

**Louisville Metro Air Pollution Control District**  
**701 West Ormsby Ave. Suite 303, Louisville, Kentucky 40203-3137**  
**XX XXXX**

**Federally Enforceable District Origin Operating Permit**  
**Statement of Basis**

**Company:** Universal Minerals Kentucky, Inc.

**Plant Location:** 8250 Port Road, Louisville, Kentucky 40258

**Date Application Received:** 31 July 2006  
11 July 2013  
28 February 2015  
21 May 2015

**Date of Draft Permit:** 07 May 2016

**District Engineer:** Elise Venard

**Permit No:** O-0465-16-F

**Plant ID:** 0465

**SIC Code:** 3295

**NAICS:** 212390

**Introduction:**

This permit will be issued pursuant to District Regulation 2.17- *Federally Enforceable District Origin Operating Permits*. Its purpose is to limit the plant wide potential emission rates from this source to below major source threshold levels and to provide methods of determining continued compliance with all applicable requirements.

Jefferson County is classified as an attainment area for lead (Pb), nitrogen dioxide (NO<sub>2</sub>), carbon monoxide (CO), 1 hr and 8 hr ozone (O<sub>3</sub>), and particulate matter less than 10 microns (PM<sub>10</sub>); and is a non-attainment area for the 1997 standard for particulate matter less than 2.5 microns (PM<sub>2.5</sub>), unclassifiable for the 2012 standard for particulate matter less than 2.5 microns (PM<sub>2.5</sub>) and partial non-attainment area for sulfur dioxide (SO<sub>2</sub>).

**Application Type/Permit Activity:**

- Initial Issuance
- Permit Revision
  - Administrative
  - Minor
  - Significant
- Permit Renewal

**Compliance Summary:**

- Compliance certification signed
- Source is out of compliance
- Compliance schedule included
- Source is operating in compliance

**I. Source Information**

1. **Product Description:** Universal Minerals Kentucky, Inc. is a metallic aggregate processing facility catering to both commercial and industrial clients.
2. **Process Description:** Material is brought into the site from area sources, separated, and processed into reusable materials.
3. **Site Determination:** There are no other facilities that are contiguous or adjacent to this facility
4. **Emission Unit Summary:**

Emission Unit	Equipment Description
Plant-wide	Plant-wide requirements
U1	Processing/Production Equipment: 4 screens with electric motors, 1 crusher, 1 dryer, aggregate stockyard, 1 bucket elevator with surge bin, 3 bucket elevators, 1 load-out station, 2 baggers, and 10 conveyors/stackers
U2	Equipment with C-I Engines: 1 aggregate sorting screen with diesel motor

5. **Fugitive Sources:** There are fugitive PM emissions from the processing of metallic minerals.
6. **Permit Revisions:**

Revision No.	Permit No.	Issue Date	Public Notice Date	Change Type	Change Scope	Description
Initial	0080-01-F	11/05/2001	6/03/2001	Initial	Entire Permit	Initial Permit Issuance
NA	O-0465-16-F	TBA	5/7/2016	Renewal	Entire Permit	Permit renewal to include the incorporation of construction permits and STAR exempt status

**7. Construction Permit History:**

Permit No.	Issue Date	Description
442-07-C	8/31/2008	Construction permit for load-out station
TBD	TBD	Powerscreen Chieftain aggregate sorting screen (200 tph) with diesel engine (66.2 hp)

**8. Emission Summary:**

Pollutant	District Calculated Emissions (ton/year) 2009	Pollutant that triggered Major Source Status (based on 2015 PTE)
CO	0.0487	No
NO <sub>x</sub>	0.0579	No
SO <sub>2</sub>	0.0003	No
PM <sub>10</sub>	0.298	Yes
VOC	0.0032	No
Total HAPs	0.0011	No
Single HAP	0.000	No

**9. Applicable Requirements:**

PSD       40 CFR 60       SIP       40 CFR 63  
 NSR       40 CFR 61       District-Origin       Other

**10. MACT Requirements:** The source has no future MACT requirements.

**11. Referenced Federal Regulations in Permit:** 40 CFR Part 63, Subpart ZZZZ – National Emission Standard for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines.

**II. Regulatory Analysis**

**1. Acid Rain Requirements:** Universal Minerals Kentucky, Inc. is not subject to the Acid Rain Program.

**2. Stratospheric Ozone Protection Requirements:** Title VI of the CAAA regulates ozone depleting substances and requires a phase-out of their use. This

rule applies to any facility that manufactures, sells, distributes, or otherwise uses any of the listed chemicals. Universal Minerals Kentucky, Inc. does not manufacture, sell, or distribute any of the listed chemicals. The source's use of listed chemicals is that in fire extinguishers, chillers, air conditioners and other HVAC equipment.

