



OFFICE OF THE CITY MANAGER

301 King Street, Suite 3500
Alexandria, Virginia 22314-3211

Philip Sunderland
City Manager

(703) 838-4300
Fax: (703) 838-6343

November 08, 2004

Assistant Attorney General
Environmental and Natural Resources Division
P O Box 7611
US Department of Justice
Washington, DC 20044-7611

Re: City of Alexandria Comments on the Consent Decree, *United States v. Mirant Potomac River LLC, Mirant Mid-Atlantic LLC, D.J. Ref. 90-5-2-1-07892*

Dear Sir:

This letter is in response to the request for comments concerning the proposed Consent Decree between the *United States, The State of Maryland, The Commonwealth of Virginia and Mirant Potomac River LLC, Mirant Mid-Atlantic LLC, D.J. Ref. 90-5-2-1-07892*. The City's comments on the consent decree are provided in Attachment I.

The City appreciates the opportunity to submit these comments. If there are any questions concerning these comments, please contact William Skrabak, Chief, Division of Environmental Quality, at 703-838-4334.

Sincerely,

Philip Sunderland
City Manager

Attachment

cc: The Honorable Mayor and Members of the City Council
Richard Baier, P.E., Director, T&ES
Ignacio Pessoa, City Attorney
Robert Burnley, Director, VDEQ
Jeffery A. Steers, Regional Director, NRO, VDEQ
Members of the Mirant Community Monitoring Group

CITY OF ALEXANDRIA COMMENTS
PROPOSED CONSENT DECREE
in
UNITED STATES AND STATE OF MARYLAND
v.
MIRANT MID-ATLANTIC, LLC AND MIRANT POTOMAC RIVER, LLC
C.A. No. 1:04CV1136

INTRODUCTION

The City of Alexandria hereby submits its Comments in response to the Notice of Lodging of the Proposed Consent Decree between the United States, the State of Maryland and the Commonwealth of Virginia, and Mirant Mid-Atlantic, LLC and Mirant Potomac River, LLC (collectively "Mirant"). The Consent Decree addresses the violations in 2003 of oxides of nitrogen (NO_x) emission limits at the Potomac River Generating Station ("PRGS") operated by Mirant and located at 1400 North Royal Street, Alexandria, Virginia. In reviewing the proposed Consent Decree, Alexandria's primary interests are (i) the direct, adverse public health and other impacts on the residents of Alexandria from the emissions and all other activities of the PRGS, and (ii) within the region, to avoid a disproportionate adverse impact on Alexandria neighborhoods and residents from such emissions and activities. Accordingly, these Comments identify the failure of both the proposed Consent Decree and the related draft State Operating Permit ("SOP") to protect Alexandria's interests.

Alexandria is opposed to the proposed Consent Decree in its present form. As set out in more detail below, there are numerous deficiencies in the proposed Consent Decree and the draft SOP relative to the health and welfare of the residents of Alexandria. The regime under which the PRGS will be allowed to continue to operate ensures continued excessive emissions from the PRGS which will be adverse to the interests of Alexandria residents. Resolution of outstanding issues related to the PRGS should occur before the Consent Decree is approved, and should not be placed in a process that is outside the Consent Decree and separate from the pending Title V review.

There is an overall lack of information and documentary support on the basic assumptions underlying the proposed Consent Decree and the draft SOP and the projections of compliance set out therein. There is no showing that the PRGS can satisfy federal guidelines for air toxic and criteria pollutants or reduce as much as possible the fugitive dust from the plant's operations. Furthermore, there is no demonstration or assurance that the fabrication of a Mirant "system" of power plants (*i.e.*, what the proposed Consent Decree describes as "System-Wide" for the PRGS and the Morgantown, Dickerson and Chalk Point power plants in Maryland) and the system-wide regulation of NO_x emissions will actually achieve the requirements of Virginia's SIP or result in improved air quality in Alexandria.

