

MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

MISSOURI AIR CONSERVATION COMMISSION

PERMIT TO CONSTRUCT

Under the authority of RSMo 643 and the Federal Clean Air Act the applicant is authorized to construct the air contaminant source(s) described below, in accordance with the laws, rules and conditions as set forth herein.

Permit Number: 022018-004

Project Number: 2013-02-064
Installation ID: 221-0041

Parent Company: K&D Crushing, Inc.

Parent Company Address: 15343 East State Highway 8, Mineral Point, MO 63660

Installation Name: K&D Crushing, Inc. 29 Mine Area - Viburnum Mine

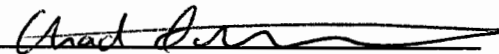
Installation Address: 10774 Wells Rd, Steelville, MO 65565

Location Information: Washington County, S7 T35N R1W

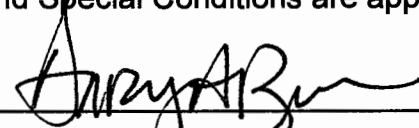
Application for Authority to Construct was made for:
Increase daily production limit and update emission factors. This review was conducted in accordance with Section (6), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*.

Standard Conditions (on reverse) are applicable to this permit.

Standard Conditions (on reverse) and Special Conditions are applicable to this permit.



Prepared by
Chad Stephenson
New Source Review Unit



Director or Designee
Department of Natural Resources

FEB 20 2018

Effective Date

STANDARD CONDITIONS:

Permission to construct may be revoked if you fail to begin construction or modification within two years from the effective date of this permit. Permittee should notify the Enforcement and Compliance Section of the Air Pollution Control Program if construction or modification is not started within two years after the effective date of this permit, or if construction or modification is suspended for one year or more.

You will be in violation of 10 CSR 10-6.060 if you fail to adhere to the specifications and conditions listed in your application, this permit and the project review. In the event that there is a discrepancy between the permit application and this permit, the conditions of this permit shall take precedence. Specifically, all air contaminant control devices shall be operated and maintained as specified in the application, associated plans and specifications.

You must notify the Enforcement and Compliance Section of the Department's Air Pollution Control Program of the anticipated date of start up of this (these) air contaminant source(s). The information must be made available within 30 days of actual startup. Also, you must notify the Department's regional office responsible for the area within which you are located within 15 days after the actual start up of this (these) air contaminant source(s).

A copy of the permit application and this permit and permit review shall be kept at the installation address and shall be made available to Department's personnel upon request.

You may appeal this permit or any of the listed special conditions to the Administrative Hearing Commission (AHC), P.O. Box 1557, Jefferson City, MO 65102, as provided in RSMo 643.075.6 and 621.250.3. If you choose to appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed. If it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC.

If you choose not to appeal, this certificate, the project review and your application and associated correspondence constitutes your permit to construct. The permit allows you to construct and operate your air contaminant source(s), but in no way relieves you of your obligation to comply with all applicable provisions of the Missouri Air Conservation Law, regulations of the Missouri Department of Natural Resources and other applicable federal, state and local laws and ordinances.

The Air Pollution Control Program invites your questions regarding this air pollution permit. Please contact the Construction Permit Unit using the contact information below.

Contact Information:

Missouri Department of Natural Resources
Air Pollution Control Program
P.O. Box 176
Jefferson City, MO 65102-0176
(573) 751-4817

The regional office information can be found at the following website:

<http://dnr.mo.gov/regions/>

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

The special conditions listed in this permit were included based on the authority granted the Missouri Air Pollution Control Program by the Missouri Air Conservation Law (specifically 643.075) and by the Missouri Rules listed in Title 10, Division 10 of the Code of State Regulations (specifically 10 CSR 10-6.060). For specific details regarding conditions, see 10 CSR 10-6.060 paragraph (12)(A)10. "Conditions required by permitting authority."

1. **Superseding Condition**
The conditions of this permit supersede all special conditions found in the previously issued construction permit 112003-010A from the Air Pollution Control Program.
2. **Best Management Practices Requirement**
K&D Crushing, Inc. 29 Mine Area - Viburnum Mine shall control fugitive emissions from all of the haul roads and vehicular activity areas at this site by performing BMPs as defined in Attachment AA.
3. **Daily Production and Loading Limitation**
 - A. K&D Crushing, Inc. 29 Mine Area - Viburnum Mine shall limit the amount of processed and loaded ore to 2,500 tons of material per 24-hour rolling period from the equipment listed in Table 1.
 - B. K&D Crushing, Inc. 29 Mine Area - Viburnum Mine shall demonstrate compliance with Special Condition 3.A using Attachment A or other equivalent forms that have been approved by the Air Pollution Control Program, including electronic forms.

Table 1: K&D Crushing, Inc. 29 Mine Area - Viburnum Mine Emission Points

Emission Points	Description	MHDR
EP-01	Crusher-Primary	220 tph
EP-02	Conveyor	220 tph
EP-03	Haul Road -Paved	5280 feet long 29.33 VMT/hr
EP-04A	Storage Pile – Load In	220 tph – Accounted for as EP-05 Stacker
EP-04B	Storage Pile – Load Out	220 tph
EP-04C	Storage Pile – Vehicular Activity Paved	50 feet long 0.37 VMT/hr
EP-04D	Storage Pile – Wind Erosion	0.15 acres
EP-05	Stacker	220 tph

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

4. **Moisture Content Testing Requirement**
 - A. K&D Crushing, Inc. 29 Mine Area - Viburnum Mine shall verify that the moisture content of the processed rock is greater than or equal to 1.5 percent by weight.
 - B. Testing shall be conducted according to the method prescribed by the American Society for Testing Materials (ASTM) D-2216, C-566 or another method approved by the Director.
 - C. The initial test shall be conducted no later than 45 days after the start of operation. A second test shall be performed the calendar year following the initial test during the months of July or August.
 - D. Test samples shall be obtained before processing (before entering the Primary Crusher, EP01) and after processing (prior to load-in to bins and/or storage piles). During the sample processing run only, any spray devices shall be turned off during the processing from which test samples are obtained.
 - E. The written analytical report shall include the raw data and moisture content of each sample, the test date and the original signature of the individual performing the test. The report shall be filed on-site or at the K&D Crushing, Inc. 29 Mine Area - Viburnum Mine main office within 30 days of completion of the required test.
 - F. If the moisture content of either of the two tests is less than the moisture content in Special Condition 4.A, another test may be performed within 15 days of the noncompliant test. If the results of that test is less than the moisture content in Special Condition 4.A, K&D Crushing, Inc. 29 Mine Area - Viburnum Mine shall either:
 - 1) Apply for a new permit to account for the revised information, or
 - 2) Submit a plan for the installation of wet spray devices to the Compliance/Enforcement Section of the Air Pollution Control Program within 10 days of the second noncompliant test. Plans may be sent by mail to P.O. Box 176, Jefferson City, MO 65102 or by email at aircompliancereporting@dnr.mo.gov. The wet spray devices shall be installed and operational within 40 days of the second noncompliant test.
5. **Minimum Distance to Property Boundary Requirement**

The primary emission point (storage piles EP-04) shall be located at least 1,548 feet from the nearest property boundary.
6. **Record Keeping Requirement**

K&D Crushing, Inc. 29 Mine Area - Viburnum Mine shall maintain all records required by

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

this permit for not less than five years and make them available to any Missouri Department of Natural Resources' personnel upon request.

7. **Reporting Requirement**
K&D Crushing, Inc. 29 Mine Area - Viburnum Mine shall report to the Air Pollution Control Program, Compliance / Enforcement Section by mail to P.O. Box 176, Jefferson City, MO 65102 or by email at AirComplianceReporting@dnr.mo.gov, no later than 10 days after any exceedances of the limitations imposed by this permit.
8. **Modification to Release Parameters Requirement**
K&D Crushing, Inc. 29 Mine Area - Viburnum Mine shall notify the Air Pollution Control Program prior to making any modifications to the facility that impact the release parameters and/or emission rates listed in Table 2. In the event the Air Pollution Control Program determines the changes are significant, K&D Crushing, Inc. 29 Mine Area - Viburnum Mine shall submit an updated AAQIA indicating compliance with the lead RALs prior to making the changes.

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

Table 2: Modeling Release Parameters and Emission Rates

Emission Point	Description	Lead Emissions (lbs/hr)	Release Height (m)	Initial Lateral Dispersion (m)	Initial Vertical Dispersion (m)	Initial Vertical Dimension (m)
EP-01	Crusher	1.39E-03	1.27	0.57	0.57	N/A
EP-02	Conveyor	9.93E-05	2.13	0.21	0.14	N/A
EP-03	Haul Road	3.26E-03	2.55 (area height)	10 (area source short side)	100 (area source long side)	2.37
EP-04a ¹	Storage Pile Load In	N/A	N/A	N/A	N/A	N/A
EP-04b	Storage Pile Load Out	3.30E-02	3.05	0.57	0.28	N/A
EP-04c	Storage Pile Vehicular Activity	4.20E-05	2.55 (area height)	10 (area source short side)	100 (area source long side)	2.37
EP-04d	Storage Pile Wind Erosion	5.35E-04	7.62 (area height)	24.64 (area source long side)	24.64 (area source short side)	N/A
EP-05	Stacker	9.93E-05	2.74	0.21	0.43	N/A

¹EP-04a emissions are accounted for with the stacker EP-05 emissions

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE
SECTION (6) REVIEW

Project Number: 2013-02-064

Installation ID Number: 221-0041

Permit Number: 022018-004

K&D Crushing, Inc. 29 Mine Area - Viburnum Mine: Complete: December 20, 2017
10774 Wells Rd
Steelville, MO 65565

Parent Company:
K&D Crushing, Inc.
15343 East State Highway 8
Mineral Point, MO 63660

Washington County, S7 T35N R1W

PROJECT DESCRIPTION

K&D crushing owns and operates crushing plants located at lead mines owned by Doe Run. This project applies to the 29 Mine Area. The purpose of this project is to increase the installation's daily ore production limit from 368 tons per day (production and loading) established in permit 112003-010A to 2,500 tons per day. The production limit of 368 tons per day was set based on overestimated emissions using emission factors from AP-42 and an incorrect application of the Risk Assessment Level (RAL) for lead. The original production limits were set based off an annual RAL of $0.07 \mu\text{g}/\text{m}^3$; however they should have been set based of 10 times the annual RAL. This project does not involve any new equipment.

The facility is located approximately four miles northeast of Viburnum, MO in southwest Washington County. The facility is approximately 90 miles southwest of St. Louis and 125 miles east of Springfield.

K&D Crushing described this site as being Mine #29, owned by The Doe Run Company. It is considered part of the Viburnum Quarry. K&D Crushing's application states that no other air pollution source/installation will operate at this site other than the hoisting operation that will take rock from an underground mine and drop it directly into K&D Crushing's primary crusher. The Southeast Regional Office and the Permits Section of the Air Pollution Control Program agreed in permit 112003-010A that emissions from this underground operation are negligible, making this a solitary operation.

The applicant is using one of the methods described in Attachment AA, "Best Management Practices," to control emissions from haul roads and vehicular activity areas. Moisture content testing is required to verify that the moisture content of the

processed rock is greater than or equal to 1.5 percent by weight. Ambient air quality modeling was performed to determine the ambient impact of lead. PM₁₀ and PM_{2.5} modeling was not required as emissions are below de minimis levels when accounting for the 2,500 tons per day production limit.

This installation is located in Washington County, an attainment/unclassifiable area for all criteria pollutants.

This installation is not on the List of Named Installations [10 CSR 10-6.020(3)(B), Table 2].

TABLES

The following permits have been issued to K&D Crushing, Inc. 29 Mine Area - Viburnum Mine from the Air Pollution Control Program.

Table 3: Permit History

Permit Number	Description
112003-010A	Portable crushing plant relocation to 29 Mine Area

The table below summarizes the emissions of this project. The existing actual emissions were taken from the previous year's EIQ. The potential emissions of the application represent the emissions of all equipment and activities assuming continuous operation (8,760 hours per year). Conditioned potential emissions account for a processing and loading limit of 2,500 tons per day.

Table 4: Emissions Summary (tons per year)

Air Pollutant	De Minimis Level/SMAL	Existing Actual Emissions (2016 EIQ)	Installation Conditioned Potential Emissions
PM	25.0	N/D	28.64
PM ₁₀	15.0	1.75	6.92
PM _{2.5}	10.0	0.61	1.58
SO _x	40.0	N/A	N/A
NO _x	40.0	N/A	N/A
VOC	40.0	N/A	N/A
CO	100.0	N/A	N/A
Lead Compounds	0.6/0.01 ^a	0.0044	0.09
Total HAPs	25.0	0.0044	0.09

N/A = Not Applicable; N/D = Not Determined

^aSMAL

AMBIENT AIR QUALITY IMPACT ANALYSIS

Emissions of concern from the crushing plant are lead emissions. The lead SMAL is 0.01 tons per year. The potential emissions from the project exceed the lead SMAL. The installation submitted a compliant AAQIA for lead. The AAQIA found that lead was below the 24-hour and annual risk assessment levels (RAL) when taking a daily processing and loading limit of 2,500 tons. A National Ambient Air Quality Standards evaluation was not necessary because the potential lead emissions from the project did not exceed the de minimis level of 0.6 tons per year.

AAQIA results are provided in Table 5. EPA's AERSCREEN model was chosen. Conservatively, the highest impact from each emission unit was summed to obtain the installation-wide impact. The maximum impact occurred at the worst-case (closest) property line and there was a negative concentration gradient from maximum point away from the source. The modeling results indicate compliance with the RALs with a 2,500 tons per day production limit; therefore, no further action is required.

Table 5: Modeling Summary

Pollutant	Modeled Impact ($\mu\text{g}/\text{m}^3$)	RAL ($\mu\text{g}/\text{m}^3$)	Time Period
Lead	0.749 ¹	2	8-hour
Lead	0.342 ²	0.357	24-hour
Lead	0.256 ²	0.7	10x Annual

¹Modeling impact for 8-hour RAL based on MHDR of 220 tons per hour

²Modeling impact for 24-hour RAL and 10x Annual RAL based on 2,500 tons per day production limit

EMISSIONS CALCULATIONS

Lead and particulate emissions are the only emissions expected from the crushing and conveying operation at this mine. Lead emission factors were developed as 4% of PM₁₀ emissions from EP-01, EP-02, EP-04 and EP-05. According to permit 112003-010A, the plant crushes rock with up to 4% lead content. Haul road lead emissions and the emission factors for particulates are discussed below.

In the previous permit, 112003-010A, emissions from the crushing and conveying were calculated using emission factors from AP-42 Section 11.19.2 for tertiary crushing. K&D Crushing requested that these emission factors be replaced with emissions factors from a nearby mine as they are more representative of the lead mining industry. The emission rates for the crushing and conveying were calculated using the emission factors from tests conducted at Westfork Mine that have been approved by the Missouri Air Pollution Control Program Testing & Emissions Unit. Westfork Mine is managed by Asarco Incorporated and the Doe Run Company. Asarco's Westfork Mine is located within the New Lead Belt along with Mine #29 and Mine #35. The New Lead Belt, or

Viburnum Trend, is part of the Southeast Missouri Lead District. Since the three mines are within 20 miles of one another and are mining the same lead trend, it is reasonable to assume that the raw materials are similar. The PM emission factor for crushing in the tests was found to be 0.00118 lbs/ton and the PM emission factor for a conveyor transfer point was found to be 0.00045 lbs/ton.

The emission factors obtained from the testing conducted at the Westfork Mine are uncontrolled factors because they represent the emissions prior to the wet scrubber installed at the facility. The test report refers to the raw material as relatively wet that is transferred above ground. A moisture content of 1.5% was used. The test conducted at the Westfork Mine only measured PM. Therefore, PM₁₀ emission factors were developed.

In order to develop PM₁₀ emission factors for lead-bearing ore from the PM emission factors provided in the Westfork Mine test report, the PM/PM₁₀ ratios in AP-42, Section 11.19.2, were examined. Using the data provided in the background document for Section 11.19.2, separate ratios were calculated for PM₁₀/PM₃₀, PM₁₀/PM₅₀, and PM₁₀/PM₁₀₀ since the Westfork Mine test report did not specify whether PM₃₀, PM₅₀, or PM₁₀₀ was measured. In each case the worst-case emission factor was selected. The worst case PM₁₀/PM ratio was 60%. Therefore, the PM₁₀ emission factor for crushing was calculated to be 0.0007 lbs/ton and for a conveyor transfer point was calculated to be 0.00027 lbs/tons. A control efficiency of 77.5% for PM, PM₁₀ and PM_{2.5} was applied to the crusher because the inherent moisture content of the crusher rock is greater than 1.5% by weight. A control 95.8% for PM, PM₁₀, and PM_{2.5} was applied to the conveyor and stacker because the inherent moisture content of the crusher rock is greater than 1.5% by weight.

PM_{2.5} emissions from the rock-crushing equipment were calculated using emission factors from AP-42 Section 11.19.2 "Crushed Stone Processing and Pulverized Mineral Processing," August 2004. The controlled emission factors were used because inherent moisture content of the crushed rock is greater than 1.5% by weight. A PM_{2.5} emission factor was not developed from the Westfork Mine test report since PM_{2.5} emissions were below de minimis using the more conservative AP-42 emission factors.

Emissions from haul roads and vehicular activity areas were calculated using the predictive equation from AP-42 Section 13.2.2 "Paved Roads," January 2011. The haul road is approximately 5,280 feet long. The distance the loader travels is approximately 50 feet. A silt loading of 2.0 g/m² was used. The facility will use best management practices to control the haul road emissions. The silt loading was compared with permit 062011-004 for tests conducted at the Doe Run – Buick Resources Recycling Facility. In permit 062011-004 a silt loading of 0.0798 g/m² was used so a silt loading of 2.0 g/m² was used in this permit as a conservative estimate without requiring K&D Crushing to test the silt loading. A lead emission factor of 0.000111 lbs/VMT was used for the haul roads and vehicular activity areas. The emission factor was obtained from Appendix H in the Missouri State Implementation Plan – Buick/Viburnum Trend Lead

Nonattainment Area. The emission factor is for Casteel Mine as this most closely resembles Viburnum Mine.

Emissions from storage piles load-in and load-out of storage piles were calculated using the predictive equation from AP-42 Section 13.2.4. The moisture content of the aggregate is 1.5% by weight. Emissions from wind erosion of storage piles were calculated using an equation found in the Air Pollution Control Program's Emissions Inventory Questionnaire Form 2.8 "Storage Pile Worksheet."

PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (6) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of all pollutants except PM are conditioned below de minimis levels by the 2,500 tons per day production and loading limit. Potential emissions of PM are above de minimis but below major source levels. There are no modeling requirements for PM. Emissions of lead are below the de minimis level of 0.6 tons per year but above the annual SMAL threshold of 0.01 tons. Modeling was therefore performed to verify that the emissions of lead would not exceed the RAL.

