Tate, Michele 2683

RECEIVED

2008 JUN 27 AM 10: 17

INDEPENDENT REGULATORY
REVIEW COMMISSION

From: Faeth, Steve [sfaeth@ppg.com]
Sent: Monday, June 23, 2008 3:56 PM
To: RegComments@state.pa.us
Subject: PPG's Comments On Proposed NOx Rule

Dear Sir or Madam,

Attached are PPG Industries, Inc.'s comments on the Pennsylvania Department of Environmental Protection's proposed regulations for the reduction of NOx emissions from glass melting furnaces published April 19, 2008 in the Pennsylvania Bulletin, 38 Pa.B. 1831. For your convenience, hard copies of the cover letter and attachments are being submitted via overnight mail.

If you have any questions, please contact me.

Steven F. Faeth

Steven F. Faeth | PPG Industries, Inc. | Senior Counsel EHS | 412.434.3799 |
sfaeth@ppg.com

(412) 434-3799
Fax: (412) 434-4291
Steven F. Faeth
Senior Counsel
sfaeth@ppg.com

June 23, 2008

Via Electronic and Overnight Mail
Environmental Quality Board
Rachel Carson State Office Building, 16th Floor
400 Market Street
Harrisburg, PA 17101-2301

Re: Comments Regarding the Proposed Rule to Control NOx Emissions from Glass Melting Furnaces (25 Pa. Code Chapters 121, 129)

Dear Sir or Madam:

This letter and the attachments hereto are the comments of PPG Industries, Inc. ("PPG") on the proposed rule for the control of nitrogen oxides ("NOx") emissions from glass melting furnaces, published in the Pennsylvania Bulletin on April 19, 2008, 38 Pa.B. 1831 (the "Proposed Rule"). Air modeling studies performed on behalf of PPG establishes that PPG's glass manufacturing facilities in Meadville and Carlisle Pennsylvania do not materially contribute to the inability to meet air quality standards for ozone. Accordingly, PPG questions the legal authority of the Pennsylvania Department of Environmental Protection ("DEP") and the Pennsylvania Environmental Quality Board ("EQB") to require these facilities to significantly reduce NOx emissions of under the authority of the Pennsylvania Air Pollution Control Act, 35 P.S. §§ 4001—4015. Notwithstanding the foregoing, PPG believes that the inclusion of a variance procedure, as discussed more fully below and in Attachment 4 to these comments, can effectively address concerns over economic waste while recognizing the value of effective environmental regulation.

PPG, headquartered in Pittsburgh, Pennsylvania is a leading manufacturer of glass products that are used in a variety of architectural (e.g., homes and commercial buildings) and transportation (e.g., automobiles and aircraft) applications. PPG is also a world leader in the development of innovative glass technologies, many of which provide significant environmental benefits such as energy savings. PPG maintains four flat glass furnaces in the Commonwealth, two in Carlisle and two in Meadville, providing a combined total of approximately 727 jobs and a combined payroll of approximately $39 million. Throughout every aspect of its business, PPG maintains a strong commitment to public health, the environment and sustainability.

With regard to the EQB's Proposed Rule to control emissions of NOx from glass melting furnaces, PPG believes that the Proposed Rule is arbitrarily and unreasonably over-

inclusive. Air modeling studies performed on behalf of PPG establish that NOx emissions from PPG's Meadville and Carlisle facilities do not contribute to the formation of material or measurable amounts of ground level ozone at any area within the Northeast Ozone Transport Region that has failed to attain compliance with the National Ambient Air Quality Standards for ozone. Accordingly, the DEP and EQB do not have the legal authority to require PPG to reduce NOx emissions from its Meadville and Carlisle facilities.

In early 2007, when DEP first announced its intention to propose regulations for the reduction of NOx emissions from glass furnaces, PPG retained Energy and Environmental Management, Inc. ("E^2M") to conduct modeling studies on NOx emissions from PPG's Meadville and Carlisle facilities. The results of these studies are summarized in two separate letter reports dated April 10, 2007, copies of which are attached hereto as Attachments 1 and 2. These studies evaluated NOx emissions from the Meadville and Carlisle facilities based on emission data for the 2002 calendar year and metrological data for the 2002 and 2003 calendar years.[1] The results of the dispersion modeling studies established that the level of NOx emissions from the Meadville and Carlisle facilities as projected for the nearest ozone non-attainment areas would be below the Significant Impact Level for NOx established by the United States Environmental Protection Agency and that the expected impact on the formation of ground-level ozone in any non-attainment area would be virtually nil. PPG presented the results of these dispersion modeling studies to DEP in the spring of 2007. According to DEP, PPG's dispersion modeling for NOx did not account for the complexities associated with atmospheric chemistry in the formation of ozone.

In the spring of 2008, PPG retained E^2M to conduct an atmospheric chemistry model to further evaluate the impacts of NOx emissions from the Meadville and Carlisle facilities. E^2M, in conjunction with Environ International Corporation ("Environ") and Alpine Geophysics, LLC, used the Community Multiscale Air Quality Model, the same model used by the Regional Planning Organization, to determine what, if any, impact NOx emissions from PPG's Meadville and Carlisle facilities would have on the formation of ground-level ozone in the nearest ozone non-attainment areas. The results of this modeling study (the "Multiscale Modeling Study") are presented in a report dated June 22, 2008 by E^2M which contains a report dated May 19, 2008 from Environ, copies of which are included in Attachment 3 to these comments. The Multiscale Modeling Study

[1] In September, 2002, during a cold repair at the end of a furnace campaign, PPG converted one furnace at the Meadville facility to an oxygen fuel firing system. The conversion of this furnace to oxy fuel has resulted in a significant reduction of NOx emissions from this facility. The NOx dispersion modeling performed by E^2M in 2007 was based on actual 2002 emissions data which only partially accounted for the facility's lower NOx emission rate. Thus, at current and future NOx emission rates with the existing oxygen fuel system, PPG's Meadville facility will have an even smaller impact on air quality than that which is projected by the NOx dispersion modeling study performed in 2007 and the Community Multiscale Air Quality Modeling Study performed in 2008.

was performed using 2002 emissions data for both the Meadville and Carlisle facilities. These emission profiles were compared to projected emissions for 2009 based upon "beyond on-the-way" projections. The Multiscale Modeling Study for PPG's Meadville facility established that based on 2002 emissions data, the NOx emissions from this facility do not contribute to the formation of ground-level ozone at any non-attainment area in Pennsylvania or any of the surrounding states.[2] The Multiscale Modeling Study also established that the NOx emissions from PPG's Carlisle facility do not contribute to the formation of ground level ozone in any non-attainment area outside of Pennsylvania and within Pennsylvania there is, at most, a trace level contribution. Moreover, since the Multiscale Modeling Study was performed under essentially "worst case" conditions, the potential impact from the Carlisle facility on air quality at any non-attainment area under normal conditions would be virtually nil.

Because PPG's Meadville and Carlisle facilities do not contribute to the failure of any non-attainment area to comply with National Ambient Air Quality Standards for ozone, there is no legal basis to require significant reductions in NOx emissions from these facilities. Regulating sources that do not affect the 8-hour ozone attainment demonstration of any area within the Northeast Ozone Transport Region, at great expense, violates 2 Pa. Const. Stat. § 102 and is therefore unlawful, unnecessary for the protection of public health and the environment, and economically wasteful. *See Com v. DeFusco*, 378 Pa.Super. 442, 445 549 A.2d 140, 141 (1998) ("It is well-settled that an administrative regulation must be consistent with the statute under which it was promulgated."); *see also North American Oil & Gas Drilling Co. Inc. v. Department of Environmental Resources*, 1991 EHB 46, 1991 WL 59362 (Pa.Env.Hrg.Bd. 1991) (denying summary judgment because the Pennsylvania Department of Environmental Resources failed to address North American's contentions that the regulation was not consistent with enabling statute and that regulation was unreasonable, arbitrary and capricious because the regulation placed excessive economic burden on owners and operators of brine wells).

However, as an alternative to excluding PPG's facilities from the Proposed Rule, and in the interest of protecting public health and the environment while at the same time avoiding inefficient and economically harmful overregulation of businesses committed to environmental protection, PPG urges the EQB to revise the Proposed Rule to allow for a variance procedure. As discussed below, PPG requests the inclusion of a reasonable variance procedure in the Proposed Rule to allow proactive, environmentally-committed glass furnace operators to avoid the unnecessary economic burden that flows from the Proposed Rule when the emission reductions that would be achieved through the

[2] As noted above, actual emissions from 2002 for the Meadville facility do not account for the significant reduction in NOx emissions since the installation of the oxy fuel system. Thus, the projected impacts, or lack thereof, from the Meadville facility would be even less if the 2002 emissions data would have included an entire year of operation with the oxy fuel system.

regulation will not further the goal of nonattainment areas achieving compliance with air quality standards.

The EQB has the authority to grant such a variance. *See* 35 P.S. § 4005(a)(9) ("The board shall have the power and its duty shall be to . . . [a]dopt rules and regulations to exempt sources or categories of sources of minor significance from the provisions of section [400]6.1."), and such a variance procedure is consistent with federal law. For example, under the federal Regional Haze Regulations, an exemption is permitted if it is determined that a source, through monitoring or modeling projections, "does not or will not, by itself or in combination with other sources, emit any air pollutant which may be reasonably anticipated to cause or contribute to a significant impairment of visibility in any mandatory Class I Federal area." 40 C.F.R. § 51.303(a). Thus, if successful, the owner or operator is exempt from the best available retrofit technology ("BART") requirements under the Regional Haze Regulations. This exemption indicates that uniform application of air quality regulations is inappropriate in cases where a facility is not adversely affecting air quality.

Therefore, PPG proposes that a variance be permitted from the Proposed Rule if the applicant demonstrates that: (1) it is economically unreasonable for the applicant to comply with the requirements of the Proposed Rule; (2) the public interest is best served by granting the variance; and (3) the applicant's current operations do not materially contribute to the failure to meet air quality standards for ozone in the Northeast Ozone Transport Region A proposed variance procedure that PPG requests be included in the Proposed Rule is attached to this letter as Attachment 4.

PPG meets the proposed standard for granting a variance. First, the potential costs to PPG to meet the requirements of the Proposed Rule are enormous. In 2002, PPG voluntarily installed an oxygen firing system on one of its two furnaces at the Meadville facility at a capital cost of approximately $29 million. Assuming facilities are allowed to average emissions among sources at the same facility, further capital costs to comply with the Proposed Rule at Meadville are estimated to be a minimum of approximately $500,000.[3] To meet the requirements of the Proposed Rule at the Carlisle facility, PPG expects it would have to spend approximately $10.5 million to $31 million, assuming the facility is allowed to average emissions across both furnaces operated at the facility.[4] These costs are unreasonable in light of the demonstrated fact that emissions from

[3] As presently drafted, the Proposed Rule allows facilities to average emissions among sources under common ownership. PPG supports this approach and believes that averaging emissions from multiple sources under common ownership is consistent with the Pennsylvania Air Pollution Control Act and the federal Clean Air Act.

[4] Because of the types of products manufactured at the Carlisle facility, it is likely that the Carlisle facility would be forced to utilize selected catalytic reduction or some other control measure other than an oxy fuel system. Although the selected catalytic reduction control system has a smaller initial capital cost, the annual cost of operating the system would be approximately $500,000.

these sources do not adversely impact the ability of any non-attainment area to meet air quality standards for ozone.

PPG recognizes that Section 309(a) of the Proposed Rule provides for a demonstration of compliance via the purchase of annual NOx allowances. However, the EQB has provided no information regarding the availability or cost of NOx emission allowances. PPG believes that the cost of compliance with the Proposed Rule, even via the purchase of annual NOx emission allowances, could easily approach the costs to control each furnace. Data obtained from a leading broker of NOx emission allowances in the Northeast Ozone Transport Region, Evolution Markets, indicate that in the last 12 months, CAIR annual NOx allowances have traded for as much as $6,000 per allowance, with seasonal allowances trading in the range of $800 per allowance. Again, in light of the demonstration discussed above, that emissions from PPG facilities do not contribute significantly to the formation of ground level ozone in any non-attainment area, incurring these costs is not reasonable.

In addition to the proposed variance procedure discussed above, PPG has reviewed the Proposed Rule and requests that the EQB consider the specific section-by-section comments on the Proposed Rule attached to this letter as Attachment 5. Finally, a one page summary of these comments is attached to this letter as Attachment 6.

PPG has a strong commitment to the protection of human health and the environment as well as a desire to conduct its business in the Commonwealth in the most economically efficient manner possible. PPG's glass manufacturing operations in Pennsylvania and elsewhere in the United States are facing tremendous economic pressure from low-cost glass producers in other parts of the world. In order for the flat glass industry to remain viable in Pennsylvania, it is imperative that the economic burdens of the Proposed Rule be considered against the contributions that would be achieved toward the stated goal of helping areas that currently fail to meet air quality standards for ozone to achieve compliance within a reasonable timeframe. Where a facility can demonstrate that the NOx reductions that will be achieved through this regulation will not, in any measurable or material way, advance the objective of the regulation, the regulation should exclude such facility or, at a minimum, include a

variance procedure such as the procedure described above in order for the regulation to be fair, reasonable and lawful.

PPG appreciates the opportunity to comment on this Proposed Rule.

Sincerely,

Steven F. Faeth
Senior Counsel

Attachments

Energy & Environmental Management, Inc.
P.O. Box 376 Harrison City, PA 15636-0376 (724)744-7170 FAX (724)744-0265

April 10, 2007 E^2M-512-07

Mr. Timothy R. Cobaugh
Director, EHS Glass & Fiber Glass
PPG Industries, Inc.
4325 Rosanna Drive
Allison Park, PA 15101-1423

Dear Tim:

We met at your office on February 5, 2007 to discuss impacts of emissions of nitrogen oxides (NOx) from your Meadville, Pennsylvania Plant. You wanted to know the level of impact of your NOx emissions at the nearest 8-hour ozone non-attainment area. This letter presents results of the dispersion modeling to address that question.

BACKGROUND

Each state that contains an 8-hour ozone non-attainment area must submit a full State Implementation Plan (SIP) with dispersion modeling by this summer or submit a redesignation request to attainment based on monitoring data and other analyses. Pennsylvania is no exception. The Federal Register has frequent submittals for redesignation for Pennsylvania and neighboring states. The nearest 8-hour ozone non-attainment area to your Meadville Plant is Chautauqua County, New York. The New York DEC is preparing a full modeling SIP for that County. Location of Chautauqua County with respect to your Meadville Plant is shown in Figure 1.

PROTOCOL

The Meadville Plant is located in Crawford County, which is in northwestern Pennsylvania. The area is relatively flat. The dispersion model, AERMOD Version 07026, was selected for this analysis because it is the EPA preferred model, will use nearby National Weather Service meteorological data, and has no intervening terrain between the meteorological data source, the emission source and the receptors.

Meteorological data from the Erie, Pennsylvania Airport for 1990 through 1995 were used in this analysis. These data were available in Hourly United States Weather Observations (HUSWO) format from the National Climatic Data Center. The data were processed using AERMET Version 06341. The program AERSURFACE was used to develop the input values for the third stage of AERMET. Table 1 shows the output from AERSURFACE.

Receptors for the dispersion model were selected on a 1-kilometer grid within Chautauqua County. AERMAP Version 06341 was used to prepare the receptor file.

The input file for AERMOD is presented in Table 2. Downwash was determined by using the EPA program BPIPPRM Version 04274. Stack parameters and emission rates were provided by PPG at the February 5 meeting.

RESULTS

AERMOD was run for the six year period. Maximum impacts for each year are listed in Table 3. Results are presented for 1-hour, 3-hour, 8-hour, 24-hour and annual periods for each year. The period of interest would be the 8-hour period to coincide with the 8-hour ozone values. EPA has not provided guidance on the level of NOx that would be significant during an 8-hour ozone violation.

However, EPA has provided guidance on nitrogen dioxide (NO_2) Significant Impact Levels (SIL). An annual value of 1.0 ug/m^3 is the SIL for NO_2. The NOx values in Table 3 can be converted to NO_2 by using a 0.75 multiplication factor as per 40 CFR Part 51, Appendix W, Section 6.2.4. Maximum annual NO_2 values are less than 0.02 ug/m^3, which is significantly less than the SIL of 1.0 ug/m^3. Therefore, NOx impacts are not EPA Significant.

Please call me if you have any questions.

Sincerely,

Larry L. Simmons

Larry L. Simmons, PE
Principal

cc: C-631

LLS/das

TABLE 1

AERSURFACE PARAMETERS FOR ERIE, PENNSYLVANIA AIRPORT

Title Line in 0.25 Km cell size geo.dat = Geo Dat file centered on Erie Airport

geo.dat file = erie.geo
SW UTM corner (E-W) of geo.dat file = 563.500
SW UTM corner (N-S) of geo.dat file = 4654.750
numb of E-W cells = 32 & numb of N-S cells = 32
study area centroid east UTM coordinate = 568.125
study area centroid north UTM coordinate = 4658.984
radius of interest (km) = 3.00

Mean Albedo = 0.16
Mean Bowen ratio = 1.07
Mean Roughness (m) = 0.6238

	Albedo	Bowen	Rough
sector 01 = 000 to 030 =	0.18	1.20	0.6939
sector 02 = 030 to 060 =	0.17	1.32	0.8792
sector 03 = 060 to 090 =	0.18	1.04	0.5371
sector 04 = 090 to 120 =	0.18	1.06	0.5074
sector 05 = 120 to 150 =	0.14	1.00	0.5505
sector 06 = 150 to 180 =	0.14	1.03	0.5128
sector 07 = 180 to 210 =	0.13	1.01	0.6512
sector 08 = 210 to 240 =	0.15	1.09	0.6519
sector 09 = 240 to 270 =	0.16	1.11	0.6553
sector 10 = 270 to 300 =	0.16	1.14	0.7079
sector 11 = 300 to 330 =	0.15	0.91	0.5203
sector 12 = 330 to 360 =	0.14	0.94	0.6157

insert this section into the AERMET ST3.INP file if not using sector averages

```
FREQ_SECT ANNUAL 1
SECTOR 1 000 360
SITE_CHAR 1 1     0.16     1.07   0.6238
```

insert this section into the AERMET ST3.INP file if using sector averages

```
FREQ_SECT ANNUAL 12
SECTOR 01 000 030
SECTOR 02 030 060
SECTOR 03 060 090
SECTOR 04 090 120
SECTOR 05 120 150
SECTOR 06 150 180
SECTOR 07 180 210
SECTOR 08 210 240
SECTOR 09 240 270
SECTOR 10 270 300
SECTOR 11 300 330
SECTOR 12 330 360
SITE_CHAR 1 01     0.18     1.20   0.6939
SITE_CHAR 1 02     0.17     1.32   0.8792
SITE_CHAR 1 03     0.18     1.04   0.5371
SITE_CHAR 1 04     0.18     1.06   0.5074
SITE_CHAR 1 05     0.14     1.00   0.5505
SITE_CHAR 1 06     0.14     1.03   0.5128
SITE_CHAR 1 07     0.13     1.01   0.6512
SITE_CHAR 1 08     0.15     1.09   0.6519
SITE_CHAR 1 09     0.16     1.11   0.6553
SITE_CHAR 1 10     0.16     1.14   0.7079
SITE_CHAR 1 11     0.15     0.91   0.5203
SITE_CHAR 1 12     0.14     0.94   0.6157
```

