



Susan Mosier, MD, Secretary

Department of Health & Environment

Sam Brownback, Governor

January 10, 2017

Mark Hague, Regional Administrator
USEPA Region 7
11201 Renner Blvd
Lenexa, KS 66219

Dear Mr. Hague:

This letter is being submitted to the Environmental Protection Agency (EPA) to recommend final area designations for the 1-hour National Ambient Air Quality Standard (NAAQS) for sulfur dioxide (SO₂) per the August 21, 2015 final Data Requirements Rule (DRR)¹. In the EPA's "Round 3" memorandum² issued on July 22, 2016, states are required to submit new/updated modeling analyses on the basis of current available information by January 13, 2017, in order to help EPA make its Round 3 designations by December 31, 2017. The KDHE submits the following recommendations per this guidance:

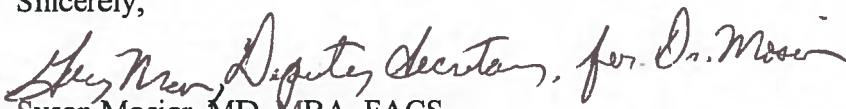
Unclassifiable/Attainment:
Unclassifiable/Attainment:

Wyandotte County
Shawnee County

The designation recommendations are based upon the Kansas Department of Health and Environment (KDHE) Bureau of Air analysis of monitoring data, dispersion modeling results, and proactive actions taken by the affected facilities. Based upon the factors specified in the DRR and related memoranda, the two Kansas facilities in question in the proposed area, Kansas City BPU - Nearman Creek Station and Westar Energy - Tecumseh Energy Center, do not significantly cause or contribute to violations of the Clean Air Act.

Feel free to contact Doug Watson, KDHE Bureau of Air Planning Section, at 785-296-0910 or douglas.watson@ks.gov, if you have any questions regarding these recommendations or the analyses upon which the recommendations are made.

Sincerely,


Susan Mosier, MD, MBA, FACS
Secretary and State Health officer,
Kansas Department of Health and Environment

Attachment:
Technical Support Document and appendices

¹ <https://www.gpo.gov/fdsys/pkg/FR-2015-08-21/pdf/2015-20367.pdf>

² <https://www.epa.gov/sites/production/files/2016-07/documents/areadesign.pdf>

Kansas Department of Health and Environment
Proposed “Round 3” Area Designations for the Environmental Protection Agency’s
2010 Primary Sulfur Dioxide National Ambient Air Quality Standards
Technical Support Document

PURPOSE

The purpose of this document is to present Kansas’ proposed recommendations for the State’s remaining area designations for the 2010 1-hour sulfur dioxide (SO₂) National Ambient Air Quality Standard (NAAQS). This document deals with two counties: Shawnee County, which surrounds the Westar Energy - Tecumseh Energy Center (TEC); and Wyandotte County, which surrounds the Kansas City BPU - Nearman Creek Station (Nearman). In accordance with the August 21, 2015 final Data Requirements Rule (DRR)¹, the Kansas City BPU has elected to characterize the air quality surrounding Nearman through air dispersion modeling, while Westar Energy has chosen the alternative approach of taking a federally enforceable limit of 2,000 tons of SO₂ per year for TEC.

The Kansas Department of Health and Environment (KDHE) will submit these recommendations to EPA Region 7 staff by January 13, 2017; EPA will make a final decision on designations for these areas by December 31, 2017 in its “Round 3” designations.² If EPA staff intend to modify the state’s recommendations or needs additional technical justification, they will notify KDHE 120 days prior to finalizing the designations.

SUMMARY OF PROPOSED RECOMMENDATIONS

KDHE is proposing to recommend unclassifiable/attainment status for each of the two counties in which the sources are located, i.e., Wyandotte County (for Nearman) and Shawnee County (for TEC).

BACKGROUND

On June 22, 2010, the EPA established a new 1-hour SO₂ primary NAAQS of 75 parts per billion (ppb), based on the three-year average of the annual 99th percentile of 1-hour daily maximum concentrations (75 FR 35520; June 22, 2010). This new SO₂ standard replaced the previous 24-hour and annual primary SO₂ NAAQS promulgated in 1971 (36 FR 8187; April 30, 1971). Once EPA establishes or revises a NAAQS, the Clean Air Act requires EPA to designate areas as “attainment” (meeting), “nonattainment” (not meeting), or “unclassifiable” (insufficient data).

The EPA has chosen a different approach to determine attainment status for the 1-hour SO₂ NAAQS. Unlike other criteria pollutants, SO₂ is almost exclusively a point source-emitted pollutant. A monitoring network large enough to adequately cover all large sources would be prohibitively expensive and an affordable network would leave large gaps in coverage. Therefore, EPA has decided to use a hybrid monitoring-modeling approach for the implementation of the 1-hour SO₂ standard.

¹ <https://www.gpo.gov/fdsys/pkg/FR-2015-08-21/pdf/2015-20367.pdf>

² <https://www.epa.gov/sites/production/files/2016-07/documents/areadesign.pdf>

EPA is promulgating designations under this standard for areas throughout the nation in multiple phases. In the initial round, EPA designated areas as nonattainment based on 2010–2012 monitoring data from existing monitors showing a violation of the NAAQS. Kansas had no nonattainment areas; however, one of Missouri’s two designated nonattainment areas was in a portion of Jackson County, which lies directly east of Wyandotte County, Kansas on the Kansas-Missouri border. The Jackson County SIP and attainment demonstration was submitted to EPA on October 9, 2015, and Missouri’s subsequent rulemaking, *Control of Sulfur Dioxide Emissions* (10 CSR 10-6.261), which establishes federally enforceable limits on major SO₂ sources in the Kansas City area, comes into effect January 1, 2017.

As stated in §51.1202 in the DRR, sources that emitted more than 2,000 tons of SO₂ in the most recent, quality assured emission year (2014), excluding sources in previously designated nonattainment areas, must be evaluated under the DRR. The DRR details two characterization options available to sources: modeling or monitoring. Alternatively, a source may elect to adopt federally enforceable emissions limitations to less than 2,000 tons by January 13, 2017 to forego characterization under the DRR.

In September 2015, KDHE submitted a list of three sources affected by the DRR (and March 2014 Sierra Club consent decree³) around which to characterize air quality to fulfill the requirement outlined in §51.1203(a). These sources were the two power plants already mentioned (Nearman and TEC), as well as KCP&L - La Cygne (La Cygne). In EPA’s June 30, 2016 letter to Kansas Governor Brownback, EPA notified the State that the area surrounding La Cygne (Linn County) was designated unclassifiable/attainment. On the other hand, EPA designated Shawnee and Wyandotte counties unclassifiable, which necessitates a new round (i.e., this round) of designations under the DRR.

