



**Redesignation Request for (Partial) Saline County Nonattainment
Area under the 2008 Lead National Ambient Air Quality Standard
and
Kansas Air Quality State Implementation Plan Revision
Lead Maintenance Plan**

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1.0 INTRODUCTION

The Kansas Department of Health and Environment (KDHE) is requesting the United States Environmental Protection Agency (EPA) redesignate the partial Saline County nonattainment area to attainment status with respect to the 2008 Lead National Ambient Air Quality Standards (NAAQS) and approve an associated maintenance plan as a revision to the State Implementation Plan (SIP) that will ensure the continued attainment of the lead NAAQS. This document outlines all of the applicable requirements for the area in accordance with the federal Clean Air Act (CAA) and provides the demonstration necessary to support the state of Kansas' request.

1.1 Background and Summary

Lead is one of the six criteria air pollutants identified as particularly harmful to humans and the environment. NAAQS were developed for these six pollutants to use as measurements of air quality. The CAA requires the EPA to set primary standards at a level judged to be “requisite to protect the public health with an adequate margin of safety,” and to establish secondary standards requisite to protect public welfare from “any known or anticipated effects associated with the pollutant in the ambient air,” including effects on crops, vegetation, wildlife, buildings and national monuments, and visibility. Therefore, NAAQS were established to measure air quality regarding Ozone (O₃), Nitrogen Dioxide (NO₂), Sulfur Dioxide (SO₂), Lead (Pb), Particulate Matter (PM), and Carbon Monoxide (CO). The CAA also requires the EPA to periodically review the standards and scientific information to ensure that they provide adequate health and environmental protection and to update those standards as necessary.

On October 15, 2008, the EPA substantially strengthened the 1978 Lead NAAQS and subsequently published a final rule in the *Federal Register* (FR) on November 12, 2008 ([73 FR 66964](#)). The revised standard of 0.15 micrograms per cubic meter (µg/m³), measured as a rolling three-month average evaluated over a three-year period for both primary and secondary standards, is an order of magnitude lower than the previous standard of 1.5 µg/m³, based on a quarterly average, initially set in 1978. In addition, the EPA revised the ambient monitoring requirements by expanding the lead monitoring network to better assess compliance with the 2008 Lead NAAQS and published a final rule in the *Federal Register* on December 27, 2010 ([75 FR 81126](#)).

In accordance with section 107(d) of the CAA, the governor of Kansas submitted a recommendation to the EPA on June 6, 2011, that a portion of Saline County surrounding the Stryten Salina LLC (Stryten) lead acid battery manufacturing facility located in Salina, Kansas be designated as a nonattainment area for lead.¹ This recommendation was based on 2008 through 2010 monitoring data, air dispersion modeling, and analysis of additional factors as prescribed by EPA regulations and guidance. The EPA designated part of Saline County, Kansas as nonattainment for the 2008 Lead NAAQS on November 8, 2011 and published a final rule in the *Federal Register* on November 22, 2011 ([76 FR 72097](#)). The designated nonattainment area is described as follows:

Saline County, KS: Saline County (part) – Area bounded by Schilling Rd. on the north, ¼ mile west of S. Ohio St. on the east, Water Well Rd. on the south, and 9th Street on the west.

¹ On September 11, 2020, the KDHE received a Change of Ownership/Operator Notification indicating that Stryten Salina LLC (Stryten) became the owner and operator of the lead acid battery manufacturing facility and the named permittee of all permits related to Source Identification (ID) No. 1690035. Stryten acquired the lead acid battery manufacturing facility through a sale related to the bankruptcy of the previous owner/operator, Exide Technologies (Case No. 20-11157, Bankr. D. Del. 2020).

Sections 191(a) and 192(a) of the CAA requires states with lead nonattainment areas to submit to the EPA, within 18 months of the effective date of the designation, a SIP revision that provides for attainment of the lead NAAQS within five years following nonattainment designation.² Kansas was identified in the second round of nonattainment designations, effective December 31, 2011, and submitted to the EPA on February 3, 2015 a SIP revision addressing the nonattainment plan requirements described in section 172(c) of the CAA to demonstrate that the Saline County, Kansas nonattainment area will reach attainment of the 2008 Lead NAAQS by December 31, 2016.³ This Lead Attainment Plan essentially included a control strategy analysis of reasonably available control technology (RACT) and reasonably available control measures (RACM), a demonstration of reasonable further progress (RFP), an emissions inventory for the area, and contingency measures. Specifically, attainment of the 2008 Lead NAAQS was demonstrated using air dispersion modeling of a control strategy consisting of process and control device/equipment modifications with corresponding emission limitations, building enclosure projects, negative pressure and particulate capture ventilation systems, and paving projects at the Stryten facility. The control strategy and contingency measures were federally enforced through an August 18, 2014, construction permit, which formed the basis of the Lead Attainment Plan and was included as part of the SIP revision. The EPA proposed to approve Kansas' Attainment Plan for the 2008 Lead NAAQS on February 29, 2016 ([81 FR 10162](#)) and subsequently finalized their approval of the plan on July 20, 2016 ([81 FR 47034](#)).

While it was believed that the Saline County nonattainment area would reach attainment by December 31, 2016, from July 2016 through October 2016, the ambient lead monitor located north of the Stryten facility registered violations of the 0.15 µg/m³ lead NAAQS. With subsequent daily exceedances recorded at the monitor from November 2016 through July 2017, it was indicative of the need for further analysis of the Stryten facility's capture system and building envelope. As such, Stryten proposed to upgrade their plant ventilation system as part of ongoing improvement efforts to reduce workplace lead exposures and was issued construction permit modifications on January 11, 2017 and June 23, 2017 that also incorporated new control requirements and measures, including better control device filtration efficiency and monitoring, expansion of negative pressure ventilation of all lead-emitting process areas, additional paving of plant property, and dust suppression on plant grounds and roadways using a water truck and vacuum street sweeper. As part of the June 23, 2017, permit modification, the KDHE updated the contingencies, for purposes of meeting CAA Section 172(c)(9), to include specific, proactive measures intended to prevent additional violations of the lead standard. Though Stryten was later authorized through the construction permit modified on December 27, 2018, to increase their plant production capability in conjunction with extending their ventilation improvement program to the plant's assembly area, this federally enforceable permit modification consisted of an overall reduction in the allowable facility-wide lead emissions since the original August 18, 2014, construction permit that was approved into Kansas' SIP. Included as **Appendix A** is the most recent Air Emission Source Construction Permit modification issued on December 27, 2018, which is being submitted for approval into Kansas' SIP.⁴ As a result of Stryten's completion of various improvement projects and activities, including implementation of additional control measures, the ambient lead concentrations have been reduced significantly in the nonattainment area, which has recorded three years of complete, quality-assured ambient air quality monitoring data for 2017 through 2019, 2018 through 2020, and 2019 through 2021 demonstrating attainment of the 2008 Lead NAAQS.

² Such SIP revisions are often referred to as nonattainment SIPs or attainment plans.

³ The Lead Attainment Plan SIP revision can be found on the KDHE's website at <https://www.kdhe.ks.gov/389/State-Implementation-Plan>.

⁴ The air dispersion modeling, which considered the new control requirements and measures to demonstrate attainment with the 2008 Lead NAAQS, is discussed in Chapter 2.0, 2.1.2 *Air Quality Modeling*.

In summary, since designation of the partial Saline County, Kansas lead nonattainment area, Stryten was issued several construction permits as mentioned above: the initial permit that formed the basis of the Lead Attainment Plan SIP Revision and subsequent permit modifications to further reduce lead emissions primarily due to the area's failure to attain the 2008 Lead NAAQS by the required attainment date of December 31, 2016. While lead emissions have been reduced considerably in the nonattainment area, the abiding objective is to maintain validity of the control strategy for lead emissions and prevent inadvertent backsliding necessary to ensure the area continues to meet the 2008 Lead NAAQS. To provide for this assurance of continued maintenance, Stryten shall be subject to preconstruction review procedures, including ambient air quality impact assessments, and permit issuance requirements (e.g., federal enforceability) as authorized and applicable under Kansas Administrative Regulations (K.A.R.) 28-19-300 et seq.

Chapter 2.0, "Requirements for Redesignation," discusses in greater detail, among other things, the monitoring data and permanent and enforceable emission reductions resulting from the updated control strategy as identified in the December 27, 2018 construction permit modification, which is being submitted for inclusion into the Kansas SIP to address and fulfill the nonattainment plan provisions of CAA Section 172(c) applicable to the partial Saline County area with respect to the 2008 Lead NAAQS concurrently with this redesignation request and lead maintenance plan.

1.2 Purpose

The state of Kansas is requesting redesignation of the partial Saline County nonattainment area to attainment for the 2008 Lead NAAQS based on section 107(d)(3)(D) of the CAA, which states:

- (D) The Governor of any State may, on the Governor's own motion, submit to the Administrator a revised designation of any area or portion thereof within the State. Within 18 months of receipt of a complete State redesignation submittal, the Administrator shall approve or deny such redesignation. The submission of a redesignation by a Governor shall not affect the effectiveness or enforceability of the applicable implementation plan for the State.

Section 107(d)(3)(E) of the CAA establishes specific requirements that shall be met for an area to be redesignated from nonattainment to attainment, as follows:

- i. The Administrator determines that the area has attained the NAAQS.
- ii. The Administrator has fully approved the applicable implementation plan for the area under section 110(k).
- iii. The Administrator determines that the improvement in air quality is due to permanent and enforceable reductions in emissions resulting from implementation of the applicable implementation plan and other federal requirements.
- iv. The Administrator has fully approved a maintenance plan for the area as meeting the requirements of section 175A.
- v. The State has met all requirements applicable to the area under section 110 and part D.

The purpose of this document is to address each of these requirements and to provide additional information to support continued compliance with the 2008 Lead NAAQS. This includes a revision to the SIP through the concurrent submittal of a maintenance plan to satisfy CAA Section 175A requirements. The maintenance plan provides for continued attainment of the lead NAAQS in Saline County for at least ten years after the EPA has formally redesignated the area to attainment. The plan also includes contingency provisions to promptly correct any lead NAAQS violations in the event that they occur after redesignation.