There are also serious deficiencies in the projects intended to evaluate the impacts of the PRGS's operations as defined in the Virginia Department of Environmental Quality's ("VDEQ") Order by Consent. Mirant's draft downwash modeling proposal, as required by the Order by Consent, is evidence of the unreliability of this process.

Put simply, it is not at all clear that the proposed Consent Decree will provide significant protection to the residents of Alexandria from the PRGS. Accordingly, it should not be approved without a full assessment of the PRGS's comprehensive compliance with air quality requirements and the full disclosure of all documents, including from the State of Maryland, that support the assumptions and provide the rationale for the proposed Decree and related SOP.

BACKGROUND

The Mirant PRGS is located in a densely populated urban area, adjacent to the Potomac River and surrounded by and in close proximity to residential communities. It is an outdated coal-fired generating plant that predates the federal Clean Air Act, thereby avoiding certain requirements intended to promote compliance with air quality standards. The PRGS is highly inefficient with stack heights that are well below what are necessary to satisfy current ambient air quality standards. Mirant also has filed for protection under the bankruptcy laws, an action that raises concerns about its long-term viability and its ability to implement any environmental improvements.

Alexandria has expressed, on numerous occasions, its concerns with the impacts of the PRGS on the surrounding neighborhoods and on the city as a whole. On June 22, 2004, the Alexandria Mayor and City Council adopted a long term strategy for the cessation of the operations of the PRGS and for the utilization of the site in a manner more compatible with the city's residential neighborhoods and the adjacent Potomac River. The proposed Consent Decree and the related draft SOP are inconsistent with this strategy. They provide, however, the opportunity for Alexandria to promote the implementation of its strategy and the protection of its citizens. For this purpose, Alexandria engaged an independent consultant, Ms. Maureen Barrett of AERO Engineering Services, who, in close coordination with Alexandria's technical staff, has provided the framework for a scientific and technical evaluation of the proposed Consent Decree and the draft SOP on which these Comments are based.

TECHNICAL COMMENTS

- 1. The impetus within the negotiations for the proposed Consent Decree was attainment of ozone standards for the northern Virginia region. The Consent Decree should reflect, however, an approach for the attainment of all criteria pollutants at the PRGS. In addition to its contribution to exceedances of the ozone standard, modeling of the PRGS's impacts show that it contributes to potential region-wide exceedances of the PM_{2.5} standard and to exceedances in Alexandria of NO_x, SO₂, PM₁₀, and PM_{2.5} standards. The Consent Decree is not appropriate until federally-enforceable (*i.e.*, Title V) permit terms are established that constrain continued operation of the PRGS to a configuration that demonstrates compliance for all pollutants.**

Table 1 below includes results from US EPA-approved modeling procedures that project the PRGS's maximum potential impact for the criteria pollutants of SO₂, NO_x and PM₁₀.^[1] These results show that, near the plant, the impacts from the PRGS exceed ambient air quality standards by up to sixty times the standard. While this table does not show the facility's impacts on PM_{2.5} ambient concentrations, the projected PM₁₀ impacts leave little doubt that the facility contributes to violations of the PM_{2.5} standard in the region which, in addition to its status as non-attainment for ozone, may soon be designated non-attainment for PM_{2.5}.^[2]

Regional non-attainment status for PM_{2.5} will bear similar financial consequences and growth constraints upon the State of Virginia as does non-attainment status for ozone.

The table also includes the projections of impacts for selected toxic pollutants that the PRGS emits. Projected impacts from arsenic emissions may be contributing to increased health risks for Alexandria citizens; impacts from mercury emissions may exceed by up to 1000% the chronic inhalation concentration that US EPA considers safe.^[3]

State regulators suggest that a return to negotiations similar to those that produced the Consent Decree can occur in the future, with the goal of defining new permit terms for which the facility's continued operation can satisfy compliance. Apparently based on this presumption, the Consent Decree offers no alternative to continued operation of the PRGS. The timeline of the Decree should be modified to allow the results of the related VDEQ Order by Consent to be evaluated and a compliance configuration defined before action on the Consent Decree is taken.^[4]

