RECORD OF HEARING AND SUMMARY OF TESTIMONY

As required by 40 CFR 51.102(e), the complete record of the hearing, along with a list of witnesses and the text of the written presentations or summary of the oral presentations, is located at the Office of Air Regulatory Development of the Department of Environmental Quality. The department contact to access this information is the Director, Office of Air Regulatory Development.

As required by Section 2.1(h) of Appendix V of 40 CFR Part 51, below is a summary of the testimony received and responses thereto. Included is a brief statement of the subject, the identification of the commenter, the summary of the comment and the response (analysis and action taken). Each issue is discussed in light of all of the comments received that affect that issue. All comments have been reviewed and responses developed based on an evaluation of the issues raised in consideration of the overall goals and objectives of the air quality program and the intended purpose of the document under review.

1. **SUBJECT:** The commenter objects to the inclusion of the requirement for Mirant Potomac River Generating Station (PRGS) to submit an air quality analysis for $PM_{2.5}$ emissions once methodologies for such an analysis are finalized. The requirement is found in Section 9.4.3 of the draft $PM_{2.5}$ SIP.

   COMMENTER: Mr. Jeffrey Holmstead of Bracewell and Guiliani, on behalf of Mirant Corporation.

   TEXT: The full text of this submittal, dated January 30, 2008, is attached to this document. The following is a summary of main points made in the document.

   - No technical or legal basis exists for the inclusion of this requirement in the $PM_{2.5}$ SIP.
   - Actual monitoring data do not support the conclusion that such an analysis is necessary.
   - The air quality analysis required to be submitted by PRGS has no relationship to the $PM_{2.5}$ attainment SIP.
   - $PM_{2.5}$ emissions from PRGS are well-controlled.

   RESPONSE: In regards to the statement that no technical or legal basis exists for the inclusion of the PRGS $PM_{2.5}$ ambient air quality analysis requirement in the $PM_{2.5}$ SIP, VDEQ believes that the requirement is supported by a variety of

documents. 9 VAC 5-20-180 I gives the State Air Pollution Control Board (Board) authority to shutdown a facility to prevent violations of the NAAQS: "Regardless of any other provision of this section, the owner of any facility subject to the Regulations for the Control and Abatement of Air Pollution shall, upon request of the board, reduce the level of operation at the facility if the board determines that this is necessary to prevent a violation of any primary ambient air quality standard…" 9 VAC 5-20-160 A provides the Board authority to request information from registered facilities: "The owner of any stationary source to which permits are issued under 9 VAC 5 Chapter 80 (9 VAC 5-80-10 et seq.) or for which emission standards are given in 9 VAC 5 Chapter 40 (9 VAC 5-40-10 et seq.), 9 VAC 5 Chapter 50 (9 VAC 5-50-10 et seq.), and 9 VAC 5 Chapter 60 (9 VAC 5-60-10 et seq.) shall, upon request of the board, register such source operations with the board and update such registration information. The information required for registration shall be determined by the board and shall be provided in the manner specified by the board." 9 VAC 5-40-50 H requires facilities to provide various reports at the request of the Board: "Upon request of the board, the owner of an existing source subject to the provisions of this chapter shall provide notifications and report, revise reports, maintain records or report emission test or monitoring result in a manner and form and using procedures acceptable to the board…" The Clean Air Act Amendments of 1990 (CAAA) notes in §172(c)(1) *Nonattainment Plan Provisions – In General* that plans shall "…provide for attainment of the national primary ambient air quality standards." §172(c)(1) *Nonattainment Plan Provisions – Other Measures* requires that plans contain emission limitations and other such control measures, means, or techniques as may be necessary or appropriate to provide for attainment.

VDEQ agrees that the actual monitoring data currently available may not necessarily indicate the presence of a NAAQS violation for $PM_{2.5}$ attributable to PRGS. However, to a certain extent, these data are inconclusive. Ambient air quality violations of the NAAQS are dependent upon meteorology; facility stack configuration; local area topography such as the presence of hills, peaks, valleys and nearby structures; emission rates from any facility; regional load being transported into the area; and a number of other factors. Emission rates from any facility can be dependent upon fuel type; demand; limitations placed on the facility by a variety of permits; and other operational and economic factors.

VDEQ agrees that there are several uses of air quality data in evaluating the impacts from a facility such as PRGS. One of the most important uses identified in the EPA's Guideline on Air Quality Model is the use of air quality measurements "in a complementary manner to dispersion models, with due regard for the strengths and weaknesses of both analysis techniques." While air quality measurements are particularly useful in assessing the accuracy of model

estimates, such measurements do not necessarily eliminate the need to apply a model to assess an individual facility's impact. Although it is possible to use air quality measurements alone to assess NAAQS compliance, this approach would not likely be preferred unless available models are found to be unacceptable, and monitoring data have sufficient spatial and temporal coverage.

Therefore VDEQ disagrees that the presence of local monitoring data showing no NAAQS violation should necessarily obviate the need for a specific facility analysis using a model.

VDEQ disagrees that the $PM_{2.5}$ air quality analysis, required to be submitted by PRGS, has no relationship to the $PM_{2.5}$ attainment plan. The facility operates within the boundaries of the nonattainment area and is considered to be upwind of many other nonattainment areas such as Baltimore and Cecil County in Maryland.

It should be noted that the federal reference monitoring program for $PM_{2.5}$ in the metropolitan Washington area is one of the most robust monitoring networks in the U.S. Based on the data from this federal reference monitoring program, the nonattainment area has demonstrated compliance with the annual $PM_{2.5}$ standard of 15.0 ug/m^3. However, attainment plans often focus on specific facilities as well as the overall regional air quality. For instance facility-specific RACT requirements may be enumerated within attainment plans, and facility-specific requirements may also be used for contingency measures in attainment plans as well as maintenance plans. An important part of the attainment plan is the assumptions made for growth in various emissions categories and how such growth is incorporated into the attainment plan. To take into account growth in emissions, VDEQ must often examine specific facilities or types of facilities to determine likely growth rates. Therefore, specifying requirements or specifying facility data for a particular facility is not a deviation from past or current attainment planning practices. Certainly VDEQ believes that ascertaining whether or not a particular facility, the operation of which has engendered enforcement actions and significant public comment in the last few years, does not cause or contribute to a $PM_{2.5}$ ambient air quality violation in an area that currently does not contain a federal reference monitor, via an approved analysis methodology, may be an appropriate topic for the $PM_{2.5}$ attainment plan.

Whether or not the description of "well-controlled" may be applied to the existing $PM_{2.5}$ control devices at PRGS (electrostatic precipitators or ESPs) is unclear. A comparison of tested emission rates, as provided by the commenter in his January 30, 2008, submittal, to those required by the existing source regulations in 9 VAC 5 Chapter 40 *Existing Stationary Sources* indicates that PRGS appears to operate at well below 0.12 lbs PM/mmbtu. However, a comparison of those

same emission rates, and emission limitations in the draft PRGS permit, to limitations placed on new coal fired boilers through the Best Available Control Technology (BACT) process show that the limitations on new coal fired boilers may be somewhat more stringent.

Regardless of whether or not the facility is "well-controlled," other factors often affect ambient air quality impacts, including facility and local topographical configurations, as discussed above. Therefore, VDEQ disagrees that the existence of $PM_{2.5}$ control devices as PRGS makes the requirement for an ambient air quality analysis moot.

2. **SUBJECT:** The commenter is concerned about the $PM_{2.5}$ impacts from the PRGS power plant.

COMMENTER: Mr. William J. Skrabak, Chief, Division of Environmental Quality, Department of Transportation and Environmental Services, City of Alexandria on behalf of the City of Alexandria.

TEXT: The full text of this submittal, dated January 30, 2008, is attached to this document. The submittal is lengthy and requests many changes to the draft $PM_{2.5}$ attainment plan. The paragraphs below group the suggestions and comments into various sub-categories. VDEQ has responded to each sub-category separately.