TABLE 2

1990 AERMOD NOX INPUT FILE FOR PPG MEADVILLE PLANT

```
CO STARTING
CO TITLEONE PPG Meadville Glass Plant NOx impact in Chautauqua County, NY 1990
CO TITLETWO actual emissions from stack tests
CO MODELOPT  DFAULT  CONC
CO AVERTIME  1 3 8 24 PERIOD
CO POLLUTID  OTHER
CO RUNORNOT  RUN
CO FINISHED

SO STARTING
SO ELEVUNIT  METERS
**
** PPG Meadville Plant NOx -- Furnace No. 1 Low NOx technology
SO LOCATION MEAD1N POINT    565537.0  4598097.0      405.97
** Point Source          QS        HS      TS      VS       DS
** Parameters:        -------    -----  ------  ------   ------
SO SRCPARAM MEAD1N     2.8224    32.78   446.5    8.99     2.44
SO BUILDHGT MEAD1N    16.46   16.46   16.46   16.46   14.32   14.32
SO BUILDHGT MEAD1N    16.46   16.46   16.46   16.46   16.46   16.46
SO BUILDHGT MEAD1N    16.46   16.46   16.46   16.46   16.46   16.46
SO BUILDHGT MEAD1N    16.46   16.46   16.46   16.46   14.32   14.32
SO BUILDHGT MEAD1N    16.46   16.46   16.46   16.46   16.46   16.46
SO BUILDHGT MEAD1N    16.46   16.46   16.46   16.46    0.00    0.00
SO BUILDWID MEAD1N    88.05   90.89  114.76  100.18  139.07  108.58
SO BUILDWID MEAD1N    34.42   27.84   20.42   26.82   33.44   39.05
SO BUILDWID MEAD1N    43.47   46.57   48.25   90.89   88.05   82.53
SO BUILDWID MEAD1N    88.05   90.89  114.76  100.18  139.07  108.58
SO BUILDWID MEAD1N    34.42   27.84   20.42   26.82   33.44   39.05
SO BUILDWID MEAD1N    43.47   46.57   48.25   90.89    0.00    0.00
SO BUILDLEN MEAD1N    52.73   64.87  125.33  138.19  217.39  227.06
SO BUILDLEN MEAD1N    48.47   47.22   44.53   47.40   48.83   48.77
SO BUILDLEN MEAD1N    47.24   44.27   39.95   64.87   52.73   38.99
SO BUILDLEN MEAD1N    52.73   64.87  125.33  138.19  217.39  227.06
SO BUILDLEN MEAD1N    48.47   47.22   44.53   47.40   48.83   48.77
SO BUILDLEN MEAD1N    47.24   44.27   39.95   64.87    0.00    0.00
SO XBADJ    MEAD1N    22.16    8.14   -6.13  -20.21  -33.68  -46.12
SO XBADJ    MEAD1N    10.30   14.38   18.03   17.76   16.96   15.64
SO XBADJ    MEAD1N    13.84   11.63    9.06  -95.23  -86.18  -74.50
SO XBADJ    MEAD1N   -74.89  -73.01 -119.20 -117.98 -183.71 -180.94
SO XBADJ    MEAD1N   -58.77  -61.60  -62.56  -65.16  -65.79  -64.41
SO XBADJ    MEAD1N   -61.08  -55.89  -49.01   30.37    0.00    0.00
SO YBADJ    MEAD1N    41.55   49.35   43.75   54.30   34.95   47.11
SO YBADJ    MEAD1N   -23.42  -17.10  -10.26   -2.59    4.63   11.71
SO YBADJ    MEAD1N    18.44   24.61   30.03  -11.72  -22.45  -32.50
SO YBADJ    MEAD1N   -41.55  -49.35  -43.75  -54.30  -34.95  -47.11
SO YBADJ    MEAD1N    23.42   17.10   10.26    2.59   -4.63  -11.71
SO YBADJ    MEAD1N   -18.44  -24.61  -30.03   11.72    0.00    0.00
**
SO LOCATION MEAD1S POINT    565536.0  4598086.0      405.97
** Point Source          QS        HS      TS      VS       DS
** Parameters:        -------    -----  ------  ------   ------
SO SRCPARAM MEAD1S     2.7594    32.78   446.5    8.99     2.44
SO BUILDHGT MEAD1S     0.00   16.46   16.46   16.46   16.46   16.46
SO BUILDHGT MEAD1S    16.46   16.46   16.46   16.46   16.46   16.46
SO BUILDHGT MEAD1S    16.46   16.46   16.46   16.46   16.46   16.46
SO BUILDHGT MEAD1S    16.46   16.46   16.46   16.46   16.46   16.46
SO BUILDHGT MEAD1S    16.46   16.46   16.46   16.46   16.46   16.46
SO BUILDHGT MEAD1S    16.46   16.46   14.32    0.00    0.00    0.00
SO BUILDWID MEAD1S     0.00   90.89  114.76   47.24   44.27   39.95
SO BUILDWID MEAD1S    34.42   27.84   20.42   26.82   33.44   39.05
SO BUILDWID MEAD1S    43.47   88.28   90.97   90.89   88.05   82.53
```

TABLE 2 (Continued)

```
SO BUILDWID MEAD1S    88.05   90.89  114.76   47.24   44.27   39.95
SO BUILDWID MEAD1S    34.42   27.84   20.42   26.82   33.44   39.05
SO BUILDWID MEAD1S    43.47   88.28  227.06    0.00    0.00    0.00
SO BUILDLEN MEAD1S     0.00   64.87  125.33   43.47   46.57   48.25
SO BUILDLEN MEAD1S    48.47   47.22   44.53   47.40   48.83   48.77
SO BUILDLEN MEAD1S    47.24   82.92   75.03   64.87   52.73   38.99
SO BUILDLEN MEAD1S    52.73   64.87  125.33   43.47   46.57   48.25
SO BUILDLEN MEAD1S    48.47   47.22   44.53   47.40   48.83   48.77
SO BUILDLEN MEAD1S    47.24   82.92  108.58    0.00    0.00    0.00
SO XBADJ    MEAD1S     0.00   18.82    3.90    5.77    9.16   12.27
SO XBADJ    MEAD1S    15.00   17.28   19.03   16.84   14.14   11.01
SO XBADJ    MEAD1S     7.54 -112.27 -110.43 -105.23  -96.84  -85.50
SO XBADJ    MEAD1S   -85.90  -83.69 -129.23  -49.24  -55.73  -60.52
SO XBADJ    MEAD1S   -63.47  -64.50  -63.56  -64.24  -62.97  -59.78
SO XBADJ    MEAD1S   -54.78   29.35    1.84    0.00    0.00    0.00
SO YBADJ    MEAD1S     0.00   52.17   48.38  -31.16  -25.98  -20.01
SO YBADJ    MEAD1S   -13.43   -6.44    0.74    8.41   15.31   21.74
SO YBADJ    MEAD1S    27.51   18.30    5.73   -7.02  -19.55  -31.50
SO YBADJ    MEAD1S   -42.48  -52.17  -48.38   31.16   25.98   20.01
SO YBADJ    MEAD1S    13.43    6.44   -0.74   -8.41  -15.31  -21.74
SO YBADJ    MEAD1S   -27.51  -18.30  -73.77    0.00    0.00    0.00
**
** PPG Meadville Plant NOx -- Furnace No. 2
SO LOCATION MEAD2  POINT    565540.0  4598191.0      405.97
** Point Source          QS        HS      TS      VS      DS
** Parameters:        -------    -----  ------  ------  ------
SO SRCPARAM MEAD2     47.4264    32.78   427.3   23.96    2.44
SO BUILDHGT MEAD2     16.46   16.46   16.46   16.46   16.46   16.46
SO BUILDHGT MEAD2     16.46   16.46   16.46   16.46   16.46   16.46
SO BUILDHGT MEAD2     16.46   16.46   16.46   16.46   16.46   16.46
SO BUILDHGT MEAD2     16.46   16.46   16.46   16.46   16.46   16.46
SO BUILDHGT MEAD2     16.46   16.46   16.46   16.46   16.46   16.46
SO BUILDHGT MEAD2     16.46   16.46   16.46   16.46   16.46   16.46
SO BUILDWID MEAD2     88.05   90.89   90.97   47.24   44.27   39.95
SO BUILDWID MEAD2     34.42   27.84   20.42   26.81   33.43   39.04
SO BUILDWID MEAD2     43.46   46.56   48.25   90.89   88.05   82.53
SO BUILDWID MEAD2     88.05   90.89   90.97   47.24   44.27   39.95
SO BUILDWID MEAD2     34.42   27.84   20.42   26.81   33.43   39.04
SO BUILDWID MEAD2     43.46   46.56   48.25   90.89   88.05   82.53
SO BUILDLEN MEAD2     52.73   64.87   75.03   43.46   46.56   48.25
SO BUILDLEN MEAD2     48.47   47.22   44.53   47.40   48.83   48.77
SO BUILDLEN MEAD2     47.24   44.27   39.95   64.87   52.73   38.99
SO BUILDLEN MEAD2     52.73   64.87   75.03   43.46   46.56   48.25
SO BUILDLEN MEAD2     48.47   47.22   44.53   47.40   48.83   48.77
SO BUILDLEN MEAD2     47.24   44.27   39.95   64.87   52.73   38.99
SO XBADJ    MEAD2    -70.93  -81.22  -89.03    0.58    3.90    7.09
SO XBADJ    MEAD2     10.07   12.74   15.03   13.50   11.55    9.26
SO XBADJ    MEAD2      6.68    3.90    1.00   -7.93    5.87   19.50
SO XBADJ    MEAD2     18.20   16.35   14.00  -44.05  -50.46  -55.34
SO XBADJ    MEAD2    -58.54  -59.96  -59.56  -60.90  -60.38  -58.03
SO XBADJ    MEAD2    -53.92  -48.17  -40.95  -56.94  -58.60  -58.49
SO YBADJ    MEAD2     28.18   20.02   11.24  -30.30  -26.03  -20.98
SO YBADJ    MEAD2    -15.28   -9.13   -2.69    4.34   10.72   16.77
SO YBADJ    MEAD2     22.31   27.18   31.22  -46.69  -41.73  -35.49
SO YBADJ    MEAD2    -28.18  -20.02  -11.24   30.30   26.03   20.98
SO YBADJ    MEAD2     15.28    9.13    2.69   -4.34  -10.72  -16.77
SO YBADJ    MEAD2    -22.31  -27.18  -31.22   46.69   41.73   35.49
**
   EMISUNIT    .100000E+07 (GRAMS/SEC)      (MICROGRAMS/CUBIC-METER)
   SRCGROUP ALL
SO FINISHED

RE STARTING
   INCLUDED  CHAUTAUQUANY.REC
```

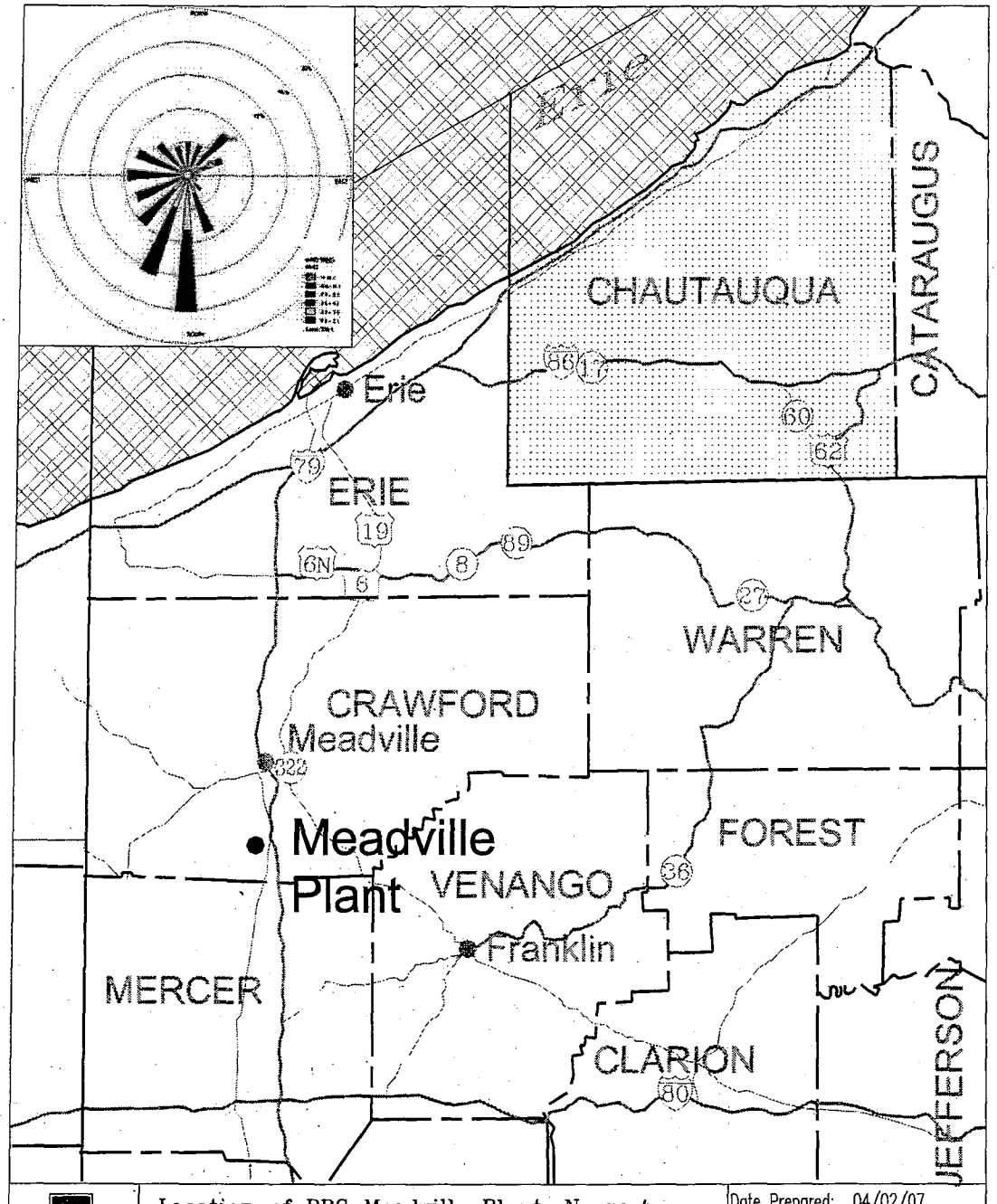
TABLE 2 (Continued)

```
RE FINISHED

ME STARTING
ME SURFFILE  ERIEPA90.SFC
ME PROFFILE  ERIEPA90.PFL
ME SURFDATA     14860  1990  ERIE,PA
ME UAIRDATA     94823  1990  PITTSBURGH,PA
ME PROFBASE  222.5  METERS
ME FINISHED

OU STARTING
OU RECTABLE  ALLAVE  FIRST-SECOND
OU FINISHED
```

TABLE 3

MAXIMUM PPG MEADVILLE NOX IMPACTS IN CHAUTAUQUA COUNTY, NEW YORK AT ACTUAL EMISSIONS

Year	Period	NOx (ug/m^3)	UTM Coord (m) East	UTM Coord (m) North	YrMoDaHr
1990	1-Hr	8.39308	605000.	4659000.	90052501
1991		8.75911	603000.	4652000.	91081304
1992		6.45129	603000.	4660000.	92010323
1993		8.81551	639000.	4662000.	93031001
1994		9.58051	614000.	4652000.	94122702
1995		9.90802	603000.	4653000.	95021621
1990	3-Hr	2.79995	605000.	4659000.	90052503
1991		5.32524	605000.	4659000.	91071203
1992		2.15237	603000.	4660000.	92010324
1993		2.93976	639000.	4662000.	93031003
1994		3.19461	614000.	4652000.	94122703
1995		3.30483	603000.	4653000.	95021621
1990	8-Hr	1.32675	604000.	4665000.	90052808
1991		1.99808	605000.	4659000.	91071208
1992		0.81041	603000.	4660000.	92010324
1993		1.27338	604000.	4665000.	93063008
1994		1.91318	614000.	4652000.	94122708
1995		1.47965	605000.	4659000.	95121524
1990	24-Hr	0.39868	604000.	4665000.	90052824
1991		0.67388	605000.	4659000.	91071224
1992		0.27036	603000.	4660000.	92010324
1993		0.38933	610000.	4653000.	93051624
1994		0.59154	614000.	4652000.	94122724
1995		0.54470	609000.	4652000.	95041624
1990	Annual	0.01802	603000.	4653000.	
1991		0.02103	603000.	4653000.	
1992		0.01599	603000.	4653000.	
1993		0.01704	603000.	4668000.	
1994		0.02538	603000.	4653000.	
1995		0.02391	603000.	4653000.	



Location of PPG Meadville Plant, Nearest 8-Hour Ozone Non-Attainment Area Receptors and Erie, PA 1990 Wind Rose	Date Prepared: 04/02/07	
	Scale: none	
	Drawing Name: meadville	
Energy & Environmental Management, Inc.	Code: C631	Figure No.: 1

Energy & Environmental Management, Inc.
P.O. Box 376 Harrison City, PA 15636-0376 (724)744-7170 FAX (724)744-0265

April 10, 2007 E²M-513-07

Mr. Timothy R. Cobaugh
Director, EHS Glass & Fiber Glass
PPG Industries, Inc.
4325 Rosanna Drive
Allison Park, PA 15101-1423

Dear Tim:

We met at your office on February 5, 2007 to discuss impacts of emissions of nitrogen oxides (NOx) from your Carlisle, Pennsylvania Plant. You wanted to know the level of impact of your NOx emissions at the nearest 8-hour ozone non-attainment area. This letter presents results of the dispersion modeling to address that question.

BACKGROUND

Each state that contains an 8-hour ozone non-attainment area must submit a full State Implementation Plan (SIP) with dispersion modeling by this summer or submit a redesignation request to attainment based on monitoring data and other analyses. Pennsylvania is no exception. The Federal Register has frequent submittals for redesignation for Pennsylvania and neighboring states.

Although not on the Pennsylvania web site yet, Pennsylvania will declare all of Pennsylvania attainment for the 8-hour standard except the Philadephia area. This area consists of Bucks, Chester, Delaware, Montgomery and Philadelphia Counties. A telephone conversation with personnel at the Maryland Department of the Environment revealed that at least four counties on the state line will remain non-attainment. These counties in Maryland are Baltimore, Carroll, Cecil and Harford. Locations of the nine non-attainment counties with respect to your Carlisle Plant are shown in Figure 1.

PROTOCOL

The Carlisle Plant is located in Cumberland County, which is in south central Pennsylvania. The area is intersected by a series of mountain ridges that result in complex meteorological flow patterns for the area. The dispersion model, AERMOD Version 07026, is the EPA preferred model but might not perform well in this situation because of the complex meteorological flow patterns. The model, CALPUFF Version 5.754, was selected for this analysis because of its ability to incorporate complex meteorological flow patterns.

Meteorological data in CALMET format were provided by the VISTAS program. Those data for 2002 and 2003 were used in this analysis. These meteorological files were prepared by VISTAS using MM5 data supplemented by local airport data.

Receptors for the dispersion model were selected on a 1-kilometer grid within each of the nine non-attainment counties. AERMAP Version 06341 was used to prepare the receptor file and then reformatted for use with CALPUFF.

The input file for one year of CALPUFF runs is presented in Attachment 1. Downwash was determined by using the EPA program BPIPPRM Version 04274. Stack parameters and emission rates were provided by PPG at the February 5 meeting.

