

November 18, 2016



James W. Boylan, Ph.D.
Planning & Support Program
Georgia Department of Natural Resources
Environmental Protection Division – Air Protection Branch
4244 International Parkway, Suite 120
Atlanta, GA 30354

Re: Georgia Power Plant Wansley, Data Requirements for Characterizing Air Quality for the Primary 1-hour SO₂ National Ambient Air Quality Standard

Dear Dr. Boylan,

This is to submit modeled air quality data in the vicinity of Georgia Power Plant Wansley characterizing maximum 1-hour ambient concentrations of sulfur dioxide (SO₂) under the Data Requirements Rule (“DRR”) in 40 C.F.R. Part 51 Subpart BB. The air quality data is based on dispersion modeling conducted in accordance with (1) the April 1, 2016 modeling protocol, (2) the June 14, 2016 modeling protocol addendum, and (3) the September 27, 2016 modeling protocol update addressing comments from EPA’s technical review of the protocol and addendum. Based on the modeled air quality data (included in the electronic files on the attached compact disc), SO₂ emissions from Plant Wansley do not cause or contribute to any violations of the 1-hour SO₂ NAAQS.

The following discusses the procedures used to support the dispersion modeling.

Meteorological Input Data

Since no onsite meteorological data was available, hourly surface and upper air observations from the Peachtree City-Falcon Field national weather service station for the period 2012-2014 were used in the modeling. The data were judged by GA EPD to be representative (i.e., no significant difference in surface characteristics in the areas surrounding the surface station and plant site) and provided in a preprocessed AERMOD model-ready format using the AERMET (v14134) processor.

Source Input Data

For Plant Wansley, actual hourly emissions, temperatures, and exhaust flow rates for the most recent three calendar years (2012-2014) were modeled. The emissions and exhaust flow rates used to develop the source input data are the same as those reported to the EPA Clean Air Markets Division under the Acid Rain Program (“ARP”) using continuous emissions monitoring

systems (“CEMS”) certified according to 40 C.F.R Part 75. The physical source parameters (e.g., actual stack heights, exhaust configuration, etc.), and other information relevant to the representation of the point sources at Plant Wansley are described in the April 1, 2016 modeling protocol. Figures 1-3 show the actual hourly SO₂ emission rates (lb/hr) that were modeled through each stack for 2012, 2013, and 2014.