The following text outlines the technical analyses for the two facilities still requiring attainment demonstrations. Each facility is considerably different and will be addressed separately.

Kansas City BPU - Nearman

Purpose for designation determination:

Nearman Creek Power Station (“Nearman”) was identified by the EPA for emitting 0.58 lb SO₂/MMBtu in 2012, which exceeds the limit of average SO₂ emissions rate 0.45 lb SO₂/MMBtu as specified in the Sierra Club consent decree.

Description of location and surrounding topography:

Nearman is located in Wyandotte County, Kansas, in a relatively unpopulated area directly adjacent to the Missouri River. The topography is very flat as would be expected of a region in a river basin.

3

<http://content.sierraclub.org/environmentallaw/sites/content.sierraclub.org.environmentallaw/files/SO2%20Consent%20Decree.pdf>

2016.

- Under a construction permit issued by KDHE August 5, 2013, and addendum issued September 11, 2015, BPU completed construction on the following emission controls on Nearman Unit 1 in November 2016:
 - Selective catalytic reduction system for NO_x removal;
 - Powdered activated carbon injection system for mercury removal;
 - Circulating dry scrubber for SO₂ and acid gas removal; and
 - Pulse-jet fabric filter for particulate removal.

Trinity Consultants, Inc., was contracted to conduct modeling to characterize the 1-hour SO₂ rates for the facility. The modeling included nearby facilities emitting SO₂ located in Kansas City, Missouri. Missouri DNR is in the final stages of implementing rules to reduce SO₂ emissions from sources in Kansas City, Missouri through a rulemaking developed for a first-round SO₂ nonattainment designation. The most recent update of the Missouri Air Conservation Commission's Rules in Progress for the Missouri Department of Natural Resources (DNR) indicates the SO₂ control rule (10 CSR 10-6.261 Control of Sulfur Dioxide Emission⁴) will take effect on January 1, 2017. Using the allowable rates contained in the MDNR SO₂ control rule for nearby sources on the Missouri side and the actual rates from Nearman Unit 1, the highest concentration of modeled SO₂ results was 129 µg/m³ (49 ppb). All modeling protocols and results for this source are provided in Appendix A and Appendix B.

KDHE recommends that Wyandotte County, in which Nearman resides, be designated as unclassifiable/attainment.

Westar Energy - Tecumseh

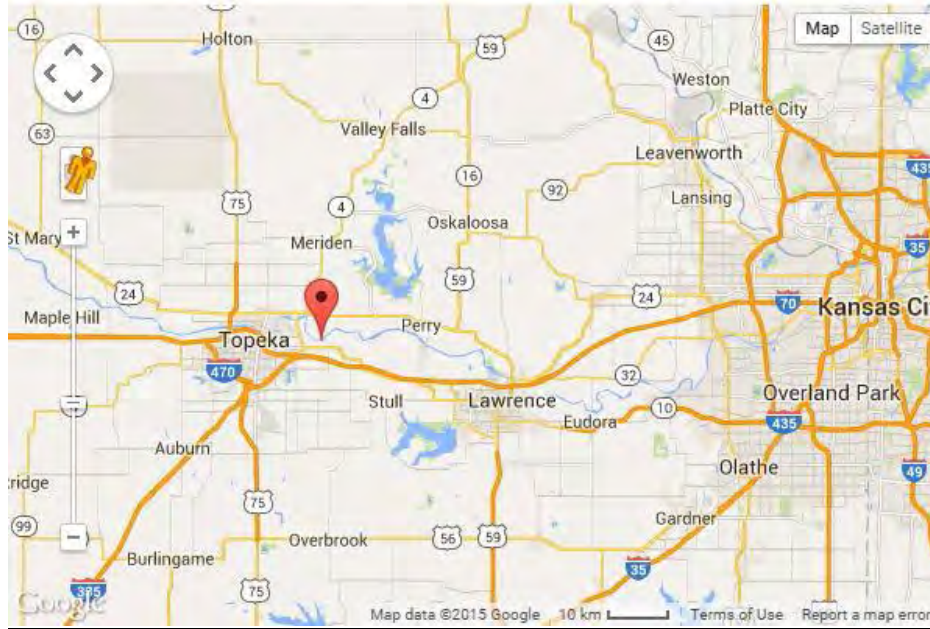
Purpose for designation determination:

Westar Energy's Tecumseh Energy Center (TEC) was identified by the EPA for emitting 0.64 lb SO₂/MMBtu in 2012, which exceeds the limit of average SO₂ emissions rate 0.45 lb SO₂/MMBtu as specified in the consent decree.

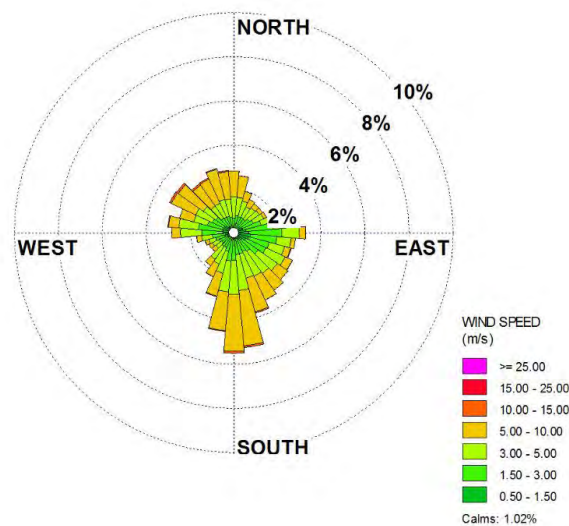
Description of location and surrounding topography:

TEC is located east of Topeka, Kansas, in an unincorporated community, Tecumseh. The Tecumseh facility is sited directly south of the Kansas River. The topography is very flat as would be expected of a river basin.

⁴ <http://s1.sos.mo.gov/cmsimages/adrules/csr/current/10csr/10c10-6b.pdf>



The wind rose plot shows the wind frequencies from the closest representative meteorological station, the Topeka Municipal Airport, for years 2012–2014. The frequencies in the wind rose represent the direction in which the wind is coming from. Based upon the data it can be concluded that the wind primarily originates from the south, with a secondary maximum from the northwest.