RESULTS

CALPUFF was run for the two year period. Maximum impacts for each year are listed in Table 1 for Pennsylvania and in Table 2 for Maryland. Results are presented for 1-hour, 3-hour, 24-hour and annual periods for each year. The period of interest would be the 8-hour period to coincide with the 8-hour ozone values. CALPOST does not provide an 8-hour post-processing option. We must look at the 3-hour and 24-hour values to interpolate an 8-hour value. Unfortuneately, EPA has not provided guidance on the level of NOx that would be significant during an 8-hour ozone violation.

However, EPA has provided guidance on nitrogen dioxide (NO2) Significant Impact Levels (SIL). An annual value of 1.0 ug/m^3 is the SIL for NO2. The NOx values in Tables 1 and 2 can be converted to NO2 by using a 0.75 multiplication factor as per 40 CFR Part 51, Appendix W, Section 6.2.4. The maximum annual NOx value occurred in Carroll County, Maryland at 0.18 ug/m^3. The corresponding annual NO2 values would be 0.14 ug/m^3, which is significantly less than the SIL of 1.0 ug/m^3. Therefore, NOx impacts are not EPA Significant.

Please call me if you have any questions.

Sincerely,

Larry L. Simmons

Larry L. Simmons, PE
Principal

cc: C631

LLS/das

TABLE 1

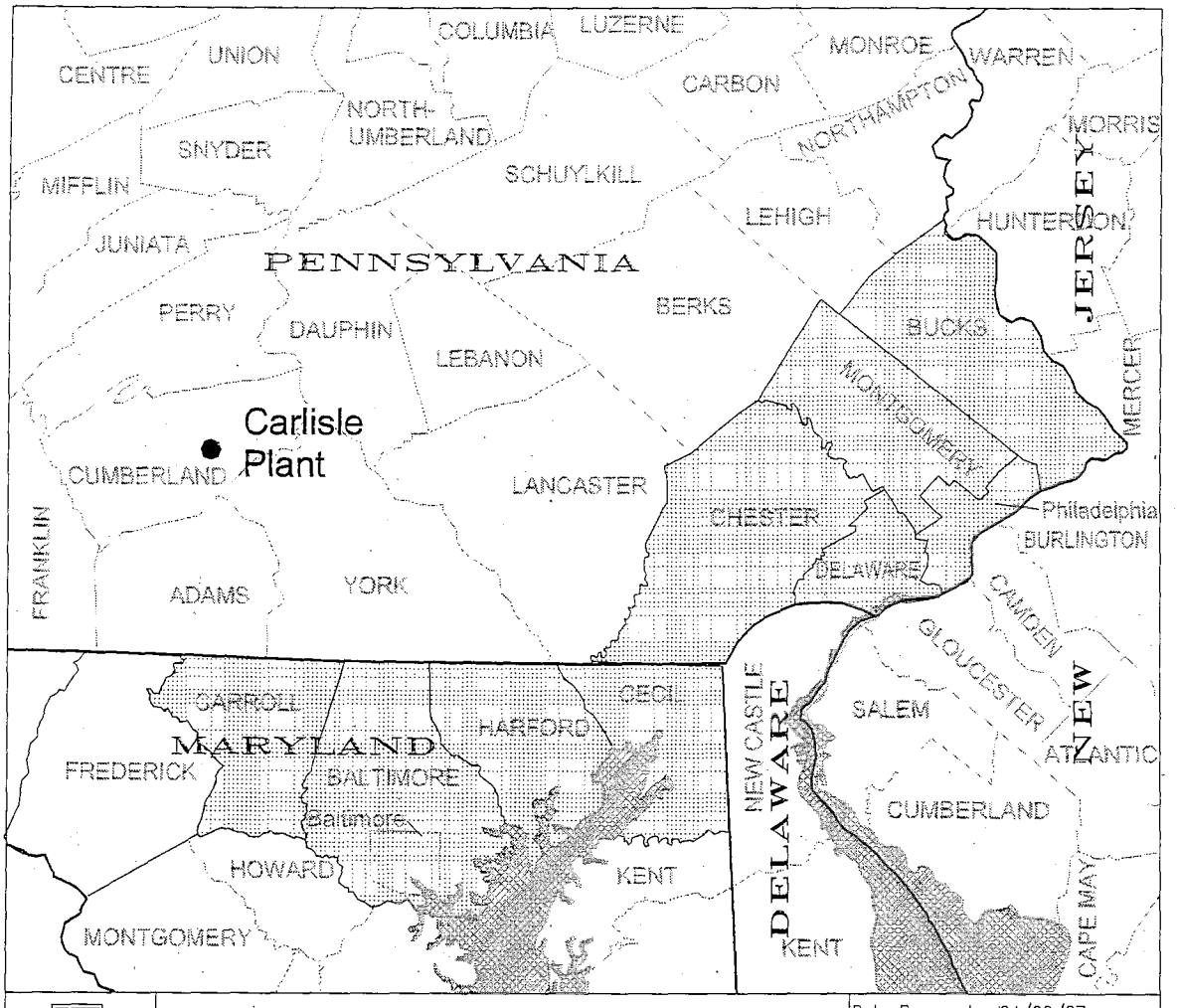
MAXIMUM PPG CARLISLE NOx IMPACTS IN 8-HOUR NON-ATTAINMENT COUNTIES IN PENNSYLVANIA AT ACTUAL EMISSIONS

County	Period	Year	NOx (ug/m^3)
Bucks Co, PA	1-hr	2002	0.94466
		2003	1.04510
	3-hr	2002	0.69770
		2003	0.54930
	24-hr	2002	0.21149
		2003	0.15681
	Annual	2002	0.00615
		2003	0.00548
Chester Co, PA	1-hr	2002	5.20680
		2003	4.79140
	3-hr	2002	3.47700
		2003	3.52130
	24-hr	2002	1.09000
		2003	0.88246
	Annual	2002	0.04030
		2003	0.05340
Delaware Co, PA	1-hr	2002	1.94420
		2003	2.39190
	3-hr	2002	1.38150
		2003	1.61520
	24-hr	2002	0.37620
		2003	0.33226
	Annual	2002	0.02024
		2003	0.02583
Montgomery Co, PA	1-hr	2002	1.92720
		2003	2.20750
	3-hr	2002	1.13130
		2003	1.71390
	24-hr	2002	0.30563
		2003	0.31597
	Annual	2002	0.01486
		2003	0.01512
Philadelphia Co, PA	1-hr	2002	1.61500
		2003	1.78080
	3-hr	2002	0.97073
		2003	1.39980
	24-hr	2002	0.27175
		2003	0.23598
	Annual	2002	0.01283
		2003	0.01686

TABLE 2

MAXIMUM PPG CARLISLE NOx IMPACTS IN 8-HOUR NON-ATTAINMENT COUNTIES IN MARYLAND AT ACTUAL EMISSIONS

County	Period	Year	NOx (ug/m^3)
Baltimore CO, MD	1-hr	2002	8.34890
		2003	12.03300
	3-hr	2002	7.12430
		2003	10.25200
	24-hr	2002	2.37970
		2003	2.79590
	Annual	2002	0.13766
		2003	0.15102
Carroll Co, MD	1-hr	2002	19.81000
		2003	15.19400
	3-hr	2002	12.73700
		2003	12.68600
	24-hr	2002	4.03480
		2003	2.49380
	Annual	2002	0.17961
		2003	0.13524
Cecil Co, MD	1-hr	2002	3.81360
		2003	3.00940
	3-hr	2002	2.30770
		2003	2.50200
	24-hr	2002	0.70162
		2003	0.83401
	Annual	2002	0.04820
		2003	0.05634
Harford Co, MD	1-hr	2002	5.41700
		2003	7.11040
	3-hr	2002	4.22810
		2003	5.70010
	24-hr	2002	1.54640
		2003	1.83520
	Annual	2002	0.09000
		2003	0.12252



Location of PPG Carlisle Plant and 8-Hour Non-Attainment Counties Nearest the Plant

Energy & Environmental Management, Inc.

Date Prepared: 04/02/07	
Scale: none	
Drawing Name: carlisle	
Code: C631	Figure No.: 1

