is appropriate to include those surrounding areas in separate nonattainment areas for the 2006 24-hour $PM_{2.5}$ NAAQS.

Furthermore, as explained in detail in Factor 8, the counties surrounding the Reading area are in separate metropolitan statistical areas and are served by separate metropolitan planning organizations. In addition, for air quality planning purposes, Pennsylvania defined separate air basins for the Pennsylvania counties surrounding Berks County.

The technical analysis above demonstrates that the Reading area is a separate and distinct area, not associated economically or jurisdictionally with the other counties in this analysis. Therefore, EPA has determined that it is appropriate to include only Berks County in the Reading nonattainment area for the 2006 24-hour $PM_{2.5}$ NAAQS. To the extent that emissions from these other counties may contribute to the Reading nonattainment area, that contribution will be lessened by emission controls put in place in those separate nonattainment areas.

EPA Technical Analysis for York

Introduction

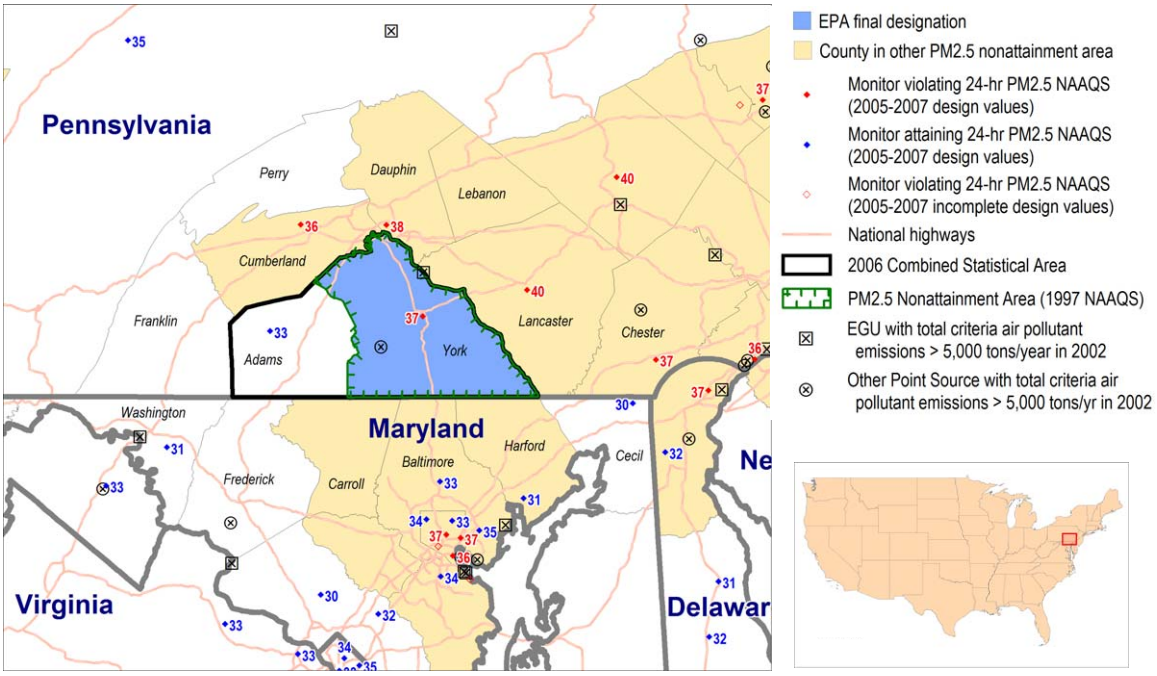
Pursuant to section 107(d) of the Clean Air Act, EPA must designate as nonattainment those areas that violate the NAAQS and those nearby areas that contribute to violations. This technical analysis for the York area identifies the counties with monitors that violate the 2006 24-hour $PM_{2.5}$ standard and evaluates nearby counties for contributions to fine particle concentrations in the area. EPA has evaluated these counties based on the weight of evidence of the following nine factors recommended in EPA guidance and any other relevant information:

- pollutant emissions
- air quality data
- population density and degree of urbanization
- traffic and commuting patterns
- growth
- meteorology
- geography and topography
- jurisdictional boundaries
- level of control of emissions sources

We also used analytical tools and data such as pollution roses, fine particle composition monitoring data, back trajectory analyses, and the contributing emission score (CES) to evaluate these areas. (See additional discussion of the CES under Factor 1 below.)

Figure 1 is a map of the counties in the York area and other relevant information such as the locations and design values of air quality monitors, and the metropolitan area boundary.

Figure 1. The York Area



For this area, EPA previously established $PM_{2.5}$ nonattainment boundaries for the 1997 $PM_{2.5}$ NAAQS that included York County located in Pennsylvania.

In December 2007, Pennsylvania recommended that York County, be designated as "nonattainment" for the 2006 24-hour $PM_{2.5}$ standard based on air quality data from 2004-2006. These data are from Federal Reference Method (FRM) monitors located in the state. (See the December 28, 2008 letter from the Pennsylvania Department of Environmental Protection to EPA.)

In August 2008, EPA notified the Commonwealth of Pennsylvania of its intended designations. In this letter, EPA also requested that if the Commonwealth of Pennsylvania wished to provide comments on EPA's intended designation, it should do so by October 20, 2008. EPA stated that it would consider any additional information (e.g., on power plants or partial county areas) provided by the state in making final decisions on the designations.

Based on EPA's technical analysis described below, EPA has designated York County as nonattainment for the 2006 24-hour $PM_{2.5}$ air-quality standard as the single-county York nonattainment area, based upon currently available information. The county is listed in the table below.

York	State-Recommended Nonattainment Counties	EPA-Final Designated Nonattainment Counties
Pennsylvania	York County	York County

The following is a technical analysis for the York area.

Factor 1: Emissions data

For this factor, EPA evaluated county level emission data for the following $PM_{2.5}$ components and precursor pollutants: $PM_{2.5}$ emissions total, $PM_{2.5}$ emissions carbon, $PM_{2.5}$ emissions other, sulfur dioxide (SO_2), nitrogen oxides (NO_x), volatile organic compounds (VOCs), and ammonia (NH_3). "$PM_{2.5}$ emissions total" represents direct emissions of $PM_{2.5}$ and includes: "$PM_{2.5}$ emissions carbon," "$PM_{2.5}$ emissions other," primary sulfate (SO_4), and primary nitrate. (Although primary sulfate and primary nitrate, which are emitted directly from stacks rather than forming in atmospheric reactions with SO_2 and NO_x, are part of "$PM_{2.5}$ emissions total," they are not shown in Table 1 as separate items). "$PM_{2.5}$ emissions carbon" represents the sum of organic carbon (OC) and elemental carbon (EC) emissions, and "$PM_{2.5}$ emissions other" represents other inorganic particles (crustal). Emissions of SO_2 and NO_x, which are precursors of the secondary $PM_{2.5}$ components sulfate and nitrate, are also considered. VOCs and NH_3 are also potential $PM_{2.5}$ precursors and are included for consideration.

Emissions data were derived from the 2005 National Emissions Inventory (NEI), version 1. See http://www.epa.gov/ttn/naaqs/pm/pm25_2006_techinfo.html.

EPA also considered the Contributing Emissions Score for each county. The CES is a metric that takes into consideration emissions data, meteorological data, and air quality monitoring

information to provide a relative ranking of counties in and near an area. Note that this metric is not the exclusive manner for considering data for these factors. A summary of the CES is included in Attachment 2, and a more detailed description can be found at http://www.epa.gov/ttn/naaqs/pm/pm25_2006_techinfo.html#C.

Table 1 shows emissions of $PM_{2.5}$ and precursor pollutants components (given in tons per year) and the CES for violating and potentially contributing counties in the York area. Counties that are part of the York nonattainment area for the 1997 $PM_{2.5}$ NAAQS are shown in boldface. Counties are listed in descending order by CES.

Table 1. $PM_{2.5}$ Related Emissions and Contributing Emissions Score

County	State Recommended Nonattainment ?	CES	$PM_{2.5}$ emissions total (tpy)	$PM_{2.5}$ emissions carbon (tpy)	$PM_{2.5}$ emissions other (tpy)	SO_2 (tpy)	NOx (tpy)	VOCs (tpy)	NH_3 (tpy)
York, PA	**Yes**	**100**	**7,614**	**1,217**	**6,396**	**118,621**	**32,214**	**18,478**	**3,913**
Baltimore, MD	Yes – other area	39	6,437	1,892	4,547	44,626	34,467	31,163	1,266
Frederick, MD	Yes – other area	22	2,478	1,051	1,427	9,275	11,315	11,927	2,741
Cumberland, PA	Yes – other area	21	1,677	698	979	1,976	14,454	9,939	2,105
Adams, PA	No	18	1,142	444	697	581	2,825	4,660	3,353
Carroll, MD	Yes – other area	17	1,562	653	909	1,476	6,410	6,860	1,836
Lancaster, PA	Yes – other area	14	3,258	1,159	2,099	4,017	16,396	26,407	16,486
Washington, MD	No	11	1,470	610	860	6,514	10,081	9,134	1,747
Franklin, PA	No	8	1,083	385	699	851	5,470	6,972	5,092
Harford, MD	Yes – other area	8	1,769	879	890	2,307	7,310	10,512	967
Dauphin, PA	Yes – other area	7	1,074	528	546	2,443	12,548	12,569	1,664
Lebanon, PA	Yes – other area	3	855	338	516	1,778	5,876	5,924	4,445
Perry, PA	No	3	486	233	253	444	2,515	2,278	1,541
Cecil, MD	No	2	870	446	425	1,298	3,962	5,853	749
Chester, PA	Yes – other area	2	2,124	799	1,325	7,990	16,507	19,666	2,563

Based upon the data set forth in Table 1, York County has by far the highest level of sulfur dioxide emissions, and the highest $PM_{2.5}$ emissions. York County also has high levels of nitrogen oxides and to a lesser degree, volatile organic compounds. In fact, SO_2 emissions in York County are more than double the next highest county (Baltimore County). This is primarily due to the emissions from the Brunner Island power station, which itself emitted over 104,000 tons of SO_2 and nearly 14,000 tons of NOx in 2005. Lancaster County leads the area of analysis in emissions of ammonia and Baltimore County has the highest level of VOC and NOx emissions.

The overwhelming emissions contribution of York County has a great deal to do with why it is assigned the highest CES in the area of analysis (normalized to 100). SO_2 emissions from York County are more than twice those of the next highest county, Baltimore County, and twelve times larger than the next largest SO_2 contributor, Frederick County.

Baltimore County has the next highest CES score to York County, as a result of its high emissions and likely due to meteorology that results in the York County monitor being downwind from Baltimore County, although that CES is less than half of York's. The CES

scores for the area are consistent with what one would expect, given in particular the emissions levels and distance of those emissions from the violating monitor.

Based on emissions levels and CES values, York and Baltimore Counties are the highest ranking candidates for 2006 24-hour $PM_{2.5}$ nonattainment designation in this area. Frederick, Cumberland, and Lancaster Counties are next highest ranking with respect to emissions, but have much lower CES scores of 22, 21, and 14, respectively.

York and Baltimore Counties are in separate nonattainment areas for the 1997 $PM_{2.5}$ NAAQS. They are in separate metropolitan statistical areas and are served by separate metropolitan planning organizations. Therefore, EPA has determined based on emissions as well as all of the other factors as described below that it is appropriate to include York and Baltimore Counties in separate nonattainment areas for the 2006 24-hour $PM_{2.5}$ NAAQS.

Factor 2: Air quality data

This factor considers the 24-hour $PM_{2.5}$ design values in micrograms per cubic meter ($\mu g/m^3$) for air quality monitors in counties in the York based on data for the 2005-2007 period. A monitor's design value indicates whether that monitor attains a specified air quality standard. The 2006 24-hour $PM_{2.5}$ standard is met when the 3-year average of a monitor's 98^{th} percentile values is 35 $\mu g/m^3$ or less. A design value is only valid if minimum data completeness criteria are met.

The 24-hour $PM_{2.5}$ design values for counties in the York area are shown in Table 2.