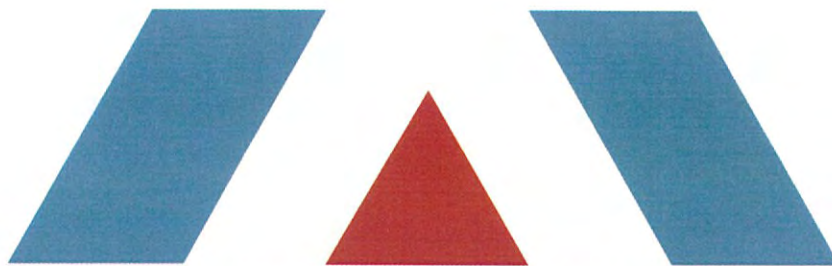
Justification for proposed designation:

Near the close of 2015, Westar Energy management consolidated operations at several of their electric generating facilities, and announced the retirement of three generating units, two of which were coal-fired boilers: the 61 MW Unit 3 at their Lawrence Energy Center in Lawrence, Kansas, and the 176 MW Unit 8/10 at TEC. The retirements were effective December 31, 2015.

The remaining 96 MW Unit 7/9 at TEC has not emitted over 2,000 tons of SO₂ for more than 10 years, with its latest available emission of SO₂ (in 2015) at 1,246 tons. Consequently, Westar Energy has decided to take a federally enforceable 2,000 tons per year limit, based on a 12-month rolling average. A copy of the construction permit, which memorializes this limit and was issued on November 21, 2016, is found in Appendix C.

KDHE recommends that Shawnee County, in which TEC resides, be designated as unclassifiable/attainment.

APPENDIX A



AIR DISPERSION MODELING REPORT FOR 1-HOUR SO₂ NAAQS DESIGNATION

**Kansas City Board of Public Utilities
Nearman Creek Station
Kansas City, KS**



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March 2016

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1. INTRODUCTION

On approximately February 16, 2016, the EPA sent a letter to each state governor summarizing the EPA's proposed designation with respect to the 1-hour SO₂ NAAQS for areas impacted by the Consent Decree entered on March 2, 2015 in the U.S. District Court for the Northern District of California, and comparing the EPA's proposed designation to the state's recommendation designation. On March 3, 2016, the EPA published a notice of their proposed 1-hour SO₂ designations and related Technical Support Document (TSD) for each state and initiated a public comment period.

The area surrounding the Kansas City Board of Public Utilities (BPU's) Nearman Creek Station, which is located in Wyandotte County, Kansas, is one of the areas that is affected by the EPA's currently proposed designations. For this area, the EPA reviewed modeling submitted by both KDHE and Sierra Club and proposed a designation of unclassifiable. Along with their proposed designation, the EPA also suggested that the extent of the area of analysis (i.e. receptor grid) that was used in the modeling analysis that KDHE submitted was inconsistent with the modeling TAD. Specifically, EPA said *"since there were no receptors placed in Missouri, the receptor grid is inconsistent with the Modeling TAD, as receptors should be placed in areas where it would be feasible to place a monitor and record ambient impacts"*.

In August 2015, Trinity conducted dispersion modeling to determine the 1-hour SO₂ concentrations in the area surrounding Nearman Creek Station. The locations where modeled impacts were determined were limited to locations in Wyandotte County. BPU provided the modeling to KDHE. KDHE relied upon Trinity's dispersion modeling in their recommendation letter to EPA dated September 9, 2015. Thus, all references by EPA to KDHE's modeling are really references to Trinity's modeling.

Trinity has prepared an updated dispersion modeling analysis that provides additional information in the area surrounding Nearman Creek Station. The major change in the modeling from what was prepared in August 2015 is the extent of the area of analysis. The extent was revised from including Wyandotte County only to including an area that is 100 km by 100 km centered on Nearman Creek Station. Additional relevant changes include removing the Nearmand Creek Station N1 stack from being included as a structure in the BPIP analysis, modeling different emission rates for some sources, and including Independence Power & Light's Blue Valley units.

2. 1-HOUR SO₂ DESIGNATION MODELING - DATA AND PROCEDURES

2.1. MODELING OVERVIEW

Trinity performed 1-hour SO₂ modeling using AERMOD version 15181 along with Trinity's *BREEZE™* AERMOD software. All regulatory default options were used in the modeling. The pollutant ID was set to SO₂ and the output options were configured such that the model predicted an SO₂ design value based on the 3-year average of the 99th percentile of the annual distribution of the daily maximum 1-hour concentrations for comparison with the 1-hour SO₂ NAAQS of 196 ug/m³.

Modeling was conducted using the urban area option feature of AERMOD. Modeling performed recently by the Missouri Department of Natural Resources (MDNR) as part of the State Implementation Plan for compliance with the 2010 1-hour SO₂ NAAQS for the Jackson County nonattainment area, which included BPU's Nearman Creek Station facility, utilized the urban option for Kansas City. Urban/rural determinations were made by implementing both land-use and population density procedures and the area was found to be largely urban. Following guidance in 40 CFR Part 51, Appendix W, subsection 7.2.3(f), each source was modeled under the urban option. Trinity has elected to maintain the urban area option, following MDNR's evaluation of the same area for recent modeling. A population of 2,343,000 for the Kansas City metro area was used as the estimated total for the two state metropolitan region.

2.2. METEOROLOGICAL DATA

Trinity processed surface meteorological data for 2012, 2013, and 2014 collected at the Charles B. Wheeler Downtown Airport in Kansas City, Missouri. Upper air meteorological data was collected for the same years at nearest U.S. National Weather Service (NWS) upper-air balloon station, located in Topeka, Kansas (TOP). A determination of whether the surface meteorological data from the Charles B. Wheeler Downtown Airport were appropriate for use in BPU's modeling analyses was considered by determining whether the data were representative of the site where the Nearman Creek Station plant is located. The extremely close proximity of the airport with respect to Nearman Creek Station (approximately 6 miles), in addition to the similarity in the climatology and topography (the airport is approximately 758 feet and Nearman Creek Station is approximately 753 feet) support that the meteorological conditions at the airport are representative of the meteorological conditions at Nearman Creek Station.

AERMOD-ready meteorological data was prepared using the latest version of the U.S. EPA's AERMET meteorological processing utility (version 14134). Standard U.S. EPA meteorological data processing guidance was used as outlined in a recent memorandum¹ and other documentation.

2.2.1. Surface Data

Raw hourly surface meteorological data was obtained from the U.S. National Climatic Data Center (NCDC) for Charles B. Wheeler Downtown Airport in Kansas City, Missouri (KMKC, WMO ID: 724463) in the standard ISHD format. This data was supplemented with TD-6405 (so-called "1-minute") wind data from KMKC. The 1-minute wind data was processed using the latest version of the U.S. EPA AERMINUTE pre-processing tool (version 14337). The quality of the 1-minute data was verified by comparison to the hourly ISHD data from KMKC. The

¹ Fox, Tyler, U.S. Environmental Protection Agency. 2013. "Use of ASOS Meteorological Data in AERMOD Dispersion Modeling." Available Online: http://www.epa.gov/ttn/scram/guidance/clarification/20130308_Met_Data_Clarification.pdf

"Ice-Free Winds Group" AERMINUTE option was selected due to the fact that a sonic anemometer has been used at KMKC since 2006.