ATTACHMENT 1

2002 CALPUFF INPUT FILE FOR CHESTER COUNTY, PENNSYLVANIA

```
PPG Facility in Carlisle, PA
NOx model run for 2002
Chester County, PA 1-KM receptor grid
---------------- Run title (3 lines) ----------------------------------------

                    CALPUFF MODEL CONTROL FILE
                    --------------------------
-------------------------------------------------------------------------------

INPUT GROUP: 0 -- Input and Output File Names

--------------
Default Name  Type          File Name
------------  ----          ---------
CALMET.DAT    input    * METDAT =             *
    or
ISCMET.DAT    input    * ISCDAT =             *
    or
PLMMET.DAT    input    * PLMDAT =             *
    or
PROFILE.DAT   input    * PRFDAT =             *
SURFACE.DAT   input    * SFCDAT =             *
RESTARTB.DAT  input    * RSTARTB=             *
-------------------------------------------------------------------------------
CALPUFF.LST   output   ! PUFLST =PPGCHE02.LST  !
CONC.DAT      output   ! CONDAT =PPGCHE02.CON  !
DFLX.DAT      output   * DFDAT  =              *
WFLX.DAT      output   * WFDAT  =              *
VISB.DAT      output   * VISDAT =              *
RESTARTE.DAT  output   * RSTARTE=              *
-------------------------------------------------------------------------------
Emission Files
--------------
PTEMARB.DAT   input    * PTDAT  =             *
VOLEMARB.DAT  input    * VOLDAT =             *
BAEMARB.DAT   input    * ARDAT  =             *
LNEMARB.DAT   input    * LNDAT  =             *
-------------------------------------------------------------------------------
Other Files
-----------
OZONE.DAT     input    ! OZDAT  =OZONE502.DAT  !
VD.DAT        input    * VDDAT  =            *
CHEM.DAT      input    * CHEMDAT=            *
H2O2.DAT      input    * H2O2DAT=            *
HILL.DAT      input    * HILDAT=             *
HILLRCT.DAT   input    * RCTDAT=             *
COASTLN.DAT   input    * CSTDAT=             *
FLUXBDY.DAT   input    * BDYDAT=             *
BCON.DAT      input    * BCNDAT=             *
DEBUG.DAT     output   * DEBUG =             *
MASSFLX.DAT   output   * FLXDAT=             *
MASSBAL.DAT   output   * BALDAT=             *
FOG.DAT       output   * FOGDAT=             *
-------------------------------------------------------------------------------
! LCFILES =  F !
! NMETDAT = 24 !
! NPTDAT  =  0 !
! NARDAT  =  0 !
! NVOLDAT =  0 !
!END!
-------------
Subgroup (0a)
-------------
  The following CALMET.DAT filenames are processed in sequence if NMETDAT>1

Default Name  Type          File Name
------------  ----          ---------
 none         input    ! METDAT=G:\BART2002\DOM5-01A.DAT     !  !END!
 none         input    ! METDAT=G:\BART2002\DOM5-01B.DAT     !  !END!
 none         input    ! METDAT=G:\BART2002\DOM5-02A.DAT     !  !END!
 none         input    ! METDAT=G:\BART2002\DOM5-02B.DAT     !  !END!
 none         input    ! METDAT=G:\BART2002\DOM5-03A.DAT     !  !END!
 none         input    ! METDAT=G:\BART2002\DOM5-03B.DAT     !  !END!
 none         input    ! METDAT=G:\BART2002\DOM5-04A.DAT     !  !END!
```

```
 none          input    ! METDAT=G:\BART2002\DOM5-04B.DAT     !  !END!
 none          input    ! METDAT=G:\BART2002\DOM5-05A.DAT     !  !END!
 none          input    ! METDAT=G:\BART2002\DOM5-05B.DAT     !  !END!
 none          input    ! METDAT=G:\BART2002\DOM5-06A.DAT     !  !END!
 none          input    ! METDAT=G:\BART2002\DOM5-06B.DAT     !  !END!
 none          input    ! METDAT=G:\BART2002\DOM5-07A.DAT     !  !END!
 none          input    ! METDAT=G:\BART2002\DOM5-07B.DAT     !  !END!
 none          input    ! METDAT=G:\BART2002\DOM5-08A.DAT     !  !END!
 none          input    ! METDAT=G:\BART2002\DOM5-08B.DAT     !  !END!
 none          input    ! METDAT=G:\BART2002\DOM5-09A.DAT     !  !END!
 none          input    ! METDAT=G:\BART2002\DOM5-09B.DAT     !  !END!
 none          input    ! METDAT=G:\BART2002\DOM5-10A.DAT     !  !END!
 none          input    ! METDAT=G:\BART2002\DOM5-10B.DAT     !  !END!
 none          input    ! METDAT=G:\BART2002\DOM5-11A.DAT     !  !END!
 none          input    ! METDAT=G:\BART2002\DOM5-11B.DAT     !  !END!
 none          input    ! METDAT=G:\BART2002\DOM5-12A.DAT     !  !END!
 none          input    ! METDAT=G:\BART2002\DOM5-12B.DAT     !  !END!
-------------------------------------------------------------------------------
INPUT GROUP: 1 -- General run control parameters
--------------
! METRUN =   0  !
! IBYR =  2002  !
! IBMO =  1  !
! IBDY =  1  !
! IBHR =  1  !
! XBTZ = 5.0  !
! IRLG =  8760  !
! NSPEC =  11   !
! NSE =  9   !
! ITEST =  2   !
! MRESTART =  0   !
! NRESPD =  0   !
! METFM =  1   !
! MPRFFM =  1   !
! AVET = 60. !
! PGTIME = 60. !
!END!
-------------------------------------------------------------------------------
INPUT GROUP: 2 -- Technical options
--------------
! MGAUSS =  1   !
! MCTADJ =  3   !
! MCTSG =  0   !
! MSLUG =  0   !
! MTRANS =  1   !
! MTIP =  1  !
! MBDW =   1  !
! MSHEAR =  0  !
! MSPLIT =  0  !
! MCHEM =  1   !
! MAQCHEM =  0   !
! MWET =  1   !
! MDRY =  1   !
! MTILT =  0   !
! MDISP =  3   !
! MTURBVW =  0  !
! MDISP2 =  3  !
! MTAULY =  0  !
! MTAUADV =  0  !
! MCTURB =  1  !
! MROUGH =  0  !
! MPARTL =  1  !
! MTINV =  0  !
! MPDF =  0  !
! MSGTIBL = 0  !
! MBCON = 0  !
! MFOG =  0   !
! MREG =  1   !
!END!
-------------------------------------------------------------------------------
INPUT GROUP: 3a, 3b -- Species list
-------------------
  The following species are modeled:
! CSPEC =          SO2 !         !END!
```

```
! CSPEC =          SO4 !          !END!
! CSPEC =          NOX !          !END!
! CSPEC =         HNO3 !          !END!
! CSPEC =          NO3 !          !END!
! CSPEC =        PM800 !          !END!
! CSPEC =        PM425 !          !END!
! CSPEC =        PM187 !          !END!
! CSPEC =        PM112 !          !END!
! CSPEC =        PM081 !          !END!
! CSPEC =        PM056 !          !END!
!      SO2  =    1,   1,  1,  0  !
!      SO4  =    1,   2,  2,  0  !
!      NOX  =    1,   1,  1,  0  !
!     HNO3  =    1,   0,  1,  0  !
!      NO3  =    1,   0,  2,  0  !
!    PM800  =    1,   1,  2,  0  !
!    PM425  =    1,   1,  2,  0  !
!    PM187  =    1,   1,  2,  0  !
!    PM112  =    1,   1,  2,  0  !
!    PM081  =    1,   1,  2,  0  !
!    PM056  =    1,   1,  2,  0  !
!END!
-------------------------------------------------------------------------------
INPUT GROUP: 4 -- Map Projection and Grid control parameters
--------------
! PMAP = LCC  !
! FEAST  = 0.000  !
! FNORTH = 0.000  !
! IUTMZN = -999   !
! UTMHEM = N  !
! RLAT0 =  40N  !
! RLON0 =  97W  !
! XLAT1 =  33N  !
! XLAT2 =  45N  !
! DATUM = NWS-84  !
! NX =  228   !
! NY =  232   !
! NZ =  10   !
! DGRIDKM = 4. !
! ZFACE = 0., 20., 40., 80., 160., 320., 640., 1200., 2000., 3000., 4000. !
! XORIGKM = 1066.005 !
! YORIGKM = -686.004 !
! IBCOMP =  1   !
! JBCOMP =  1   !
! IECOMP =  228   !
! JECOMP =  232   !
! LSAMP = F !
! IBSAMP =  1   !
! JBSAMP =  1   !
! IESAMP =  228   !
! JESAMP =  232   !
! MESHDN =  1  !
!END!
-------------------------------------------------------------------------------
INPUT GROUP: 5 -- Output Options
--------------
!  ICON =  1   !
!  IDRY =  1   !
!  IWET =  1   !
!  IVIS =  1   !
! LCOMPRS = T !
! IQAPLOT =  1  !
! IMFLX =  0  !
! IMBAL =  0  !
! ICPRT =  0   !
! IDPRT =  0   !
! IWPRT =  0   !
! ICFRQ =  1   !
! IDFRQ =  1   !
! IWFRQ =  1   !
! IPRTU =  3   !
! IMESG =  2   !
!    SO2 = 0, 1, 0, 1, 0, 1, 0 !
!    SO4 = 0, 1, 0, 1, 0, 1, 0 !
```

```
!    NOX = 0, 1, 0, 1, 0, 1, 0 !
!   HNO3 = 0, 1, 0, 1, 0, 1, 0 !
!    NO3 = 0, 1, 0, 1, 0, 1, 0 !
!  PM800 = 0, 1, 0, 0, 0, 0, 0 !
!  PM425 = 0, 1, 0, 0, 0, 0, 0 !
!  PM187 = 0, 1, 0, 0, 0, 0, 0 !
!  PM112 = 0, 1, 0, 0, 0, 0, 0 !
!  PM081 = 0, 1, 0, 0, 0, 0, 0 !
!  PM056 = 0, 1, 0, 0, 0, 0, 0 !
! LDEBUG = F !
! IPFDEB =  1  !
! NPFDEB =  10  !
! NN1 =  10   !
! NN2 =  10  !
!END!
-------------------------------------------------------------------------------
INPUT GROUP: 6a, 6b, & 6c -- Subgrid scale complex terrain inputs
-------------------------
---------------
Subgroup (6a)
---------------
! NHILL =  0   !
! NCTREC =  0   !
! MHILL =  0   !
! XHILL2M = 0. !
! ZHILL2M = 0. !
! XCTDMKM = 0.0E00 !
! YCTDMKM = 0.0E00 !
! END !
-------------------------------------------------------------------------------
INPUT GROUP: 7 -- Chemical parameters for dry deposition of gases
--------------
!   SO2 =  0.1509, 1000.,   8.,  0.,        0.04 !
!   NOX =  0.1656,    1.,   8.,  5.,         3.5 !
!  HNO3 =  0.1628,    1.,  18.,  0.,  0.00000008 !
!END!
-------------------------------------------------------------------------------
INPUT GROUP: 8 -- Size parameters for dry deposition of particles
--------------
!   SO4 =    0.48,     2.   !
!   NO3 =    0.48,     2.   !
! PM800 =      8.,     0.   !
! PM425 =    4.25,     0.   !
! PM187 =   1.875,     0.   !
! PM112 =   1.125,     0.   !
! PM081 =  0.8125,     0.   !
! PM056 =  0.5625,     0.   !
!END!
-------------------------------------------------------------------------------
INPUT GROUP: 9 -- Miscellaneous dry deposition parameters
--------------
!  RCUTR = 30.0 !
!    RGR = 10.0 !
! REACTR = 8.0 !
!   NINT =  9  !
!   IVEG =  1   !
!END!
-------------------------------------------------------------------------------
INPUT GROUP: 10 -- Wet Deposition Parameters
---------------
!   SO2 =  3.0E-05,     0.0E00 !
!   SO4 =  1.0E-04,    3.0E-05 !
!  HNO3 =  6.0E-05,     0.0E00 !
!   NO3 =  1.0E-04,    3.0E-05 !
! PM800 =  1.0E-04,    3.0E-05 !
! PM425 =  1.0E-04,    3.0E-05 !
! PM187 =  1.0E-04,    3.0E-05 !
! PM112 =  1.0E-04,    3.0E-05 !
! PM081 =  1.0E-04,    3.0E-05 !
! PM056 =  1.0E-04,    3.0E-05 !
!END!
-------------------------------------------------------------------------------
INPUT GROUP: 11 -- Chemistry Parameters
---------------
```

```
! MOZ =  1   !
! BCKO3 = 27.13, 34.52, 35.20, 41.26, 44.24, 52.78, 52.77,
          49.95, 39.85, 23.83, 24.03, 25.02 !
! BCKNH3 = 0.50, 0.50, 0.50, 0.50, 0.50, 0.50, 0.50, 0.50,
           0.50, 0.50, 0.50, 0.50 !
! RNITE1 = .2 !
! RNITE2 = 2.0 !
! RNITE3 = 2.0 !
! MH2O2 =  1   !
! BCKH2O2 = 1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.00,
             1.00, 1.00, 1.00, 1.00 !
!  BCKPMF = 1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.00,
            1.00, 1.00, 1.00, 1.00 !
!  OFRAC  = 0.15, 0.15, 0.20, 0.20, 0.20, 0.20, 0.20, 0.20,
            0.20, 0.20, 0.20, 0.15 !
!  VCNX   = 50.00, 50.00, 50.00, 50.00, 50.00, 50.00, 50.00,
            50.00, 50.00, 50.00, 50.00, 50.00 !
!END!
-------------------------------------------------------------------------------
INPUT GROUP: 12 -- Misc. Dispersion and Computational Parameters
---------------
! SYTDEP = 5.5E02 !
! MHFTSZ =  0   !
! JSUP =  5   !
! CONK1 = .01 !
! CONK2 = .1 !
! TBD = .5 !
! IURB1 =  10  !
! IURB2 =  19  !
! ILANDUIN =  20  !
! Z0IN = .25 !
! XLAIIN = 3.0 !
! ELEVIN = .0 !
! XLATIN = -999.0 !
! XLONIN = -999.0 !
! ANEMHT = 10.0 !
! ISIGMAV =  1  !
! IMIXCTDM =  0  !
! XMXLEN = 1.0 !
! XSAMLEN = 1.0 !
! MXNEW =  99   !
! MXSAM =  99   !
! NCOUNT =  2   !
! SYMIN = 1.0  !
! SZMIN = 1.0  !
! SVMIN = 0.500, 0.500, 0.500, 0.500, 0.500, 0.500, 0.370,
          0.370, 0.370, 0.370, 0.370, 0.370!
! SWMIN = 0.200, 0.120, 0.080, 0.060, 0.030, 0.016, 0.200,
          0.120, 0.080, 0.060, 0.030, 0.016!
! CDIV = .0, .0 !
! WSCALM = .5 !
! XMAXZI = 3000.0 !
! XMINZI = 50.0 !
! WSCAT = 1.54, 3.09, 5.14, 8.23, 10.80 !
! PLX0 = 0.07, 0.07, 0.10, 0.15, 0.35, 0.55 !
! PTG0 = 0.020,   0.035 !
!  PPC = 0.50, 0.50, 0.50, 0.50, 0.35, 0.35 !
! SL2PF = 5.0 !
! NSPLIT =  3  !
!  IRESPLIT = 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,1,0,0,0,0,0,0 !
! ZISPLIT = 100.0 !
! ROLDMAX = 0.25 !
! NSPLITH =  5  !
! SYSPLITH = 1.0 !
! SHSPLITH = 2.0 !
! CNSPLITH = 1.0E-07 !
! EPSSLUG = 1.0E-04 !
! EPSAREA = 1.0E-06 !
! DSRISE = 1.0 !
! HTMINBC = 500.0 !
! RSAMPBC = 15.0 !
! MDEPBC =  0  !
!END!
-------------------------------------------------------------------------------
```

```
INPUT GROUPS: 13a, 13b, 13c, 13d -- Point source parameters
-------------------------------
---------------
Subgroup (13a)
---------------
!  NPT1 =  2  !
!  IPTU =   1  !
!  NSPT1 =  0  !
!  NPT2 =  0  !
!END!
---------------
Subgroup (13b)
---------------
          POINT SOURCE: CONSTANT DATA
          ----------------------------
Source      X      Y    Stack    Base   Stack    Exit  Exit    Bldg.  Emission
 No.      Coord  Coord  Height   Elev  Diameter  Vel.  Temp.   Dwash   Rates
           (km)   (km)    (m)    (m)     (m)    (m/s) (deg. K)
  ------   ----   ----  ------  -----   -----   -----  -------  ------ --------
   1 ! SRCNAM = 1 ! PPG Carlisle Furnace No. 1
   1 ! X =  1663.985,  196.506,  28.84, 168.9,     3.30, 27.37,  464.82,   1.,
       0.00000, 0.00, 67.536, 0.0, 0.0, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00000 !
   1 ! ZPLTFM  =       .0 !
   1 ! FMFAC  =      1.0 !   !END!
   2 ! SRCNAM = 2 ! PPG Carlisle Furnace No. 2
   2 ! X =  1663.980,  196.476,  28.84, 168.9,     3.30, 34.04,  444.82,   1.,
       0.00000, 0.00, 65.394, 0.0, 0.0, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00000 !
   2 ! ZPLTFM  =       .0 !
   2 ! FMFAC  =      1.0 !   !END!
--------
          BUILDING DIMENSION DATA FOR SOURCES SUBJECT TO DOWNWASH
          -------------------------------------------------------
Source
 No.      Effective building width and height (in meters) every 10 degrees
------    ------------------------------------------------------------------
   1 ! SRCNAM = 1 !
   1 ! WIDTH  =      0.00,   0.00,   0.00,   0.00,  61.70,  56.29,
                    49.17,  40.56,  30.72,  21.94,  34.20,  45.43,
                    55.28,  63.45,  69.69,  73.82,   0.00,   0.00,
                     0.00,   0.00,   0.00,   0.00,  61.70,  56.29,
                    49.17,  40.56,  30.72,  21.94,  34.20,  45.43,
                    55.28,  63.45,  69.69,  73.82,   0.00,   0.00!
   1 ! HEIGHT  =     0.00,   0.00,   0.00,   0.00,  16.46,  16.46,
                    16.46,  16.46,  16.46,  16.46,  16.46,  16.46,
                    16.46,  16.46,  16.46,  16.46,   0.00,   0.00,
                     0.00,   0.00,   0.00,   0.00,  16.46,  16.46,
                    16.46,  16.46,  16.46,  16.46,  16.46,  16.46,
                    16.46,  16.46,  16.46,  16.46,   0.00,   0.00!
   1 ! LENGTH  =     0.00,   0.00,   0.00,   0.00,  55.74,  60.97,
                    64.35,  65.77,  65.20,  72.85,  73.95,  73.93,
                    71.66,  67.22,  60.73,  52.40,   0.00,   0.00,
                     0.00,   0.00,   0.00,   0.00,  55.74,  60.97,
                    64.35,  65.77,  65.20,  72.85,  73.95,  73.93,
                    71.66,  67.22,  60.73,  52.40,   0.00,   0.00!
   1 ! XBADJ   =     0.00,   0.00,   0.00,   0.00, -83.05, -90.86,
                   -95.91, -98.04, -97.20, -94.84, -96.41, -96.18,
                   -93.02, -87.03, -78.40, -67.39,   0.00,   0.00,
                     0.00,   0.00,   0.00,   0.00,  27.31,  29.89,
                    31.56,  32.27,  32.00,  21.99,  22.46,  22.25,
                    21.35,  19.81,  17.67,  14.99,   0.00,   0.00!
   1 ! YBADJ   =     0.00,   0.00,   0.00,   0.00,  34.71,  24.53,
                    13.62,   2.28,  -9.12,  13.50,   3.12,  -7.34,
                   -17.59, -27.30, -36.18, -43.96,   0.00,   0.00,
                     0.00,   0.00,   0.00,   0.00, -34.71, -24.53,
                   -13.62,  -2.28,   9.12, -13.50,  -3.12,   7.34,
                    17.59,  27.30,  36.18,  43.96,   0.00,   0.00!
!END!
   2 ! SRCNAM = 2 !
   2 ! WIDTH  =      0.00,   0.00,   0.00,   0.00,   0.00,   0.00,
                     0.00,   0.00,  30.72,  20.38,  30.77,  40.40,
                    48.81,  55.74,  69.69,  73.82,  75.70,   0.00,
                     0.00,   0.00,   0.00,   0.00,   0.00,   0.00,
                     0.00,   0.00,  30.72,  20.38,  30.77,  40.40,
                    48.81,  55.74,  89.53,  88.86,  85.49,   0.00!
```

```
   2 ! HEIGHT  =     0.00,    0.00,    0.00,    0.00,    0.00,    0.00,
                     0.00,    0.00,   16.46,   16.46,   16.46,   16.46,
                    16.46,   16.46,   16.46,   16.46,   16.46,    0.00,
                     0.00,    0.00,    0.00,    0.00,    0.00,    0.00,
                     0.00,    0.00,   16.46,   16.46,   16.46,   16.46,
                    16.46,   16.46,   16.46,   16.46,   16.46,    0.00!!
   2 ! LENGTH  =     0.00,    0.00,    0.00,    0.00,    0.00,    0.00,
                     0.00,    0.00,   65.20,   63.80,   66.30,   66.78,
                    65.23,   61.70,   60.73,   52.40,   42.48,    0.00,
                     0.00,    0.00,    0.00,    0.00,    0.00,    0.00,
                     0.00,    0.00,   65.20,   63.80,   66.30,   66.78,
                    65.23,   61.70,   82.01,   78.36,   72.33,    0.00!
   2 ! XBADJ   =     0.00,    0.00,    0.00,    0.00,    0.00,    0.00,
                     0.00,    0.00,  -92.20,  -94.48,  -96.54,  -95.67,
                   -91.89,  -85.32, -101.88,  -93.87,  -83.01,    0.00,
                     0.00,    0.00,    0.00,    0.00,    0.00,    0.00,
                     0.00,    0.00,   27.00,   30.68,   30.25,   28.90,
                    26.67,   23.63,   19.87,   15.51,   10.68,    0.00!
   2 ! YBADJ   =     0.00,    0.00,    0.00,    0.00,    0.00,    0.00,
                     0.00,    0.00,   20.88,   10.38,   -0.51,  -11.49,
                   -22.11,  -32.06,  -16.85,  -29.00,  -40.27,    0.00,
                     0.00,    0.00,    0.00,    0.00,    0.00,    0.00,
                     0.00,    0.00,  -20.88,  -10.38,    0.51,   11.49,
                    22.11,   32.06,   26.76,   36.52,   45.17,    0.00!
!END!
-----------------------------------------------------
INPUT GROUPS: 14a, 14b, 14c, 14d -- Area source parameters
---------------------------------
---------------
Subgroup (14a)
---------------
!  NAR1 =  0   !
!  IARU =   1  !
!  NSAR1 =  0  !
!  NAR2 =  0   !
!END!
-----------------------------------------------------------------------------------
INPUT GROUPS: 15a, 15b, 15c -- Line source parameters
----------------------------
---------------
Subgroup (15a)
---------------
!  NLN2 =  0   !
! NLINES =  0  !
!  ILNU =   1  !
!  NSLN1 =  0  !
! MXNSEG =  7  !
! NLRISE =  6  !
! XL = .0 !
! HBL = .0 !
! WBL = .0 !
! WML = .0 !
! DXL = .0 !
! FPRIMEL = .0 !
!END!
-----------------------------------------------------------------------------------
INPUT GROUPS: 16a, 16b, 16c -- Volume source parameters
----------------------------
---------------
Subgroup (16a)
---------------
!  NVL1 =  0   !
!  IVLU =   1  !
!  NSVL1 =  0  !
!  NVL2 =   0   !
!END!
-----------------------------------------------------------------------------------
INPUT GROUPS: 17a & 17b -- Non-gridded (discrete) receptor information
-----------------------
---------------
Subgroup (17a)
---------------
     Number of non-gridded receptors (NREC)  No default  !  NREC = 2043  !
!END!
```

Subgroup (17b)

NON-GRIDDED (DISCRETE) RECEPTOR DATA[a]

Receptor No.	X Coordinate (km)	Y Coordinate (km)	Ground Elevation (m)	Height Above Ground (m)[b]	
1 ! X =	1813.871,	224.325,	122.00,	0.000!	!END!
2 ! X =	1812.907,	224.087,	149.34,	0.000!	!END!
3 ! X =	1811.944,	223.849,	126.18,	0.000!	!END!
.					
.					
2041 ! X =	1760.332,	172.099,	90.26,	0.000!	!END!
2042 ! X =	1759.130,	172.828,	61.01,	0.000!	!END!
2043 ! X =	1759.369,	171.860,	61.00,	0.000!	!END!

---

[a] Data for each receptor are treated as a separate input subgroup and therefore must end with an input group terminator.

[b] Receptor height above ground is optional. If no value is entered, the receptor is placed on the ground.

Energy & Environmental Management, Inc.
P.O. Box 376 Harrison City, PA 15636-0376 (724)744-7170 FAX (724)744-0265

June 22, 2008 E^2M-556-08

Mr. Timothy R. Cobaugh
Director, EHS Glass & Fiber Glass
PPG Industries, Inc.
4325 Rosanna Drive
Allison Park, PA 15101-1423

Dear Tim:

We met in early 2007 to discuss nitrogen oxides (NO_x) emission reductions expected for your Meadville and Carlisle plants in Pennsylvania. These NO_x reductions were anticipated as one of several regulations required to meet the 8-hour ozone standard. Ground-level ozone concentrations are influenced by NO_x and other pollutants through a complex atmospheric chemistry process. PPG was concerned that the proposed NO_x controls were not necessary because impacts due to existing NO_x emissions from their facilities were insignificant.

The 8-hour ozone standard was set at 80 ppb in 1997 and revised to 75 ppb effective last month (May 27, 2008). NO_x emission reductions proposed for the PPG plants address the 80 ppb standard. According to the EPA website, regulations for the 75 ppb standard are under development.

PPG commissioned Energy & Environmental Management, Inc. (E^2M) to conduct a dispersion modeling analysis of the impact of the NO_x emissions from both facilities.

INITIAL MODEL RESULTS

The initial modeling effort focused on NO_x impacts within the nearest ozone non-attainment area to each facility. The nearest non-attainment area to the Meadville Plant is Chautauqua County, New York. The nearest non-attainment area to the Carlisle Plant is Carroll County, Maryland, although dispersion modeling included the five county Philadelphia area.

If the NO_x impacts within the ozone non-attainment area did not exceed the NO_2 Significance Impact Level (SIL of 1 $\mu g/m^3$, annual), then the influence of NO_x emissions on ozone concentration would be virtually nil. Results of the NO_x impacts for Meadville were run with the AERMOD model because of the flat terrain as presented in 512_C631.PDF. Results of the NO_x impacts for Carlisle were run with the CALPUFF model because of the surrounding complex terrain as presented in 513_C631.PDF. NO_x impacts were found to be less than 2 percent of the NO_2 SIL for the Meadville Plant and only 11 percent of the NO_2 SIL for the Carlisle Plant.

These results were presented to the Pennsylvania DEP by PPG. The Pennsylvania DEP responded that, while the NO_x impacts are less than the NO_2 SIL, the complex nature of ozone formation can not be solely determined by NO_x impacts. Atmospheric chemistry plays a role in ozone formation, and modeling just NO_x does not address this atmospheric chemistry.

CMAQ MODEL RESULTS

PPG decided to implement an atmospheric chemistry model to determine the impacts of their NO_x emissions on ozone. E²M in conjuction with both Environ and Alpine Geophysics conducted this analysis. These firms decided to work together using the same model used by the Regional Planning Organization to determine baseline and future ozone impacts. This is the Community Multiscale Air Quality (CMAQ) model as described at http://www.cmaq-model.org. Results of the Environ/ Alpine Geophysics modeling effort are presented in PPG_CMAQ_May19_2008.PDF, which is attached to this letter. Modeling was conducted for two periods. The first period is 2002 which is the base year for the ozone SIP using actual emissions. The second period is 2009 with projected compliance emissions for all sources. The task was to model each PPG facility with their 2002 actual emission rate with all other sources run at their projected 2009 compliance emissions. This approach would determine how each PPG facility impacted forecasted 2009 ozone levels.

Impacts are presented in the Environ/Alpine Geophysics report as a series of color graphs for each PPG facility. The Meadville Plant shows a maximum ozone impact of 2 ppb in the immediate vicinity of the plant. The nearest non-attainment area (Chautauqua County, New York) is shown to have no ozone difference caused by the Meadville Plant. The Carlisle Plant shows a maximum ozone impact of 5 to 6 ppb in the immediate vicinity of the plant. The ozone impact due to Carlisle 2002 NO_x emissions does extend into the five county Philadelphia non-attainment area by a maximum of 0.1 ppb.

CONCLUSIONS

The Meadville Plant, when run at their 2002 NO_x emission rates for the facility, has no discernible impact on any ozone non-attainment area.

The Carlisle Plant, when run at their 2002 NO_x emission rates for the facility, has a maximum ozone impact of 0.1 ppb at the nearest non-attainment area.

Please call me if you have any questions.