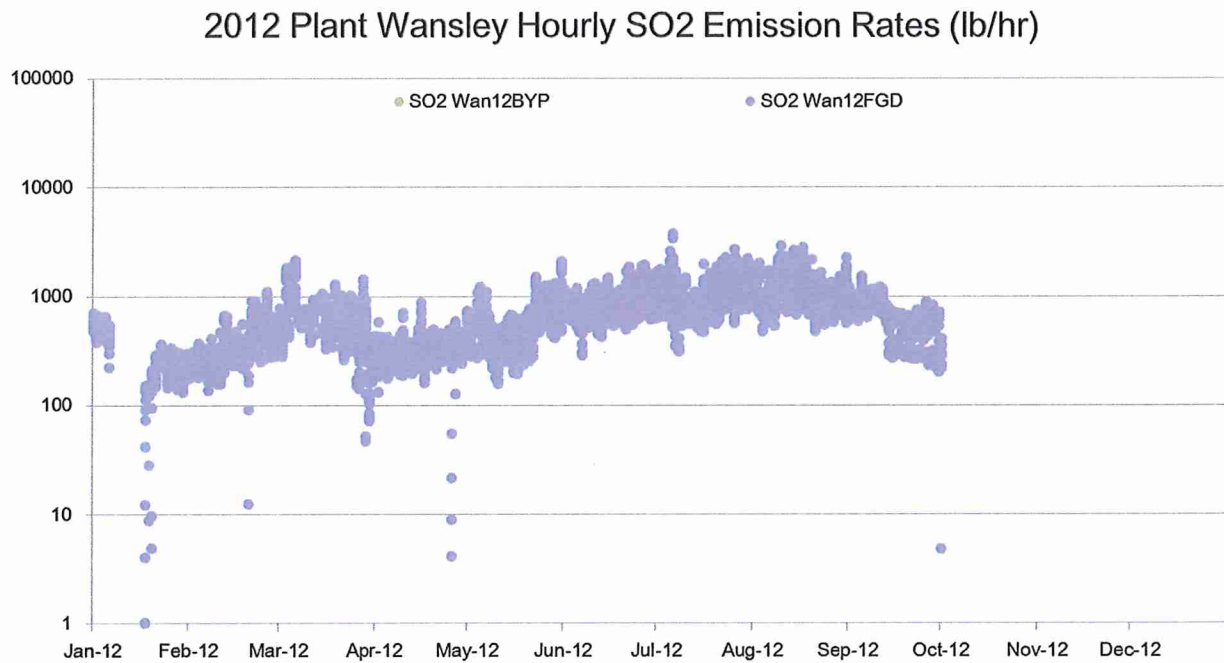


Figure 1. Hourly (2012) SO₂ emission rates for each modeled point source at Plant Wansley

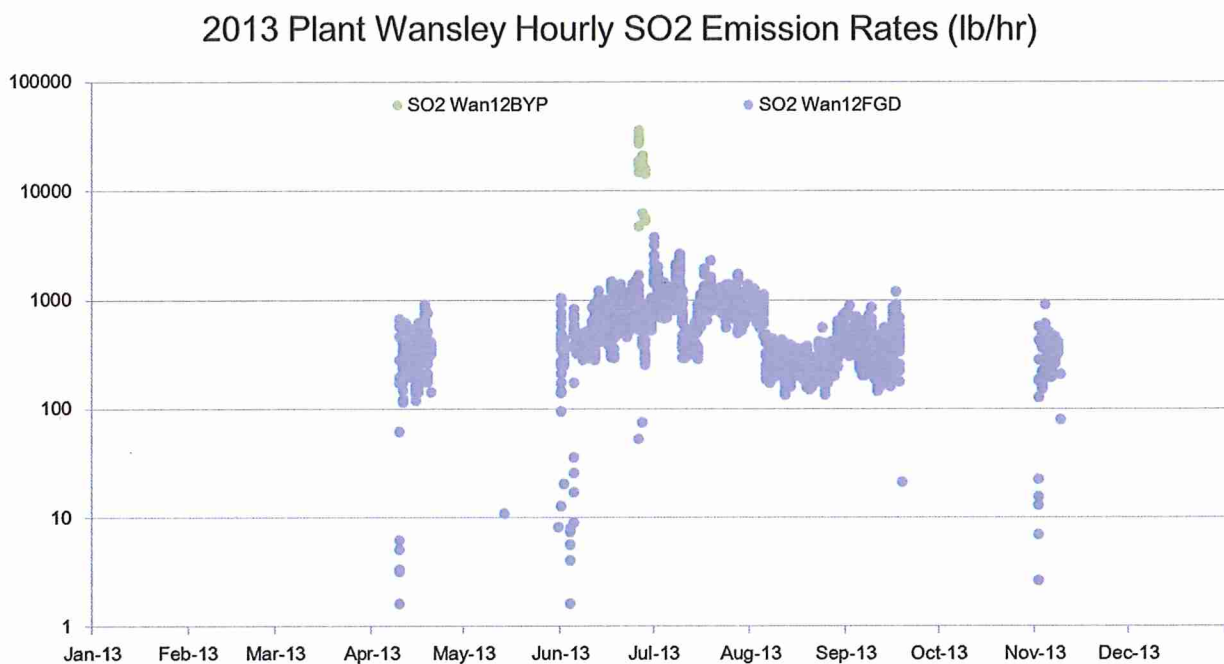


Figure 2. Hourly (2013) SO₂ emission rates for each modeled point source at Plant Wansley