(a) Comment: The attainment plan does not contain a detailed description of how existing permit programs will be specifically implemented, or enhanced, in regards to $PM_{2.5}$. The attainment plan should contain more rigorous monitoring, permitting, and enforcement programs.

Response: It is important to note that for regional air quality and the purposes of determining attainment of a NAAQS by a regional area, federal reference monitoring (FRM) data must be used to show compliance or noncompliance with the standard. The existing FRM network in the metropolitan Washington area consists of 14 $PM_{2.5}$ monitors and is one of the most robust monitoring networks in the country. For years 2003-2005 as well as for years 2004-2006, this monitoring network has demonstrated compliance with the 1997 $PM_{2.5}$ standards of 15.0 ug/m^3 on an annual basis and 65 ug/m^3 on a 24-hour basis. FRM data for the year 2007 are not currently available for Maryland and Washington, D.C. However, VDEQ has completed quality assurance reviews and has certified the 2007 $PM_{2.5}$ data. These data show that the highest measurements in northern Virginia reflect $PM_{2.5}$ design values of

14.1 ug/m^3 on an annual basis and 34.0 ug/m^3 on a 24-hour basis, well beneath both 1997 standards.

This draft attainment plan is designed to address these standards. Certainly the new NAAQS standards, which were promulgated in 2006 and lowered the 24-hour requirement to 35 ug/m^3 $PM_{2.5}$, should be considered. However, the attainment planning process for the 1997 standard has in no way been subjugated by the 2006 standards. The main purpose of this attainment plan continues to be demonstrating compliance with the 1997 standards of 15.0 ug/m^3 annually and 65 ug/m^3 daily.

Section 8.2 of the draft attainment plan discusses the changes made to the major stationary source permitting program in regards to $PM_{2.5}$. Section 8.4 notes the intention by the state agencies to adopt further $PM_{2.5}$ nonattainment permitting requirements, including requirements for precursor emissions, controls, and offsets, when these regulations are finalized by EPA.

In the 2008-2010 Grant Work Plan, of which both EPA Region III and VDEQ is a party, VDEQ has a grant commitment to submit a draft NSR SIP for $PM_{2.5}$ nonattainment areas no later than 6 months after EPA finalizes the $PM_{2.5}$ NSR implementation rule. This commitment is found under Objective 1.1-Healthier Outdoor Air, Sub Objective 1.1.1 – More People Breathing Cleaner Air, Work Plan Component – NAAQS NSR.

It is clear from these various paragraphs that VDEQ intends to adopt the EPA's finalized version of nonattainment permitting requirements when they become available. However, to include in the draft attainment plan an outline of these requirements prior to publication of a final version would be premature since EPA has published little regarding these new regulations and since changes are always likely between proposed and final versions.

Additionally, including in an attainment plan specific requirements of the new source review permitting program would be duplicative. The new source review permitting program is published under a separate chapter of the Virginia *State Air Pollution Control Board's Regulations for the Control and Abatement of Air Pollution*. Changes will undergo public scrutiny if required by the Administrative Process Act. Modeling requirements that may be necessary for the program are generally guidelines published by EPA and used by many states across the country. If such detail were included in the attainment plan, any changes made to modeling guidance

or the new source review program would also necessitate a revision of the attainment plan, which is a time consuming, resource intensive process. Therefore, VDEQ does not deem it appropriate or necessary to include additional detail about the permitting program within the attainment plan.

(b) Comment: The existing permitting program and regional/national control programs alone are insufficient to accomplish the SIP goal. The goals must be accomplished as expeditiously as possible, mindful of 2006 standards. Rigorous monitoring programs and more severe limitations are necessary due to model uncertainty. Lax permitting, monitoring, and compliance programs allow increases of emissions over this attainment plan's emissions inventories and caps.

Response: VDEQ disagrees that the programs outlined within the attainment plan are insufficient to accomplish the SIP goal. FRM data show that the region has already attained the 1997 standards of 15.0 ug/m^3 on an annual average and 65 ug/m^3 on a daily average. These accomplishments may be attributed to many of the control programs implemented in previous attainment plans for ozone. Additional federal, state, and supplemental control programs, as outlined in the draft attainment plan, will continue to reduce precursor and direct emissions of $PM_{2.5}$. This attainment plan should improve air quality.

VDEQ agrees that it is important to be mindful of the 2006 $PM_{2.5}$ NAAQS standard on a regional basis. For years 2004-2006, only one regional FRM located in Washington, D.C. showed a 24-hour design value above 35 ug/m^3. The data for all states have not yet been certified for years 2005-2007. However, VDEQ's data have been certified for these years, and these data show all monitors in northern Virginia have 24-hour averages of no more than 34.0 ug/m^3. On a regional basis, these data show that air quality is improving and appears to be attaining or nearly attaining the 2006 standard.

Modeling uncertainty does exist and is documented as part of the modeling evaluation report. However, EPA has recognized the fact that $PM_{2.5}$ models have intrinsic uncertainties due to many factors, including but not limited to the complex nature of $PM_{2.5}$ formation and the current state of the science of $PM_{2.5}$ modeling. To address these uncertainties, EPA requires the use of the modeling results in a relative sense rather than an absolute sense. VDEQ must make comparisons between modeling outputs for 2002 and 2009 then use these ratios with actual FRM data to predict future design values. Direct model output results for 2009 may not be used to show future attainment status. The use of the

modeling outputs in a relative sense, coupled with the current improved air quality in the metropolitan Washington D.C. area, does not support the development of more stringent permitting requirements than those that will be published for implementation of the $PM_{2.5}$ nonattainment permitting program.

It is important to note differences between regional modeling protocols and facility-specific point source modeling that is performed for new and modified units under the Prevention of Significant Deterioration (PSD) Major New Source Review Permitting Program. Modeling performed within the PSD permitting program to determine if a facility causes or contributes to a NAAQS violation is performed when guidance for such analyses is available. Additionally, such analyses are typically performed at the facility's potential to emit or permitted levels to ensure that all levels of operation by the new facility will not impact the NAAQS.

Regional modeling inventories are based on actual emissions and projected emissions. Projected emissions are rarely, if ever, as high as the potential to emit of a facility. Projected emissions are generally extrapolated using a base year's actual emissions inventory and applying a conservative growth factor, as required by EPA. In some instances, projected emissions are adjusted based on control estimates. However, projected emissions are almost never based on potential to emit of a facility. Using such a methodology region-wide would drastically over inflate the point-source emissions inventory of an area. Drastic over inflation of the projected emissions inventory would have the effect of requiring costly and likely unnecessary regional control measure implementation to meet the air quality standards and protect public health. Such mitigation efforts cannot be supported if there is every reasonable expectation that $PM_{2.5}$ air quality is good and getting better, as indicated by the FRM data. Therefore, VDEQ does not support the approach of setting projection year emission inventories equal to permitted limits or potential to emit.

VDEQ disagrees with the comment that current permitting, enforcement, and monitoring program requirements are lax. Facilities that trigger major new source review permitting in the northern Virginia $PM_{2.5}$ nonattainment area, either as new or modified sources, must install technology deemed to meet lowest achievable emission rates (LAER). This technology determination does not allow the cost of a control device to be considered in feasibility studies, making it a very stringent hurdle. Additionally, offsets must be purchased or obtained to ensure that emissions increases will not adversely affect regional air quality. These permitting requirements are

quite stringent and will continue to be applied in $PM_{2.5}$ nonattainment areas. Monitoring and enforcement programs in the Northern Virginia Regional Office (NRO) and VDEQ are strong. The NRO air compliance and enforcement staff conducted 209 full compliance evaluations of facilities, reviewed 55 stack tests, and conducted 96 Stage II inspections in 2007. At total of 83 enforcement follow-ups were conducted in 2007 as well. Additionally, in 2007, the northern Virginia Inspection and Maintenance Program performed 463 overt inspections and 177 covert inspections. These inspections resulted in 138 inspectors and/or stations being fined, losing licenses, or other wise being prohibited from operating. Across the Commonwealth, VDEQ conducted over 8,500 full compliance evaluations, more than 200 stack tests reviews, and over 390 enforcement follow-ups. NRO and VDEQ have a capable and able enforcement and monitoring program.