Sincerely,

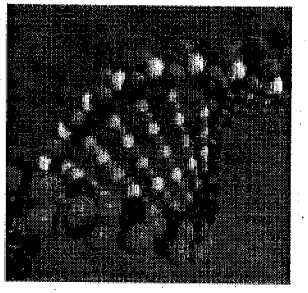
Larry L. Simmons

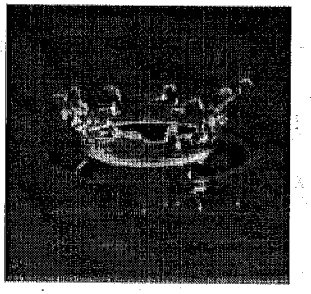
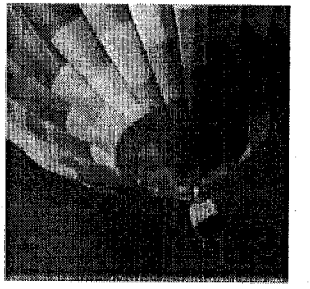
Larry L. Simmons, PE
Principal

cc: C-631

LLS/das

Effects of Controls on Two PPG Facilities on the Pennsylvania 8-Hour Ozone Attainment Demonstration

Ralph Morris and Tan Sakulyanontvittaya

ENVIRON International Corporation

Dennis McNally and Cyndi Loomis

Alpine Geophysics, LLC

May 19, 2008

ENVIRON

Background

- June 2004 EPA designates 17 areas (37 counties) in Pennsylvania as nonattainment for the 8-hour ozone NAAQS (0.08 ppm threshold) based on 2001-2003 ozone measurements
- Pennsylvania Department of Environmental Protection (PDEP) submitted an 8-hour ozone State Implementation Plan (SIP) to EPA that demonstrates attainment by 2010
- The PDEP 8-hour ozone SIP was based on the Community Multiscale Air Quality (CMAQ) modeling system run for the summer of 2002

Background

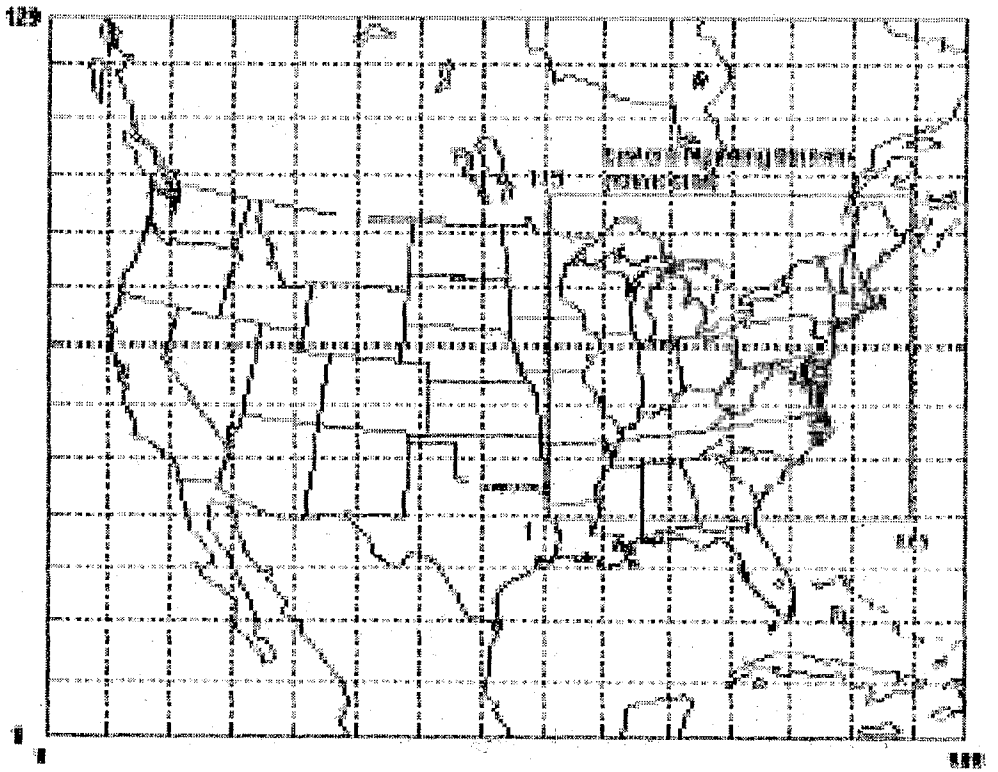
- The PDEP Pennsylvania 8-hour ozone SIP was prepared by an consortium of Northeast state organizations (e.g., NESCAUM, OTC, UMD, NYSDEC, etc.) using the common CMAQ modeling platform
  - Model entire 2002 ozone season (May 1 – September 30, 2002)
  - 36/12 km modeling grid
  - 2002 base case modeling
  - 2009 emissions scenarios
    - Base case on-the-books (otb)
    - On-the-books and On-the-way (otbotw)
    - Beyond on-the-way (botw)
  - 2009 botw emissions scenario used in PADEP PA SIP 8-hour ozone attainment demonstration

Background

- Energy Environmental Management, Inc. (EEMI) retained ENVIRON and Alpine Geophysics to examine the sensitivity of the PDEP Pennsylvania 8-hour ozone SIP attainment demonstration to controls on two PPG Industries, Inc. facilities:
  - PPG Meadville, PA plant located at (-80.21426, 41.53232)
  - PPG Carlisle, PA plant located at (-77.16380, 40.12613)
- ENVIRON/Alpine reran the 2009 botw PDEP 8-hour ozone SIP CMAQ attainment demonstration modeling, only with the emissions from these two facilities separately kept at 2002 emission levels

Approach

- ENVIRON/Alpine acquired most of the 2002 and 2009 36/12 km databases from the New York State Department of Environmental Conservation (NYSDEC)



  - NYSDEC did not actually have and run the 2009 botw scenario used in the PDEP Pennsylvania SIP, so the 2009 botw emission inputs were acquired from the Virginia Department of Environmental Protection (VDEP).

2009 Emission Scenarios

- 2009 Beyond On-the-Way (botw) [Used in PA SIP]
  - Growth on all sources and on-the-book and botw controls
- 2009 botw w/ 2002 PPG Meadville Emissions
  - 2009 botw emissions only with the PPG Meadville plant at 2002 levels
- 2009 botw w/ 2002 PPG Carlisle Emissions
  - 2009 botw emissions only with the PPG Carlisle plant at 2002 levels
- Project 2009 8-hour ozone Design Values using EPA's Modeled Attainment Test Software (MATS) that follows EPA's modeling guidance
  - http://www.epa.gov/scram001/modelingapps_mats.htm

2009 Emissions Scenario

- PPG Carlisle and Meadville Plants 2009 botw NOx emissions 81% and 85% lower than 2002 base and 2009 otbotw emission levels

			TPY	
			NOx	**VOC**
Carlisle	420410013	2002b	4175.52	21.55
		2009 otbotw	5105.61	26.34
		2009 botw	778.86	26.34
Meadville	420390012	2002b	2863.70	14.50
		2009 otbotw	3500.75	17.73
		2009 botw	525.11	17.73

2009 Ozone Projection Approach Using MATS (2007 EPA Modeling Guidance)

- Start with current year 8-hour ozone Design Value (DVC) based on ozone measurements
  - EPA recommends using an average of three years of 8-hour ozone Design Values centered on the base modeling year
    - As modeling 2002 then use 8-hour Design Values for 2000-2002, 2001-2003, 2002-2004
    - Has effect of weighting fourth highest daily maximum 8-hour ozone concentration from 2000-2003 by 1, 2, 3, 2, 1
- Develop model-derived Relative Response Factors (RRFs) based on the ratio of the 2009 to 2002 CMAQ modeling results
- Project future-year (2009) 8-hour ozone Design Values (DVF) using the RRFs:
  - DVF = DVC x RRF

ENVIRON

2009 Ozone Projection Approach – Procedures for Developing RRFs

- Select 2002 and 2009 modeled daily maximum 8-hour ozone concentration pairs "near" a monitor for all modeling days in which the 2002 modeled value is greater than a "threshold"
  - By "near", EPA recommends selecting the maximum 8-hour ozone concentrations within a using a 3 x 3 array of 12 km grid cells centered on the monitor (NX x NY array of cells grid size dependant)
  - Initially, an 85 ppb "threshold" is used. If there are less than 10 modeled 2009/2002 concentrations pairs, then the "threshold" is reduced by 1 ppb until either at least 10 modeled days are obtained or a 70 ppb floor is reached
  - If even using a 70 ppb "threshold" floor there are less than 5 modeled 2002/2009 concentration pairs, then the local EPA regional office should be contacted for advise

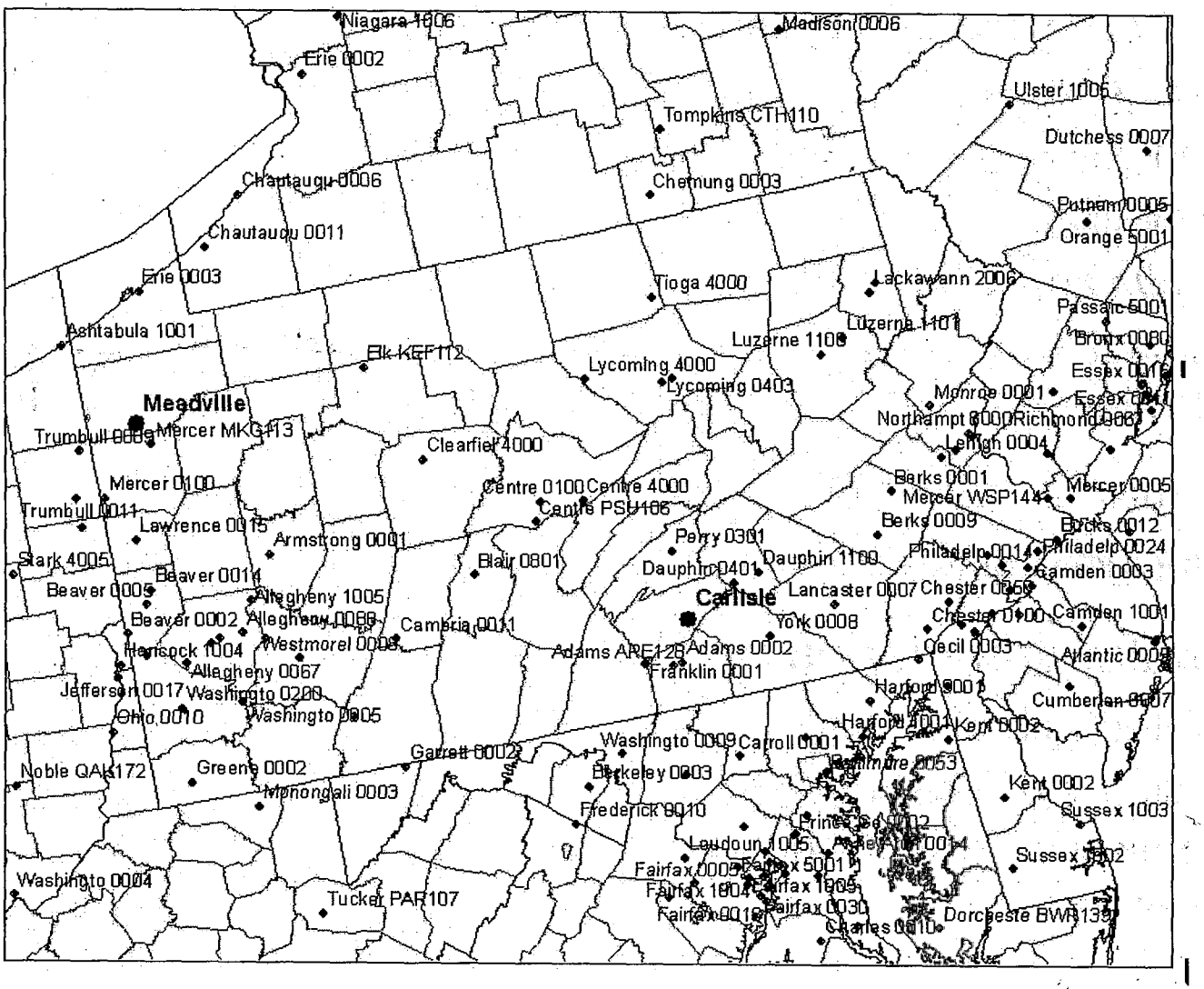
Future Year 8-Houir Ozone Design Value using MATS

- The RRF is then obtained as the ratio of the average 2009 to average 2002 modeled 8-hour ozone concentration pairs "near" the monitor for all pairs with the 2002 modeled value above the "threshold"
- MATS then truncates the future year projected 8-hour ozone Design Value to the nearest tenth of a ppb (84.99 = 84.91 = 84.9)

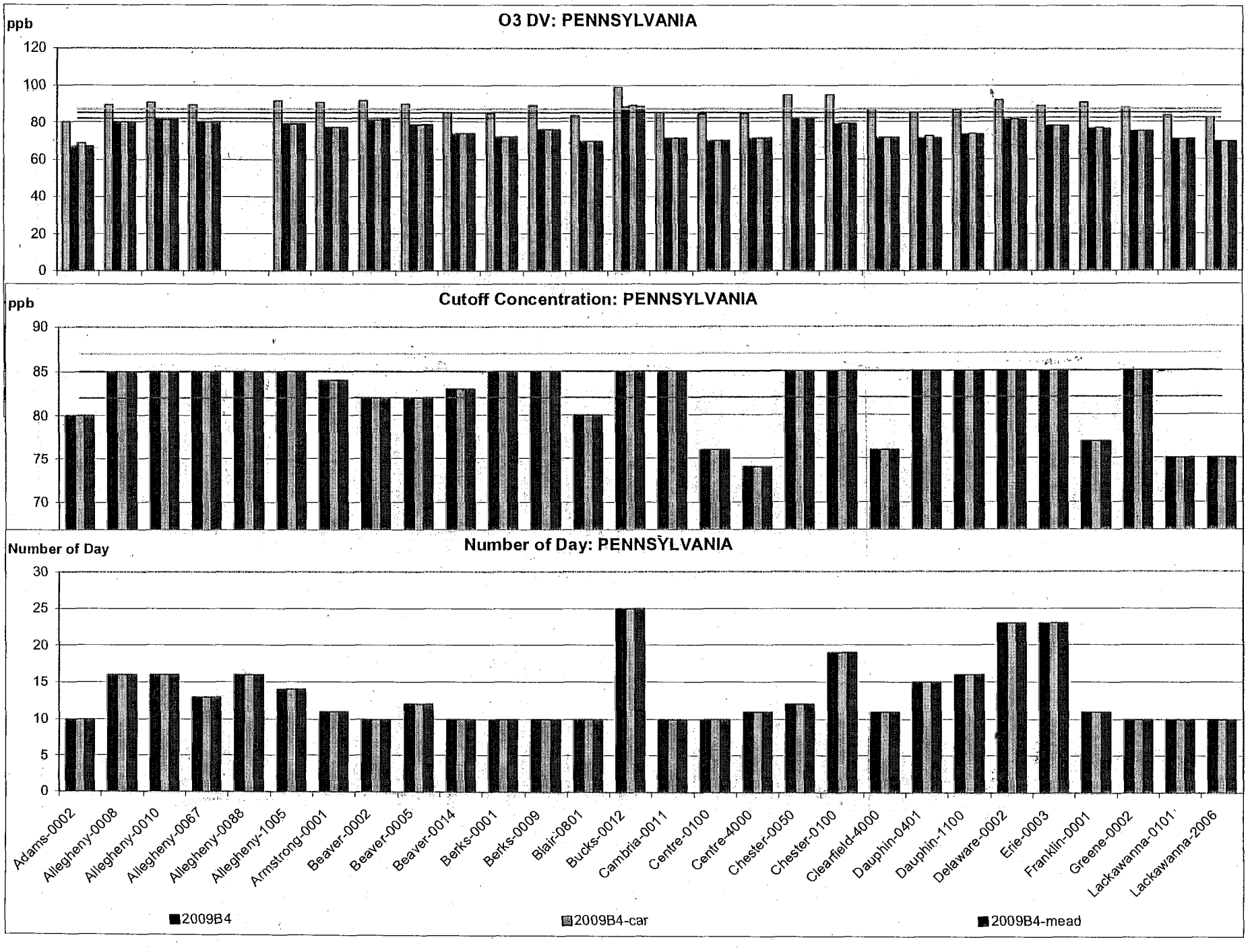
PPG Carlisle/Meadville Modeling Results

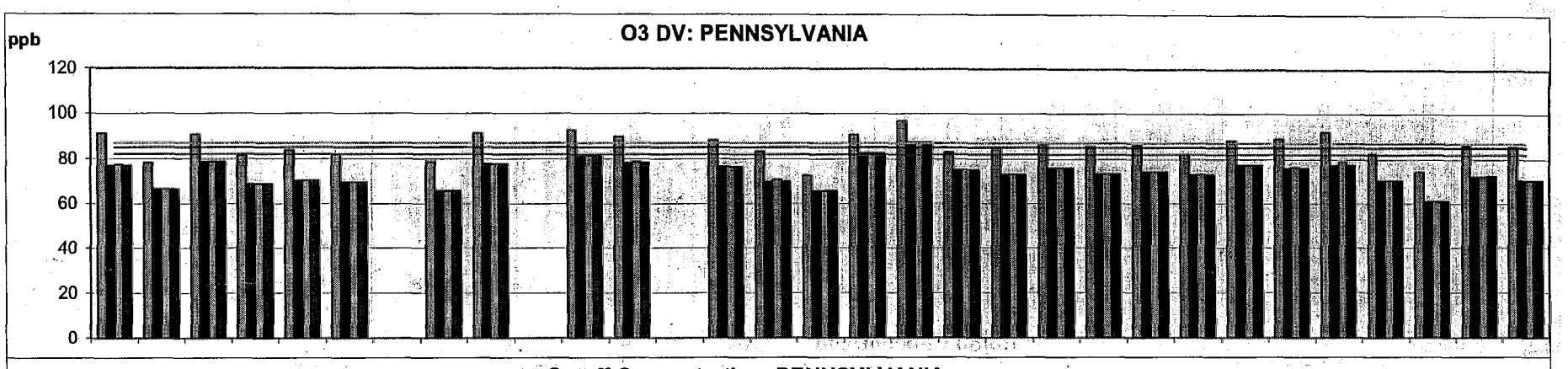
- Definitions of Design Values & Emission Scenarios
  - DVC = Current Year 8-Hour Ozone Design Value
  - DFV = Future Year (2009) Projected 8-Hour Ozone Design Value
  - 2009B4 = 2009 botw base case used in PA SIP
  - 2009B4-Carlise = 2009 botw base case with PPG Carlisle facility NOx emissions at 2002 levels
  - 2009B4-Meadville = 2009 botw base case with PPG Meadville facility NOx emissions at 2002 levels
- Spatial Maps of DVC and DVFs using EPA's MATS
  - Includes differences in DVFs with changes in PPG emissions
- Tabular summaries of DVC and DVFs at monitoring sites
  - Sites with maximum 2009 DVFs
  - Sites with maximum increases in 2009 DVFs when 2002 NOx emissions from Carlisle or Meadville are substituted for 2009 botw values

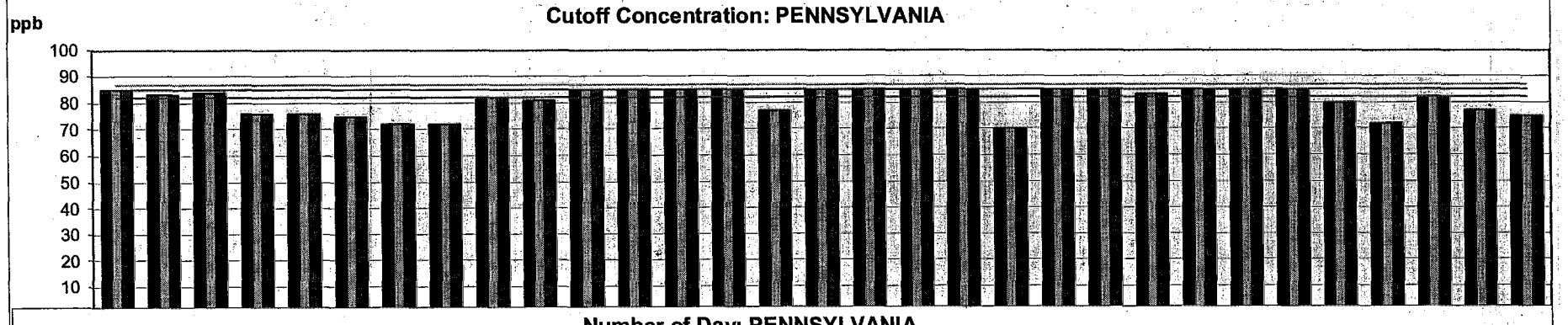
Location of Monitoring Sites and the PPG Carlisle and Meadville