2.2.2. Upper Air Data

In addition to surface meteorological data, AERMET requires the use of data from a sunrise-time upper air sounding to estimate daytime mixing heights. Upper air data from the nearest U.S. National Weather Service (NWS) upper-air balloon station, located in Topeka, KS (TOP), was obtained from the National Oceanic and Atmospheric Administration (NOAA) in FSL format.

2.2.3. Land Use Analysis

Parameters derived from analysis of land use data (surface roughness, Bowen ratio, and albedo) are also required by AERMET. In accordance with U.S. EPA guidance, these values were determined using the latest version of the U.S. EPA AERSURFACE tool (version 13016).² The AERSURFACE settings that were used for processing are summarized in Table 2.1 below. The met station coordinates were determined by visually identifying the met station using Google Earth. NLCD 1992 (CONUS) Land Cover data used in AERSURFACE processing was obtained from the Multi-Resolution Land Use Consortium (MRLC).

U.S. EPA guidance dictates that on at least an annual basis, precipitation at a surface site should be classified as wet, dry, or average in comparison to the 30-year climatological record at the site. This determination is used to adjust the Bowen ratio estimated by AERSURFACE. To make the determination, annual precipitation in each modeled year (2012-2014) was compared to the 1981-2010 climatological record for KMKC.³ The 30th and 70th percentile values of the annual precipitation distribution from the most recent available 30-year period was calculated. Per U.S. EPA guidance, each modeled year was classified for AERSURFACE processing as "wet" if its annual precipitation was higher than the 70th percentile value, "dry" if its annual precipitation was lower than the 30th percentile value, and "average" if it was between the 30th and 70th percentile values.

Table 2-1. AERSURFACE Input Parameters

AERSURFACE Parameter	Value
Met Station Latitude	39.120963
Met Station Longitude	-94.597027
Datum	NAD 1983
Radius for surface roughness (km)	1.0
Vary by Sector?	Yes
Number of Sectors	12
Temporal Resolution	Seasonal
Continuous Winter Snow Cover?	No
Station Located at Airport?	Yes
Arid Region?	No
Surface Moisture Classification	Determined based on 30 th and 70 th percentile of climate normals

² U.S. Environmental Protection Agency. 2013. "AERSURFACE User's Guide." EPA-454/B-08-001, Revised 01/16/2013. Available Online: http://www.epa.gov/scram001/7thconf/aermod/aersurface_userguide.pdf

³ National Climatic Data Center. 2010 Local Climatological Data (LCD), Charles B. Wheeler Airport (KMKC).

2.2.4. AERMET Processing Options

Standard AERMET processing options were used.^{4,5} The options elected included the following:

- MODIFY keyword for upper air data
- THRESH_1MIN 0.5 keyword to provide a lower bound of 0.5 m/s for 1-minute wind data
- AUDIT keywords to provide additional QA/QC and diagnostic information
- ASOS1MIN keyword to incorporate 1-minute wind data
- NWS_HGT WIND 10 keyword to designate the anemometer height as 7.9 meters
- METHOD WIND_DIR RANDOM keyword to correct for any wind direction rounding in the raw ISHD data
- METHOD REFLEVEL SUBNWS keyword to allow use of airport surface station data
- Default substitution options for cloud cover and temperature data were not overridden
- Default ASOS_ADJ option for correction of truncated wind speeds was not overridden
- ADJ_U* beta option was not used

2.3. COORDINATE SYSTEM

In all modeling input and output files, the locations of emission sources, structures, and receptors were represented in Zone 15 of the Universal Transverse Mercator (UTM) coordinate system using datum World Geodetic System (WGS) 1984, which is comparable to the North American Datum 1983 (NAD83). Nearman Creek Station is approximately centered at UTM, Zone 15, coordinates 353,394 meters East and 4,337,135 meters North. The base elevation of the facility is approximately 230 meters above mean sea level.

2.4. RECEPTOR LOCATIONS

The model included a receptor grid centered on Nearman Creek Station that expanded 50 km in each direction, for a total grid of 100 km by 100 km. The grid included the following receptor spacing centered on Nearman Creek Station:

- 100 meter spacing from 0 to 5 km
- 1,000 meter spacing from 5 to 25 km
- 5,000 meter spacing from 25 to 50 km

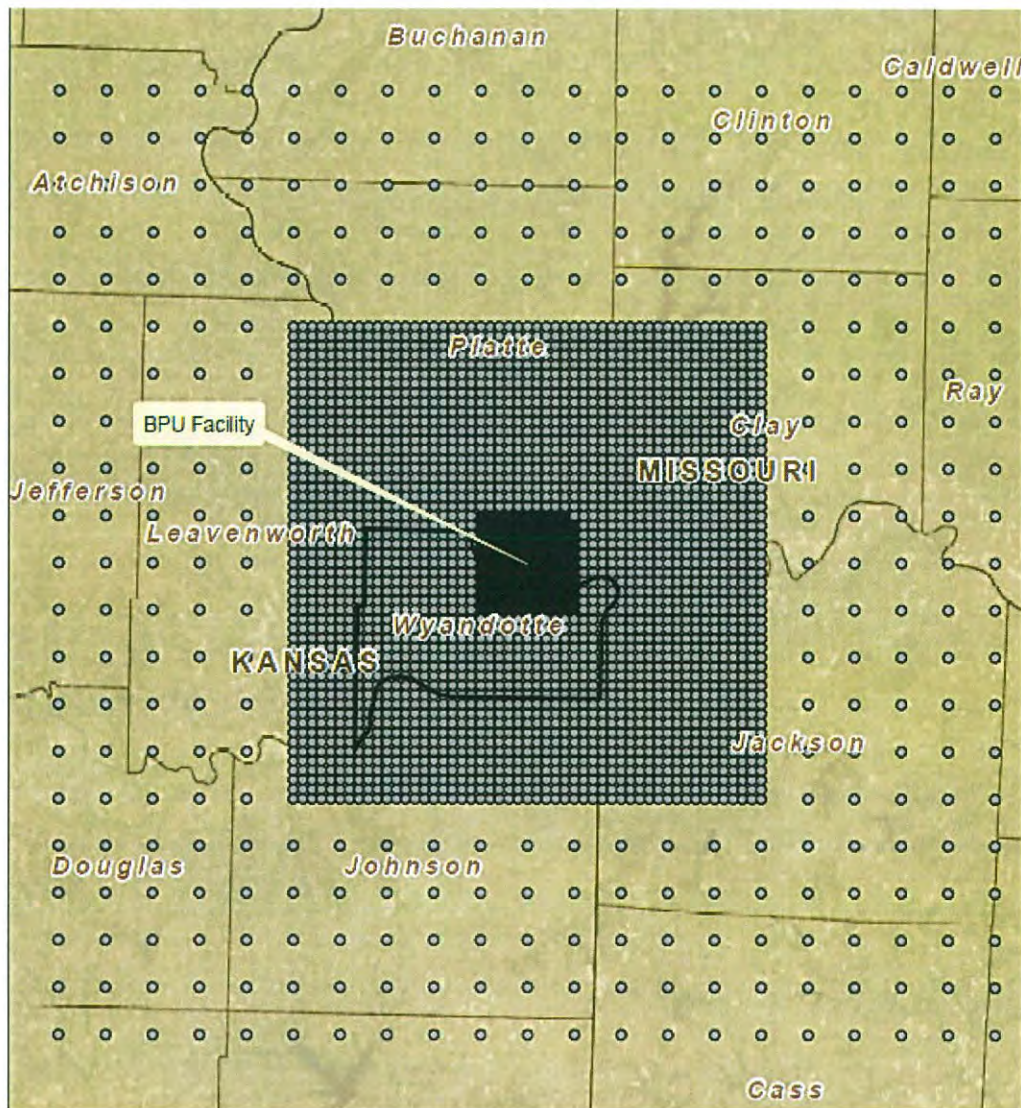
A receptor was also placed at the location of the SO₂ “Troost monitor” in Missouri. Figure 2.1 shows a map of the receptor locations with respect to Nearman Creek Station.