APPLICABLE REQUIREMENTS

K&D Crushing, Inc. 29 Mine Area - Viburnum Mine shall comply with the following applicable requirements. The Missouri Air Conservation Laws and Regulations should be consulted for specific record keeping, monitoring, and reporting requirements. Compliance with these emission standards, based on information submitted in the application, has been verified at the time this application was approved.

GENERAL REQUIREMENTS

- *Submission of Emission Data, Emission Fees and Process Information*, 10 CSR 10-6.110.
- Submittal of an amendment to your Basic Operating Permit is required within 30 days of this permit issuance.
- *Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin*, 10 CSR 10-6.170
- *Restriction of Emission of Visible Air Contaminants*, 10 CSR 10-6.220
- *Restriction of Emission of Odors*, 10 CSR 10-6.165

SPECIFIC REQUIREMENTS

- None of the National Emission Standards for Hazardous Air Pollutants (NESHAPS) or National Emission Standards for Hazardous Air Pollutants for Source Categories (MACTS) apply to the proposed equipment.

STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section (6), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*, it is recommended that this permit be granted with special conditions.

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated February 25, 2013, received February 26, 2013, designating K&D Crushing, Inc. as the owner and operator of the installation.
- Ambient Air Quality Impact Analysis, dated November 27, 2017, received by email December 20, 2017, from GeoEngineers

Attachment A: Daily Production Tracking Sheet
K&D Crushing, Inc. 29 Mine Area - Viburnum Mine 221-0041
Project Number: 2013-02-064
Permit Number: 022018-004

This sheet covers the period from _____ to _____ (Copy as needed)
 (Month, Day Year) (Month, Day Year)

Day/Month/Year	Daily Production (processed and loaded tons)	Daily Production Limit (tons)	Day/Month/Year	Daily Production (tons)	Daily Production Limit (tons)
Example	500	2,500			2,500
		2,500			2,500
		2,500			2,500
		2,500			2,500
		2,500			2,500
		2,500			2,500
		2,500			2,500
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		2,500			2,500
		2,500			2,500
		2,500			2,500
		2,500			2,500
		2,500			2,500
		2,500			2,500
		2,500			2,500

†Add the daily production of the plant (tons). A total of less than 2,500 tons per day is necessary for compliance.

Attachment AA: Best Management Practices

Haul roads and vehicular activity areas shall be maintained in accordance with at least one of the following options when the plant is operating.

1. Pavement

- A. The operator shall pave the area with materials such as asphalt, concrete or other materials approved by the Air Pollution Control Program. The pavement will be applied in accordance with industry standards to achieve control of fugitive emissions while the plant is operating.
- B. Maintenance and repair of the road surface will be conducted as necessary to ensure that the physical integrity of the pavement is adequate to achieve control of fugitive emissions from these areas while the plant is operating.
- C. The operator shall periodically wash or otherwise clean all of the paved portions of the haul roads as necessary to achieve control of fugitive emissions from these areas while the plant is operating.

2. Application of Chemical Dust Suppressants

- A. The operator shall apply a chemical dust suppressant (such as magnesium chloride, calcium chloride, lignosulfonates, etc.) to unpaved areas.
- B. The quantities of the chemical dust suppressant shall be applied and maintained in accordance with the manufacturer's recommendation (if available) and in sufficient quantities to achieve control of fugitive emissions from these areas while the plant is operating.
- C. The operator shall record the time, date and the amount of material applied for each application of the chemical dust suppressant agent on the above areas. The operator shall keep these records with the plant for not less than five (5) years and make these records available to Department of Natural Resources' personnel upon request.

3. Application of Water-Documented Daily

- A. The operator shall apply water to unpaved areas. Water shall be applied at a rate of 100 gallons per day per 1,000 square feet of unpaved or untreated surface area while the plant is operating.
- B. Precipitation may be substituted for watering if the precipitation is greater than one quarter of one inch and is sufficient to control fugitive emissions.
- C. Watering may also be suspended when the ground is frozen, during periods of freezing conditions when watering would be inadvisable for traffic safety reasons, or when there will be no traffic on the roads.
- D. The operator shall record the date, volume of water application and total surface area of active haul roads or the amount of precipitation that day. The operators shall also record the rational for not watering (e.g. freezing conditions or not operating).
- E. The operator shall keep these records with the plant for not less than five (5) years, and the operator shall make these records available to Department of Natural Resources' personnel upon request.

APPENDIX A

Abbreviations and Acronyms

%percent	MMBtuMillion British thermal units
°Fdegrees Fahrenheit	MMCFmillion cubic feet
acfmactual cubic feet per minute	MSDSMaterial Safety Data Sheet
BACTBest Available Control Technology	NAAQSNational Ambient Air Quality Standards
BMPsBest Management Practices	NESHAPs ..National Emissions Standards for Hazardous Air Pollutants
BtuBritish thermal unit	NO_xnitrogen oxides
CAMCompliance Assurance Monitoring	NSPSNew Source Performance Standards
CASChemical Abstracts Service	NSRNew Source Review
CEMSContinuous Emission Monitor System	PMparticulate matter
CFRCode of Federal Regulations	PM_{2.5}particulate matter less than 2.5 microns in aerodynamic diameter
COcarbon monoxide	PM₁₀particulate matter less than 10 microns in aerodynamic diameter
CO₂carbon dioxide	ppmparts per million
CO₂ecarbon dioxide equivalent	PSD Prevention of Significant Deterioration
COMSContinuous Opacity Monitoring System	PTEpotential to emit
CSRCode of State Regulations	RACTReasonable Available Control Technology
dscfdry standard cubic feet	RALRisk Assessment Level
EIQEmission Inventory Questionnaire	SCCSource Classification Code
EPEmission Point	scfmstandard cubic feet per minute
EPAEnvironmental Protection Agency	SDSSafety Data Sheet
EUEmission Unit	SICStandard Industrial Classification
fpsfeet per second	SIPState Implementation Plan
ftfeet	SMALScreening Model Action Levels
GACTGenerally Available Control Technology	SO_xsulfur oxides
GHGGreenhouse Gas	SO₂sulfur dioxide
gpmgallons per minute	SSMstartup, shutdown, & malfunction
grgrains	tphtons per hour
GWPGlobal Warming Potential	tpytons per year
HAPHazardous Air Pollutant	VMTvehicle miles traveled
hrhour	VOCVolatile Organic Compound
hphorsepower	
lbpound	
lbs/hrpounds per hour	
MACTMaximum Achievable Control Technology	
µg/m³micrograms per cubic meter	
m/smeters per second	
Mgal1,000 gallons	
MWmegawatt	
MHDRmaximum hourly design rate	

K & D Crushing - Viburnum Mine #29

Emissions Calculations
Project No: 2013-02-064

Operational Information

Days per yr	365
Hours per day	24
Hours per year	8760

Viburnum 29 Mine Emissions Calculations

Point ID	Emission Unit	Throughput			Units	Pollutant	Emission Factor (lb/unit)	Control Efficiency (%)	Modeling Emission Rate (g/s) for 8 hour RAL	Modeling Emission Rate (lbs/hr)	Modeling Emission Rate (g/s) for 24 hour and Annual RAL	Emissions		
		Potential at MHDR 220 ton/hr	Potential at 2,500 ton/day									Limited Potential (tons/yr) 2500 ton/day	De Minimis Levels (tons/yr)	
EP-1	Crusher - Primary	220	104.2		tons/hr	PM	0.0018	77.5				0.1848		
		220	104.2			PM10	0.0007	77.5				0.0719		
		220	104.2			PM2.5	0.0007	77.5				0.0719		
		220	104.2			Lead	0.0000	77.5	1.75E-04	1.39E-03	8.2686E-05	0.0028744		
		220	104.2			PM	0.0005	95.82					0.0086	
EP-2	Conveyor	220	104.2		tons/hr	PM10	0.0003	95.82				0.0051		
		220	104.2			PM2.5	0.0003	95.82				0.0051		
		220	104.2			Lead	1.08E-05	95.82	1.25E-05	9.93E-05	5.92505E-06	0.00020597		
		29.33333333	13.89			PM	0.3970						24.1487	
		29.33333333	13.89			PM10	0.0794						4.8297	
EP-3	Haul Road - Paved	29.33333333	13.89		VMT/hr	PM2.5	0.0195					1.1855		
		29.33333333	13.89			Lead	0.000111		4.10E-04	3.26E-03	0.000194247	0.0068		
		0	0.0			PM	0.0087						0.0000	
		0	0.0			PM10	0.0041						0.0000	
		0	0.0			PM2.5	0.0006						0.0000	
EP-4a	Load In - Accounted for un	0	0.0		tons/hr	Lead	0.0002		0.00E+00	0.00E+00	0	0.0000		
		220	104.2			PM	0.0087						3.9796	
		220	104.2			PM10	0.0041						1.8822	
		220	104.2			PM2.5	0.0006						0.2850	
		200	104.2			Lead	0.0002		4.16E-03	3.30E-02	0.002165823	0.0753		
EP-4c	Storage Pile - Vehicular Activity	0.378787879	0.18		VMT/hr	PM	0.3970					0.3118		
		0.378787879	0.18			PM10	0.0794					0.0624		
		0.378787879	0.18			PM2.5	0.0195					0.0153		
		0.378787879	0.18			Lead	0.000111		5.30E-06	4.20E-05	2.50835E-06	0.0001		
		0.15	0.15			PM	0.0001						0.0001	
EP-4d	Storage Pile - Wind Erosion	0.15	0.15		acres	PM10	0.0892					0.0586		
		0.15	0.15			PM2.5	0.0134					0.0088		
		0.15	0.15			Lead	0.0036		6.74E-05	5.35E-04	6.74085E-05	0.0023		
		220	104.2			PM	0.0005	95.82					0.0086	
		220	104.2			PM10	0.0003	95.82					0.0051	
EP-5	Stacker	220	104.2		tons/hr	PM2.5	0.0003	95.82				0.0051		
		220	104.2			Lead	0.0000	95.82	1.25E-05	9.93E-05	5.92505E-06	0.0002		

Viburnum 29 Mine Emissions Summary Table

Pollutant	Limited Potential (tons/yr) 2500 ton/day	De Minimis Levels (tons/yr)
PM	28.64	25
PM10	6.92	15
PM2.5	1.58	10
Lead	0.09	0.6

1 pound = 453.592 grams

K&D Crushing AERSCREEN Results by Emission Point					
			8-Hr	24-Hr	Annual
EP-1	Crusher	Volume	1.53E-02	4.83E-03	8.05E-04
EP-2	Conveyor	Volume	9.37E-04	2.96E-04	4.93E-05
EP-3	Haul Road - Paved	Area	0.3976	1.88E-01	1.88E-01
EP-4a	Storage Pile - Load In- Accounted for with EP-5	Volume			
EP-4b	Storage Pile - Load Out	Volume	2.82E-01	9.79E-02	1.63E-02
EP-4c	Storage Pile - Vehicular Activity	Area	0.00512	2.43E-03	2.43E-03
EP-4d	Storage Pile - Wind Erosion	Area	4.75E-02	4.75E-02	4.75E-02
EP-5	Stacker	Volume	8.73E-04	2.76E-04	4.60E-05

Sum of all Emission Points		7.49E-01	3.42E-01	2.55E-01
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	RAL Values ($\mu\text{g}/\text{m}^3$)	Summed AERSCREEN Results ($\mu\text{g}/\text{m}^3$)
8-Hour	0.749	0.749
24-Hour	0.357	0.342
Annual	0.07	0.2555
10x Annual**	0.7	0.2555

*lifetime cancer risk of 1-in-100,000

**lifetime cancer risk of 1-in-10,000

K&D_Crushing-Crusher

AERSCREEN 16216 / AERMOD 16216r

01/09/18
14:10:07

TITLE: K&D_CRUSHING-CRUSHER

***** VOLUME PARAMETERS *****

SOURCE EMISSION RATE: 0.175E-03 g/s 0.139E-02 lb/hr
VOLUME HEIGHT: 1.22 meters 4.00 feet
INITIAL LATERAL DIMENSION: 0.57 meters 1.87 feet
INITIAL VERTICAL DIMENSION: 0.57 meters 1.87 feet
RURAL OR URBAN: RURAL
INITIAL PROBE DISTANCE = 5000. meters 16404. feet

***** BUILDING DOWNWASH PARAMETERS *****

BUILDING DOWNWASH NOT USED FOR NON-POINT SOURCES

***** PROBE ANALYSIS *****
25 meter receptor spacing: 472. meters - 5000. meters

Zo SECTOR	ROUGHNESS LENGTH	1-HR CONC (ug/m3)	DIST (m)	TEMPORAL PERIOD
1*	1.300	0.1701E-01	472.4	SUM

* = worst case flow sector

***** MAKEMET METEOROLOGY PARAMETERS *****

MIN/MAX TEMPERATURE: 250.0 / 310.0 (K)

MINIMUM WIND SPEED: 0.5 m/s

ANEMOMETER HEIGHT: 10.000 meters

SURFACE CHARACTERISTICS INPUT: AERMET SEASONAL TABLES

DOMINANT SURFACE PROFILE: Coniferous Forest
DOMINANT CLIMATE TYPE: Average Moisture
DOMINANT SEASON: Summer

ALBEDO: 0.12
BOWEN RATIO: 0.30
ROUGHNESS LENGTH: 1.300 (meters)

SURFACE FRICTION VELOCITY (U*) NOT ADJUSTED

K&D_Crushing-Crusher
 METEOROLOGY CONDITIONS USED TO PREDICT OVERALL MAXIMUM IMPACT

YR MO DY JDY HR
 10 01 02 2 12

HO	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS
1.78	0.115	0.100	0.020	19.	89.	-72.5	1.300	0.30	0.12	0.50

HT	REF TA	HT
10.0	280.0	2.0

METEOROLOGY CONDITIONS USED TO PREDICT AMBIENT BOUNDARY IMPACT

YR MO DY JDY HR
 10 01 02 2 12

HO	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS
1.78	0.115	0.100	0.020	19.	89.	-72.5	1.300	0.30	0.12	0.50

HT	REF TA	HT
10.0	280.0	2.0

***** AERSCREEN AUTOMATED DISTANCES *****
 OVERALL MAXIMUM CONCENTRATIONS BY DISTANCE

DIST (m)	MAXIMUM 1-HR CONC (ug/m3)	DIST (m)	MAXIMUM 1-HR CONC (ug/m3)
472.44	0.1701E-01	2750.00	0.4933E-02
475.00	0.1696E-01	2775.00	0.4900E-02
500.00	0.1655E-01	2800.00	0.4866E-02
525.00	0.1614E-01	2825.00	0.4834E-02
550.00	0.1575E-01	2850.00	0.4802E-02
575.00	0.1538E-01	2875.00	0.4770E-02
600.00	0.1502E-01	2900.00	0.4739E-02
625.00	0.1462E-01	2925.00	0.4708E-02
650.00	0.1422E-01	2950.00	0.4677E-02
675.00	0.1383E-01	2975.00	0.4648E-02
700.00	0.1348E-01	3000.00	0.4618E-02
725.00	0.1314E-01	3025.00	0.4589E-02
750.00	0.1282E-01	3050.00	0.4560E-02
775.00	0.1252E-01	3075.00	0.4532E-02
800.00	0.1224E-01	3100.00	0.4504E-02
825.00	0.1197E-01	3125.00	0.4476E-02
850.00	0.1171E-01	3150.00	0.4449E-02
875.00	0.1147E-01	3175.00	0.4422E-02
900.00	0.1124E-01	3200.00	0.4396E-02
925.00	0.1102E-01	3225.00	0.4370E-02

K&D_Crushing-Crusher

950.00	0.1081E-01	3250.00	0.4344E-02
975.00	0.1060E-01	3275.00	0.4319E-02
1000.00	0.1041E-01	3300.00	0.4294E-02
1025.00	0.1023E-01	3325.00	0.4269E-02
1050.00	0.1005E-01	3350.00	0.4244E-02
1075.00	0.9879E-02	3375.00	0.4220E-02
1100.00	0.9715E-02	3400.00	0.4196E-02
1125.00	0.9557E-02	3425.00	0.4173E-02
1150.00	0.9406E-02	3450.00	0.4149E-02
1175.00	0.9259E-02	3475.00	0.4126E-02
1200.00	0.9118E-02	3500.00	0.4104E-02
1225.00	0.8982E-02	3525.00	0.4081E-02
1250.00	0.8851E-02	3550.00	0.4059E-02
1275.00	0.8724E-02	3575.00	0.4037E-02
1300.00	0.8601E-02	3600.00	0.4015E-02
1325.00	0.8482E-02	3625.00	0.3994E-02
1350.00	0.8367E-02	3650.00	0.3973E-02
1375.00	0.8255E-02	3675.00	0.3952E-02
1400.00	0.8147E-02	3700.00	0.3931E-02
1425.00	0.8042E-02	3725.00	0.3911E-02
1450.00	0.7940E-02	3750.00	0.3890E-02
1475.00	0.7841E-02	3775.00	0.3871E-02
1500.00	0.7745E-02	3800.00	0.3851E-02
1525.00	0.7652E-02	3825.00	0.3831E-02
1550.00	0.7561E-02	3850.00	0.3812E-02
1575.00	0.7473E-02	3875.00	0.3793E-02
1600.00	0.7387E-02	3900.00	0.3774E-02
1625.00	0.7303E-02	3925.00	0.3755E-02
1650.00	0.7221E-02	3950.00	0.3736E-02
1675.00	0.7141E-02	3975.00	0.3718E-02
1700.00	0.7064E-02	4000.00	0.3700E-02
1725.00	0.6988E-02	4025.00	0.3682E-02
1750.00	0.6914E-02	4050.00	0.3664E-02
1775.00	0.6842E-02	4075.00	0.3647E-02
1800.00	0.6772E-02	4100.00	0.3629E-02
1825.00	0.6703E-02	4125.00	0.3612E-02
1850.00	0.6636E-02	4150.00	0.3595E-02
1875.00	0.6570E-02	4175.00	0.3578E-02
1900.00	0.6506E-02	4200.00	0.3561E-02
1925.00	0.6443E-02	4225.00	0.3545E-02
1950.00	0.6382E-02	4250.00	0.3529E-02
1975.00	0.6322E-02	4275.00	0.3512E-02
2000.00	0.6263E-02	4300.00	0.3496E-02
2025.00	0.6206E-02	4325.00	0.3480E-02
2050.00	0.6149E-02	4350.00	0.3465E-02
2075.00	0.6094E-02	4375.00	0.3449E-02
2100.00	0.6040E-02	4400.00	0.3434E-02
2125.00	0.5987E-02	4425.00	0.3418E-02
2150.00	0.5935E-02	4450.00	0.3403E-02
2175.00	0.5884E-02	4475.00	0.3388E-02
2200.00	0.5834E-02	4500.00	0.3373E-02
2225.00	0.5785E-02	4525.00	0.3359E-02
2250.00	0.5737E-02	4550.00	0.3344E-02
2275.00	0.5690E-02	4575.00	0.3329E-02
2300.00	0.5643E-02	4600.00	0.3315E-02
2325.00	0.5598E-02	4625.00	0.3301E-02
2350.00	0.5553E-02	4650.00	0.3287E-02
2375.00	0.5509E-02	4675.00	0.3273E-02
2400.00	0.5466E-02	4700.00	0.3259E-02
2425.00	0.5424E-02	4725.00	0.3245E-02
2450.00	0.5382E-02	4750.00	0.3232E-02
2475.00	0.5341E-02	4775.00	0.3218E-02
2500.00	0.5301E-02	4800.00	0.3205E-02