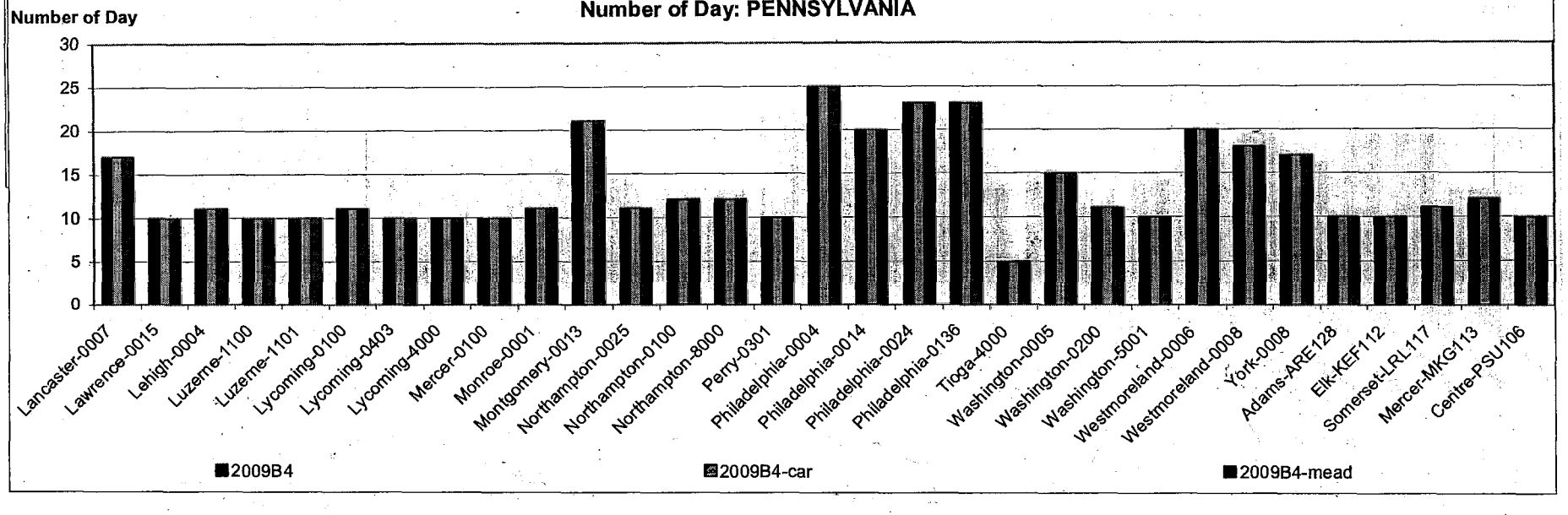


IVIRON

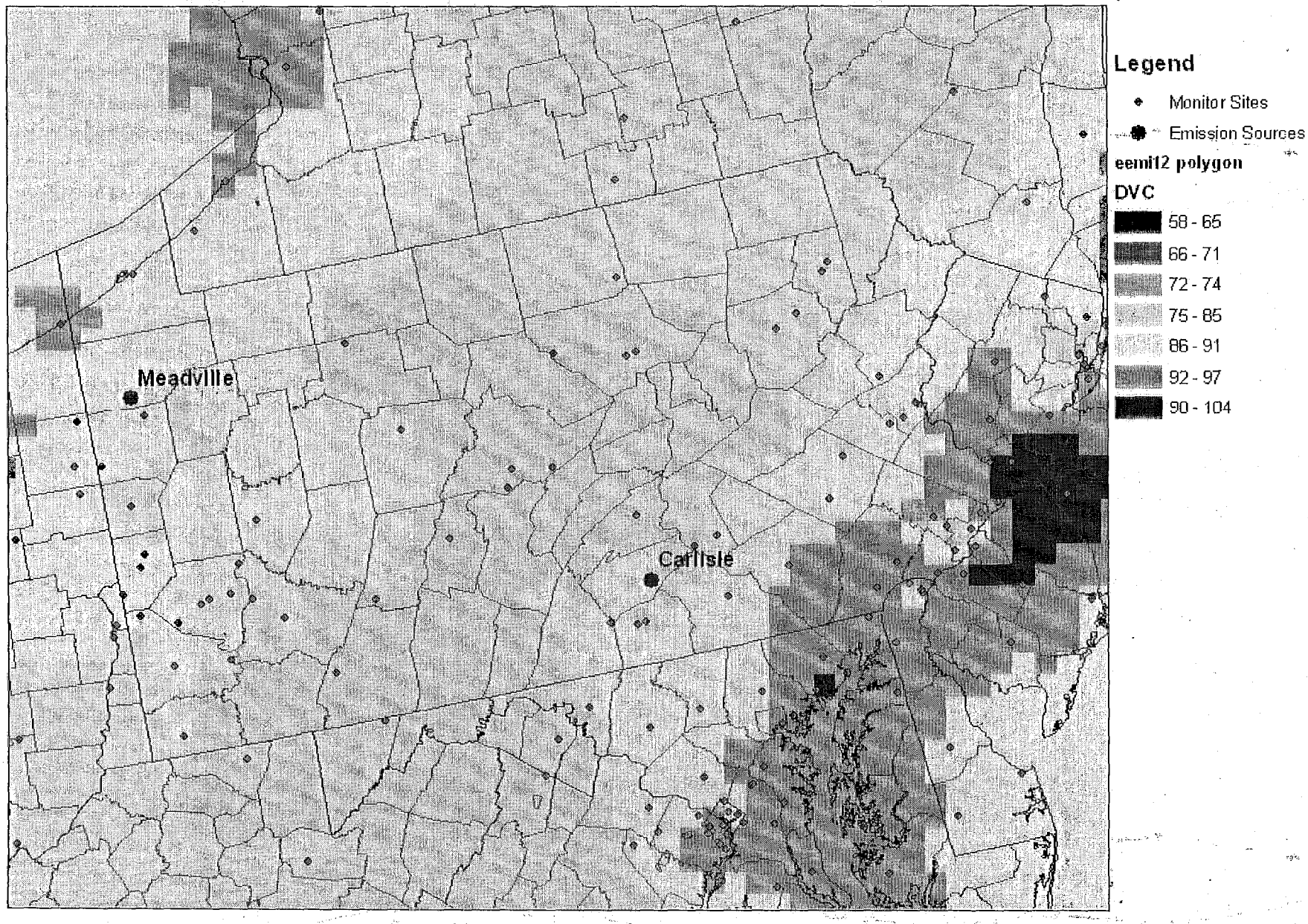

O3 DV: PENNSYLVANIA
ppb
120
100
80
60
40
20
0
Cutoff Concentration: PENNSYLVANIA
ppb
90
85
80
75
70
Number of Day: PENNSYLVANIA
Number of Day
30
25
20
15
10
5
0
Adams-0002
Allegheny-0008
Allegheny-0010
Allegheny-0067
Allegheny-0088
Allegheny-1005
Armstrong-0001
Beaver-0002
Beaver-0005
Beaver-0014
Berks-0001
Berks-0009
Blair-0801
Bucks-0012
Cambria-0011
Centre-0100
Centre-4000
Chester-0050
Chester-0100
Clearfield-4000
Dauphin-0401
Dauphin-1100
Delaware-0002
Erie-0003
Franklin-0001
Greene-0002
Lackawanna-0101
Lackawanna-2006
2009B4
2009B4-car
2009B4-mead


O3 DV: PENNSYLVANIA
ppb
120
100
80
60
40
20
0

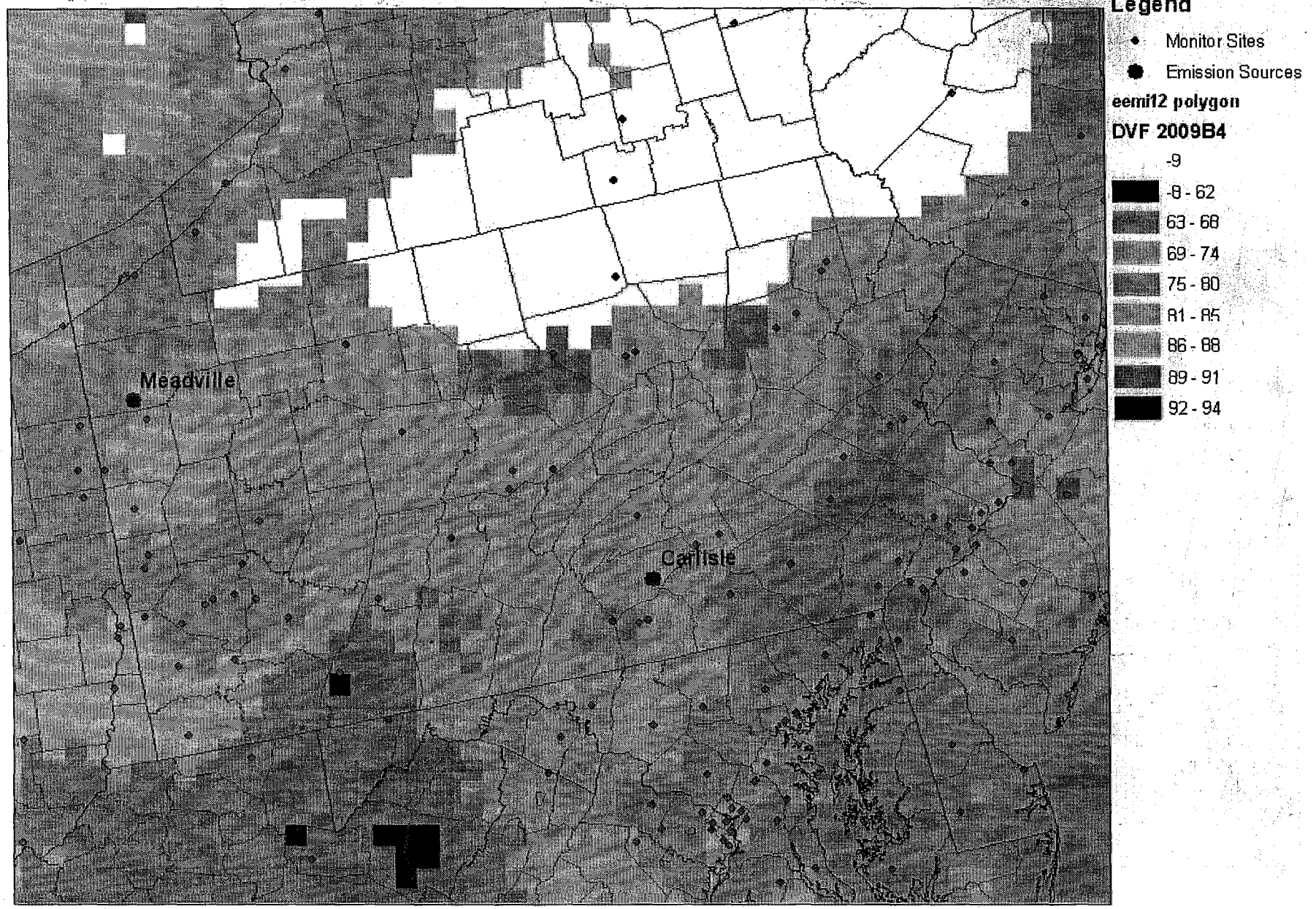

Cutoff Concentration: PENNSYLVANIA
ppb
100
90
80
70
60
50
40
30
20
10


Number of Day: PENNSYLVANIA
Number of Day
30
25
20
15
10
5
0
Lancaster-0007
Lawrence-0015
Lehigh-0004
Luzerne-1100
Luzerne-1101
Lycoming-0100
Lycoming-0403
Lycoming-4000
Mercer-0100
Monroe-0001
Montgomery-0013
Northampton-0025
Northampton-0100
Northampton-8000
Perry-0301
Philadelphia-0004
Philadelphia-0014
Philadelphia-0024
Philadelphia-0136
Tioga-4000
Washington-0005
Washington-0200
Washington-5001
Westmoreland-0006
Westmoreland-0008
York-0008
Adams-ARE128
Elk-KEF112
Somerset-LRL117
Mercer-MKG113
Centre-PSU106
2009B4
2009B4-car
2009B4-mead