2. **The residents of Alexandria have borne the environmental cost of the PRGS that, for almost fifty years, has emitted pollutants, without regulation and in most cases without control – pollutants that can have acute and chronic adverse health impacts. Before approval of any Consent Decree, Federal and State regulators and Mirant should provide a thorough analysis of the expected local and regional health impacts from continued operation of the PRGS.**

Table 1 shows that the PRGS's emissions of criteria and toxic pollutants can have adverse health impacts on nearby Alexandrians. Before approval of the Consent Decree, therefore, Mirant must provide an assessment of the extent to which the PRGS's continued operation represents a chronic health risk to the residents of Alexandria.

^[1] US EPA-approved SCREEN3 model was applied with the facility's own stack parameters, accounting for impacts from five separate stacks and the facility's own building dimensions, and including receptors placed at heights consistent with patio locations at Marina Towers.

^[2] Designation of PM_{2.5} status is proposed to occur in November 2004.

^[3] US EPA's Integrated Risk Information System, www.epa.gov/iris.

^[4] The VDEQ and Mirant maintain that the facility's continued operation is necessary to maintain reliability of the region's electrical power distribution network. The VDEQ should present all records, documentation and correspondence which support this statement.

3. Before approval of the Consent Decree, VDEQ and Mirant should present potential facility configurations and control technologies that they have determined will achieve compliance assuming continued facility operation.

The proposed Consent Decree lacks substantive analysis of how the PRGS will achieve compliance with standards for all criteria pollutants and with guidelines for toxic pollutants. Table 1 (which is based on our modeling of PRGS emissions) shows that in order for continued operation of the PRGS to achieve compliance with criteria pollutant standards and selected toxic pollutant guidelines, emission reductions greater than 90% are necessary for SO₂, arsenic and mercury. It is possible that the necessary reductions for these pollutants might be accomplished with flue gas de-sulfurization, limits on coal sulfur content and state-of-the-art mercury reduction techniques. However, flue gas de-sulfurization, and possibly add-on mercury controls, represent added environmental burdens to the surrounding area through increased truck traffic and increased water demands. Before the approval of the Consent Decree, VDEQ and Mirant should present the techniques to be used at the PRGS to achieve compliance.

For PM₁₀ and NO_x, Table 1 shows that emission reductions necessary to achieve compliance may be as high as 800 tons and 5,600 tons, respectively. The proposed Consent Decree and related SOP accomplish minor fractions of these required reductions: only 25 tons of PM₁₀ reduction, and only about 500 tons of NO_x reduction (and that only after five years of continued operation).^{[[[4]} It is important to note that the PRGS already employs electrostatic precipitators (ESPs) for PM₁₀ and PM_{2.5} control, and any additional reduction of PM₁₀ and PM_{2.5} emissions through add-on technology would require significant capital expenditures. This cost burden would also apply to add-on SO₂ controls.

Based on the Table I data, and given that Mirant cannot increase the height of the facility's stacks or convert the facility to natural gas operation, it is unlikely that the PRGS will be able to achieve compliance with SO₂, NO_x and PM₁₀ requirements. This makes it essential that VDEQ and Mirant publicly define the facility configurations and control technologies that will be employed to ensure facility compliance with all applicable standards and guidelines.

^{[[[4]} Approximate PM₁₀ portion of dust reduction accomplished by "Appendix A, Environmental Projects" within the proposed Consent Decree.

Table 1. Estimated Impacts of the PRGS at Marina Tower Property, and Emission Reductions and Potential Technology Required to Achieve Compliance.