Table 2. Air Quality Data

County	State Recommended Nonattainment?	24-hr PM2.5 Design Values, 2004-2006 ($\mu g/m^3$)	24-hr PM2.5 Design Values, 2005-2007 ($\mu g/m^3$)
York, PA	**Yes**	**37**	**37**
Baltimore, MD	Yes – other area	36	35
Frederick, MD	Yes – other area	No monitor	
Cumberland, PA	Yes – other area	38	36
Adams, PA	No	35	33
Carroll, MD	Yes – other area	No monitor	
Lancaster, PA	Yes – other area	39	40
Washington, MD	No	34	31
Franklin, PA	No	No monitor	
Harford, MD	Yes – other area	31	31
Dauphin, PA	Yes – other area	38	38
Lebanon, PA	Yes – other area	No monitor	
Perry, PA	No	No monitor	
Cecil, MD	No	30	30
Chester, PA	Yes – other area		37

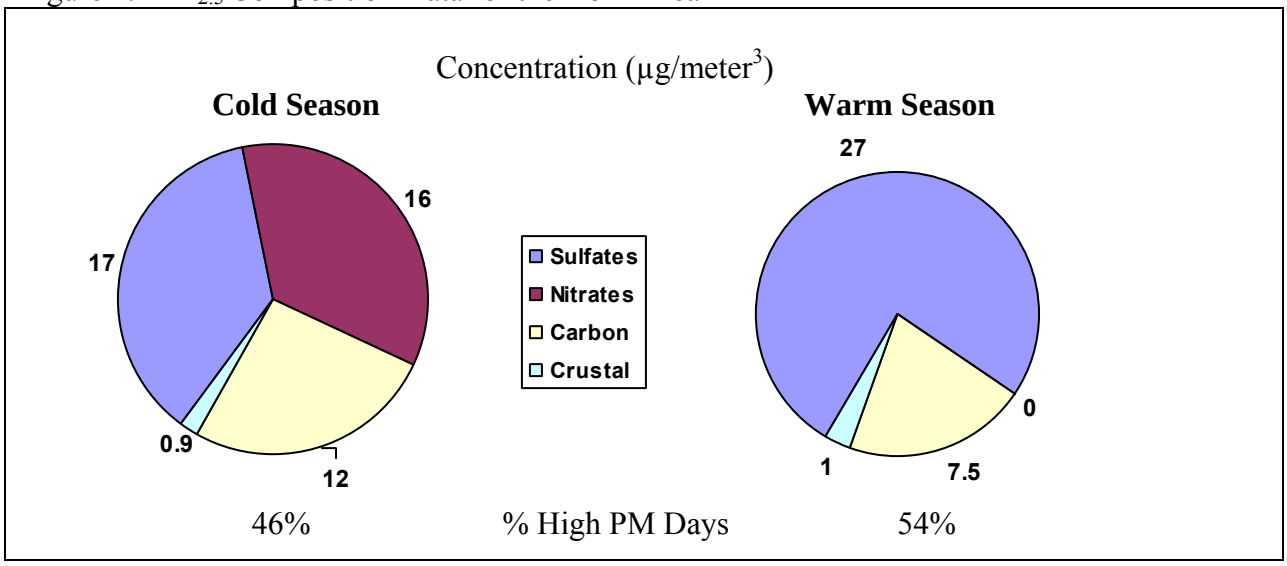
York, Cumberland, Dauphin, Lancaster, and Chester Counties show violations of the 2006 24-hour $PM_{2.5}$ standard (for the 2005-07 period). Therefore, York County is included in the York nonattainment area. However, Baltimore, Cumberland, Dauphin, Lancaster, and Chester Counties are part of other nonattainment areas for the 1997 $PM_{2.5}$ NAAQS (Baltimore, Harrisburg, Lancaster, and Philadelphia-Wilmington respectively) and as explained below are economically separate areas. Each of these counties has been included in those same

nonattainment areas for the 2006 $PM_{2.5}$ NAAQS and are addressed in separate technical analyses. See the "EPA Technical Analysis for Lancaster Area," the "EPA Technical Analysis for the Baltimore Area," the "EPA Technical Analysis for the Philadelphia-Wilmington Area," and the "EPA Technical Analysis for the Harrisburg Area."

The absence of a violating monitor alone is not a sufficient reason to eliminate counties as candidates for nonattainment status. Each county has been evaluated based on the weight of evidence of the nine factors and other relevant information.

Under this factor, we also consider fine particle composition monitoring data. Air quality monitoring data on the composition of fine particle mass are available from the EPA Chemical Speciation Network and the IMPROVE monitoring network. Analysis of these data indicates that the days with the highest fine particle concentrations occur in both cool and warm seasons. The average chemical composition of the highest days is typically characterized by high levels of sulfates in the warm season and nitrates and sulfates in the cold season as illustrated in Figure 2. This data indicates that sources of SO_2, NOx, and direct $PM_{2.5}$ carbon emissions are key contributors to exceedances in the area.

Figure 2. $PM_{2.5}$ Composition Data for the York Area



Note: Eligible monitors for providing design value data generally include State and Local Air Monitoring Stations (SLAMS) at population-oriented locations with an FRM monitor. All data from Special Purpose Monitors (SPM) using an FRM is eligible for comparison to the relevant NAAQS, subject to the requirements given in the October 17, 2006 Revision to Ambient Air Monitoring Regulations (71 FR 61236). All monitors used to provide data must meet the monitor siting and eligibility requirements given in 71 FR 61236 to 61328 in order to be acceptable for comparison to the 2006 24-hr $PM_{2.5}$ NAAQS for designation purposes.

Factor 3: Population density and degree of urbanization (including commercial development)

Table 3 shows the 2005 population for each county in the area being evaluated, as well as the population density for each county in that area. Population data gives an indication of whether it

is likely that population-based emissions might contribute to violations of the 2006 24-hour $PM_{2.5}$ standard.

Table 3. Population

County	State Recommended Nonattainment?	2005 Population	2005 Population Density (pop/sq mi)
York, PA	**Yes**	**408,182**	**449**
Baltimore, MD	Yes – other area	783,405	1255
Frederick, MD	Yes – other area	220,409	331
Cumberland, PA	Yes – other area	223,017	405
Adams, PA	No	99,746	191
Carroll, MD	Yes – other area	168,397	371
Lancaster, PA	Yes – other area	489,936	499
Washington, MD	No	141,563	303
Franklin, PA	No	137,273	178
Harford, MD	Yes – other area	238,850	519
Dauphin, PA	Yes – other area	252,949	454
Lebanon, PA	Yes – other area	125,429	346
Perry, PA	No	44,724	81
Cecil, MD	No	97,474	257
Chester, PA	Yes – other area	473,723	624

The above data indicates that the area around York County varies from sparsely to densely populated, with county level population densities ranging from a low of 81 to a high of 1255 persons per square mile. The average population density for Pennsylvania on the whole was 274 people per square mile, per the 2000 US Census. Most of these counties are characterized by their relatively distributed populations, relatively small urban centers, and predominately rural/suburban development pattern. Baltimore County is the exception, with a fairly dense urban/suburban development pattern, followed distantly by Chester County. For example, the City of York had a 2005 population of 40,862, while the City of Lancaster had a 2005 population of 55, 551, each having around 10% of their respective total county populations. Baltimore County has the largest, densest population of this area, and is therefore the highest ranking for this factor. Chester, York, and Lancaster Counties have smaller, but still relatively large populations. These counties are the next highest ranking counties for determination of nonattainment based upon this factor.

The data in Table 3 indicates that counties within the Lancaster, Harrisburg or Baltimore areas are high ranking candidates for a nonattainment designation based upon this factor. However, as explained in detail in Factor 8, below, these counties are distinguishable from York County and Adams County, because they are in separate metropolitan statistical areas (MSAs) and are served by separate metropolitan planning organizations. In addition, for air quality planning purposes, Pennsylvania defined separate air basins for the Pennsylvania counties surrounding the York area. Moreover, as shown below in Factor 6, meteorological data indicates that emissions from these areas do not impact the air quality monitored in York County. Therefore, EPA is designating York County as a single county nonattainment area, and is designating these other relatively high ranking counties under this factor (i.e., Baltimore, Chester, Lancaster,

Cumberland, and Dauphin Counties) as part of other, separate nonattainment areas for the 2006 24-hour $PM_{2.5}$ NAAQS.

Factor 4: Traffic and commuting patterns

This factor considers the number of commuters in each county who drive to another county within the York area, the percent of total commuters in each county who commute to other counties within the York area, as well as the total Vehicle Miles Traveled (VMT) for each county in millions of miles (see Table 4). A county with numerous commuters is generally an integral part of an urban area and is likely contributing to fine particle concentrations in the area.

Table 4. Traffic and Commuting Patterns

County	State Recommended Nonattainment?	2005 VMT (millions of miles)	Number Commuting to any violating counties	Percent Commuting to any violating counties	Number Commuting into and within statistical area	Percent Commuting into and within statistical area
Lancaster, PA	Yes – other area	4,392	219,960	95	4,090	2
Baltimore, MD	Yes – other area	8,032	198,060	53	960	0
York, PA	**Yes**	**3,333**	**177,150**	**92**	**147,030**	**76**
Chester, PA	Yes – other area	4,414	141,030	65	200	0
Dauphin, PA	Yes – other area	3,413	115,320	95	2,530	2
Cumberland, PA	Yes – other area	2,996	100,130	95	4,490	4
Harford, MD	Yes – other area	2,068	27,440	25	530	1
Lebanon, PA	Yes – other area	1,133	18,320	31	280	1
Carroll, MD	Yes – other area	1,294	16,110	21	1,140	2
Adams, PA	No	742	14,560	32	35,650	79
Perry, PA	No	424	13,840	65	390	2
Franklin, PA	No	1,535	4,390	7	1,350	2
Cecil, MD	No	1,193	2,150	5	110	0
Frederick, MD	Yes – other area	3,024	1,080	1	340	0
Washington, MD	No	2,019	320	1	40	0

The listing of counties on Table 4 reflects a ranking based on the number of people commuting to other counties. The counties that are in the nonattainment area for the 1997 $PM_{2.5}$ NAAQS are shown in boldface.

Table 4.1 shows the bulk of commuter movement within and between the counties in the York area. The table is read by finding the county that contributes commuters in the left column, and reading across the table to the column to where those commuters travel (e.g., on average, 142,104 commuter trips per day originate and end in York County). Each of the neighboring counties contributes commuters most to itself, with relatively few commuters crossing county lines. In York County, over 78% of commuter trips originate and end within the county, with fewer than 10% travelling to York County from other contiguous counties.

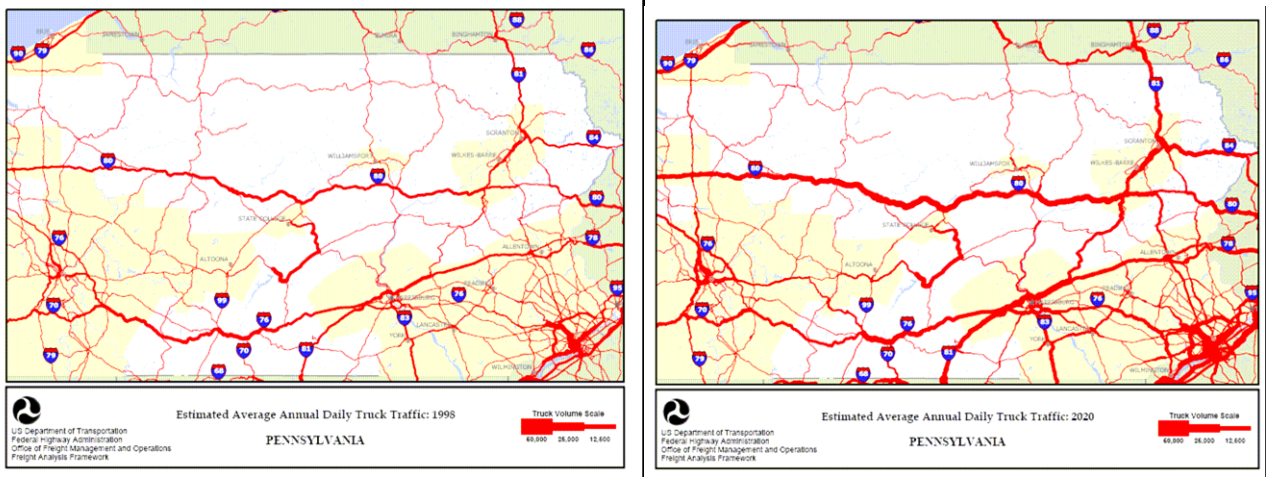
Table 4.1. Predominant Commuting Patterns for the York Area (2005)

Commuting From:	Consolidated Statistical Area (CSA)	Core Based Statistical Area (CBSA)	Commuting To:					
			Baltimore	Cumberland	Dauphin	Lancaster	York	Adams
Baltimore, MD		Baltimore-Towson, MD	196,917	56	73	39	925	36
Cumberland, PA	Harrisburg-Carlisle-Lebanon, PA	Harrisburg-Carlisle, PA	39	73,081	22,448	705	3,807	683
Dauphin, PA	Harrisburg-Carlisle-Lebanon, PA	Harrisburg-Carlisle, PA	46	16,310	93,958	2,585	2,365	165
Lancaster, PA		Lancaster, PA	74	1,197	6,927	201,608	4,018	71
York, PA	**York-Hanover-Gettysburg, PA**	**York-Hanover, PA**	**7,970**	**11,626**	**9,848**	**5,485**	**142,104**	**4,923**
Adams, PA	York-Hanover-Gettysburg, PA	York-Hanover, PA	572	1,793	922	109	11,152	24,495
Source: United States 2000 Census County-To-County Worker Flow Files http://www.census.gov/population/www/cen2000/commuting/index.html								

Overall, the counties being evaluated here had annual average VMT levels of over 40 million miles per day, making emissions contribution from motor vehicles an important consideration in designating this area. However, while the number of commuters is fairly large, most do not cross county lines and commute only within their own county.

Although York's contribution to traffic levels in the York area is significant, Table 4.1 shows that there is relatively small contribution from commuter traffic into York County. However, this data may not adequately address heavy-duty diesel truck traffic from surrounding counties to the York area. The entire region is expected to see strong growth in truck traffic over the next several decades (see Figure 4).

Figure 4. Estimated Pennsylvania Average Annual Daily Truck Traffic (1998 vs. 2020)



Note: For areas where truck traffic is not adequately taken into account, additional information that could be used in this discussion is available at http://ops.fhwa.dot.gov/freight/freight_analysis/state_info/.