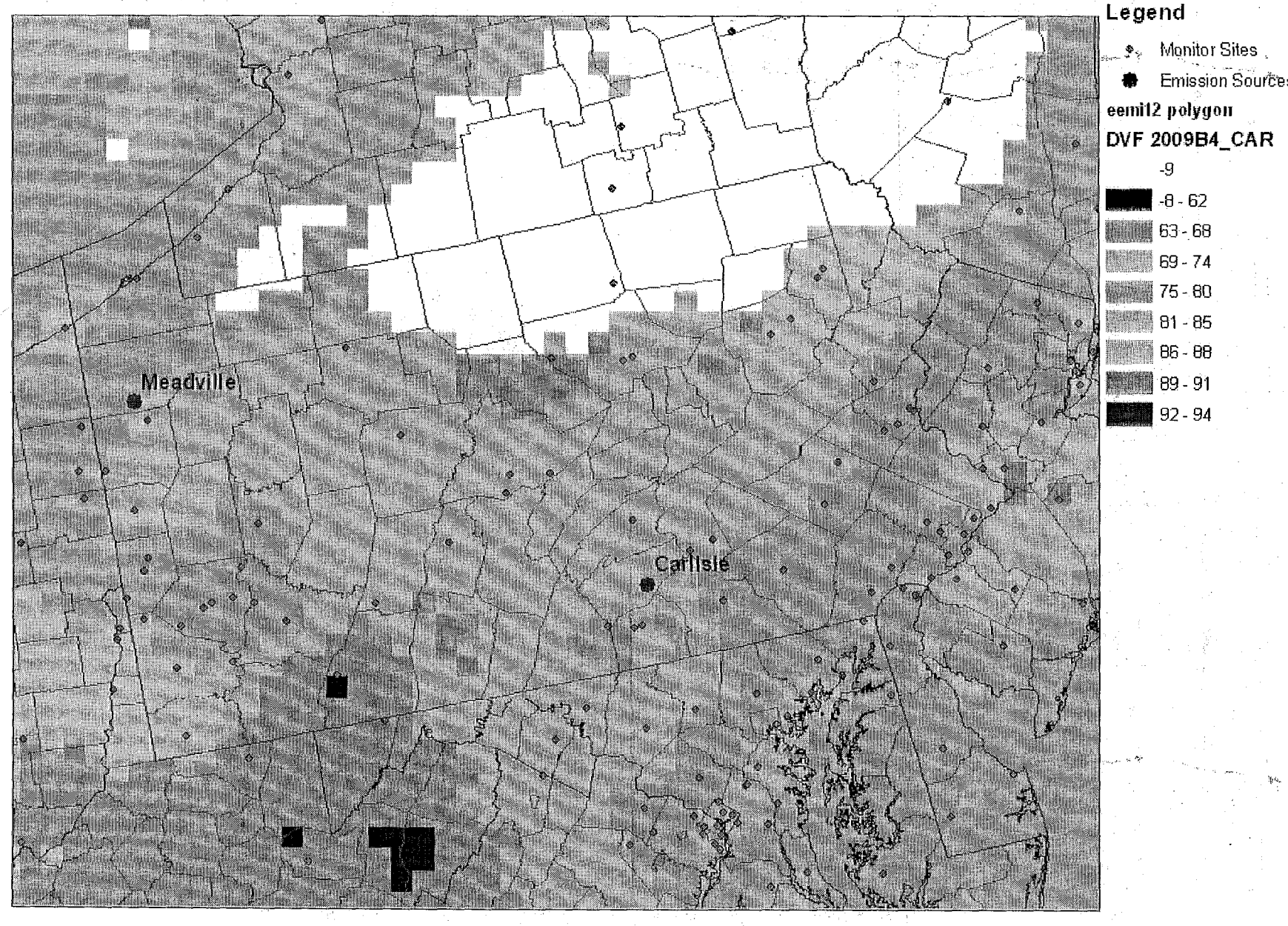
Current Year 8-Hour Ozone Design Value



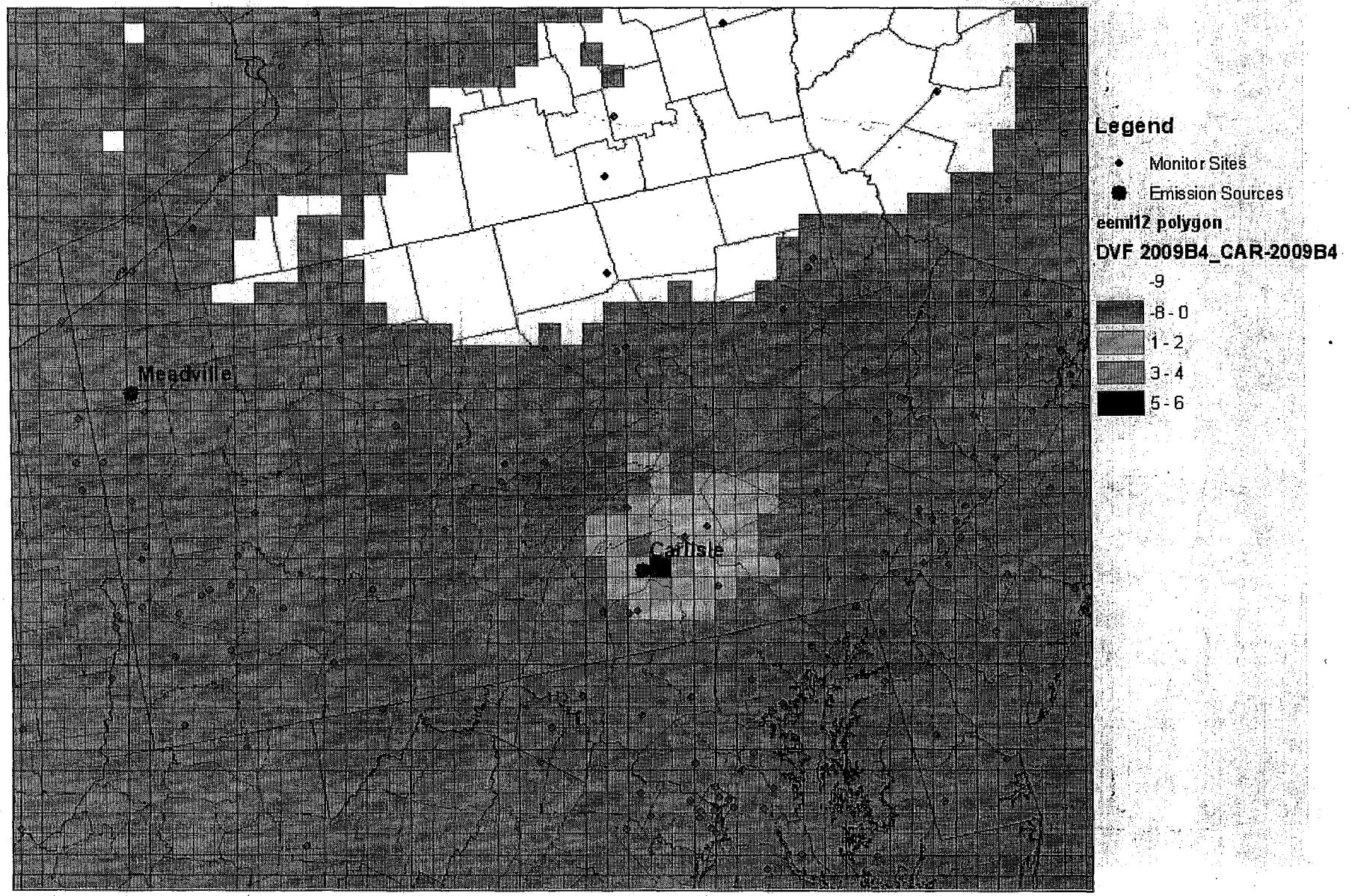
2009B4 botw 8-hr Ozone DVF



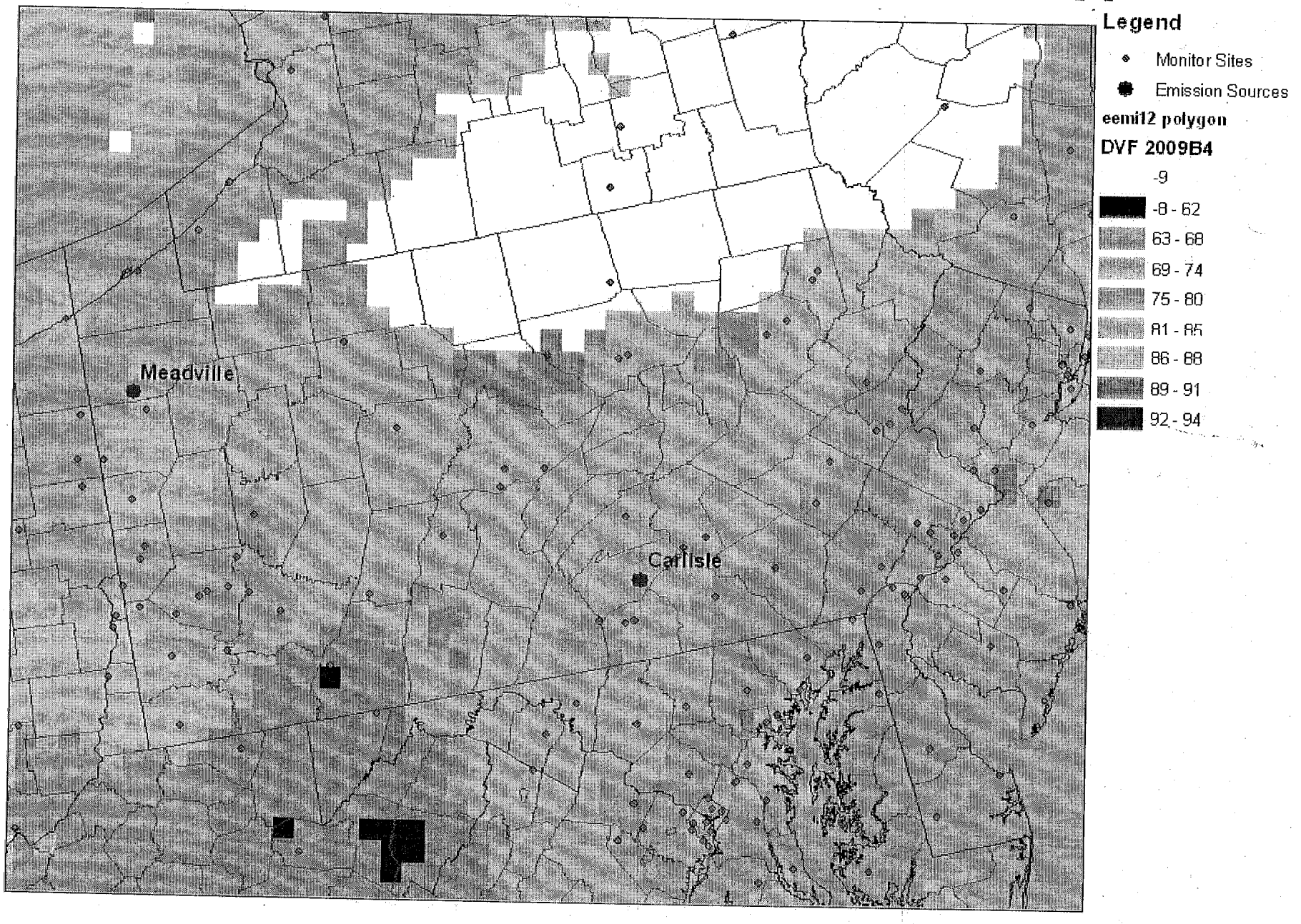
2009B4-Carlisle 8-hr Ozone DVF



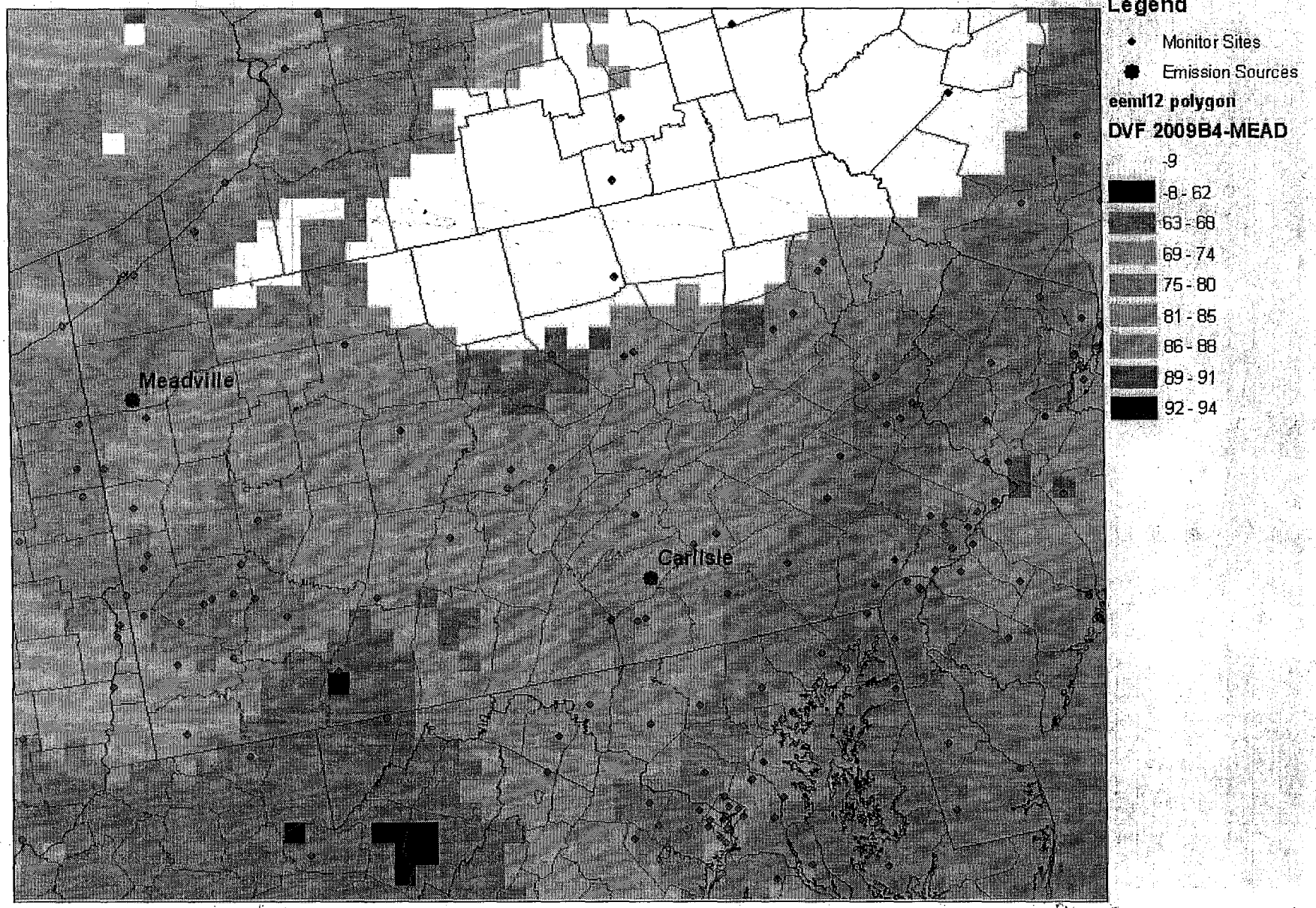
Differences in DVF 2009B4 – 2009B4-



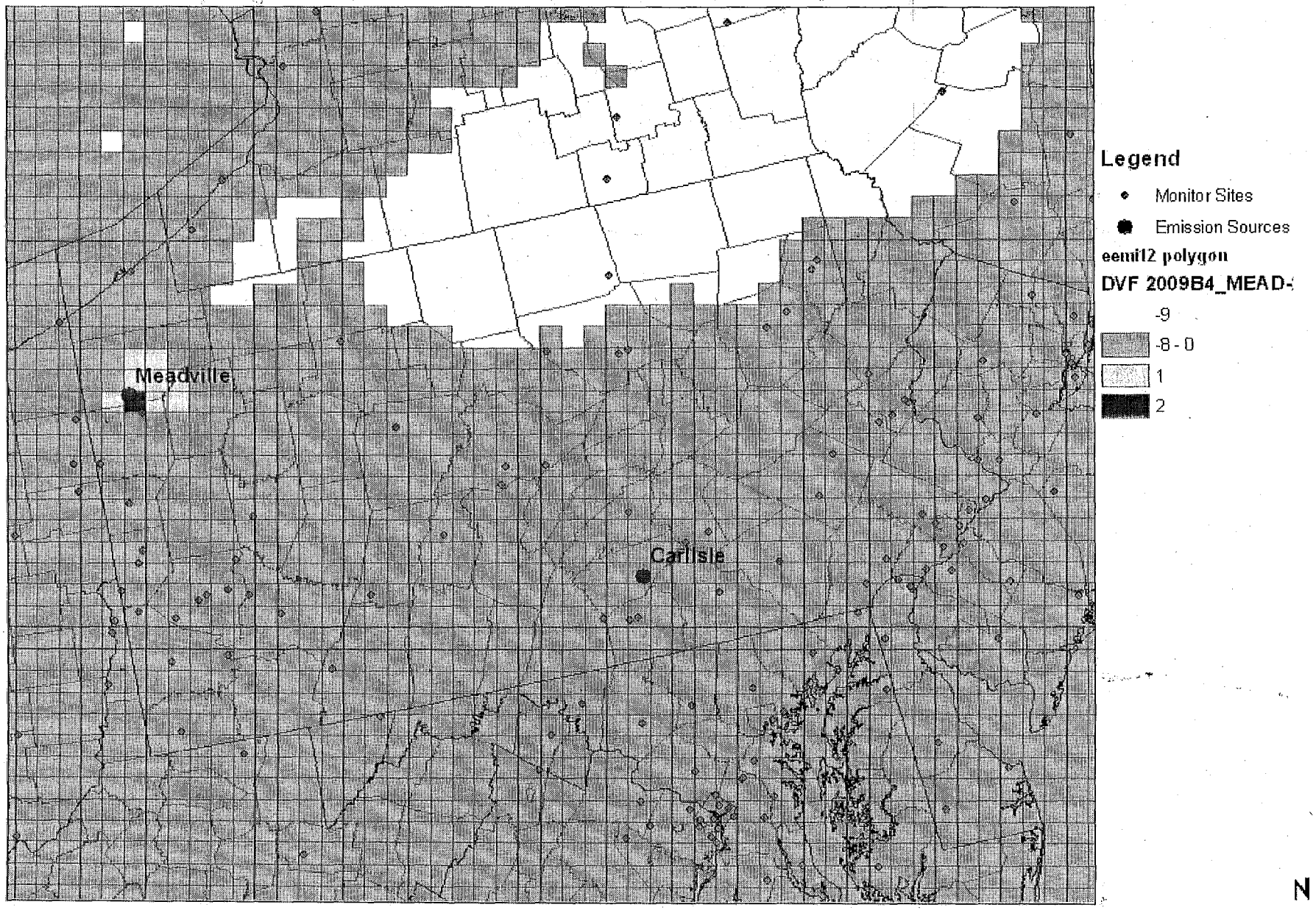
2009B4 botw 8-hr Ozone DVF



2009B4-Meadville 8-hr Ozone DVF



Differences DVF 2009B4 – 2009B4-



Highest 2009 Projected PA DVFs with 2009B4 DVF > 75.0 ppb

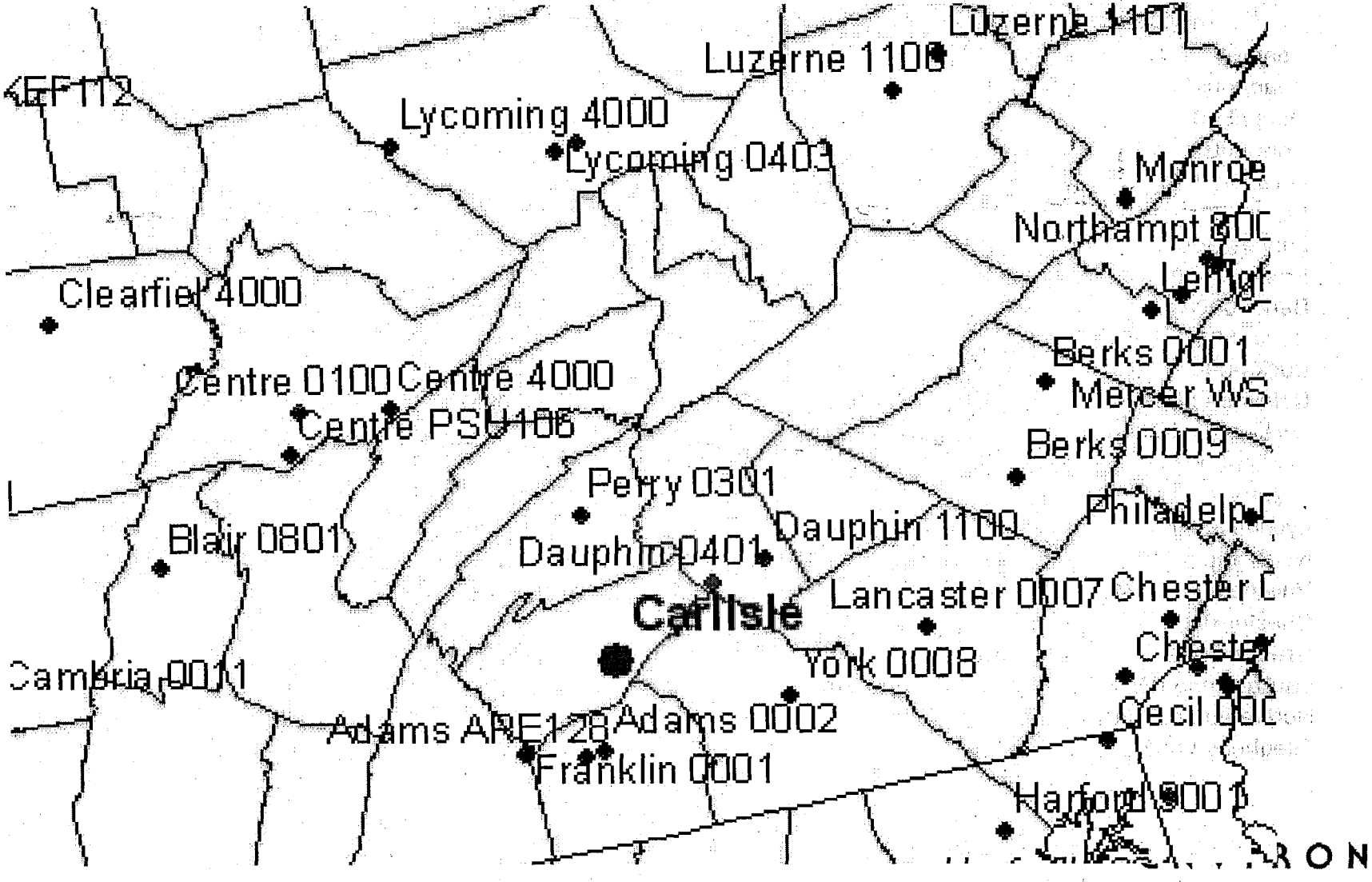
County	DVBase	2009B4	2009B4_car	2009B4_car - 2009B4	2009B4_mead	2009B4_mead - 2009B4
Bucks-0012	99.0	88.6	88.7	0.10	88.6	0.00
Philadelphia-0024	96.7	87.1	87.2	0.10	87.1	0.00
Philadelphia-0014	90.7	82.6	82.6	0.00	82.6	0.00
Chester-0050	95.0	82.4	82.4	0.00	82.4	0.00
Montgomery-0013	92.3	81.5	81.5	0.00	81.5	0.00
Allegheny-0010	90.7	81.4	81.4	0.00	81.4	0.00
Beaver-0002	91.3	81.1	81.1	0.00	81.2	0.10
Delaware-0002	91.7	81.1	81.2	0.10	81.1	0.00
Allegheny-0008	89.3	80.2	80.2	0.00	80.2	0.00
Allegheny-0067	89.3	80.1	80.1	0.00	80.1	0.00
Chester-0100	94.7	79.0	79.1	0.10	79.0	0.00
Allegheny-1005	91.3	78.7	78.7	0.00	78.7	0.00
Lehigh-0004	90.7	78.6	78.7	0.10	78.6	0.00
Beaver-0005	89.7	78.4	78.4	0.00	78.4	0.00
Northampton-0025	90.0	78.3	78.4	0.10	78.3	0.00
Erie-0003	89.0	78.2	78.2	0.00	78.2	0.00
Mercer-0100	91.3	77.5	77.5	0.00	77.5	0.00
Armstrong-0001	90.7	77.4	77.4	0.00	77.4	0.00
Westmoreland-0008	88.0	77.2	77.2	0.00	77.2	0.00
Adams-ARE128	92.0	77.0	79.0	2.00	77.0	0.00
Lancaster-0007	91.0	76.7	77.2	0.50	76.7	0.00
Northampton-8000	88.0	76.4	76.5	0.10	76.4	0.00
Franklin-0001	90.7	76.2	76.6	0.40	76.2	0.00
York-0008	89.0	75.9	76.6	0.70	75.9	0.00
Berks-0009	88.7	75.8	76.1	0.30	75.8	0.00
Washington-0005	86.3	75.8	75.8	0.00	75.8	0.00
Philadelphia-0136	83.0	75.1	75.1	0.00	75.1	0.00
Greene-0002	87.7	74.9	75.0	0.10	74.9	0.00

ENVIRON

Highest Increase in Projected DVFs when 2002 Carlisle NOx Emissions in 2009B4

County	DVBase	2009B4	2009B4_car	2009B4_car - 2009B4	2009B4_mead	2009B4_mead - 2009B4
Adams-ARE128	92.0	77.0	79.0	2.00	77.0	0.00
Adams-0002	80.0	66.9	68.7	1.80	67.0	0.10
Dauphin-0401	85.0	71.4	72.7	1.30	71.4	0.00
York-0008	89.0	75.9	76.6	0.70	75.9	0.00
Dauphin-1100	86.7	73.2	73.8	0.60	73.2	0.00
Perry-0301	83.3	70.0	70.6	0.60	70.0	0.00
Lancaster-0007	91.0	76.7	77.2	0.50	76.7	0.00
Franklin-0001	90.7	76.2	76.6	0.40	76.2	0.00
Berks-0009	88.7	75.8	76.1	0.30	75.8	0.00
Berks-0001	84.5	72.0	72.2	0.20	72.0	0.00
Bucks-0012	99.0	88.6	88.7	0.10	88.6	0.00
Delaware-0002	91.7	81.1	81.2	0.10	81.1	0.00
Lackawanna-2006	82.0	69.6	69.7	0.10	69.6	0.00
Lehigh-0004	90.7	78.6	78.7	0.10	78.6	0.00
Luzerne-1101	83.7	70.1	70.2	0.10	70.1	0.00
Lycoming-0100	82.0	69.3	69.4	0.10	69.3	0.00
Northampton-0025	90.0	78.3	78.4	0.10	78.3	0.00
Philadelphia-0024	96.7	87.1	87.2	0.10	87.1	0.00
Chester-0100	94.7	79.0	79.1	0.10	79.0	0.00
Greene-0002	87.7	74.9	75.0	0.10	74.9	0.00
Lackawanna-0101	83.3	70.7	70.8	0.10	70.7	0.00
Northampton-8000	88.0	76.4	76.5	0.10	76.4	0.00
Allegheny-0008	89.3	80.2	80.2	0.00	80.2	0.00

