UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

JUNE 29, 2004

REPLY TO THE ATTENTION OF:
R-19J

Honorable Joseph E. Kernan
Governor of Indiana
Indianapolis, Indiana 46204-2797

Dear Governor Kernan:

Fine-particle pollution represents one of the most significant barriers to clean air facing our nation today. These tiny particles - about 1/30th the diameter of a human hair - have been scientifically linked to serious human health problems. Their ability to be suspended in air for long periods of time makes them a public health threat far beyond the source of emissions. An important part of our nation's commitment to clean, healthy air deals with reducing levels of this fine-particle ($PM_{2.5}$) pollution.

We have reviewed your letter of February 15, 2004, and the letter of the same date from Lori Kaplan, Commissioner of the Indiana Department of Environmental Management (IDEM), submitting Indiana's recommendations on air quality designations for the $PM_{2.5}$ standard. We have also reviewed the technical information IDEM submitted to support Indiana's recommendations for areas that differed from the presumptive boundaries. We appreciate the effort the State has made to develop this supporting information. Consistent with the Clean Air Act, this letter is to notify you that, based upon the information contained in your submission and other available information, EPA intends to make modifications to Indiana's recommended designations and boundaries.

Your Environmental Commissioner will receive a copy of this letter with a more detailed enclosure containing a description of areas where EPA intends to modify your state recommendations, and the basis for such modification. Should you have additional information that you wish to be considered by the Environmental Protection Agency (EPA) in this process, we request that you provide it to us by September 1.

You will hear from us again in November when EPA takes the final step in the $PM_{2.5}$ designation process and determines those areas that are in attainment (or unclassifiable) and those areas that are nonattainment. For areas in attainment, the challenge will be not only to maintain, but also to continue the progress you

have made toward clean air. It is a commitment to no backsliding in your State's clean air status for fine particles. EPA will also issue a proposed fine particle implementation rule prior to final designations, which will allow you to proceed with planning to achieve clean air.

The Bush Administration is addressing fine particle pollution with a comprehensive national clean air strategy. This strategy includes EPA's recent rule to reduce pollution from nonroad diesel engines, and the proposed rule to reduce pollution from power plants in the Eastern United States. These two rules are important components of EPA's efforts to help States and localities meet the more protective national fine-particle and 8-hour ozone air quality standards. Together these rules will help all areas of the country achieve cleaner air.

If you have any questions, please do not hesitate to contact me. We look forward to a continued dialogue with you as we work together to implement the $PM_{2.5}$ standards.

Very truly yours,

Bharat Mathur,
Acting Regional Administrator

Enclosure

cc: Lori Kaplan, Commissioner
Indiana Department of Environmental Management

Christopher Jones, Director
Ohio Environmental Protection Agency

Renee Cipriano, Director
Illinois Environmental Protection Agency

Steven Chester, Director
Michigan Department of Environmental Quality

Review of Designations in Indiana
For the Particulate Matter Air Quality Standard

The following table identifies the individual areas and counties comprising those areas in Indiana that EPA intends to designate as nonattainment for the fine particulate matter ("$PM_{2.5}$") air quality standard. Following this table is 1) discussion of the general issue of the size of nonattainment areas, 2) a description of the data EPA examined, and 3) a discussion of each area and the basis for EPA's intended designations. EPA intends to designate as attainment/unclassifiable all counties or portions of counties not identified in the table below.

Area	**Indiana Counties in Metropolitan Area**	**Indiana Recommended Nonattainment Counties**	**EPA's Intended Nonattainment Counties**
Chicago-Northwest Indiana	Lake Porter	Lake	Lake Porter
Cincinnati	Dearborn Ohio	none	Dearborn-Lawrenceburg Township only
Elkhart	Elkhart	Elkhart	Elkhart Saint Joseph
Evansville	Vanderburgh Warrick Posey	Vanderburgh Dubois	Vanderburgh Warrick Dubois Gibson Pike Spencer
Indianapolis	Boone Hamilton Hancock Hendricks Johnson Madison Marion Morgan Shelby	Marion	Hamilton Hendricks Johnson Marion Morgan

Louisville	Clark Floyd Harrison Scott	Clark	Clark Floyd Jefferson

A. General Issue of Size of Nonattainment Areas

Indiana's recommendations for nonattainment areas included only counties that monitored nonattainment and did not include any additional counties that contributed to nonattainment. Indiana's submission noted several areas where relatively nearby monitors showed differing concentrations, for example Lake County monitoring nonattainment and Porter County monitoring attainment. Indiana deduces from this that the impacts of emissions within an area (added to large "background concentrations" arising from long range transport) are very localized. Therefore, Indiana concludes, counties lacking a monitored violation may be considered not to contribute to monitored violations in other counties.

EPA's guidance recommends a presumption for nonattainment areas that include entire metropolitan areas, reflecting a presumption that violations in a metropolitan area reflect contributions from the entire area. EPA's guidance states a recognition that violations of the $PM_{2.5}$ standard reflect both regional scale impacts from contributions originating outside the metropolitan area and more local scale impacts. Indeed, the different components of $PM_{2.5}$ have different ranges of impacts, with some components showing greatest impacts very close to the emissions sources, some components showing peak impacts at a moderate distance from the emissions (such as from rapid photochemical reactions), and some components showing similar impacts over distance ranges of hundreds of kilometers. Consequently, the existence of neighboring counties with somewhat different concentrations, like Lake County observing design values as high as 17.7 $\mu g/m^3$ versus the Porter County site having a design value of 13.8 $\mu g/m^3$, does not signify that emissions in the county with lower concentrations fails to contribute to the higher concentrations in the neighboring county.

Further considerations apply to mobile sources. By definition, these sources can be associated with a residence or business in one county but emit $PM_{2.5}$ and its precursors in another county. Some of the relevant control measures address the "home" of these vehicles. This consideration supports including counties that are the origin of sizable numbers of vehicles in the nonattainment area.

Indiana has not provided convincing evidence to rebut EPA's general presumption or the underlying view of the typical characteristics of the $PM_{2.5}$ problem, nor has Indiana demonstrated that the presumption does not apply in any Indiana areas. Therefore, EPA intends to include the additional counties that it believes contribute to the observed violations in the nonattainment areas it promulgates.