K&D_Crushing-Crusher					
2525.00	0.5262E-02		4825.00		0.3192E-02
2550.00	0.5223E-02		4850.00		0.3179E-02
2575.00	0.5184E-02		4875.00		0.3166E-02
2600.00	0.5147E-02		4900.00		0.3153E-02
2625.00	0.5110E-02		4925.00		0.3140E-02
2650.00	0.5073E-02		4950.00		0.3127E-02
2675.00	0.5038E-02		4975.00		0.3115E-02
2700.00	0.5002E-02		5000.00		0.3102E-02
2725.00	0.4968E-02				

***** AERSCREEN MAXIMUM IMPACT SUMMARY *****

CALCULATION PROCEDURE	MAXIMUM 1-HOUR CONC (ug/m3)	SCALED 3-HOUR CONC (ug/m3)	SCALED 8-HOUR CONC (ug/m3)	SCALED 24-HOUR CONC (ug/m3)	SCALED ANNUAL CONC (ug/m3)
FLAT TERRAIN	0.1701E-01	0.1701E-01	0.1531E-01	0.1020E-01	0.1701E-02
DISTANCE FROM SOURCE	472.44 meters				
IMPACT AT THE AMBIENT BOUNDARY	0.1701E-01	0.1701E-01	0.1531E-01	0.1020E-01	0.1701E-02
DISTANCE FROM SOURCE	472.44 meters				

K&D_Crushing-Conveyor

AERSCREEN 16216 / AERMOD 16216r

01/09/18
14:08:13

TITLE: K&D_CRUSHING-CONVEYOR

***** VOLUME PARAMETERS *****

SOURCE EMISSION RATE: 0.125E-04 g/s 0.993E-04 lb/hr
VOLUME HEIGHT: 2.13 meters 6.99 feet
INITIAL LATERAL DIMENSION: 0.21 meters 0.69 feet
INITIAL VERTICAL DIMENSION: 0.14 meters 0.46 feet
RURAL OR URBAN: RURAL
INITIAL PROBE DISTANCE = 5000. meters 16404. feet

***** BUILDING DOWNWASH PARAMETERS *****

BUILDING DOWNWASH NOT USED FOR NON-POINT SOURCES

***** PROBE ANALYSIS *****
25 meter receptor spacing: 472. meters - 5000. meters

Zo SECTOR	ROUGHNESS LENGTH	1-HR CONC (ug/m3)	DIST (m)	TEMPORAL PERIOD
1*	1.300	0.1041E-02	472.4	SUM

* = worst case flow sector

***** MAKEMET METEOROLOGY PARAMETERS *****

MIN/MAX TEMPERATURE: 250.0 / 310.0 (K)
MINIMUM WIND SPEED: 0.5 m/s
ANEMOMETER HEIGHT: 10.000 meters
SURFACE CHARACTERISTICS INPUT: AERMET SEASONAL TABLES
DOMINANT SURFACE PROFILE: Coniferous Forest
DOMINANT CLIMATE TYPE: Average Moisture
DOMINANT SEASON: Summer
ALBEDO: 0.12
BOWEN RATIO: 0.30
ROUGHNESS LENGTH: 1.300 (meters)
SURFACE FRICTION VELOCITY (U*) NOT ADJUSTED

K&D_Crushing-Conveyor
 METEOROLOGY CONDITIONS USED TO PREDICT OVERALL MAXIMUM IMPACT

YR MO DY JDY HR
 10 01 02 2 12

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O	LEN	Z0	BOWEN	ALBEDO	REF	WS
1.78	0.115	0.100	0.020	19.	89.	-72.5	1.300	0.30	0.12	0.50		
HT	REF	TA	HT									
10.0	280.0	2.0										

METEOROLOGY CONDITIONS USED TO PREDICT AMBIENT BOUNDARY IMPACT

YR MO DY JDY HR
 10 01 02 2 12

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O	LEN	Z0	BOWEN	ALBEDO	REF	WS
1.78	0.115	0.100	0.020	19.	89.	-72.5	1.300	0.30	0.12	0.50		
HT	REF	TA	HT									
10.0	280.0	2.0										

***** AERSCREEN AUTOMATED DISTANCES *****
 OVERALL MAXIMUM CONCENTRATIONS BY DISTANCE

DIST (m)	MAXIMUM 1-HR CONC (ug/m3)	DIST (m)	MAXIMUM 1-HR CONC (ug/m3)
472.44	0.1041E-02	2750.00	0.3000E-03
475.00	0.1038E-02	2775.00	0.2979E-03
500.00	0.1012E-02	2800.00	0.2959E-03
525.00	0.9861E-03	2825.00	0.2939E-03
550.00	0.9618E-03	2850.00	0.2919E-03
575.00	0.9386E-03	2875.00	0.2900E-03
600.00	0.9163E-03	2900.00	0.2881E-03
625.00	0.8917E-03	2925.00	0.2862E-03
650.00	0.8667E-03	2950.00	0.2844E-03
675.00	0.8434E-03	2975.00	0.2826E-03
700.00	0.8215E-03	3000.00	0.2808E-03
725.00	0.8008E-03	3025.00	0.2790E-03
750.00	0.7814E-03	3050.00	0.2772E-03
775.00	0.7630E-03	3075.00	0.2755E-03
800.00	0.7457E-03	3100.00	0.2738E-03
825.00	0.7292E-03	3125.00	0.2721E-03
850.00	0.7136E-03	3150.00	0.2705E-03
875.00	0.6987E-03	3175.00	0.2689E-03
900.00	0.6845E-03	3200.00	0.2672E-03
925.00	0.6710E-03	3225.00	0.2657E-03

K&D_Crushing-Conveyor

950.00	0.6581E-03	3250.00	0.2641E-03
975.00	0.6458E-03	3275.00	0.2625E-03
1000.00	0.6340E-03	3300.00	0.2610E-03
1025.00	0.6227E-03	3325.00	0.2595E-03
1050.00	0.6119E-03	3350.00	0.2580E-03
1075.00	0.6015E-03	3375.00	0.2565E-03
1100.00	0.5915E-03	3400.00	0.2551E-03
1125.00	0.5819E-03	3425.00	0.2537E-03
1150.00	0.5726E-03	3450.00	0.2522E-03
1175.00	0.5637E-03	3475.00	0.2508E-03
1200.00	0.5551E-03	3500.00	0.2495E-03
1225.00	0.5468E-03	3525.00	0.2481E-03
1250.00	0.5387E-03	3550.00	0.2467E-03
1275.00	0.5310E-03	3575.00	0.2454E-03
1300.00	0.5235E-03	3600.00	0.2441E-03
1325.00	0.5162E-03	3625.00	0.2428E-03
1350.00	0.5092E-03	3650.00	0.2415E-03
1375.00	0.5024E-03	3675.00	0.2402E-03
1400.00	0.4958E-03	3700.00	0.2390E-03
1425.00	0.4894E-03	3725.00	0.2377E-03
1450.00	0.4832E-03	3750.00	0.2365E-03
1475.00	0.4772E-03	3775.00	0.2353E-03
1500.00	0.4713E-03	3800.00	0.2341E-03
1525.00	0.4656E-03	3825.00	0.2329E-03
1550.00	0.4601E-03	3850.00	0.2317E-03
1575.00	0.4547E-03	3875.00	0.2305E-03
1600.00	0.4494E-03	3900.00	0.2294E-03
1625.00	0.4443E-03	3925.00	0.2282E-03
1650.00	0.4393E-03	3950.00	0.2271E-03
1675.00	0.4345E-03	3975.00	0.2260E-03
1700.00	0.4297E-03	4000.00	0.2249E-03
1725.00	0.4251E-03	4025.00	0.2238E-03
1750.00	0.4206E-03	4050.00	0.2227E-03
1775.00	0.4162E-03	4075.00	0.2217E-03
1800.00	0.4119E-03	4100.00	0.2206E-03
1825.00	0.4078E-03	4125.00	0.2196E-03
1850.00	0.4037E-03	4150.00	0.2185E-03
1875.00	0.3997E-03	4175.00	0.2175E-03
1900.00	0.3958E-03	4200.00	0.2165E-03
1925.00	0.3919E-03	4225.00	0.2155E-03
1950.00	0.3882E-03	4250.00	0.2145E-03
1975.00	0.3845E-03	4275.00	0.2135E-03
2000.00	0.3809E-03	4300.00	0.2125E-03
2025.00	0.3774E-03	4325.00	0.2115E-03
2050.00	0.3740E-03	4350.00	0.2106E-03
2075.00	0.3706E-03	4375.00	0.2096E-03
2100.00	0.3673E-03	4400.00	0.2087E-03
2125.00	0.3641E-03	4425.00	0.2078E-03
2150.00	0.3610E-03	4450.00	0.2068E-03
2175.00	0.3578E-03	4475.00	0.2059E-03
2200.00	0.3548E-03	4500.00	0.2050E-03
2225.00	0.3518E-03	4525.00	0.2041E-03
2250.00	0.3489E-03	4550.00	0.2032E-03
2275.00	0.3460E-03	4575.00	0.2024E-03
2300.00	0.3432E-03	4600.00	0.2015E-03
2325.00	0.3404E-03	4625.00	0.2006E-03
2350.00	0.3377E-03	4650.00	0.1998E-03
2375.00	0.3350E-03	4675.00	0.1989E-03
2400.00	0.3324E-03	4700.00	0.1981E-03
2425.00	0.3298E-03	4725.00	0.1973E-03
2450.00	0.3273E-03	4750.00	0.1964E-03
2475.00	0.3248E-03	4775.00	0.1956E-03
2500.00	0.3223E-03	4800.00	0.1948E-03

K&D_Crushing-Conveyor

2525.00	0.3199E-03	4825.00	0.1940E-03
2550.00	0.3176E-03	4850.00	0.1932E-03
2575.00	0.3152E-03	4875.00	0.1924E-03
2600.00	0.3130E-03	4900.00	0.1916E-03
2625.00	0.3107E-03	4925.00	0.1908E-03
2650.00	0.3085E-03	4950.00	0.1901E-03
2675.00	0.3063E-03	4975.00	0.1893E-03
2700.00	0.3041E-03	5000.00	0.1886E-03
2725.00	0.3020E-03		

***** AERSCREEN MAXIMUM IMPACT SUMMARY *****

CALCULATION PROCEDURE	MAXIMUM 1-HOUR CONC (ug/m3)	SCALED 3-HOUR CONC (ug/m3)	SCALED 8-HOUR CONC (ug/m3)	SCALED 24-HOUR CONC (ug/m3)	SCALED ANNUAL CONC (ug/m3)
FLAT TERRAIN	0.1041E-02	0.1041E-02	0.9366E-03	0.6244E-03	0.1041E-03
DISTANCE FROM SOURCE	472.44 meters				
IMPACT AT THE AMBIENT BOUNDARY	0.1041E-02	0.1041E-02	0.9366E-03	0.6244E-03	0.1041E-03
DISTANCE FROM SOURCE	472.44 meters				

K&D_Crushing-Haul-Road

AERSCREEN 16216 / AERMOD 16216r

01/16/18
07:59:13

TITLE: K&D_CRUSHING-HAUL-ROAD

***** AREA PARAMETERS *****

SOURCE EMISSION RATE:	0.410E-03 g/s	0.325E-02 lb/hr
AREA EMISSION RATE:	0.410E-06 g/(s-m2)	0.325E-05 lb/(hr-m2)
AREA HEIGHT:	2.55 meters	8.37 feet
AREA SOURCE LONG SIDE:	100.00 meters	328.08 feet
AREA SOURCE SHORT SIDE:	10.00 meters	32.81 feet
INITIAL VERTICAL DIMENSION:	2.37 meters	7.78 feet
RURAL OR URBAN:	RURAL	
INITIAL PROBE DISTANCE =	5000. meters	16404. feet

***** BUILDING DOWNWASH PARAMETERS *****

BUILDING DOWNWASH NOT USED FOR NON-POINT SOURCES

***** FLOW SECTOR ANALYSIS *****
25 meter receptor spacing: 472. meters - 5000. meters

MAXIMUM IMPACT RECEPTOR

Zo SECTOR	SURFACE ROUGHNESS	1-HR CONC (ug/m3)	RADIAL (deg)	DIST (m)	TEMPORAL PERIOD
1*	1.300	0.3976	5	472.4	WIN

* = worst case diagonal

***** MAKEMET METEOROLOGY PARAMETERS *****

MIN/MAX TEMPERATURE: 250.0 / 310.0 (K)

MINIMUM WIND SPEED: 0.5 m/s

ANEMOMETER HEIGHT: 10.000 meters

SURFACE CHARACTERISTICS INPUT: AERMET SEASONAL TABLES

DOMINANT SURFACE PROFILE: Coniferous Forest
DOMINANT CLIMATE TYPE: Average Moisture
DOMINANT SEASON: Winter

K&D_Crushing-Haul-Road

ALBEDO: 0.35
 BOWEN RATIO: 1.50
 ROUGHNESS LENGTH: 1.300 (meters)

SURFACE FRICTION VELOCITY (U*) NOT ADJUSTED

METEOROLOGY CONDITIONS USED TO PREDICT OVERALL MAXIMUM IMPACT

YR MO DY JDY HR

10 01 01 1 01

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O	LEN	Z0	BOWEN	ALBEDO	REF	WS
-1.40	0.049	-9.000	0.020	-999.	25.	6.5	1.300	1.50	0.35	0.50		
HT	REF	TA	HT									
10.0	250.0	2.0										

***** AERSCREEN AUTOMATED DISTANCES *****
 OVERALL MAXIMUM CONCENTRATIONS BY DISTANCE

DIST (m)	MAXIMUM 1-HR CONC (ug/m3)	DIST (m)	MAXIMUM 1-HR CONC (ug/m3)
472.44	0.3976	2750.00	0.3658E-01
475.00	0.3947	2775.00	0.3613E-01
500.00	0.3684	2800.00	0.3570E-01
525.00	0.3449	2825.00	0.3527E-01
550.00	0.3240	2850.00	0.3485E-01
575.00	0.3051	2875.00	0.3444E-01
600.00	0.2880	2900.00	0.3403E-01
625.00	0.2726	2925.00	0.3364E-01
650.00	0.2583	2950.00	0.3325E-01
675.00	0.2455	2975.00	0.3287E-01
700.00	0.2338	3000.00	0.3250E-01
725.00	0.2230	3025.00	0.3213E-01
750.00	0.2130	3050.00	0.3178E-01
775.00	0.2038	3075.00	0.3143E-01
800.00	0.1952	3100.00	0.3108E-01
825.00	0.1873	3125.00	0.3074E-01
850.00	0.1799	3150.00	0.3041E-01
875.00	0.1730	3174.99	0.3009E-01
900.00	0.1665	3200.00	0.2977E-01
925.00	0.1604	3225.00	0.2945E-01
950.00	0.1548	3250.00	0.2915E-01
975.00	0.1494	3275.00	0.2884E-01
1000.00	0.1444	3300.00	0.2855E-01
1025.00	0.1396	3325.00	0.2826E-01
1050.00	0.1352	3350.00	0.2797E-01
1075.00	0.1309	3375.00	0.2769E-01
1100.00	0.1269	3400.00	0.2741E-01
1125.00	0.1231	3425.00	0.2714E-01

K&D_Crushing-Haul-Road

1150.00	0.1195	3450.00	0.2687E-01
1175.00	0.1161	3475.00	0.2661E-01
1200.00	0.1128	3500.00	0.2635E-01
1225.00	0.1097	3525.00	0.2610E-01
1250.00	0.1067	3550.00	0.2585E-01
1275.00	0.1039	3575.00	0.2560E-01
1300.00	0.1012	3600.00	0.2536E-01
1325.00	0.9862E-01	3625.00	0.2512E-01
1350.00	0.9615E-01	3650.00	0.2489E-01
1375.00	0.9379E-01	3675.00	0.2466E-01
1400.00	0.9152E-01	3700.00	0.2443E-01
1425.00	0.8935E-01	3725.00	0.2421E-01
1450.00	0.8727E-01	3750.00	0.2399E-01
1475.00	0.8527E-01	3775.00	0.2377E-01
1500.00	0.8335E-01	3800.00	0.2356E-01
1525.00	0.8150E-01	3825.00	0.2335E-01
1550.00	0.7972E-01	3850.00	0.2315E-01
1575.00	0.7801E-01	3875.00	0.2294E-01
1600.00	0.7636E-01	3900.00	0.2274E-01
1625.00	0.7477E-01	3925.00	0.2255E-01
1650.00	0.7323E-01	3950.00	0.2235E-01
1675.00	0.7175E-01	3975.00	0.2216E-01
1700.00	0.7032E-01	4000.00	0.2197E-01
1725.00	0.6894E-01	4025.00	0.2179E-01
1750.00	0.6761E-01	4050.00	0.2160E-01
1775.00	0.6632E-01	4075.00	0.2142E-01
1800.00	0.6507E-01	4100.00	0.2125E-01
1825.00	0.6386E-01	4125.00	0.2107E-01
1850.00	0.6270E-01	4150.00	0.2090E-01
1875.00	0.6156E-01	4175.00	0.2073E-01
1900.00	0.6046E-01	4200.00	0.2056E-01
1924.99	0.5940E-01	4225.00	0.2040E-01
1950.00	0.5837E-01	4250.00	0.2023E-01
1975.00	0.5737E-01	4275.00	0.2007E-01
2000.00	0.5640E-01	4300.00	0.1991E-01
2025.00	0.5545E-01	4325.00	0.1976E-01
2050.00	0.5453E-01	4350.00	0.1960E-01
2075.00	0.5364E-01	4375.00	0.1945E-01
2100.00	0.5278E-01	4400.00	0.1930E-01
2125.00	0.5194E-01	4425.00	0.1915E-01
2150.00	0.5112E-01	4450.00	0.1901E-01
2175.00	0.5032E-01	4475.00	0.1886E-01
2200.00	0.4954E-01	4500.00	0.1872E-01
2225.00	0.4879E-01	4525.00	0.1858E-01
2250.00	0.4805E-01	4550.00	0.1844E-01
2275.00	0.4734E-01	4575.00	0.1830E-01
2300.00	0.4664E-01	4600.00	0.1817E-01
2325.00	0.4596E-01	4625.00	0.1803E-01
2350.00	0.4530E-01	4650.00	0.1790E-01
2375.00	0.4465E-01	4675.00	0.1777E-01
2400.00	0.4402E-01	4700.00	0.1764E-01
2425.00	0.4340E-01	4725.00	0.1752E-01
2450.00	0.4280E-01	4750.00	0.1739E-01
2475.00	0.4222E-01	4775.00	0.1727E-01
2500.00	0.4164E-01	4800.00	0.1714E-01
2525.00	0.4108E-01	4825.00	0.1702E-01
2550.00	0.4054E-01	4850.00	0.1690E-01
2575.00	0.4000E-01	4875.00	0.1679E-01
2600.00	0.3948E-01	4900.00	0.1667E-01
2625.00	0.3897E-01	4925.00	0.1655E-01
2650.00	0.3847E-01	4950.00	0.1644E-01
2675.00	0.3798E-01	4975.00	0.1633E-01
2700.00	0.3751E-01	5000.00	0.1622E-01