(c) Comment: The attainment plan does not discuss additional RACT/RACM in enough detail.

Response: 40 CFR 51.1010, which delineates requirements for reasonably available control measures (RACM) and reasonably available control technology (RACT), predicates the implementation of a suite of measures on whether those measures can collectively advance the attainment date of a nonattainment area by one year. Since the metropolitan Washington area is currently attaining the $PM_{2.5}$ NAAQS, based on FRM data for 2003-2005 and 2004-2006, it is not possible for any suite of measures to advance attainment. This explanation is provided in section 8.3 of the draft attainment plan. No further requirements or discussions of RACT/RACM are necessary for the plan to be approved. Therefore, VDEQ believes that RACT/RACM requirements for this attainment plan are satisfied.

(d) Comment: U.S. EPA's *Clean Air Fine Particulate Implementation Rule* suggests the use of more stringent monitoring and opacity standards. Virginia's current opacity standard of 20% allows $PM_{2.5}$ emission increases without adequate review. Opacity limitations should be strengthened to no more than 10%.

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Response: How the current opacity standard for large boilers allows emissions increases above a baseline is unclear. However, the justification for examining monitoring and opacity standards as discussed in EPA's Clean Air Fine Particulate Implementation Rule (72 FR 20586, April 25, 2007) is that of RACT/RACM. The quote provided by the commenter is found in 72 FR 20617 and is in the context of observations

on control opportunities when examining requirements for RACT/RACM. As noted in a previous paragraph, RACT/RACM requirements are predicated on advancing the attainment date, which is not possible for the metropolitan Washington area. Therefore, unless a facility undergoes a major modification as part of the new source review major permitting process, in which case LAER must be applied, or undergoes a minor modification as part of 9 VAC 5 Chapter 80 Article 6 "Permits for New and Modified Stationary Sources," in which case state Best Available Control Technology (BACT) must be applied, there currently is no basis for reviewing source-specific opacity standards applied to major stationary sources, and VDEQ must disagree with the comment.

(e) Comment: CMAQ generally over-predicts during winter months and under-predicts during summer months. This aspect of model performance cannot be considered acceptable. Statistical metrics such as fractional error and bias do not provide assurance that the model predictions meet the modeling performance goals on either a 24-hour or an annual basis. There is no observed error in model performance on the end model result in the target year of 2010. The design value calculations should include columns of maximum predicted values that reflect the model's worst-case performance for this modeling domain. The analysis relies too heavily on the trend in observed $PM_{2.5}$ levels.

Response: A critical component of every air quality modeling study is the model performance evaluation (MPE) in which the modeled estimates for the current year base case are compared against observed values to assess the model's accuracy and provide an indication of its reliability. The first step in the modeling process is to verify the model's performance in terms of its ability to predict $PM_{2.5}$ and its individual components (i.e., sulfate, nitrate, ammonium, organic carbon, elemental carbon and other $PM_{2.5}$) in the right locations and at the right levels. To do this, the model predictions for the base year simulation are compared to the ambient data observed in the historical episode.

The MPE included in the metropolitan Washington attainment plan was developed based on input from several regional planning groups such as the Mid-Atlantic/Northeast Visibility Union (MANE-VU), the Ozone Transport Commission (OTC) and the Association for Southeastern Integrated Planning (ASIP). Specifically, all elements of the modeling platform, including the emissions, meteorology, and air quality model, have undergone an evaluation.

The MPE consists of a combination of statistical and graphical evaluations recommended by EPA in its guidance. After review of the MPE, if the model appears to be producing $PM_{2.5}$ in the right locations for the right reasons, then the model can be used as a predictive tool to evaluate various control strategies and their effects on $PM_{2.5}$.

The issue of model performance goals for $PM_{2.5}$ is an area of ongoing research and debate. Performance goals refer to targets that a well-performing model should achieve, whereas performance benchmarks are based on historical model performance measures for the best performing simulations. Performance goals are necessary in order to provide consistency in model applications and expectations across the country and to provide standardization in how much weight may be accorded modeling study results in the decision-making process. The model performance goals and criteria are not regarded as a pass/fail test but rather as a basis of inter-comparing model performance across studies, sensitivity tests, and models.

The results of the MPE for the metropolitan Washington area for $PM_{2.5}$ and its individual species indicate that the CMAQ model performance for surface $PM_{2.5}$ is good, with acceptable bias and error. The MPE was consistent with EPA guidance and includes the proper statistical performance metrics.

EPA and VDEQ recognize that although good model performance remains a prerequisite for use of a model in an attainment demonstration, problems posed by less than ideal model performance on individual days are reduced through the use of the model results in a relative sense. Furthermore, starting with an observed concentration as the base value reduces problems in interpreting model results. It is recognized that model results and projections will continue to have associated uncertainty. The attainment demonstration that EPA recommends recognizes this by including modeling plus other supplemental analyses such as air quality trends to determine whether all available evidence supports a conclusion that a proposed emission reduction plan will suffice to meet the NAAQS.

In summary, VDEQ believes the issues identified by the commenter are not regulatory requirements and are not appropriate for inclusion in the attainment demonstration since attainment tests are based on the application of relative response factors. The regional and local model performance is acceptable for $PM_{2.5}$ and was evaluated using EPA-approved procedures. While there are some differences between the spatial data between sub-regions, there is nothing to suggest a tendency

for the model to respond in a systematically different manner between regions. Examination of the statistical metrics by sub-region confirms the absence of significant performance problems arising in one area but not in another, building confidence that the CMAQ modeling system is operating consistently across the full modeling domain. This confidence in the modeling results allows for the modeling system to be used to support the $PM_{2.5}$ attainment plan.

(f) Comment: The proposed SIP provides no assurance that attainment with the NAAQS will be achieved in unmonitored areas where local-scale modeling is the only means for determining compliance. Alexandria is an unmonitored area. Detailed special purpose monitoring data show time periods when concentrations at Marina Towers approached or exceeded the NAAQS. These data present a clear indication that the regional monitors are not representative of concentrations in Alexandria and that an unmonitored area analysis must be conducted.

Response: The information presented by the commenter on page 6 compares all monitoring data to the 2006 daily 35 ug/m^3 standard. This attainment plan is directed at the 1997 standards, for which the daily standard is 65 ug/m^3. Data provided do not exceed 65 ug/m^3. Additionally, use of exceedence periods is not particularly helpful in comparisons to the NAAQS. Each NAAQS standard contains both a numerical limitation and a statistical methodology for computing that standard from monitoring data. The statistical methodology, for example an annual average or a fourth highest, three-year average, is partly due to concerns of exposure time and rates. To violate a NAAQS, the standard must be surpassed using the appropriate statistical approach. The Clean Air Act (CAA) concerns itself with violations of the NAAQS, not exceedences. Exceedences must therefore be considered data variability, not actionable violations.

In regards to the inclusion of an unmonitored area analysis, the regional modeling attainment demonstration does not address future air quality at locations where there is no $PM_{2.5}$ monitor nearby. To guard against the possibility that air quality levels could exceed the standard in areas with limited monitoring, EPA suggests that additional review is necessary, particularly in nonattainment areas where the $PM_{2.5}$ monitoring network just meets or minimally exceeds the size of the network required to report data to Air Quality System (AQS). This review is intended to ensure that a SIP control strategy leads to reductions in $PM_{2.5}$ and its constituent pollutants at other locations that could have baseline (and future) design

values exceeding the NAAQS were a monitor deployed there. The test is called an “Unmonitored Area Analysis” (UAA).

The UAA uses a combination of the 12-km gridded model output and ambient data. The analysis should include, at a minimum, all non-attainment counties and counties surrounding the non-attainment area. Based on VDEQ’s initial review of the gridded model output and ambient data, the UAA is unlikely to reveal any areas where future design values would exceed the NAAQS in the metropolitan Washington area.