1.3 Sources of Lead

Lead is a naturally occurring element (classified as a metal) found in the earth's crust. Lead particles are emitted from some industrial processes and may be present in manufactured products. Historically, major sources of lead emissions have been motor vehicles and industrial sources. With the phase-out of lead from motor vehicle gasoline, airborne lead concentrations in the United States have decreased by 98% between 1980 and 2014. Industrial sources of lead emissions include waste incinerators, utilities, and lead-acid battery manufacturers, with the highest airborne lead concentrations generally found near lead smelters.⁵

1.4 Health Effects of Lead

Maintaining concentrations of lead below the health-based standard is important because lead is a serious human health threat. Lead emitted into the air can be inhaled directly or ingested after it settles out of the air onto surfaces. As such, people can be exposed by breathing air, drinking water, eating foods, or swallowing dust or dirt that contains lead. Children are more vulnerable to the damaging effects of lead because their minds and bodies are developing rapidly, they typically spend more time outdoors, and their frequent hand-to-mouth behaviors increase their risk of exposure. Some of the more common health effects in children include anemia, lower IQ and hyperactivity, slowed growth, hearing problems, and learning disabilities. Common health effects of lead exposure in adults include cardiovascular effects, increased blood pressure, decreased kidney function, and reproductive problems in both men and women. Lead levels in the blood are measured in micrograms per deciliter; there is no safe level of lead in the blood that has been identified.⁶

1.5 Source and Geographical Description

Stryten (Air Source ID No. 1690035) owns and operates a lead acid battery manufacturing facility located at 413 East Berg Street in Salina, Saline County, Kansas.^{7,8} Lead acid batteries were historically manufactured for automobile, truck, and marine applications; although, current production includes a wide variety of applications. Operations at the facility consist of grid production, lead oxide manufacturing, pasting, formation, finishing, and assembly. As shown below in **Figure 1-1**, the partial nonattainment area boundary encompasses the Stryten plant property, which occupies approximately 46 acres centered within the total nonattainment area that spans 475 acres of Saline County, situated 1.6 kilometers north to south and 1.2 kilometers east to west.⁹

⁵ Basic information about lead air pollution can be found on the EPA's website at <https://www.epa.gov/lead-air-pollution/basic-information-about-lead-air-pollution#how>.

⁶ Lead health impacts can be found on the EPA's website at <https://www.epa.gov/lead/learn-about-lead#effects>.

⁷ Stryten is classified as synthetic minor under the Class I operating permit program, which implements 40 CFR Part 70 – State Operating Permit Programs (Title V of the CAA).

⁸ Stryten is currently subject to the requirements of CAA Sections 111 and 112, specifically the following implementing regulations, respectively: 40 CFR Part 60 Subpart KK, Standards of Performance for Lead-Acid Battery Manufacturing Plants, and 40 CFR Part 63 Subpart PPPPPP, National Emission Standards for Hazardous Air Pollutants for Lead Acid Battery Manufacturing Area Sources.

⁹ Metlcast Products, Inc. (Metlcast), a neighboring lead-emitting source approximately less than 0.50 kilometers north of Stryten, previously operated within the nonattainment area and permanently closed in late 2017. Prior to ceasing operations, Metlcast was classified as synthetic minor under the Class I operating permit program.

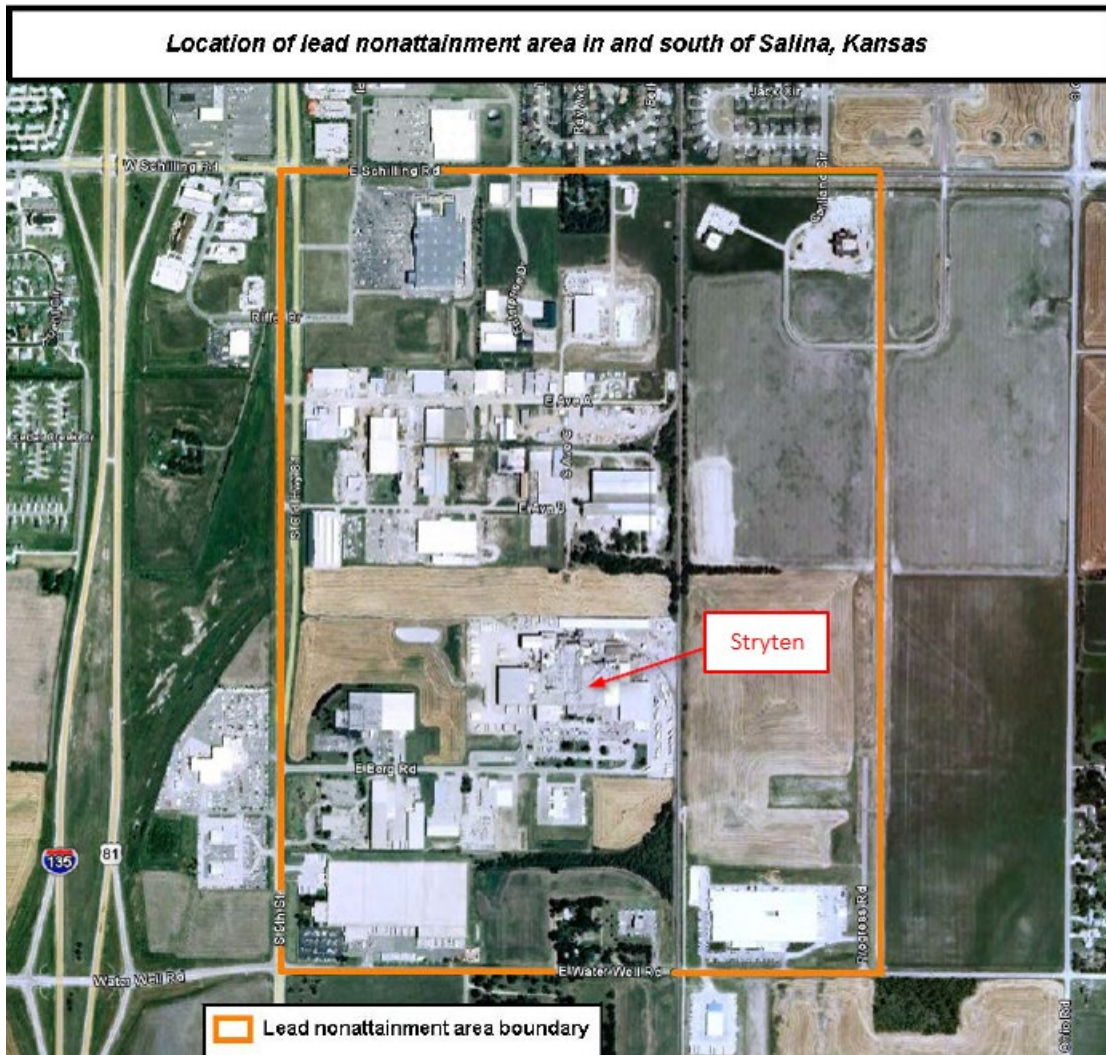


Figure 1-1. Saline County Lead Nonattainment Area

Lead emissions from the Stryten facility are primarily from a single, identifiable area, such as a stack or vent and are minimized by pollution control devices. Stryten is required to operate all lead-emitting process areas within total enclosures that are maintained under negative pressure and vented to a control device. This requirement ensures that process fugitive lead dust is not generated outside of total enclosures and that process fugitive lead dust generated inside total enclosures is not carried outside of the enclosures. In addition, the facility is required to utilize dust suppression measures on plant grounds and roadways to control fugitive (re-entrained) lead dust that occurs from vehicular traffic or by natural wind.

2.0 REQUIREMENTS FOR REDESIGNATION

An area designated as nonattainment for a pollutant can be redesignated to attainment if specific requirements are met. The EPA published a Memorandum entitled “Procedures for Processing Requests to Redesignate Areas to Attainment” (redesignation guidance) that discusses the five requirements for redesignation found in CAA Sections 107(d)(3)(E)(i-v).¹⁰ This request for redesignation and maintenance plan are based on the redesignation guidance, supplemented with additional guidance received from EPA Region 7. The following demonstrates how each of the statutory requirements for redesignation has been met through this submittal, and that a redesignation of the partial Saline County nonattainment area to attainment is appropriate.

2.1 Attainment of the Lead NAAQS [CAA Section 107(d)(3)(E)(i)]

There are two interdependent components involved in making this demonstration. First, the ambient air quality data used to demonstrate attainment should be the product of ambient monitoring that is representative of the area of highest concentration. The second component relies upon supplemental EPA-approved air quality modeling.

2.1.1 Ambient Air Quality Data

The KDHE Bureau of Air and local air quality agencies operate and maintain a comprehensive network of air quality monitors throughout the state with the primary objective of determining compliance with the applicable NAAQS. In accordance with 40 CFR Part 58, the KDHE submits an annual ambient air monitoring network plan to the EPA for approval and also performs and submits to the EPA an ambient air monitoring network assessment every five years.¹¹

Pursuant to Appendix D of 40 CFR Part 58, a source-oriented lead monitoring site is required to measure the maximum lead concentration resulting from each lead source that emits 0.50 or more ton per year (tpy). Reported lead emissions inventory revealed that one source in Kansas, the Stryten facility, exceeded 0.50 tpy. Site placement was guided by dispersion modeling to indicate the location of maximum expected concentration of lead in the area, while considering logistics and potential for population exposure. The lead monitoring/sampling site near the Stryten facility located in Salina, Saline County, Kansas is designated with Air Quality System (AQS) Site ID 20-169-0004.

The source-oriented ambient lead monitoring site in Saline County (as displayed below in **Figure 2-1**) was originally located north of the Stryten (formerly Exide Technologies) manufacturing facility at the following legal description.

¹⁰ John Calcagni, Director, Air Quality Management Division, September 4, 1992, U.S. Environmental Protection Agency Office of Air Quality Planning and Standards, ["Procedures for Processing Requests to Redesignate Areas to Attainment,"](#) U.S., Research Triangle Park, North Carolina 27711.

¹¹ The annual monitoring network plans and 5-year monitoring network assessments can be found on the KDHE’s website at <https://www.kdhe.ks.gov/Archive.aspx?AMID=45>.



Figure 2-1. Original Salina, Kansas Lead Source Monitoring Site

A high volume (HiVol) total suspended particulate (TSP) sampler installed at the original site began sampling on February 2, 2010, on a 1-in-6-day schedule. In 2013, the KDHE installed a second HiVol TSP sampler at the original Stryten monitoring site for collocation purposes. Installed next to the existing monitor, the second monitor operates on the same 1-in-6-day sampling schedule as the initial lead monitor. Data from these samplers are used to establish compliance with the NAAQS. Discussions about relocating this site were held throughout 2018 and early 2019 due to the anticipated sale of the property where the samplers were located. An appropriate new location was selected approximately 90 meters east of the previous location. The move to the current location occurred in early October 2019 and the samplers restarted on October 6, 2019. The KDHE provided information about the change of site location in the 2019-2020 Ambient Air Monitoring Network Plan. The 30-day public comment period ended on May 8, 2019, and no comments were received. The current location of the samplers in comparison to the Stryten facility is shown below in **Figure 2-2**; the old location is also noted on this figure.



Figure 2-2. Salina, Kansas Old and Current Locations for Lead Sampling Site

Lead is measured in TSP and concentrations are reported using local conditions. Ambient lead concentrations measured at this site were used in the nonattainment designation process and recent data are appropriate for use in redesignating the area to attainment. There are no additional ambient lead monitoring sites in the area.