3. **Prevention of Accidental Releases 112(r):** Universal Minerals Kentucky, Inc. does not manufacture, process, use, store, or otherwise handle one or more of the regulated substances listed in 40 CFR Part 68, Subpart F, and District Regulation 5.15, *Chemical Accident Prevention Provisions*, in a quantity in excess of the corresponding specified threshold amount.
4. **40 CFR Part 64 Applicability Determination:** Universal Minerals Kentucky, Inc. is not subject to 40 CFR Part 64 - *Compliance Assurance Monitoring for Major Stationary Sources*.
5. **Basis of Regulation Applicability**

- a. **Plant-wide**

Universal Minerals Kentucky, Inc. is a potential major source for the pollutant PM<sub>10</sub>. Regulation 2.17 – *Federally Enforceable District Origin Operating Permits* establishes requirements to limit the plant wide potential emission rates to below major source threshold levels and to provide methods of determining continued compliance with all applicable requirements. The source requested limits of the criteria pollutant PM<sub>10</sub> < 25 tn/yr, to be a FEDOOP STAR Exempt source as defined by Regulation 5.00, section 1.13.5. The source is not major for Greenhouse Gases.

Regulation 2.17, section 5.2, requires monitoring and record keeping to assure ongoing compliance with the terms and conditions of the permit. The owner or operator shall maintain all the required records for a minimum of 5 years and make the records readily available to the District upon request.

Regulation 2.17, section 5.2, requires performance testing on emission control units to assure ongoing compliance with the terms and conditions of the permit. The owner or operator shall maintain all the required records for a minimum of 5 years and make the records readily available to the District upon request.

Regulation 2.17, section 7.2, requires stationary sources for which a FEDOOP is issued shall submit an Annual Compliance Certification by April 15 of the following calendar year. In addition, as required by Regulation 2.17, section 5.2, the source shall submit an Annual Compliance Report to show compliance with the permit, by March 1 of the following

calendar year. Compliance reports and compliance certifications shall be signed by a responsible official and shall include a certification statement per Regulation 2.17, section 3.5.

**b. Emission Unit U1 – Production/Processing Equipment**

**i. Equipment:**

P/PE	Capacity	Install Date	Applicable Regulation	Basis for Applicability
Dryer 1: Rotary aggregate dryer with Hauck burner, natural gas engine	50 tph / 12.0 MMBtu/hr	1996	2.17, 7.08	Regulation 2.17 applies to any stationary source, or one or more processes or process equipment at a stationary source, for which the owner or operator voluntarily applies for a federally enforceable District origin operating permit. The District shall establish requirements and specific conditions that limit source PTE to below Title V standards.  Regulation 7.08 establishes the requirements for PM emissions from new processes that commence construction after September 1, 1976.
Elevator 1 w/ surge bin: Bucket elevator 1, electric motor, surge bin	150 tph	1996		

**ii. Equipment with PTE less than 5 tpy Criteria Pollutants and HAPs less than 1000 lb/yr:**

Emission Point	Description	PTE (tpy)	Applicable Regulation
Screen 1	Derrick Manufacturing, 3'x10', double deck, vibrating screen, electric motor (75 tph)	PM <sub>10</sub> =2.86 PM=8.21	2.17, 7.08
Screen 2	Derrick Manufacturing, 3'x10', double deck, vibrating screen, electric motor (75 tph)	PM <sub>10</sub> =2.86 PM=8.21	2.17, 7.08
Screen 3	Derrick Manufacturing, 3'x10', double deck, vibrating screen, electric motor. (20 tph)	PM <sub>10</sub> =0.76 PM=2.19	2.17, 7.08
Screen 4	SWECO 4-ft diameter circular screen with electric motor. (25 tph)	PM <sub>10</sub> =0.95 PM=2.74	2.17, 7.08
Crusher 1	Barmac, model 6900 Duopactor, vertical impact crusher, electric motor. (100 tph)	PM <sub>10</sub> =1.05 PM=2.37	2.17, 7.08