EPA stresses that due to the lack of measured data, the examination of concentrations as part of the UAA is more uncertain than the monitor-based attainment test. EPA’s guidance recommends that predicted violations of the unmonitored area analysis be carefully scrutinized to determine whether they are likely to exist in the ambient air or whether they may be caused by an error or uncertainty in the modeling system. At a minimum, it may be appropriate to commit to additional deployment of ambient monitors in areas where the UAA predicts future violations. This monitoring would allow a better assessment in the future of whether the NAAQS is being met at currently unmonitored locations. In fact, in many ways the analysis of PRGS using special purpose monitors has already fulfilled the goal of the UAA. VDEQ believes that the PRGS should not be considered an “unmonitored area” based on the fact that there is a continuous $PM_{2.5}$ monitor operating on the southeast property line and an FRM located on the roof of Marina Towers. The Marina Towers FRM monitor site is located in the area of expected maximum impact from PRGS. PRGS remains one of the most well-monitored sources in Virginia.

Predicted violations of the UAA should be handled on a case-by-case basis. As such, additional analyses and/or tracking requirements may be needed depending on the nature of the problem and the uncertainty associated with the potential violation(s). EPA also stated at its $PM_{2.5}$ modeling workshop held on June 20-21, 2007, that the UAA was not designed to look for unmonitored PM micro-scale hot-spot issues. This would preclude the use of the UAA as a useful technique in evaluating impacts from an individual source such as PRGS.

VDEQ is currently in the process of conducting the UAA for the metropolitan Washington area. VDEQ is also part of the test group for the recently released beta version of EPA’s “Model Attainment Test Software (MATS)” which is the tool required to conduct the UAA. Unfortunately, this tool is limited and does not have the spatial field feature

necessary to complete the UAA. EPA expects that this component will be added in the next version of MATS and VDEQ will complete the analysis upon release of the updated software.

The metropolitan Washington area currently has a network of 14 $PM_{2.5}$ monitors. Several of these monitors were established as State and Local Air Monitoring Stations (SLAMS). These SLAMS monitors were selected based on specific monitoring objectives (background concentration, area of highest concentration, high population, source impact, transport, and rural impact) as required by EPA and siting scales (micro, middle, neighborhood, urban, and regional) established by EPA. It is believed that the density of the monitoring network relieves the necessity of applying the UAA. Despite being confident that the monitoring network is robust for the metropolitan Washington area, once the final version of the MATS tool has been released, and after sufficient peer review and proper guidance for the analysis of the results is provided, VDEQ will complete the UAA.

(g) Comment: No FRM monitor exists in Alexandria. Additionally, monitoring alone, especially within the impact area of a large source, is insufficient to demonstrate NAAQS compliance. Only through a modeling analysis that includes a robust receptor network can NAAQS protection be assured. VDEQ should immediately address primary impacts of $PM_{2.5}$ in the local areas surrounding PRGS. Modeling tools are available.

Response: VDEQ is examining the possibility of installing either a special purpose $PM_{2.5}$ monitor or a $PM_{2.5}$ FRM within Alexandria. Whether or not such a monitor can be sited and operated within Alexandria depends on a number of issues, including manpower and monetary resources as well as locating an appropriate site for such a monitor. If at all possible, VDEQ would prefer to gather necessary monitoring data to determine air quality within Alexandria's city limits. VDEQ is also exploring the possibility of PRGS continuing to operate at least one of the two $PM_{2.5}$ monitoring stations they currently are using to gather air quality data.

VDEQ disagrees that only through a modeling analysis can NAAQS protection be assured. As stated in a previous paragraph, there are several uses of air quality data in evaluating the impacts from a facility such as the PRGS. One of the most important uses identified in the EPA's Guideline on Air Quality Models is the use of air quality measurements "in a complementary manner to dispersion models with due regard for the strength and weaknesses of both analysis techniques." While air quality measurements are particularly useful in assessing the accuracy of model estimates, these measurements do not necessarily

eliminate the need to apply a model to assess an individual facility's impact. Although it is possible to use air quality measurements alone to assess NAAQS compliance, this approach would not likely be preferred unless available models are found to be unacceptable, and monitoring data has sufficient spatial and temporal coverage.

Additionally, for certain pollutants, such as SO_2, conservative EPA-approved modeling analyses are indeed available and can be used for such a purpose. However, this is not the case for all pollutants. For example, there is no source specific, EPA-approved modeling approach for ozone from facilities that emit VOC and NO_X. VDEQ disagrees that appropriate modeling methodologies exist for estimating direct $PM_{2.5}$ impacts. A few states have published guidance for estimating impacts from new or modified sources using state-specific significant impact levels. No federal guidance has yet been finalized on such protocols. Currently, it is unclear what type of analyses EPA will require in regards to source-specific $PM_{2.5}$ emissions. Modeling may not be a part of such analytical guidance. Adoption of other states' (NY, NJ, or CT) guidance, which was intended for use on new and modified facilities and not existing facilities, would set a precedent for use in other areas of the Commonwealth. Due to its highly conservative nature, use of such guidance may unjustifiably prohibit the construction or modification of facilities within the Commonwealth. Use of such guidance, as applied to existing facilities, may unjustifiably require source curtailment or other expensive operational changes to meet air quality standards and protect public health.

Section 9.4.3 requires an analysis be performed after an analytical approach is finalized by EPA and peer reviewed. This analysis may or may not involve Gaussian modeling of some type. Regardless, the analysis will be performed to ensure $PM_{2.5}$ NAAQS compliance by PRGS.

(h) Comment: In Section 9.4.3, VDEQ defers any modeling analysis of the PRGS facility until an appropriate implementation methodology for $PM_{2.5}$ is established, which appears to be an acknowledgement that the proposed SIP is deficient and that a more appropriate implementation plan is necessary.

Response: Section 9.4.3 was in no way added to the attainment plan to address any "deficiency" of that plan. Section 9.4.3 was included to address Alexandria's concerns regarding $PM_{2.5}$ air quality even though the special purpose monitors in the City do not show violations of either the 1996 or the 2006 $PM_{2.5}$ NAAQS standard. VDEQ believes that including such requirements to address concerns is an appropriate use of the

attainment plan. However, it is not a requirement of the $PM_{2.5}$ planning process to address any particular facility, and the plan would be complete and approvable without this language. Generally, VDEQ believes that such facility concerns should be addressed within the normal VDEQ permitting processes. In this case, the language in Section 9.4.3, which is also included in the recent draft permit for PRGS, was added to the draft attainment plan in part to help build a consensus with Alexandria's participants in the planning process and to help provide assurances to the citizens that air quality it being protected.

(i) Comment: Alexandria strongly recommends that a local area analysis (LAA) be conducted.

Response: The LAA uses dispersion models to address observed primary $PM_{2.5}$ contributions at monitors. Specifically, in areas with large spatial gradients of primary $PM_{2.5}$, dispersion models are best suited to characterizing the change in primary $PM_{2.5}$ in the future. Areas that are relying on local primary particulate matter controls to reach attainment should submit a LAA as part of the primary attainment demonstration. In other areas, a LAA may be useful as a supplemental analysis.

EPA also states in its guidance that the dispersion modeling results should be evaluated to ensure adequate model performance. Similar to photochemical grid modeling, the dispersion model results should be compared to ambient data to ensure that the model is working well. Many of the same statistical calculations used for photochemical grid modeling are recommended for evaluating primary $PM_{2.5}$ and $PM_{2.5}$ components predicted by a dispersion model.

The LAA is used to determine the actual (or typical) contribution from sources at a monitor, and the model results are used in a relative sense. Therefore, it is only appropriate (and in fact conservative) to use actual emissions in the base year and projection year emissions inventories. Using actual emissions should lead to a reasonable estimate of air quality improvements from reducing emissions at the contributing sources. Using allowable emissions might lead to an overestimate of benefits from emissions controls.

The LAA appears to be an optional element of the SIP modeling demonstration, and the need for this analysis is considered on a case-by-case basis. The LAA is likely not required by EPA as part of the metropolitan Washington attainment planning process. This is due to the fact that the monitoring network does not have any observed spatial

gradients of primary $PM_{2.5}$ and that the attainment plan does not need to rely on local primary $PM_{2.5}$ controls to reach attainment.

