Commonwealth of Kentucky
Division for Air Quality

STATEMENT OF BASIS / SUMMARY

Conditional Major, Construction/Operating
Permit: F-26-003

Alum Springs Convenience Center
775 Yates Road
Danville, KY 40422

January 13, 2025
Lauren Shackleford, Reviewer

SOURCE ID:	21-021-00081
AGENCY INTEREST:	43827
ACTIVITY:	APE20250001

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SECTION 1 – SOURCE DESCRIPTION

SIC Code and description: 4953, Refuse Systems (solid waste combustors and incinerators)

Single Source Det. ☐ Yes ☒ No If Yes, Affiliated Source AI:

Source-wide Limit ☒ Yes ☐ No If Yes, See Section 4, Table A

28 Source Category ☐ Yes ☒ No If Yes, Category:

County: Boyle
Nonattainment Area ☒ N/A ☐ PM_{10} ☐ $PM_{2.5}$ ☐ CO ☐ NO_X ☐ SO_2 ☐ Ozone ☐ Lead
If yes, list Classification:

PTE* greater than 100 tpy for any criteria air pollutant ☒ Yes ☐ No
If yes, for what pollutant(s)?
☐ PM_{10} ☐ $PM_{2.5}$ ☒ CO ☐ NO_X ☐ SO_2 ☐ VOC

PTE* greater than 250 tpy for any criteria air pollutant ☐ Yes ☒ No
If yes, for what pollutant(s)?
☐ PM_{10} ☐ $PM_{2.5}$ ☐ CO ☐ NO_X ☐ SO_2 ☐ VOC

PTE* greater than 10 tpy for any single hazardous air pollutant (HAP) ☐ Yes ☒ No
If yes, list which pollutant(s):

PTE* greater than 25 tpy for combined HAP ☐ Yes ☒ No

*PTE does not include self-imposed emission limitations.

Description of Facility:
The Alum Springs Convenience Center is a municipal waste collection facility that serves the Boyle County area as a compost dump for the purpose of tree and leaf removal and disposal. The facility accepts wood debris from residents of all incorporated cities and the Public Works Department. Limbs and brush are stacked in place until ready to be placed in the AirBurner. The resulting ash, or biochar, is stored on site and given away to any Boyle County citizen/farmer.

SECTION 2 – CURRENT APPLICATION AND EMISSION SUMMARY FORM

Permit Number: F-26-003 Activity: APE20250001

Application Received: November 5, 2025 Application Complete Date: January 8, 2025

Permit Action: ☒ Initial ☐ Renewal ☐ Significant Rev ☐ Minor Rev ☐ Administrative

Construction/Modification Requested? ☒Yes ☐No

Previous 502(b)(10) or Off-Permit Changes incorporated with this permit action ☐Yes ☒No

Description of Action:
Alum Springs Convenience Center submitted an application for an initial Conditional Major permit for their municipal waste collection facility consisting of EU 01, an air curtain incinerator (ACI), and EU 02, the associated diesel-fired engine, which were already on site and operational at the time of application. The facility elected to limit source-wide CO emissions to 90 tpy, and operating limitations of the ACI are in place to allow the facility to preclude 40 CFR Part 60 Subpart CCCC applicability and operate under a Conditional Major permit.

F-26-003 Emission Summary		
Pollutant	2024 Actual (tpy)	PTE F-26-003 (tpy)
CO	N/A	16.71*
NOx	N/A	8.59
PT	N/A	8.31
PM_{10}	N/A	8.31
$PM_{2.5}$	N/A	7.04
SO_2	N/A	1.39
VOC	N/A	5.87
Lead	N/A	0
Greenhouse Gases (GHGs)		
Carbon Dioxide	N/A	23,518.21
Methane	N/A	8.96
Nitrous Oxide	N/A	1.06
CO_2 Equivalent (CO_2e)	N/A	24,049.48
Hazardous Air Pollutants (HAPs)		
Hydrochloric Acid	N/A	1.092
Combined HAPs:	N/A	2.08

*PTE emissions were calculated using the 35 tons/day operating limit of the ACI. At a charge rate of 13 tons/hr for 8,760 hours per year, the PTE of CO is 148.15 tpy.

SECTION 3 – EMISSIONS, LIMITATIONS AND BASIS

Emission Unit #01 (EP01) Air Curtain Incinerator				
Pollutant	**Emission Limit or Standard**	**Regulatory Basis for Emission Limit or Standard**	**Emission Factor Used and Basis**	**Compliance Method**
CO	Source wide 90 tpy	401 KAR 52:030	2.6 lb/ton (Clerico, B. and Villegas, E. (2017). Air Curtain Incinerator Emissions Factors Determinations. Table 3: Emissions Factors for Air Curtain Incinerator Burning Woody Biomass)	Calculate monthly source-wide CO emissions and add to 12-month rolling total
PM	10% opacity	40 CFR 60.2791(a)(1)	N/A	US EPA Reference Method 9
	0.23 g/dscm corrected to 12% CO_2	401 KAR 59:020, Section 3(2)(a)	1.3 lb/ton (Clerico, B. and Villegas, E. (2017). Air Curtain Incinerator Emissions Factors Determinations. Table 3: Emissions Factors for Air Curtain Incinerator Burning Woody Biomass)	Operate and maintain ACI according to manufacturer's recommendations