2725.00 0.3704E-01 K&D_Crushing-Haul-Road

 ***** AERSCREEN MAXIMUM IMPACT SUMMARY *****

3-hour, 8-hour, and 24-hour scaled concentrations are equal to the 1-hour concentration as referenced in SCREENING PROCEDURES FOR ESTIMATING THE AIR QUALITY IMPACT OF STATIONARY SOURCES, REVISED (Section 4.5.4) Report number EPA-454/R-92-019 http://www.epa.gov/scram001/guidance_permit.htm under Screening Guidance

CALCULATION PROCEDURE	MAXIMUM 1-HOUR CONC (ug/m3)	SCALED 3-HOUR CONC (ug/m3)	SCALED 8-HOUR CONC (ug/m3)	SCALED 24-HOUR CONC (ug/m3)	SCALED ANNUAL CONC (ug/m3)
FLAT TERRAIN	0.3976	0.3976	0.3976	0.3976	N/A
DISTANCE FROM SOURCE	472.44 meters				
IMPACT AT THE AMBIENT BOUNDARY	0.3976	0.3976	0.3976	0.3976	N/A
DISTANCE FROM SOURCE	472.44 meters				

K&D_Crushing-StoragePile-LoadOut

AERSCREEN 16216 / AERMOD 16216r

01/09/18
14:12:44

TITLE: K&D_CRUSHING-STORAGEPILE_LOADOUT

***** VOLUME PARAMETERS *****

SOURCE EMISSION RATE:	0.416E-02 g/s	0.330E-01 lb/hr
VOLUME HEIGHT:	3.05 meters	10.01 feet
INITIAL LATERAL DIMENSION:	0.57 meters	1.87 feet
INITIAL VERTICAL DIMENSION:	0.28 meters	0.92 feet
RURAL OR URBAN:	RURAL	
INITIAL PROBE DISTANCE =	5000. meters	16404. feet

***** BUILDING DOWNWASH PARAMETERS *****

BUILDING DOWNWASH NOT USED FOR NON-POINT SOURCES

***** PROBE ANALYSIS *****
25 meter receptor spacing: 472. meters - 5000. meters

Zo SECTOR	ROUGHNESS LENGTH	1-HR CONC (ug/m3)	DIST (m)	TEMPORAL PERIOD
1*	1.300	0.3131	472.4	SUM

* = worst case flow sector

***** MAKEMET METEOROLOGY PARAMETERS *****

MIN/MAX TEMPERATURE: 250.0 / 310.0 (K)

MINIMUM WIND SPEED: 0.5 m/s

ANEMOMETER HEIGHT: 10.000 meters

SURFACE CHARACTERISTICS INPUT: AERMET SEASONAL TABLES

DOMINANT SURFACE PROFILE: Coniferous Forest
 DOMINANT CLIMATE TYPE: Average Moisture
 DOMINANT SEASON: Summer

ALBEDO: 0.12
 BOWEN RATIO: 0.30
 ROUGHNESS LENGTH: 1.300 (meters)

SURFACE FRICTION VELOCITY (U*) NOT ADJUSTED

K&D_Crushing-StoragePile-LoadOut
 METEOROLOGY CONDITIONS USED TO PREDICT OVERALL MAXIMUM IMPACT

YR MO DY JDY HR
 10 01 02 2 12

HO	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O	LEN	Z0	BOWEN	ALBEDO	REF	WS
1.78	0.115	0.100	0.020	19.	89.	-72.5	1.300	0.30	0.12	0.50		
HT	REF	TA	HT									
10.0	280.0	2.0										

METEOROLOGY CONDITIONS USED TO PREDICT AMBIENT BOUNDARY IMPACT

YR MO DY JDY HR
 10 01 02 2 12

HO	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O	LEN	Z0	BOWEN	ALBEDO	REF	WS
1.78	0.115	0.100	0.020	19.	89.	-72.5	1.300	0.30	0.12	0.50		
HT	REF	TA	HT									
10.0	280.0	2.0										

***** AERSCREEN AUTOMATED DISTANCES *****
 OVERALL MAXIMUM CONCENTRATIONS BY DISTANCE

DIST (m)	MAXIMUM 1-HR CONC (ug/m3)	DIST (m)	MAXIMUM 1-HR CONC (ug/m3)
472.44	0.3131	2750.00	0.8973E-01
475.00	0.3122	2775.00	0.8912E-01
500.00	0.3041	2800.00	0.8851E-01
525.00	0.2962	2825.00	0.8792E-01
550.00	0.2888	2850.00	0.8733E-01
575.00	0.2817	2875.00	0.8675E-01
600.00	0.2749	2900.00	0.8618E-01
625.00	0.2675	2925.00	0.8562E-01
650.00	0.2599	2950.00	0.8507E-01
675.00	0.2529	2975.00	0.8452E-01
700.00	0.2463	3000.00	0.8398E-01
725.00	0.2401	3025.00	0.8345E-01
750.00	0.2342	3050.00	0.8293E-01
775.00	0.2287	3075.00	0.8241E-01
800.00	0.2235	3100.00	0.8190E-01
825.00	0.2185	3125.00	0.8140E-01
850.00	0.2138	3150.00	0.8091E-01
875.00	0.2094	3175.00	0.8042E-01
900.00	0.2051	3200.00	0.7994E-01
925.00	0.2011	3225.00	0.7946E-01

K&D_Crushing-StoragePile-LoadOut

950.00	0.1972	3250.00	0.7899E-01
975.00	0.1935	3275.00	0.7853E-01
1000.00	0.1899	3300.00	0.7807E-01
1025.00	0.1865	3325.00	0.7762E-01
1050.00	0.1833	3350.00	0.7717E-01
1075.00	0.1802	3375.00	0.7673E-01
1100.00	0.1772	3400.00	0.7630E-01
1125.00	0.1743	3425.00	0.7587E-01
1150.00	0.1715	3450.00	0.7544E-01
1175.00	0.1688	3475.00	0.7502E-01
1200.00	0.1662	3500.00	0.7461E-01
1225.00	0.1637	3525.00	0.7420E-01
1250.00	0.1613	3550.00	0.7380E-01
1275.00	0.1590	3575.00	0.7340E-01
1300.00	0.1567	3600.00	0.7300E-01
1325.00	0.1546	3625.00	0.7261E-01
1350.00	0.1525	3650.00	0.7223E-01
1375.00	0.1504	3675.00	0.7185E-01
1400.00	0.1484	3700.00	0.7147E-01
1425.00	0.1465	3725.00	0.7110E-01
1450.00	0.1447	3750.00	0.7073E-01
1475.00	0.1428	3775.00	0.7036E-01
1500.00	0.1411	3800.00	0.7000E-01
1525.00	0.1394	3825.00	0.6965E-01
1550.00	0.1377	3850.00	0.6930E-01
1575.00	0.1361	3875.00	0.6895E-01
1600.00	0.1345	3900.00	0.6860E-01
1625.00	0.1330	3925.00	0.6826E-01
1650.00	0.1315	3950.00	0.6792E-01
1675.00	0.1300	3975.00	0.6759E-01
1700.00	0.1286	4000.00	0.6726E-01
1725.00	0.1272	4025.00	0.6693E-01
1750.00	0.1259	4050.00	0.6661E-01
1775.00	0.1246	4075.00	0.6629E-01
1800.00	0.1233	4100.00	0.6597E-01
1825.00	0.1220	4125.00	0.6566E-01
1850.00	0.1208	4150.00	0.6535E-01
1875.00	0.1196	4175.00	0.6504E-01
1900.00	0.1184	4200.00	0.6474E-01
1925.00	0.1173	4225.00	0.6444E-01
1950.00	0.1162	4250.00	0.6414E-01
1975.00	0.1151	4275.00	0.6384E-01
2000.00	0.1140	4300.00	0.6355E-01
2025.00	0.1129	4325.00	0.6326E-01
2050.00	0.1119	4350.00	0.6298E-01
2075.00	0.1109	4375.00	0.6269E-01
2100.00	0.1099	4400.00	0.6241E-01
2125.00	0.1090	4425.00	0.6213E-01
2150.00	0.1080	4450.00	0.6186E-01
2175.00	0.1071	4475.00	0.6158E-01
2200.00	0.1062	4500.00	0.6131E-01
2225.00	0.1053	4525.00	0.6104E-01
2250.00	0.1044	4550.00	0.6078E-01
2275.00	0.1035	4575.00	0.6052E-01
2300.00	0.1027	4600.00	0.6026E-01
2325.00	0.1019	4625.00	0.6000E-01
2350.00	0.1010	4650.00	0.5974E-01
2375.00	0.1002	4675.00	0.5949E-01
2400.00	0.9945E-01	4700.00	0.5924E-01
2425.00	0.9868E-01	4725.00	0.5899E-01
2450.00	0.9792E-01	4750.00	0.5874E-01
2475.00	0.9717E-01	4775.00	0.5849E-01
2500.00	0.9644E-01	4800.00	0.5825E-01

K&D_Crushing-StoragePile-LoadOut

2525.00	0.9572E-01	4825.00	0.5801E-01
2550.00	0.9501E-01	4850.00	0.5777E-01
2575.00	0.9431E-01	4875.00	0.5754E-01
2600.00	0.9362E-01	4900.00	0.5730E-01
2625.00	0.9295E-01	4925.00	0.5707E-01
2650.00	0.9228E-01	4950.00	0.5684E-01
2675.00	0.9163E-01	4975.00	0.5661E-01
2700.00	0.9099E-01	5000.00	0.5638E-01
2725.00	0.9035E-01		

***** AERSCREEN MAXIMUM IMPACT SUMMARY *****

CALCULATION PROCEDURE	MAXIMUM 1-HOUR CONC (ug/m3)	SCALED 3-HOUR CONC (ug/m3)	SCALED 8-HOUR CONC (ug/m3)	SCALED 24-HOUR CONC (ug/m3)	SCALED ANNUAL CONC (ug/m3)
FLAT TERRAIN	0.3131	0.3131	0.2818	0.1879	0.3131E-01
DISTANCE FROM SOURCE	472.44 meters				
IMPACT AT THE AMBIENT BOUNDARY	0.3131	0.3131	0.2818	0.1879	0.3131E-01
DISTANCE FROM SOURCE	472.44 meters				

K&D_CRUSHING-VEHICULAR-ACTIVITY

AERSCREEN 16216 / AERMOD 16216r

01/16/18
07:58:09

TITLE: K&D_CRUSHING-VEHICULAR-ACTIVITY

***** AREA PARAMETERS *****

SOURCE EMISSION RATE:	0.530E-05 g/s	0.421E-04 lb/hr
AREA EMISSION RATE:	0.530E-08 g/(s-m2)	0.421E-07 lb/(hr-m2)
AREA HEIGHT:	2.55 meters	8.37 feet
AREA SOURCE LONG SIDE:	100.00 meters	328.08 feet
AREA SOURCE SHORT SIDE:	10.00 meters	32.81 feet
INITIAL VERTICAL DIMENSION:	2.37 meters	7.78 feet
RURAL OR URBAN:	RURAL	
INITIAL PROBE DISTANCE =	5000. meters	16404. feet

***** BUILDING DOWNWASH PARAMETERS *****

BUILDING DOWNWASH NOT USED FOR NON-POINT SOURCES

***** FLOW SECTOR ANALYSIS *****
25 meter receptor spacing: 472. meters - 5000. meters

MAXIMUM IMPACT RECEPTOR

Zo SECTOR	SURFACE ROUGHNESS	1-HR CONC (ug/m3)	RADIAL (deg)	DIST (m)	TEMPORAL PERIOD
1*	1.300	0.5140E-02	5	472.4	WIN

* = worst case diagonal

***** MAKEMET METEOROLOGY PARAMETERS *****

MIN/MAX TEMPERATURE: 250.0 / 310.0 (K)
 MINIMUM WIND SPEED: 0.5 m/s
 ANEMOMETER HEIGHT: 10.000 meters

SURFACE CHARACTERISTICS INPUT: AERMET SEASONAL TABLES

DOMINANT SURFACE PROFILE: Coniferous Forest
 DOMINANT CLIMATE TYPE: Average Moisture
 DOMINANT SEASON: Winter

K&D_CRUSHING-VEHICULAR-ACTIVITY

ALBEDO: 0.35
 BOWEN RATIO: 1.50
 ROUGHNESS LENGTH: 1.300 (meters)

SURFACE FRICTION VELOCITY (U*) NOT ADJUSTED

METEOROLOGY CONDITIONS USED TO PREDICT OVERALL MAXIMUM IMPACT

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YR MO DY JDY HR
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10 01 01 1 01

  HO      U*      W*      DT/DZ  ZICNV  ZIMCH  M-O  LEN      ZO      BOWEN  ALBEDO  REF  WS
-----
-1.40  0.049 -9.000  0.020 -999.   25.    6.5  1.300   1.50   0.35   0.50

  HT      REF  TA      HT
-----
  10.0    250.0  2.0
  
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***** AERSCREEN AUTOMATED DISTANCES *****
 OVERALL MAXIMUM CONCENTRATIONS BY DISTANCE

DIST (m)	MAXIMUM 1-HR CONC (ug/m3)	DIST (m)	MAXIMUM 1-HR CONC (ug/m3)
472.44	0.5140E-02	2750.00	0.4729E-03
475.00	0.5103E-02	2775.00	0.4671E-03
500.00	0.4762E-02	2800.00	0.4614E-03
525.00	0.4459E-02	2825.00	0.4559E-03
550.00	0.4188E-02	2850.00	0.4505E-03
575.00	0.3944E-02	2875.00	0.4451E-03
600.00	0.3723E-02	2900.00	0.4399E-03
625.00	0.3523E-02	2925.00	0.4348E-03
650.00	0.3339E-02	2950.00	0.4298E-03
675.00	0.3174E-02	2975.00	0.4249E-03
700.00	0.3022E-02	3000.00	0.4201E-03
725.00	0.2882E-02	3025.00	0.4154E-03
750.00	0.2753E-02	3050.00	0.4108E-03
775.00	0.2634E-02	3075.00	0.4062E-03
800.00	0.2524E-02	3100.00	0.4018E-03
825.00	0.2421E-02	3125.00	0.3974E-03
850.00	0.2325E-02	3150.00	0.3931E-03
875.00	0.2236E-02	3174.99	0.3889E-03
900.00	0.2152E-02	3200.00	0.3848E-03
925.00	0.2074E-02	3225.00	0.3807E-03
950.00	0.2001E-02	3250.00	0.3768E-03
975.00	0.1931E-02	3275.00	0.3729E-03
1000.00	0.1866E-02	3300.00	0.3690E-03
1025.00	0.1805E-02	3325.00	0.3653E-03
1050.00	0.1747E-02	3350.00	0.3616E-03
1075.00	0.1692E-02	3375.00	0.3579E-03
1100.00	0.1641E-02	3400.00	0.3543E-03
1125.00	0.1591E-02	3425.00	0.3508E-03

K&D_CRUSHING-VEHICULAR-ACTIVITY

1150.00	0.1545E-02	3450.00	0.3474E-03
1175.00	0.1500E-02	3475.00	0.3440E-03
1200.00	0.1458E-02	3500.00	0.3406E-03
1225.00	0.1418E-02	3525.00	0.3374E-03
1250.00	0.1380E-02	3550.00	0.3341E-03
1275.00	0.1343E-02	3575.00	0.3309E-03
1300.00	0.1308E-02	3600.00	0.3278E-03
1325.00	0.1275E-02	3625.00	0.3248E-03
1350.00	0.1243E-02	3650.00	0.3217E-03
1375.00	0.1212E-02	3675.00	0.3188E-03
1400.00	0.1183E-02	3700.00	0.3158E-03
1425.00	0.1155E-02	3725.00	0.3129E-03
1450.00	0.1128E-02	3750.00	0.3101E-03
1475.00	0.1102E-02	3775.00	0.3073E-03
1500.00	0.1077E-02	3800.00	0.3046E-03
1525.00	0.1053E-02	3825.00	0.3019E-03
1550.00	0.1031E-02	3850.00	0.2992E-03
1575.00	0.1008E-02	3875.00	0.2966E-03
1600.00	0.9870E-03	3900.00	0.2940E-03
1625.00	0.9665E-03	3925.00	0.2915E-03
1650.00	0.9467E-03	3950.00	0.2889E-03
1675.00	0.9275E-03	3975.00	0.2865E-03
1700.00	0.9091E-03	4000.00	0.2840E-03
1725.00	0.8912E-03	4025.00	0.2816E-03
1750.00	0.8740E-03	4050.00	0.2793E-03
1775.00	0.8573E-03	4075.00	0.2770E-03
1800.00	0.8412E-03	4100.00	0.2747E-03
1825.00	0.8256E-03	4125.00	0.2724E-03
1850.00	0.8104E-03	4150.00	0.2702E-03
1875.00	0.7958E-03	4175.00	0.2680E-03
1900.00	0.7816E-03	4200.00	0.2658E-03
1924.99	0.7679E-03	4225.00	0.2637E-03
1950.00	0.7545E-03	4250.00	0.2615E-03
1975.00	0.7416E-03	4275.00	0.2595E-03
2000.00	0.7290E-03	4300.00	0.2574E-03
2025.00	0.7168E-03	4325.00	0.2554E-03
2050.00	0.7050E-03	4350.00	0.2534E-03
2075.00	0.6934E-03	4375.00	0.2514E-03
2100.00	0.6823E-03	4400.00	0.2495E-03
2125.00	0.6714E-03	4425.00	0.2476E-03
2150.00	0.6608E-03	4450.00	0.2457E-03
2175.00	0.6505E-03	4475.00	0.2438E-03
2200.00	0.6405E-03	4500.00	0.2420E-03
2225.00	0.6307E-03	4525.00	0.2402E-03
2250.00	0.6212E-03	4550.00	0.2384E-03
2275.00	0.6119E-03	4575.00	0.2366E-03
2300.00	0.6029E-03	4600.00	0.2348E-03
2325.00	0.5941E-03	4625.00	0.2331E-03
2350.00	0.5855E-03	4650.00	0.2314E-03
2375.00	0.5772E-03	4675.00	0.2297E-03
2400.00	0.5690E-03	4700.00	0.2281E-03
2425.00	0.5611E-03	4725.00	0.2264E-03
2450.00	0.5533E-03	4750.00	0.2248E-03
2475.00	0.5457E-03	4775.00	0.2232E-03
2500.00	0.5383E-03	4800.00	0.2216E-03
2525.00	0.5311E-03	4825.00	0.2201E-03
2550.00	0.5240E-03	4850.00	0.2185E-03
2575.00	0.5171E-03	4875.00	0.2170E-03
2600.00	0.5104E-03	4900.00	0.2155E-03
2625.00	0.5038E-03	4925.00	0.2140E-03
2650.00	0.4973E-03	4950.00	0.2125E-03
2675.00	0.4910E-03	4975.00	0.2111E-03
2700.00	0.4848E-03	5000.00	0.2096E-03