Lancaster County is the highest ranking county for a nonattainment designation based on VMT. Baltimore County and York County are also high ranking candidates for a nonattainment designation based on VMT. These three counties are also high ranking candidates based on other factors and their CES value. However, as shown below in Factor 6, meteorological data indicates that emissions from Lancaster and Baltimore Counties do not impact the air quality monitored in York County. Furthermore, as shown in Table 4.1, the majority of commuters from York County, commute within York County. Relatively few people commute between York County and Baltimore County, or between York County and Lancaster County. Moreover, Lancaster and Baltimore Counties are in separate nonattainment areas for the 1997 $PM_{2.5}$ NAAQS. York County is also distinguishable from Lancaster County and Baltimore County because those counties are in separate MSAs and are served by separate metropolitan planning organizations. In addition, for air quality planning purposes, Pennsylvania defined separate air basins for the Pennsylvania counties surrounding the York area. Therefore, EPA is designating Lancaster County and Baltimore Counties as part of separate nonattainment areas for the 2006 24-hour $PM_{2.5}$ NAAQS. To the extent that vehicle-based emissions from these counties may impact the York nonattainment area, that contribution will be lessened by controls put in place in these separate nonattainment areas.

Note: The 2005 VMT data used for Table 4 and 5 of the technical analysis have been derived using methodology such as that described in "Documentation for the 2005 Mobile National Emissions Inventory, Version 2," December 2008, prepared for the Emission Inventory Group, U.S. EPA. This document may be found at: ftp://ftp.epa.gov/EmisInventory/2005_nei/mobile_sector/documentation/2005_mobile_nei_version_2_report.pdf

Factor 5: Growth rates and patterns

This factor considers population growth for 2000-2005 and growth in vehicle miles traveled for 1996-2005 for counties in the York area, as well as patterns of population and VMT growth. A county with rapid population or VMT growth is generally an integral part of an urban area and likely to be contributing to fine particle concentrations in the area.

Table 5 below shows population, population growth, VMT, and VMT growth for counties that are included in the York area.

Table 5. Population and VMT Values and Percent Change.

Location	Population (2005)	Population Density (2005)	Population % change (2000 - 2005)	2005 VMT (millions of miles)	VMT % change (1996 to 2005)
York, PA	**408,182**	**449**	**7**	**3,333**	**6**
Baltimore, MD	783,405	1255	4	8,032	32
Frederick, MD	220,409	331	12	3,024	38
Cumberland, PA	223,017	405	4	2,996	25
Adams, PA	99,746	191	9	742	9
Carroll, MD	168,397	371	11	1,294	(6)
Lancaster, PA	489,936	499	4	4,392	21
Washington, MD	141,563	303	7	2,019	14
Franklin, PA	137,273	178	6	1,535	18

Harford, MD	238,850	519	9	2,068	0
Dauphin, PA	252,949	454		3,413	27
Lebanon, PA	125,429	346	4	1,133	7
Perry, PA	44,724	81	3	424	17
Cecil, MD	97,474	257	13	1,193	10
Chester, PA	473,723	624	9	4,414	54

Baltimore County had the highest 2005 VMT, and the highest rate of VMT growth between 2000 and 2005 of any county in the area of analysis, followed distantly by Lancaster, Chester, and York Counties, which had similar levels of VMT -- but each had varying levels of VMT growth. Lancaster and Baltimore Counties both had relatively low population growth between 2000 and 2005, while Cecil, Frederick, and Carroll Counties in Maryland experienced high rates of population growth.

Cecil and Frederick Counties led the way in population growth rates, but Baltimore, York, and Chester Counties added more in terms of absolute population increase, albeit at a slower rate of growth. For this reason, Baltimore, York, and Chester Counties are highest ranking under this factor in terms of population growth. In terms of VMT growth, York County and Lancaster County are relatively low ranking. Chester County had the highest rate of VMT growth and total VMT, but Baltimore again had large increases in total 2005 VMT.

Baltimore and Chester Counties are in areas that are distinct from York and Adams Counties because they are in separate MSAs and are served by separate metropolitan planning organizations. In addition, relatively few people commute between these counties and York and Adams Counties. Therefore, EPA has determined that it is appropriate to include Baltimore County and Chester County in separate nonattainment areas for the 2006 24-hour $PM_{2.5}$ NAAQS. To the extent that vehicle-based, or population-based, emissions from these counties may impact the air quality monitored within the York nonattainment area, that contribution will be lessened by controls put in place in those separate nonattainment areas.

Factor 6: Meteorology (weather/transport patterns)

For this factor, EPA considered data from National Weather Service instruments and other meteorological monitoring sites in the area. Wind direction and wind speed data for 2005-2007 were analyzed, with an emphasis on "high $PM_{2.5}$ days" for each of two seasons (an October-April "cold" season and a May-September "warm" season). These high days are defined as days where any FRM air quality monitors had 24-hour $PM_{2.5}$ concentrations above 95% on a frequency distribution curve of $PM_{2.5}$ 24-hour values.

For each air quality monitoring site, EPA developed a "pollution rose" to understand the prevailing wind direction and wind speed on the days with highest fine particle concentrations. The figures identify 24-hour $PM_{2.5}$ values by color; days exceeding 35 ug/m3 are denoted with a red or black icon. A dot indicates the day occurred in the warm season; a triangle indicates the day occurred in the cool season. The center of the figure indicates the location of the air quality monitoring site, and the location of the icon in relation to the center indicates the direction from which the wind was blowing on that day. An icon that is close to the center indicates a low average wind speed on that day. Higher wind speeds are indicated when the icon is further away from the center.

Lancaster and York Areas

The pollution roses, illustrated in Figures 6 and 6.1, for the adjacent counties of York and Lancaster Counties show a similar pattern, for both warm and cool seasons on days with the highest measured $PM_{2.5}$ (>30 µg/m^3) concentration values, winds are mild and predominately from the northwest and the southeast. The wind directions shown on Figure 6 for the Lancaster monitor, west of York County, show that pollutants from Lancaster County are not transported to York County. The low wind speeds (especially from the west) shown on Figure 6.1 for York County indicate that on high PM days, local emissions dominate. This points to Brunner Island's impact on the York air quality monitor.

Figure 6. Pollution Trajectory Plot for York County, PA (Site 42-133-0008)

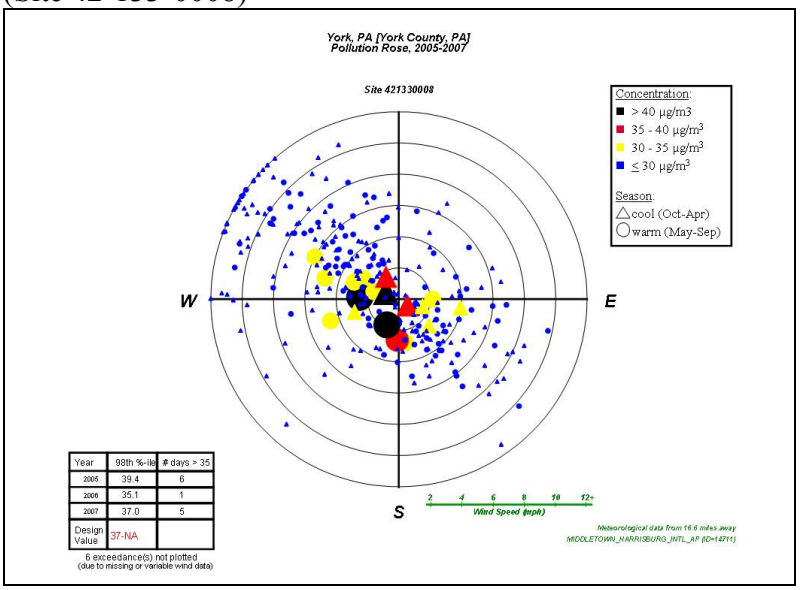
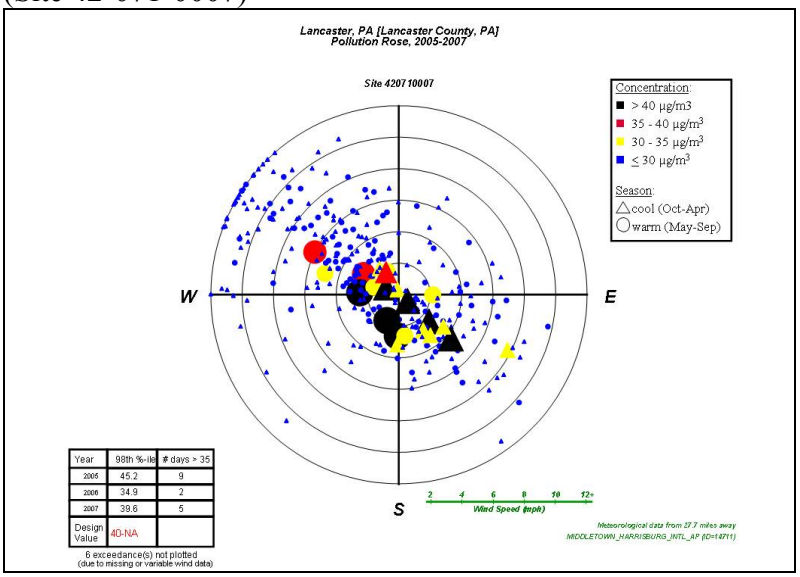


Figure 6.1. Pollution Trajectory Plot for Lancaster County, PA (Site 42-071-0007)



Harrisburg Area

The pollution roses below for Dauphin County and Cumberland County, illustrated in Figures 6.2 and 6.3, are similar to those of Lancaster and York Counties. They show a similar northwest-southeast prevailing wind direction on high concentration days in both the cold and warm season, but show more cool high concentration days in the northwest quadrant and more cool weather days in the southwest quadrant. As shown on Figure 1, these monitors are north (and in the case of Cumberland County, northwest) of York County, indicating that they likely do not impact pollution transported to York County.

Figure 6.2 - Pollution Trajectory Plot for Dauphin County, PA (Site 42-043-0401)

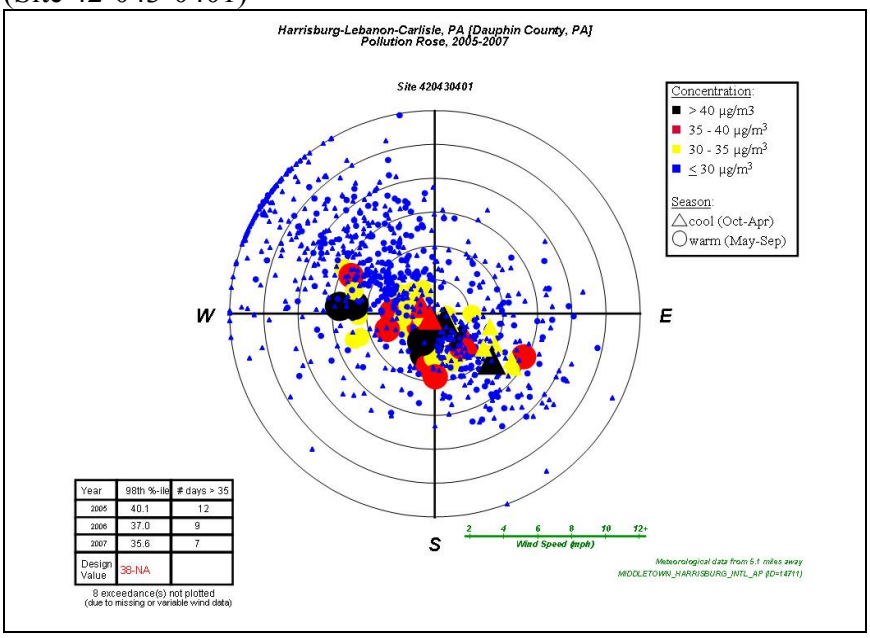
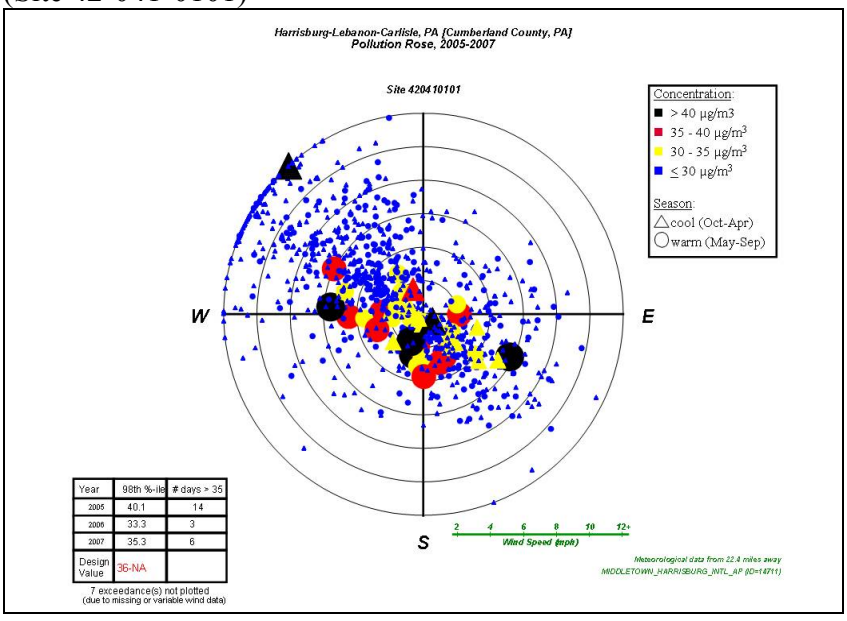