Criteria Pollutants

Pollutant (Maximum Annual Emissions) ⁽¹⁾:		Maximum Impact by Mirant v. Standard (background and fugitive PM impacts not included)	Emission Reduction Necessary to Meet Standard and Potential Control Technology Options
SO₂ (>14,000 T)	SO ₂ (3-hour)	>40	97% / lower sulfur coal plus flue gas de-sulfurization (FGD) or fuel switch.
	SO ₂ (24-hour)	>65	>98% / lower sulfur coal plus FGD or fuel switch.
	SO ₂ (annual)	>25	>95% / lower sulfur coal plus FGD or fuel switch.
NO_x (>7,000 T)	NO ₂ (annual)	>5	80% reduction to 1,400 tons annually; proposed reduction and LNBs, plus SOFA, are inadequate.
PM₁₀ (>1,000 T)	PM ₁₀ (24-hour)	>8	85% reduction, or appr. 850 tons reduction: 47 tons of fugitive particulate matter not adequate; not likely to achieve reduc. without fuel switching or constraints on output.
	PM ₁₀ (annual)	>2	50% reduction required; constrained to meet above reduction.

Selected Air Toxic Impacts

		Ratio of Mirant's Impact to Reference Concentration or to Risk Level for 1 in 10,000 Increase in Cancer Incidence.	Emission Reductions Necessary to Meet Standard/Potential Control Technology Options
Arsenic (>550 lbs.)	Risk Level for 1 in 10,000 increase in Cancer.	>12	>90% reduction; FGD and/or fuel switch.
Mercury (>200 lbs.) ⁽²⁾	Chronic Inhalation Exposure Level of Lowest- Observed Adverse Health Effects.	> 240	New sorbent technology plus FGD and/or fuel switch.

Table Notes.

- (1) Annual emissions for all pollutants except mercury derive from applying a capacity factor representative of capacity values from US EPA eGRID records for PRGS, to maximum short-term emissions. Impacts derive from the maximum SCREEN3 result for the facility. Short-term emissions derive from maximum heat input rating and for SO₂, the maximum allowed sulfur content, for PM₁₀, US EPA-derived emission factors for bituminous coal combustion in a pulverized coal boiler with ESP control, including the condensable portion of emissions, and for NO_x, the PRGS's Phase II NO_x Compliance Plan.
- (2) Mercury emissions derive from test results for the Brayton Point pulverized coal boiler, firing bituminous coal with ESP control. These test results show a higher value than PRGS's 1999 test result for emissions of mercury as reported by US EPA; however, these test results include no data on facility capacity at the time of testing, and to determine maximum impacts this analysis assumes a scenario that accounts for the wide variability in mercury content among potential bituminous coal supplies.

4. VDEQ and Mirant should provide records describing the nature and scope of the PRGS life extension project that occurred in the 1980's, including all other records describing the nature of modifications at the facility. They also should disclose annual fuel use records and historical emission estimates in order to determine potential violations of Prevention of Significant Deterioration ("PSD") or New Source Review ("NSR") (for the non-attainment pollutants NO_x or VOC) permit requirements.

A modification is subject to PSD review (or NSR review, for non-attainment pollutants like NO_x) if the existing source is major, as is the PRGS, and the net emissions increase of any pollutant as a result of any modification exceeds the prescribed significance level. It seems unlikely that the PRGS has not undergone some physical modifications since its construction in the years between 1949 and 1957.^[5] For example, records suggest that the PRGS underwent a life extension project in the 1980's when its efficiency was declining by about 2 percent per year, a project that may have included the replacement of a superheater.^[6] These modifications may have allowed the facility to increase its capacity over its original rating or to increase its capacity against its baseline capacity at the time of modification. This is a critical point: even if this life extension project only served to boost the PRGS's output back up to its

^[5] "Pepco Studies Mysteries of Power-Plant Longevity," Washington Post, May 23, 1983.

^[6] Ibid.

originally rated capacity, the modification would likely have triggered NSR due to the resultant emission increases. Such emission increases should have been evaluated against the facility's emissions for the two years prior to the modification. A modification at the PRGS facility that triggered PSD or NSR review would have required that the facility install the control technology deemed best and available for the time.[7]