B. An Explanation of EPA's 9-Factor Analysis

Factor 1. Emissions in areas potentially included versus excluded from the nonattainment area:

The analysis for factor 1 looks at emissions of carbonaceous particles (carbon), inorganic particles (crustal), SO_2, and NOx. EPA computed a composite emission score for each county by multiplying the county's emissions as a fraction of the metropolitan area emissions for each of these pollutants times a corresponding air quality weighting factor. These scores for the metropolitan area counties add to 100. The air quality weighting factors for each area are given below and reflect the percentages of the total estimated "urban excess" value found as carbonaceous particles, miscellaneous inorganic particles (crustal material), ammonium sulfate, and ammonium nitrate. Tables presented under factor 1 provide the carbonaceous particles, inorganic particles, SO_2, and NOx emissions and the composite emission scores for the counties in the corresponding metropolitan area and adjacent counties. Emissions data are derived from the National Emissions Inventory and are for 2001, given in tons per year. Metropolitan area counties are in ***bold****. Emissions data indicate the potential for a county to contribute to observed violations, often making the emissions data the most important factor in assessing boundaries of nonattainment areas.*

"Urban excess" values are derived by comparing urban monitored component concentrations against rural monitored component concentrations. Concentrations of the four $PM_{2.5}$ components are obtained from local data if available or, if necessary, from the nearest available urban site, and are compared to available rural concentrations. The monitoring sites used for this purpose are identified below. Although this information is air quality information, it is presented under Factor 1 due to its integration into the analysis of emissions information.

Factor 2. Air quality in potentially included versus excluded areas:

The air quality analysis looks at the annual averaged design value for each area based on data for 2001 to 2003. Counties without monitors are not listed.

Factor 3. Population density and degree of urbanization including commercial development in included versus excluded areas:

Tables presented under factor 3 show the 2002 population for each metropolitan area, as well as the population density for each county in that area. Population density is listed in people per square mile. Population data indicate the likelihood of population-based emissions that might contribute to violations.

Factor 4. Traffic and commuting patterns:

A county with numerous commuters is generally an integral part of the area, and would be an appropriate part of the domain of some mobile source strategies, thus warranting inclusion in the nonattainment area. A table summarizes the vehicle miles traveled (VMT) in 2002 and the expected VMT growth between 2002-10 for each area. Information on the county to county commuting is also provided.

Factor 5. Growth:

The growth analysis looks at the percent growth for counties in each metropolitan area from 1990 to 2000.

Factor 6. Meteorology:

The meteorology analysis looks at wind data gathered over a ten year period by the National Weather Service. Tables presented under factor 6 list the year round average prevailing wind directions by quadrant for each county in the corresponding metropolitan area. This data shows that annual average $PM_{2.5}$ concentrations are influenced by emissions in any direction at various times, but these data may also suggest that emissions in some directions relative to the violation may be more prone to contribute than emissions in other directions. The meteorology data for the Indianapolis Metropolitan area differs from this standard form.

Factor 7. Geography/topography:

The geography/topography analysis looks at physical features of the land that might have an effect on the airshed, and therefore, the distribution of particulate matter over an area. The State

of Indiana has no such features that significantly influenced EPA's intended nonattainment areas.

Factor 8. Jurisdictional boundaries:

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

Factor 9. Level of control of emission sources:

The level of control analysis looks at what controls are currently implemented in each area.

C. 9-Factor Analysis for Chicago-Northwest Indiana

Discussion

The following is the nine factor analysis for the Indiana portion of the Chicago-Northwest Indiana area including adjacent counties in Indiana. The Chicago-Gary-Kenosha Metropolitan Area includes 10 counties in Illinois, two in Indiana and one in Wisconsin. Indiana recommended that Lake County, which has a violating monitor, be designated as nonattainment for $PM_{2.5}$, and that Porter County, which has a monitor showing attainment, be designated as attainment/unclassified. However, EPA intends to designate both Lake and Porter Counties as nonattainment.

Lake and Porter Counties both have high composite emissions scores. Although Porter County has a monitor which shows attainment, its emissions contribute to over 9% of the Chicago area composite emissions score largely as a result of significant power plant coal combustion and steel mill emissions as well as some emissions from mobile sources and other sources. The composite emissions scores from the adjacent counties are all modest. La Porte County, adjacent to the metropolitan area, is monitoring attainment of the annual $PM_{2.5}$ standard and is judged not to contribute to nonattainment in the Chicago-Northwest Indiana area.

In addition, Porter has a moderate population with over 150,000 residents and over 21,000 workers travel into Lake County on a daily basis, thereby contributing to Lake County monitored PM levels. There is limited commuting from Jasper, La Porte, and Newton Counties into the metropolitan area. Lake County experienced very little growth from 1990 to 2000. During this time, Porter County added nearly 18,000 people. Jasper County

growth rate was high, but even with the increase of 5,000 people, its population is still quite small for the area.

EPA considered the emissions, population, and vehicle miles traveled (VMT) from Newton, Jasper, and La Porte Counties, which are adjacent to Lake and Porter Counties. Based upon the emissions, populations, and VMT, EPA intends to designate these three counties as attainment/unclassified.

Other factors EPA reviewed are meteorology, geography, jurisdictional boundaries, and emission controls. The wind data presented below shows no dominant wind direction for Northwest Indiana. There are no geographical features in this area that would effect the distribution of $PM_{2.5}$. Lake and Porter Counties are both included in the Chicago ozone nonattainment area. La Porte County is in a separate ozone nonattainment area. All three counties make up the area's metropolitan planning organization. The state has not submitted any information on emission controls in Northwest Indiana.

Factor 1: Emissions

County	SO_2	NOx	Carbon	Crustal	Composite emissions score
Lake, IN	**50,110**	**72,142**	**5,708**	**7,588**	**19.5**
Porter, IN	**21,601**	**41,315**	**2,702**	**5,587**	**9.2**
Cook, IL	**61,676**	**195,428**	**10,110**	**8,268**	**33.0**
De Kalb, IL	**445**	**4,885**	**384**	**1,875**	**1.1**
Du Page, IL	**2,990**	**29,479**	**1,731**	**1,229**	**4.9**
Grundy, IL	**6,149**	**9,589**	**563**	**1,235**	**2.1**
Kane, IL	**1,395**	**9,490**	**1,047**	**2,326**	**2.8**
Kankakee, IL	**551**	**6,628**	**490**	**1,720**	**1.4**
Kendall, IL	**292**	**2,941**	**265**	**961**	**0.7**
Lake, IL	**14,223**	**24,488**	**2,092**	**1,777**	**6.7**
McHenry, IL	**637**	**5,834**	**564**	**1,992**	**1.6**
Will, IL	**80,847**	**37,518**	**1,447**	**4,120**	**11.7**
Kenosha, WI	**33,122**	**27,469**	**770**	**1,236**	**5.4**
Benton	101	1,326	215	724	0.6
Jasper	34,435	23,020	668	1,838	5.2

La Porte	10,974	19,681	826	1,643	3.3
Newton	89	1,321	160	642	0.4
Pulaski	111	1,187	196	667	0.5
Starke	100	2,852	188	551	0.5
White	188	2,495	292	1,185	0.8
Boone, IL	849	2,188	215	834	0.6
Ford, IL	219	1,462	216	1,280	0.6
Iroquois, IL	458	4,177	452	2,290	1.3
La Salle, IL	2,140	13,984	845	3,352	2.5
Lee, IL	3,978	4,793	345	1,722	1.3
Livingston,IL	503	4,686	485	2,413	1.3
Ogle, IL	672	4,985	335	1,536	1.1
Winnebago, IL	1,100	10,496	656	1,405	1.9
Racine, WI	2,309	7,252	662	890	1.9
Walworth, WI	866	5,693	470	908	1.3

All emissions are from the 2001 NEI and are in tons.
Metropolitan area counties are shown in **bold**.