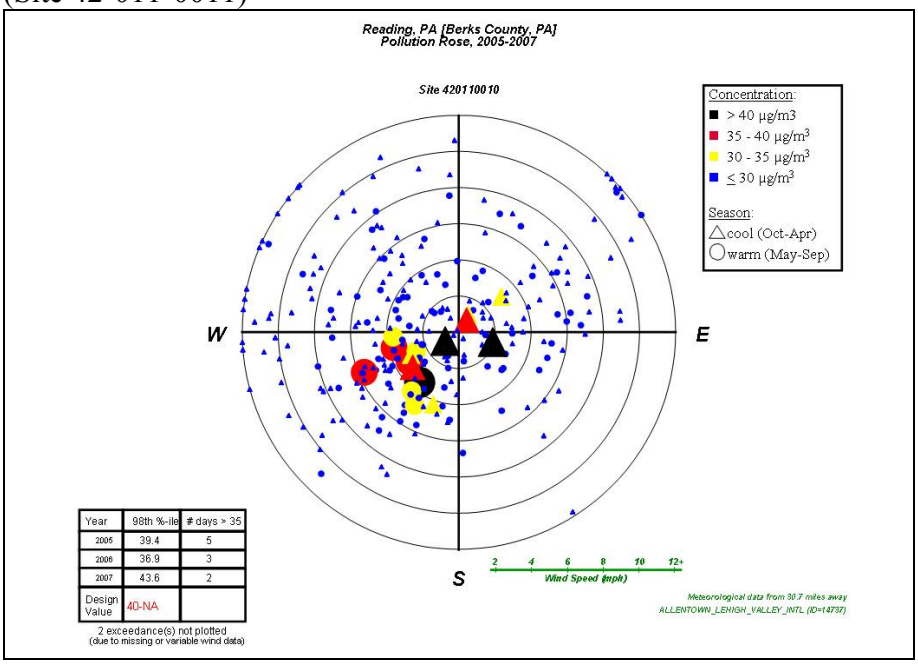
Figure 6.3 - Pollution Trajectory Plot for Cumberland County, PA (Site 42-041-0101)



Reading Area

The Reading area monitor lies fairly distant to the north and east of the violating monitor in Lancaster County. For high days in the cool season, it shows a prevalence of light winds in the northeast or southwest direction (See Figure 6.4). The trend for warm days is for light winds from the southwest. It appears from this information that the wind magnitude and direction on high days in Berks County does not contribute significantly to the violations of the 2006 24-hour $PM_{2.5}$ NAAQS monitored within York County.

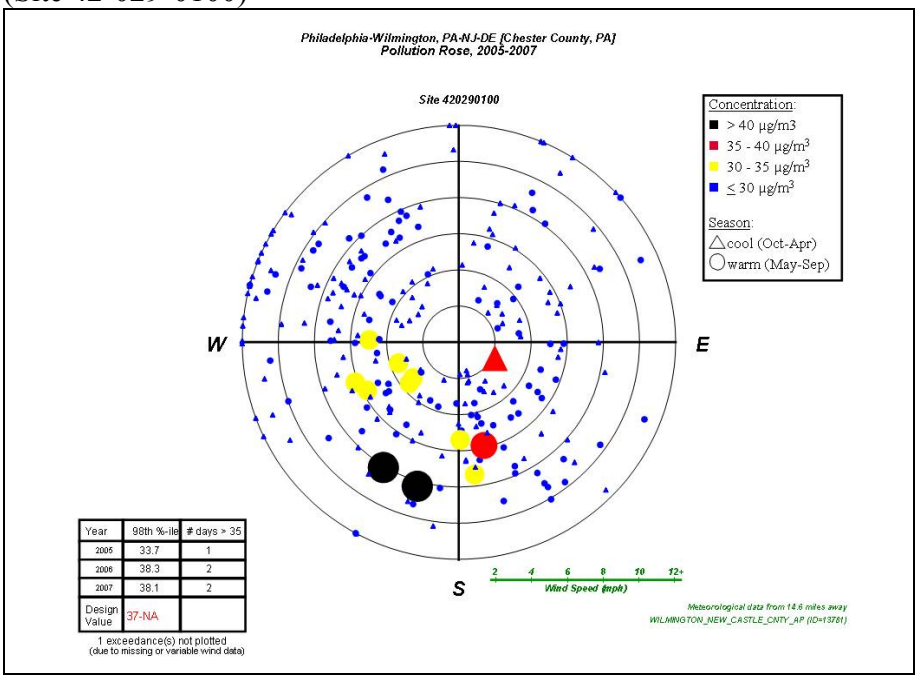
Figure 6.4. Pollution Trajectory Plot for Berks County, PA
(Site 42-011-0011)



Chester County

The New Garden monitor lies to the distant east of the violating monitor in York (see Figure 6.5). For high days in the warm season, it shows prevailing winds from the southwest, indicating transport from the direction of the Baltimore or Washington areas. The trend for cool days is for light winds from the east, from the direction of the Philadelphia-Wilmington, PA-DE area. From this, it appears that wind magnitude and direction on high days in Chester County does not contribute significantly to the violations of the 2006 24-hour $PM_{2.5}$ NAAQS monitored within York County.

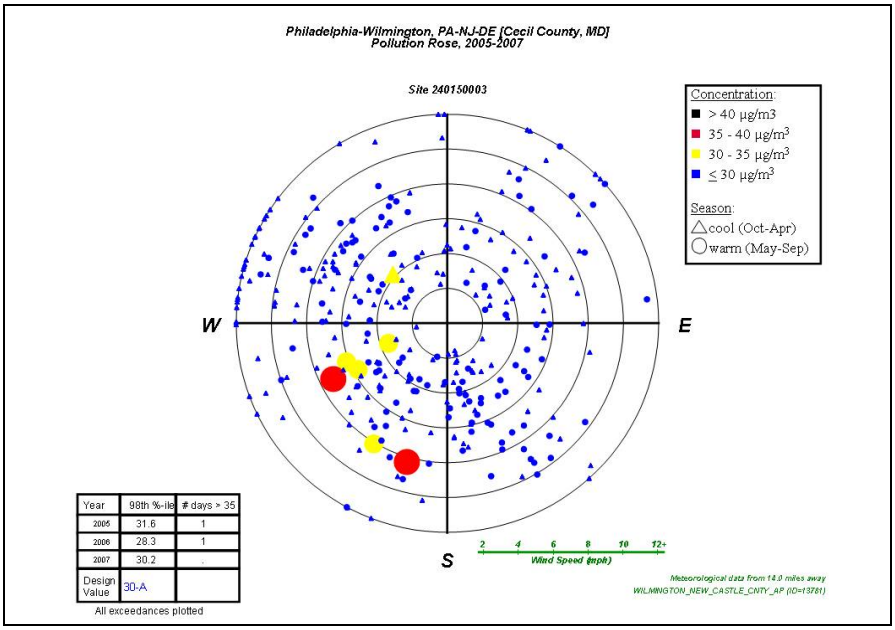
Figure 6.5. Pollution Trajectory Plot for Chester County, PA
(Site 42-029-0100)



Cecil County, Maryland

The Fairhill monitor in Cecil County (See Figure 6.6) lies fairly distant to the southeast of the violating monitor in York, south even of the New Garden monitor in Chester County (See Figure 6.5). For high days in the warm season, it trends similar to the New Garden monitor, with winds from the southwest, indicating transport from the direction of the Baltimore or Washington areas, rather than York. It appears from this information that the wind magnitude and direction on high days in Cecil County do not contribute significantly to the violations of the 2006 24-hour $PM_{2.5}$ NAAQS monitored within York County.

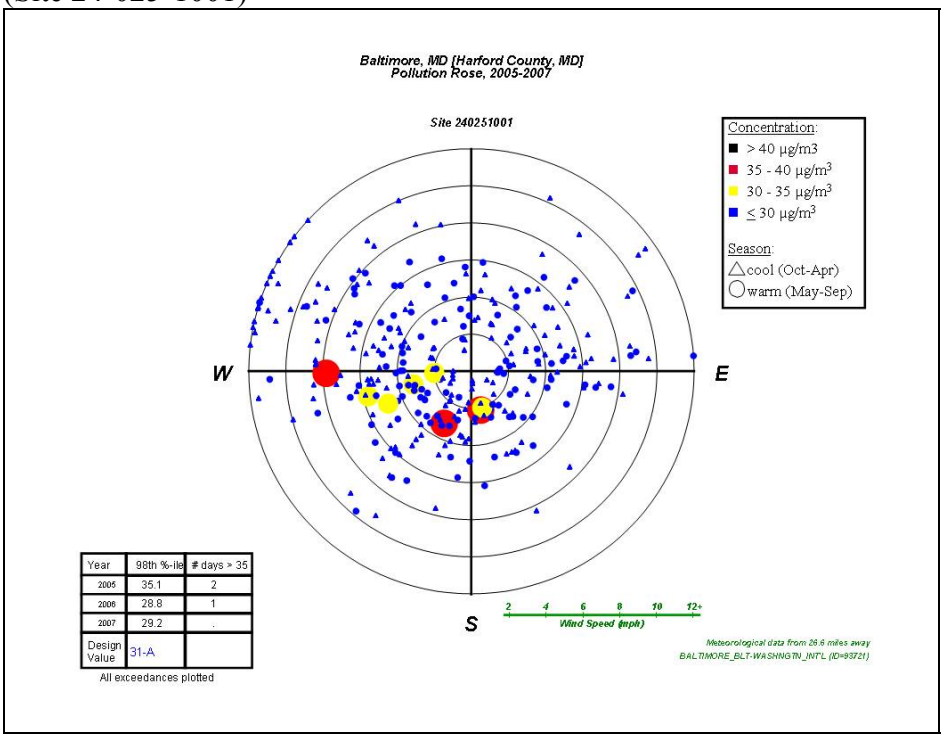
Figure 6.6. Pollution Trajectory Plot for Cecil County, MD
(Site 240-150-003)


Philadelphia-Wilmington, PA-NJ-DE [Cecil County, MD]
Pollution Rose, 2005-2007
Site 240150003
Concentration:
> 40 µg/m3
35 - 40 µg/m3
30 - 35 µg/m3
≤ 30 µg/m3
Season:
cool (Oct-Apr)
warm (May-Sep)
W
E
S
2 4 6 8 10 12+
Wind Speed (mph)
Meteorological data from 14.0 miles away
WILMINGTON_NEW_CASTLE_CNTY_AP (ID=13781)
Year | 98th %-ile | # days > 35
2005 | 31.6 | 1
2006 | 28.3 | 1
2007 | 30.2 | -
Design Value | 30-A |
All exceedances plotted

Harford County, Maryland

The Edgewood monitor in Harford County lays to the distant southeast to the violating monitor in York (See Figure 6.7). On high days in the warm season, winds prevail from the western direction -- indicating impact from the direction of the Baltimore area rather than the York area. Figure 6.7 does show an occasional high day with winds from the south or southwest. High winds speeds from due south through Harford County may impact York County. However, the southerly winds are at low speeds. It appears from this information that Harford County does not contribute significantly to the violations of the 2006 24-hour $PM_{2.5}$ NAAQS monitored within York County.

Figure 6.7. Pollution Trajectory Plot for Harford County, MD
(Site 24-025-1001)



EPA's analysis of this meteorological data shows that during high $PM_{2.5}$ days in 2005-2007, $PM_{2.5}$ emissions from the counties surrounding York County do not significantly affect the air quality monitored in York County. Low wind speeds from the west at the York monitor indicate that emissions within York County, primarily from the Brunner Island power station, impact the air quality monitored in York County.

Note: The meteorology factor is also considered in each county's Contributing Emissions Score because the method for deriving this metric included an analysis of trajectories of air masses for high $PM_{2.5}$ days.

Factor 7: Geography/topography (mountain ranges or other air basin boundaries)

The geography/topography analysis evaluates the physical features of the land that might have an effect on the air shed and, therefore, on the distribution of $PM_{2.5}$ over the York area.

The South Central Region of Pennsylvania is home to four separate nonattainment areas under the 1997 $PM_{2.5}$ NAAQS, including the Lancaster, York, Harrisburg-Lebanon-Carlisle, and Reading nonattainment areas. These areas generally lie to the south and east of the southern boundary of the Allegheny Mountains, which influence regional wind patterns and serves as a barrier to low maritime air masses originating from the Atlantic Ocean. Several broad valleys stretch across this South Central Region, although these terrain features are smaller than the mountains to the north. Statistical analysis by Pennsylvania indicate monitors within the area generally correlate well with each other, but less well with monitors in eastern Pennsylvania, or with Adams County (to the west) or Perry County (to the north).

The York area does not have geographical or topographical barriers that significantly limit air-pollution transport within its air shed. Therefore, geography did not play a significant role in the decision-making process. However, Pennsylvania and EPA feel that the air basins have served as a distinguishing characteristic. In the past, EPA has designated the Lancaster area separately from the York, Harrisburg-Lebanon-Carlisle, and Reading areas for both PM and ozone standards, although these areas are geographically contiguous, and to some degree, may contribute to one another. For the reasons explained above, EPA is continuing to designate these as separate nonattainment areas for the 2006 24-hour $PM_{2.5}$ standard.