<b>Emission Point</b>	<b>Description</b>	<b>PTE (tpy)</b>	<b>Applicable Regulation</b>
Aggregate Stockyard	Aggregate storage pile (50 tph)	PM <sub>10</sub> =4.40 PM=8.80	2.17, 7.08
Elevator 2	Bucket Elevator with electric motor (30 tph)	PM <sub>10</sub> =1.14 PM=3.29	2.17, 7.08
Elevator 3	Bucket Elevator with electric motor (20 tph)	PM <sub>10</sub> =0.76 PM=2.19	2.17, 7.08
Elevator 4	Bucket Elevator with electric motor (25 tph)	PM <sub>10</sub> =0.95 PM=2.74	2.17, 7.08
Load-out Station	Truck load-out station (25 tph)	PM <sub>10</sub> =0 PM=0	2.17, 7.08
Bagger (1 & 2)	MHE/Choice Packaging, plug stack, air packer, bagging machine, electric motor (12 tph)	PM <sub>10</sub> =0 PM=0	2.17, 7.08
Conveyor/s tacker (1 & 9)	Conveyor/Stacker with electric motor (50 tph)	PM <sub>10</sub> =0.24 PM=0.66	2.17, 7.08
Conveyor/s tacker (2, 3, &4)	Conveyor/Stacker with electric motor (100 tph)	PM <sub>10</sub> =0.48 PM=1.31	2.17, 7.08
Conveyor/s tacker (5 & 7)	Conveyor/Stacker with electric motor (30 tph)	PM <sub>10</sub> =0.14 PM=0.39	2.17, 7.08
Conveyor/s tacker (6 & 8)	Conveyor/Stacker with electric motor (20 tph)	PM <sub>10</sub> =0.10 PM=0.26	2.17, 7.08
Conveyor/s tacker 10	Conveyor/Stacker with electric motor (25 tph)	PM <sub>10</sub> =0.12 PM=0.33	2.17, 7.08

### iii. Standards/Operating Limits

#### 1) PM/PM<sub>10</sub>

- (a) The emission standard for PM at each emission point with a process throughput greater than 30 tn/hr is determined in accordance with Regulation 7.08, section 3.1.2 as follows:

$$\text{PM lb/hr limit} = 17.31 (\text{process weight tn/hr})^{0.16} .$$

- (b) The District has determined that the equipment (Screen 1, Screen 2, Screen 3, Screen 4, Crusher 1, Aggregate Stockyard, Elevator 1 through Elevator 4, Load-out Station, Bagger 1, Bagger 2, and Conveyors 1 through 10) in this unit cannot exceed

the Regulation 7.08 hourly PM limits uncontrolled.

- (c) To meet the Regulation 7.08 lb/hr PM emission standard for Dryer 1, the Pulse jet dust collector (C-2) must be in operation at all times the Rotary aggregate dryer is in operation.

- (i) The stack test performed on March 14, 1996 demonstrated that the source was in compliance with the PM emission standard. The highest PM concentration from the stack test was  $2.7 \times 10^{-6}$  lb/cf and the lowest was  $2.26 \times 10^{-6}$  lb/cf for an average PM concentration for all test runs of  $2.5 \times 10^{-6}$  lb/cf. This equates to 1.487 lb/hr controlled.

- (d) The emission standard for PM at each emission point with a process throughput of less than 30 tn/hr is determined in accordance with Regulation 7.08, section 3.1.2 as follows:

$$\text{PM lb/hr limit} = 3.59 (\text{process weight tn/hr})^{0.62}$$

2) **Opacity**

- (a) Regulation 7.08, section 3.1.1 establishes an opacity standard of less than 20%, for processes that commenced construction after September 1, 1976.

c. **Emission Unit U2 – Equipment with C-I Engines**

i. **Equipment:**

P/PE	Capacity	Install Date	Applicable Regulation	Basis for Applicability
Screen 5(a): Powerscreen Chieftain aggregate sorting screen with diesel engine	200 tph	2012	2.17, 7.08	Regulation 2.17 applies to any stationary source, or one or more processes or process equipment at a stationary source, for which the owner or operator voluntarily applies for a federally enforceable District origin operating permit.
Screen5(b): Diesel engine for Powerscreen Chieftain aggregate sorting screen	66.2 hp	1984	2.17, 40 CFR Part 63, Subpart ZZZZ	<p>The District shall establish requirements and specific conditions that limit source PTE to below Title V standards.</p> <p>Regulation 7.08 establishes the requirements for PM emissions from new processes that commence construction after September 1, 1976.</p> <p>Federal Regulation 40 CFR Part 63, Subpart ZZZZ applies to existing, new, and reconstructed stationary internal combustion engines operating at major and area sources of HAP.</p>

ii. **Standards/Operating Limits**

1) **HAP**

- (a) Regulation 40 CFR Part 63, Subpart ZZZZ establishes emission standards to existing, new, and reconstructed stationary internal combustion engines.