⁴ Fox, Tyler, U.S. Environmental Protection Agency. 2013. “Use of ASOS Meteorological Data in AERMOD Dispersion Modeling.” Available Online:

http://www.epa.gov/ttn/scram/guidance/clarification/20130308_Met_Data_Clarification.pdf

⁵ U.S. Environmental Protection Agency. 2014. “User’s Guide for the AERMOD Meteorological Preprocessor (AERMET)”. EPA-454/B-03-002, November 2004).

Figure 2-1. Map of Receptor Grid



2.5. TERRAIN ELEVATIONS

The terrain elevation for each receptor, building, and emission source was determined using USGS 1/3 arc-second National Elevation Data (NED). The NED, obtained from the USGS, has terrain elevations at 10-meter intervals. Using the AERMOD terrain processor, AERMAP (version 11103), the terrain height for each receptor, building, and emission source included in the model was determined by assigning the interpolated height from the digital terrain elevations surrounding each source.

In addition, AERMAP was used to compute the hill height scales for each receptor. AERMAP searches all NED points for the terrain height and location that has the greatest influence on each receptor to determine the hill

height scale for that receptor. AERMOD then uses the hill height scale in order to select the correct critical dividing streamline and concentration algorithm for each receptor.

2.6. EMISSION SOURCES

2.6.1. Wyandotte County Emission Sources

The boiler at Nearman Creek Station is currently the only significant source of SO₂ in Wyandotte County. Thus, this is the only source located in Wyandotte County that was included in the model. The stack for the boiler was modeled as a point source. The emission rates and stack parameters that were used to characterize the boiler are summarized in Table 2-2 below.

Table 2-2. Nearman Creek Station Model Inputs

X Coordinate (m) ¹	Y Coordinate (m) ¹	Stack Height (ft)	Stack Diameter (ft)	Exit Velocity (ft/s)	Flow Rate (acfm)	Exit Temp (F)	Emission Rate (lb/hr)
353394.7	4337135.7	400	20	2012-2014 CEMS	2012-2014 CEMS	2012-2014 CEMS	2012-2014 CEMS

¹UTM Zone 15, NAD 83

2.6.2. Jackson County Sources

Portions of Jackson County were designated nonattainment for 1-hour SO₂ during Phase 1 of the designations under the EPA's Data Requirements Rule. Figure 2-2 shows the Jackson County nonattainment area.

Figure 2-2 Jackson County, Missouri 1-Hour SO₂ Nonattainment Area¹



¹From EPA's Green Book.

The 100 km X 100 km grid centered on Nearman Creek Station includes sources in the nonattainment area. The MDNR developed a nonattainment SIP that addresses the nonattainment area. The SIP includes limits that result in modeled compliance with the NAAQS for several large sources within and near the nonattainment area.

Some of the limits contained in the SIP are higher than 2012 to 2014 actual emissions, as is the case for the Missouri City Independence Power & Light boilers 1 & 2 stack (EP5) and heating boiler stack (EP6). On the contrary, some of the SIP limits are less than 2012 to 2014 actual emissions, but higher than emissions occurring since the Boiler MACT compliance date of January 31, 2016, which is the case for Veolia Energy in Kansas City, Missouri. In 2015, Veolia switched to burning natural gas instead of coal in order to comply with the Boiler MACT. While Veolia is burning natural gas, BPU recognizes that there is no permit condition restricting Veolia from burning coal, and thus a coal restriction is not a federally enforceable requirement. However BPU also recognizes that Veolia could only start burning coal if emission controls were put in place that would allow the boilers to meet the emission limits in the Boiler MACT. Veolia has modified its existing Title V operating permit to remove all references to coal, and it is reasonable to estimate actual emissions from the Boiler MACT compliance data of January 31, 2016 and forward based on the use of natural gas.

The fuel changes made by Veolia in 2015, along with other changes in the area, resulted in large reductions in SO₂ concentrations in the Jackson County nonattainment area. In 2016, the 99th percentile 1-hour SO₂ concentration measured at the Troost monitor in Kansas City, Missouri is only 7 ppb, well below the NAAQS of 75 ppb and a large drop from previous years. This is evidence that recent changes are making a significant difference on SO₂ concentrations in the nonattainment area. Since a fuel change was implemented at Veolia in 2015, and the TAD suggests that actual emissions should be modeled, it is likely most appropriate to model emissions from Veolia reflective of natural gas combustion. In short, Trinity has relied upon the SO₂ limits in the MDNR's nonattainment SIP for Veolia, which are higher than the current actual emissions from Veolia, as a conservative approach for handling emissions from Veolia.

For purposes of the modeling, for sources without CEMS data, 2013 actual emissions were modeled except for the case of Veolia where SIP limits were modeled (MDNR's SIP limits will be federally enforceable as of January 1, 2017, six months after designations for Phase 2 will be complete). This is a conservative estimate of actual emissions since Veolia has already reduced emissions to comply with the Boiler MACT. Other Jackson County sources were modeled using three years (2012-2014) of CEMS data where CEMS was available.

