Appendix A. ADEM Data Approval

From: Weant, Jeremy B <jweant@adem.alabama.gov>
Sent: Tuesday, November 29, 2016 10:43 AM
To: Horton, Brett
Subject: RE: Boise - Actual Emission Data Submittal for Use with SO2 NAAQS DRR

Brett,
On October 26, 2016, I reviewed the data presented, along with the methodology used in calculating the values, and determined that it was acceptable to be used in the SO2 NAAQS DRR. I also conveyed that acceptance to the pertinent individuals within the Department. Thank you,

Jeremy Weant, P.E.
Air Division
Industrial Chemical Section
Alabama Department of Environmental Management
P.O. Box 301463
Montgomery, Alabama 36130-1463
(334) 270-5671
www.adem.alabama.gov
jweant@adem.state.al.us

Mission: Assure for all citizens of the state a safe, healthful and productive environment

---

From: Horton, Brett [mailto:BrettHorton@boisepaper.com]
Sent: Monday, November 28, 2016 9:56 AM
To: Weant, Jeremy B
Subject: RE: Boise - Actual Emission Data Submittal for Use with SO2 NAAQS DRR
Jeremy,
Would it be possible to receive written verification via email or letter of ADEM's acceptance of our data to be used in the SO2 NAAQS DRR demonstration application?
Thanks,

Brett Horton
Environmental Engineer
Jackson, Alabama
Work: (251) 246 - 8242
Cell: (251) 744 - 4907

From: Weant, Jeremy B [mailto:jweant@adem.alabama.gov]
Sent: Tuesday, October 25, 2016 10:19 AM
To: Horton, Brett <BrettHorton@boisepaper.com>
Subject: RE: Boise - Actual Emission Data Submittal for Use with SO2 NAAQS DRR
Brett,
I got your voicemail concerning this email, and I just now have had the opportunity to look at this information. I will review it, and get back to you with any questions, I may have. Thank you,

Jeremy Weant, P.E.
Air Division
Industrial Chemical Section
Alabama Department of Environmental Management

P.O. Box 301463
Montgomery, Alabama 36130-1463
(334) 270-5671
www.adem.alabama.gov
jweant@adem.state.al.us

Mission: Assure for all citizens of the state a safe, healthful and productive environment

From: Horton, Brett [mailto:BrettHorton@boisepaper.com]
Sent: Friday, October 21, 2016 2:46 PM
To: Weant, Jeremy B
Subject: Boise - Actual Emission Data Submittal for Use with SO2 NAAQS DRR

Dear Mr. Weant:

On May 23, 2016, Boise was contacted by ADEM and asked to provide the information regarding mass emission rates for the year 2014 from each source that is considered to be a contributable sulfur dioxide (SO2) emission source. Although these sources have very small annual emissions of SO2, we were made aware that this information would be considered with regard to the SO2 1-Hour National Ambient Air Quality Standards (NAAQS) Data Requirement Rule (DRR) for area designation. The sources at the Boise Jackson facility include the Lime Kiln (102-0001-Z003), No.2 Recovery Furnace north and south stack (-Z011A & -Z011B), and Combination Fuel Boiler (-Z013). Boise previously provided very conservative maximum/allowable hour rates, but we have now developed more accurate and representative data for the years 2012 to 2014. That more accurate data is enclosed and described below.
Specifically, the attached Excel file has been prepared by Boise and has each of the four (4) stack locations listed with mass emission rates (g/s), exhaust temperature (K), and exhaust velocity (m/s) that has been calculated to be as representative as possible of the actual hourly emissions. The data has been derived from hourly production rates and trade organization specific emission factors, site specific emission factors, or Continuous Emission Monitoring Systems (CEMS) data. The derivation of emissions for each source is described in greater detail below:

Lime Kiln (Z003) – CEMS data was available and used for the years 2013 and 2014. The CEMS was not installed on this unit until 2012. For 2012 emissions calculations, the pulp & paper trade organization specific emission factors from the National Council for Air and Stream Improvement (NCASI) were used. For the base emission rate from the Lime Kiln, the mean SO2 emission factor of 0.07 lb/ton CaO for lime kilns with wet scrubbers was used (NCASI Technical Bulletin No. 1020, Table 4.13). The major contribution of SO2 emissions from the Lime Kiln is due to the kiln being a control device for incineration of Non-Condensable Gases (NCG) from the pulping process. The NCASI emission factor for Total Reduced Sulfur content of uncontrolled NCGs is 0.961 lb/ADTUBP (NCASI Technical Bulletin No. 973, Table 4.15). The Total Reduced Sulfur emission factor was converted quantitatively to SO2, and a 90% removal rate for destruction in the kiln was used and applied to the hours during 2012 when the Lime Kiln was incinerating NCGs.
Exhaust temperature is measured on the Lime Kiln and is supplied as well. Stack velocity is static since it is derived from the latest particulate test flowrate and usually not changed unless the velocity is higher than the previous year which would give a conservative bias, if any.

No. 2 Recovery Furnace North & South Stack (Z011A & Z011B) – Boise has used a site specific emission factor that was produced from an actual emission test that was performed on the boiler in March 2006. The factor of 0.0686 lb/ton black liquor solids (BLS) was used and applied to each hour of BLS fired in the Recovery Furnace during the years 2012 to 2014. The No. 2 Recovery Furnace is one unit with two stacks with equal mass emission rates. The mass emission rate was divided in half to represent the emission rate for each stack.
Exhaust temperature is measured on each stack and is supplied. The stack velocity is static due to the derivation from the site specific emission factor.

Combination Fuel Boiler (Z013) – SO2 concentration CEMS data is available for the years 2012 to 2014. The hourly emission rate calculation from SO2 ppm and O2 % to lb/hr assumes a maximum boiler heat input of 429 MMBtu/hr. To better determine a more accurate heat input for the boiler, hourly steaming rates were used to calculate heat input. Using a conversion of 1203.7 btu/lb (Cameron Hydraulic Data) of steam and assuming an

efficiency of 69.8% conversion of heat generated to steam produced, a more accurate heat input value was derived. The newly derived heat input was applied to the hourly emissions data to calculate the mass emission rate. This calculation method is consistent with Title V permit application emission calculations.

The stack exhaust temperature for this unit is not measured for this unit. The control device for the boiler is a venturi wet scrubber and a static exhaust temperature of 158F was assumed due to the stable nature of the saturated flue gas. Please note that in review of previous information provided by ADEM this data indicates an exhaust temperature of 378F which is not correct. Additionally, a stack velocity was also assumed to be static.

To the best of our knowledge and ability, using the available emission and production data, we have derived what we believe to be the most accurate representation of hourly emissions data for the years 2012 to 2014 for our emission sources.

Furthermore, attached please find an air dispersion modeling file containing our facility's building configuration information for use in developing downwash information for modeling and an illustration for reference.

We appreciate your timely review and request your approval of this emissions data and building information for use in the aforementioned NAAQS DRR for area designation analyses.

If you have any questions or comments concerning the data or derivation thereof, please do not hesitate to call me at 251-246-8242 or request a meeting to discuss further.

Brett Horton
Environmental Engineer
Jackson, Alabama
Work: (251) 246 - 8242
Cell: (251) 744 - 4907