Factor 8: Jurisdictional boundaries (e.g., existing $PM_{2.5}$ areas)

In evaluating the jurisdictional boundary factor, EPA gave special consideration to areas that were already designated nonattainment in 2005 for violating the 1997 fine particle standards. Analysis of chemical composition data in these areas indicates that the same components that make up most of the $PM_{2.5}$ mass in the area on an annual average basis (such as sulfate and direct $PM_{2.5}$ carbon in many eastern areas) also are key contributors to the $PM_{2.5}$ mass on days exceeding the 2006 24-hour $PM_{2.5}$ standard. These data indicate that in many cities, the same source categories that contribute to violations of the annual standard also contribute to exceedances of the 2006 24-hour standard.

Most areas that were originally designated nonattainment for the $PM_{2.5}$ standards still have not attained the standards. Thus, EPA has generally concluded that counties that were designated as having emissions sources contributing to fine particle concentrations which continue to exceed the 1997 standards (all areas violated the annual standard, three also violated the previous 24-hour standard) also contribute to fine particle concentrations on the highest days. For this reason, EPA believes that for most existing nonattainment areas, the nonattainment area for the 2006 24-hour standard should be the same. Consideration also should be given to existing boundaries and organizations as they may facilitate air quality planning and the implementation of control measures to attain the standard. Areas already designated as nonattainment represent important boundaries for state air quality planning.

For both the 1997 $PM_{2.5}$ standard and the 8-hour ozone standard, York County (i.e., the one-county York metropolitan area) was designated as a separate nonattainment area from the other areas surrounding it. The York metropolitan area is served by its own metropolitan planning organization (MPO) based on economic, political, and commuting patterns.

Other counties included in this technical analysis are also designated as 8-hour ozone nonattainment areas, separate from the York area. To the degree appropriate, based upon violations and contributions to violations of the ozone and $PM_{2.5}$ NAAQS in a particular area, EPA believes it may be helpful for air planning purposes and for attainment of both NAAQS, for there to be some consistency between ozone and $PM_{2.5}$ nonattainment area boundaries. Comparison of ozone areas with potential $PM_{2.5}$ nonattainment areas, therefore, gives added weight to designation of York County as a separate $PM_{2.5}$ nonattainment area under the 2006 standard.

Pennsylvania has defined four air basins that roughly correspond to the 1997 and the 2006 proposed $PM_{2.5}$ nonattainment areas in South Central Pennsylvania. These include the Lancaster Air Basin in Lancaster County, the Reading Air Basin in Berks County, the Harrisburg Air Basin in Cumberland and Dauphin Counties, and the York Air Basin in York County. These air basins are defined in 25 *Pa Code* § 121.1, and designate sulfur compound controls outlined in 25 *Pa Code* § 123.22. The definitions of these four air basins, as they appear in 25 *Pa Code* § 121.1 appear below:

> *Air basin*—A geographic area of this Commonwealth as delimited in this section.
>
> *Lancaster air basin*—The political subdivisions in Lancaster County of East Petersburg Borough, City of Lancaster, Lancaster Township, Manheim Township, and Millersville Borough.
>
> *Reading air basin*—The political subdivisions in Berks County of Bern Township, Cumru Township, Kenhorst Borough, Laureldale Borough, Leesport Borough, Lower Alsace Township, Mohnton Borough, Mt. Penn Borough, Muhlenberg Township, City of Reading, Shillington Borough, Sinking Spring Borough, Spring Township, St. Lawrence Borough, Temple Borough, West Lawn Borough, West Reading Borough, Wyomissing Borough, and Wyomissing Hills Borough.
>
> *Harrisburg air basin*—The following political subdivisions in Cumberland County: Camp Hill Borough, East Pennsboro Township, Lemoyne Borough, New Cumberland Borough, West Fairview Borough, Wormleysburg Borough, and the political subdivisions in Dauphin County of the City of Harrisburg, Highspire Borough, Lower Swatara Township, Middletown Borough, Paxtang Borough, Royalton Borough, Steelton Borough, Susquehanna Township, and Swatara Township.
>
> *York air basin*—The political subdivisions in York County of Manchester Township, North York Borough, Spring Garden Township, Springettsbury Township, West Manchester Township, West York Borough, and City of York.

On the basis of this factor, EPA is designating York County as a separate nonattainment area for the 2006 $PM_{2.5}$ standard.

Factor 9: Level of control of emission sources

Under this factor, the existing level of control of emission sources is taken into consideration. The emissions data used by EPA in this technical analysis and provided in Table 1 (under Factor 1) represent emissions levels taking into account any control strategies implemented in the York area before 2005 on stationary, mobile, and area sources. Data are presented for $PM_{2.5}$ components that are directly emitted (carbonaceous $PM_{2.5}$ and crustal $PM_{2.5}$) and for pollutants which react in the atmosphere to form fine particles (e.g. SO_2, NOx, VOC, and ammonia).

In considering county-level emissions, EPA used data from the 2005 National Emissions Inventory, the most updated version of the national inventory available at the beginning of the designations process in late 2007. However, EPA recognized that for certain counties, emissions may have changed since 2005. For example, certain power plants or large sources of emissions in or near this area may have installed emission controls or otherwise significantly reduced emissions since 2005. Some States provided updated information on emissions and emission controls in their comments to EPA. EPA considered such additional information in making final designation decisions.

With regard to nearby power plants, EPA considered information about whether a specific plant installed federally enforceable emission controls by December 2008 resulting in significant emissions reductions. A control requirement is considered to be federally-enforceable if it is required by a State regulation adopted in a State implementation plan, if it is included in a federally-enforceable Title V operating permit, or if it is required by a consent decree which also requires the controls to be included in federally enforceable permit upon termination of the consent decree. In making final decisions, EPA also considered whether a facility would continue to emit pollutants which contribute to $PM_{2.5}$ exceedances even after emission controls are operational.

The York area and its adjacent counties contain several large stationary point sources that emit high levels of SO_2 and NOx (defined as greater those emitting 5,000 tons per year). Most notable of these in terms of emissions levels is the PPL Brunner Island power station in York Haven, York County. This facility emitted over 106,000 tons of SO_2 in 2007 (see Table 9.1). Under a consent agreement, two scrubbers are in the process of being constructed at Brunner Island, which will handle exhaust from the plants three coal fired boilers. The first of these scrubbers is to be completed in 2008 (See Table 9), and the second scrubber for the remaining boiler units will be completed in 2009. These scrubbers are projected to remove about 100,000 tons of SO_2 per year, which will have a significant impact on air quality in and around the York area. However, since the second scrubber will not be in place until 2009 after the $PM_{2.5}$ designations are final, EPA concludes that the Brunner Island facility continues to contribute to the violating monitor at the time of designation notwithstanding the controls installed in 2008. In addition, the violating monitor is located in York County. Another large facility in the region is the CP Crane in Baltimore County, which has fairly large heat input and no post control scrubbers or SCR. However, this facility lies within the Baltimore metropolitan statistical area, a fairly large distance from York County.

Table 9. EGUs with SO_2 and NO_x emissions > 5000 tons, from the 2006 NEEDS EGU database

County	Plant Name	Plant Type	Unique ID Final	2006 SO_2	2006 NOx	Scrubber Online Year	Scrubber Efficiency	Capacity MW

County	Plant Name	Plant Type	Unique ID Final	2006 SO_2	2006 NOx	Scrubber Online Year	Scrubber Efficiency	Capacity MW
Chester, PA	Cromby Generating Station	O/G Steam	3159_B_1	3,435	1,581	1982	93.8	48.0
			3159_B_2	178	112			201.0
			3159_B_FB1	3,435	1,581		89.0	48.0
			3159_B_FB2	3,435	1,581		89.0	48.0
York, PA	P H Glatfelter	Coal Steam	50397_B_5PB 036				91.6	36.1
York, PA	PPL Brunner Island	Coal Steam	3140_B_3	45,447	6,288	2008	95.0	749.0
			3140_B_2	26,606	3,600	2009	95.0	378.0
			3140_B_1	21,492	2,866	2009	95.0	321.0
Baltimore, MD	C P Crane	Coal Steam	1552_B_1	14,770	2,898			200.0
			1552_B_2	13,111	2,410			200.0
Baltimore, MD	Riverside	O/G Steam	1559_B_4	0	40			78.0
Washington, MD	R Paul Smith	Coal	1570_B_11	3,462	867			87.0
			1570_B-9	926	279			28.0

Table 9.1. Selected EGU Emissions (2002-2007) from EPA's Clean Air Markets Division

Brunner Island, York County, PA, Facility ID: 3140					
Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	68,931.9	16,190.7	8,773,248.7	85,510,980
2003	12	73,731.0	13,507.7	7,870,160.3	76,709,689
2004	12	92,073.5	16,249.1	9,317,167.7	90,810,610
2005	12	104,601.6	13,929.5	9,020,665.8	87,923,213
2006	12	93,545.0	12,753.7	8,173,709.4	79,665,649
2007	12	106,148.2	15,730.2	9,380,958.3	91,432,329
PH Glatfelter, York County, PA, Facility ID: 50397					
Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	no data				
2003	12	Not Reported	2,142.1	8,773,248.7	10,960,507
2004	12		2,068.6	7,870,160.3	10,423,119
2005	12		1,765.0	9,317,167.7	10,408,417
2006	12		1,735.7	9,020,665.8	10,495,477
2007	12		1,691.2	8,173,709.4	10,009,067
Cromby Generating Station, Chester County, PA, Facility ID: 3140					
Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	3,666.6	1,416.5	888,337.4	9,365,376
2003	12	5,442.3	1,952.5	1,257,579.8	13,222,000
2004	12	6,864.9	2,053.2	1,247,551.4	12,790,103

2005	12	4,989.2	2,104.9	1,221,416.0	12,799,778
2006	12	3,613.5	1,692.7	970,952.9	9,881,506
2007	12	3,446.6	1,973.3	1,062,054.7	10,942,142

C.P. Crane, Baltimore County, MD, Facility ID: 1552

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	32,386.3	10,742.1	2,446,255.7	23,715,373
2003	12	32,260.8	10,849.4	2,601,391.3	25,353,113
2004	12	29,042.1	7,703.5	2,196,962.3	21,412,831
2005	12	33,031.0	8,205.5	2,385,667.4	23,252,164
2006	12	27,881.1	5,307.8	2,087,302.3	20,344,135
2007	12	30,630.7	5,775.6	2,240,018.6	21,832,479

Riverside, Baltimore County, MD, Facility ID: 1559

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	0.2	78.3	32,412.1	545,379
2003	12	0.0	20.1	8,304.8	139,748
2004	12	0.0	7.6	2,872.7	48,340
2005	12	0.1	45.8	13,167.0	221,567
2006	12	0.1	39.6	10,540.3	177,348
2007	12	0.1	76.5	19,762.8	332,513

R. Paul Smith Power Station, Washington County, MD, Facility ID: 1570

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	4,588.0	1,258.9	618,454.8	6,027,713
2003	12	3,749.3	988.8	544,712.8	5,309,100
2004	12	2,800.7	752.7	410,146.3	3,997,496
2005	12	3,359.3	921.4	488,778.3	4,763,912
2006	12	4,388.0	1,146.6	615,251.1	5,996,636
2007	12	5,535.8	1,398.4	754,853.7	7,357,237

Conclusion

On the basis of the above analysis, York County is violating the standard, and is also high ranking for nearly all factors evaluated.

Baltimore, Lancaster, Cumberland, Dauphin, and Chester Counties were high ranking for a number of individual factors. However, based on jurisdictional and other factors such as commuting patterns and meteorology, EPA is designating these counties nonattainment as part of separate nonattainment areas.

Therefore, EPA is maintaining the same single-county boundary established for the 1997 $PM_{2.5}$ NAAQS in designating the York nonattainment area under the 2006 24-hour $PM_{2.5}$ NAAQS.

EPA Technical Analysis for the Youngstown Area, Mercer County

Introduction

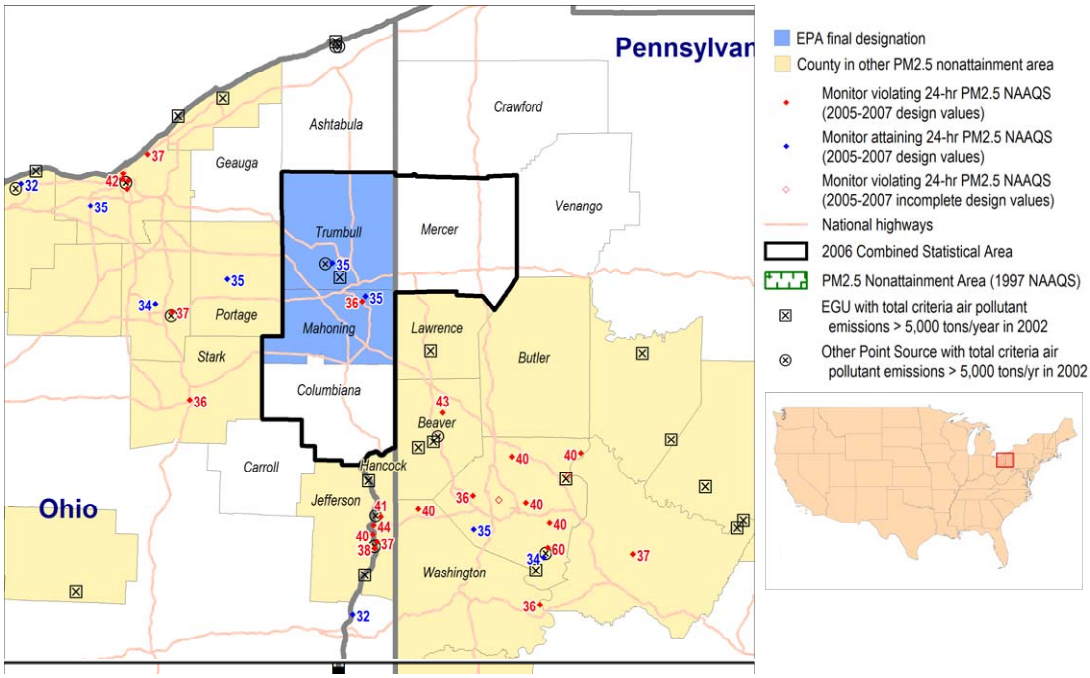
Pursuant to section 107(d) of the Clean Air Act, EPA must designate as nonattainment those areas that violate the NAAQS and those nearby areas that contribute to violations. This technical analysis for the Youngstown area identifies the counties with monitors that violate the 2006 24-hour $PM_{2.5}$ standard and evaluates nearby counties for contributions to fine particle concentrations in the area. EPA has evaluated these counties based on the weight of evidence of the following nine factors recommended in EPA guidance and any other relevant information:

- pollutant emissions
- air quality data
- population density and degree of urbanization
- traffic and commuting patterns
- growth
- meteorology
- geography and topography
- jurisdictional boundaries
- level of control of emissions sources

We also used analytical tools and data such as pollution roses, fine particle composition monitoring data, back trajectory analyses, and the contributing emission score (CES) to evaluate these areas. (See additional discussion of the CES under Factor 1).