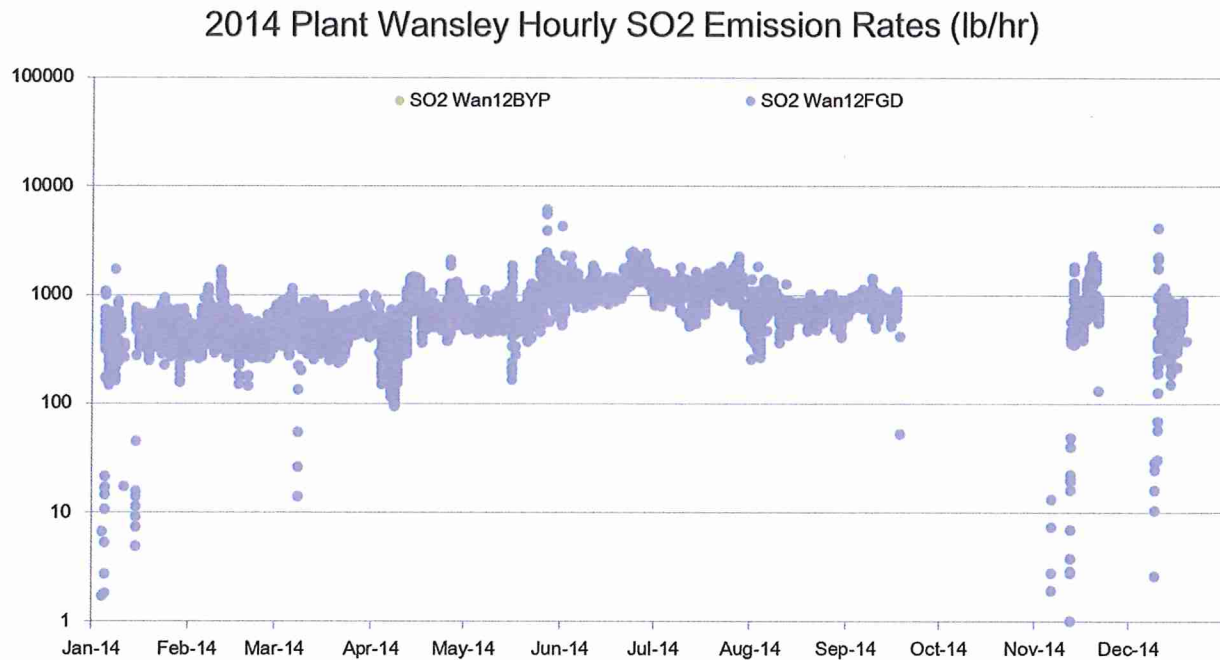


Figure 3. Hourly (2014) SO₂ emission rates for each modeled point source at Plant Wansley

In addition to the two coal-fired units at Plant Wansley, the following offsite SO₂ sources were included in the modeling analysis in accordance with the protocol addendum and update.

- Natural gas-fired Units 6 and 7 at Plant Yates,
- Natural gas-fired combined-cycle Blocks 6 and 7 owned by Southern Power Company (“SPC”) at the Wansley Combined-Cycle Generating Plant,
- Natural gas-fired combined-cycle Block 8 owned by Oglethorpe Power Corporation (“OPC”) at the Chattahoochee Energy Facility, and
- Natural gas-fired combined-cycle Block 9 owned by the Municipal Electric Authority of Georgia (“MEAG Power”).

Plant Yates Units 1, 2, 3, 4, and 5 are not included in the model since these units were retired on April 15, 2015. Please refer to the attached Retired Unit Exemption forms submitted to EPA under the Acid Rain Program, 40 C.F.R. §72.8. Additionally, the retired units will be removed from the Plant Yates Title V operating permit upon renewal (Application # 23087, submitted January 26, 2015).

The modeled source input data for the above sources are listed in Tables 1 through 4 below. For these sources, allowable or PTE emissions of SO₂ were modeled. Therefore, GEP stack heights were used. Information for the SPC, OPC, and MEAG Power combined-cycle units was obtained from the Georgia PSD Modeling Inventory available online at <https://psd.georgiaair.org/inventory/>.

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Table 1. Georgia Power Plant Yates Unit 6-7

<u>ID</u>	<u>UTM East</u> (m)	<u>UTM North</u> (m)	<u>Elev.</u> (ft)	<u>Height</u> (ft)	<u>Dia.</u> (ft)	<u>Temp.</u> (F)	<u>Vel.</u> (fps)	<u>SO₂</u> (lb/hr)
Yat67	695,303	3,704,514	759	485.9	22.7	260	67	4.2

Please note that Plant Yates Units 6 and 7 exhaust to single stack which is equipped with two flues, one for each unit. Dual-flue stacks have distinct emission points close enough together such that they will result in a merged plume. Please refer to the discussion of modeling such emissions points in the April 1, 2016 modeling protocol.