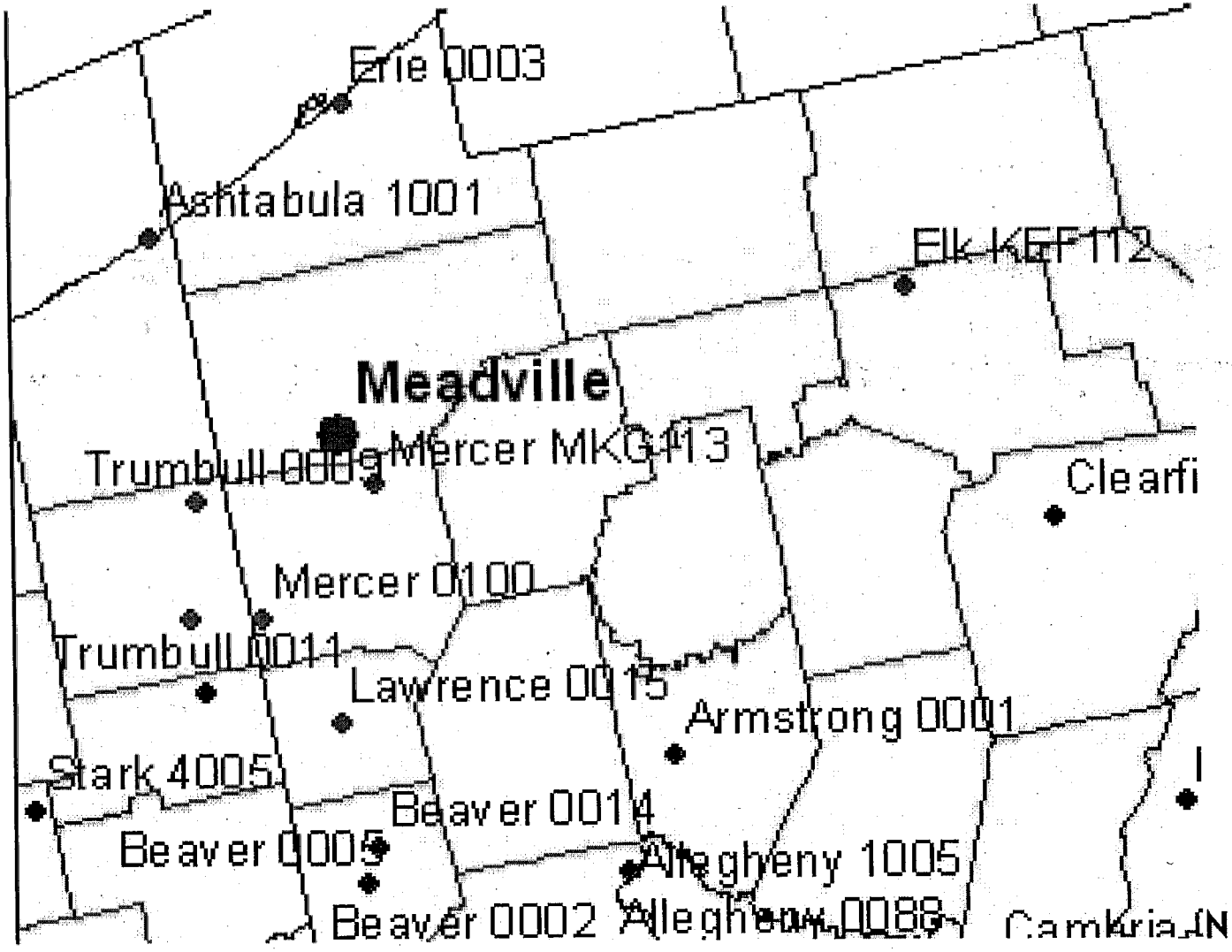
Monitoring Sites Near PPG Carlisle



Highest Increase in Projected DVFs when 2002 Meadville NOx Emissions in 2009B4

County	DVBase	2009B4	2009B4_car	2009B4_car - 2009B4	2009B4_mead	2009B4_mead - 2009B4
Mercer-MKG113	85.7	71.9	71.9	0.00	72.5	0.60
Beaver-0002	91.3	81.1	81.1	0.00	81.2	0.10
Adams-0002	80.0	66.9	68.7	1.80	67.0	0.10
Elk-KEF112	82.3	70.2	70.2	0.00	70.3	0.10
Allegheny-0008	89.3	80.2	80.2	0.00	80.2	0.00

Monitoring Sites Near PPG Carlisle



ENVIRON

MATS Artifact @ Adams-0002 Monitor

- The Adams County 0002 monitoring site near Carlisle is only site with reduced projected 2009 8-hour ozone Design Value with 2009 botw controls on both Carlisle (-1.8 ppb) and Meadville (-0.1 ppb) facilities
  - 0.1 ppb reduction due to Meadville artifact of EPA's MATS truncation to nearest tenth of a ppb methodology
  - -0.1 ppb = 66.9 – 67.0 (2009B4 minus 2009VB4-Meadville)
  - Actual difference with more resolution is:
    - 66.992 – 67.008 = -0.016 ppb

Conclusions

- Keeping the 2009 NOx emissions at the PPG Carlisle and Meadville facilities at 2002 levels most has little effect on the projected 2009 8-hour ozone Design Values (DVFS)
  - At two ozone monitors projected to still violate the 85 ppb ozone NAAQS (Bucks-0012 @ 88.6 ppb and Philadelphia-0024 @ 87.1 ppb):
    - use of 2002 NOx emissions at Carlisle increases the 2009 DVF by 0.1 ppb; and
    - use of 2002 NOx emissions at Meadville has no effect (0.0 ppb)
  - At 27 PA monitoring sites with 2009B4 DVFs > 75.0 ppb
    - 2002 Carlisle NOx emissions increases the DVF by 0.1 ppb or more at 12 sites
    - 2002 Meadville NOx emissions results in an increase of 0.1 ppb at just one site

PROPOSED VARIANCE PROCEDURE FOR PENNSYLVANIA NOx RULES

The variance procedure proposed below is modeled after variance procedures already set forth in the Pennsylvania Code. One existing variance procedure is provided at 25 Pa. Code Sections 130.606—130.610, which addresses variances from VOC standards for architectural and industrial maintenance coatings. This is one of the most recent variance provisions incorporated into the Pennsylvania Code and provides a comprehensive procedure. Additionally, these architectural and industrial maintenance coating variance provisions ("Coating Variance Provisions") were added in response to public comments. *See* 33 Pa. Bull. 5297 (Oct. 25, 2003). Please note that the proposed variance procedure does not permit any variance from the recordkeeping requirements in section 129.310 of the proposed rule; (Section 129.310 requires a log of the total hours of operation, type and quantity of fuel used, and quantity of glass pulled. Section 129.310 also requires records of source tests and operating parameters and records of maintenance, repairs, malfunctions, idling, start-up, and shutdown.)

§ 129.311. Application for variance.

(a) The Department may, upon written application from the owner or operator of a glass melting furnace, grant a variance from one or more provisions of sections §§ 129.302—129.309.

(b) A written application for a variance shall be submitted to the Department and provide the following information:

(1) The specific grounds upon which the variance is sought.

(2) The specific sections of this rule from which the variance is sought.

(3) A compliance report detailing the methods by which compliance will be achieved.

(c) No later than 90 days after receipt of a complete variance application containing the information required in this section, the Department will hold a public hearing in accordance with § 129.315 (relating to public hearings) to determine the following:

(1) Whether a variance from the requirements in §§ 129.302—129.309 is necessary.

(2) Under what conditions a variance from the requirements in §§ 129.302—129.309 is necessary.

(3) To what extent a variance from the requirements in §§ 129.302—129.309 is necessary.

(d) The Department will not grant a variance unless the applicant demonstrates in writing to the Department's satisfaction that:

(1) Requiring compliance with §§129.302—129.309 would be economically unreasonable for the applicant.

(2) The public interest is best served by granting the variance.

(3) The applicant's current operations have no adverse impact on atmospheric NOx concentrations.

§ 129.312. Variance orders.

(a) The Department will provide to the applicant a written notice of approval, approval with additional conditions, or denial.

(b) A variance order will contain conditions that the Department determines to be necessary in consideration of the testimony received at the public hearing held in accordance with § 129.315 (relating to public hearings), written comments and other information available to the Department.

§ 129.313. Termination of variance.

A variance will cease to be effective upon failure of the party to whom the variance was granted to substantially comply with a term or condition of the variance.

§ 129.314. Extension, modification or revocation of variance.

The Department may, for good cause, including air quality considerations, extend, modify or revoke a variance from the requirements of §§129.302-129.309 (relating to standards), after holding a public hearing in accordance with §129.315 (relating to public hearings).

§ 129.315. Public hearings.

(a) Prior to issuance, extension, modification or revocation of a variance order, the Department will hold a public hearing to take public comment on the application for a variance or on the proposed extension, modification or revocation of a variance order.

(b) The Department will publish notice of the time, place and purpose of the hearing in newspapers of general circulation and in the *Pennsylvania Bulletin* not less than 30 days prior to the hearing.

(c) Not less than 30 days prior to the hearing, the Department will make available to the public the following:

(1) The application for the variance or, if the hearing is for an extension, modification or revocation, the variance order.

(2) The proposed order for issuing, extending, modifying or revoking the variance.

PPG Industries, Inc. – Section-by-Section Comments on Pennsylvania's Proposed Rulemaking: Glass Melting Furnaces (Version Dated April 19, 2008)

1) **<u>§121.1 – Definitions:</u>**

   a) The definition of "Furnace Rebuild" is unclear and appears to broaden the scope of repair activities currently requiring permitting. PPG requests that this regulation for the reduction of NOx not expand the scope of what currently triggers permitting or Plan Approvals as specified in 25 PA Code 127.11 and existing federal regulations. Therefore PPG respectfully requests the following clarifications:

      i) That the term "complete reconstruction" as used in this definition be stated as "reconstruction" and have the same meaning as the federal definition of "reconstruction" provided in 40 CFR Part 60, §60.15.

      ii) That the term "Furnace Rebuild" exclude rebricking activities as defined in 40 CFR Subpart CC and likewise exclude those activities from permitting. Also per 40 CFR Subpart CC, rebricking should not be considered a reconstruction.

      iii) PPG requests deleting the part of the rebuild definition stating *"That for the purpose of the compliance deadline in § 129.304 (relating to emission requirements) the effective date of a furnace rebuild is the date of the start of the furnace shutdown"*, because §129.304 mandates a compliance date and limits independent of consideration to rebuild timing.

   b) The definition of "Start-Up" in the proposed rule does not include within the definition the time required to have the furnace (and instrumentation) fully operational and stable. Therefore, PPG requests that the text of the definition be revised as follows: "the period of time, after initial construction or a furnace rebuild, during which a glass melting furnace is heated to operating temperature by the primary furnace combustion system, *and systems and instrumentation are brought to stabilization.*"

2) **§129.304 – Emission Requirements:** This section imposes new NOx emission limits on glass melting furnaces beginning May 1, 2009. This is not reasonable as there is less than a year until the May 1 deadline and the rule is not yet final and may not be final before the end of the year. Compliance with this regulation will likely require permitting of pollution control equipment which cannot reasonably occur by May 1, 2009. PPG proposes that the deadline be amended to become effective upon the next furnace rebuild but no sooner than May 1, 2012.

<u>3) §129.305(a) – Plan Approvals:</u> As noted in comment 1 above, PPG requests that this regulation for the reduction of NOx not expand the scope of what currently triggers permitting or Plan Approvals in accordance with current federal and PA regulations. Exemptions should be included for furnace rebricking and repairs or replacements that do not constitute a modification.

DEP has stated previously, that this provision is not intended to expand the scope of activities required in permitting or plan approvals.

4) §129.305(c) – Start Ups: The start-up exemption time for a flat glass furnace is too short. In addition to the 104 days allowed by the draft rule following activation of the primary furnace combustion system, PPG requests 208 days for a flat glass furnace that uses a NOx control that is not readily available from a commercial supplier, or not in common use, or is innovative.

5) §129.305(e) – Start Up Excess Oxygen: PPG requests that this requirement be eliminated. During a meeting between PPG and PA DEP on June 14, 2007, PPG asked DEP representatives to cite the technical source or explanation behind this requirement to constrain combustion oxygen, as it does not appear to have any relationship or benefit to NOx emissions. In addition the presence of air (i.e., source of the excess oxygen) is necessary for (1) a gradual, even heat up of the furnace, and (2) to have sufficient volume and pressure of air to control the rate of expansion of the furnace structure as it is heated. It seems unnecessary to specify such an operating condition since other sections of this regulation already exempt facilities from emission limits during the start up period [see 129.303(b)] and also constrain the length of time allowed for "startup." As there is no relevance to NOx emissions, PPG requests deleting this requirement, as it imposes an unnecessary operational constraint with no emission benefit.

6) §129.308 – Compliance Determinations:

§129.308 (a) – The rule requires the installation and operation of continuous emissions monitoring systems (CEMs) or an alternate NOx emissions monitoring system or method (alternate system) approved by the DEP in writing. The CEMS or alternate system would have to be approved by the DEP, ordered, installed and operational by May 1, 2009. This is not reasonable as there is less than a year until the deadline and the rule is not yet final and imposes no time requirement upon the DEP for review and approval of the CEMS or alternate system. PPG proposes the following changes:

i) Owners or Operators would be allowed to use stack testing to demonstrate compliance pending installation of CEMs or an alternate system.

ii) The DEP would have 12 months from the effective date of the regulation in which to review and approve the CEMS or alternate system.

iii) The Owner or Operator would have 12 months from the date of receipt of DEP approval to order, install, and have the system fully operational.

iv) Owners or Operators would be allowed to use stack testing in lieu of CEMS to demonstrate compliance where the Owner or Operator can demonstrate that emissions are consistently below the allowable emission limits specified in section 129.304;

129.308 (e) – The compliance determinations in this section specify units of lb/hour, whereas the emission requirements are elsewhere expressed in units of lb/ton and/or tons of NOx. PPG

requests that the units for the compliance determinations be the same as those specified for the emission requirements in § 129.304.

7) §129.309 – Compliance Demonstrations:

a) §129.309(a) – CAIR NOx allowances: In June, 2007, PPG expressed concern to the DEP regarding the timing, cost, and business impact of the proposed NOx allowance scheme. This is a serious concern because (1) there is now less than a year before the first compliance demonstration period and the rule is not yet final; (2) the rule does not provide for time for permitting prior to installation of control equipment or approvals prior to installation of CEMs; (3) the rule limits the type of allowances to CAIR NOx allowances; (4) the rule does not provide for a variance where CAIR NOx allowances are not available or are in limited supply or the costs are not reasonable; and (5) CAIR NOx allowances have recently sold for as much as $6,000 per ton. DEP suggested further discussion on this matter. PPG proposes the following changes, that would provide some flexibility , and would also provide incentive for early reduction of NOx emissions.

i) The effective date for demonstrating compliance would be upon completion of the next furnace rebuild. In no event, however, would compliance demonstrations be required until 2012.

ii) Where an Owner or Operator seeks to install a continuance emission monitor, an alternate monitoring system or pollution control equipment on its glass melting furnace and is unable to obtain a permit to install and operate from DEP within a year from the date of application, the Owner or Operator shall be entitled to a waiver from the requirement to purchase NOx credits for at least one ozone season. In the event, the permit to install pollution control equipment is not forthcoming within the next 6 months, the Owner or Operator shall be entitled to a continuing waiver from the requirement to purchase NOx credits until such time as the permit is issued and the equipment is installed and fully operational.

§129.309(c) – CAIR NOx allowances: The regulation provides for CAIR Nox allowances. Owners and Operators should not be constrained to CAIR NOx allowances but allowed to use NOx credits previously banked as a result of prior emission reductions. Owners or Operators purchasing CAIR NOx allowances who can demonstrate that such allowances are not available or are in limited supply or the costs are not reasonable, may seek a variance.

Summary of PPG Industries, Inc.'s Comments Regarding the Proposed Rule to Control NOx Emissions from Glass Melting Furnaces (25 Pa. Code Chapters 121, 129)

PPG, headquartered in Pittsburgh, is a leading manufacturer of flat glass products for construction and transportation applications and maintains two facilities in the Commonwealth, Carlisle and Meadville, providing approximately 727 jobs in Pennsylvania with a total payroll of approximately $39 million.

With regard to the EQB's proposed rule to control NOx emissions from glass melting furnaces, PPG believes that the proposed rule is arbitrarily and unreasonably over-inclusive. Comprehensive modeling performed by PPG indicates that PPG's flat glass furnaces in Carlisle and Meadville simply do not adversely affect in any material or measurable manner the 8-hour ozone attainment status of any area in Pennsylvania or elsewhere in the Northeast ozone transport Region. Because PPG's facilities do not contribute to the failure of any area to comply with air quality standards for ozone, PPG believes the proposed rule cannot legally extend to these facilities. Regulating sources that do not affect the attainment of air quality standards for ozone, at great expense, under the proposed rule violates 2 Pa. Const. Stat. § 102 and is therefore unlawful, unnecessary for the protection of public health and the environment, and economically wasteful.

However, as an alternative to excluding PPG's facilities from the proposed rule, and in the interest of protecting public health and the environment while at the same time avoiding inefficient and economically harmful overregulation of businesses committed to environmental protection, PPG urges the EQB to revise the proposed rule to allow for a variance procedure if the applicant demonstrates that: (1) it is economically unreasonable for the applicant to comply with the requirements of the proposed rule; (2) the public interest is best served by granting the variance; and (3) the applicant's current operations have no significant adverse impact on atmospheric NOx concentrations and do not effect Pennsylvania's 8-hour ozone demonstration.

PPG meets the proposed standard for granting a variance. First, the potential costs to PPG to meet the requirements of the proposed rule are enormous. At Meadville, PPG has spent approximately $29 million in a voluntary measure to reduce NOx emissions and estimates further capital costs to comply with the proposed rule at Meadville are approximately $500,000 in capital costs. Similarly, to meet the requirements of the proposed rule at the Carlisle facility, PPG expects it would have to spend approximately $10.5 million to $31 million with increased annual O&M costs. These costs are unreasonable in light of the demonstrated fact that emissions from these sources do not adversely affect the ozone attainment status of any area in the Northeast Ozone Transport Region.

PPG has a strong commitment to the protection of human health and the environment as well as a desire to conduct its business in the Commonwealth in the most economically efficient manner possible. Please consider the proposed variance procedure in these comments as an effort to balance concerns of economic waste with a recognition of the value of effective environmental regulation.