2725.00 K&D_CRUSHING-VEHICULAR-ACTIVITY
 0.4788E-03

 ***** AERSCREEN MAXIMUM IMPACT SUMMARY *****

3-hour, 8-hour, and 24-hour scaled concentrations are equal to the 1-hour concentration as referenced in SCREENING PROCEDURES FOR ESTIMATING THE AIR QUALITY IMPACT OF STATIONARY SOURCES, REVISED (Section 4.5.4) Report number EPA-454/R-92-019 http://www.epa.gov/scram001/guidance_permit.htm under Screening Guidance

CALCULATION PROCEDURE	MAXIMUM 1-HOUR CONC (ug/m3)	SCALED 3-HOUR CONC (ug/m3)	SCALED 8-HOUR CONC (ug/m3)	SCALED 24-HOUR CONC (ug/m3)	SCALED ANNUAL CONC (ug/m3)
FLAT TERRAIN	0.5140E-02	0.5140E-02	0.5140E-02	0.5140E-02	N/A
DISTANCE FROM SOURCE	472.44 meters				
IMPACT AT THE AMBIENT BOUNDARY	0.5140E-02	0.5140E-02	0.5140E-02	0.5140E-02	N/A
DISTANCE FROM SOURCE	472.44 meters				

K&D_Crushing-StoragePile-windEorsion

AERSCREEN 16216 / AERMOD 16216r

01/09/18
14:14:17

TITLE: K&D_CRUSHING-STORAGEPILE-WINDEROSION

***** AREA PARAMETERS *****

SOURCE EMISSION RATE:	0.674E-04 g/s	0.535E-03 lb/hr
AREA EMISSION RATE:	0.111E-06 g/(s-m2)	0.881E-06 lb/(hr-m2)
AREA HEIGHT:	7.62 meters	25.00 feet
AREA SOURCE LONG SIDE:	24.64 meters	80.83 feet
AREA SOURCE SHORT SIDE:	24.64 meters	80.83 feet
INITIAL VERTICAL DIMENSION:	0.00 meters	0.00 feet
RURAL OR URBAN:	RURAL	
INITIAL PROBE DISTANCE =	5000. meters	16404. feet

***** BUILDING DOWNWASH PARAMETERS *****

BUILDING DOWNWASH NOT USED FOR NON-POINT SOURCES

***** FLOW SECTOR ANALYSIS *****
25 meter receptor spacing: 472. meters - 5000. meters

MAXIMUM IMPACT RECEPTOR

Zo SECTOR	SURFACE ROUGHNESS	1-HR CONC (ug/m3)	RADIAL (deg)	DIST (m)	TEMPORAL PERIOD
1*	1.300	0.4752E-01	15	472.4	WIN

* = worst case diagonal

***** MAKEMET METEOROLOGY PARAMETERS *****

MIN/MAX TEMPERATURE: 250.0 / 310.0 (K)

MINIMUM WIND SPEED: 0.5 m/s

ANEMOMETER HEIGHT: 10.000 meters

SURFACE CHARACTERISTICS INPUT: AERMET SEASONAL TABLES

DOMINANT SURFACE PROFILE: Coniferous Forest
DOMINANT CLIMATE TYPE: Average Moisture
DOMINANT SEASON: Winter

K&D_Crushing-StoragePile-windEorsion

ALBEDO: 0.35
 BOWEN RATIO: 1.50
 ROUGHNESS LENGTH: 1.300 (meters)

SURFACE FRICTION VELOCITY (U*) NOT ADJUSTED

METEOROLOGY CONDITIONS USED TO PREDICT OVERALL MAXIMUM IMPACT

YR MO DY JDY HR

10 01 01 1 01

HO	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O	LEN	Z0	BOWEN	ALBEDO	REF	WS
-1.40	0.049	-9.000	0.020	-999.	25.		6.5	1.300	1.50	0.35		0.50

HT	REF	TA	HT
10.0	250.0		2.0

***** AERSCREEN AUTOMATED DISTANCES *****
 OVERALL MAXIMUM CONCENTRATIONS BY DISTANCE

DIST (m)	MAXIMUM 1-HR CONC (ug/m3)	DIST (m)	MAXIMUM 1-HR CONC (ug/m3)
472.44	0.4752E-01	2749.99	0.5041E-02
475.00	0.4722E-01	2775.00	0.4981E-02
500.00	0.4446E-01	2800.00	0.4922E-02
525.00	0.4196E-01	2824.99	0.4864E-02
550.00	0.3970E-01	2849.99	0.4808E-02
575.00	0.3763E-01	2875.00	0.4752E-02
600.00	0.3574E-01	2900.00	0.4698E-02
625.00	0.3402E-01	2925.00	0.4645E-02
650.00	0.3242E-01	2950.00	0.4593E-02
675.00	0.3103E-01	2975.00	0.4541E-02
700.00	0.2966E-01	3000.00	0.4491E-02
725.00	0.2840E-01	3025.00	0.4442E-02
750.00	0.2722E-01	3050.00	0.4394E-02
775.00	0.2613E-01	3075.00	0.4346E-02
800.00	0.2511E-01	3100.00	0.4300E-02
825.00	0.2416E-01	3125.00	0.4254E-02
850.00	0.2326E-01	3150.00	0.4209E-02
875.00	0.2243E-01	3174.99	0.4165E-02
900.00	0.2164E-01	3200.00	0.4122E-02
924.99	0.2090E-01	3225.00	0.4079E-02
950.00	0.2020E-01	3250.00	0.4038E-02
975.00	0.1955E-01	3274.99	0.3997E-02
1000.00	0.1892E-01	3300.00	0.3956E-02
1024.99	0.1834E-01	3325.00	0.3917E-02
1050.00	0.1778E-01	3350.00	0.3878E-02
1075.00	0.1725E-01	3375.00	0.3840E-02
1100.00	0.1675E-01	3400.00	0.3802E-02
1125.00	0.1627E-01	3425.00	0.3765E-02

K&D_Crushing-StoragePile-windEorsion

1149.99	0.1582E-01	3450.00	0.3729E-02
1175.00	0.1538E-01	3475.00	0.3693E-02
1200.00	0.1497E-01	3500.00	0.3658E-02
1225.00	0.1458E-01	3525.00	0.3624E-02
1250.00	0.1420E-01	3550.00	0.3590E-02
1275.00	0.1384E-01	3575.00	0.3556E-02
1300.00	0.1350E-01	3600.00	0.3523E-02
1325.00	0.1317E-01	3625.00	0.3491E-02
1350.00	0.1285E-01	3650.00	0.3459E-02
1375.00	0.1255E-01	3674.99	0.3428E-02
1400.00	0.1226E-01	3700.00	0.3397E-02
1425.00	0.1198E-01	3724.99	0.3367E-02
1449.99	0.1171E-01	3750.00	0.3337E-02
1475.00	0.1145E-01	3775.00	0.3307E-02
1500.00	0.1120E-01	3800.00	0.3278E-02
1525.00	0.1096E-01	3825.00	0.3250E-02
1550.00	0.1073E-01	3849.99	0.3222E-02
1575.00	0.1051E-01	3875.00	0.3194E-02
1600.00	0.1030E-01	3900.00	0.3167E-02
1625.00	0.1009E-01	3925.00	0.3140E-02
1650.00	0.9891E-02	3950.00	0.3113E-02
1674.99	0.9698E-02	3975.00	0.3087E-02
1700.00	0.9512E-02	4000.00	0.3061E-02
1725.00	0.9331E-02	4025.00	0.3036E-02
1750.00	0.9157E-02	4050.00	0.3011E-02
1774.99	0.8988E-02	4075.00	0.2986E-02
1800.00	0.8824E-02	4100.00	0.2962E-02
1824.99	0.8666E-02	4125.00	0.2938E-02
1850.00	0.8512E-02	4150.00	0.2915E-02
1875.00	0.8363E-02	4175.00	0.2891E-02
1899.99	0.8219E-02	4200.00	0.2868E-02
1924.99	0.8079E-02	4225.00	0.2846E-02
1950.00	0.7942E-02	4250.00	0.2823E-02
1975.00	0.7810E-02	4275.00	0.2801E-02
2000.00	0.7682E-02	4300.00	0.2780E-02
2025.00	0.7557E-02	4325.00	0.2758E-02
2050.00	0.7436E-02	4350.00	0.2737E-02
2075.00	0.7318E-02	4375.00	0.2716E-02
2100.00	0.7203E-02	4400.00	0.2696E-02
2124.99	0.7092E-02	4425.00	0.2675E-02
2150.00	0.6983E-02	4450.00	0.2655E-02
2175.00	0.6877E-02	4475.00	0.2635E-02
2199.99	0.6774E-02	4500.00	0.2616E-02
2224.99	0.6674E-02	4525.00	0.2597E-02
2250.00	0.6576E-02	4550.00	0.2577E-02
2275.00	0.6481E-02	4575.00	0.2559E-02
2300.00	0.6388E-02	4599.99	0.2540E-02
2325.00	0.6297E-02	4625.00	0.2522E-02
2350.00	0.6209E-02	4650.00	0.2504E-02
2375.00	0.6122E-02	4675.00	0.2486E-02
2399.99	0.6038E-02	4700.00	0.2468E-02
2425.00	0.5956E-02	4725.00	0.2451E-02
2449.99	0.5876E-02	4750.00	0.2433E-02
2475.00	0.5797E-02	4775.00	0.2416E-02
2500.00	0.5720E-02	4800.00	0.2400E-02
2525.00	0.5646E-02	4825.00	0.2383E-02
2550.00	0.5572E-02	4850.00	0.2367E-02
2575.00	0.5501E-02	4875.00	0.2350E-02
2600.00	0.5431E-02	4900.00	0.2334E-02
2625.00	0.5362E-02	4925.00	0.2318E-02
2650.00	0.5295E-02	4950.00	0.2303E-02
2675.00	0.5230E-02	4975.00	0.2287E-02
2700.00	0.5166E-02	5000.00	0.2272E-02

2725.00 K&D_Crushing-StoragePile-windEorsion
 0.5103E-02

***** AERSCREEN MAXIMUM IMPACT SUMMARY *****

3-hour, 8-hour, and 24-hour scaled concentrations are equal to the 1-hour concentration as referenced in SCREENING PROCEDURES FOR ESTIMATING THE AIR QUALITY IMPACT OF STATIONARY SOURCES, REVISED (Section 4.5.4) Report number EPA-454/R-92-019 http://www.epa.gov/scram001/guidance_permit.htm under Screening Guidance

CALCULATION PROCEDURE	MAXIMUM 1-HOUR CONC (ug/m3)	SCALED 3-HOUR CONC (ug/m3)	SCALED 8-HOUR CONC (ug/m3)	SCALED 24-HOUR CONC (ug/m3)	SCALED ANNUAL CONC (ug/m3)
FLAT TERRAIN	0.4752E-01	0.4752E-01	0.4752E-01	0.4752E-01	N/A
DISTANCE FROM SOURCE	472.44 meters				
IMPACT AT THE AMBIENT BOUNDARY	0.4752E-01	0.4752E-01	0.4752E-01	0.4752E-01	N/A
DISTANCE FROM SOURCE	472.44 meters				

K&D_Crushing-Stacker

AERSCREEN 16216 / AERMOD 16216r

01/09/18
13:52:32

TITLE: K&D_CRUSHING-STACKER

***** VOLUME PARAMETERS *****

SOURCE EMISSION RATE: 0.125E-04 g/s 0.993E-04 lb/hr
VOLUME HEIGHT: 2.74 meters 8.99 feet
INITIAL LATERAL DIMENSION: 0.21 meters 0.69 feet
INITIAL VERTICAL DIMENSION: 0.43 meters 1.41 feet
RURAL OR URBAN: RURAL
INITIAL PROBE DISTANCE = 5000. meters 16404. feet

***** BUILDING DOWNWASH PARAMETERS *****

BUILDING DOWNWASH NOT USED FOR NON-POINT SOURCES

***** PROBE ANALYSIS *****
25 meter receptor spacing: 472. meters - 5000. meters

Zo SECTOR	ROUGHNESS LENGTH	1-HR CONC (ug/m3)	DIST (m)	TEMPORAL PERIOD
1*	1.300	0.9702E-03	472.4	SUM

* = worst case flow sector

***** MAKEMET METEOROLOGY PARAMETERS *****

MIN/MAX TEMPERATURE: 250.0 / 310.0 (K)
MINIMUM WIND SPEED: 0.5 m/s
ANEMOMETER HEIGHT: 10.000 meters
SURFACE CHARACTERISTICS INPUT: AERMET SEASONAL TABLES
DOMINANT SURFACE PROFILE: Coniferous Forest
DOMINANT CLIMATE TYPE: Average Moisture
DOMINANT SEASON: Summer
ALBEDO: 0.12
BOWEN RATIO: 0.30
ROUGHNESS LENGTH: 1.300 (meters)
SURFACE FRICTION VELOCITY (U*) NOT ADJUSTED

K&D_Crushing-Stacker
 METEOROLOGY CONDITIONS USED TO PREDICT OVERALL MAXIMUM IMPACT

YR MO DY JDY HR
 10 01 02 2 12

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O	LEN	Z0	BOWEN	ALBEDO	REF	WS
1.78	0.115	0.100	0.020	19.	89.	-72.5	1.300	0.30	0.12	0.50		
HT	REF	TA	HT									
10.0	280.0	2.0										

METEOROLOGY CONDITIONS USED TO PREDICT AMBIENT BOUNDARY IMPACT

YR MO DY JDY HR
 10 01 02 2 12

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O	LEN	Z0	BOWEN	ALBEDO	REF	WS
1.78	0.115	0.100	0.020	19.	89.	-72.5	1.300	0.30	0.12	0.50		
HT	REF	TA	HT									
10.0	280.0	2.0										

***** AERSCREEN AUTOMATED DISTANCES *****
 OVERALL MAXIMUM CONCENTRATIONS BY DISTANCE

DIST (m)	MAXIMUM 1-HR CONC (ug/m3)	DIST (m)	MAXIMUM 1-HR CONC (ug/m3)
472.44	0.9702E-03	2750.00	0.2786E-03
475.00	0.9676E-03	2775.00	0.2767E-03
500.00	0.9425E-03	2800.00	0.2748E-03
525.00	0.9185E-03	2825.00	0.2729E-03
550.00	0.8955E-03	2850.00	0.2711E-03
575.00	0.8736E-03	2875.00	0.2693E-03
600.00	0.8527E-03	2900.00	0.2676E-03
625.00	0.8296E-03	2925.00	0.2658E-03
650.00	0.8064E-03	2950.00	0.2641E-03
675.00	0.7846E-03	2975.00	0.2624E-03
700.00	0.7641E-03	3000.00	0.2607E-03
725.00	0.7449E-03	3025.00	0.2591E-03
750.00	0.7268E-03	3050.00	0.2575E-03
775.00	0.7096E-03	3075.00	0.2559E-03
800.00	0.6934E-03	3100.00	0.2543E-03
825.00	0.6781E-03	3125.00	0.2527E-03
850.00	0.6635E-03	3150.00	0.2512E-03
875.00	0.6497E-03	3175.00	0.2497E-03
900.00	0.6365E-03	3200.00	0.2482E-03
925.00	0.6239E-03	3225.00	0.2467E-03