As explained in 40 CFR Part 50 Appendix R, three (3) complete, consecutive years of lead monitoring data are required to demonstrate attainment at a monitoring site. The 2008 Lead NAAQS is met at a monitoring site when the identified design value is valid and is less than or equal to $0.15 \mu\text{g}/\text{m}^3$. The design value is the site-level metric that is selected according to the procedures in Appendix R from among the valid three-month arithmetic mean concentrations for the 38-month period consisting of the most recent 3-year calendar period plus two previous months (*i.e.*, 36 3-month periods) using the last month of each 3-month period as the period of report. The 3-month means are arithmetic averages of three consecutive monthly means and are computed on a rolling, overlapping basis (January-March, February-April, March-May, etc.).

Lead design values computed for the Saline County site using data through 2021 are listed below in **Table 2-1**. The 2017-2019 design value was $0.15 \mu\text{g}/\text{m}^3$, which meets the lead NAAQS. Thus, the area has attained the 2008 Lead NAAQS on December 31, 2019, and continues to demonstrate attainment of the 2008 Lead NAAQS. Table 2-1 does not include design values for 2020-2022, 2021-2023, and 2022-2024. In 2022, eight sample periods between May 5, 2022, and June 16, 2022, did not yield usable sampling material for analysis by the contract laboratory, due to equipment failures and electrical malfunctions. Therefore, the KDHE did not achieve the data completeness threshold required for a valid design value calculation using 2022 lead data. The 2022 lead data that was certified by the KDHE and submitted to the EPA demonstrated attainment of the 2008 Lead NAAQS. Results from 2023 and preliminary results for 2024 further demonstrate attainment of the standard. Finally, to further describe attainment in the absence of a valid 2022 design value, the KDHE reviewed lead data from Stryten's north fence line filter-based sampler. Reported data between May 5, 2022, and June 16, 2022, did not contain concentrations that call attainment of the 2008 Lead NAAQS into question.

Table 2-1. Lead Design Values ($\mu\text{g}/\text{m}^3$) at the Saline County Lead Monitoring Site (ID 20-169-0004)
Design values not meeting the NAAQS are indicated in red.

2015-2017	2016-2018	2017-2019	2018-2020	2019-2021	NAAQS Level
0.18	0.18	0.15	0.05	0.05	0.15

Since the form of the standard is based on the maximum 3-month rolling average across a three-year period, design values do not immediately respond to sudden and continuous improvements in air quality. The 2017-2019 lead design value (monitored air quality data from November 2016 – December 2019) yields an important improvement in ambient air quality, but it still represents a 3-month rolling average from 2017. An evaluation of the individual 3-month rolling averages is therefore warranted to provide a more thorough review in which recent air quality trends can be assessed.

The 3-month rolling averages from 2015-2021 are listed below in **Table 2-2** and plotted in **Figure 2-3**. Looking at the annual maximums, **Figure 2-3** shows that a trend toward lower concentrations emerges after April 2017. The maximum 3-month rolling average lead concentration measured in 2019 ($0.05 \mu\text{g}/\text{m}^3$) was 72% lower than the 2016 annual maximum ($0.18 \mu\text{g}/\text{m}^3$) and was 67% lower than the 2017 maximum (which produced the 2017-2019 design value of $0.15 \mu\text{g}/\text{m}^3$). These low values have remained consistent in both 2020 and 2021 with maximum 3-month rolling average concentrations of $0.05 \mu\text{g}/\text{m}^3$ and $0.04 \mu\text{g}/\text{m}^3$, respectively. This significant downward trend seen in the nonattainment area since 2017 is likely attributed to the additional control measures implemented to reduce fugitive lead dust at the Stryten facility. The area's design values have remained consistently low since Stryten addressed general housekeeping issues at the facility, contained all lead-emitting process areas in negative pressure total enclosures, improved control device filtration efficiency and monitoring, and completed dust control projects including paving trailer parking areas and sweeping/cleaning paved surfaces of the plant property. All of these control measures were implemented by the end of 2017.

Table 2-2. Three-Month Rolling Average Lead Concentrations Measured at the Saline County Lead Monitoring Site (NAAQS violations in red)

	3-Month Rolling Average (Site ID 20-169-0004)						
	2015	2016	2017	2018	2019	2020	2021
January	0.03	0.06	0.04	0.03	0.01	0.01	0.01
February	0.04	0.11	0.12	0.03	0.02	0.01	0.02
March	0.07	0.12	0.14	0.03	0.02	0.01	0.02
April	0.07	0.10	0.15	0.03	0.03	0.04	0.02
May	0.08	0.09	0.08	0.03	0.04	0.04	0.03
June	0.08	0.14	0.06	0.04	0.05	0.05	0.03
July	0.11	0.18	0.06	0.04	0.05	0.03	0.04
August	0.09	0.17	0.05	0.05	0.03	0.03	0.03
September	0.09	0.15	0.04	0.04	0.03	0.03	0.02
October	0.06	0.10	0.03	0.02	0.03	0.02	0.02
November	0.07	0.08	0.02	0.02	0.02	0.01	0.01
December	0.03	0.04	0.02	0.01	0.02	0.01	0.01
Annual Maximum 3-Month Avg	0.11	0.18	0.15	0.05	0.05	0.05	0.04

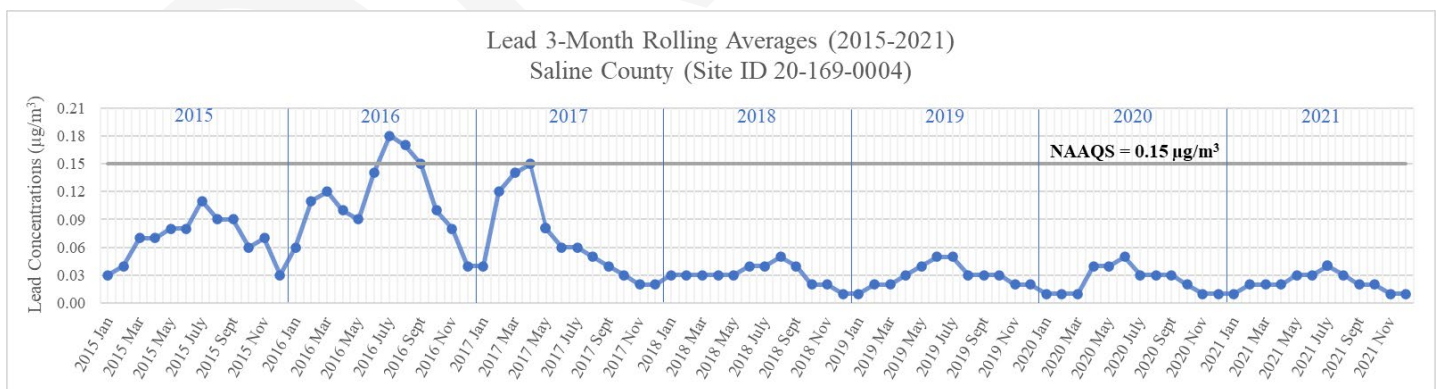


Figure 2-3. Saline County 3-Month Rolling Average Lead Concentrations (Jan. 2015 – Dec. 2021)

As seen below in **Figure 2-4**, the 3-month rolling averages are plotted by month and again, trends toward lower lead concentrations are evident, particularly during the summer and early fall months when the 3-month rolling average concentrations typically peak. In all but three cases, the 2021 3-month rolling averages are the lowest among all other years. While February, March, and July 2021 are the exceptions, they are only 0.01 $\mu\text{g}/\text{m}^3$ higher than in 2020 and therefore not significantly different. In 2021, the monitoring site saw the lowest lead averages in the seven years of data shown and continues the trend of lead values being only one-third or less of the NAAQS standard.

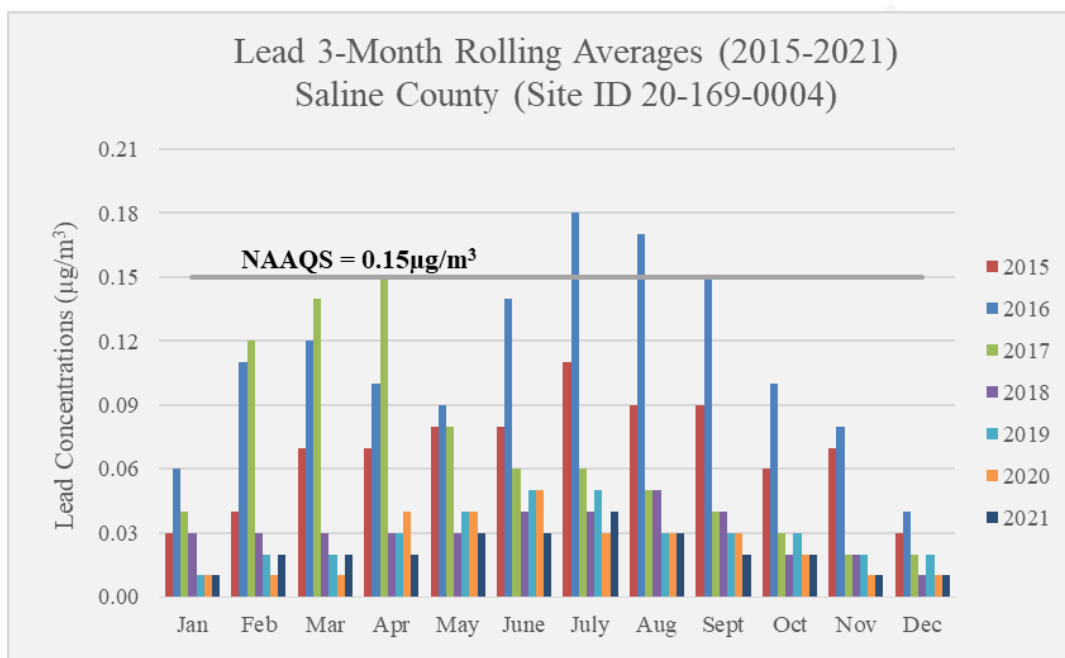


Figure 2-4. Saline County 3-Month Rolling Average Lead Concentrations by Month (2015 – 2021)

All monitoring data has been quality assured in accordance with 40 CFR Part 58 and all other federal requirements. This data has been validated, certified, and submitted to the EPA AQS database for public access. The KDHE submits annual air monitoring data certification letters to EPA Region 7, with the recent and pertinent certification letter dated April 28, 2022, for the period January 1, 2021, to December 31, 2021.

Once the nonattainment area is redesignated to attainment, the KDHE commits to continue monitoring lead concentrations at the Saline County monitoring site to verify the maintenance of the 2008 Lead NAAQS in the area. Kansas will consult with EPA Region 7 prior to making changes to the existing monitoring network, continue to quality assure the monitoring data in accordance with 40 CFR Part 58 and all other federal requirements, and enter all data into the AQS in a timely manner.