Any boiler and equipment modifications that occurred may have increased the heat input rating of the facility. As stated by VDEQ within the PRGS's current Permit to Operate, dated September 18, 2000, the heat input ratings for boilers 1 and 2 equal 970.1 MMBtu per hour, and the heat input ratings for boilers 3, 4 and 5 equal 960.7 MMBtu per hour, for a total heat input rating of 4,822 MMBtu per hour for the facility. This statement of boiler heat input rating within that permit was likely based on the facility's original, as-constructed heat input. However, the PRGS currently reports a total boiler heat input rate that is approximately 6% greater than the rating VDEQ recognizes, with a total heat input rating of 5,134 MMBtu per hour.[8],[9]

Table 2 shows that the increase in heat input rating as described above would trigger PSD or NSR for at least three criteria pollutants; it is possible that PSD significance levels would have also been triggered for lead, asbestos, beryllium, mercury, vinyl chloride, fluorides, sulfuric acid mist, benzene and arsenic.

Additionally, US EPA records show significant increases in fuel use by the PRGS over a four-year period that may exceed fuel use variations associated strictly with load demands. For example, between 1996 and 2000, the PRGS's consumption of fuel, on an energy input basis, increased from 19.7 million MMBtu per year to 26.1 million MMBtu per year, or about a 30% increase[10]. Fuel use records and power production records, obtained from the Federal Energy Regulatory Commission and other utility monitoring agencies, should be analyzed before final action on the Consent Decree to determine if physical changes may have occurred at the plant that account for these or other emission increases.

Table 2. PSD and NSR Significance Levels for Selected Criteria Pollutants and Potential Contemporaneous Emission Increases at PRGS Associated with Increase in Heat Rate.

Criteria Pollutant	PSD /NSR Threshold (tons per year)	Contemporaneous Emission Increases at PRGS from Contemporaneous Increase in Heat Rate (tons per year)
Nitrogen Dioxides	25	420
Sulfur Dioxide	40	1600
PM/PM10	25/15	120 / 88

[8] USEPA eGRID 2002 Version 2.01, www.epa.gov.

[9] In personal conversation, J. McKie of Virginia DEQ indicated that the DEQ recognizes a lower heat input rating than Mirant does, and the basis for this difference is not completely understood.

[10] US EPA eGRID.

5. The environmental projects within the Consent Decree do not include several of the recommendations of Mirant's own consultant for reducing fugitive dust impacts. The consent decree should include all of these recommendations, including, but not limited to, (i) maintenance of the coal piles to reduce side slopes and lower the overall height, (ii) covers for ash transport trucks and (iii) an EPA-approved perimeter monitoring program.

The settled dust study proposed in the Environmental Projects of the proposed Consent Decree at PRGS does not qualify as an EPA-approved, *i.e.*, EPA reference, method for determining compliance with the ambient air quality standards for PM₁₀ and PM_{2.5}. While the settled dust may provide useful information concerning fugitive dust at the property line, it will not determine whether PM₁₀ and PM_{2.5} concentrations comply with applicable national ambient air quality standards (NAAQS). The Consent Decree and the downwash study should specify terms by which Mirant will determine through modeling the location of the maximum predicted impacts of PM₁₀ and PM_{2.5}, and demonstrate, with EPA-approved monitors at these locations, compliance with the NAAQS. In addition to the proposed environmental projects, the consent decree should include requirements for ash truck covers and coal pile side-slope and height reduction practices, as set out in Mirant's consultant's report entitled "Fugitive Dust Review" (CH2M Hill, July 20, 2001).

6. The "Protocol For Modeling the Effects of Downwash from Mirant's Potomac River Power Plant" ("Protocol") that responds to the VDEQ Order by Consent is inadequate. The Protocol limits the analysis to less than a full demonstration of the PRGS's impact on the ambient air quality standards. Deficiencies in the proposed modeling analysis that will result in a significant under-estimation of impacts include, but are not limited to, the (i) lack of accounting for wake effects by the very tall and closely-located Marina Towers, (ii) lack of placement of receptors on several close-by residential structures, and (iii) disregard of PM10 and PM2.5 emissions from coal and ash processing.