K&D_Crushing-Stacker

950.00	0.6119E-03	3250.00	0.2453E-03
975.00	0.6004E-03	3275.00	0.2438E-03
1000.00	0.5894E-03	3300.00	0.2424E-03
1025.00	0.5789E-03	3325.00	0.2410E-03
1050.00	0.5688E-03	3350.00	0.2396E-03
1075.00	0.5591E-03	3375.00	0.2382E-03
1100.00	0.5498E-03	3400.00	0.2369E-03
1125.00	0.5408E-03	3425.00	0.2356E-03
1150.00	0.5322E-03	3450.00	0.2342E-03
1175.00	0.5239E-03	3475.00	0.2329E-03
1200.00	0.5159E-03	3500.00	0.2317E-03
1225.00	0.5082E-03	3525.00	0.2304E-03
1250.00	0.5007E-03	3550.00	0.2291E-03
1275.00	0.4935E-03	3575.00	0.2279E-03
1300.00	0.4865E-03	3600.00	0.2267E-03
1325.00	0.4797E-03	3625.00	0.2255E-03
1350.00	0.4732E-03	3650.00	0.2243E-03
1375.00	0.4669E-03	3675.00	0.2231E-03
1400.00	0.4607E-03	3700.00	0.2219E-03
1425.00	0.4548E-03	3725.00	0.2207E-03
1450.00	0.4490E-03	3750.00	0.2196E-03
1475.00	0.4434E-03	3775.00	0.2185E-03
1500.00	0.4379E-03	3800.00	0.2174E-03
1525.00	0.4326E-03	3825.00	0.2162E-03
1550.00	0.4275E-03	3850.00	0.2152E-03
1575.00	0.4224E-03	3875.00	0.2141E-03
1600.00	0.4176E-03	3900.00	0.2130E-03
1625.00	0.4128E-03	3925.00	0.2119E-03
1650.00	0.4082E-03	3950.00	0.2109E-03
1675.00	0.4037E-03	3975.00	0.2099E-03
1700.00	0.3993E-03	4000.00	0.2088E-03
1725.00	0.3950E-03	4025.00	0.2078E-03
1750.00	0.3908E-03	4050.00	0.2068E-03
1775.00	0.3867E-03	4075.00	0.2058E-03
1800.00	0.3827E-03	4100.00	0.2048E-03
1825.00	0.3788E-03	4125.00	0.2039E-03
1850.00	0.3750E-03	4150.00	0.2029E-03
1875.00	0.3713E-03	4175.00	0.2020E-03
1900.00	0.3676E-03	4200.00	0.2010E-03
1925.00	0.3641E-03	4225.00	0.2001E-03
1950.00	0.3606E-03	4250.00	0.1991E-03
1975.00	0.3572E-03	4275.00	0.1982E-03
2000.00	0.3539E-03	4300.00	0.1973E-03
2025.00	0.3506E-03	4325.00	0.1964E-03
2050.00	0.3474E-03	4350.00	0.1955E-03
2075.00	0.3443E-03	4375.00	0.1947E-03
2100.00	0.3412E-03	4400.00	0.1938E-03
2125.00	0.3382E-03	4425.00	0.1929E-03
2150.00	0.3353E-03	4450.00	0.1921E-03
2175.00	0.3324E-03	4475.00	0.1912E-03
2200.00	0.3296E-03	4500.00	0.1904E-03
2225.00	0.3268E-03	4525.00	0.1895E-03
2250.00	0.3241E-03	4550.00	0.1887E-03
2275.00	0.3214E-03	4575.00	0.1879E-03
2300.00	0.3188E-03	4600.00	0.1871E-03
2325.00	0.3162E-03	4625.00	0.1863E-03
2350.00	0.3137E-03	4650.00	0.1855E-03
2375.00	0.3112E-03	4675.00	0.1847E-03
2400.00	0.3087E-03	4700.00	0.1839E-03
2425.00	0.3063E-03	4725.00	0.1832E-03
2450.00	0.3040E-03	4750.00	0.1824E-03
2475.00	0.3017E-03	4775.00	0.1816E-03
2500.00	0.2994E-03	4800.00	0.1809E-03

K&D_Crushing-Stacker

2525.00	0.2972E-03	4825.00	0.1801E-03
2550.00	0.2950E-03	4850.00	0.1794E-03
2575.00	0.2928E-03	4875.00	0.1787E-03
2600.00	0.2907E-03	4900.00	0.1779E-03
2625.00	0.2886E-03	4925.00	0.1772E-03
2650.00	0.2865E-03	4950.00	0.1765E-03
2675.00	0.2845E-03	4975.00	0.1758E-03
2700.00	0.2825E-03	5000.00	0.1751E-03
2725.00	0.2805E-03		

***** AERSCREEN MAXIMUM IMPACT SUMMARY *****

CALCULATION PROCEDURE	MAXIMUM 1-HOUR CONC (ug/m3)	SCALED 3-HOUR CONC (ug/m3)	SCALED 8-HOUR CONC (ug/m3)	SCALED 24-HOUR CONC (ug/m3)	SCALED ANNUAL CONC (ug/m3)
FLAT TERRAIN	0.9702E-03	0.9702E-03	0.8732E-03	0.5821E-03	0.9702E-04
DISTANCE FROM SOURCE	472.44 meters				
IMPACT AT THE AMBIENT BOUNDARY	0.9702E-03	0.9702E-03	0.8732E-03	0.5821E-03	0.9702E-04
DISTANCE FROM SOURCE	472.44 meters				

K&D_Crushing-Crusher

AERSCREEN 16216 / AERMOD 16216r

01/02/18
13:48:50

TITLE: K&D_Crushing-Crusher

***** VOLUME PARAMETERS *****

SOURCE EMISSION RATE:	0.827E-04 g/s	0.656E-03 lb/hr
VOLUME HEIGHT:	1.22 meters	4.00 feet
INITIAL LATERAL DIMENSION:	0.57 meters	1.87 feet
INITIAL VERTICAL DIMENSION:	0.57 meters	1.87 feet
RURAL OR URBAN:	RURAL	
INITIAL PROBE DISTANCE =	5000. meters	16404. feet

***** BUILDING DOWNWASH PARAMETERS *****

BUILDING DOWNWASH NOT USED FOR NON-POINT SOURCES

***** PROBE ANALYSIS *****

25 meter receptor spacing: 472. meters - 5000. meters

Zo SECTOR	ROUGHNESS LENGTH	1-HR CONC (ug/m3)	DIST (m)	TEMPORAL PERIOD
1*	1.300	0.8054E-02	472.4	SUM

* = worst case flow sector

***** MAKEMET METEOROLOGY PARAMETERS *****

MIN/MAX TEMPERATURE: 250.0 / 310.0 (K)

MINIMUM WIND SPEED: 0.5 m/s

ANEMOMETER HEIGHT: 10.000 meters

SURFACE CHARACTERISTICS INPUT: AERMET SEASONAL TABLES

DOMINANT SURFACE PROFILE: Coniferous Forest
 DOMINANT CLIMATE TYPE: Average Moisture
 DOMINANT SEASON: Summer

ALBEDO: 0.12
 BOWEN RATIO: 0.30
 ROUGHNESS LENGTH: 1.300 (meters)

SURFACE FRICTION VELOCITY (U*) NOT ADJUSTED

K&D_Crushing-Crusher
 METEOROLOGY CONDITIONS USED TO PREDICT OVERALL MAXIMUM IMPACT

YR MO DY JDY HR
 10 01 02 2 12

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF	WS
1.78	0.115	0.100	0.020	19.	89.	-72.5	1.300	0.30	0.12		0.50
HT	REF TA	HT									
10.0	280.0	2.0									

METEOROLOGY CONDITIONS USED TO PREDICT AMBIENT BOUNDARY IMPACT

YR MO DY JDY HR
 10 01 02 2 12

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF	WS
1.78	0.115	0.100	0.020	19.	89.	-72.5	1.300	0.30	0.12		0.50
HT	REF TA	HT									
10.0	280.0	2.0									

***** AERSCREEN AUTOMATED DISTANCES *****
 OVERALL MAXIMUM CONCENTRATIONS BY DISTANCE

DIST (m)	MAXIMUM 1-HR CONC (ug/m3)	DIST (m)	MAXIMUM 1-HR CONC (ug/m3)
472.44	0.8054E-02	2750.00	0.2336E-02
475.00	0.8034E-02	2775.00	0.2320E-02
500.00	0.7836E-02	2800.00	0.2305E-02
525.00	0.7645E-02	2825.00	0.2289E-02
550.00	0.7461E-02	2850.00	0.2274E-02
575.00	0.7284E-02	2875.00	0.2259E-02
600.00	0.7115E-02	2900.00	0.2244E-02
625.00	0.6925E-02	2925.00	0.2230E-02
650.00	0.6732E-02	2950.00	0.2215E-02
675.00	0.6552E-02	2975.00	0.2201E-02
700.00	0.6382E-02	3000.00	0.2187E-02
725.00	0.6223E-02	3025.00	0.2173E-02
750.00	0.6072E-02	3050.00	0.2160E-02
775.00	0.5930E-02	3075.00	0.2146E-02
800.00	0.5795E-02	3100.00	0.2133E-02
825.00	0.5668E-02	3125.00	0.2120E-02
850.00	0.5547E-02	3150.00	0.2107E-02
875.00	0.5432E-02	3175.00	0.2094E-02
900.00	0.5322E-02	3200.00	0.2082E-02
925.00	0.5218E-02	3225.00	0.2070E-02

K&D_Crushing-Crusher

950.00	0.5118E-02	3250.00	0.2057E-02
975.00	0.5022E-02	3275.00	0.2045E-02
1000.00	0.4931E-02	3300.00	0.2033E-02
1025.00	0.4843E-02	3325.00	0.2022E-02
1050.00	0.4759E-02	3350.00	0.2010E-02
1075.00	0.4678E-02	3375.00	0.1999E-02
1100.00	0.4601E-02	3400.00	0.1987E-02
1125.00	0.4526E-02	3425.00	0.1976E-02
1150.00	0.4454E-02	3450.00	0.1965E-02
1175.00	0.4385E-02	3475.00	0.1954E-02
1200.00	0.4318E-02	3500.00	0.1943E-02
1225.00	0.4254E-02	3525.00	0.1933E-02
1250.00	0.4192E-02	3550.00	0.1922E-02
1275.00	0.4132E-02	3575.00	0.1912E-02
1300.00	0.4073E-02	3600.00	0.1902E-02
1325.00	0.4017E-02	3625.00	0.1892E-02
1350.00	0.3963E-02	3650.00	0.1882E-02
1375.00	0.3910E-02	3675.00	0.1872E-02
1400.00	0.3858E-02	3700.00	0.1862E-02
1425.00	0.3809E-02	3725.00	0.1852E-02
1450.00	0.3761E-02	3750.00	0.1843E-02
1475.00	0.3714E-02	3775.00	0.1833E-02
1500.00	0.3668E-02	3800.00	0.1824E-02
1525.00	0.3624E-02	3825.00	0.1814E-02
1550.00	0.3581E-02	3850.00	0.1805E-02
1575.00	0.3539E-02	3875.00	0.1796E-02
1600.00	0.3498E-02	3900.00	0.1787E-02
1625.00	0.3459E-02	3925.00	0.1778E-02
1650.00	0.3420E-02	3950.00	0.1770E-02
1675.00	0.3382E-02	3975.00	0.1761E-02
1700.00	0.3345E-02	4000.00	0.1752E-02
1725.00	0.3310E-02	4025.00	0.1744E-02
1750.00	0.3275E-02	4050.00	0.1735E-02
1775.00	0.3240E-02	4075.00	0.1727E-02
1800.00	0.3207E-02	4100.00	0.1719E-02
1825.00	0.3175E-02	4125.00	0.1711E-02
1850.00	0.3143E-02	4150.00	0.1703E-02
1875.00	0.3112E-02	4175.00	0.1695E-02
1900.00	0.3081E-02	4200.00	0.1687E-02
1925.00	0.3052E-02	4225.00	0.1679E-02
1950.00	0.3023E-02	4250.00	0.1671E-02
1975.00	0.2994E-02	4275.00	0.1663E-02
2000.00	0.2966E-02	4300.00	0.1656E-02
2025.00	0.2939E-02	4325.00	0.1648E-02
2050.00	0.2912E-02	4350.00	0.1641E-02
2075.00	0.2886E-02	4375.00	0.1633E-02
2100.00	0.2861E-02	4400.00	0.1626E-02
2125.00	0.2835E-02	4425.00	0.1619E-02
2150.00	0.2811E-02	4450.00	0.1612E-02
2175.00	0.2787E-02	4475.00	0.1605E-02
2200.00	0.2763E-02	4500.00	0.1598E-02
2225.00	0.2740E-02	4525.00	0.1591E-02
2250.00	0.2717E-02	4550.00	0.1584E-02
2275.00	0.2695E-02	4575.00	0.1577E-02
2300.00	0.2673E-02	4600.00	0.1570E-02
2325.00	0.2651E-02	4625.00	0.1563E-02
2350.00	0.2630E-02	4650.00	0.1557E-02
2375.00	0.2609E-02	4675.00	0.1550E-02
2400.00	0.2589E-02	4700.00	0.1543E-02
2425.00	0.2569E-02	4725.00	0.1537E-02
2450.00	0.2549E-02	4750.00	0.1531E-02
2475.00	0.2530E-02	4775.00	0.1524E-02
2500.00	0.2511E-02	4800.00	0.1518E-02

K&D_Crushing-Crusher					
2525.00	0.2492E-02		4825.00	0.1512E-02	
2550.00	0.2473E-02		4850.00	0.1505E-02	
2575.00	0.2455E-02		4875.00	0.1499E-02	
2600.00	0.2438E-02		4900.00	0.1493E-02	
2625.00	0.2420E-02		4925.00	0.1487E-02	
2650.00	0.2403E-02		4950.00	0.1481E-02	
2675.00	0.2386E-02		4975.00	0.1475E-02	
2700.00	0.2369E-02		5000.00	0.1469E-02	
2725.00	0.2353E-02				

***** AERSCREEN MAXIMUM IMPACT SUMMARY *****

CALCULATION PROCEDURE	MAXIMUM 1-HOUR CONC (ug/m3)	SCALED 3-HOUR CONC (ug/m3)	SCALED 8-HOUR CONC (ug/m3)	SCALED 24-HOUR CONC (ug/m3)	SCALED ANNUAL CONC (ug/m3)
FLAT TERRAIN	0.8054E-02	0.8054E-02	0.7249E-02	0.4833E-02	0.8054E-03
DISTANCE FROM SOURCE	472.44 meters				
IMPACT AT THE AMBIENT BOUNDARY	0.8054E-02	0.8054E-02	0.7249E-02	0.4833E-02	0.8054E-03
DISTANCE FROM SOURCE	472.44 meters				

K&D_Crushing-Conveyor

AERSCREEN 16216 / AERMOD 16216r

01/02/18
13:57:42

TITLE: K&D_Crushing-Conveyor

***** VOLUME PARAMETERS *****

SOURCE EMISSION RATE:	0.593E-05 g/s	0.470E-04 lb/hr
VOLUME HEIGHT:	2.13 meters	6.99 feet
INITIAL LATERAL DIMENSION:	0.21 meters	0.69 feet
INITIAL VERTICAL DIMENSION:	0.14 meters	0.46 feet
RURAL OR URBAN:	RURAL	
INITIAL PROBE DISTANCE =	5000. meters	16404. feet

***** BUILDING DOWNWASH PARAMETERS *****

BUILDING DOWNWASH NOT USED FOR NON-POINT SOURCES

***** PROBE ANALYSIS *****
25 meter receptor spacing: 472. meters - 5000. meters

Zo SECTOR	ROUGHNESS LENGTH	1-HR CONC (ug/m3)	DIST (m)	TEMPORAL PERIOD
1*	1.300	0.4929E-03	472.4	SUM

* = worst case flow sector

***** MAKEMET METEOROLOGY PARAMETERS *****

MIN/MAX TEMPERATURE: 250.0 / 310.0 (K)

MINIMUM WIND SPEED: 0.5 m/s

ANEMOMETER HEIGHT: 10.000 meters

SURFACE CHARACTERISTICS INPUT: AERMET SEASONAL TABLES

DOMINANT SURFACE PROFILE: Coniferous Forest
 DOMINANT CLIMATE TYPE: Average Moisture
 DOMINANT SEASON: Summer

ALBEDO: 0.12
 BOWEN RATIO: 0.30
 ROUGHNESS LENGTH: 1.300 (meters)

SURFACE FRICTION VELOCITY (U*) NOT ADJUSTED

K&D_Crushing-Conveyor
 METEOROLOGY CONDITIONS USED TO PREDICT OVERALL MAXIMUM IMPACT

YR MO DY JDY HR
 10 01 02 2 12

HO	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS
1.78	0.115	0.100	0.020	19.	89.	-72.5	1.300	0.30	0.12	0.50
HT	REF TA	HT								
10.0	280.0	2.0								

METEOROLOGY CONDITIONS USED TO PREDICT AMBIENT BOUNDARY IMPACT

YR MO DY JDY HR
 10 01 02 2 12

HO	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS
1.78	0.115	0.100	0.020	19.	89.	-72.5	1.300	0.30	0.12	0.50
HT	REF TA	HT								
10.0	280.0	2.0								

***** AERSCREEN AUTOMATED DISTANCES *****
 OVERALL MAXIMUM CONCENTRATIONS BY DISTANCE

DIST (m)	MAXIMUM 1-HR CONC (ug/m3)	DIST (m)	MAXIMUM 1-HR CONC (ug/m3)
472.44	0.4929E-03	2750.00	0.1421E-03
475.00	0.4916E-03	2775.00	0.1411E-03
500.00	0.4791E-03	2800.00	0.1401E-03
525.00	0.4671E-03	2825.00	0.1392E-03
550.00	0.4556E-03	2850.00	0.1383E-03
575.00	0.4445E-03	2875.00	0.1374E-03
600.00	0.4340E-03	2900.00	0.1365E-03
625.00	0.4223E-03	2925.00	0.1356E-03
650.00	0.4105E-03	2950.00	0.1347E-03
675.00	0.3994E-03	2975.00	0.1338E-03
700.00	0.3891E-03	3000.00	0.1330E-03
725.00	0.3793E-03	3025.00	0.1321E-03
750.00	0.3701E-03	3050.00	0.1313E-03
775.00	0.3614E-03	3075.00	0.1305E-03
800.00	0.3532E-03	3100.00	0.1297E-03
825.00	0.3454E-03	3125.00	0.1289E-03
850.00	0.3380E-03	3150.00	0.1281E-03
875.00	0.3309E-03	3175.00	0.1273E-03
900.00	0.3242E-03	3200.00	0.1266E-03
925.00	0.3178E-03	3225.00	0.1258E-03