Speciation profile for Chicago: 25% Sulfates, 8% Nitrates, 65% Carbon, and 2% Crustal derived by comparing data from site number 170310076 in Chicago against data from the Bondville monitor.

Factor 2: Air quality

County	2001-03 Design Value
Lake, IN	**17.7 μg/m^3**
Porter, IN	**13.8 μg/m^3**
Cook, IL	**17.3 μg/m^3**
Du Page, IL	**14.4 μg/m^3**
Kane, IL	**14.2 μg/m^3**
Lake, IL	**12.8 μg/m^3**
McHenry, IL	**12.7 μg/m^3**

Will, IL	**14.7 µg/m^3**
Kenosha, WI	**11.7 µg/m^3**
La Porte, IN	13.6 µg/m^3

Metropolitan area counties are shown in **bold.**

Jasper and Newton Counties do not have monitors.

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

County	2002 Population	Population Density
Lake, IN	**487,016**	**980**
Porter, IN	**150,403**	**360**
Cook, IL	**5,377,507**	**5684**
De Kalb, IL	**91,561**	**144**
Du Page, IL	**924,589**	**2768**
Grundy, IL	**38,839**	**92**
Kane, IL	**443,041**	**850**
Kankakee, IL	**104,657**	**154**
Kendall, IL	**61,222**	**191**
Lake, IL	**674,850**	**1506**
Mc Henry, IL	**277,710**	**460**
Will, IL	**559,861**	**669**
Kenosha, WI	**154,433**	**566**
Jasper	30,815	55
La Porte	110,384	185

Metropolitan area counties are shown in **bold.**

Factor 4: Traffic and commuting patterns

County	VMT	Growth	% Change
Lake, IN	**5,012,000**	**1,235,000**	**25 %**
Porter, IN	**1,680,000**	**38,000**	**14 %**
Cook, IL	**44,107,000**	**12,254,000**	**28 %**
De Kalb, IL	**729,000**	**-176,000**	**-24 %**

Du Page, IL	**6,609,000**	**1,971,000**	**30 %**
Grundy, IL	**530,000**	**-175,000**	**-33 %**
Kane, IL	**841,000**	**309,000**	**37 %**
Kankakee, IL	**889,000**	**281,000**	**32 %**
Kendall, IL	**278,000**	**34,000**	**12 %**
Lake, IL	**3,549,000**	**1,479,000**	**42 %**
Mc Henry, IL	**792,000**	**234,000**	**29 %**
Will, IL	**2,136,000**	**240,000**	**11 %**
Kenosha, WI	**1,228,000**	**318,000**	**26 %**
Jasper, IN	722,000	-261,000	-36 %
La Porte, IN	1,536,000	-343,000	-22 %

Metropolitan area counties are shown in **bold.**

Commuting Information:

	Porter	Jasper	La Porte	Illinois
Into Lake County	21,654	2,817	1,783	11,672
From Lake County	5,066	270	1,200	34,263

	Jasper	La Porte	Illinois
Into Porter County	988	4,238	524
From Porter County	363	3,390	5,273

Factor 5: Growth

County	% Population Change
Lake	**2 %**
Porter	**14 %**
Cook, IL	**-2 %**
De Kalb, IL	**5 %**
Du Page, IL	**1 %**
Grundy, IL	**2 %**
Kane, IL	**4 %**
Kankakee, IL	**7 %**
Kendall, IL	**-8 %**

Lake, IL	**-1 %**
Mc Henry, IL	**8 %**
Will, IL	**9 %**
Kenosha, WI	**-1 %**
Jasper	20 %
La Porte	3 %

Metropolitan area counties are shown in **bold**.

Factor 6: Meteorology

Year-round average wind direction for
Lake County, Indiana: 25% NW, 38% SW, 17% SE, 19% NE;
Porter County: 25% NW, 38% SW, 18% SE, 19% NE;

Factor 7: Geography/topography

The geography/topography analysis looks at physical features of the land that might have an effect on the airshed, and therefore, the distribution of particulate matter over an area. The State of Indiana has no features that significantly influenced EPA's intended nonattainment areas.

Factor 8: Jurisdictional boundaries

Lake and Porter Counties are both designated as nonattainment in the Chicago ozone nonattainment area. La Porte County is also designated as ozone nonattainment in its own area.

Northwestern Indiana Regional Planning Commission is the MPO for Lake (Indiana), La Porte, and Porter Counties.

Factor 9: Level of control of emission sources

Indiana has not submitted any information on emission controls in Northwest Indiana.

D. 9-Factor Analysis for the Cincinnati Area

Discussion
The Cincinnati Metropolitan Area includes five Ohio counties, six Kentucky counties, and two Indiana counties: Dearborn and Ohio. Indiana did not recommend either of their counties for nonattainment in the Cincinnati area. After considering all nine

factors for both counties, EPA intends to designate Lawrenceburg Township in Dearborn County as nonattainment. All other Dearborn County townships would be designated as attainment/unclassified.

Data was available for full counties only. Therefore, data is presented for all of Dearborn County. The county's main emissions sources are found in Lawrenceburg Township.

Dearborn County has significant emissions yielding a composite emissions score of 11.4. This score ranks third in the three State, 13 county metropolitan area. The wind, with a westerly component 63% of the time, commonly transports Dearborn County emissions east into the rest of the Cincinnati area.

Considering its modest population, a significant number of Dearborn County workers commute into the Ohio and Kentucky portions of the area. This shows that it is an integral part of the area. Dearborn County's Lawrenceburg Township is also included as a partial county in the Cincinnati ozone nonattainment area. The county is in Cincinnati's metropolitan planning organization as well.

Because emissions are relatively low for the counties adjacent to the metropolitan area, and no other factor warranted designating these counties nonattainment, the following data summaries for factors 3 through 9 do not display these counties.