2.1.2 Air Quality Modeling

The Lead Attainment Plan that was submitted to the EPA in February 2015 included air quality modeling to demonstrate that the implemented control measures at the Stryten facility would result in the area attaining and maintaining the NAAQS. Dispersion modeling was performed in 2013 with meteorological data from 2007-2011 and using the EPA-recommended AERMOD modeling system including pre and post processors to estimate the ambient air lead concentrations within the nonattainment area. The modeling analysis included 11 lead-emitting point sources and three volume sources characterizing fugitive emissions from the following: Ball Mill process/building, plant roadways, and a neighboring lead-emitting source, Metlcast. The attainment demonstration modeling also conformed to EPA guidelines and resulted in a maximum 3-month average lead concentration of $0.137 \mu\text{g}/\text{m}^3$ (including $0.01 \mu\text{g}/\text{m}^3$ background concentration).

The modeled emission rates were incorporated into a federally enforceable construction permit issued on August 18, 2014 (Permit No. C-12206/CSP00487). This construction permit was subsequently modified on January 11, 2017 (Permit No. C-13556/CSP00485), June 23, 2017 (Permit No. C-13863/CSP00486), and December 27, 2018 (Permit No. C-14364/CSP02942 v1.0), which is included as **Appendix A**. These permit modifications authorized, among other things, an upgrade to the plant ventilation system, new, decommissioned, and relocated units/equipment, and additional control measures. As these facility modifications resulted in substantial changes to the control strategy that affected the allowable emission rates from what was modeled for the original attainment demonstration, updated dispersion modeling was necessary. The dispersion modeling performed in 2018 included 12 lead-emitting point sources and two volume sources characterizing fugitive emissions from the Ball Mill process/building and plant roadways. The neighboring source, Metlcast, was not modeled as a volume source but rather considered and accounted for as a component of background lead concentration in the modeling analysis.¹²

In early 2021, the KDHE discovered errors in the modeled inputs that required a revision to the dispersion modeling analysis conducted as part of the December 27, 2018, permit. Stryten later submitted an updated Air Quality Dispersion Modeling Report dated October 2021. Specifically, the following inputs were corrected in the revised modeling: 1) a point source stack diameter (to reflect as-built specification) and associated exit velocity and 2) select volume source emission rates associated with roadway fugitives. The previously modeled emission rates for the point sources and Ball Mill process/building volume source were maintained in the revised modeling.¹³ Stryten indicated that their modeling scenario for the point sources reflected stack parameters/characteristics at design capacities (100% load) and represented worst-case dispersion conditions; however, performance test reports for the point sources revealed facility operations at both greater and lower stack release parameters (e.g., exit velocities and temperatures) than those shown in Stryten's October 2021 Modeling Report. As a result, the KDHE, in coordination with EPA Region 7, performed supplemental modeling to establish a worst-case operating scenario for purposes of evaluating the maximum (highest) air quality impact from Stryten. This modeling scenario maintained the allowable emission rates, yet it considered the worst-case dispersion conditions consisting of the lowest stack exit velocity and respective exit temperature, for each point source, selected from either KDHE-approved performance tests (two most recent tests conducted between 2009 and 2021) or Stryten's October 2021 Modeling Report.¹⁴

¹² Metlcast ceased operations and permanently closed in late 2017. Metlcast submitted a final annual emissions inventory through the State and Local Emissions Inventory System that revealed zero process and emissions data for calendar year 2017.

¹³ The lead emissions from point sources were modeled at their allowable emission rates based on performance test results and adjusted by arbitrary safety factors.

¹⁴ The KDHE reviewed and accepted Stryten's October 2021 Modeling Report for the supplemental modeling and maintained all modeling inputs/data, except as otherwise indicated.

The updated modeling conformed to current EPA models and guidelines, and the meteorological data used encompassed a five-year dataset (2016-2020) representative of current conditions. The KDHE also reevaluated the background lead concentration based on current meteorological and monitoring data using the period 2015-2020. Given that Metlcast has permanently closed, the KDHE considered any residual impacts from operations at this source to be reflected in the background lead concentration. Most importantly, the updated attainment demonstration modeling included continuation of the existing control strategy as well as implementation of additional control requirements and measures, which are identified in the December 27, 2018, construction permit modification, to support continued attainment of the lead standard.

The results of Stryten's revised modeling and the KDHE supplemental modeling are shown below in **Table 2-3** and **Table 2-4**, respectively. Under the KDHE supplemental model, which evaluated a worst-case operating scenario, the resulting maximum 3-month average lead concentration was calculated to be 0.1489 $\mu\text{g}/\text{m}^3$ (including 0.0210 $\mu\text{g}/\text{m}^3$ background concentration), and therefore, does not cause or contribute to a violation of the 2008 Lead NAAQS. Included as **Appendix B** is the KDHE Modeling Report (with attachments), which provides a comprehensive review of the dispersion model selection, inputs, methods, and results for both Stryten-submitted and KDHE supplemental models.

Table 2-3. Stryten-Submitted Model: Summary of Predicted Impacts at Maximum and Sensitive Receptors

Receptor	Maximum 3-Month Average Lead Concentration ($\mu\text{g}/\text{m}^3$) (Including 0.020 $\mu\text{g}/\text{m}^3$ Background Concentration)	Lead NAAQS ($\mu\text{g}/\text{m}^3$)
Maximum Impact Point of Impingement	0.1272	0.15
Schilling Elementary School	0.0269	
Coronado Elementary School	0.0319	
Stryten-Submitted Ambient Lead NAAQS Monitoring Site Location	0.0900	
Actual KDHE Ambient Lead NAAQS Monitoring Site Location	0.1225	

Table 2-4. KDHE Supplemental Model: Summary of Predicted Impacts at Maximum and Sensitive Receptors

Receptor	Maximum 3-Month Average Lead Concentration ($\mu\text{g}/\text{m}^3$) (Including 0.021 $\mu\text{g}/\text{m}^3$ Background Concentration)	Lead NAAQS ($\mu\text{g}/\text{m}^3$)
Maximum Impact Point of Impingement	0.1489	0.15
Schilling Elementary School	0.0284	
Coronado Elementary School	0.0347	
Stryten-Submitted Ambient Lead NAAQS Monitoring Site Location	0.1043	
Actual KDHE Ambient Lead NAAQS Monitoring Site Location	0.1428	

2.2 Fully Approved Implementation Plan for the Area [CAA Section 107(d)(3)(E)(ii)]

Though Kansas' SIP for the partial Saline County lead nonattainment area satisfied the applicable requirements of the CAA and was fully approved under section 110(k) by the EPA on July 20, 2016, the monitoring site recorded violations of the standard from July to October 2016. Thus, the nonattainment area failed to attain the lead standard by December 31, 2016, as required, which triggered implementation of contingency measures in accordance with CAA Section 172(c)(9) as identified in the August 18, 2014, permit and attainment plan. Stryten proposed changes to the facility in 2016 and later in 2018 and was issued three modified construction permits that included additional improvement projects designed to further reduce lead emissions. These permit modifications authorized implementation of control requirements and proactive control measures for an updated control strategy in conjunction with emission limitations used in the dispersion modeling to demonstrate attainment with the 2008 Lead NAAQS. The updated control strategy is preserved by the most recent, federally enforceable construction permit modification issued on December 27, 2018 (Permit No. C-14364/CSP02942 v1.0) (**Appendix A**), which coupled with the updated attainment demonstration modeling (**Appendix B**), will serve as the enforcement mechanism to ensure that lead emissions are permanently reduced at the Stryten facility, and the area maintains compliance with the lead standard. Accordingly, the state of Kansas is submitting the December 27, 2018, construction permit modification for approval into the SIP and satisfying the nonattainment plan provisions of CAA Section 172(c) applicable to the partial Saline County area with respect to the 2008 Lead NAAQS concurrently with this redesignation request and lead maintenance plan.

Below in **Table 2-5** is a summary of various improvement projects and activities implemented by Stryten to obtain lead emission reductions. These control requirements and measures were established in the August 18, 2014, construction permit through the December 27, 2018, construction permit modification.

Table 2-5. Stryten Facility Improvement Projects and Activities

Emission Source	Identification/Activity	Description	Date Completed
General-Purpose Baghouses	BH3	Installed high-efficiency pulse-jet dust collection system	September 2009
	BH2		November 2010
	BH4		July 2011
	BH5		May 2012
	BH1	Replaced baghouse with high-efficiency pulse-jet dust collection system and increased stack height to 80 feet	February 2014
	BH1-BH5 Upgrades	Replaced current media with Teflon membrane type cartridges	2017
	BH1-BH5	Installed bag leak detection system	2017
	BH5	Routed Barton Oxide Mill process combustion stacks to baghouse	2017
	BH6	New installation with Teflon membrane type bag cartridges, secondary HEPA filter, and bag leak detection system	2019
Barton Oxide Mills	OM1 & OM2	Replaced existing oxide mill reactors OM1 through OM10 with new Eagle/Linklater M1500 Oxide Reactors with automated controls; included replacement of associated process baghouses and addition of HEPA filters for an overall efficiency of 99.97%	September 2006
	OM3 & OM4		July 2009
	OM5 & OM6		October 2010
	OM7		January 2011
	OM8		February 2011
	OM9 & OM10		March 2011

	Relocating Oxide Mill Diverter Valves	Implemented new oxide delivery layout with an auxiliary set of valves installed in a parallel system; enclosed sections of Oxide Mill building where highest potential exists for escape of lead oxide		July 2012
	OM1-OM10 Oxide Mill Stacks	Manifold ten OM stacks to one new combined OM stack with height of 65 feet from ground level		October 2013
Ball Mills	Ball Mill Process Fugitive Control	Established negative pressure Ball Mill building ventilation with maintained local exhaust ventilation at process points		September 2011
	Upgrading Ball Mill Ventilation	Improved ventilation in Ball Mill room		November 2011
	BH11-BH15 Ball Mill Stacks	Increased stack heights by 37 feet	BMBH11: 80.420 feet	July 2013
			BMBH12: 80.574 feet	
			BMBH13: 80.489 feet	
			BMBH14: 80.420 feet	
BMBH15: 81.325 feet				
Plant Roadways	Paving Plant Roadways	Paved all internal roadways and parking lots subject to vehicular traffic on the northwest section; total area paved was 15,220 square yards		July 2014
	Dust Control	Dust suppression via water truck		Spring 2017
	Dust Control	Dust Suppression via vacuum street sweeper		September 2017
	Dust Control	Sealed Northeast corner of the plant property (not used for traffic) with appropriate dust suppressant cover ¹⁵		October 2017
	Paving Plant Roadways	Paved West and East Trailer Parking areas		November 2017
Plant Processes	Plant Process Fugitive Control	Established negative pressure ventilation for all buildings containing lead-emitting operations		2017

2.3 Permanent and Enforceable Emission Reductions [CAA Section 107(d)(3)(E)(iii)]

Another element required for redesignation is that the improvement in air quality is due to permanent and enforceable emission reductions. The discussion below describes that reductions in emissions are identifiable and permanent through a legally enforceable document. The reductions have resulted in attainment of the 2008 Lead NAAQS.