Mirant is aware that predicted impacts from the PRGS's stacks may be highest in the two to three kilometer range than at the fenceline. In a report to Mirant in July, 2001, CH2M Hill states that "modeling results for boiler stack emissions predict maximum impacts from fly ash will occur north of the plant about 2 to 3 kilometers downwind" and "that predicted maximum concentrations in the immediate neighborhood are less than 0.1 percent of the maximum predicted concentration."^{12]}

US EPA-approved procedures for NAAQS compliance demonstrations require that impacts be calculated at all receptors to which the public has access and where the facility's impacts are significant (as defined by significance levels). The grid upon which

^[12] "Fugitive Dust Review," CH2Mhill to Mirant, July 20, 2001.

receptors are placed within Mirant's modeling analysis should extend to this significant impact area for each of the pollutants modeled, likely to be in the range of 10 to 20 kilometers, versus the one kilometer distance that ENSR proposes. Additionally, within its proposed downwash analysis and building profile input calculations, Mirant ignores the very significant influence that the tall and closely-located Marina Towers structure imposes on the wake of the PRGS. The residences located within Marina Tower represent areas to which the public has access. Therefore, flagpole receptors should be defined at heights and locations representative of these residences.

7. The Consent Decree should include terms that constrain PRGS to an annual NOx emission limit in addition to a NOx ozone season limit.

While the Consent Decree currently includes an annual NOx limit for the Mirant System, it includes no annual NOx limit for PRGS. The Consent Decree should establish an annual NOx limit for PRGS, so that NOx budget constraints for the Mirant "system" before the implementation of SCR cannot be met through shifting NOx emissions to PRGS. Furthermore, an annual NOx limit for PRGS is added to insure that Mirant does not increase production from existing levels at the PRGS.

8. Local and regional ozone exceedences occur episodically on days that are hot and, as a result, when power demand is high. It is precisely on these days when the maximum control of emissions of NOx is most important. Therefore, all units at the PRGS should be subject to NOx controls. Also, daily NOx emission limits should be set for the PRGS and the Mirant system as a whole.

Under the Consent Decree, units #1 and #2 go uncontrolled with respect NOx emissions. These units should not be permitted to operate on those days where air quality is forecast to exceed the ozone NAAQS (Code Red days). At the very least, additional NOx controls on these units should be required under the Consent Decree. Specifically, the installation of low NOx burners and SOFA should be required to be installed on units #1 and #2. In the case of PRGS, it is on forecasted high ozone (code red) days when these two units are most likely to be operated, which is why it is important to not allow the units to go uncontrolled with respect to NOx emissions.

9. With the proposed NOx emission controls for Mirant, the Consent Decree does not demonstrate that it will achieve Virginia's SIP requirement.

The permit term that Mirant violated was required by the Virginia SIP as a control measure to achieve compliance with the Washington, D.C., metropolitan area one-hour ozone standard. This proposed Consent Decree relax the PRGS's limits significantly by allowing the PRGS to emit from 731 to 456 more tons of NOx in the ozone season through the years 2010 and beyond. The Consent Decree should require Mirant to demonstrate with ozone modeling that the consent decree proposed NOx rates for the Mirant "system" are more beneficial for Alexandria, Northern Virginia, and the Washington Non-attainment area than requiring that PRGS be constrained to an ozone season NOx limit of 1,019 tons.

The Virginia NOx Budget rule states that "the trading mechanism...allows sources to purchase NOx allowances until such time as they choose to retrofit or replace or shut down older equipment that may not operate as efficiently as new equipment." (*Ibid*) The PRGS is a highly in-efficient plant with stacks that are designed to meet Federal Aviation Administration guidelines in the 1950 time frame, not to meet ambient air quality requirements that the majority of electrical generating facilities in the US are constrained to meet. By allowing Mirant to both use allowances to meet its Virginia emission requirements and to operate outside of the constraints of compliance with the health-based NAAQS and toxic impact guidelines, this draft consent decree provides an unfair market advantage to Mirant over the newer, more-efficient electrical generating facilities that EPA and Virginia should be promoting.

CONCLUSION

For the foregoing reasons, the City of Alexandria contends that the Consent Decree should not be approved in its current form.