Based on its review of existing monitoring data, EPA initially did not invite VDEQ to participate in a LAA workshop that was conducted in Chicago on October 17-18, 2007. However, due to concerns expressed by stakeholders, VDEQ requested and was granted approval by EPA to attend this workshop. The focus of the workshop centered on areas that have elevated primary $PM_{2.5}$ concentrations in their core urban areas (or that contribute to their highest FRM. The table below provides a list of the areas in the Eastern United States identified by EPA for a LAA:

EPA Identified Jurisdictions for Local Area Analysis	
Criteria	**Location**
Areas with 2004-2006 annual design values (DV) greater than 17 µg/m^3 and 24-hour DV greater than 40 µg/m^3.	Birmingham, AL Cincinnati, OH Cleveland, OH Detroit, MI Pittsburgh, PA
Areas with 2004-2006 annual DV greater than 17 µg/m^3 and 24-hour DV greater than 35 µg/m^3.	Atlanta, GA Indianapolis, IN
Areas with 2004-2006 annual DV greater than 15.5 µg/m^3 and 24-hour DV greater than 40 µg/m^3.	Chicago, IL Steubenville, OH New York, NY
Areas with 2004-2006 annual DV greater than 16.0 µg/m^3.	Baltimore, MD Charleston, WV Huntington/Ashland, WV/KY/OH Lancaster, PA York, PA Louisville, KY Macon, GA St. Louis, MO

At this time, no monitors within the metropolitan Washington area are projected to exceed the NAAQS so it does not appear to be a necessary requirement in this circumstance to conduct the LAA. All of the regional monitors are projected to reach attainment with the $PM_{2.5}$ NAAQS in 2009. The future year inventory projections have significant decreases in primary $PM_{2.5}$ and $PM_{2.5}$ precursors resulting from various control programs throughout the region. Furthermore, existing monitoring data suggest a uniform regional pattern with respect to $PM_{2.5}$ concentrations rather than any "hot spot" monitor. For these reasons, VDEQ does not believe that a local area analysis is necessary.

(j) Comment: VDEQ's proposed permit for PRGS is contradictory to SIP goals. The inventory used in the attainment plan regional modeling exercise is less than proposed permit limits and therefore underestimates emissions.

Response: VDEQ disagrees that the proposed permit is contradictory to SIP goals. The goal of the attainment plan is to demonstrate compliance by 2009 with the 1997 $PM_{2.5}$ NAAQS standards. Current FRM data show, as discussed in other responses, that the region is indeed meeting the 1997 $PM_{2.5}$ NAAQS standards. The proposed permit reduces emissions from the baseline year for this facility. VDEQ believes that the proposed permit will improve air quality and is not contrary to the goals of the $PM_{2.5}$ attainment plan.

As noted in paragraph (b), there are differences between regional modeling protocols and facility-specific point source modeling that is performed for new and modified units under the Prevention of Significant Deterioration (PSD) Major New Source Review Permitting Program. Modeling performed within the PSD permitting program to determine if a facility causes or contributes to a NAAQS violation is performed when guidance for such analyses is available. Additionally, such analyses are typically performed at the facility's potential to emit or permitted levels to ensure that all levels of operation by the facility will not impact the NAAQS.

Regional modeling inventories are based on actual emissions and projected emissions, partly due to the fact that the model is regional in nature. Projected emissions are rarely, if ever, as high as the potential to emit of a facility. To assume that projected emissions equal potential to emit for every facility in the point source inventory over an entire region would drastically inflate emission estimates in the projection year, especially considering the conservative nature of the other projection estimates. For instance, the emission factors for area source categories are generally highly conservative. These estimates are further inflated since many are grown in relation to population increases, which in the northern Virginia area are quite high. Additionally, transportation budgets in the projection year do not take into account transportation emission reduction measures (TERMS), which account for many tons of emission reductions and are withheld for use in rare conformity situations. Transportation emissions also do not take into account emission reductions achieved through VDEQ's On-Road Emissions Testing program, which monitors the tailpipe emissions of vehicles to locate and repair polluting automobiles between required station inspections. For these reasons, and many others, VDEQ believes that the 2009 projection year inventory is quite conservative. As noted in paragraph (b), drastic over inflation of the projected point source emissions inventory may have the effect of requiring costly and likely unnecessary regional control measure implementation. Such mitigation efforts cannot be supported if there is every reasonable expectation that $PM_{2.5}$ air quality is good and getting better, as indicated by the FRM data. Therefore, VDEQ does not support the approach of setting projection year emission inventories equal to permitted limits or potential to emit.

(k) Comment: The SIP does not address the reduced operational loads of PRGS that were important events in relation to the downward 24-hour design level trends between 2002-04 and 2003-05. Chapter 9 should

include a thorough discussion, along with a timeline that matches the implementation of the regional programs with the FRM monitoring results and include the effects of various actions concerning PRGS on the decline in regional values

Response: VDEQ does not agree that detailed discussions of every facility's operational changes between 2002 and 2009 are necessary. The goal of the attainment plan is to demonstrate compliance with the 1997 $PM_{2.5}$ NAAQS by 2009 on a regional basis. The attainment plan discusses the enforceable limits of the Virginia CAIR Caps, to which PRGS is subject, on Page 5-3, as well as a variety of other control measures and their expected overarching effect on air quality, such as the Maryland Healthy Air Act and a coal-to-natural gas conversion made at a nearby power plant. None of these descriptions include greatly detailed accounts of each measure or strategy since the sum total of all the reductions are used to show that $PM_{2.5}$ regional air quality in northern Virginia and metropolitan Washington is good and getting better. Additionally, providing in Chapter 9 a discussion of various control strategy and programs implementation schedules as they correspond to FRM monitoring results would be an incredibly lengthy process, given the number and variety of control programs that have gone into or are scheduled to go into effect between 2002 and 2009. Such an analysis would have to include reductions from such significant source sectors as the power industry, the transportation sector, the petroleum fuel sector, auto body refinishing, surface coating, and many others. Such an analysis is unnecessary in any event due to the regional context of the attainment plan.

(l) Comment: VDEQ should not rely on PM_{10} as a surrogate for $PM_{2.5}$ in the permitting process for PRGS. EPA has suggested, in May 31, 2006, correspondence from Mr. Donald Welsh to Congressman James Moran that the $PM_{2.5}$ SIP is an appropriate place to address the issue of PRGS' air quality issues.

Response: VDEQ does not believe that the $PM_{2.5}$ attainment plan is an appropriate arena in which to discuss federal permitting guidance, adopted by VDEQ, in regards to the use of PM_{10} as a surrogate for $PM_{2.5}$. Such permitting concerns are more appropriately addressed through the many significant public participation opportunities afforded the public during the permitting process. In any event, VDEQ believes that the current permitting guidance is appropriate since it reflects the suggested federal guidance on the issue of $PM_{2.5}$ in permits.

In regards to the EPA documentation sent to Congressman Moran, VDEQ believes the draft PRGS permit satisfies the suggestions made in this letter regarding enforcement of the $PM_{2.5}$ NAAQS. Page 3 of the addendum provided by Mr. Welsh to Congressman Moran notes, under the heading of *Enforcement of $PM_{2.5}$ NAAQS*, that "….Even following approval of the SIP for $PM_{2.5}$, it may be that the only enforceable restrictions on Mirant are a general, statewide provision limiting $PM_{2.5}$ emissions, or a specific $PM_{2.5}$ permit limit given to the PRGS through the normal Virginia permitting process. A permit limit for $PM_{2.5}$ is the most likely mechanism; however, at present Mirant is not subject to any such permit limits."

PRGS air quality issues are being addressed through VDEQ's normal permitting process. Requirements of the permit and of the draft attainment plan as listed in Section 9.4.3 mandate an ambient air quality analysis after methodologies for such analyses are finalized. VDEQ believes that use of the normal permitting process is appropriate for addressing specific facility concerns.