K&D_Crushing-Conveyor

950.00	0.3117E-03	3250.00	0.1251E-03
975.00	0.3059E-03	3275.00	0.1243E-03
1000.00	0.3003E-03	3300.00	0.1236E-03
1025.00	0.2949E-03	3325.00	0.1229E-03
1050.00	0.2898E-03	3350.00	0.1222E-03
1075.00	0.2849E-03	3375.00	0.1215E-03
1100.00	0.2801E-03	3400.00	0.1208E-03
1125.00	0.2756E-03	3425.00	0.1201E-03
1150.00	0.2712E-03	3450.00	0.1195E-03
1175.00	0.2670E-03	3475.00	0.1188E-03
1200.00	0.2629E-03	3500.00	0.1181E-03
1225.00	0.2590E-03	3525.00	0.1175E-03
1250.00	0.2552E-03	3550.00	0.1169E-03
1275.00	0.2515E-03	3575.00	0.1162E-03
1300.00	0.2479E-03	3600.00	0.1156E-03
1325.00	0.2445E-03	3625.00	0.1150E-03
1350.00	0.2412E-03	3650.00	0.1144E-03
1375.00	0.2379E-03	3675.00	0.1138E-03
1400.00	0.2348E-03	3700.00	0.1132E-03
1425.00	0.2318E-03	3725.00	0.1126E-03
1450.00	0.2288E-03	3750.00	0.1120E-03
1475.00	0.2260E-03	3775.00	0.1114E-03
1500.00	0.2232E-03	3800.00	0.1109E-03
1525.00	0.2205E-03	3825.00	0.1103E-03
1550.00	0.2179E-03	3850.00	0.1097E-03
1575.00	0.2153E-03	3875.00	0.1092E-03
1600.00	0.2129E-03	3900.00	0.1086E-03
1625.00	0.2104E-03	3925.00	0.1081E-03
1650.00	0.2081E-03	3950.00	0.1076E-03
1675.00	0.2058E-03	3975.00	0.1070E-03
1700.00	0.2035E-03	4000.00	0.1065E-03
1725.00	0.2014E-03	4025.00	0.1060E-03
1750.00	0.1992E-03	4050.00	0.1055E-03
1775.00	0.1971E-03	4075.00	0.1050E-03
1800.00	0.1951E-03	4100.00	0.1045E-03
1825.00	0.1931E-03	4125.00	0.1040E-03
1850.00	0.1912E-03	4150.00	0.1035E-03
1875.00	0.1893E-03	4175.00	0.1030E-03
1900.00	0.1874E-03	4200.00	0.1025E-03
1925.00	0.1856E-03	4225.00	0.1020E-03
1950.00	0.1839E-03	4250.00	0.1016E-03
1975.00	0.1821E-03	4275.00	0.1011E-03
2000.00	0.1804E-03	4300.00	0.1006E-03
2025.00	0.1788E-03	4325.00	0.1002E-03
2050.00	0.1771E-03	4350.00	0.9974E-04
2075.00	0.1755E-03	4375.00	0.9929E-04
2100.00	0.1740E-03	4400.00	0.9884E-04
2125.00	0.1725E-03	4425.00	0.9840E-04
2150.00	0.1710E-03	4450.00	0.9797E-04
2175.00	0.1695E-03	4475.00	0.9753E-04
2200.00	0.1680E-03	4500.00	0.9710E-04
2225.00	0.1666E-03	4525.00	0.9668E-04
2250.00	0.1652E-03	4550.00	0.9626E-04
2275.00	0.1639E-03	4575.00	0.9584E-04
2300.00	0.1625E-03	4600.00	0.9543E-04
2325.00	0.1612E-03	4625.00	0.9502E-04
2350.00	0.1599E-03	4650.00	0.9462E-04
2375.00	0.1587E-03	4675.00	0.9421E-04
2400.00	0.1574E-03	4700.00	0.9382E-04
2425.00	0.1562E-03	4725.00	0.9342E-04
2450.00	0.1550E-03	4750.00	0.9303E-04
2475.00	0.1538E-03	4775.00	0.9264E-04
2500.00	0.1527E-03	4800.00	0.9226E-04

K&D_Crushing-Conveyor					
2525.00	0.1515E-03		4825.00		0.9188E-04
2550.00	0.1504E-03		4850.00		0.9150E-04
2575.00	0.1493E-03		4875.00		0.9113E-04
2600.00	0.1482E-03		4900.00		0.9076E-04
2625.00	0.1472E-03		4925.00		0.9039E-04
2650.00	0.1461E-03		4950.00		0.9002E-04
2675.00	0.1451E-03		4975.00		0.8966E-04
2700.00	0.1441E-03		5000.00		0.8930E-04
2725.00	0.1430E-03				

***** AERSCREEN MAXIMUM IMPACT SUMMARY *****

CALCULATION PROCEDURE	MAXIMUM 1-HOUR CONC (ug/m3)	SCALED 3-HOUR CONC (ug/m3)	SCALED 8-HOUR CONC (ug/m3)	SCALED 24-HOUR CONC (ug/m3)	SCALED ANNUAL CONC (ug/m3)
FLAT TERRAIN	0.4929E-03	0.4929E-03	0.4436E-03	0.2957E-03	0.4929E-04
DISTANCE FROM SOURCE	472.44 meters				
IMPACT AT THE AMBIENT BOUNDARY	0.4929E-03	0.4929E-03	0.4436E-03	0.2957E-03	0.4929E-04
DISTANCE FROM SOURCE	472.44 meters				

K&D_Crushing-Haul-Road

AERSCREEN 16216 / AERMOD 16216r

01/16/18
07:57:00

TITLE: K&D_CRUSHING-HAUL-ROAD

***** AREA PARAMETERS *****

SOURCE EMISSION RATE: 0.194E-03 g/s 0.154E-02 lb/hr
 AREA EMISSION RATE: 0.194E-06 g/(s-m2) 0.154E-05 lb/(hr-m2)
 AREA HEIGHT: 2.55 meters 8.37 feet
 AREA SOURCE LONG SIDE: 100.00 meters 328.08 feet
 AREA SOURCE SHORT SIDE: 10.00 meters 32.81 feet
 INITIAL VERTICAL DIMENSION: 2.37 meters 7.78 feet
 RURAL OR URBAN: RURAL
 INITIAL PROBE DISTANCE = 5000. meters 16404. feet

***** BUILDING DOWNWASH PARAMETERS *****

BUILDING DOWNWASH NOT USED FOR NON-POINT SOURCES

***** FLOW SECTOR ANALYSIS *****

25 meter receptor spacing: 472. meters - 5000. meters

MAXIMUM IMPACT RECEPTOR

Zo SECTOR	SURFACE ROUGHNESS	1-HR CONC (ug/m3)	RADIAL (deg)	DIST (m)	TEMPORAL PERIOD
1*	1.300	0.1883	5	472.4	WIN

* = worst case diagonal

***** MAKEMET METEOROLOGY PARAMETERS *****

MIN/MAX TEMPERATURE: 250.0 / 310.0 (K)
 MINIMUM WIND SPEED: 0.5 m/s
 ANEMOMETER HEIGHT: 10.000 meters

SURFACE CHARACTERISTICS INPUT: AERMET SEASONAL TABLES

DOMINANT SURFACE PROFILE: Coniferous Forest
 DOMINANT CLIMATE TYPE: Average Moisture
 DOMINANT SEASON: winter

K&D_Crushing-Haul-Road

ALBEDO: 0.35
 BOWEN RATIO: 1.50
 ROUGHNESS LENGTH: 1.300 (meters)

SURFACE FRICTION VELOCITY (U*) NOT ADJUSTED

METEOROLOGY CONDITIONS USED TO PREDICT OVERALL MAXIMUM IMPACT

YR MO DY JDY HR

 10 01 01 1 01

HO	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O	LEN	Z0	BOWEN	ALBEDO	REF	WS
-1.40	0.049	-9.000	0.020	-999.	25.	6.5	1.300	1.50	0.35	0.50		
HT	REF	TA	HT									
10.0	250.0	2.0										

***** AERSCREEN AUTOMATED DISTANCES *****
 OVERALL MAXIMUM CONCENTRATIONS BY DISTANCE

DIST (m)	MAXIMUM 1-HR CONC (ug/m3)	DIST (m)	MAXIMUM 1-HR CONC (ug/m3)
472.44	0.1883	2750.00	0.1733E-01
475.00	0.1870	2775.00	0.1712E-01
500.00	0.1745	2800.00	0.1691E-01
525.00	0.1634	2825.00	0.1670E-01
550.00	0.1534	2850.00	0.1651E-01
575.00	0.1445	2875.00	0.1631E-01
600.00	0.1364	2900.00	0.1612E-01
625.00	0.1291	2925.00	0.1593E-01
650.00	0.1223	2950.00	0.1575E-01
675.00	0.1163	2975.00	0.1557E-01
700.00	0.1107	3000.00	0.1539E-01
725.00	0.1056	3025.00	0.1522E-01
750.00	0.1009	3050.00	0.1505E-01
775.00	0.9652E-01	3075.00	0.1488E-01
800.00	0.9247E-01	3100.00	0.1472E-01
825.00	0.8870E-01	3125.00	0.1456E-01
850.00	0.8520E-01	3150.00	0.1440E-01
875.00	0.8192E-01	3174.99	0.1425E-01
900.00	0.7886E-01	3200.00	0.1410E-01
925.00	0.7600E-01	3225.00	0.1395E-01
950.00	0.7330E-01	3250.00	0.1381E-01
975.00	0.7077E-01	3275.00	0.1366E-01
1000.00	0.6839E-01	3300.00	0.1352E-01
1025.00	0.6614E-01	3325.00	0.1338E-01
1050.00	0.6402E-01	3350.00	0.1325E-01
1075.00	0.6201E-01	3375.00	0.1311E-01
1100.00	0.6011E-01	3400.00	0.1298E-01
1125.00	0.5831E-01	3425.00	0.1285E-01

K&D_Crushing-Haul-Road

1150.00	0.5660E-01	3450.00	0.1273E-01
1175.00	0.5497E-01	3475.00	0.1260E-01
1200.00	0.5343E-01	3500.00	0.1248E-01
1225.00	0.5195E-01	3525.00	0.1236E-01
1250.00	0.5055E-01	3550.00	0.1224E-01
1275.00	0.4921E-01	3575.00	0.1213E-01
1300.00	0.4793E-01	3600.00	0.1201E-01
1325.00	0.4671E-01	3625.00	0.1190E-01
1350.00	0.4554E-01	3650.00	0.1179E-01
1375.00	0.4442E-01	3675.00	0.1168E-01
1400.00	0.4335E-01	3700.00	0.1157E-01
1425.00	0.4232E-01	3725.00	0.1147E-01
1450.00	0.4134E-01	3750.00	0.1136E-01
1475.00	0.4039E-01	3775.00	0.1126E-01
1500.00	0.3948E-01	3800.00	0.1116E-01
1525.00	0.3860E-01	3825.00	0.1106E-01
1550.00	0.3776E-01	3850.00	0.1096E-01
1575.00	0.3695E-01	3875.00	0.1087E-01
1600.00	0.3617E-01	3900.00	0.1077E-01
1625.00	0.3541E-01	3925.00	0.1068E-01
1650.00	0.3469E-01	3950.00	0.1059E-01
1675.00	0.3399E-01	3975.00	0.1050E-01
1700.00	0.3331E-01	4000.00	0.1041E-01
1725.00	0.3266E-01	4025.00	0.1032E-01
1750.00	0.3202E-01	4050.00	0.1023E-01
1775.00	0.3141E-01	4075.00	0.1015E-01
1800.00	0.3082E-01	4100.00	0.1006E-01
1825.00	0.3025E-01	4125.00	0.9981E-02
1850.00	0.2970E-01	4150.00	0.9899E-02
1875.00	0.2916E-01	4175.00	0.9819E-02
1900.00	0.2864E-01	4200.00	0.9739E-02
1924.99	0.2814E-01	4225.00	0.9661E-02
1950.00	0.2765E-01	4250.00	0.9583E-02
1975.00	0.2717E-01	4275.00	0.9507E-02
2000.00	0.2671E-01	4300.00	0.9432E-02
2025.00	0.2627E-01	4325.00	0.9358E-02
2050.00	0.2583E-01	4350.00	0.9285E-02
2075.00	0.2541E-01	4375.00	0.9213E-02
2100.00	0.2500E-01	4400.00	0.9142E-02
2125.00	0.2460E-01	4425.00	0.9071E-02
2150.00	0.2421E-01	4449.99	0.9002E-02
2175.00	0.2383E-01	4475.00	0.8934E-02
2200.00	0.2347E-01	4500.00	0.8866E-02
2225.00	0.2311E-01	4525.00	0.8800E-02
2250.00	0.2276E-01	4550.00	0.8734E-02
2275.00	0.2242E-01	4575.00	0.8669E-02
2300.00	0.2209E-01	4600.00	0.8605E-02
2325.00	0.2177E-01	4625.00	0.8542E-02
2350.00	0.2146E-01	4650.00	0.8479E-02
2375.00	0.2115E-01	4675.00	0.8418E-02
2400.00	0.2085E-01	4700.00	0.8357E-02
2425.00	0.2056E-01	4725.00	0.8297E-02
2450.00	0.2027E-01	4750.00	0.8237E-02
2475.00	0.2000E-01	4775.00	0.8179E-02
2500.00	0.1972E-01	4800.00	0.8121E-02
2525.00	0.1946E-01	4825.00	0.8063E-02
2550.00	0.1920E-01	4850.00	0.8007E-02
2575.00	0.1895E-01	4875.00	0.7951E-02
2600.00	0.1870E-01	4900.00	0.7896E-02
2625.00	0.1846E-01	4925.00	0.7841E-02
2650.00	0.1822E-01	4950.00	0.7787E-02
2675.00	0.1799E-01	4975.00	0.7734E-02
2700.00	0.1776E-01	5000.00	0.7682E-02

2725.00 0.1754E-01 K&D_Crushing-Haul-Road

 ***** AERSCREEN MAXIMUM IMPACT SUMMARY *****

3-hour, 8-hour, and 24-hour scaled concentrations are equal to the 1-hour concentration as referenced in SCREENING PROCEDURES FOR ESTIMATING THE AIR QUALITY IMPACT OF STATIONARY SOURCES, REVISED (Section 4.5.4) Report number EPA-454/R-92-019 http://www.epa.gov/scram001/guidance_permit.htm under Screening Guidance

CALCULATION PROCEDURE	MAXIMUM 1-HOUR CONC (ug/m3)	SCALED 3-HOUR CONC (ug/m3)	SCALED 8-HOUR CONC (ug/m3)	SCALED 24-HOUR CONC (ug/m3)	SCALED ANNUAL CONC (ug/m3)
FLAT TERRAIN	0.1883	0.1883	0.1883	0.1883	N/A
DISTANCE FROM SOURCE	472.44 meters				
IMPACT AT THE AMBIENT BOUNDARY	0.1883	0.1883	0.1883	0.1883	N/A
DISTANCE FROM SOURCE	472.44 meters				

K&D_Crushing-StoragePile-LoadOut

AERSCREEN 16216 / AERMOD 16216r

01/02/18
14:02:50

TITLE: K&D_Crushing-StoragePile_LoadOut

***** VOLUME PARAMETERS *****

SOURCE EMISSION RATE: 0.217E-02 g/s 0.172E-01 lb/hr
VOLUME HEIGHT: 3.05 meters 10.01 feet
INITIAL LATERAL DIMENSION: 0.57 meters 1.87 feet
INITIAL VERTICAL DIMENSION: 0.28 meters 0.92 feet
RURAL OR URBAN: RURAL
INITIAL PROBE DISTANCE = 5000. meters 16404. feet

***** BUILDING DOWNWASH PARAMETERS *****

BUILDING DOWNWASH NOT USED FOR NON-POINT SOURCES

***** PROBE ANALYSIS *****
25 meter receptor spacing: 472. meters - 5000. meters

Zo SECTOR	ROUGHNESS LENGTH	1-HR CONC (ug/m3)	DIST (m)	TEMPORAL PERIOD
1*	1.300	0.1631	472.4	SUM

* = worst case flow sector

***** MAKEMET METEOROLOGY PARAMETERS *****

MIN/MAX TEMPERATURE: 250.0 / 310.0 (K)
MINIMUM WIND SPEED: 0.5 m/s
ANEMOMETER HEIGHT: 10.000 meters
SURFACE CHARACTERISTICS INPUT: AERMET SEASONAL TABLES
DOMINANT SURFACE PROFILE: Coniferous Forest
DOMINANT CLIMATE TYPE: Average Moisture
DOMINANT SEASON: Summer
ALBEDO: 0.12
BOWEN RATIO: 0.30
ROUGHNESS LENGTH: 1.300 (meters)
SURFACE FRICTION VELOCITY (U*) NOT ADJUSTED

K&D_Crushing-StoragePile-LoadOut
 METEOROLOGY CONDITIONS USED TO PREDICT OVERALL MAXIMUM IMPACT

YR MO DY JDY HR
 10 01 02 2 12

HO	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS
1.78	0.115	0.100	0.020	19.	89.	-72.5	1.300	0.30	0.12	0.50
HT	REF TA	HT								
10.0	280.0	2.0								

METEOROLOGY CONDITIONS USED TO PREDICT AMBIENT BOUNDARY IMPACT

YR MO DY JDY HR
 10 01 02 2 12

HO	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS
1.78	0.115	0.100	0.020	19.	89.	-72.5	1.300	0.30	0.12	0.50
HT	REF TA	HT								
10.0	280.0	2.0								

***** AERSCREEN AUTOMATED DISTANCES *****
 OVERALL MAXIMUM CONCENTRATIONS BY DISTANCE

DIST (m)	MAXIMUM 1-HR CONC (ug/m3)	DIST (m)	MAXIMUM 1-HR CONC (ug/m3)
472.44	0.1631	2750.00	0.4674E-01
475.00	0.1626	2775.00	0.4642E-01
500.00	0.1584	2800.00	0.4611E-01
525.00	0.1543	2825.00	0.4580E-01
550.00	0.1504	2850.00	0.4549E-01
575.00	0.1467	2875.00	0.4519E-01
600.00	0.1432	2900.00	0.4489E-01
625.00	0.1393	2925.00	0.4460E-01
650.00	0.1354	2950.00	0.4431E-01
675.00	0.1317	2975.00	0.4403E-01
700.00	0.1283	3000.00	0.4375E-01
725.00	0.1251	3025.00	0.4347E-01
750.00	0.1220	3050.00	0.4320E-01
775.00	0.1191	3075.00	0.4293E-01
800.00	0.1164	3100.00	0.4267E-01
825.00	0.1138	3125.00	0.4240E-01
850.00	0.1114	3150.00	0.4215E-01
875.00	0.1091	3175.00	0.4189E-01
900.00	0.1069	3200.00	0.4164E-01
925.00	0.1047	3225.00	0.4139E-01