Stryten is the sole source of lead emissions in the nonattainment area and has implemented a control strategy consisting of various control requirements and measures, listed above in **Table 2-5**, that have reduced lead emissions in the area and improved ambient air quality substantially. The required implementation of the control strategy leading to lower, aggregate facility lead emissions is federally enforced through the most recent construction permit modification issued on December 27, 2018 (Permit No. CSP02942 v1.0). Improvements in air quality are reasonably attributed to these permanent and enforceable emission reductions as evidenced by the low monitored lead concentrations recorded during the 2017-2019, 2018-2020, and 2019-2021 periods and verified through the updated attainment demonstration modeling.

¹⁵ The Northeast corner of the plant property (not used for traffic) is paved.

While summarized above in **Table 2-5**, the following describes in more detail the updated control strategy for the identified sources of lead emissions at Stryten since undergoing facility upgrades and improvements as permitted on January 11, 2017 (Permit No. C-13556/CSP00485), June 23, 2017 (Permit No. C-13863/CSP00486), and December 27, 2018 (Permit No. C-14364/CSP02942 v1.0). The most recent construction permit, as modified on December 27, 2018 (**Appendix A**), contains the up-to-date control strategy, which is relied upon in the updated attainment demonstration modeling (**Appendix B**), and is being submitted for approval into Kansas' SIP to address and fulfill the nonattainment plan provisions of CAA Section 172(c) applicable to the partial Saline County area with respect to the 2008 Lead NAAQS.

Point Sources (Facility-Wide Stack Emissions):

- General-Purpose Baghouses 1 through 6 (BH1 through BH6) are equipped and maintained with the following:
 - Polytetrafluoroethylene (PTFE)/Teflon membrane type bag cartridges for the filter media; and
 - A bag leak detection system to detect bag failures or leaks.
- General-Purpose Baghouse 6 (BH6) is also equipped and maintained with a secondary High Efficiency Particulate Air (HEPA) filter certified by the manufacturer to capture a minimum of 99.97% of 0.3 micron (or micrometer) or larger particles.
- Ball Mill (process) Baghouses 11 through 15 (BH11 through BH15) and Barton Oxide Mill (process) Baghouses 1 through 7 (OM1 through OM7) are equipped and maintained with the following:
 - PTFE/Teflon membrane type bag cartridges for the filter media; and
 - A secondary HEPA filter certified by the manufacturer to capture a minimum of 99.97% of 0.3 micron (or micrometer) or larger particles.
- Emissions from the Barton Oxide Mill process combustion stacks are routed to and controlled by General-Purpose Baghouse 5 (BH5).
- Lead emissions to the atmosphere are limited by the amounts listed below in **Table 2-6**, which shows each point source with the respective allowable lead emission limit/rate, as modeled to demonstrate attainment with the 2008 Lead NAAQS (**Appendix B**). The total allowable emissions of all point sources are 1.15 ton/year, approximately 25% (0.38 ton/year) lower than originally permitted on August 18, 2014. Compliance with each point source lead emission limit/rate is demonstrated through five-year performance testing.

Table 2-6. Point Source Lead Emission Limits/Rates

Point Source	Point Source Description	Lead Emission Limit/Rate	
		(gram/second)	(pound/hour)
BH1	General-Purpose Baghouse 1	3.71E-03	2.94E-02
BH2	General-Purpose Baghouse 2	2.52E-03	2.00E-02
BH3	General-Purpose Baghouse 3	5.04E-03	4.00E-02
BH4	General-Purpose Baghouse 4	1.26E-02	1.00E-01
BH5	General-Purpose Baghouse 5	1.63E-03	1.29E-02
BH6	General-Purpose Baghouse 6	2.27E-03	1.80E-02
BH11	Ball Mill Baghouse 11	8.82E-04	7.00E-03
BH12	Ball Mill Baghouse 12	8.82E-04	7.00E-03
BH13	Ball Mill Baghouse 13	8.82E-04	7.00E-03
BH14	Ball Mill Baghouse 14	8.82E-04	7.00E-03
BH15	Ball Mill Baghouse 15	8.82E-04	7.00E-03
OM	Oxide Mill Baghouses (single OM stack)	8.82E-04	7.00E-03

It is difficult to quantify on an absolute basis the emission reductions attributable to both process fugitive and fugitive (re-entrained) dust control, such as maintaining negative pressure total enclosures, local exhaust ventilation, paving of plant property, and sweeping/cleaning of paved surfaces; however, they can be expected to be considerable. This is discussed in more detail below.

Process Fugitives (Facility-Wide):

- All lead-emitting process areas including grid casting facilities, paste mixing facilities, three-process operation facilities, lead oxide manufacturing facilities, lead reclamation facilities, and any other lead-emitting operations are contained in negative pressure total enclosure(s) that are vented to control device(s) to prevent fugitive emissions from escaping through building openings uncontrolled. The total enclosure standards and requirements, including locations of the differential pressure monitoring devices, are detailed in the December 27, 2018, construction permit modification. The total building enclosure is the linchpin in the strategy to control lead emissions and ambient concentrations, as the configuration of the facility originally permitted on August 18, 2014, allowed uncontrolled fugitive lead emissions except from the Ball Mill process directly to the ambient air. The original permit also required the Ball Mill process to be maintained with local exhaust ventilation (LEV) at process points to increase the effectiveness of lead particulate capture within the total enclosure. A plant diagram of the negative pressure total enclosure with approximately 600 LEV points within the enclosure is displayed below in **Figure 2-5**. Also identified on this figure are the locations of three pressure monitors. Not only is the negative pressure of the total enclosure monitored continuously to ensure compliance, but it also aligns with the total enclosure negative pressure requirement (negative pressure values of at least 0.013 millimeters of mercury) identified in National Emission Standards for Hazardous Air Pollutants (NESHAP) from Secondary Lead Smelting codified at 40 CFR Part 63 Subpart X. Although Stryten is not a secondary lead smelter subject to NESHAP Subpart X, the concepts of controlling lead emissions are similar and therefore relevant.

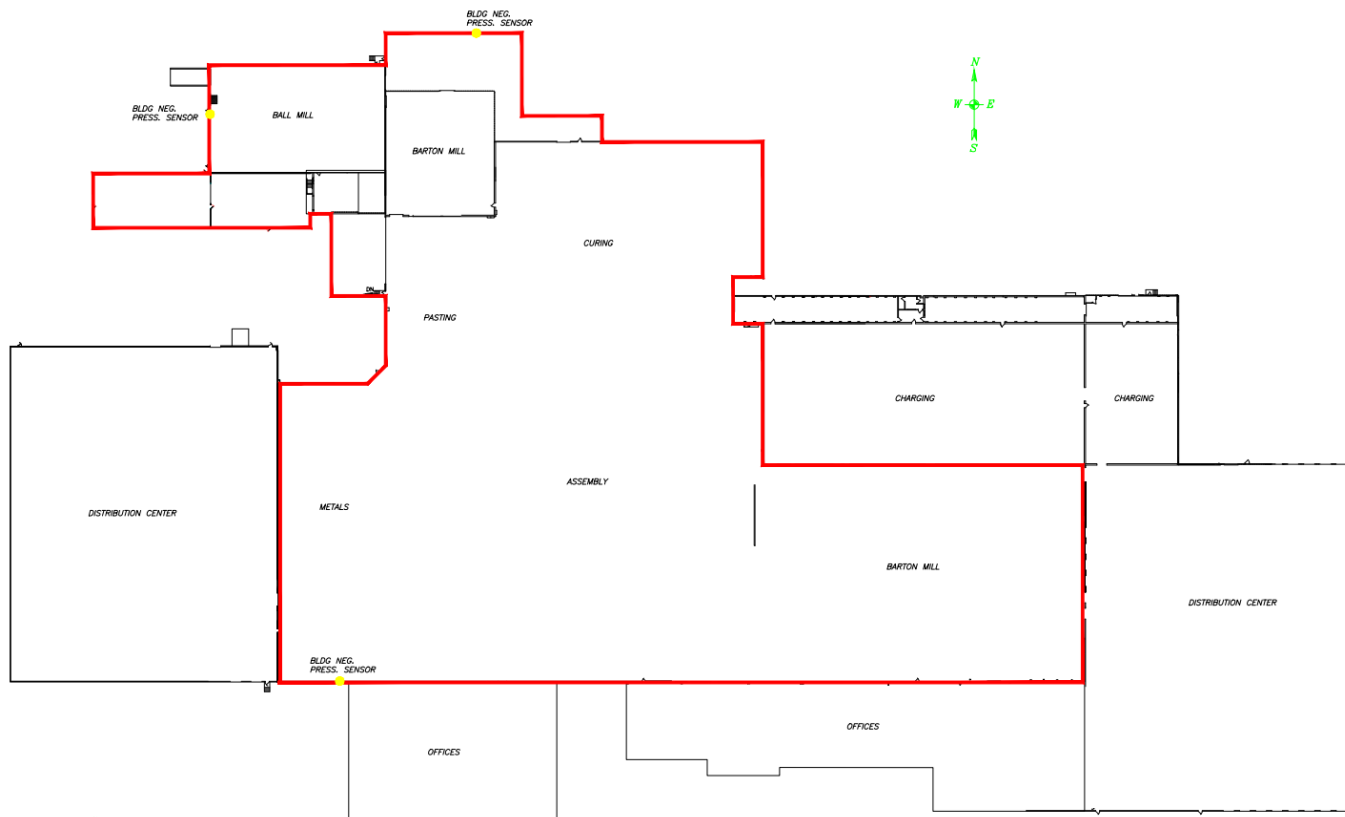


Figure 2-5. Stryten Plant Diagram of Negative Pressure Total Enclosure with LEV and Pressure Monitors

- Fugitive lead emissions from the facility's lead processing were calculated to be 4.86×10^{-5} gram/second (3.86×10^{-4} pound/hour), as modeled to demonstrate attainment with the 2008 Lead NAAQS (**Appendix B**). Specifically, Stryten determined that 10% of the total (facility-wide) process exhaust lead emissions are released as fugitives and characterized the facility's process fugitive emissions as a single volume source. The resulting fugitive lead emissions were reduced by 99% from 338 pounds per year to 3.38 pounds per year (3.86×10^{-4} pounds per hour; 4.86×10^{-5} grams per second) due to the combined effectiveness of the negative pressure total enclosure with maintained LEVs at the interior source level.¹⁶

Fugitive Dust Source (Grounds and Roadways):

- The Northeast corner of the plant property, which is not used for traffic, was sealed with dust suppressant cover (paved), as shown below in **Figure 2-6**.
- Approximately 15,000 square yards located on the east and west ends of the plant property (East and West Trailer Parking areas) were paved, as shown below in **Figure 2-6**.