Initial Construction Date: August 2025

Process Description:
Burning tree limbs/brush/leaves,
Maximum Charging Rate: 13 tons/hr*
Waste burned: 100% mixture of wood waste, clean lumber, and/or yard waste
Manufacturer: Air Burners Inc
Model: S330

Applicable Regulations:
401 KAR 59:020, *New Incinerators,* applicable to each incinerator commenced on or after June 6, 1979.

401 KAR 60:005, Section 2(2)(cccc) 40 C.F.R. 60.2880 through 60.2977, Tables 1 through 4 **(Subpart EEEE),** *Standards of Performance for Other Solid Waste Incineration Units for Which Construction is Commenced After December 9, 2004, or for Which Modification or Reconstruction is Commenced on or After June 16, 2006,* applicable to a new incineration unit. Air curtain incinerators (ACIs) that burn less than 35 tons per day and burn only (1) 100% wood waste, (2) 100% clean lumber, (3) 100% clean yard waste, or (4) 100% mixture of only wood waste, clean lumber and/or yard waste, collected from the general public and from residential,

Emission Unit #01 (EP01) Air Curtain Incinerator

commercial, institutional, and industrial sources are required to meet only the requirements in 40 CFR 60.2970 through 60.2973 and are exempt from all other requirements of 40 CFR 60, Subpart EEEE. ACIs include both firebox and trench burner units.

State Origin Requirement:
401 KAR 63:020, *Potentially hazardous matter and toxic substances,* applicable to each affected facility which emits or may emit potentially hazardous matter or toxic substances, provided such emissions are not elsewhere subject to the provisions of the administrative regulations of the Division for Air Quality.

Precluded Regulation:
401 KAR 60:005, Section 2(2)(bbbb) 40 C.F.R. 60.2000 through 60.2265, Tables 1 through 8 **(Subpart CCCC),** *Standards of Performance for Commercial and Industrial Solid Waste Incineration Units,* not applicable to incineration units that are subject to 40 CFR 60 Subpart EEEE.

Comments:
*To preclude the requirements of 40 CFR 60 Subpart CCCC & 401 KAR 59:020, Section 3(3), the permittee is subject to an operational limit of 35 tons/day charging rate. This operational limit replaced the hourly design rate in the POC table for EP01.

Emission factors for criteria air pollutants and GHGs for wood burning are primarily sourced from technical reports found on the Air Burners website. In the absence of alternate emission factor sources, emission factors for HAPs are from AP-42 Chapter 1.6 for wood residue combustion.

Stack information for air screen modeling was determined by first finding the equivalent diameter of the firebox using the following equation:

$$D_e = 1.30 * \frac{(a * b)^{0.625}}{(a + b)^{0.25}}$$

Where D_e is the equivalent diameter, a is the length of the firebox, and b is the width of the firebox. The stack height is the height of the firebox.

Stack gas flowrate and temperature were assumed based on the average of test data from "Final Report Describing Particulate and Carbon Monoxide Emissions from the Whitton S-127 Air Curtain Destructor" (pg. 25).

The permittee shall monitor and maintain records of the daily charging rate, hours of operations, and the type and quantity of material burned on a monthly basis.

The permittee shall demonstrate compliance with the 90 tpy source-wide CO emission limit by adhering to the 35 ton/day operating limit for this unit.

<table>
<tr><th colspan="5">Emission Unit #02 (EP02) Diesel-Fired Engine</th></tr>
<tr><th>Pollutant</th><th>Emission Limit or Standard</th><th>Regulatory Basis for Emission Limit or Standard</th><th>Emission Factor Used and Basis</th><th>Compliance Method</th></tr>
<tr><td>PM</td><td>0.03 g/kW-hr</td><td rowspan="3">40 CFR 60.4201(b) referencing 40 CFR 1039.101(b)</td><td>0.02 g/kW-hr (EPA Certification Data)</td><td rowspan="3">Purchasing an EPA tier certified engine</td></tr>
<tr><td>NOx + NMHC</td><td>4.7 g/kW-hr</td><td>4.2 g/kW-hr (EPA Certification Data)</td></tr>
<tr><td rowspan="2">CO</td><td>5.0 g/kW-hr</td><td rowspan="2">0.2 g/kW-hr (EPA Certification Data)</td></tr>
<tr><td>Source wide 90 tpy</td><td>401 KAR 52:030</td><td>Calculate monthly source-wide CO emissions and add to 12-month rolling total</td></tr>
</table>

Initial Construction Date: August 2025

Process Description:
The engine powers the air curtain incinerator fan.
Maximum Engine Power: 74 HP
Manufacturer: HATZ
Model: 4H50TIC

Applicable Regulation:
401 KAR 60:005, Section 2(2)(dddd), 40 C.F.R. 60.4230 through 60.4248, Tables 1 through 4 **(Subpart IIII),** *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines,* applicable to owners and operators of stationary CI ICE that commence construction after July 11, 2005, where the stationary CI ICE are manufactured after April 1, 2006, and are not fire pump engines.