(m) Comment: Language in Section 9.4.3 requiring an ambient air quality analysis is deficient since it fails to insure that the analysis will be done in a timely manner. It also suggests that methodology to conduct such an analysis is not available at the present time, which is contrary to existing EPA guidance. The language should be revised to read:

Using an available Gaussian dispersion model, such as AEROMOD, for stationary sources, which has been approved by USEPA to model primary $PM_{2.5}$ impacts, VDEQ shall conduct an ambient air quality analysis of the emissions of $PM_{2.5}$ from the Mirant Potomac River Power Generating facility. VDEQ shall complete this analysis within 120 days of adoption of the SIP by MWAQC.

Response: VDEQ does not believe the language suggested by the commenter is appropriate. As noted in previous paragraphs, it is not certain that Gaussian dispersion modeling will be a requirement of $PM_{2.5}$ ambient air quality analyses. EPA has not yet published modeling guidance for $PM_{2.5}$ pollution. Use of published guidance for other pollutants, such as SO_2, is not prudent given that the highly complex nature of $PM_{2.5}$ chemistry may not make the use of guidance for other pollutants applicable. If Gaussian dispersion modeling is eventually required, no federal guidance currently exists explaining the application to $PM_{2.5}$ of this technique, which is multi-faceted and highly complicated.

The language included in Section 9.4.3 states that the timeline for submitting the analysis will be determined by VDEQ management. This language was included to account for the fact that the requirements of the ambient air quality methodology are not known so that a reasonable timeframe cannot currently be fixed. Regardless, the language in Section 9.4.3 clearly indicates the intention of VDEQ to require an analysis, once methodologies are determined, within a reasonable period of time.

3. **SUBJECT:** The commenter requests that certain voluntary measures being implemented by the City of Alexandria be included in the draft attainment plan as part of the supplemental analysis.

COMMENTER: Mr. William J. Skrabak, Chief, Division of Environmental Quality, Department of Transportation and Environmental Services, City of Alexandria on behalf of the City of Alexandria.

TEXT: The full text of this submittal, dated January 30, 2008, is attached to this document. Alexandria is requesting the inclusion of various measures that the city funds and oversees in the attainment plan, as these measures are directionally correct and improve air quality.

RESPONSE: VDEQ has added the supplemental measures as listed by the commenter into the draft attainment plan.

4. **SUBJECT:** PRGS impacts on $PM_{2.5}$ concentrations in the City of Alexandria

COMMENTER: Mr. C. Flint Webb, P.E., Environmental Committee Chair, Fairfax County Federation of Citizen's Associations

TEXT: The full text of Mr. Webb's comments, submitted January 29, 2008, is attached to this document. The commenter requests that the Community Multi-scale Air Quality (CMAQ) model be re-run to calculate a design value for a model node point representative of downtown Alexandria.

RESPONSE: VDEQ cannot use the CMAQ modeling results as indicated by Mr. Webb and still conform to EPA guidance on how CMAQ results should be used. As noted in various other responses, EPA recommends the use of CMAQ results in a relative sense when calculating future design values. In other words, CMAQ is run for both 2002 and 2009, and estimated concentrations for $PM_{2.5}$ for each year are used to create a ratio. This ratio may be thought of as 2009 divided by 2002; however, this explanation is somewhat oversimplified since $PM_{2.5}$ is a

composite of a variety of different chemical compounds that must be factored into the equation. The calculated ratio of 2009 to 2002 is then applied to actual 2002 monitored design values at FRMs to calculate the projected 2009 design values for each monitoring site. EPA recommends the use of CMAQ in this manner for many reasons. One reason such methodology is recommended is the state of the science of $PM_{2.5}$ modeling, which is really in its infancy. EPA recognizes that the model does not account for many physical and chemical properties of $PM_{2.5}$ and therefore believes using the model in a relative sense provides more certain results. Another reason such methodology is recommended is the belief that actual monitoring data should play a significant role in the projected design value calculations. Using the CMAQ results in the relative sense ensures that the design value projections have a strong basis in actual monitoring results.

Since no FRM monitor exists in Alexandria, this modeling exercise cannot be performed according to EPA guidance. Please note that in other response to comments, VDEQ states that consideration is being given to locating either a special purpose $PM_{2.5}$ monitor or a $PM_{2.5}$ FRM in the City.

5. **SUBJECT:** PRGS impacts on $PM_{2.5}$ concentrations in the City of Alexandria

COMMENTER: Mr. C. Flint Webb, P.E., Environmental Committee Chair, Fairfax County Federation of Citizen's Associations

TEXT: The full text of Mr. Webb's comments, submitted January 29, 2008, is attached to this document. The commenter recommends that the attainment plan should include a Gaussian dispersion model for PRGS of direct fine particulate emissions with downwash. He suggests that data from the model should not be added to background concentrations to address the issue that background concentrations may include the effects of PRGS's emissions.

RESPONSE: VDEQ believes that specific facility concerns, including results of any air quality analysis performed on PRGS or any other facility, do not belong in a regional attainment plan. Due to significant facility concerns, Section 9.4.3, which reiterates the requirement in the draft permit for PRGS, requires an ambient air quality analysis be performed on PRGS's emissions when methodology for such an analysis is finalized. Including the results of the Gaussian dispersion model performed by the City of Alexandria on this facility as part of the attainment plan would not make the plan any more approvable. VDEQ believes the draft attainment plan is fully approvable in its current state. Including the results of the Gaussian dispersion model may also be premature since it is unclear what methodology will be recommended for $PM_{2.5}$ ambient air quality analyses. If the recommended methodology is something other than a

Gaussian dispersion model, including the results of such modeling in the attainment plan could be misleading. Lastly, it is unclear what purpose including the results of Alexandria's Gaussian dispersion model with the background concentration removed would serve. The table below shows Alexandria's calculated impacts by PRGS in the Gaussian model. Not including the background concentrations would demonstrate a maximum impact of 8.2 ug/m^3 on a 24-hour basis, far less than either the 1997 24-hour standard of 65 ug/m^3 or the 2006 24-hour standard of 35 ug/m^3. The maximum impact of 2.6 ug/m^3 on an annual basis is far less than 15.0 ug/m^3. VDEQ does not believe including this information provides any additional insight to the regional air quality issues of the metropolitan Washington area.

PRGS Modeled $PM_{2.5}$ Impacts
(Case ID - 5 units operating at mid-range load for 24 hours per day)

	24-hour (µg/m^3)	**Annual (µg/m^3)**
Stack Impacts on Elevated Receptors: 3-year avg. of 8th-highest, stacks alone, among all Marina Towers rooftop receptors.	6.5	0.9
Coal and Ash Yard Impacts on Ground-level Receptors: 3-year avg. of 8th-highest, ground-level, from coal and ash yard sources only.	8.2	2.6
Background 3-year avg. of 8th-highest, closest monitor.	34.1	14.1
NAAQS	***35***	***15.0***

6. **SUBJECT:** Various recommendations on clarifying text, providing technical details, and growth rates for area source emissions inventories.

COMMENTER: Mr. C. Flint Webb, P.E., Environmental Committee Chair, Fairfax County Federation of Citizen's Associations

TEXT: The full text of Mr. Webb's comments, submitted January 29, 2008, is attached to this document. The following paragraphs list the various recommendations made.

(a) Comment: Figure 2-5 does not include data for March through September of 2005.

Response: This figure has been updated to include information through December of 2005.

(b) Comment: Text in Section 2.2.4 does not appear to support the figure. Perhaps different plots should be used.

Response: An updated figure and additional information within the text of the section have been added.

(c) Comment: Figure 2-10 needs more explanation, especially concerning the reasons for not considering ammonia emissions for control purposes in the SIP. Also, terms on the figure need more explanation.

Response: Figure 2-10 has been updated to better explain the content and terms of the figure. However, the reasons why ammonia is not considered a significant precursor to $PM_{2.5}$ are explained thoroughly in various places in the draft attainment plan, including Section 2.8. VDEQ does not believe further explanation is necessary.

(d) Comment: Figure 2-11 is misleading. The axis should be changed to reflect zero or should contain a jog to indicate that the axis doesn't begin at zero.