¹⁶ For the purpose of SIP attainment modeling of total enclosure emissions, in accordance with EPA guidance (2008 Lead NAAQS Implementation Questions and Answers, https://www.epa.gov/sites/default/files/2016-03/documents/memorandum_questions.pdf), total enclosure controls that are imposed in a manner consistent with 40 CFR Part 63 Subpart X, NESHAP for Secondary Lead Smelting, a capture efficiency of no greater than 95% can be assumed for total enclosures. Pursuant to the guidance, a greater level of capture efficiency (up to 99%) may be demonstrated based on site-specific factors and additional design or housekeeping practices that go beyond what is assumed in NESHAP Subpart X. As indicated by EPA Region 7, the use of LEVs exceeds the assumptions of the Secondary Lead Smelting NESHAP, which does not consider LEVs to achieve the negative building pressure requirement. Therefore, as supported by EPA Region 7, for emission sources that have LEV and within buildings/total enclosures meeting the negative pressure requirement of NESHAP Subpart X, a combined building fugitive capture efficiency of 99% can be assumed.

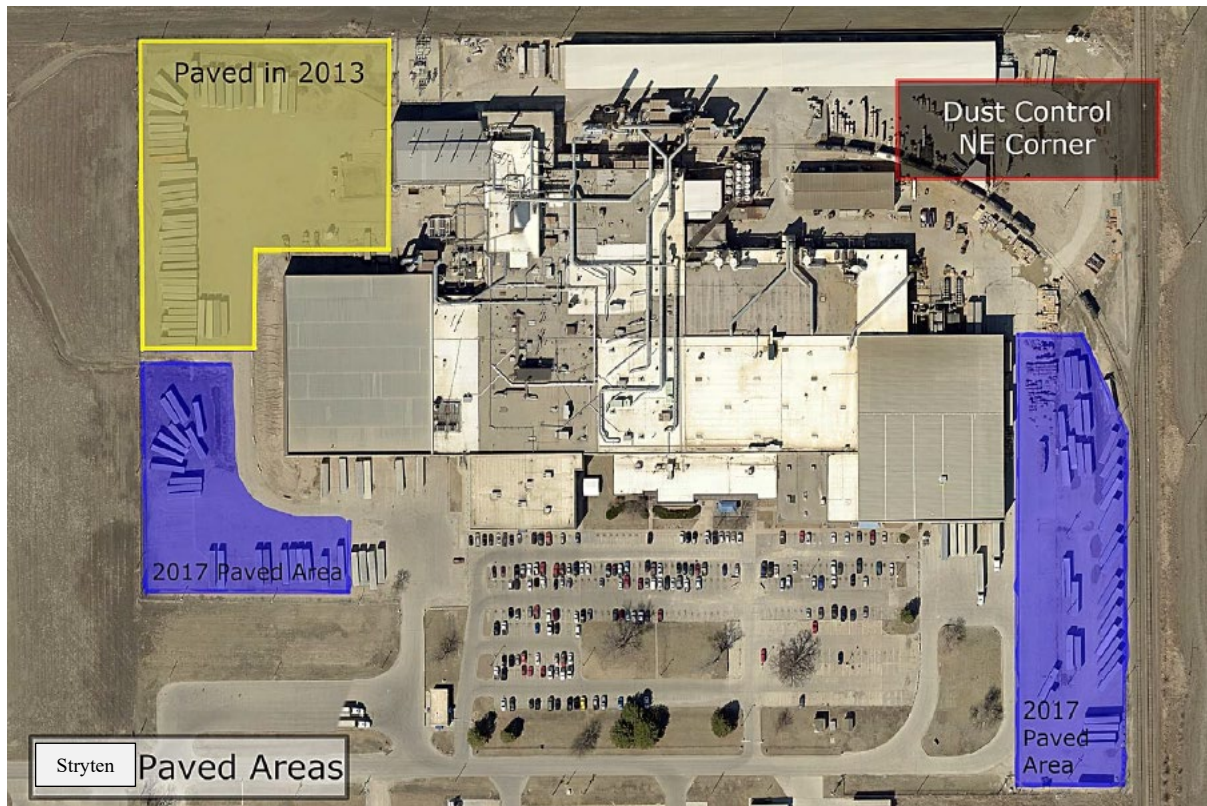


Figure 2-6. Stryten Plant Property Paving Projects

- Dust suppression measures consisting of a vacuum street sweeper and/or a water truck are utilized on plant grounds and roadways to control fugitive (re-entrained) lead dust that occurs from vehicular traffic or by natural wind. The sweeping/cleaning and wet dust suppression requirements are detailed in the December 27, 2018, construction permit modification.
- Fugitive lead emissions from on-site plant vehicular traffic activities were calculated to be 1.76×10^{-4} gram/second (1.40×10^{-3} pound/hour, 6.12×10^{-3} ton/year) and characterized as volume sources in the dispersion modeling analysis (**Appendix B**). Emissions were estimated based on site-specific parameters including silt and lead content sampling conducted in May 2018 after completion of additional paving and routine sweeping/cleaning. These measures resulted in a reduction in fugitive lead emissions of approximately 62% (0.01 ton/year) since issuance of the original construction permit on August 18, 2014.

2.4 Fully Approved Maintenance Plan [CAA Section 107(d)(3)(E)(iv)]

This element stipulates that for an area to be redesignated to attainment, the EPA shall fully approve a maintenance plan that meets the requirements of CAA Section 175A.

The maintenance plan for this area is provided in Chapter 3.0, “Lead Maintenance Plan,” of this document and is subject to concurrent processing with this redesignation request.

2.5 Section 110 and Part D Requirements [CAA Section 107(d)(3)(E)(v)]

The last element in a redesignation request is to show that all CAA Section 110 and Part D requirements that were applicable prior to submittal of the complete redesignation request have been met.

2.5.1 Section 110 Requirements

CAA Sections 110(a)(1) and (2) contain requirements for state plans that provide for the implementation, maintenance, and enforcement of any new or revised NAAQS. Section 110(a)(1) directs each state to submit a SIP to the EPA within three years of promulgation of a new or revised NAAQS, and section 110(a)(2) specifies the basic elements that need to be addressed in the SIP submission. Such elements include enforceable emission limitations and other control measures¹⁷, an ambient monitoring program, enforcement and permitting programs, provisions to address interstate transport, air quality modeling capabilities, public and local agency participation, and adequate personnel, resources, and legal authority. These SIPs are commonly referred to as “infrastructure” SIPs designed to ensure that the structural components of each state’s air quality management program are adequate to meet the state’s responsibilities under the CAA.

In January 2012, the KDHE submitted to the EPA for review and approval the 2008 Lead NAAQS Infrastructure SIP that demonstrates how Kansas is satisfying the infrastructure elements required under section 110 of the CAA. The EPA proposed to approve Kansas’ Lead Infrastructure SIP on July 16, 2014 ([79 FR 41476](#)) and subsequently finalized their approval of the SIP on September 15, 2014 ([79 FR 54908](#)). The KDHE concludes that prior submittals, along with this redesignation request and maintenance plan, address the relevant requirements associated with statutory and regulatory authorities, SIP submissions, and implementation and enforcement of required control measures, and maintains the necessary infrastructure and resources to comply with sections 110(a)(1) and (2) of the CAA with respect to the 2008 Lead NAAQS.

2.5.2 Part D Requirements

Subpart 1 of Part D of the CAA consists of general requirements applicable to all areas designated as nonattainment for any NAAQS; these include section 172 (nonattainment plan provisions), section 175A (maintenance plans), and section 176 (conformity requirements). Subpart 5 of Part D contains additional provisions applicable to lead nonattainment areas.

Section 172(c) identifies several key provisions that states shall address in a nonattainment SIP submission, including:

CAA Section 172(c)(1)	Provisions for attainment and the timely implementation of all reasonably available control technology (RACT) and reasonable available control measures (RACM)
CAA Section 172(c)(2)	Reasonable Further Progress (RFP)
CAA Section 172(c)(3)	An emissions inventory for the nonattainment area
CAA Section 172(c)(4)	Allowed emission increases from new/modified major sources
CAA Section 172(c)(5)	Nonattainment new source review
CAA Section 172(c)(6)	A control strategy with enforceable emission limits and schedules and timetables for compliance as necessary to provide for attainment
CAA Section 172(c)(7)	Applicable provisions of section 110(a)(2)

¹⁷ These are apart from nonattainment area emission limitations and measures which are part of nonattainment SIPs or attainment plans and subject to the timing requirements of CAA Section 172.

CAA Section 172(c)(8)	Equivalent modeling, emissions inventory, or planning activities
CAA Section 172(c)(9)	Contingency measures

On February 3, 2015, the KDHE submitted to the EPA a Lead Attainment Plan for the partial Saline County nonattainment area. It defined control technology and measures that contained emission limits and other enforceable conditions including methods, schedules, and timetables for compliance necessary to attain the 2008 Lead NAAQS as expeditiously as practicable. The SIP revision was designed to fulfill all applicable nonattainment plan requirements in Part D, including RACT/RACM provisions of section 172(c)(1), RFP provisions of section 172(c)(2), and section 172(c)(6) provisions, such as enforceable emission limitations and other control measures as necessary. Though Kansas' SIP for the partial Saline County lead nonattainment area satisfied the applicable requirements of the CAA and was fully approved by the EPA under section 110(k) on July 20, 2016, the nonattainment area failed to attain the lead standard by December 31, 2016. Stryten's subsequent facility upgrades and improvements, as permitted in January and June 2017 and December 2018, consisted of additional control measures and requirements for the identified sources of lead emissions (described above under 2.3 Permanent and Enforceable Emission Reductions), which ultimately resulted in attainment of the 2008 Lead NAAQS. The December 27, 2018, construction permit modification, which incorporates the updated control strategy, is being submitted for approval into Kansas' SIP to address and fulfill these nonattainment plan provisions of CAA Section 172(c) applicable to the partial Saline County area with respect to the 2008 Lead NAAQS.

The KDHE also developed a comprehensive, accurate, and current lead emissions inventory for the nonattainment area, specifically the Stryten facility. In accordance with section 172(c)(3), the requirements for an emissions inventory will be satisfied by the inventory requirements of the maintenance plan. Chapter 3.0 discusses this requirement in greater detail.

With respect to identifying and quantifying the allowable emissions in accordance with section 172(c)(4)¹⁸ and the nonattainment New Source Review (NSR) provisions of section 172(c)(5) and permit requirements of section 173, Kansas has a longstanding and fully effective minor NSR (preconstruction) permitting program, as implemented by K.A.R. 28-19-300 et seq., that was approved by the EPA into Kansas' SIP on October 3, 2018 ([83 FR 49826](#)). The Stryten facility is considered a minor source under NSR. Nevertheless, CAA Section 110(a)(2)(C) requires a SIP approved minor NSR program to regulate "the modification and construction of any stationary source... as necessary to assure that the [NAAQS] are achieved..." Furthermore, the implementing regulations of 40 CFR 51.160 through 51.164, which govern the minor NSR program, require legally enforceable procedures that enable the state to determine whether a construction or modification of an existing source would interfere with attainment or maintenance of the NAAQS or violate any control strategy contained in the SIP. The KDHE regulates the construction of new sources and modification of existing sources that may impact the maintenance of attainment through the provision of K.A.R. 28-19-301(d), which prohibits issuing any permit or approval to a source that would interfere with the attainment or maintenance of any NAAQS.¹⁹ Therefore, Kansas' minor NSR permitting program applies to sources in both attainment and nonattainment areas. Following redesignation to attainment, the KDHE shall ensure that the area continues to meet the 2008 Lead NAAQS through appropriate preconstruction review and permitting procedures, including modeling assessments, to

¹⁸ These provisions allow a state to provide a "growth allowance," in accordance with section 173(a)(1)(B), for new/modified major sources in the nonattainment area in lieu of the offset requirements under section 173(a)(1)(A).