Factor 1: Emissions

County	SO_2	NOx	Carbon	Crustal	Composite emission score
Dearborn, IN	**56,773**	**31,138**	**900**	**2,121**	**11.4**
Ohio, IN	**113**	**682**	**49**	**89**	**0.5**
Boone, KY	**14,717**	**15,794**	**721**	**1,068**	**7.7**
Campbell, KY	**860**	**5,294**	**285**	**260**	**2.8**
Gallatin, KY	**350**	**2,365**	**100**	**234**	**1.0**
Grant, KY	**210**	**2,664**	**182**	**191**	**1.8**
Kenton, KY	**1,573**	**8,365**	**415**	**301**	**4.2**
Pendleton, KY	**597**	**3,396**	**139**	**207**	**1.5**
Brown, OH	**395**	**2,927**	**208**	**520**	**2.0**
Butler, OH	**13,204**	**19,735**	**956**	**1,752**	**9.9**
Clermont,OH	**84,599**	**45,618**	**1,693**	**3,916**	**20.0**

Hamilton, OH	**88,053**	**58,398**	**2,780**	**3,873**	**30.3**
Warren, OH	**895**	**7,565**	**743**	**1,063**	**6.9**
Decatur	154	2,525	190	717	1.8
Fayette	150	1,426	156	392	1.4
Franklin	92	1,335	143	341	1.3
Ripley	140	2,081	221	507	2.0
Rush	140	1,274	177	814	1.6
Switzerland	251	1,554	101	145	1.0
Union	58	548	68	272	0.6

All emissions are from the 2001 NEI and are in tons.

Speciation profile for Cincinnati: 7% Sulfates, 15% Nitrates, 78% Carbon, 0% Crustal based on a comparison of data from site number 211170007 against data from the Livonia monitor.

Factor 2: Air quality

There are no $PM_{2.5}$ monitors in the Indiana portion of the Cincinnati area. The design value for the metropolitan area is 17.8 µg/m^3 from Hamilton County, Ohio. The following are design values for Cincinnati area counties in Ohio and Kentucky with monitors.

County	2001-2003 Design Value
Butler, OH	**16.2 µg/m^3**
Hamilton, OH	**17.8 µg/m^3**
Campbell, KY	**14.5 µg/m^3**
Kenton, KY	**15.0 µg/m^3**
Preble, OH	13.5 µg/m^3

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

County	2002 Population	Population Density

Dearborn, IN	47,333	155
Ohio, IN	5,804	67
Boone, KY	93,290	379
Campbell, KY	88,604	583
Gallatin, KY	7,836	79
Grant, KY	23,620	91
Kenton, KY	152,164	934
Pendleton, KY	14,815	53
Brown, OH	43,464	88
Butler, OH	340,543	729
Clermont, OH	183,352	406
Hamilton, OH	833,721	2048
Warren, OH	175,133	438

Factor 4: Traffic and commuting patterns

County	VMT	Growth	% Change
Dearborn	607,000	-55,000	-9 %
Ohio	56,000	64,000	114 %

Commuting Information:

	Ohio	Ripley	Hamilton, OH	Butler, OH	Boone, KY	Kenton, KY
Into Dearborn	906	1,082	1,335	163	350	244
From Dearborn	311	1,095	7,672	750	1,466	459

	Hamilton, OH	Boone, KY	Switzerland
Into Ohio County	87	25	393
From Ohio County	463	135	74

Factor 5: Growth

County	% Population Change
Dearborn	19%
Ohio	6%

Factor 6: Meteorology

Year-round average wind direction for Dearborn County, Indiana: 23% NW, 40% SW, 18% SE, 19% NE;

Factor 7: Geography/topography

The geography/topography analysis looks at physical features of the land that might have an effect on the airshed, and therefore, the distribution of particulate matter over an area. The State of Indiana has no features that significantly influenced EPA's intended nonattainment areas.

Factor 8: Jurisdictional boundaries

Lawrenceburg Township in Dearborn County is designated nonattainment for ozone as part of the Cincinnati ozone nonattainment area. The rest of this county and Ohio County are designated as attainment/unclassified for ozone.

The Ohio-Kentucky-Indiana Regional Council of Governments (OKI) is the Metropolitan Planning Organization (MPO) for Butler, Warren, Clermont, and Hamilton Counties in Ohio; Campbell, Kenton, and Boone Counties in Kentucky; and Dearborn County, Indiana.

Factor 9: Level of control of emission sources

Indiana has not submitted any information on emission controls in this area.

E. 9-Factor Analysis for Elkhart

Discussion

The Elkhart, Indiana Metropolitan Area consists solely of Elkhart County, which has a violating monitor. As a result of the violating monitor, Indiana recommended that it be designated as nonattainment. EPA also considered the impact of the surrounding seven counties. These counties in Indiana include Saint Joseph, Kosciusko, Marshall, Noble, Lagrange Counties (which Indiana recommended be designated as attainment for $PM_{2.5}$) and in Michigan include Saint Joseph and Cass Counties. Of the surrounding counties, EPA intends to designate Saint Joseph County, Indiana, as nonattainment and the remaining six counties as attainment/unclassified.

Over half of the composite emissions score for the eight counties is from Elkhart and Saint Joseph (IN) Counties. In fact, Saint Joseph County has the highest emissions score with emissions comparable to Elkhart County. In addition, Saint Joseph County has a large population with Elkhart County's population being slightly less. The vehicle miles traveled (VMT) was significant in both counties. There are a large number of Elkhart County workers commuting from Saint Joseph County. Although Saint Joseph County has a monitor showing attainment, the particulate matter emissions from Saint Joseph County would reasonably be expected to contribute to concentrations in Elkhart County. This is because Saint Joseph County is directly west of Elkhart County and the winds are from the northwest or southwest 64% of the time. Elkhart and Saint Joseph Counties are designated as a single nonattainment for the ozone standard. Also, both counties are in the same metropolitan planning organization, the Michiana Area Council of Government. EPA intends to designate the remaining six counties as attainment/unclassified because they have much lower emissions, population, and VMT than Elkhart and Saint Joseph Counties.

Factor 1: Emissions

County	SO_2	NOx	Carbon	Crustal	Composite emission score
Elkhart	**1,409**	**12,549**	**1,828**	**2,228**	**100.0**
Kosciusko	428	5,387	679	1,682	36.5
Lagrange	809	3,259	326	755	28.8
Marshall	463	3,569	621	1,322	33.6

Noble	390	3,740	457	1,302	26.6
Saint Joseph	2,850	13,690	1,482	1,825	114.1
Cass, MI	325	2,080	263	814	17.1
St Joseph, MI	744	4,212	427	1,775	32.5

Speciation profile for Elkhart: 25% Sulfates, 8% Nitrates, 65% Carbon, and 2% Crustal based on a comparison of data from site 170310076 (in Chicago) against data from the Bondville monitor. Adequate speciation data were not available from Elkhart.