Table 2. Southern Power Wansley Combined-Cycle Generating Plant

<u>ID</u>	<u>UTM East</u> (m)	<u>UTM North</u> (m)	<u>Elev.</u> (ft)	<u>Height</u> (ft)	<u>Dia.</u> (ft)	<u>Temp.</u> (F)	<u>Vel.</u> (fps)	<u>SO₂</u> (lb/hr)
SPC6A	682,529	3,698,011	750	132	16.8	198	87	1.50
SPC6B	682,556	3,697,983	750	132	16.8	198	87	1.50
SPC7A	682,436	3,698,100	750	132	16.8	198	87	1.50
SPC7B	682,464	3,698,075	750	132	16.8	198	87	1.50

Table 3. Oglethorpe Power Corporation Chattahoochee Energy Facility

<u>ID</u>	<u>UTM East</u> (m)	<u>UTM North</u> (m)	<u>Elev.</u> (ft)	<u>Height</u> (ft)	<u>Dia.</u> (ft)	<u>Temp.</u> (F)	<u>Vel.</u> (fps)	<u>SO₂</u> (lb/hr)
OPC8A	682,408	3,698,122	750	130	16.5	205	65	1.22
OPC8B	682,385	3,698,143	750	130	16.5	205	65	1.22

Table 4. Municipal Electric Authority of Georgia

<u>ID</u>	<u>UTM East</u> (m)	<u>UTM North</u> (m)	<u>Elev.</u> (ft)	<u>Height</u> (ft)	<u>Dia.</u> (ft)	<u>Temp.</u> (F)	<u>Vel.</u> (fps)	<u>SO₂</u> (lb/hr)
MEAG9A	682,299	3,698,259	750	132	19.0	181	54	1.50
MEAG9B	682,268	3,698,287	750	132	19.0	181	54	1.50

Receptor Locations

A Cartesian receptor grid extending to approximately 20 km from Plant Wansley in all directions was used in the modeling analysis. The receptors were placed according to the following configuration:

- 100 meter spacing out to 2 km,
- 250 meter spacing from 2 km out to 5 km,
- 500 meter spacing from 5 km out to 10 km, and
- 1,000 meter spacing from 10 km out to 20 km.

Then, all areas of maximum impact were resolved to 100 meter spacing.

Building Downwash

The effects of building downwash were incorporated into the modeling analysis. Direction-specific building downwash parameters required by AERMOD were developed using BPIP PRIME (04274).

Offsite Emissions Inventory

All offsite sources of SO₂ not modeled are adequately represented by the background concentration included in the modeling analysis. Please refer to the June 14, 2016 modeling protocol addendum for discussion regarding the representativeness of the background concentration.

2010 SO₂ NAAQS Assessment

As part of the modeling analysis, background was added to the modeled concentrations to assess compliance with the 1-hour SO₂ NAAQS. The 2013-2015 design value for the South DeKalb monitor (13-089-002), 5 ppb (13.1 µg/m³), was used as the background concentration. Please refer to the June 14, 2016 modeling protocol addendum. The total SO₂ concentrations were calculated as the sum of the modeled design concentration from Plant Wansley and the offsite sources and the background concentration. The modeled design concentration was calculated by AERMOD (v14134) and reflects the 3-year average of the 99th-percentile daily maximum 1-hour SO₂ concentrations. The modeling results are presented in Table 5 below and show that the 4th highest daily 1-hour concentration averaged over 3 years, including background, is 21 ppb. This value is well below the NAAQS level of 75 ppb.

Table 5. Summary of highest 1-hour SO₂ modeled impacts averaged over 3 years, including background

Rank	3-year Average (ppb)	2012 (ppb)	2013 (ppb)	2014 (ppb)	Receptor (lat, long)	Distance from Plant Wansley (km)
1st	35	22.5	58.6	23.9	33.4218, -84.9930	3.93
2nd	29	23.8	44.6	19.8	33.4183, -85.0017	3.06
3rd	23	20.4	27.2	22.2	33.4284, -85.0090	2.89
4th	21	19.8	24.1	19.7	33.4239, -85.0081	2.70

Should you or your staff have any questions, please contact Jon Bandzul at (404) 506-3458.

*Georgia Power Plant Wansley, Data Requirements for Characterizing Air Quality for the
Primary 1-hour SO₂ National Ambient Air Quality Standard*

Sincerely,

A handwritten signature in black ink, appearing to read 'Rosa Chi', with a long horizontal flourish extending to the right.

Rosa Chi
Environmental Affairs Manager

Cc: Di Tian, Georgia Environmental Protection Division
Jon Bandzul, Georgia Power Company
Justin Walters, Southern Company
Travis Hicks, Southern Company

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