¹⁹ K.A.R. 28-19-301(d) states, "No construction permit or approval shall be issued if the department determines that the air contaminant emissions from the source will interfere with the attainment or maintenance of any ambient air quality standard that has been established under the provisions of the federal clean air act, as amended, or under the provisions of state law."

preserve the validity and to prohibit inadvertent backsliding of the established control strategy. Chapter 3.0 elaborates on the state's demonstration of continued maintenance of the lead standard.

CAA Section 172(c)(7) requires nonattainment SIPs to meet the applicable provisions of section 110(a)(2). As discussed above under 2.5.1 *Section 110 Requirements*, the provisions of section 110(a)(2) address various, general SIP elements that are statewide requirements and are not linked to a particular area's designation and classification relevant to section 172(c)(7). All applicable section 110(a)(2) criteria and demonstrated by the state's minor NSR permitting program and updated control strategy with associated emission limitations are satisfied by prior submittals, along with this redesignation request and maintenance plan, to address and fulfill the nonattainment plan provisions applicable to the partial Saline County area with respect to the 2008 Lead NAAQS.

Furthermore, the KDHE has followed EPA regulations and guidance when conducting dispersion modeling, preparing emission inventories, and implementing planning procedures. The KDHE did not use, or request approval of equivalent techniques as allowed under section 172(c)(8).

Regarding the requirement for contingency measures in section 172(c)(9), which is directed at ensuring RFP and attainment, section 175A for maintenance plans provides specific requirements for contingency provisions in section 175A(d) that subsume the requirements of section 172(c)(9) for this area. The updated contingency measures contained in the December 27, 2018, construction permit modification and effective during the area's nonattainment designation status for the 2008 Lead NAAQS are required to be implemented accordingly along with any maintenance plan contingency measures to ensure that any violation of the lead standard, which occurs after the redesignation of the area as an attainment area, will be promptly corrected. The December 27, 2018, construction permit modification, which contains the updated contingency measures, is being submitted for approval into Kansas' SIP to address and fulfill the nonattainment plan provisions of CAA Section 172(c) applicable to the partial Saline County area with respect to the 2008 Lead NAAQS.

Transportation conformity is required under CAA Section 176(c)(4) to ensure that federally supported highway and transit project activities are consistent with the purpose of the SIP. In light of the elimination of lead additives from gasoline, transportation conformity does not apply to the lead NAAQS, as stated in the EPA's November 12, 2008 final rule ([73 FR 66964](https://www.ecfr.gov/current/title-40/chapter-I/subchapter-D/part-93/subpart-B/section-93.104-1)) revising the primary and secondary lead NAAQS.

The KDHE concludes that prior submittals, along with this redesignation request and maintenance plan, address and satisfy the substantive SIP requirements of the CAA, including section 110, Part D, and implementing regulations applicable to the partial Saline County area with respect to the 2008 Lead NAAQS.

3.0 LEAD MAINTENANCE PLAN

CAA Section 107(d)(3)(E) stipulates that for an area to be redesignated to “attainment” from “nonattainment,” the EPA shall fully approve a maintenance plan that meets the requirements of section 175(A). Section 175(A) outlines the general framework of a maintenance plan that shall provide for maintenance of the relevant NAAQS in the area for at least ten (10) years after redesignation. The KDHE is submitting this maintenance plan, which constitutes a SIP revision, for the partial Saline County lead nonattainment area concurrently with the redesignation request.²⁰ This maintenance plan is designed to satisfy the requirements of CAA Section 175(A) and be consistent with the EPA’s redesignation guidance by considering the following provisions:

- Attainment Inventory
- Maintenance Demonstration
- Monitoring Network
- Verification of Continued Attainment
- Contingency Plan

3.1 Attainment Inventory

The state should develop an attainment emissions inventory to identify the level of emissions in the area which is sufficient to attain the NAAQS; and where the state has made an adequate demonstration that air quality has improved as a result of the SIP, the attainment inventory is generally the actual inventory at the time the area attained the standard.

As explained above in Chapter 2.0, the improvement in air quality in the nonattainment area between the year that monitored violations occurred (2016) and the year that attainment was achieved (2017 – the first year from the 2017-2019 design value years of attainment) is attributed to permanent and enforceable emission reductions. The additional control measures implemented in 2017 at the Stryten facility, including negative pressure total enclosures of all lead-emitting process areas, paving additional areas (trailer parking and Northeast corner) of the plant property, and sweeping/cleaning paved surfaces, have dramatically reduced fugitive emissions; and quantifiable stack emissions have declined as well.

The complete attainment inventory includes emissions of lead from point sources. Stryten is the only point source of emissions in the partial Saline County, Kansas nonattainment area, and there are no area, non-road, or mobile sources of lead emissions that contribute to nonattainment. Actual lead emissions data for the years 2015-2021 were obtained from Stryten’s annual emissions inventory, as reported through the State and Local Emissions Inventory System (SLEIS) and are presented below in **Table 3-1**.²¹ Data from 2016 coincide with the period of nonattainment and the period before Stryten implemented additional control measures. Over the 5-year span of 2017-2021, lead emissions have been greatly reduced resulting in ambient air concentrations below the 2008 Lead NAAQS of 0.15 µg/m³.

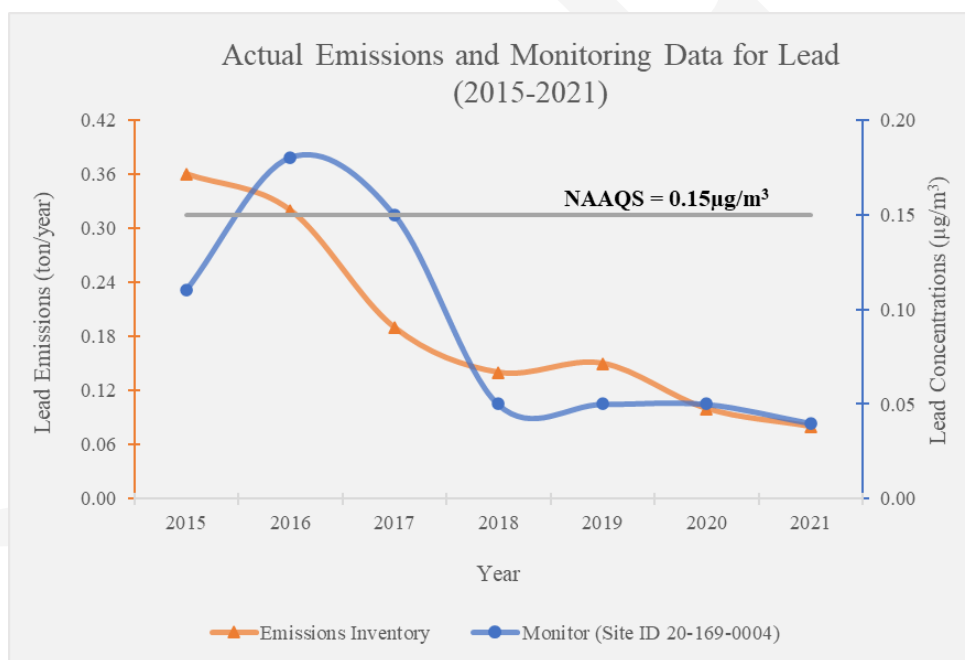
²⁰ CAA Section 175A(b) requires the State to submit a SIP revision eight years after the original redesignation request is approved to provide for maintenance of the NAAQS for an additional 10 years following the first 10-year period.

²¹ Lead emissions data obtained from the EPA’s National Emissions Inventory (NEI) for the years 2015-2021 is consistent with the lead emissions data from SLEIS for those years.

Table 3-1. Lead Emissions Inventory for the Stryten Facility

Area Status	Year	Lead Emissions (ton/year)
Nonattainment	2015	0.36
	2016	0.32
Attainment	2017	0.19
	2018	0.14
	2019	0.15
	2020	0.10
	2021	0.08

As illustrated below in **Figure 3-1**, the actual reported annual emissions during attainment (2017-2021) reveal a downward trend with a considerable decrease in lead emissions from 2017 to 2018 followed by another notable reduction from 2019 to 2020. Also plotted in the figure are annual maximum 3-month rolling average lead concentrations, as listed above in **Table 2-2**, that exhibit relatively low and steady lead levels measured at the monitoring site since 2018.

**Figure 3-1. Actual Lead Emissions and Ambient Lead Monitoring Data (2015 – 2021)**

3.2 Maintenance Demonstration

A state may generally demonstrate maintenance of the NAAQS by either showing that future emissions of a pollutant or its precursors will not exceed the level of the attainment inventory, or by modeling to show that the future mix of sources and emission rates will not cause a violation of the NAAQS. In both instances, the demonstration should be for a period of ten years following the redesignation.

Since the maintenance horizon is for ten years following redesignation, this plan provides for demonstrating maintenance of the 2008 Lead NAAQS projected through the year 2036, which includes the time provided for the EPA to review and approve the lead maintenance plan and redesignation request.²²

Maintenance can be demonstrated using the attainment inventory, and in general, when the future-year (2036) projected emission totals are below the 2017 attainment year totals. As reported in **Table 3-1**, the annual lead emissions data since 2017 demonstrate that the implemented control measures at Stryten, the only source of lead emissions in the nonattainment area, have resulted in considerable stack and fugitive emission reductions that are permanent and enforceable. While it is expected that lead emissions from the Stryten facility will remain steady with slight fluctuations through the maintenance period such that the 2036 inventory can be represented by the 2017 attainment year, it is unlikely that Stryten will not undergo facility changes that may increase lead emissions during this timeframe.

Therefore, to demonstrate maintenance through 2036, the KDHE is relying upon the attainment demonstration modeling (**Appendix B**) that conforms to current EPA guidelines. Dispersion modeling is a sophisticated means of demonstrating maintenance because it incorporates meteorology, topography, and source characteristics. The modeling analysis reflected an updated control strategy consisting of allowable emission limits based on implementation of additional control measures that are permanent and enforceable through the December 27, 2018, construction permit modification (**Appendix A**). As such, all control measures and requirements will remain in effect following redesignation of the area, and Stryten is prohibited from reducing or removing emissions controls (backsliding). In addition, the KDHE supplemental modeling, which evaluated an operating scenario characterizing the point sources' federally enforceable allowable emission rates at worst-case dispersion conditions, provides sufficient evidence of continued maintenance of the lead NAAQS into the foreseeable future.

