2/19/97

Dennis--

Regarding the 2/13/87 fax from Alan Dresser and our discussions related to the telephone call that you had with Regions II & III and PA & NJ on 2/14, here are some thoughts regarding the use of the multiple years of meteorological data available for the regulatory modeling analysis of the Martin's Creek power plant.

First, I should note that these thoughts are based on Model Clearinghouse history and on previous Federal Register determinations. In order to get an official response on the issue, we would need a memo from the Region(s) which analyzes the issue and states their position. This memo and proposed response would likely need to be run by the Office of General Counsel for concurrence.

The basic issue inherent in the several options proposed by NJ is that when doing the regulatory modeling for the power plant can one somehow make use of the partial years of meteorological data that have been collected? NJ proposes several options on how these data can be utilized, or not utilized in the regulatory analysis.

One factor to be considered relates to the nature of the ambient standard, against which the model estimates will be compared. EPA's NAAQS are interpreted in terms of "block averages." The short term NAAQS for SO_2 are written in terms of maximum concentrations in 3-hour and 24-hour (day) blocks "not to be exceeded more than once per year," where "year" is taken to mean the block calendar year. Thus, one would need to collect a calendar year of ambient data or modeled data in order to make a comparison to such NAAQS. Thus, our regulatory models historically have always required a full calendar year of meteorological data before they will make a calculation. That is not to say that the models cannot be fooled into thinking that they have a calendar year with input of data from a shorter period of time, or substituting some data from another year to "make up" a calendar year. For Martins Creek for example, one might model 6 months of data (June-Dec.) from 1991, full years for 1992 and 1993, and 9 months (Jan.-Oct.) for 1994. The high-second-high's for each of these periods could then be compared to the NAAQS. Alternatively, one could take the Jan. to May data from 1994 and mix it with the June to Dec. data from 1991 to "make up" a calendar year for modeling purposes. In this case you would have 3 years of high-second-highs for comparison to the NAAQS, two calendar years and one "made up" calendar year.

While the above examples may seem creative and intuitively acceptable, it is doubtful that the high-second-high from the partial year or "made up" year runs could be strictly compared to the NAAQS. In developing the Guideline on Air Quality Models, we have strived to be consistent with the way in which monitoring is used to determine compliance with the NAAQS. We don't think that partial year monitoring or "made up" year monitoring could be required for determining NAAQS compliance. Pursuant to the monitoring interpretation, for modeling data we do not think that the creative methods could be required.

On another twist, States are always permitted to be more stringent than the NAAQS and they could, say, define their ambient standards in terms of "not to be exceeded more than once in 365

consecutive days." In this way they could create three years of modeling data for Martins Creek by starting in June, 1991, modeling for three consecutive 365 day periods, and comparing the three sets of high-second-high's with the redefined ambient standards. (Or, they could start in Nov. 1991 and model the three consecutive 365 day periods in order to use the "latest" three years of data.). In order to do this it seems that NJ would need to have such a redefined standard in their regulations. However, they would be "on their own" in enforcing it, since EPA cannot enforce standards more stringent than the NAAQS. This might prove to be difficult for the State to enforce such a standard against a source in another state.

Similarly, back to the creative data base examples above, there is nothing in the EPA requirements to restrict the State(s) from using such procedures since they seem to be more restrictive than EPA requirements, but it might prove difficult to impose them on the source.

Looking back through the Model Clearinghouse records, we find that there are two types of problems where EPA has permitted modeling on other than a calendar year basis. One is for ozone where violations can be presumed only to occur in the warmer months and there is no need to model say, in January. The other type is when source begins collecting on-site meteorological data at some time other than January 1, and collects the minimum required one year of data spanning parts of two calendar years. We have accepted such data in the interest of expediency on the assumption that the procedure would not be expected to be "climatologically biased," and the results would be expected to be at least as restrictive as if it were done on a calendar year basis. The important point here is that the procedure was accepted, but not required by EPA.

Looking at the four alternatives proposed by NJ, it seems that their logic for rejecting Alternatives 1 & 2 seem OK. On Alternative 3, while we agree that that the Alternaive itself is supportable, we disagree with the statement that there is no requirement that the modeled period run from Jan. 1 to Dec. 31. Alternative 4 could be accepted but not imposed or enforced by EPA.

Incidently, the issue of modeling with block vs. running averages has been challenged before. See the May 20 1988 F.R., p18039, on the Muskingum River power plant for good discussion on this subject.