401 KAR 63:002, Section 2(4)(eeee), 40 C.F.R. 63.6580 through 63.6675, Tables 1a through 8, and Appendix A **(Subpart ZZZZ),** *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*, applicable to stationary RICE at a major or area source of HAP emissions.

Comments:
Emission factors for CO, NO_X, PM, and CO_2 were sourced from EPA certification data for engine family SHZXL02.0V50. Other GHG emission factors were sourced from Table C-2 of 40 CFR Part 90. In the absence of alternate emission factor sources, remaining emission factors are from AP-42 Chapter 3.3 for diesel industrial engines.

The permittee shall monitor and maintain records of fuel usage (in gallons) on a monthly basis.

SECTION 3 – EMISSIONS, LIMITATIONS AND BASIS (CONTINUED)

Testing Requirements\Results

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
EU 01	None	Opacity	40 CFR 60.2971(a)	Initial & annual	EPA Method 9	10%	TBD	TBD	TBD	TBD

Footnotes:

SECTION 4 – SOURCE INFORMATION AND REQUIREMENTS

Table A - Group Requirements:

Emission and Operating Limit	Regulation	Emission Unit
90 tpy of CO emissions	To preclude **401 KAR 52:020,** *Title V permits*	Source-wide

Table B - Summary of Applicable Regulations:

Applicable Regulations	Emission Unit
401 KAR 59:020, *New incinerators*	EU 01
401 KAR 63:020, *Potentially hazardous matter or toxic substances*	EU 01
401 KAR 60:005, Section 2(2)(cccc), 40 C.F.R. 60.2880 through 60.2977, Tables 1 through 4 (**Subpart EEEE**), *Standards of Performance for Other Solid Waste Incineration Units for Which Construction is Commenced After December 9, 2004, or for Which Modification or Reconstruction is Commenced on or After June 16, 2006*	EU 01
401 KAR 60:005, Section 2(2)(dddd), 40 CFR 60.4200 through 60.4219, Tables 1 through 8 (**Subpart IIII**), *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines*	EU 02
401 KAR 63:002, Section 2(4)(eeee), 40 C.F.R. 63.6580 through 63.6675, Tables 1a through 8, and Appendix A (**Subpart ZZZZ**) *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*	EU 02

Table C - Summary of Precluded Regulations:

Applicable Regulations	Emission Unit
401 KAR 60:005, Section 2(2)(bbbb), 40 C.F.R. 60.2000 through 60.2265, Tables 1 through 8 (**Subpart CCCC**), *Standards of Performance for Commercial and Industrial Solid Waste Incineration Units*	EU 01

Table D - Summary of Non-Applicable Regulations:

N/A

SECTION 4 – SOURCE INFORMATION AND REQUIREMENTS (CONTINUED)

Air Toxic Analysis

401 KAR 63:020, *Potentially Hazardous Matter or Toxic Substances*
The Division for Air Quality (Division) has performed modeling using SCREEN View on January 8, 2026 of potentially hazardous matter or toxic substances that may be emitted by the facility based upon the process rates, material formulations, stack heights and other pertinent information provided by the applicant. Based upon this information, the Division has determined that the conditions outlined in this permit will assure compliance with the requirements of 401 KAR 63:020.

Single Source Determination

N/A

SECTION 5 – PERMITTING HISTORY

N/A

SECTION 6 – PERMIT APPLICATION HISTORY

N/A

APPENDIX A – ABBREVIATIONS AND ACRONYMS

AAQS – Ambient Air Quality Standards
ACI – Air Curtain Incinerator
BACT – Best Available Control Technology
Btu – British thermal unit
CAM – Compliance Assurance Monitoring
CO – Carbon Monoxide
Division – Kentucky Division for Air Quality
dscm – Dry Standard Cubic Meter
ESP – Electrostatic Precipitator
GHG – Greenhouse Gas
HAP – Hazardous Air Pollutant
HF – Hydrogen Fluoride (Gaseous)
MSDS – Material Safety Data Sheets
mmHg – Millimeter of mercury column height
NAAQS – National Ambient Air Quality Standards
NESHAP – National Emissions Standards for Hazardous Air Pollutants
NO_x – Nitrogen Oxides
NSR – New Source Review
PM – Particulate Matter
PM_{10} – Particulate Matter equal to or smaller than 10 micrometers
$PM_{2.5}$ – Particulate Matter equal to or smaller than 2.5 micrometers
PSD – Prevention of Significant Deterioration
PTE – Potential to Emit
SO_2 – Sulfur Dioxide
TF – Total Fluoride (Particulate & Gaseous)
VOC – Volatile Organic Compounds