Figure 1 is a map of the counties in the Youngstown area and other relevant information such as the locations and design values of air quality monitors, and the metropolitan area boundary.

Figure 1. The Youngstown Area



In December 2007, the Commonwealth of Pennsylvania recommended that Mercer County, PA be designated as "attainment" for the 2006 24-hour $PM_{2.5}$ standard based on air quality data from 2004-2006. These data are from Federal Reference Method (FRM) monitors located in the Commonwealth. (See the December 28, 2007 letter from the Pennsylvania Department of Environmental Protection to EPA.)

In August 2008, EPA notified the Commonwealth of Pennsylvania of its intended designations. In this letter, EPA also requested that if the Commonwealth of Pennsylvania wished to provide comments on EPA's intended designation, it should do so by October 20, 2008. EPA stated that it would consider any additional information (e.g., on power plants or partial county areas) provided by the state in making final decisions on the designations.

Based on EPA's technical analysis described below, EPA believes that no counties in Pennsylvania should be designated nonattainment for the 2006 24-hour $PM_{2.5}$ air quality standard as part of the Youngstown nonattainment area, based upon currently available information.

Youngstown area	State-Recommended Nonattainment Counties	EPA Final Designated Nonattainment Counties within Region III
Pennsylvania	None	None

However, EPA designated Mercer County, PA "unclassifiable" for the 2006 24-hour $PM_{2.5}$ standard due to incomplete data in 2006. Because of this data incompleteness, a design value cannot be calculated for the 2004-2006 or 2005-2007 periods. When, pursuant to the data requirements of 40 CFR Part 50, Appendix N, EPA can calculate a design value for the monitor located in Mercer County, EPA will revisit this designation and propose attainment or nonattainment, as appropriate. With respect to contribution to violations in nearby Mahoning County, Ohio, EPA's analysis suggests that Mercer County does not contribute to violations in that area, and therefore Mercer should not be designated nonattainment as part of the Youngstown area at this time.

The following is a technical analysis for the EPA Region III portion of the Youngstown area.

Factor 1: Emissions data

For this factor, EPA evaluated county level emission data for the following $PM_{2.5}$ components and precursor pollutants: $PM_{2.5}$ emissions total, $PM_{2.5}$ emissions carbon, $PM_{2.5}$ emissions other, sulfur dioxide (SO_2), nitrogen oxides (NO_x), volatile organic compounds (VOCs), and ammonia (NH_3). "$PM_{2.5}$ emissions total" represents direct emissions of $PM_{2.5}$ and includes: "$PM_{2.5}$ emissions carbon," "$PM_{2.5}$ emissions other," primary sulfate (SO_4), and primary nitrate. (Although primary sulfate and primary nitrate, which are emitted directly from stacks rather than forming in atmospheric reactions with SO_2 and NO_x, are part of "$PM_{2.5}$ emissions total," they are not shown in Table 1 as separate items). "$PM_{2.5}$ emissions carbon" represents the sum of organic carbon (OC) and elemental carbon (EC) emissions, and "$PM_{2.5}$ emissions other" represents other inorganic particles (crustal). Emissions of SO_2 and NO_x, which are precursors of the secondary

$PM_{2.5}$ components sulfate and nitrate, are also considered. VOCs and NH_3 are also potential $PM_{2.5}$ precursors and are included for consideration.

Emissions data were derived from the 2005 National Emissions Inventory (NEI), version 1. See http://www.epa.gov/ttn/naaqs/pm/pm25_2006_techinfo.html.

EPA also considered the Contributing Emissions Score for each county. The CES is a metric that takes into consideration emissions data, meteorological data, and air quality monitoring information to provide a relative ranking of counties in and near an area. Note that this metric is not the exclusive manner for considering data for these factors. A summary of the CES is included in Attachment 2, and a more detailed description can be found at http://www.epa.gov/ttn/naaqs/pm/pm25_2006_techinfo.html#C.

Table 1 shows emissions of $PM_{2.5}$ and precursor pollutants components (given in tons per year) and the CES for violating and potentially contributing counties in the Youngstown area. Counties are listed in descending order by CES, with the exception of Trumbull, Mahoning, Columbiana, and Mercer Counties. These counties are listed first because they make up the Youngstown-Warren-Sharon maintenance area for the 1997 8-hour ozone NAAQS.

Table 1. $PM_{2.5}$ 24-Hour Component Emissions and CES

County	State Recommended Nonattainment?	CES	$PM_{2.5}$ emissions total (tpy)	$PM_{2.5}$ Emissions carbon (tpy)	$PM_{2.5}$ emissions other (tpy)	SO_2 (tpy)	NOx (tpy)	VOCs (tpy)	NH_3 (tpy)
Trumbull*, OH	Yes	89	1,730	625	1,105	18,501	13,373	12,098	881
Mahoning*, OH	Yes	34	722	338	384	1,927	10,086	10,416	1,415
Columbiana*, OH	No	14	805	366	441	525	4,377	4,933	1,956
Mercer*, PA	No	11	793	290	503	1,042	6,010	7,028	1,210
Jefferson, OH	Yes - other area	100	11,409	722	10,686	224,025	46,158	3,693	297
Allegheny, PA	Yes - other area	64	5,221	2,245	2,975	51,471	63,290	46,690	2,249
Beaver, PA	Yes - other area	43	2,909	451	2,457	45,452	33,400	7,424	450
Lawrence, PA	Yes - other area	40	2,046	313	1,733	22,900	9,001	4,234	692
Portage, OH	Yes - other area	18	1,011	496	514	548	7,269	8,365	564
Ashtabula, OH	No	14	1,407	648	758	5,713	14,555	10,988	860
Hancock, WV	Yes - other area	12	3,781	704	3,077	2,039	4,404	2,298	830
Stark, OH	Yes - other area	11	1,488	574	915	2,334	13,046	19,011	1,902
Geauga, OH	No	9	951	461	491	458	3,101	7,162	490
Butler, PA	Yes - other area	7	1,232	441	791	3,359	7,549	8,805	771
Washington, PA	Yes - other area	5	1,683	514	1,170	6,318	16,311	9,297	919
Crawford, PA	No	3	1,020	418	602	1,111	6,015	5,829	1,106
Carroll, OH	No	2	338	141	196	123	1,627	1,482	409
Venango, PA	No	2	522	235	287	1,919	2,757	3,476	286

*Notes: Trumbull, Mahoning, and Columbiana Counties made up the 1999 Youngstown-Warren, OH MSA. Trumbull, Mahoning, and Mercer Counties make up the December 2006 Youngstown-Warren-Boardman, OH-PA metropolitan statistical area (MSA).

Based upon the data set forth in Table 1, the emissions from Jefferson County, OH are much higher than any other county under consideration, and this county has the highest CES. However, Jefferson County is included in the Steubenville-Weirton nonattainment area for the 2006 24-hour $PM_{2.5}$ NAAQS.

Trumbull County, OH has the next highest CES, while the next highest emissions are from Allegheny, Beaver, and Lawrence Counties in Pennsylvania. Trumbull County's CES is likely higher than Allegheny, Beaver, and Lawrence Counties' CESs because of its proximity to the violating monitor, which is in northern Mahoning County, close to the Mahoning-Trumbull County line. EPA has designated Allegheny County, Beaver, and Washington Counties as part of other nonattainment areas for the 2006 $PM_{2.5}$ NAAQS. EPA has determined that those counties should be designated as the Pittsburgh-Beaver Valley and Liberty-Clairton areas instead of the Youngstown area, because they are more integrated into those separate areas.

Butler, Washington, Crawford, and Venango Counties in Pennsylvania all have a CES below ten. EPA has designated Butler and Washington Counties as part of the Pittsburgh-Beaver Valley nonattainment area for the 2006 24-hour $PM_{2.5}$ NAAQS.

Mercer County, PA has a low CES of eleven. However, because it is part of the Youngstown-Warren-Sharon area and nearby to the violations in Mahoning County, Ohio, further analysis was warranted to determine if it should be included within the Youngstown nonattainment area for the 2006 24-hour $PM_{2.5}$ NAAQS.

Factor 2: Air Quality Data

This factor considers the 24-hour $PM_{2.5}$ design values in micrograms per cubic meter ($\mu g/m^3$) for air quality monitors in counties in the Youngstown area based on data for the 2005-2007 period. A monitor's design value indicates whether that monitor attains a specified air quality standard. The 2006 24-hour $PM_{2.5}$ standard is met when the 3-year average of a monitor's 98^{th} percentile value is 35 $\mu g/m^3$ or less. A design value is only valid if minimum data completeness criteria are met.

The 24-hour $PM_{2.5}$ design values for counties in the Youngstown area are shown in Table 2.

Table 2. Air Quality Data

County	State Recommended Nonattainment	Daily Design Values 2003-05 ($\mu g/m^3$)	Daily Design Values 2004-06 ($\mu g/m^3$)	Daily Design Values 2005-07 ($\mu g/m^3$)
Trumbull, OH	Yes	38	36	35
Mahoning, OH	Yes	38	37	36
Columbiana, OH	No	No monitor		
Mercer, PA	No	36	Inc	Inc

Jefferson, OH	Yes - other area	46	43	40
Allegheny, PA [Liberty-Clairton]*	Yes - other area [Yes - other area]*	52 [68]	45 [65]	40 [60]
Beaver, PA	Yes - other area	43	45	43
Lawrence, PA	Yes - other area	No monitor		
Portage, OH	Yes - other area	34	34	35
Ashtabula, OH	No	No monitor		
Hancock, WV	Yes - other area	45	40	41
Stark, OH	Yes - other area	38	37	36
Geauga, OH	No	No monitor		
Butler, PA	Yes - other area	No monitor		
Washington, PA	Yes - other area	36	38	40
Crawford, PA	No	No monitor		
Carroll, OH	No	No monitor		
Venango, PA	No	No monitor		

Notes: *Allegheny County, except for the Liberty-Clairton area, is in the Pittsburgh-Beaver Valley $PM_{2.5}$ nonattainment area. The Liberty-Clairton area is a separate $PM_{2.5}$ nonattainment area. Inc: Incomplete data for 2006, design value cannot be confidently calculated.

Allegheny, Beaver, and Washington Counties in Pennsylvania and Hancock County in West Virginia all have monitored violations of the 2006 24-hour $PM_{2.5}$ standard. However, EPA has concluded that Allegheny County, Beaver, and Washington Counties should be designated as part of other nonattainment areas for the 2006 $PM_{2.5}$ NAAQS, for Pittsburgh-Beaver Valley and Liberty-Clairton. Hancock County is included in the Steubenville-Weirton nonattainment area for the 1997 and 2006 $PM_{2.5}$ NAAQS.