Factor 2: Air quality

County	2001-03 Design Value
Elkhart	15.2 µg/m^3
Saint Joseph	14.3 µg/m^3

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

County	2002 Population	Population Density
Elkhart	186,465	402
Saint Joseph	267,120	585

Factor 4: Traffic and commuting patterns

County	VMT	Growth	% Change
Elkhart	2,087,000	615,000	29 %
Saint Joseph	2,304,000	1,037,000	45 %

Commuting Information:
29,756 people commuted into Elkhart County in 2002.
107,500 people lived and worked in Elkhart County in 2002.

	Saint Joseph
Into Elkhart County	10,850
From Elkhart County	3,722

Factor 5: Growth

County	% Growth 1990-2000
Elkhart	17 %
Saint Joseph	7 %

Factor 6: Meteorology

Year-round average wind direction for
Elkhart County: 25% NW, 39% SW, 19% SE, 16% NE;
Saint Joseph County: 25% NW, 39% SW, 20% SE, 16% NE;

Factor 7: Geography/topography

The geography/topography analysis looks at physical features of the land that might have an effect on the airshed, and therefore, the distribution of particulate matter over an area. The State of Indiana has no features that significantly influenced EPA's intended nonattainment areas.

Factor 8: Jurisdictional boundaries

Elkhart and Saint Joseph counties are designated as a joint nonattainment area for the ozone air quality standard.

The Michiana Area Council of Government is the MPO for Elkhart and Saint Joseph Counties.

Factor 9: Level of control of emission sources

Indiana has not submitted any information on emission controls in the Elkhart area.

F. 9-Factor Analysis for Evansville

Discussion

The Evansville Metropolitan Area includes Warrick, Posey and Vanderburgh Counties in Indiana and Henderson County in Kentucky. In addition, numerous adjacent counties were considered, particularly the Counties of Gibson, Pike, Dubois and Spencer. Both Vanderburgh and Dubois Counties have violating monitors and were recommended by Indiana to be designated as nonattainment for the $PM_{2.5}$ standard. EPA also intends to designate Gibson, Pike, Spencer, and Warrick Counties as nonattainment.

Gibson, Spencer, Pike, and Warrick Counties have the highest emission levels in the Evansville area. Emissions of both direct $PM_{2.5}$ and precursors are high for these counties, resulting in their high composite emission scores. Dubois and Vanderburgh Counties have design values exceeding the $PM_{2.5}$ standard of 15.0 $\mu g/m^3$, despite their more modest emissions. Spencer County, Indiana, and Daviess County, Kentucky are monitoring below the standard while the rest of the Evansville area and adjacent counties have no monitors.

Vanderburgh County is home to a majority of the Evansville area population. Commuting patterns show a connection between Vanderburgh County and Gibson, Posey, and Warrick Counties. Dubois County receives a significant number of commuters from Pike and Spencer Counties. Population growth was modest for all counties being considered.

Gibson and Pike Counties are located north of Vanderburgh County and west of Dubois County. Spencer and Warrick Counties are east of Vanderburgh County and south of Dubois County. The meteorological data presented under Factor 6 indicates no prevailing wind direction. The location of the area counties and the varied wind directions mean that Vanderburgh County or Dubois County will commonly be downwind from at least some of the high emissions counties.

EPA believes that the high emissions in several counties in the area are a common factor in the violations recorded in both Vanderburgh and Dubois Counties. Therefore, EPA intends to designate these two violating counties and the other four counties that contribute to these violations as a single nonattainment area, to be identified as the Evansville nonattainment area.

Gibson, Pike, and Spencer Counties are adjacent to the Evansville Metropolitan Area and contain power plants with significant emissions that contribute to the violations in the Evansville/Dubois County area. We have included such counties in our initial recommendations in order to ensure that a sufficient portion of these counties, including such large facilities, is included within the boundaries of the nonattainment area as part of the final designations. You may wish to recommend an alternative Evansville nonattainment area that includes these emissions but includes only a portion of these counties.

Factor 1: Emissions

County	SO_2	NOx	Carbon	Crustal	Composite emission score
Posey	**18,715**	**14,866**	**595**	**1,308**	**19.5**
Vanderburgh	**1,421**	**9,538**	**1,550**	**1,337**	**17.5**
Warrick	**102,206**	**28,647**	**1,655**	**4,940**	**52.3**
Henderson, KY	**6,308**	**8,075**	**418**	**971**	**10.7**
Crawford	536	3,842	161	137	4.3
Daviess	328	1,542	179	621	24.2
Dubois	1,694	5,665	1,037	995	11.3
Gibson	148,808	46,937	1,767	6,093	76.3
Martin	110	797	193	252	1.9
Perry	789	3,102	195	257	4.0
Pike	63,626	28,567	745	2,209	39.4
Spencer	57,983	38,521	1,107	3,124	49.5

All emissions are from the 2001 NEI and are in tons. Metropolitan area counties are shown in **bold**.

Speciation profile for Evansville: 20% Sulfates, 51% Nitrates, 23% Carbon, and 6% Crustal based on a comparison of data from site number 210590014 (in Owensboro) against data from the Mammoth Cave monitor.

Factor 2: Air quality

County	2001-03 Design Value
Vanderburgh	**15.5 µg/m^3**
Henderson, KY	**14.0 µg/m^3**
Dubois	16.2 µg/m^3
Spencer	14.4 µg/m^3
Daviess, KY	14.9 µg/m^3

There are no monitors in Gibson, Pike, Posey, or Warrick Counties.

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

County	2002 Population	Population Density
Posey	**26,990**	**66**
Vanderburgh	**171,744**	**731**
Warrick	**53,624**	**140**
Henderson, KY	**44,995**	**102**
Dubois	40,015	93
Gibson	32,590	67
Pike	12,908	38
Spencer	20,353	51

Metropolitan area counties are shown in **bold.**

Factor 4: Traffic and commuting patterns

County	VMT	Growth	% Change
Posey	**508,000**	**-63,000**	**-12 %**

Vanderburgh	**1,732,000**	**552,000**	**32 %**
Warrick	**828,000**	**-166,000**	**-20 %**
Henderson, KY	**510,000**	**271,000**	**53 %**
Dubois	479,000	39,000	8 %
Gibson	429,000	70,000	17 %
Pike	178,000	104,000	58 %
Spencer	392,000	47,000	12 %

Metropolitan area counties are shown in **bold**.

Commuting Information:
29,553 people commuted into Vanderburgh County in 2002.
104,660 people lived and worked in Vanderburgh County in 2002.