Although the KDHE does not anticipate any new industry growth or development through 2036 within the nonattainment area, any potential, new industrial source of lead that may locate into the area would be required to comply with the state of Kansas' SIP approved NSR permitting program to ensure continued compliance with the NAAQS. Similarly, if Metlcast²³ (or another owner/operator) intends to restart operations in the future, the source would be subject to preconstruction review and permitting under K.A.R. 28-19-300 et seq. Therefore, it is through the state's NSR program requirements, including applications, ambient air quality impact assessments, and permits, that the KDHE will assure there is anti-backsliding of the federally enforceable and permanent control strategy, and the area continues to meet the 2008 Lead NAAQS.

²² CAA Section 107(d)(3)(D) grants the EPA up to 18 months from receipt of a complete submittal to process a redesignation request.

²³ Metlcast's operating status is classified as "permanently closed" in the Kansas Environmental Information Management System (KEIMS).

3.3 Monitoring Network

Once an area has been redesignated, the State should continue to operate an appropriate air quality monitoring network, in accordance with 40 CFR Part 58 to verify the attainment status of the area.

The KDHE currently operates co-located samplers at the lead monitoring/sampling site that meets all federal regulations and requirements as described above in Chapter 2.0. The site is located near the Stryten facility and well placed to monitor the highest lead concentrations. The KDHE commits to maintaining an appropriate, well-sited lead monitoring network in the area through the maintenance plan period to verify the continued attainment of the 2008 Lead NAAQS. Additionally, the KDHE will continue to work with the EPA through the air monitoring network plan review process to evaluate the adequacy of the lead monitoring network.

3.4 Verification of Continued Attainment

Each state should ensure that it has the legal authority to implement and enforce all measures necessary to attain and maintain the NAAQS. The state should indicate how progress of the maintenance plan will be tracked, regardless of whether the maintenance demonstration is based on modeling or a showing that future emission inventories will not exceed the attainment inventory.

All control measures and requirements necessary to attain and maintain the 2008 Lead NAAQS have been implemented through the most recent, federally enforceable construction permit modified on December 27, 2018 (**Appendix A**) to support continued attainment of the lead NAAQS. The KDHE will assure Stryten's continued compliance with all permanent and enforceable control measures through monitoring, performance testing, recordkeeping, and reporting requirements established in the permit. Field representatives have the authority to conduct onsite inspections to review and determine the compliance status of the facility pursuant to K.S.A. 65-3009, which is a component of the KDHE's comprehensive air quality program to identify violations and undertake timely and appropriate compliance and enforcement action, as authorized by Kansas Statutes Annotated (K.S.A.) 65-3005 and 65-3011. Furthermore, in accordance with the construction permit, Stryten is required to report and take corrective action in response to incidences of excess emissions.

Beginning of calendar year 2014, Stryten had been required to submit a Class I annual emissions inventory in accordance with K.A.R. 28-19-517 for purposes of providing comprehensive facility air emissions information and data.²⁴ The KDHE submits, and commits to submit to the EPA, emissions inventories annually in accordance with the EPA's Air Emissions Reporting Requirements in Subpart A to 40 CFR Part 51. Stryten's actual emissions, the majority of which are based on five-year testing of each point source, will be used to verify continued compliance with the federally enforceable allowable emission limits/rates and can be compared to the 2017 attainment year to assess emission trends and provide assurance that the lead standard is maintained. Further, as stated earlier, the KDHE regulates permitting and approval of the construction of new sources or modification of existing sources that may impact the maintenance of attainment through the provision of K.A.R. 28-19-301(d). The KDHE's implementation of an effective NSR program, which includes, among other things, dispersion modeling analyses to assess the full impact of new or modified sources in the area, shall provide sufficient evidence of continued attainment through the 20-year maintenance period.

²⁴ In general, K.A.R. 28-19-517 is applicable to a major stationary source under the Class I operating permit program, which implements 40 CFR Part 70 – State Operating Permit Programs (Title V of the CAA).

Most significantly, the KDHE will verify continued attainment through the well-placed monitoring network. Also, Stryten is subject to ambient air monitoring requirements (identified in the December 27, 2018, construction permit modification and summarized below), which include operating fence line site monitors and maintaining an Airborne Metals Monitor (AMM) system designed to provide more frequent lead sampling than the KDHE ambient monitor. While the KDHE recognizes that the AMM system is not approved for monitoring attainment or maintenance of the lead NAAQS and will not be used to determine an excursion or exceedance, the established short-term and long-term airborne lead action levels, if triggered, require Stryten to implement strategies aimed to prevent monitored concentrations of lead from contributing to exceedances of the NAAQS.

Ambient Air Monitoring Requirements:

- A minimum of one lead monitor at the north fence line and one at the south fence line are operated by Stryten, with lead sampling occurring for 24 hours every three (3) days.
- An Airborne Metals Monitor (AMM) system for the purpose of providing near real time lead monitoring (sampling occurring 24 hours, daily) is maintained by Stryten, while the KDHE is responsible for operating the AMM system, reviewing the data collected, and sharing the information and data with the facility. The AMM system allows Stryten to take actions to limit or prevent a potential or actual excursion or exceedance of the lead NAAQS but is not used for the monitoring of attainment or maintenance of the NAAQS. The KDHE and Stryten entered into a separate agreement, effective January 29, 2019, which outlines the monitor type, all ancillary equipment (including fencing and shelter), monitor siting location, monitoring specifications, sampling periods, airborne action levels, and terms and provisions.

3.5 Contingency Plan

CAA Section 175A requires that maintenance plan include contingency provisions, as necessary, to promptly correct any violation of the NAAQS that occurs after redesignation of the area. The contingency plan should ensure that the contingency measures are adopted expeditiously once they are triggered.

In the event that a monitored lead violation occurs after redesignation, the KDHE will require, at a minimum, implementation of all of the contingency measures that were effective prior to the redesignation of the area to attainment. The specific contingency measures listed below in **Table 3-2** mirror Table 11 under section **X. Contingency Measures Implementation** of the December 27, 2018, construction permit modification (**Appendix A**) and shall continue to apply as part of the maintenance area SIP. Furthermore, these measures include triggers established to initiate a timely response to indications of a possible future violation of the lead NAAQS; and therefore, mitigating actions can be undertaken that might prevent a violation and potential redesignation to nonattainment.

Table 3-2. Contingency Measures

Measure	Trigger	Completion Time
Adjustment to section VIa, part F to increase dust suppression. If prior to October 1, 2017 dust suppression via water truck must be completed four times daily. If on or after October 1, 2017 dust suppression via vacuum sweeper must be conducted three times per week, with a maximum of two days between sweeping.	Two days with lead concentrations greater than $0.15 \mu\text{g}/\text{m}^3$ at KDHE ambient air monitor within an individual month	7 days after KDHE notification
The facility shall install and operate continuous pressure analyzers/monitors on all outside walls of buildings containing lead-emitting operations and shall follow monitoring requirements outlined in 40 CFR 63.548(k). Pressure value records must be kept a minimum of two years.	Monthly average lead concentration greater than $0.15 \mu\text{g}/\text{m}^3$ at KDHE ambient air monitor	60 days after KDHE notification
Exide shall implement any or all of the contingency measures not previously triggered by two days within a month or monthly average lead concentrations greater than $0.15 \mu\text{g}/\text{m}^3$ at KDHE ambient air monitor.	NAAQS violation (3-month rolling average greater than $0.15 \mu\text{g}/\text{m}^3$) at KDHE ambient air monitor	60 days after KDHE notification
Exide¹ shall complete and submit a root cause analysis, which shall include but not limited to: the investigation of production/operations performance; efficiency of emissions control equipment and measures; startup, shutdown, malfunction and maintenance periods; meteorological data for site and surrounding area; and any other conditions or events that may be relevant to lead emissions and/or that may influence KDHE ambient air monitoring results.	NAAQS violation (3-month rolling average greater than $0.15 \mu\text{g}/\text{m}^3$) at KDHE ambient air monitor	30 days after KDHE notification

Exide ¹ shall conduct stack testing on an increased frequency as determined by KDHE. The scope and frequency of the increased stack tests will be based on an evaluation by KDHE of the information submitted in the root cause analysis. The supplemental stack tests may be reduced once tests demonstrate that the stacks do not show a significant increase above their baseline stack test rates.	NAAQS violation (3-month rolling average greater than 0.15 µg/m ³) at KDHE ambient air monitor	60 days after KDHE notification
Exide ¹ shall complete new air dispersion modeling with proposed and/or completed changes to emissions rates, work practices, and any other contingency measures. Exide shall submit to KDHE for approval any revised demonstration for the timely attainment and maintenance of the lead NAAQS.	NAAQS violation (3-month rolling average greater than 0.15 µg/m ³) at KDHE ambient air monitor	60 days after KDHE notification

While it is not possible to develop a complete list of contingency measures or to specify implementation deadlines until the cause of the elevated levels is known and the appropriate response is identified, contingency measures to be considered will be based on an analysis of the suspected cause of the elevated lead level. This analysis may require data collection activities and a reexamination of previous assumptions or conclusions. Contingency measures may include improvements in the applicable permitted control devices, additional haul road sweeping requirements, the addition of secondary control devices or improvements in housekeeping and maintenance, among other measures. If a new measure is already required and scheduled to be implemented at the federal or state level, and that measure is determined to be sufficient to address the upward trend in air quality, additional local measures may be unnecessary. However, as previously stated, if a NAAQS violation occurs after redesignation, KDHE shall, at a minimum, require implementation of all applicable measures of Stryten's Air Emission Source Construction Permit modification issued on December 27, 2018, including all contingency measures specified in section X.

4.0 CONCLUSION

The requirements for redesignation of a nonattainment area, as stated above, include: 1) attainment of the NAAQS; 2) a fully approved nonattainment SIP meeting all CAA Sections 110 and Part D requirements for the area; 3) improvement in air quality due to permanent and enforceable emission reductions; and 4) a fully approved maintenance plan meeting the requirements of CAA Section 175A. Through this submittal, the KDHE has demonstrated that the partial Saline County area is attaining the 2008 Lead NAAQS attributed to permanent and enforceable emission reductions from an updated control strategy contained in the December 27, 2018, construction permit modification, which is being submitted for approval into Kansas' SIP to address and fulfill the nonattainment plan (Part D) provisions of CAA Section 172(c). Furthermore, this submission includes a complete lead maintenance plan that satisfies CAA Section 175A. Therefore, the KDHE requests redesignation of the partial Saline County nonattainment area to attainment status for the 2008 Lead NAAQS and inclusion of the maintenance plan (Chapter 3.0) into Kansas' SIP.