The monitor in Mercer County, PA (AQS # 420850100) does not have complete data capture for the second quarter of 2006. Data capture was 58%, well below the required 75%. According to 40 CFR Part 50, Appendix N, Section 4.2:

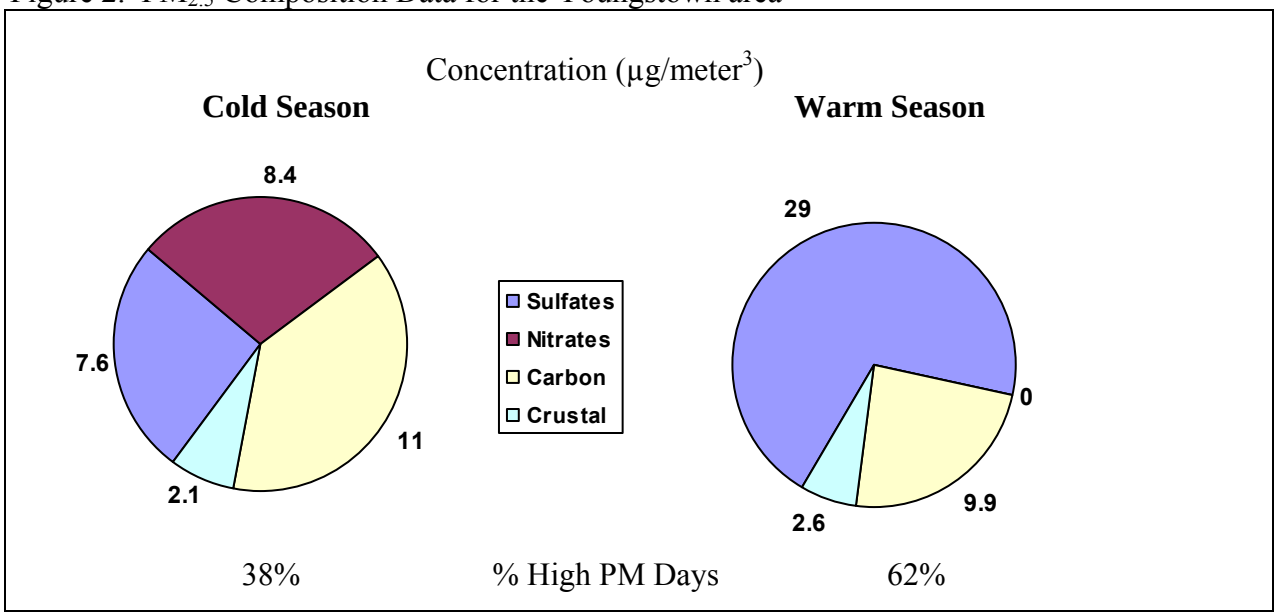
> The 24-hour $PM_{2.5}$ NAAQS is met when the 24-hour standard design value at each monitoring site is less than or equal to 35 $\mu g/m^3$. This comparison shall be based on 3 consecutive, complete years of air quality data. A year meets data completeness requirements when at least 75 percent of the scheduled sampling days for each quarter have valid data. However, years shall be considered valid, notwithstanding quarters with less than complete data (even quarters with less than 11 samples), if the resulting annual 98th percentile value or resulting 24-hour standard design value (rounded according to the conventions of section 4.3 of this appendix) is greater than the level of the standard.

Using the incomplete data, the 98th percentile value for 2006 the monitor in Mercer County is 30.7 $\mu g/m^3$. The 98th percentile values for 2005 and 2007 were 39.0 $\mu g/m^3$ and 34.9 $\mu g/m^3$, respectively. The resulting design value for 2005 – 2007 is 34.89 $\mu g/m^3$. Using the criteria dictated by 40 CFR Part 50, Appendix N, this data cannot be considered valid. Therefore, EPA cannot calculate a design value for this monitor for the 2006 24-hour $PM_{2.5}$ NAAQS at this time.

EPA also considered fine particle composition monitoring data for this area. Air quality monitoring data on the composition of fine particle mass are available from the EPA Chemical

Speciation Network and the IMPROVE monitoring network. Analysis of these data indicates that the days with the highest fine particle concentrations occur predominantly in the summer and the average chemical composition of the highest day is illustrated in Figure 2. The average chemical composition of the highest days is typically characterized by high levels of sulfates in the warm season, followed by slightly lower levels of carbon. The warm season is dominated by carbon, with a more even split between sulfates and nitrates (see Figure 2). This data confirms the importance of SO_2, NOx, and direct PM emissions to the area.

Figure 2. $PM_{2.5}$ Composition Data for the Youngstown area



Note: Eligible monitors for providing design value data generally include State and Local Air Monitoring Stations (SLAMS) at population-oriented locations with an FRM monitor. All data from Special Purpose Monitors (SPM) using an FRM is eligible for comparison to the relevant NAAQS, subject to the requirements given in the October 17, 2006 Revision to Ambient Air Monitoring Regulations (71 FR 61236). All monitors used to provide data must meet the monitor siting and eligibility requirements given in 71 FR 61236 to 61328 in order to be acceptable for comparison to the 2006 24-hr $PM_{2.5}$ NAAQS for designation purposes.

Factor 3: Population density and degree of urbanization (including commercial development)

Table 3 shows the 2005 population for each county in the area being evaluated, as well as the population density for each county in that area. Population data gives an indication of whether it is likely that population-based emissions might contribute to violations of the 2006 24-hour $PM_{2.5}$ standard.

Table 3. Population

County	State Recommended Nonattainment	2005 Population	2005 Population Density (people/sq mi)
Trumbull, OH	Yes	218,672	345
Mahoning, OH	Yes	253,181	599
Columbiana, OH	No	110,636	207
Mercer, PA	No	119,115	175
Jefferson, OH	Yes - other area	70,631	172
Allegheny, PA	Yes - other area	1,233,036	1658
Beaver, PA	Yes - other area	176,825	399
Lawrence, PA	Yes - other area	92,412	255
Portage, OH	Yes - other area	155,150	307
Ashtabula, OH	No	103,044	145
Hancock, WV	Yes - other area	31,191	354
Stark, OH	Yes - other area	380,275	655
Geauga, OH	No	95,060	233
Butler, PA	Yes - other area	181,526	229
Washington, PA	Yes - other area	206,418	240
Crawford, PA	No	89,484	87
Carroll, OH	No	29,252	73
Venango, PA	No	55,938	82

In 2005, Mercer County, PA population was roughly half that of either Trumbull or Mahoning Counties in Ohio. Furthermore, its population density is roughly half that of Trumbull County and less than one-third that of Mahoning County. This results in much lower population-based emissions from Mercer County than the other nearby counties to the violating monitor. Therefore, for purposes of this factor, Mercer is contributing much less to violations in nearby Mahoning County, Ohio.

Factor 4: Traffic and Commuting Patterns

This factor considers the number of commuters in each county who drive to another county within the Youngstown area, the percent of total commuters in each county who commute to other counties within the Youngstown area, as well as the total Vehicle Miles Traveled (VMT) for each county in millions of miles (see Table 4). A county with numerous commuters is generally an integral part of an urban area and is likely contributing to fine particle concentrations in the area

Table 4. Traffic and Commuting Patterns

County	State Recommended Nonattainment?	2005 VMT (millions)	Number commuting into any violating counties	Percent commuting into any violating counties	Number commuting into & within statistical area	Percent commuting into & within statistical area
Trumbull, OH	Yes	2,153	85,820	88	85,870	88
Mahoning, OH	Yes	2,666	99,310	91	100,200	92
Columbiana, OH	No	872	16,360	33	39,050	79
Mercer, PA	No	1,302	44,370	87	44,270	87
Jefferson, OH	Yes - other area	684	21,140	74	730	3
Allegheny, PA	Yes - other area	10,003	564,260	97	474	0
Beaver, PA	Yes - other area	1,522	48,250	60	970	1
Lawrence, PA	Yes - other area	769	7,390	18	4,730	12
Portage, OH	Yes - other area	1,788	3,650	5	2,250	3
Ashtabula, OH	No	1,182	720	2	670	2
Hancock, WV	Yes - other area	187	8,480	60	940	7
Stark, OH	Yes - other area	3,049	3,650	5	2,250	3
Geauga, OH	No	834	530	1	440	1
Butler, PA	Yes - other area	1,669	3,510	4	1,880	2
Washington, PA	Yes - other area	2,399	54,270	61	60	0
Crawford, PA	No	795	1,590	4	1,560	4
Carroll, OH	No	173	5,380	42	370	3
Venango, PA	No	596	850	4	830	4

The listing of counties on Table 4 reflects a ranking based on the number of people commuting to other counties. VMT in Mercer County, PA is roughly half that of VMT in Trumbull and Mahoning Counties, Ohio. Furthermore, the numbers commuting into any violating counties or into the statistical area from Mercer County are less than half that of Trumbull and Mahoning Counties. More importantly, while 44,270 commute into the statistical area, 40,370 of those commuters are traveling within Mercer County itself. Therefore, less than 4000 commuters are traveling from Mercer County into Trumbull and Mahoning Counties. Finally, the VMT and commuting figures for Mercer County are, in comparison to more populated areas where vehicle emissions are more relevant, very low relative to other counties in this area. As demonstrated in Table 4.1, vehicle emissions from Mercer County are minimal when compared to a more populated area, in this case, Allegheny County, PA.

Table 4.1. Highway Vehicle Emissions for the Youngtown Area and Selected Nearby Counties

Highway Vehicle Emissions (Tier 11) 2005 NEI, Version 1			Total County Emissions
County	Pollutant	Tons	tons
Trumbull, OH	NOx	4,987	13,373
Mahoning , OH		6,713	10,086
Columbiana, OH		2,025	4,377
Mercer, PA		3,521	6,010
Jefferson, OH		1,528	46,158
Allegheny, PA		18,403	63,290
Trumbull, OH	PM25-PRI	86	1,730

Mahoning , OH		117	722
Columbiana, OH		34	805
Mercer, PA		73	793
Jefferson, OH		25	11,409
Allegheny, PA		311	5,221
Trumbull, OH	SO_2	110	18,501
Mahoning , OH		145	1,927
Columbiana, OH		44	525
Mercer, PA		84	1,042
Jefferson, OH		33	224,025
Allegheny, PA		392	51,471
Trumbull, OH	VOC	3,773	12,098
Mahoning , OH		4,719	10,416
Columbiana, OH		1,596	4,933
Mercer, PA		1,838	7,028
Jefferson, OH		1,216	3,693
Allegheny, PA		14,938	46,690
Trumbull, OH	NH3	223	881
Mahoning , OH		274	1,415
Columbiana, OH		90	1,956
Mercer, PA		128	1,210
Jefferson, OH		71	297
Allegheny, PA		1,052	2,249

Note: The 2005 VMT data used for Tables 4 and 5 of the 9-factor analysis have been derived using methodology such as that described in "Documentation for the 2005 Mobile National Emissions Inventory, Version 2," December 2008, prepared for the Emission Inventory Group, U.S. EPA. This document may be found at: ftp://ftp.epa.gov/EmisInventory/2005_nei/mobile_sector/documentation/2005_mobile_nei_version_2_report.pdf

Factor 5: Growth rates and patterns

This factor considers population growth for 2000-2005 and growth in VMT for 1996-2005 for counties in Youngstown area, as well as patterns of population and VMT growth. A county with rapid population or VMT growth is generally an integral part of an urban area and likely to be contributing to fine particle concentrations in the area.

Table 5 shows population, population growth, VMT, and VMT growth for counties that are included in the Youngstown area.

Table 5. Population and VMT Values and Percent Change

County	State Recommended Nonattainment?	2005 Population	Percent Population Change (2000-2005)	2005 VMT (millions)	Percent VMT Growth (1996-2005)
Trumbull, OH	Yes	218,672	(3)	2,153	8
Mahoning, OH	Yes	253,181	(2)	2,666	9
Columbiana, OH	No	110,636	(1)	872	(2)
Mercer, PA	No	119,115	(1)	1,302	(0)
Jefferson, OH	Yes - other area	70,631	(4)	684	(6)
Allegheny, PA	Yes - other area	1,233,036	(4)	10,003	(3)
Beaver, PA	Yes - other area	176,825	(2)	1,522	0
Lawrence, PA	Yes - other area	92,412	(2)	769	(1)
Portage, OH	Yes - other area	155,150	2	1,788	6
Ashtabula, OH	No	103,044	0.5	1,182	13
Hancock, WV	Yes - other area	31,191	(4)	187	(32)
Stark, OH	Yes - other area	380,275	1	3,049	(1)
Geauga, OH	No	95,060	4	834	(2)
Butler, PA	Yes - other area	181,526	4	1,669	10
Washington, PA	Yes - other area	206,418	2	2,399	25
Crawford, PA	No	89,484	(1)	795	(11)
Carroll, OH	No	29,252	1	173	(7)
Venango, PA	No	55,938	(3)	596	15

Based on the data in Table 5, most counties with CES values above ten had population decreases between 2000 and 2005, with the exception of Portage County, OH, Ashtabula County, OH, and Stark County, OH (See Table 1 under Factor 1 – Emissions Data). Portage and Ashtabula Counties also had increased VMT between 2000 and 2005, as did Trumbull and Mahoning Counties. Mercer County, PA had no change in VMT, while all other counties with CESs above ten experienced a drop in VMT.

Factor 6: Meteorology (weather/transport patterns)

For this factor, EPA considered data from National Weather Service instruments and other meteorological monitoring sites in the area. Wind direction and wind speed data for 2005-2007 were analyzed, with an emphasis on "high $PM_{2.5}$ days" for each of two seasons (an October-April "cold" season and a May-September "warm" season). These high days are defined as days where any FRM air quality monitors had 24-hour $PM_{2.5}$ concentrations above 95% on a frequency distribution curve of $PM_{2.5}$ 24-hour values.

For each air quality monitoring site, EPA developed a "pollution rose" to understand the prevailing wind direction and wind speed on the days with highest fine particle concentrations. Figures 6 through 6.3 identify 24-hour $PM_{2.5}$ values by color; days exceeding 35 ug/m3 are denoted with a red or black icon. A dot indicates the day occurred in the warm season; a triangle indicates the day occurred in the cool season. The center of the figure indicates the location of the air quality monitoring site, and the location of the icon in relation to the center indicates the

direction from which the wind was blowing on that day. An icon that is close to the center indicates a low average wind speed on that day. Higher wind speeds are indicated when the icon is further away from the center.