Table 2-3 below summarizes the sources in Jackson County, Missouri that were included in the model.

Table 2-3. Jackson County Source Model Inputs¹

Facility & Unit	X Coordinate (m) ²	Y Coordinate (m) ²	Stack Height (ft)	Stack Diameter (ft)	Exit Velocity (ft/s)	Flow Rate (acfm)	Exit Temp (F)	Emission Rate (lb/hr)
Independence Power & Light at Missouri City, Boilers 1 & 2 Stack (EP5)	4343248.6	387072.9	300	10.5	23.0	119,494.4	290	220.4
Independence Power & Light at Missouri City, Heating Boiler Stack (EP6)	4343248.6	387072.9	93	1.67	20.0	2,628.5	405	0.1
Independence Power & Light at Blue Valley, Unit 1 (EP3)	4327808.3	385311.9	153	5.5	47.1	67,104.9	323	193.4
Independence Power & Light at Blue Valley, Unit 2 (EP4)	4327821.1	385313.6	153	5.5	51.8	73,840.8	356	224.6
Independence Power & Light at Blue Valley, Unit 3 (EP5)	4327832.3	385329.9	250	6.75	97.86	210,113.5	320	340.3
Veolia Energy, Boiler 1A Stack (EP1)	4330417	363390.1	156	7.0	47.9	110,604.5	600	0.50
Veolia Energy, Boilers 6 & 8 Stack (EP2)	4330434.0	363376.5	282	16.75	5.96	78,798.3	253	351.8
Veolia Energy, Boiler 7 Stack (EP3)	4330428	363422.9	282	16.75	5.02	66,370.4	282	0.50
KCP&L GMO at Sibley, EP5A Stack	4337276.5	397714.9	696	13.5	2012-2014 CEMS	2012-2014 CEMS	2012-2014 CEMS	2012-2014 CEMS
KCP&L GMO at Sibley, EP5B Stack	4337276.5	397714.9	696	13.5	2012-2014 CEMS	2012-2014 CEMS	2012-2014 CEMS	2012-2014 CEMS
KCP&L GMO at Sibley, EP5C Stack	4337276.5	397714.9	696	13.5	2012-2014 CEMS	2012-2014 CEMS	2012-2014 CEMS	2012-2014 CEMS
KCP&L at Hawthorn, Unit 6/9 Stack (EP901)	4332321.2	372276.7	602	20.34	2012-2014 CEMS	2012-2014 CEMS	2012-2014 CEMS	2012-2014 CEMS

¹Provided in a May 26, 2015 e-mail from Lynn Deahl of KDHE to BPU.

²UTM Zone 15, NAD 83.

2.7. BUILDING INFLUENCES

The U.S. EPA's Building Profile Input Program (BPIP) with Plume Rise Model Enhancements (PRIME) (version 04274), was used to account for building downwash influences in the model. The purpose of a building downwash analysis is to determine if the plume discharged from a stack will become caught in the turbulent wake of a building (or other structure), resulting in downwash of the plume. The downwash of the plume can result in elevated ground-level concentrations.

Note, initial modeling included a building and stack structure for the stack. The updated modeling, however, removed the building structure and just left the stack as a point source. BPIP was re-run prior to running the updated modeling.

2.8. BACKGROUND CONCENTRATION

KDHE requested that BPU use a 1-hour SO₂ background concentration of 13 parts per billion (ppb), or 33.57 µg/m³, which KDHE feels was representative of the background concentration in the vicinity of Nearman Creek Station. BPU incorporated the agreed upon background concentration in the model.

3. RESULTS

Table 3-1 lists the maximum modeled concentration from each source individually, the Missouri sources combined, and all sources combined. As Table 3-1 shows, each individual source, including BPU's Nearman N1, as well as the total combined sources do not exceed the 1-hour SO₂ NAAQS of 196 µg/m³ at any receptor.

Table 3-1. Modeled Results from Updated Modeling

Source	Modeled Emission Rate (lb/hr)	Highest Concentration ¹ (µg/m ³)	Exceed NAAQS? ²
BPU - Nearman N1	3 Year CEMS	129	NO
Veolia Energy - EP1	0.5	0	NO
Veolia Energy - EP2	351.8	81	NO
Veolia Energy - EP3	0.5	0	NO
Independence Power & Light - Missouri City EP5	220.4	27	NO
Independence Power & Light - Missouri City EP6	0.1	0	NO
KCP&L GMO - Sibley EP5A	3 Year CEMS	9	NO
KCP&L GMO - Sibley EP5B	3 Year CEMS	11	NO
KCP&L GMO - Sibley EP5C	3 Year CEMS	63	NO
KCP&L - Hawthorn EP6	3 Year CEMS	27	NO
Independence Power & Light - Blue Valley EP3	193.40	25	NO
Independence Power & Light - Blue Valley EP4	224.60	26	NO
Independence Power & Light - Blue Valley EP5	340.30	26	NO
Missouri Sources	--	83	NO
Combined Sources	--	129	NO

¹Background concentration = 33.57 ug/m³ and is not added in here.

²NAAQS for 1-Hour SO₂ = 196 ug/m³.

Figures 3-1 and 3-2 below show the modeled concentrations from all of the sources. As Figure 3-1 shows, the highest concentrations from all of the sources occur about 2 to 3 kilometers southeast of Nearman Creek Station. Figure 3-2 shows there are also hot spots of higher concentrations in portions of Jackson and Ray Counties near some of the other modeled sources. While pockets of higher concentrations exist both near Nearman Creek Station and in portions of Jackson and Ray Counties, all concentrations are below the NAAQS.

Figure 3-1. Modeled Concentrations from Combined Sources (Zoomed View)