It is good that this issue is to be brought out at the modelers'workshop. I would be interested in getting other perspectives on it.

Dean Wilson
2/19/97

NEW JERSEY ISSUE FOR THE 1997 EPA/STATE MODELER'S WORKSHOP:
When more than one year of valid site-specific meteorological data is available, does the permit applicant only have to use one year of data in the modeling analysis or can the regulatory agency require use of more than one year and, if so, how much more?

BACKGROUND:
The amount of meteorological data used to establish compliance with the NAAQS and PSD increments can in some cases be critical. In some situations the site-specific meteorological data already exists, having been collected earlier by an entity other than the applicant. However, in many cases it is the permit applicant who is collecting the meteorological data expressly for use in their modeling analysis. Enough meteorological data must be used to ensure that the worst-case meteorological conditions at the site are represented in the modeling results. The *Guideline on Air Quality Models (Revised)* refers to this issue in several places.

Section 9.3.1.2 (Length of Record of Meteorological Data - Recommendations) states the following: "If the source is large, e.g., a 500 MW power plant, the use of 5 years of NWS meteorological data or at least 1 year of site-specific data is required. If one year or more, up to five years, of site-specific data is available, these data are preferred for use in air quality analyses."

Section 8.2.1.1 (Design Concentrations for Criteria Pollutants with Deterministic Standards - Recommendations) states the following: "As long a period of record as possible should be used in making estimates to determine design values and PSD increments. If more than 1 year of site-specific data is available, it should be used."

To my knowledge there are no Clearinghouse memos that explicitly address this issue.

As the above guidance implies, the more meteorological data used, the more likely it is that worst-case meteorological conditions have been modeled. However, can a regulatory agency require more than 1 year of site specific meteorological data be used if it is available?
As an example, a source modeling in New Jersey has collected valid on-site data from June 1991 until October 1994. Should the source be required to model with:

1) one year of data, and if so, which year,
2) two calendar years of data (1992 and 1993)
3) two calendar years of data (1992 and 1993) plus nine months (January 1994 to September 1994)
4) three years of annual data, each of the three years defined as running from June thru June or October thru October.

ALTERNATIVES:
Alternative 1: Regardless of the amount of data available, only one year of site-specific meteorological data must be used in a permit or nonattainment modeling analysis.

An argument could be made that this option should be selected so that a source is not discouraged from collecting more than one year of meteorological data. However, if only one

year of data will be used in the modeling analysis, from the regulatory standpoint there is little to be gained by collecting additional data which will not be used. There is also the potential problem of a source having access to more than one year of meteorological data and, based on preliminary modeling results, choosing to base its permit modeling on the year of data most advantageous to their project (i.e., predicts the lowest impacts). In addition, this option contradicts the existing guidance in Section 8.2.1.1 of the *Guideline on Air Quality Models (Revised)* discussed earlier.

Alternative 2: One year of site-specific meteorological data must be used in a permit or nonattainment modeling analysis. If more than one year of data is available, its use will be determined on a case-by-case.

Although it is often a convenient way of dealing with an issue, leaving the use of additional meteorological data entirely up to case-by-case determinations may lead to large discrepancies across the country on how sources are modeled and the level of pollution control required. Use of more than one year of meteorological data will always result in more robust, and often lower, design concentrations. An applicant with more than one year of site-specific meteorological data could argue for use of one year of data in their modeling analysis because in a different state a source in an identical situation only had to use one year (this recently happened in New Jersey). Competition between states for industry could result in this alternative devolving into Alternative 1.

Alternative 3: If two or more (up to five) calendar years of site-specific meteorological data are available, they must be used in a permit or nonattainment modeling analysis.

In some situations an additional year of meteorological would not be used in the modeling analysis with this calendar year restriction (see the example meteorological data set discussed in the Background Section). In addition, the restriction on using only calendar years of meteorological data is unnecessary. While conceptually easier to understand the results, modeled compliance with short-term and annual NAAQS and PSD increments can be based on any defined annual period. There is no requirement that the modeled annual period run from January 1 through December 31.

Alternative 4: All complete years (up to five) of site-specific meteorological data available must be used in a permit or nonattainment modeling analysis. Partial years of meteorological data (annual data base less than 90 percent complete) can be dealt with on a case-by-case basis.

This alternative follows the current guidance and avoids some of the disadvantages of the other alternatives. It is unfortunate if this alternative discourages permit applicants from collecting additional meteorological data for use in the analysis.

RECOMMENDATION:
Alternative No. 4