The following pollution roses show that, during high $PM_{2.5}$ days in 2005-2007 in Trumbull and Mahoning Counties, the wind generally came from the south, including southwestern and southeastern components on days with high ambient levels relevant to the 2006 24-hour $PM_{2.5}$ NAAQS. In addition, there is one day showing winds from the northeast and monitored ambient levels in the 30 to 35 µg/m^3 range. The highest days, with monitored values greater than 35 µg/m^3 $PM_{2.5}$, are from the south, southeast, and southwest, suggesting that contribution to violations of the 2006 24-hour $PM_{2.5}$ NAAQS is more likely from those directions, rather than from the direction of Mercer County.

Figure 6. Pollution Trajectory Plot for Mahoning County, OH (Site 39-099-0014)

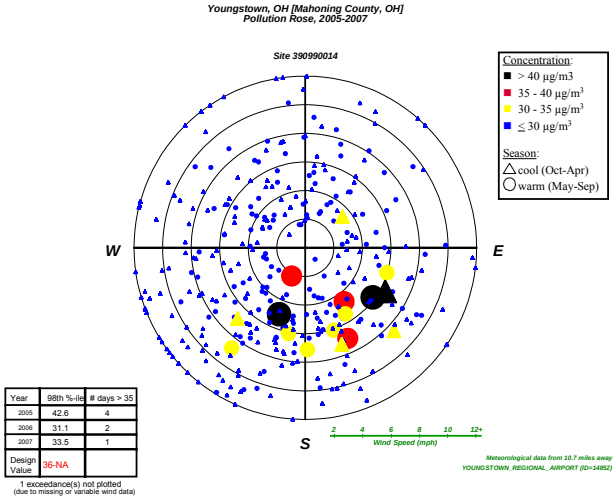


Figure 6.1. Pollution Trajectory Plot for Mahoning County, OH (Site 39-099-0005)

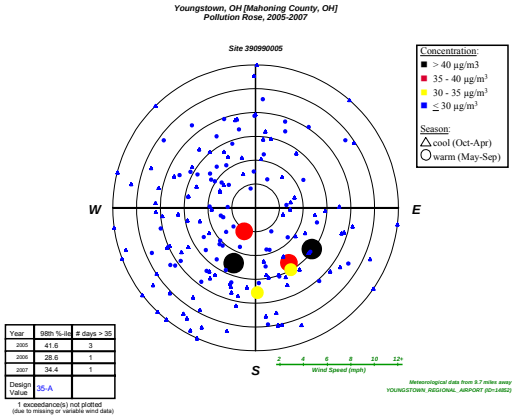
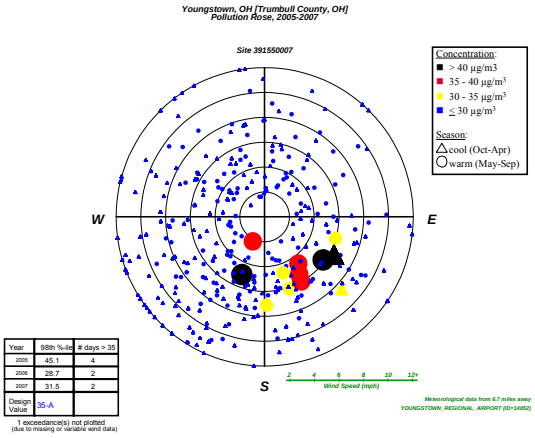
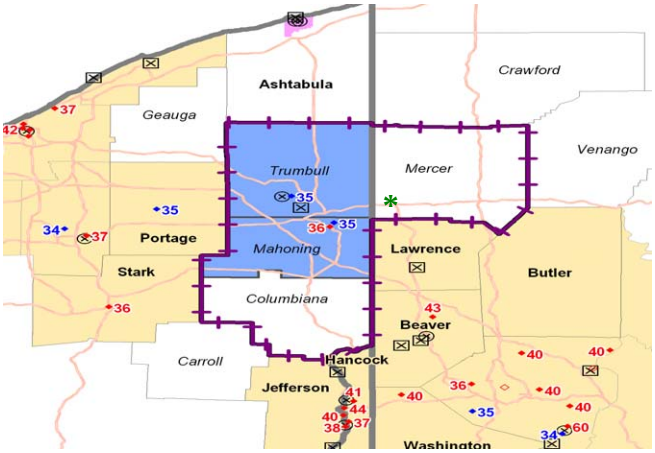


Figure 6.2. Pollution Trajectory Plot for Trumbull County, OH
(Site 39-155-0007)



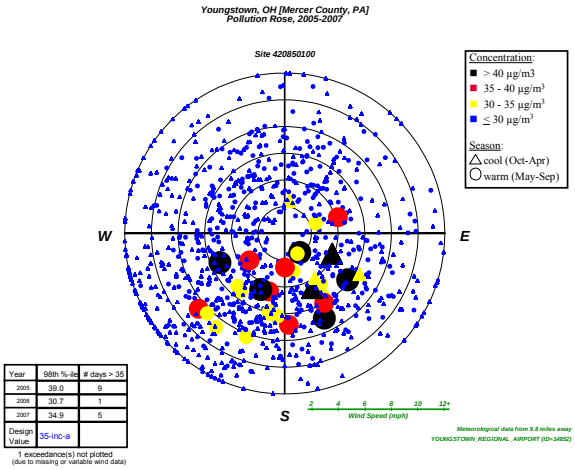
As shown in Figure 6.3, the violating monitor in the Youngstown area is in northern Mahoning County, OH. Mercer County, PA is northeast of the violating monitor. Therefore, emissions from Mercer County do not appear to contribute to the violating monitor on high $PM_{2.5}$ days (with monitored values greater than 35 µg/m^3.)

Figure 6.3. The Youngstown Area



The following pollution rose shows that on high $PM_{2.5}$ days at the Mercer County monitor, winds are generally from the south, southwest, and southeast, with occasional days dominated by winds from the east. (See Figure 6.4)

Figure 6.4. Pollution Trajectory Plot for Mercer County, PA
(Site 42-085-0100)



Note: The meteorology factor is also considered in each county's Contributing Emissions Score because the method for deriving this metric included an analysis of trajectories of air masses for high $PM_{2.5}$ days.

Factor 7: Geography/topography (mountain ranges or other air basin boundaries)

The geography/topography analysis looks at physical features of the land that might have an effect on the air shed and, therefore, on the distribution of $PM_{2.5}$ over the Youngstown area.

The Youngstown area does not have any geographical or topographical barriers significantly limiting air-pollution transport within its air shed. Although there are no barriers to contribution of emissions within this area, other evidence suggests that Mercer County is not contributing to violations in adjacent Mahoning County, Ohio.

Factor 8: Jurisdictional boundaries (e.g., existing $PM_{2.5}$ areas)

In evaluating the jurisdictional boundary factor, EPA gave special consideration to areas that were already designated nonattainment in 2005 for violating the 1997 fine particle standards. Analysis of chemical composition data in these areas indicates that the same components that make up most of the $PM_{2.5}$ mass in the area on an annual average basis (such as sulfate and direct $PM_{2.5}$ carbon in many eastern areas) also are key contributors to the $PM_{2.5}$ mass on days exceeding the 2006 24-hour $PM_{2.5}$ standard. These data indicate that in many cities, the same source categories that contribute to violations of the annual standard also contribute to exceedances of the 2006 24-hour standard.

Most areas that were originally designated nonattainment for the $PM_{2.5}$ standards still have not attained the standards. Thus, EPA has generally concluded that counties that were designated as having emissions sources contributing to fine particle concentrations which continue to exceed the 1997 standards (all areas violated the annual standard, three also violated the previous 24-hour standard) also contribute to fine particle concentrations on the highest days. For this reason, EPA believes that for most existing nonattainment areas, the nonattainment area for the

2006 24-hour standard should be the same. Consideration also should be given to existing boundaries and organizations as they may facilitate air quality planning and the implementation of control measures to attain the standard. Areas already designated as nonattainment represent important boundaries for state air quality planning.

The major jurisdictional boundary in the Youngstown area is the State line between Ohio and Pennsylvania. The county with an air quality monitor that violates the 2006 $PM_{2.5}$ NAAQS is Mahoning, OH. Pennsylvania has no jurisdictional say in the air quality regulations and policies (e.g., transportation policies) developed by either Ohio to address $PM_{2.5}$ emissions in the areas with the violating monitor.

To the degree appropriate, based upon violations and contributions to violations of the ozone and PM2.5 NAAQS in a particular area, EPA believes it may be helpful for air planning purposes and for attainment of both NAAQS, for there to be some consistency between ozone and PM2.5 nonattainment area boundaries. Mercer County, PA was included in the ozone nonattainment area associated with the Youngstown area. Mahoning, Trumbull, Columbiana, and Mercer Counties are part of the Youngstown-Warren-Sharon maintenance area for the 8-hour ozone NAAQS. Other counties included in this 9-factor analysis are also designated as 8-hour ozone nonattainment areas, but are not associated with the Youngstown area.

Factor 9: Level of control of emission sources

Under this factor, EPA took into consideration recent significant reductions in emissions. The emissions data used by EPA in this technical analysis and provided in Table 1 (under Factor 1) represent emissions levels taking into account any control strategies implemented in the Youngstown area before 2005 on stationary, mobile, and area sources. Data are presented for $PM_{2.5}$ components that are directly emitted (carbonaceous $PM_{2.5}$ and crustal $PM_{2.5}$) and for pollutants which react in the atmosphere to form fine particles (e.g. SO_2, NOx, VOC, and ammonia).

In considering county-level emissions, EPA used data from the 2005 National Emissions Inventory, the most updated version of the national inventory available at the beginning of the designations process in late 2007. However, EPA recognized that for certain counties, emissions may have changed since 2005. For example, certain power plants or large sources of emissions in or near this area may have installed emission controls or otherwise significantly reduced emissions since 2005. Some States provided updated information on emissions and emission controls in their comments to EPA. EPA considered such additional information in making final designation decisions.

With regard to nearby power plants, EPA considered information about whether a specific plant installed federally enforceable emission controls by December 2008 resulting in significant emissions reductions. A control requirement is considered to be federally-enforceable if it is required by a State regulation adopted in a State implementation plan, if it is included in a federally-enforceable Title V operating permit, or if it is required by a consent decree which also requires the controls to be included in federally enforceable permit upon termination of the consent decree. In making final decisions, EPA also considered whether a facility would

continue to emit pollutants which contribute to $PM_{2.5}$ exceedances even after emission controls are operational.

As explained in connection with Factor 6, EPA has concluded that emissions from Mercer County, PA do not impact the violating monitor in Mahoning County on days with high ambient PM2.5. Furthermore, there are no large electric generating units or other large sources with emissions greater than 5000 tons per year in Mercer County. Therefore, an analysis of any additional emission reductions which may have occurred in Mercer County since 2005 was not performed.

Conclusion

Mercer County, PA is part of the Youngstown-Warren-Sharon area, along with of Trumbull, Mahoning, and Columbiana Counties in Ohio. However, compared to Trumbull and Mahoning Counties, emissions of PM2.5 and PM2.5 precursors from Mercer County are quite low. In addition, population, population density, and VMT in Mercer County are all roughly half that of both Trumbull and Mahoning Counties. Furthermore, fewer than 4000 commuters are traveling from Mercer County into Trumbull and Mahoning Counties, also indicating less potential for contribution from Mercer to the nearby violating area. Meteorological data indicate that the prevailing winds in the area are primarily from the south, southeast, and southwest, on days with high ambient PM2.5 levels, suggesting that contribution to violations of the 2006 24-hour $PM_{2.5}$ NAAQS is less likely from the direction of Mercer County. Considering all of this information, EPA has concluded that Mercer County does not contribute to the nonattainment problem in the Youngstown area, and therefore should not be included in the Youngstown nonattainment area.

However, EPA designated Mercer County, PA "unclassifiable" for the 2006 24-hour $PM_{2.5}$ standard due to incomplete data in 2006. Because of this data incompleteness, a design value cannot be calculated for the 2004-2006 or 2005-2007 periods. When, pursuant to the data requirements of 40 CFR Part 50, Appendix N, EPA can confidently calculate a design value for the monitor located in Mercer County, EPA will revisit this designation and propose attainment or nonattainment, as appropriate.

Attachment 2

Description of the Contributing Emissions Score

The CES is a metric that takes into consideration emissions data, meteorological data, and air quality monitoring information to provide a relative ranking of counties in and near an area. Using this methodology, scores were developed for each county in and around the relevant metro area. The county with the highest contribution potential was assigned a score of 100, and other county scores were adjusted in relation to the highest county. The CES represents the relative maximum influence that emissions in that county have on a violating county. The CES, which reflects consideration of multiple factors, should be considered in evaluating the weight of evidence supporting designation decisions for each area.

The CES for each county was derived by incorporating the following significant information and variables that impact $PM_{2.5}$ transport:

- Major $PM_{2.5}$ components: total carbon (organic carbon (OC) and elemental carbon (EC)), SO_2, NO_x, and inorganic particles (crustal).
- $PM_{2.5}$ emissions for the highest (generally top 5%) $PM_{2.5}$ emission days (herein called "high days") for each of two seasons, cold (Oct-Apr) and warm (May-Sept)
- Meteorology on high days using the NOAA HYSPLIT model for determining trajectories of air masses for specified days
- The "urban increment" of a violating monitor, which is the urban $PM_{2.5}$ concentration that is in addition to a regional background $PM_{2.5}$ concentration, determined for each $PM_{2.5}$ component
- Distance from each potentially contributing county to a violating county or counties

A more detailed description of the CES can be found at http://www.epa.gov/ttn/naaqs/pm/pm25_2006_techinfo.html#C.