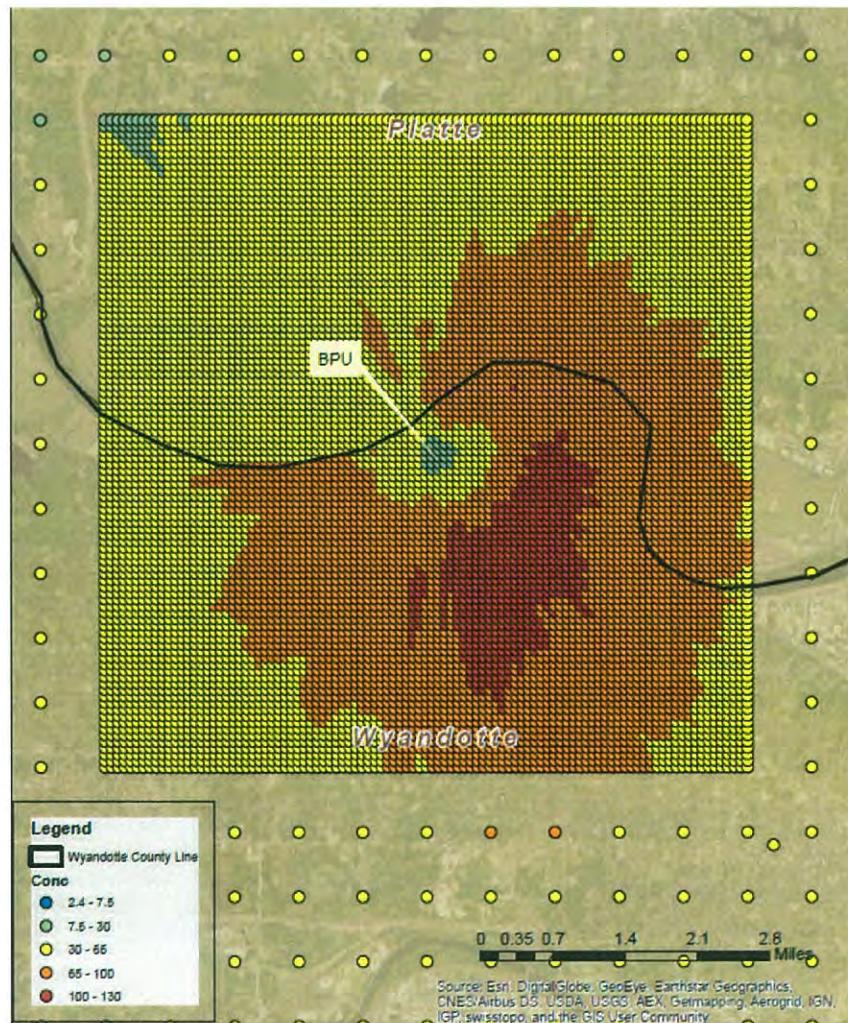
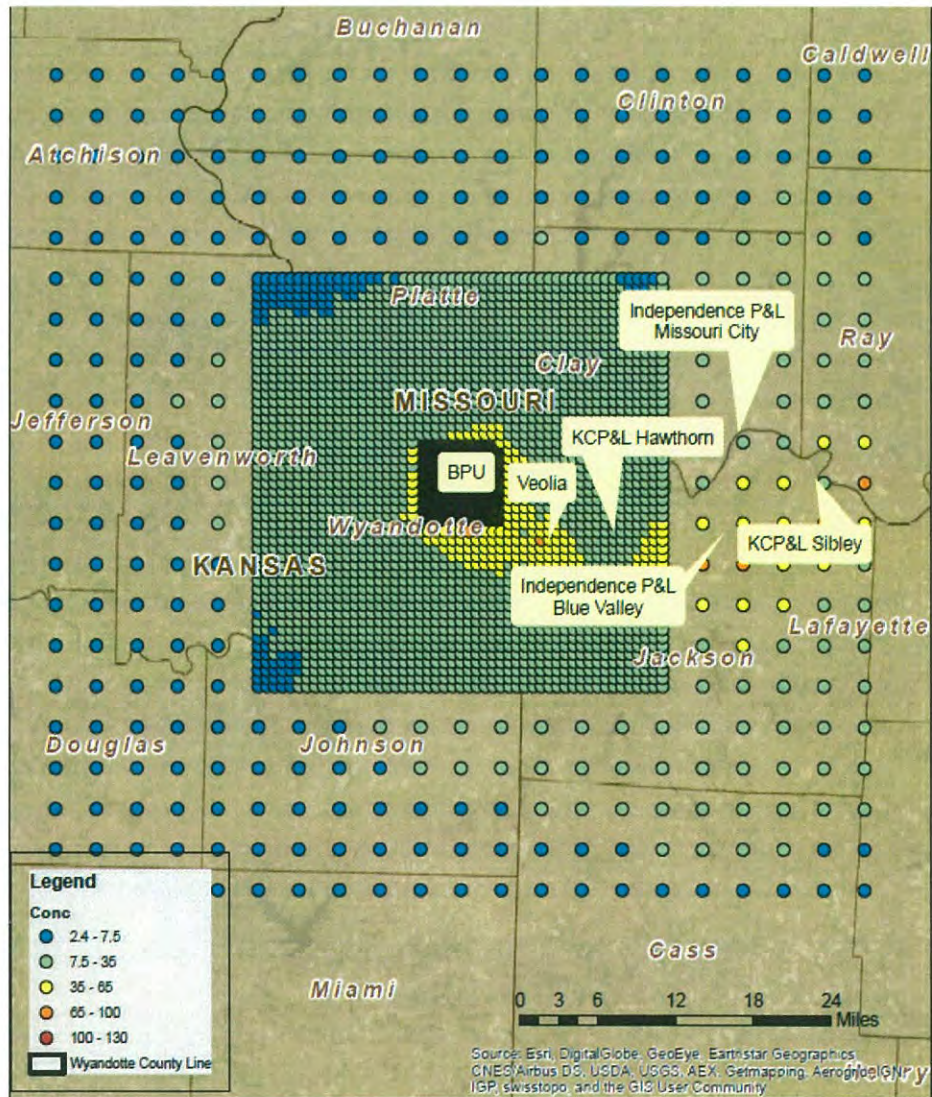


Figure 3-2. Modeled Concentrations from Combined Sources (Wide View)



Based on the above analysis, it can be concluded that BPU alone does not cause OR contribute to any violation of the NAAQS anywhere within the modeling domain since concentrations from BPU alone, and concentrations from BPU combined with all other sources are all below the NAAQS.

APPENDIX B

Updated Attainment Modeling Results

Source	Modeled Emission Rate (lb/hr)	Highest Concentration ¹ (µg/m ³)	Exceed NAAQS? ²
BPU - Nearman N1	3 Year CEMS	129	NO
Veolia Energy - EP1	0.5	0	NO
Veolia Energy - EP2	351.8	81	NO
Veolia Energy - EP3	0.5	0	NO
Independence Power & Light - Missouri City EP5	220.4	27	NO
Independence Power & Light - Missouri City EP6	0.1	0	NO
KCP&L GMO - Sibley EP5A	3 Year CEMS	9	NO
KCP&L GMO - Sibley EP5B	3 Year CEMS	11	NO
KCP&L GMO - Sibley EP5C	3 Year CEMS	63	NO
KCP&L - Hawthorn EP6	3 Year CEMS	27	NO
Independence Power & Light - Blue Valley EP3	193.40	25	NO
Independence Power & Light - Blue Valley EP4	224.60	26	NO
Independence Power & Light - Blue Valley EP5	340.30	26	NO
Missouri Sources	--	83	NO
Combined Sources	--	129	NO

¹Background concentration = 33.57 ug/m³ and is not added in here.