Response: The range of the y axis in Figure 2-11 was defined from 14.0 to 17.5 in order to clearly demonstrate a declining design value trend line. Extending the y axis to zero instead of 14.0 creates a trend line that is nearly flat. A flat trend line does not clearly indicate the significant level of air quality improvement measured by the FRM network. Also, data are labeled for design values for different years, and the annual $PM_{2.5}$ standard line is clearly delineated in the graph. VDEQ disagrees with the commenter and believes that the figure is quite clear in its meaning.

(e) Comment: The plan needs to clarify the difference between area "non stationary" sources and mobile sources. A definition for "county-equivalent" should be provided. Non-road airport vehicles need to be mentioned in Section 3.2.2.

Response: A sentence has been added to Section 3.2.3 to define what constitutes a mobile source. Section 3.2.2 provides details about area sources, and the discussions in these two sections make clear distinctions between area and mobile sources. Examples have been added in Section 3.2.2 to illustrate the differences between area "non stationary" and mobile sources. Since the MWAQC area inventory is calculated at county level, the term "county-equivalent" is not relevant and has been deleted. Non-road airport vehicles are included in the non-road inventory. It is unclear why the commenter is suggesting the inclusion of non-road information in the area source inventory discussion.

(f) Comment: The commenter suggests examining certain sectors of the area source emissions inventory to determine if appropriate growth factors have been used. The specific sectors mentioned are residential fuel combustion, open burning, municipal landfills and incineration, and fugitive dust emissions.

Response: VDEQ has examined the open burning emissions category and found updated guidance for determining emissions from this source sector. See the comment on this subject submitted by VDEQ. However, for the other mentioned sectors, growth surrogates for different area and nonroad source categories were decided in consultation with the state air agencies' staff and the Emissions Inventory Sub-Committee of the Technical Advisory Committee. These factors are the most appropriate factors available to inventory staff and have therefore been employed in inventory development. As EPA provides additional guidance on how these emissions inventories should be developed, such guidance will be examined for use in future inventories.

7. **SUBJECT:** Health effects of $PM_{2.5}$.

COMMENTER: Mrs. Julie Crenshaw-Van Fleet, citizen of the City of Alexandria and member of the Air Quality Public Advisory Committee (AQPAC)

TEXT: The full text of Mrs. Crenshaw-Van Fleet's comments is attached to this document. The following bullets summarize these comments and questions regarding health effects.

- The attainment plan makes no mention that the reductions, contingencies, or controls as documented will cause a reduction in the occurrences of the health conditions and problems caused by $PM_{2.5}$.
- Will health problems and conditions associated by the Department of Energy with PRGS in its SEA decrease with the application of this attainment plan?
- Results from a study done by the Agency for Toxic Substances and Disease Registry are due sometime in late winter or early spring of 2008. This study should be carefully reviewed.

Response:

Language has been added to the attainment plan to indicate that attainment of the $PM_{2.5}$ NAAQS, as well as further air quality improvements, will have a positive influence on the health and well-being of the citizens of the Commonwealth.

The attainment plan requires that PRGS perform an ambient air quality analysis when the methodology for such an analysis is finalized. The results of this study may show that additional controls on PRGS are needed to ensure the $PM_{2.5}$ NAAQS is met. The purpose of the attainment demonstration is to ensure that the region meets the NAAQS in a timely manner. The plan also ensures that further air quality improvements will be enjoyed by the citizens of the

metropolitan Washington area. However, the CAA does not mandate that a study demonstrating health benefits from each control program as applied within each separate nonattainment area be provided to create an approvable plan. While such information would certainly be interesting and noteworthy, VDEQ does not have the resources to undertake such an endeavor. Such an endeavor is also not a necessary requirement of the $PM_{2.5}$ attainment planning process.

The study from the Agency for Toxic Substances and Disease Registry will be reviewed by both VDEQ central office and the NRO.

8. **SUBJECT:** $PM_{2.5}$ monitors located near large $PM_{2.5}$ sources

COMMENTER: Mrs. Julie Crenshaw-Van Fleet, citizen of the City of Alexandria and member of the Air Quality Public Advisory Committee (AQPAC)

TEXT: The full text of Mrs. Crenshaw-Van Fleet's comments is attached to this document. The following bullets summarize these comments and questions regarding health effects.

- Current $PM_{2.5}$ monitors at PRGS do not meet siting criteria and thus cannot be used for this SIP.
- Are there other point sources in the Metropolitan Washington Region that would benefit from properly sited $PM_{2.5}$ monitors? Any and all locations that are considered sources of $PM_{2.5}$ emissions should have $PM_{2.5}$ monitors properly sited under EPA criteria.

Response: One monitor located near PRGS, the monitor sited on top of the Marina Towers, uses FRM measurement methods to collect data on that site. The location does not meet the criteria for FRM monitoring sites since FRM siting criteria include limitations on the height of the sampling probe. The criteria suggest that appropriate heights for probes should be approximately equal to the level at which an average person breathes. However, data from this site have not been discounted. Since the FRM testing methodology requires the use of a laboratory to analyze filters, FRMs are not real time monitors. In other words, there is a lag between the sample collection time and when the results of the laboratory analyses are received. For the FRM on the top of Marina Towers, at the time the draft SIP was being written, VDEQ had 10 months of 2007 data, January through October. To calculate an annual average, 12 months of data are needed. As a place holder, data from November and December of 2006 were used to examine the annual average at that monitoring site. The data indicate an annual average for one year of 13.7 ug/m^3, well below 15.0 ug/m^3. This information was not included in the draft attainment plan because using

November 2006 through October 2007 data is an irregular method of calculating an annual average; because three years of data were not available from this monitoring site, as required by the statistical methodology for the NAAQS; and because the calculated annual average was well beneath the 15.0 ug/m^3 standard. In early February of 2008, the final months of $PM_{2.5}$ data for 2007 at the Marina Tower monitors became available. For January through December of 2007, the Marina Towers monitor measured an annual average of 13.5 ug/m^3 and a 24-hour average of 31.3 ug/m^3. VDEQ will continue to examine the data gathered from this monitoring site.

For a number of reasons it is impractical to locate $PM_{2.5}$ FRMs near every source, or even every major point source, of $PM_{2.5}$ emissions in the metropolitan Washington area. First, $PM_{2.5}$ FRMs are resource intensive. Installing a $PM_{2.5}$ FRM costs approximately $13,000 each. Annual operations for each $PM_{2.5}$ FRM cost approximately $15,000. VDEQ must operate within its resource constraints. Adding additional monitors to the already robust monitoring network in metropolitan Washington would be quite costly. Another reason such a plan is impractical is the fact that additional monitors may likely show no great deviation from the measurements made at the current FRM sites. To date, the FRMs in the metropolitan Washington area do not appear to show a great deal of data deviation, indicating that the $PM_{2.5}$ air quality in the metropolitan Washington area is more a regional issue than it is a localized issue. VDEQ does not believe it necessary or cost-effective to locate FRM's near every major point source of $PM_{2.5}$ emissions in the metropolitan Washington area.

9. **SUBJECT:** Emissions from PRGS.

COMMENTER: Mrs. Julie Crenshaw-Van Fleet, citizen of the City of Alexandria and member of the Air Quality Public Advisory Committee (AQPAC)

TEXT: The full text of Mrs. Crenshaw-Van Fleet's comments is attached to this document. The following bullets summarize the comments concerning PRGS's emissions.

- Mirant Potomac River Generating Station is a point source considered to be a high polluter by EPA. High polluters should be considered hotspot problem locations.
- The use of TRONA at PRGS, and its effects on $PM_{2.5}$ emissions and human health, should be discussed in the attainment plan.

RESPONSE: EPA has a very specific definition of hotspots. The current EPA guidance for regional modeling to support attainment plans notes that hotspots

are areas within a region that show elevated monitored $PM_{2.5}$ concentrations at monitors within the federal reference monitoring network when compared to data from other federal reference monitors in the region. By EPA's definition, there is no hotspot in metropolitan Washington since the monitoring network shows similar results for various monitoring sites.

