

ATTACHMENT

Comments on Protocol for Refined Air Quality Analysis

Personnel from the Missouri Department of Natural Resources' Air Pollution Control Program have reviewed the protocol document that describes the modeling methodology that will be used to evaluate the impact of ambient sulfur dioxide (SO₂) emissions at or beyond the property boundary of the Bridgeton Landfill. The following are section specific comments regarding this methodology.

1.0 Introduction

The protocol document states that the primary objective of the modeling study is to demonstrate compliance with the National Ambient Air Quality Standards (NAAQS) for SO₂. In the event that modeled compliance cannot be demonstrated or the NAAQS appear to be threatened based upon the model results, the collection of air quality data will be required through the establishment of a comprehensive monitoring network. The number and the location of monitors will be determined based upon model estimates with an emphasis placed upon the location(s) of maximum impact from the facility itself and the maximum impact area where the combined effect from the facility itself in combination with existing nearby sources is the greatest.

2.2 Pollutants Evaluated

On June 2, 2010, the Environmental Protection Agency (EPA) strengthened the SO₂ NAAQS through the establishment of a new 1-hour standard of 75 parts per billion. This standard is in addition to the existing, 3-hour SO₂ standard that is being retained at 0.5 parts per million. Both the 24-hour and annual NAAQS were revoked in the final SO₂ rule that was published on June 22, 2010; however, NAAQS compliance must continue to be evaluated on a 24-hour and annual basis for a period of one year after the issuance of the final SO₂ area designations. The SO₂ designations are not expected to be finalized until December of 2020.

Both the 3-hour and 24-hour NAAQS are deterministically based standards that allow for one exceedance per year; unlike the annual standard which does not allow for any exceedances. The new 1-hour standard is a statistical standard that is based upon the three-year average of the 99th percentile of the annual distribution of daily maximum 1-hour average concentrations.

For the annual averaging period, the maximum, annual concentration predicted by the dispersion model should be compared to the NAAQS of 80 µg/m³. Compliance with the 3-hour and 24-hour standards is demonstrated when the second highest concentration for each year modeled is less than 1300 and 365 µg/m³, respectively. Based upon the form of the new 1-hour standard, the modeled design value is the five year average of the fourth highest, daily maximum, 1-hour concentrations.

All applicable averaging times for SO₂ should be addressed in the air quality analysis that is submitted for the initial phase of this project. All subsequent analyses that are submitted in support of the construction permit application must include a compliance demonstration for each pollutant that exceeds the *de minimis* thresholds outlined in 10 CSR 10-6.020 (3)(A) Table 1. Additionally, the director may request that an applicant provide an ambient air quality impact analysis (AAQIA) if it is likely that the modification could appreciably affect air quality within the region regardless of the projected emissions of the construction.

The objective of the AAQIA is to demonstrate that the proposed project, in conjunction with other emission sources, will not cause or significantly contribute to a violation of the NAAQS, the Prevention of Significant Deterioration (PSD) increments or the Missouri Risk Assessment Levels (RALs).

3.2 Meteorological Data

The criteria used to determine the spatial and climatological representativeness of the National Weather Service site at Lambert International Airport should be provided within the final air quality report. The meteorological conditions that are occurring at the facility site should be similar to the meteorological conditions that are occurring at the measurement site. Data representativeness is critical and should be determined based upon spatial proximity, instrument exposure, topography and land use.

3.3 Coordinate System

The protocol document incorrectly identified the Universal Transverse Mercator (UTM) zone for the Bridgeton Landfill site as Zone 16. The UTM zone included in the final report should reference Zone 15.

3.5 Receptor Grid

The methodology outlined in the protocol document for the establishment of the receptor grid is acceptable as described with the following caveats. Because main line rail systems, waterways and public roads are accessible to outside entities, they must be considered ambient air in all compliance demonstrations; regardless of their location. If a rail system, river or public road bi-sects the applicant's property boundary, receptors must be placed at 50-meter intervals along the boundary in order to determine if compliance with the air quality standards is demonstrated at these locations.

3.7 Background Concentrations

The protocol document states that a 2014 design value of 22 parts per billion from the Margareta monitor site will be included in the compliance demonstration for Bridgeton Landfill to account for the monitored portion of the background concentration for the 1-hour SO₂ analysis. According to the March 1, 2011 EPA memorandum, the monitored portion of background should be based upon the 1-hour design value which is equivalent to the 99th percentile of the annual distribution of the daily maximum 1-hour values averaged across the most recent three years of data.

Using this methodology, the 1-hour design value for the 2012-2014 reporting period at the Margareta monitor site is 26 parts per billion. The 3-hour, 24-hour and annual background values for the same time period are 43.4 parts per billion, 10.3 parts per billion and 1.8 parts per billion. Each of these values should be included in the results obtained from the model compliance demonstration.

As noted previously, the initial objective of this project is to determine the impact due to the facility itself; and, as such, interactive source impacts do not have to be evaluated at this time. However, the AAQIA that is submitted in support of the issuance of the construction permit must include explicitly modeled interactive source impacts in the compliance demonstration.

3.8 Flare Modeling Representation

All emission estimates, effective stack parameters, control/destruction efficiencies, and heat release calculations submitted in support of the proposed project must be reviewed and approved by the permit engineer assigned to the project. The emission rates contained in the model input file will be considered preliminary and subject to change until this approval is granted.

The use of a site specific radiative heat loss factor is acceptable; however, it will require the submittal of supporting documentation in order to allow staff to confirm the accuracy of the factor that was applied in the air quality analysis. In addition, the permit engineer reviewing the project will be responsible for determining if the proposed factor is appropriate or requires additional documentation.

4.0 Post Processing, Model Results and Files

The protocol document states the following: *“If initial model results show non-compliance with the NAAQS, Bridgeton Landfill will at that time redefine some of the more conservative assumptions originally used to better represent actual operating conditions.”*

Any alterations made to the modeling procedures contained within the protocol document must be approved by the Department’s Air Pollution Control Program prior to use. A description of the proposed changes should be provided with all supporting documentation.

Additionally, the Department’s Air Pollution Control Program requires that all of the model inputs and outputs be submitted electronically, including the building downwash and terrain files. A written description of the procedures used throughout the model analysis should be submitted with an emphasis placed upon any special considerations that were made during the course of the modeling study.

As noted previously, if modeled compliance cannot be demonstrated or the NAAQS appear to be threatened based upon the model results, the collection of air quality data will be required.

Miscellaneous Items

The ambient air quality impact analysis submitted in support of the construction permit application must contain a map of the immediate area surrounding the facility. The map should be detailed enough to show the entirety of the property boundary, building locations, and release points.

In addition, the characterization of the land use surrounding the Bridgeton Landfill should include a determination of the status of the area as urban or rural. If the urban dispersion coefficients are selected, justification should be provided and should be based upon the criteria outlined in Section 5.1 of the March 19, 2009 AERMOD Implementation Guide.

The remainder of the protocol document sufficiently addresses the proposed modeling techniques.