	Warrick	Posey	Gibson	Spencer	Pike	Dubois
Into Vanderburgh	14,522	5,484	3,509	1,056	393	178
From Vanderburgh	1,891	1,355	1,696	103	39	84

8,101 people commuted into Dubois County in 2002.
26,873 people lived and worked in Dubois County in 2002.

	Spencer	Pike	Gibson	Warrick
Into Dubois	1,494	1,653	236	293
From Dubois	393	124	173	48

Factor 5: Growth

County	% Growth 1990-2000
Posey	**4 %**
Vanderburgh	**4 %**
Warrick	**17 %**
Henderson, KY	**4 %**

Dubois	8 %
Gibson	2 %
Pike	3 %
Spencer	5 %

Metropolitan area counties are shown in **bold**.

Factor 6: Meteorology

Year-round average wind direction for
Vanderburgh County: 30% NW, 30% SW, 21% SE, 19% NE;
Dubois County: 27% NW, 30% SW, 22% SE, 20% NE;

Factor 7: Geography/topography

The geography/topography analysis looks at physical features of the land that might have an effect on the airshed, and therefore, the distribution of particulate matter over an area. The State of Indiana has no features that significantly influenced EPA's intended nonattainment areas.

Factor 8: Jurisdictional boundaries

Vanderburgh and Warrick Counties are designated as nonattainment for the ozone NAAQS. All other area counties are designated as attainment/unclassified.

The MPO for Vanderburgh and Warrick Counties is the Evansville Urban Transportation Study.

Factor 9: Level of control of emission sources

Indiana has not submitted any information on emission controls in this area.

G. 9-Factor Analysis for Indianapolis

Discussion

The Indianapolis Metropolitan Area includes nine Indiana counties: Boone, Hamilton, Hancock, Hendricks, Johnson, Madison, Marion, Morgan, and Shelby. Indiana recommended designating Marion County as nonattainment of the $PM_{2.5}$ standard.

The monitors in Marion County are showing a violation of the standard. Madison County's monitor indicates concentrations below the annual $PM_{2.5}$ standard of 15.0 $\mu g/m^3$. No other area counties have monitored air quality data. The Indianapolis area has one central county, Marion County, ringed by the other eight counties. The eight outlying counties are all a similar distance from the central county with no intermediate counties. This configuration allows the EPA to consider a combination of emissions and wind data to estimate each county's potential contributions to violation of the annual $PM_{2.5}$ standard in Marion County. A description of the methods for assessing this information is given along with the Indianapolis area emissions data below. EPA believes that this approach provides a fine tuned comparison of the potential of each of the counties surrounding Marion County to contribute to the violations recorded in Marion County.

Marion County contributes about 50 percent of the emissions of the metropolitan area (on a composite emissions basis). Consistent with its intended designations elsewhere, EPA believes that this indicates that more than just Marion County contributes to the violations, and that the planning area for evaluating strategies must include a greater fraction of emissions in the area.

The wind-weighted emissions information suggest that Hamilton, Hendricks, Johnson, Madison, Morgan and Shelby Counties have significant potential to contribute to violations in Marion County. Conversely, this information suggests that Boone and Hancock have somewhat limited potential to contribute to violations in Marion County.

EPA further examined the proximity of the emissions in the surrounding to the violations in Marion County and commuting and growth information. None of the Indianapolis urbanized area as defined by the U.S. Census Bureau is in Madison or Shelby Counties. As a result, Madison and Shelby Counties have less growth and less commuting into Marion County than other counties that are more integrally part of the Indianapolis area. Much of the population and emissions in Madison and Shelby Counties are in Anderson and Shelbyville, respectively. Thus, these emissions

are at a greater distance from the violations in Marion County than the other counties, for which population and emissions tend to be concentrated at the edge of Marion County.

For these reasons, EPA believes that Hamilton, Hendricks, Johnson, Marion, and Morgan Counties contribute to the violations in Marion County and should be designated nonattainment. For these reasons, EPA believes that Boone, Hancock, Madison, and Shelby Counties do not contribute and should be designated attainment/unclassified. EPA also concluded that none of the numerous counties that are outside but adjacent to the Indianapolis Metropolitan Area should be considered to contribute to the violations in Marion County.

Factor 1: Emissions

Given the unique geography of the Indianapolis area, EPA calculated a wind-weighted emissions score as well as a composite emissions score for the Indianapolis area. The wind data used in calculating the wind-weighted score reflect the frequency of winds in the Indianapolis area from each of 16 directions. This data is provided under factor 6 below.

The wind-weighted score is calculated as follows: for each of the eight counties surrounding Marion County, EPA identified the direction for which the winds would blow most directly over Marion County, and tabulated the sum of the frequency of winds for that direction and the two adjacent directions among the set of 16 directions. This frequency of being upwind was multiplied times the composite score to obtain a preliminary wind-weighted composite emissions score. These eight preliminary scores added up to 8.7. For Marion County, EPA retained the unweighted composite emissions score of 50.6. EPA then normalized the scores of the surrounding scores to add up to 49.4. Each county score was multiplied by $^{49.4}/_{8.7}$, yielding the wind-weighted emissions score. The total of the wind-weighted emissions scores for all 9 counties is 100.

The EPA derived wind-weighted emissions scores reflect the variability of frequency of winds from different directions. This process seeks to assess more precisely the relative potential impacts of the counties in the Indianapolis area. The following table has the SO_2, NOx, carbon, and crustal emissions, the composite emissions scores, along with the wind-weighted emissions scores for the nine counties in the Indianapolis area.

Emissions data and composite emissions scores are also provided for counties adjacent to the Indianapolis Metropolitan Area. All emissions are from the 2001 NEI and are in tons.