2) **PM/PM<sub>10</sub>**

- (a) The emission standard for PM at each emission point with a process throughput of greater than 30 tn/hr is determined in accordance with Regulation 7.08, section 3.1.2 as follows:

$$PM \text{ lb/hr limit} = 17.31 (\text{process weight tn/hr})^{0.16} .$$

- (b) Calculations for uncontrolled potential to emit for

screen 5(a) has demonstrated that the equipment cannot exceed the Regulation 7.08 lb/hr standard, therefore no monitoring or record keeping are required.

3) **Opacity**

- (a) Regulation 7.08, section 3.1.1 establishes an opacity standard of less than 20%, for processes that commenced construction after September 1, 1976.

iii. **Monitoring and Recordkeeping**

1) **HAP**

- (a) Regulation 40 CFR Part 63, Subpart ZZZZ establishes the monitoring and record keeping requirements for stationary reciprocating internal combustion engines.

iv. **Reporting**

1) **HAP**

- (a) Regulation 40 CFR Part 63, Subpart ZZZZ establishes the reporting requirements for stationary reciprocating internal combustion engines.

**III. Other Requirements**

1. **Temporary Sources:** None
2. **Short Term Activities:** None
3. **Emissions Trading:** N/A
4. **Operational Flexibility:** None
5. **Compliance History:**

<b>Incid. #</b>	<b>Date</b>	<b>Regulation Violated</b>	<b>Settlement</b>
06751	4/15/15	Regulation 2.17, section 07, subsection 02 failure to submit annual certification	Settled

**6. Calculation Methodology or Other Approved Method:**

**a. PM<sub>10</sub>**

- i. The PM<sub>10</sub> emissions shall be calculated based on the material throughput and emission factors from (or derived from) AP-42, Chapter 11 Section 11.19.2-2 Emission Factors for Crushed Stone Processing Operations; Section 11.24-2 Emission Factors for Metallic Minerals Processing; and Chapter 13 Section 13.2.2 Unpaved Roads and Section 13.2.4 Aggregate Handling and Storage Piles, unless another method is approved in writing by the District.

Emission Source	Uncontrolled PM <sub>10</sub> Emission Factor	Controlled PM <sub>10</sub> Emission Factor
Tertiary Crushing	0.0024	0.00054
Screening	0.0087	0.00074
Conveyor Transfer Point*	0.00110	4.6x10 <sup>-5</sup>
Drying – all minerals except titanium/zirconium sands	12	0.6
Aggregate Stockyard †	0.15	NA

\* Use this emission factor for conveyors, feeder/hoppers, bucket elevators, bagging and truck load-out

† This emission factor includes pile loading, pile unloading, haul road transport, and wind action on a sitting storage pile.

Using the above Emission Factors calculating the tons per month PM<sub>10</sub> emissions for crushing, screening, conveyor transfer points and aggregate storage and handling is as follows:

$$E_{PM10} = (X)(EF \text{ lb/ton})(1 \text{ ton}/2000 \text{ lb.})$$

Where: E<sub>PM10</sub> = PM<sub>10</sub> emissions (tons) during a month

X = the amount of material throughput (tons) processed by the unit during a month

- ii. The PM<sub>10</sub> emissions shall be calculated from the diesel engine powering the Powerscreen Chieftain utilizing diesel fuel throughput, AP-42, table 3.3-1, Emission Factors for Uncontrolled Gasoline and Diesel Industrial Engines (diesel engines less than or equal to 600-hp), and the formula shown below, unless another method is approved in writing by the District:

$$E_{PM} = (0.31 \text{ lb. PM}_{10}/\text{MMBtu}) (0.139 \text{ MMBtu}/\text{gal}) (X) (1 \text{ ton}/2000 \text{ lb.})$$

Where: E<sub>PM</sub> = PM<sub>10</sub> emissions (tons) during a consecutive 12-month

period

X = the amount of diesel fuel (gallons) combusted, in the cranking engine, during a consecutive 12-month period

- iii. Since the emissions are minor the owner or operator may use the potential PM<sub>10</sub> emissions as the monthly emissions, when totaling the plant-wide emissions. District calculated PM<sub>10</sub> PTE for the heaters is 0.017 pounds per month.

