

Bradley Werling

From: John Mays [jmays@powertechuranium.com]
Sent: Tuesday, July 16, 2013 5:45 PM
To: Bradley Werling; 'Ronn Smith'
Cc: Haimanot Yilma; James Prikryl
Subject: RE: Protocol received
Attachments: Response to Table 6-1 Questions Rev3.docx

Haimanot and Bradley,

Please see the attached response prepared by Ronn Smith in regard to the question below. This response is provided for clarification and we do not intend to update the report text.

John



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From: Bradley Werling [<mailto:bwerling@swri.org>]
Sent: Monday, July 15, 2013 10:51 AM
To: Ronn Smith
Cc: Haimanot Yilma; James Prikryl; jmays@powertechuranium.com
Subject: FW: Protocol received

Ronn,

Sorry for the delay on the feedback. I was sick on Friday and over the weekend. I only have one follow up question on the comment responses. It concerns the clarification of the statistics associated with table 6-1. The attached file contains the details in table form with the last column identifying whether I had a question on the statistic or simply wanted verification. Questions include both ambient impact design values (NO2 annual, SO2 3 hour, CO 8 hour, and CO 1 hour) as well as ambient impact non-design values (PM10 annual, SO2 annual, and SO2 24 hour). I anticipate that this would take very little time on your behalf. Please let me know if you have any questions.

Bradley

From: Bradley Werling
Sent: Thursday, July 11, 2013 10:12 AM
To: 'Ronn Smith'
Cc: James Prikryl; Haimanot Yilma; 'jmays@powertechuranium.com'
Subject: Protocol received

Ronn,

I received the your emails with the latest modeling protocol. I'll look it over to verify it addresses the topics from the NRC perspective as we have discussed. I'll let you know when I have completed that task. If no changes are needed, I think the formal version of the protocol, including the detailed AERMOD and CALPUFF backup files, can be transmitted to NRC.

Thanks for all of your efforts,
Bradley

Clarification on Table 6-1 headings

Pollutant	Interval	Ambient Impact Statistic	Last 3 Columns statistic	Question or verification	Response
PM10 No dry	Annual	Not a design value, however is a PSD - see question	Not provided	Question - is the ambient statistic the average of the 3 annual averages (2009 to 2011) or the highest single yearly average over the 3 years modeled	Maximum annual result averaged over three years
	24 hr	Design value - 4th highest value over 3 yr period (i.e., not to be exceeded more than once per year on average over 3 years)	3 highest values over the 3 year period (values can occur in same model year)	Verify both ambient and last 3 columns statistics	Correct
PM10 Dry	Annual	Not a design value, however is a PSD - see question	Annual average for each of the individual modeled years 2009-2011	Question - is the ambient statistic the average of the 3 annual averages (2009 - 2011) or the highest single yearly average over the 3 years modeled Verify last 3 columns statistic	Maximum annual result averaged over three years Maximum annual result in the corresponding year (note that the maximum 3-year average and each maximum 1-year average may occur at different receptors)
	24 hr	Design value - 4th highest value over 3 yr period (i.e., not to be exceeded more than once per year on average over 3 years)	3 highest values over the 3 year period (values can occur in same model year)	Verify both ambient and last 3 columns statistics	Correct
PM2.5	Annual	Design value - Annual mean averaged over the 3 year period	Not provided	Verify ambient statistic	Correct (Maximum annual result averaged over three years)
	24 hr	Design value -98th percentile, averaged over 3 years	98th percentile for each of the individual modeled years	Verify last 3 columns	Correct
NO2	Annual	Design value - Annual mean -see question	Not provided	Question - is the ambient statistic the average of the 3 annual averages (2009 to 2011) or the highest single yearly average over the 3 years modeled. Note - the design value is for a single year	Maximum average across 3 yearly values (Period average, see note 1 below)
	1 hr	Design value - 98th percentile, averaged over 3 years	98th percentile for each of the individual modeled years	Verify last 3 columns	Correct
SO2	Annual	Not a design value, however is a PSD - see question	Not provided	Question - is the ambient statistic the average of the 3 annual averages (2009 to 2011) or the highest single yearly average over the 3 years modeled. Note - the PSD value is for a single year	Maximum average across 3 yearly values (Period average, see note 2 below)
	24 hr	Not a design value, however is a PSD - see question	Not provided	Question - is the ambient statistic the average of the 3 annual maximum values (2009 to 2011) or the highest single year maximum over the 3 years modeled. Note - the PSD value is for a single year	High 1 st high over any single calendar year
	3 hr	Design value - not to be exceeded more than once per year - see question	Not provided	Question - is the ambient statistic the average of the 3 annual maximum values (2009 to 2011), or the highest single year maximum over the 3 years modeled. Note - the design value is for a single year	High 1 st high over any single calendar year
	1 hr	Design value - 99th percentile of 1 hr daily maximum, averaged over 3 years	99th percentile of 1 hr daily maximum for each of the individual years modeled	Verify last 3 columns	Correct

CO	8 hr	Design value - not to be exceeded more than once per year - see question	Not provided	Question - is the ambient statistic the average of the 3 annual maximum values (2009 to 2011) or the highest single year maximum over the 3 years modeled. Note - the design value is for a single year	High 1 st high over any single calendar year
	1 hr	Design value - not to be exceeded more than once per year - see question	Not provided	Question - is the ambient statistic the average of the 3 annual maximum values (2009 to 2011) or the highest single year maximum over the 3 years modeled. Note - the design value is for a single year	High 1 st high over any single calendar year

Notes:

1. For NO₂ the pollutant/averaging specification in the AERMOD control pathway provides a US EPA 1-hr NAAQS option in order to output the 98th percentile according to the 1-hour NAAQS format. In the Lakes AERMOD View software, this option is only compatible with selection of the period average (not the annual average). The period averages were therefore computed to avoid dual model runs. It should be noted, however, that the period average of 1.5 µg/m³ reported in Table 6-1 ensures that the modeled annual average would have been far below the maximum allowable annual average of 100 µg/m³ for NO₂. Assuming the model had predicted a peak annual average at the standard of 100 µg/m³. The minimum possible 3-year period average would be achieved if the annual averages for the other two years were zero. This would calculate to a minimum period average of $(100 + 0 + 0)/3 = 33.3 \mu\text{g}/\text{m}^3$, more than 20 times higher than the period average of 1.5 µg/m³ reported in Table 6-1. Therefore, by inference the annual average must be below the standard by factor of 20 or greater
2. For SO₂ the pollutant/averaging specification in the AERMOD control pathway provides a US EPA 1-hr NAAQS option in order to output the 99th percentile according to the 1-hour NAAQS format. In the Lakes AERMOD View software, this option is only compatible with selection of the period average (not the annual average). The period averages were therefore computed to avoid dual model runs. It should be noted, however, that the period average of 0.2 µg/m³ reported in Table 6-1 ensures that the modeled annual average would have been far below the allowable PSD Class II increment of 20 µg/m³ for SO₂. Assuming the model had predicted a peak annual average at the standard of 20 µg/m³. The minimum possible 3-year period average at that receptor would be achieved if the annual averages for the other two years were zero. This would calculate to a period average of $(20 + 0 + 0)/3 = 6.67 \mu\text{g}/\text{m}^3$, more than 30 times higher than the period average of 0.2 µg/m³ reported in Table 6-1. Therefore, by inference the annual average must be below the PSD increment by a factor of 30 or greater.