County	SO_2	NOx	Carbon	Crustal	Composite emissions score	Wind-weighted emissions score
Boone	224	3,468	297	988	3.1	3.1
Hamilton	5,215	9,251	730	1,635	8.0	6.2
Hancock	338	3,936	395	1,022	3.8	2.8
Hendricks	773	5,802	593	1,596	5.7	6.8
Johnson	338	5,165	416	918	4.4	5.0
Madison	934	8,106	884	1,548	8.3	6.0
Marion	49,549	52,848	4,891	4,429	50.6	50.6
Morgan	17,343	8,303	554	1,362	7.0	11.3
Shelby	329	6,212	1,141	1,277	9.1	8.2
Bartholomew	520	5,309	659	1,382	5.9	—
Brown	46	828	132	131	1.1	—
Clay	243	2,057	209	641	2.0	—
Clinton	411	2,614	246	1,061	2.5	—
Decatur	154	2,525	190	717	2.1	—
Delaware	1,548	6,353	593	1,019	5.9	—
Fayette	150	1,426	156	392	1.5	—
Fountain	167	2,109	395	1,311	3.1	—
Grant	1,280	5,341	381	1,135	4.3	—
Henry	291	3,919	707	1,243	5.7	—
Jackson	260	3,427	341	533	3.3	—
Jefferson	39,599	33,990	549	1,368	11.2	—
Jennings	233	1,589	208	408	1.8	—
Monroe	2,168	4,852	545	647	5.1	—
Montgomery	1,072	4,099	691	1,213	5.7	—

Owen	100	1,052	118	273	1.1	—
Parke	125	3,140	389	571	3.5	—
Putnam	2,643	6,116	230	548	3.7	—
Randolf	494	2,731	232	968	2.4	—
Ripley	140	2,081	221	507	2.1	—
Rush	140	1,274	177	814	1.5	—
Scott	100	1,515	151	236	1.5	—
Tippecanoe	11,434	9,922	1,632	2,345	13.8	—
Tipton	81	1,040	158	730	1.3	—
Wayne	13,919	5,951	589	1,498	6.2	—

Speciation profile for Indianapolis: 3% Sulfates, 38% Nitrates, 59% Carbon, and 0% Crustal based on a comparison of data from site 180970078 against data from the Livonia monitor.

Factor 2: Air quality

County	2001-03 Design Value
Madison	14.6 $\mu g/m^3$
Marion	16.7 $\mu g/m^3$

There are no monitors in Boone, Hamilton, Hancock, Hendricks, Johnson, Morgan, and Shelby Counties.

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

County	2002 Population	Population Density
Boone	48,277	114
Hamilton	205,610	517
Hancock	58,343	191

Hendricks	114,301	280
Johnson	121,604	380
Madison	132,068	292
Marion	863,429	2,180
Morgan	67,791	167
Shelby	43,674	106

Factor 4: Traffic and commuting patterns

County	VMT	Growth	% Change
Boone	752,000	-160,000	-21 %
Hamilton	1,807,000	-81,000	-5 %
Hancock	732,000	-2,000	0 %
Hendricks	1,240,000	6,000	0 %
Johnson	1,368,000	-8,000	-1 %
Madison	1,601,000	457,000	29 %
Marion	9,983,000	3,260,000	33 %
Morgan	913,000	17,000	2 %
Shelby	641,000	-30,000	-5 %

Commuting Information:
189,804 people commuted into Marion County in 2002.
489,449 people lived and worked in Marion County in 2002.

	Into Marion	From Marion
Boone	9,905	990
Hamilton	46,440	10,958
Hancock	15,700	1,487
Hendricks	33,009	4,602

Johnson	29,458	4,917
Madison	6,603	755
Morgan	15,749	807
Shelby	5,664	663

Factor 5: Growth

County	%Growth 1990-2000
Boone	21 %
Hamilton	68 %
Hancock	22 %
Hendricks	37 %
Johnson	31 %
Madison	2 %
Marion	8 %
Morgan	19 %
Shelby	8 %

Factor 6: Meteorology

Indianapolis Airport wind data for 1984 to 1992 (9 year average, all seasons):

N	5.07 %
NNE	4.11 %
NE	4.35 %
ENE	4.31 %
E	3.76 %
ESE	4.96 %
SE	5.95 %

SSE	4.94 %
S	7.22 %
SSW	7.76 %
SW	11.38 %
WSW	9.20 %
W	5.82 %
WNW	6.13 %
NW	6.27 %
NNW	5.43 %
Calm	3.34 %

Wind directions for each county used in computing wind-weighted emissions scores:

County	Wind Directions		
Boone	NNW	NW	WNW
Hamilton	N	NNE	NE
Hancock	ENE	E	ESE
Hendricks	WSW	W	WNW
Johnson	SSE	S	SSW
Madison	NNE	NE	ENE
Morgan	SSW	SW	WSW
Shelby	ESE	SE	SSE

Factor 7: Geography/topography

The geography/topography analysis looks at physical features of the land that might have an effect on the airshed, and therefore, the distribution of particulate matter over an area. The State of Indiana has no features that significantly influenced EPA's intended nonattainment areas.

Factor 8: Jurisdictional boundaries

Boone, Hamilton, Hancock, Hendricks, Johnson, Madison, Marion, Morgan, and Shelby Counties are all designated as nonattainment for the ozone air quality standard.

The Indianapolis Metropolitan Planning Organization (MPO) serves Boone, Hamilton, Hancock, Hendricks, Johnson, Marion, Morgan, and Shelby Counties.

Factor 9: Level of control of emission sources

Indiana has not submitted any information on emission controls in the Indianapolis area.

H. 9-Factor Analysis for the Louisville Area

Discussion

The Louisville Metropolitan Area includes three Kentucky counties and Clark, Floyd, Harrison, and Scott Counties in Indiana. Several counties adjacent to the metropolitan area were evaluated, especially Jefferson County, Indiana. Indiana recommended designating Clark County as nonattainment of the $PM_{2.5}$ standard. EPA intends to designate Clark, Floyd, and Jefferson Counties as nonattainment.

The monitor in Clark County is showing a violation of the standard. Floyd County's monitor is just below the annual $PM_{2.5}$ standard of 15 $\mu g/m^3$. The emissions from both Floyd and Clark Counties are significant, with Floyd County's emissions being greater. Jefferson County, Indiana also has a substantial level of emissions. There are relatively low emissions from Harrison and Scott Counties.

The population in Clark and Floyd Counties dominates the Indiana population in the area. All metropolitan area counties had a similar growth rate. There is significant commuting between Clark and Floyd Counties and from both counties into the Kentucky portion of the Louisville area. Commuting from Harrison and Scott Counties to the rest of the metropolitan area is modest. There is very limited commuting from Jefferson County, Indiana.

Meteorological data shows the wind is from the northeast about 21% of the time. Jefferson County, Indiana is located northeast of Clark and Floyd Counties. EPA believes that winds blow sufficiently frequent from the northeast and emissions from Jefferson County, Indiana, are sufficient that Jefferson County should be considered to contribute to violations in Louisville. Clark and Floyd Counties are included in the Louisville area ozone designations and with its metropolitan planning organization. The state has not provided any information on emission controls in the Indiana portion of the Louisville area.

Jefferson County is adjacent to the Louisville Metropolitan Area and contains a power plant with significant emissions that contribute to the violations in the Louisville Metropolitan Area. We have included such counties in our initial recommendations in order to ensure that a sufficient portion of these counties, including such large facilities, is included within the boundaries of the nonattainment area as part of the final designations. You may wish to recommend an alternative Louisville nonattainment area that includes these emissions but includes only a portion of these counties.