The commenter expressed concern about the use of TRONA injection for SO_2 control at the PRGS and the need for effects of TRONA injection to be documented in the attainment plan. VDEQ does not believe the attainment plan is an appropriate place to enumerate details about a specific facility's operational considerations. Such details are routinely examined and incorporated into permits through the normal VDEQ permitting process. Such details have been and continue to be the subject of scrutiny by the NRO permitting staff in the ongoing PRGS permitting process. As stated in other places in this document, the PRGS permitting process has incorporated many public comment opportunities to provide citizens the opportunity to examine and make comments on the drafts.

In regards to specific concerns about $PM_{2.5}$ increases from the use of TRONA injection at PRGS, an attachment to this document goes into great detail about that very issue. The May 31, 2006, letter from Mr. David Welsh to Congressman Moran provides an enclosure that addresses the issues of full scale evaluations of TRONA use and particulate increases due to TRONA injection. The enclosure states, "EPA believes there is sufficient evidence that TRONA is a suitable absorbent for injection into a power plant flue gas stream for the purpose of removing sulfur dioxide. … The Material Safety Data Sheet (MSDS) for TRONA identifies is as a relatively non-toxic compound. …" The enclosure also summarizes the effect of TRONA at PRGS as, "TRONA was demonstrated to remove 80% of SO_2 emissions, while not impacting opacity and significantly decreasing the PM_{10} emission rate."

$PM_{2.5}$ tests were performed using EPA's Conditional Test Method 40 (CTM-40) at PRGS on December 14 through 17, 2007. These tests confirmed that TRONA injection did not increase $PM_{2.5}$ emissions from the boilers.

10. **SUBJECT:** $PM_{2.5}$ impacts of the PRGS in Alexandria, Virginia

COMMENTER: Ms. Ana Prados, Air Quality Chair, Sierra Club, Virginia Chapter; Mr. Mike Town, Director, Sierra Club, Virginia Chapter

TEXT: The full text of Ms. Prados' and Mr. Town's comments is attached to this document. The following bullets summarize the comments concerning PRGS's emissions.

- PRGS is the single largest source of $PM_{2.5}$ in northern Virginia.
- $PM_{2.5}$ monitors at Marina Towers measured concentrations above the 35 ug/m^3 24-hour NAAQS on several occasions in 2007.
- EPA scientists have recommended an annual $PM_{2.5}$ NAAQS limit that is lower than 15.0 ug/m^3.
- The City of Alexandria's dispersion modeling to date, including downwash, demonstrates that a "hot spot" exists.
- PRGS contributes significantly to $PM_{2.5}$ nonattainment in Alexandria and the metropolitan Washington areas.

RESPONSE: VDEQ agrees that PRGS is a large emitter of $PM_{2.5}$. However, it is not the largest point source emitter in the metropolitan Washington area, nor is it the largest emitter in northern Virginia, when all segments of the point, area, non-road, and transportation inventories are considered.

As stated in other portions of this document, short-term excursions above the 35 ug/m^3 standard are not actionable violations. Violations are based on statistical methodologies to take into account exposure rates. Occasional exceedences of the 35 ug/m^3 standard must be treated as data variability unless a violation of the $PM_{2.5}$ NAAQS occurs. Additionally, this attainment plan is designed to address the 1997 $PM_{2.5}$ NAAQS, which sets the standards at 15.0 ug/m^3 on an annual average and 65 ug/m^3 on a 24-hour average. Since the NAAQS standard is based on three years of data, only a partial evaluation can be made of the Marina Towers monitoring data. As noted in other places within this document, for January through December of 2007, the Marina Towers monitor measured an annual average of 13.5 ug/m^3 and a 24-hour average of 31.3 ug/m^3. VDEQ will continue to examine the data gathered from this monitoring site.

The purpose of this attainment plan is to address the 1997 standards as finalized. These standards are 15.0 ug/m^3 on an annual average and 65 ug/m^3 on a 24-hour average. Certainly it is important for VDEQ to be mindful of the 2006 standard revision to 35 ug/m^3 on a 24-hour basis as well as other information such as scientific recommendations. However, this document, which shows that air quality has improved and currently meets the 1997 standards at all FRM monitors and that air quality is predicted to meet the 2006 standards at all FRM monitors by 2009, is fully approvable as written.

Previous comments provide information on EPA's definition of a "hotspot." As noted in other places in this document, the current EPA guidance for regional

modeling to support attainment plans notes that hotspots are areas within a region that show elevated monitored $PM_{2.5}$ concentrations at monitors within the federal reference monitoring network when compared to data from other federal reference monitors in the region. By EPA's definition, there is no hotspot in metropolitan Washington since the monitoring network shows similar results for various monitoring sites.

To ensure that PRGS is not causing a NAAQS violation, VDEQ has included a requirement in the attainment demonstration that an ambient air quality analysis of PRGS emissions be provided once such methodology is finalized. The City of Alexandria's modeling exercise of PRGS's emissions does not use a methodology that has been peer reviewed and finalized by EPA. The methodology may double count PRGS emissions since it adds background concentrations from nearby $PM_{2.5}$ FRMs even though PRGS, as an existing facility, contributes to these concentrations. The methodology adopted by Alexandria has been used by other states, but only for new and modified sources, not existing sources. These reasons, and others, make Alexandria's methodology and results inappropriate for inclusion in this attainment demonstration.

11. **SUBJECT:** Non-road emissions.

COMMENTER: Mr. J. Charles Baummer, Jr., Environmental Engineer, Office of Engineering, Metropolitan Washington Airports Authority

TEXT: The full text of Mr. Baummer's comments is attached to this document. The commenter requests confirmation that the attainment plan intends to account for airport construction equipment emissions. Additionally, the commenter requests that construction emission budgets for airports can be derived from the plan as percentages of county construction equipment emissions, based on employment at the airports relative to county employment.

RESPONSE: County level construction emissions are intended to account for construction emissions at the airports as well as other facilities within each county. VDEQ agrees that past methodologies have used a percentage of employment by the airport, as compared to county employment data, to demonstrate the inclusion of these emissions in the implementation plan. However, VDEQ does not believe it is appropriate to include this methodology in the attainment demonstration narrative. Future guidance from EPA may provide other acceptable ways in which to apportion these emissions so that inclusion in the attainment plan of any particular way may require a future SIP revision, a time and resource intensive process.

12. **SUBJECT:** Typographical clarifications.

COMMENTER: Ms. Marilyn Powers, EPA Region III

TEXT: The full text of Ms. Powers' comments is attached to this document. The commenter notes that the plan must address both the annual and 24-hour 1997 NAAQS standards; that much of the guidance for this plan is also relevant to both the annual and 24-hour standard; that the appropriate level of precision for the annual standard is 15.0 ug/m^3; that clarifying language in regards to the status of the nonattainment area emissions caps within the VA CAIR rule should be added; and that a typographical mistake was located in Section 9.3.1.

RESPONSE: Based on EPA comments, modifications have been made to text in Chapters 1 through 4, and appendices B, D, and E1 to reflect the fact that the plan addresses the 24-hour $PM_{2.5}$ standard as well as the annual standard; to reflect the appropriate level of significant figures in standards; to clarify the status of the VA CAIR rule and associated nonattainment area emission caps; and to correct typographical errors.

13. **SUBJECT:** $PM_{2.5}$ area source emissions from open burning-land clearing

COMMENTER: Mr. Thomas Ballou, Director of Air Data Analysis and Planning, VDEQ (The comment was supplied to MD and DC, but included here for completeness.)

TEXT: The full text of Mr. Ballou's comment is attached to this document. The commenter requests that the northern Virginia area source emissions inventory be corrected for years 2002 and 2009 and that all charts and references to these numbers be updated.

RESPONSE: Appendices B, C1, and D have been updated to reflect 2002 and 2009 $PM_{2.5}$ and PM_{10} emissions changes. Chapters 1, 3, and 4 have been edited to reflect the revised numbers for these pollutants in Northern Virginia.

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