**b. PM**

- i. For the emission point Dryer 1: The bypass event PM emissions can be calculated based on the material throughput, duration of event, and emission factors from AP-42, Chapter 11 Section 11.24-2 Emission Factors for Metallic Minerals Processing shown below unless another method is approved in writing by the District:

Emission Source	Uncontrolled PM Emission Factor (lb/ton)	E.F. Rating
Drying (uncontrolled) (SCC 3-03-024-11)	19.7	C

Equation 1:  $E_{PM} = (X)(EF \text{ lb/ton})$

Where:  $E_{PM}$  = uncontrolled PM emissions (pounds) during a bypass event

X = the amount of material throughput (tons) processed by the unit during a bypass event

**7. Insignificant Activities**

Emission Process	Equipment Description	Quantity	PTE (tpy) each	Regulation Basis
Screen	Derrick Manufacturing, 3'x10', double deck, vibrating screen, electric motor. (75 tph)	2	PM <sub>10</sub> =2.86 PM=8.21	Regulation 1.02
Screen	Derrick Manufacturing, 3'x10', double deck, vibrating screen, electric motor. (20 tph)	1	PM <sub>10</sub> =0.76 PM=2.19	Regulation 1.02
Screen	SWECO 4-ft diameter circular screen with electric motor. (25 tph)	1	PM <sub>10</sub> =0.95 PM=2.74	Regulation 1.02
Crusher	Barmac, model 6900 Duopactor, vertical impact crusher, electric motor. (100 tph)	1	PM <sub>10</sub> =1.05 PM=2.37	Regulation 1.02

Emission Process	Equipment Description	Quantity	PTE (tpy) each	Regulation Basis
Aggregate Stockyard	Aggregate storage pile (50 tph)	1	PM <sub>10</sub> =4.40 PM=8.80	Regulation 1.02
Elevator	Bucket Elevator with electric motor (30 tph)	1	PM <sub>10</sub> =1.14 PM=3.29	Regulation 1.02
Elevator	Bucket Elevator with electric motor (20 tph)	1	PM <sub>10</sub> =0.76 PM=2.19	Regulation 1.02
Elevator	Bucket Elevator with electric motor (25 tph)	1	PM <sub>10</sub> =0.95 PM=2.74	Regulation 1.02
Load-out Station	Truck load-out station (25 tph)	1	PM <sub>10</sub> =0 PM=0	Regulation 1.02
Conveyor/stacker	Conveyor/Stacker with electric motor (50 tph)	2	PM <sub>10</sub> =0.24 PM=0.66	Regulation 1.02
Conveyor/stacker	Conveyor/Stacker with electric motor (100 tph)	3	PM <sub>10</sub> =0.48 PM=1.31	Regulation 1.02
Conveyor/stacker	Conveyor/Stacker with electric motor (30 tph)	2	PM <sub>10</sub> =0.14 PM=0.39	Regulation 1.02
Conveyor/stacker	Conveyor/Stacker with electric motor (20 tph)	1	PM <sub>10</sub> =0.10 PM=0.26	Regulation 1.02
Conveyor/stacker	Conveyor/Stacker with electric motor (10 tph)	1	PM <sub>10</sub> =0.05 PM=0.13	Regulation 1.02
Conveyor/stacker	Conveyor/Stacker with electric motor (25 tph)	1	PM <sub>10</sub> =0.12 PM=0.33	Regulation 1.02
Storage tank	Storage tank < 250 gallons	1	VOC=0.01	Regulation 1.02, Appendix A
Heaters	Area heaters, natural gas, direct fire, < 10 MMBtu	2	NO <sub>x</sub> =1.61 PM <sub>10</sub> =0.0003	Regulation 1.02

- 1) Insignificant activities identified in District Regulation 1.02, Appendix A, may be subject to size or production rate disclosure requirements.
- 2) Insignificant activities identified in District Regulation 1.02, Appendix A shall comply with generally applicable requirements.
- 3) The owner or operator shall annually submit an updated list of insignificant activities that occurred during the preceding year, with the compliance certification due April 15<sup>th</sup>.
- 4) Emissions from Insignificant Activities shall be reported in conjunction with the reporting of annual emissions of the facility as required by the District.
- 5) The owner or operator may elect to monitor actual throughputs for each of the insignificant activities and calculate actual annual emissions, or use Potential to Emit (PTE) as the annual emissions for each piece of equipment.

- 6) The District has determined that no monitoring, record keeping, or reporting requirements apply to the insignificant activities listed, except for the equipment that has an applicable regulation and permitted under an insignificant activity (IA) unit.
- 7) There are two MHE/Choice Packaging, plug stack, air packer, bagging machine, electric motor (12 tph) on site that do not emit any regulated air pollutants.