Factor 1: Emissions

County	SO_2	NOx	Carbon	Crustal	Composite emissions score
Clark	**484**	**4,960**	**725**	**773**	**12.2**
Floyd	**47,796**	**10,282**	**954**	**2,301**	**16.4**
Harrison	**419**	**3,677**	**305**	**466**	**5.3**
Scott	**100**	**1,515**	**151**	**236**	**2.6**
Bullitt, KY	**343**	**3,463**	**433**	**379**	**7.3**
Jefferson, KY	**62,526**	**81,398**	**2,817**	**3,816**	**51.5**
Oldham, KY	**529**	**3,707**	**271**	**475**	**4.7**
Crawford	536	3,842	161	137	2.9
Jefferson	39,599	33,990	549	1,368	11.2
Jennings	233	1,589	208	408	3.5
Lawrence	4,330	5,707	376	909	6.5

Orange	86	2,017	171	286	2.9
Perry	789	3,102	195	257	3.4
Washington	136	1,452	380	119	3.1
Anderson, KY	443	1,535	144	180	2.5
Breckinridge, KY	321	2,592	260	288	4.4
Carroll, KY	53,086	26,269	821	2,177	15.2
Franklin, KY	601	3,059	217	273	3.8
Grayson, KY	412	1,532	235	341	4
Green, KY	104	507	103	151	1.7
Hardin, KY	1,774	7,695	524	644	2.1
Hart, KY	162	1,839	188	193	3.2
Henry, KY	156	1,465	125	288	1.8
Larue, KY	186	768	108	180	4.0
Marion, KY	143	801	147	225	2.5
Meade, KY	661	4,551	227	439	5.0
Nelson, KY	497	2,134	296	463	4.0
Owen, KY	57	572	126	105	2.1
Shelby, KY	397	2,906	231	446	1.7
Spencer, KY	31	393	102	174	4.6
Taylor, KY	632	3,642	172	221	3.1
Trimble, KY	7,998	8,458	249	506	2.9
Washington, KY	115	618	110	157	1.8

All emissions are from the 2001 NEI and are in tons.
Metropolitan area counties are in **bold**.

Speciation profile for Louisville: 0% Sulfates, 7% Nitrates, 93% Carbon, and 0% Crustal based on a comparison of data from site number 211110043 (in Louisville) against data from the Livonia monitor.

Factor 2: Air quality

County	2001-03 Design Value
Clark	**16.2 µg/m^3**
Floyd	**14.9 µg/m^3**
Bullitt, KY	**15.0 µg/m^3**
Jefferson, KY	**16.9 µg/m^3**

There are no monitors in Harrison, Scott, and Jefferson Counties in Indiana.

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

County	2002 Population	Population Density
Clark	**98,198**	**262**
Floyd	**71,633**	**484**
Harrison	**35,244**	**73**
Scott	**23,334**	**123**
Bullitt	**63,800**	**213**
Jefferson	**698,080**	**1813**
Oldham	**49,310**	**261**
Jefferson	32,113	89

Factor 4: Traffic and commuting patterns

County	VMT	Growth	% Change
Clark	**1,262,000**	**144,000**	**11 %**
Floyd	**843,000**	**292,000**	**35 %**
Harrison	**528,000**	**79,000**	**15 %**
Scott	**364,000**	**-89,000**	**-25 %**
Bullitt, KY	**849,000**	**-178,000**	**-21 %**
Jefferson, KY	**7,149,000**	**4,398,000**	**62 %**

Oldham, KY	**507,000**	**2,000**	**0 %**
Jefferson	331,000	26,000	8 %

Commuting Information:

	Floyd	Harrison	Scott	Jefferson, IN	Kentucky
Into Clark County	5,224	1,376	866	198	780
From Clark County	4,591	530	316	775	16,582

	Harrison	Scott	Jefferson, IN	Kentucky
Into Floyd County	2,073	223	39	466
From Floyd County	921	66	492	12,647

Factor 5: Growth

County	% Growth 1990-2000
Clark, IN	**10%**
Floyd, IN	**10%**
Harrison, IN	**15%**
Scott, IN	**9%**
Bullitt, KY	**29%**
Jefferson, KY	**4%**
Oldham, KY	**39%**
Jefferson, IN	6%

Factor 6: Meteorology

Year-round average wind direction for
Clark County, Indiana: 22% NW, 33% SW, 24% SE, 21% NE;
Floyd County, Indiana: 22% NW, 32% SW, 25% SE, 21% NE;

Factor 7: Geography/topography

The geography/topography analysis looks at physical features of the land that might have an effect on the airshed, and therefore, the distribution of particulate matter over an area. The States of Indiana and Kentucky have no features that significantly influenced EPA's intended nonattainment areas.

Factor 8: Jurisdictional boundaries

Clark and Floyd Counties are designated as nonattainment in the Louisville ozone nonattainment area. Harrison, Scott, and Jefferson Counties in Indiana are designated as attainment/ unclassified.

The Kentuckiana Regional Planning and Development Agency serves as the Metropolitan Planning Organization (MPO) for Clark and Floyd Counties in Indiana.

Factor 9: Level of control of emission sources

Indiana has not submitted any information on emission controls in this area.

I. Analysis for the Muncie Area

Discussion

The Muncie area consists of Delaware County, Indiana. EPA intends to designate Delaware County as unclassifiable for the $PM_{2.5}$ standard. This represents a modification of the State's recommendation that this county be designated attainment/unclassifiable.

Data must be collected for at least 75% of the scheduled days in a calendar quarter to meet the completeness criteria for showing attainment.

Muncie has a single $PM_{2.5}$ monitor which is scheduled to sample on every third day. In the first quarters of 2001 and 2003, this monitor recorded less than 75 percent of the scheduled values but more than 11 samples. EPA policy states that this quantity of

data is insufficient to label an area as attainment, insofar as the data are considered complete. On the other hand, EPA policy states that this quantity of data is sufficient to label an area nonattainment, with the data being considered complete in this case. The following are the 3-year average values recorded at this site.

County	2000-02 Design Value	2001-03 Design Value
Delaware	15.1 $\mu g/m^3$	14.3 $\mu g/m^3$

The annual $PM_{2.5}$ standard is 15.0 $\mu g/m^3$.

Under EPA policy, the data for 2000 to 2002 are considered complete, and the data for 2001 to 2003 are considered incomplete. On the other hand, the most recent data suggest that the area is attaining the standard. Therefore, EPA concludes that it cannot currently judge the most appropriate designation for this area. EPA intends to promulgate either a nonattainment or an attainment/unclassifiable designation for this area once further data are available. EPA will consult further with the State once the necessary data become available.