²NAAQS for 1-Hour SO₂ = 196 ug/m³.

APPENDIX C



Susan Mosier, MD, Secretary

Department of Health & Environment

Sam Brownback, Governor

January 9, 2017

Source ID No. 1770030

Ms. Stephanie Hirner
Supervisor, Air Permitting and Compliance
Westar Energy
P.O. Box 889
Topeka, Kansas 66601

Re: Air Emission Source Construction Permit for Westar Energy, Inc., Tecumseh Energy Center

Dear Ms. Hirner:

The Kansas Department of Health and Environment (KDHE) has reviewed Westar Energy, Inc.'s application proposing to accept a federally enforceable emission limitation on emission unit Combustion Engineering Boiler identified as EU-BLR7/9 at Tecumseh Energy Center to comply with the EPA's sulfur dioxide Data Requirements Rule (DRR).

Please review the permit carefully since it obligates Westar Energy, Inc. to certain requirements.

Currently, Westar Energy, Inc. operates under a Class I Air Operating Permit renewed on January 13, 2009. Please notify the Air Program Field Staff, Pat Simpson, at the Northeast District Office in Lawrence at (785) 842-4600 within 30 days of receipt of this permit, so that an evaluation may be conducted.

As provided for in K.S.A. 65-3008b(e), an owner or operator may request a hearing within 15 days after affirmation, modification, or reversal of a permit decision pursuant to subsection (b) of K.S.A. 65-3008a. In the Request for Hearing, the owner or operator shall specify the provision of this act or rule and regulation allegedly violated, the facts constituting the alleged violation, and secretary's intended action. Such request must be submitted to the Director, Office of Administrative Hearings, 1020 S. Kansas Avenue, Topeka, KS 66612-1327. Failure to submit a timely request shall result in a waiver of the right to hearing.

Include source ID number 1770030 in all communications with the KDHE regarding this facility.

If you have any questions regarding this permit, please contact me at (785) 296-0912 or email me at Amid.Paudyal@ks.gov.

Sincerely,

Amid Paudyal
Environmental Specialist
Air Permitting Section

AP:saw
Enclosure
c: NEDO
C-13688



AIR EMISSION SOURCE CONSTRUCTION PERMIT

Source ID No.: 1770030

Effective Date: January 9, 2017

Source Name: Westar Energy, Inc., Tecumseh Energy Center

SIC Code: 4911, Electrical Services – electric power generation, transmission, or distribution

NAICS Code: 221112, Fossil fuel power generation

Source Location: 5530 SE 2nd Street
Tecumseh, Shawnee County, Kansas 66542
Section 31, Township 11S, Range 17E

Mailing Address: 818 South Kansas Avenue
P.O. Box 889
Topeka, Kansas 66601

Contact Person(s): Stephanie Hirner
Supervisor, Air Permitting and Compliance
Phone: (785) 575-8447
Email: Stephanie.Hirner@westarenergy.com

This permit is issued pursuant to K.S.A. 65-3008 as amended.

I. Description of Activity Subject to Air Pollution Control Regulations

Westar Energy, Inc. (Westar) is proposing to accept a federally enforceable emission limitation on the Combustion Engineering Boiler identified as EU-BLR7/9, located at the Tecumseh Energy Center (TEC) in Tecumseh, Kansas.

The U.S. Environmental Protection Agency's (EPA) sulfur dioxide (SO₂) Data Requirements Rule (DRR), requires that state agencies model or monitor air quality around large SO₂ emitting sources. In lieu of monitoring or modeling the air quality around large SO₂ emitters, air quality agencies can work with affected sources to accept a 2,000 ton per year SO₂ limit. Westar has agreed to accept an appropriate federally enforceable emission limitation on SO₂, effective January 13, 2017.

The Kansas Department of Health and Environment (KDHE) reviewed the air quality requirements for the proposed equipment. There will be no increase in emission as part of this permit action. However, this activity requires a permit under the requirements of K.A.R. 28-19-300(a)(2) (Construction permits and approvals; applicability) because it includes a federal enforceable permit limit.

II. Significant Applicable Air Pollution Control Regulations

The proposed activity is subject to Kansas Administrative Regulations (K.A.R.) relating to air pollution control. The following air quality regulations were determined to be applicable to this activity:

K.A.R. 28-19-300, Construction permits and approvals; applicability.

III. Air Emission Unit Limitations

Beginning with calendar year 2017 and thereafter, EU-BLR7/9 shall be limited to below 2,000 tons per year SO₂ emissions on a 12-month rolling total basis. This limit does not apply retrospectively. The 12-month total will begin to accrue with the January 2017 emissions, therefore the first complete 12-month rolling total will include January 2017 through December 2017 emissions.

IV. Monitoring and Recordkeeping

The owner or operator shall maintain records of SO₂ emissions from the emission unit EU-BLR7/9 on a 12-month rolling total basis. Recordkeeping will begin with the collection of the January 2017 SO₂ data, and will accrue each month until a complete 12-months of SO₂ data is collected, which will roll thereafter.

V. Notifications

Notify the Air Program Field Staff, Pat Simpson, at the Northeast District Office in Lawrence at (785) 842-4600 within 30 days of receipt of this permit, so that an evaluation may be conducted.

VI. General Provisions

- A. A construction permit or approval must be issued by the KDHE prior to commencing any construction or modification of equipment or processes which results in potential-to-emit increases equal to or greater than the thresholds specified at K.A.R. 28-19-300.
- B. Upon presentation of credentials and other documents as may be required by law, representatives of the KDHE (including authorized contractors of the KDHE) shall be allowed to:
 - 1. enter upon the premises where a regulated facility or activity is located or conducted or where records must be kept under conditions of this document;
 - 2. have access to and copy, at reasonable times, any records that must be kept under conditions of this document;
 - 3. inspect, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this document; and
 - 4. sample or monitor, at reasonable times, for the purposes of assuring compliance with this document or as otherwise authorized by the Secretary of the KDHE, any substances or parameters at any location.
- C. The emission unit or stationary source which is the subject of this document shall be operated in compliance with all applicable requirements of the Kansas Air Quality Act and the Federal Clean Air Act.

- D. This document is subject to periodic review and amendment as deemed necessary to fulfill the intent and purpose of the Kansas Air Quality Statutes and Regulations.
- E. This document does not relieve the permittee of the obligation to obtain any approvals, permits, licenses or documents of sanction which may be required by other federal, state, or local agencies.

Permit Writer



Amid Paudyal
Environmental Specialist
Air Permitting Section

01/09/2017

Date Signed

AP:saw
c: NEDO
C-13688