K&D_Crushing-StoragePile-LoadOut

950.00	0.1027	3250.00	0.4115E-01
975.00	0.1008	3275.00	0.4091E-01
1000.00	0.9894E-01	3300.00	0.4067E-01
1025.00	0.9718E-01	3325.00	0.4043E-01
1050.00	0.9548E-01	3350.00	0.4020E-01
1075.00	0.9385E-01	3375.00	0.3997E-01
1100.00	0.9229E-01	3400.00	0.3975E-01
1125.00	0.9078E-01	3425.00	0.3952E-01
1150.00	0.8933E-01	3450.00	0.3930E-01
1175.00	0.8794E-01	3475.00	0.3908E-01
1200.00	0.8659E-01	3500.00	0.3887E-01
1225.00	0.8529E-01	3525.00	0.3865E-01
1250.00	0.8404E-01	3550.00	0.3844E-01
1275.00	0.8283E-01	3575.00	0.3823E-01
1300.00	0.8165E-01	3600.00	0.3803E-01
1325.00	0.8052E-01	3625.00	0.3783E-01
1350.00	0.7942E-01	3650.00	0.3762E-01
1375.00	0.7836E-01	3675.00	0.3743E-01
1400.00	0.7733E-01	3700.00	0.3723E-01
1425.00	0.7632E-01	3725.00	0.3704E-01
1450.00	0.7535E-01	3750.00	0.3684E-01
1475.00	0.7441E-01	3775.00	0.3665E-01
1500.00	0.7349E-01	3800.00	0.3647E-01
1525.00	0.7260E-01	3825.00	0.3628E-01
1550.00	0.7174E-01	3850.00	0.3610E-01
1575.00	0.7090E-01	3875.00	0.3592E-01
1600.00	0.7008E-01	3900.00	0.3574E-01
1625.00	0.6928E-01	3925.00	0.3556E-01
1650.00	0.6850E-01	3950.00	0.3538E-01
1675.00	0.6774E-01	3975.00	0.3521E-01
1700.00	0.6700E-01	4000.00	0.3504E-01
1725.00	0.6628E-01	4025.00	0.3487E-01
1750.00	0.6558E-01	4050.00	0.3470E-01
1775.00	0.6489E-01	4075.00	0.3453E-01
1800.00	0.6422E-01	4100.00	0.3437E-01
1825.00	0.6357E-01	4125.00	0.3420E-01
1850.00	0.6293E-01	4150.00	0.3404E-01
1875.00	0.6231E-01	4175.00	0.3388E-01
1900.00	0.6169E-01	4200.00	0.3372E-01
1925.00	0.6110E-01	4225.00	0.3357E-01
1950.00	0.6051E-01	4250.00	0.3341E-01
1975.00	0.5994E-01	4275.00	0.3326E-01
2000.00	0.5938E-01	4300.00	0.3311E-01
2025.00	0.5884E-01	4325.00	0.3295E-01
2050.00	0.5830E-01	4350.00	0.3281E-01
2075.00	0.5777E-01	4375.00	0.3266E-01
2100.00	0.5726E-01	4400.00	0.3251E-01
2125.00	0.5676E-01	4425.00	0.3237E-01
2150.00	0.5626E-01	4450.00	0.3222E-01
2175.00	0.5578E-01	4475.00	0.3208E-01
2200.00	0.5530E-01	4500.00	0.3194E-01
2225.00	0.5484E-01	4525.00	0.3180E-01
2250.00	0.5438E-01	4550.00	0.3166E-01
2275.00	0.5393E-01	4575.00	0.3152E-01
2300.00	0.5349E-01	4600.00	0.3139E-01
2325.00	0.5306E-01	4625.00	0.3125E-01
2350.00	0.5263E-01	4650.00	0.3112E-01
2375.00	0.5221E-01	4675.00	0.3099E-01
2400.00	0.5181E-01	4700.00	0.3086E-01
2425.00	0.5140E-01	4725.00	0.3073E-01
2450.00	0.5101E-01	4750.00	0.3060E-01
2475.00	0.5062E-01	4775.00	0.3047E-01
2500.00	0.5024E-01	4800.00	0.3034E-01

K&D_Crushing-StoragePile-LoadOut				
2525.00	0.4986E-01		4825.00	0.3022E-01
2550.00	0.4949E-01		4850.00	0.3010E-01
2575.00	0.4913E-01		4875.00	0.2997E-01
2600.00	0.4877E-01		4900.00	0.2985E-01
2625.00	0.4842E-01		4925.00	0.2973E-01
2650.00	0.4807E-01		4950.00	0.2961E-01
2675.00	0.4773E-01		4975.00	0.2949E-01
2700.00	0.4740E-01		5000.00	0.2937E-01
2725.00	0.4707E-01			

 ***** AERSCREEN MAXIMUM IMPACT SUMMARY *****

CALCULATION PROCEDURE	MAXIMUM 1-HOUR CONC (ug/m3)	SCALED 3-HOUR CONC (ug/m3)	SCALED 8-HOUR CONC (ug/m3)	SCALED 24-HOUR CONC (ug/m3)	SCALED ANNUAL CONC (ug/m3)
FLAT TERRAIN	0.1631	0.1631	0.1468	0.9786E-01	0.1631E-01
DISTANCE FROM SOURCE	472.44 meters				
IMPACT AT THE AMBIENT BOUNDARY	0.1631	0.1631	0.1468	0.9786E-01	0.1631E-01
DISTANCE FROM SOURCE	472.44 meters				

K&D_Crushing-Vehicular-Activity

AERSCREEN 16216 / AERMOD 16216r

01/16/18
07:54:46

TITLE: K&D_CRUSHING-VEHICULAR-ACTIVITY

***** AREA PARAMETERS *****

SOURCE EMISSION RATE:	0.251E-05 g/s	0.199E-04 lb/hr
AREA EMISSION RATE:	0.251E-08 g/(s-m2)	0.199E-07 lb/(hr-m2)
AREA HEIGHT:	2.55 meters	8.37 feet
AREA SOURCE LONG SIDE:	100.00 meters	328.08 feet
AREA SOURCE SHORT SIDE:	10.00 meters	32.81 feet
INITIAL VERTICAL DIMENSION:	2.37 meters	7.78 feet
RURAL OR URBAN:	RURAL	
INITIAL PROBE DISTANCE =	5000. meters	16404. feet

***** BUILDING DOWNWASH PARAMETERS *****

BUILDING DOWNWASH NOT USED FOR NON-POINT SOURCES

***** FLOW SECTOR ANALYSIS *****
25 meter receptor spacing: 472. meters - 5000. meters

MAXIMUM IMPACT RECEPTOR

Zo SECTOR	SURFACE ROUGHNESS	1-HR CONC (ug/m3)	RADIAL (deg)	DIST (m)	TEMPORAL PERIOD
1*	1.300	0.2432E-02	5	472.4	WIN

* = worst case diagonal

***** MAKEMET METEOROLOGY PARAMETERS *****

MIN/MAX TEMPERATURE: 250.0 / 310.0 (K)

MINIMUM WIND SPEED: 0.5 m/s

ANEMOMETER HEIGHT: 10.000 meters

SURFACE CHARACTERISTICS INPUT: AERMET SEASONAL TABLES

DOMINANT SURFACE PROFILE: Coniferous Forest

DOMINANT CLIMATE TYPE: Average Moisture

DOMINANT SEASON: winter

K&D_Crushing-Vehicular-Activity

ALBEDO: 0.35
 BOWEN RATIO: 1.50
 ROUGHNESS LENGTH: 1.300 (meters)

SURFACE FRICTION VELOCITY (U*) NOT ADJUSTED

METEOROLOGY CONDITIONS USED TO PREDICT OVERALL MAXIMUM IMPACT

YR MO DY JDY HR
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 10 01 01 1 01

HO	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O	LEN	Z0	BOWEN	ALBEDO	REF	WS
-1.40	0.049	-9.000	0.020	-999.	25.	6.5	1.300	1.50	0.35	0.50		
HT	REF	TA	HT									
10.0	250.0	2.0										

***** AERSCREEN AUTOMATED DISTANCES *****
 OVERALL MAXIMUM CONCENTRATIONS BY DISTANCE

DIST (m)	MAXIMUM 1-HR CONC (ug/m3)	DIST (m)	MAXIMUM 1-HR CONC (ug/m3)
472.44	0.2432E-02	2750.00	0.2238E-03
475.00	0.2415E-02	2775.00	0.2210E-03
500.00	0.2253E-02	2800.00	0.2184E-03
525.00	0.2110E-02	2825.00	0.2157E-03
550.00	0.1982E-02	2850.00	0.2132E-03
575.00	0.1866E-02	2875.00	0.2106E-03
600.00	0.1762E-02	2900.00	0.2082E-03
625.00	0.1667E-02	2925.00	0.2058E-03
650.00	0.1580E-02	2950.00	0.2034E-03
675.00	0.1502E-02	2975.00	0.2011E-03
700.00	0.1430E-02	3000.00	0.1988E-03
725.00	0.1364E-02	3025.00	0.1966E-03
750.00	0.1303E-02	3050.00	0.1944E-03
775.00	0.1246E-02	3075.00	0.1922E-03
800.00	0.1194E-02	3100.00	0.1901E-03
825.00	0.1146E-02	3125.00	0.1881E-03
850.00	0.1100E-02	3150.00	0.1860E-03
875.00	0.1058E-02	3175.00	0.1840E-03
900.00	0.1018E-02	3200.00	0.1821E-03
925.00	0.9814E-03	3225.00	0.1802E-03
950.00	0.9467E-03	3250.00	0.1783E-03
975.00	0.9140E-03	3275.00	0.1764E-03
1000.00	0.8832E-03	3300.00	0.1746E-03
1025.00	0.8542E-03	3325.00	0.1728E-03
1050.00	0.8268E-03	3350.00	0.1711E-03
1075.00	0.8008E-03	3375.00	0.1694E-03
1100.00	0.7763E-03	3400.00	0.1677E-03
1125.00	0.7530E-03	3425.00	0.1660E-03

K&D_Crushing-vehicular-Activity

1150.00	0.7309E-03	3450.00	0.1644E-03
1175.00	0.7099E-03	3475.00	0.1628E-03
1200.00	0.6900E-03	3500.00	0.1612E-03
1225.00	0.6710E-03	3525.00	0.1596E-03
1250.00	0.6528E-03	3550.00	0.1581E-03
1275.00	0.6356E-03	3575.00	0.1566E-03
1300.00	0.6190E-03	3600.00	0.1551E-03
1325.00	0.6033E-03	3625.00	0.1537E-03
1350.00	0.5882E-03	3650.00	0.1522E-03
1375.00	0.5737E-03	3675.00	0.1508E-03
1400.00	0.5599E-03	3700.00	0.1495E-03
1425.00	0.5466E-03	3725.00	0.1481E-03
1450.00	0.5338E-03	3750.00	0.1467E-03
1475.00	0.5216E-03	3775.00	0.1454E-03
1500.00	0.5098E-03	3800.00	0.1441E-03
1525.00	0.4985E-03	3825.00	0.1428E-03
1550.00	0.4876E-03	3850.00	0.1416E-03
1575.00	0.4772E-03	3875.00	0.1403E-03
1600.00	0.4671E-03	3900.00	0.1391E-03
1625.00	0.4573E-03	3925.00	0.1379E-03
1650.00	0.4480E-03	3950.00	0.1367E-03
1675.00	0.4389E-03	3975.00	0.1356E-03
1700.00	0.4302E-03	4000.00	0.1344E-03
1725.00	0.4217E-03	4025.00	0.1333E-03
1750.00	0.4136E-03	4050.00	0.1322E-03
1775.00	0.4057E-03	4075.00	0.1311E-03
1800.00	0.3981E-03	4100.00	0.1300E-03
1825.00	0.3907E-03	4125.00	0.1289E-03
1850.00	0.3835E-03	4150.00	0.1278E-03
1875.00	0.3766E-03	4175.00	0.1268E-03
1900.00	0.3699E-03	4200.00	0.1258E-03
1924.99	0.3634E-03	4225.00	0.1248E-03
1950.00	0.3570E-03	4250.00	0.1238E-03
1975.00	0.3509E-03	4275.00	0.1228E-03
2000.00	0.3450E-03	4300.00	0.1218E-03
2025.00	0.3392E-03	4325.00	0.1209E-03
2050.00	0.3336E-03	4350.00	0.1199E-03
2075.00	0.3281E-03	4375.00	0.1190E-03
2100.00	0.3228E-03	4400.00	0.1181E-03
2125.00	0.3177E-03	4425.00	0.1172E-03
2150.00	0.3127E-03	4449.99	0.1163E-03
2175.00	0.3078E-03	4475.00	0.1154E-03
2200.00	0.3031E-03	4500.00	0.1145E-03
2225.00	0.2985E-03	4525.00	0.1136E-03
2250.00	0.2940E-03	4550.00	0.1128E-03
2275.00	0.2896E-03	4575.00	0.1120E-03
2300.00	0.2853E-03	4600.00	0.1111E-03
2325.00	0.2811E-03	4625.00	0.1103E-03
2350.00	0.2771E-03	4650.00	0.1095E-03
2375.00	0.2731E-03	4675.00	0.1087E-03
2400.00	0.2693E-03	4700.00	0.1079E-03
2425.00	0.2655E-03	4725.00	0.1071E-03
2450.00	0.2618E-03	4750.00	0.1064E-03
2475.00	0.2582E-03	4775.00	0.1056E-03
2500.00	0.2547E-03	4800.00	0.1049E-03
2525.00	0.2513E-03	4825.00	0.1041E-03
2550.00	0.2480E-03	4850.00	0.1034E-03
2575.00	0.2447E-03	4875.00	0.1027E-03
2600.00	0.2415E-03	4900.00	0.1020E-03
2625.00	0.2384E-03	4925.00	0.1013E-03
2650.00	0.2353E-03	4950.00	0.1006E-03
2675.00	0.2323E-03	4975.00	0.9988E-04
2700.00	0.2294E-03	5000.00	0.9920E-04

2725.00 0.2266E-03 K&D_Crushing-Vehicular-Activity

 ***** AERSCREEN MAXIMUM IMPACT SUMMARY *****

3-hour, 8-hour, and 24-hour scaled concentrations are equal to the 1-hour concentration as referenced in SCREENING PROCEDURES FOR ESTIMATING THE AIR QUALITY IMPACT OF STATIONARY SOURCES, REVISED (Section 4.5.4) Report number EPA-454/R-92-019 http://www.epa.gov/scram001/guidance_permit.htm under Screening Guidance

CALCULATION PROCEDURE	MAXIMUM 1-HOUR CONC (ug/m3)	SCALED 3-HOUR CONC (ug/m3)	SCALED 8-HOUR CONC (ug/m3)	SCALED 24-HOUR CONC (ug/m3)	SCALED ANNUAL CONC (ug/m3)
FLAT TERRAIN	0.2432E-02	0.2432E-02	0.2432E-02	0.2432E-02	N/A
DISTANCE FROM SOURCE	472.44 meters				
IMPACT AT THE AMBIENT BOUNDARY	0.2432E-02	0.2432E-02	0.2432E-02	0.2432E-02	N/A
DISTANCE FROM SOURCE	472.44 meters				

K&D_Crushing-StoragePile-windEorsion

AERSCREEN 16216 / AERMOD 16216r

01/02/18
14:09:50

TITLE: K&D_Crushing-StoragePile-windErosion

***** AREA PARAMETERS *****

SOURCE EMISSION RATE: 0.674E-04 g/s 0.535E-03 lb/hr
AREA EMISSION RATE: 0.111E-06 g/(s-m2) 0.881E-06 lb/(hr-m2)
AREA HEIGHT: 7.62 meters 25.00 feet
AREA SOURCE LONG SIDE: 24.64 meters 80.83 feet
AREA SOURCE SHORT SIDE: 24.64 meters 80.83 feet
INITIAL VERTICAL DIMENSION: 0.00 meters 0.00 feet
RURAL OR URBAN: RURAL
INITIAL PROBE DISTANCE = 5000. meters 16404. feet

***** BUILDING DOWNWASH PARAMETERS *****

BUILDING DOWNWASH NOT USED FOR NON-POINT SOURCES

***** FLOW SECTOR ANALYSIS *****
25 meter receptor spacing: 472. meters - 5000. meters

MAXIMUM IMPACT RECEPTOR

Zo SECTOR	SURFACE ROUGHNESS	1-HR CONC (ug/m3)	RADIAL (deg)	DIST (m)	TEMPORAL PERIOD
1*	1.300	0.4752E-01	15	472.4	WIN

* = worst case diagonal

***** MAKEMET METEOROLOGY PARAMETERS *****

MIN/MAX TEMPERATURE: 250.0 / 310.0 (K)
MINIMUM WIND SPEED: 0.5 m/s
ANEMOMETER HEIGHT: 10.000 meters
SURFACE CHARACTERISTICS INPUT: AERMET SEASONAL TABLES
DOMINANT SURFACE PROFILE: Coniferous Forest
DOMINANT CLIMATE TYPE: Average Moisture
DOMINANT SEASON: Winter

K&D_Crushing-StoragePile-WindEorsion

ALBEDO: 0.35
 BOWEN RATIO: 1.50
 ROUGHNESS LENGTH: 1.300 (meters)

SURFACE FRICTION VELOCITY (U*) NOT ADUSTED

METEOROLOGY CONDITIONS USED TO PREDICT OVERALL MAXIMUM IMPACT

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YR MO DY JDY HR
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10 01 01 1 01

  HO      U*      W*  DT/DZ ZICNV ZIMCH  M-O LEN      Z0  BOWEN ALBEDO  REF WS
-----
-1.40  0.049 -9.000  0.020 -999.  25.      6.5 1.300  1.50  0.35  0.50

  HT  REF TA      HT
-----
 10.0 250.0  2.0
    
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***** AERSCREEN AUTOMATED DISTANCES *****
 OVERALL MAXIMUM CONCENTRATIONS BY DISTANCE

DIST (m)	MAXIMUM 1-HR CONC (ug/m3)	DIST (m)	MAXIMUM 1-HR CONC (ug/m3)
472.44	0.4752E-01	2749.99	0.5041E-02
475.00	0.4722E-01	2775.00	0.4981E-02
500.00	0.4446E-01	2800.00	0.4922E-02
525.00	0.4196E-01	2824.99	0.4864E-02
550.00	0.3970E-01	2849.99	0.4808E-02
575.00	0.3763E-01	2875.00	0.4752E-02
600.00	0.3574E-01	2900.00	0.4698E-02
625.00	0.3402E-01	2925.00	0.4645E-02
650.00	0.3242E-01	2950.00	0.4593E-02
675.00	0.3103E-01	2975.00	0.4541E-02
700.00	0.2966E-01	3000.00	0.4491E-02
725.00	0.2840E-01	3025.00	0.4442E-02
750.00	0.2722E-01	3050.00	0.4394E-02
775.00	0.2613E-01	3075.00	0.4346E-02
800.00	0.2511E-01	3100.00	0.4300E-02
825.00	0.2416E-01	3125.00	0.4254E-02
850.00	0.2326E-01	3150.00	0.4209E-02
875.00	0.2243E-01	3174.99	0.4165E-02
900.00	0.2164E-01	3200.00	0.4122E-02
924.99	0.2090E-01	3225.00	0.4079E-02
950.00	0.2020E-01	3250.00	0.4038E-02
975.00	0.1955E-01	3274.99	0.3997E-02
1000.00	0.1892E-01	3300.00	0.3956E-02
1024.99	0.1834E-01	3325.00	0.3917E-02
1050.00	0.1778E-01	3350.00	0.3878E-02
1075.00	0.1725E-01	3375.00	0.3840E-02
1100.00	0.1675E-01	3400.00	0.3802E-02
1125.00	0.1627E-01	3425.00	0.3765E-02

K&D_Crushing-StoragePile-windEorsion

1149.99	0.1582E-01	3450.00	0.3729E-02
1175.00	0.1538E-01	3475.00	0.3693E-02
1200.00	0.1497E-01	3500.00	0.3658E-02
1225.00	0.1458E-01	3525.00	0.3624E-02
1250.00	0.1420E-01	3550.00	0.3590E-02
1275.00	0.1384E-01	3575.00	0.3556E-02
1300.00	0.1350E-01	3600.00	0.3523E-02
1325.00	0.1317E-01	3625.00	0.3491E-02
1350.00	0.1285E-01	3650.00	0.3459E-02
1375.00	0.1255E-01	3674.99	0.3428E-02
1400.00	0.1226E-01	3700.00	0.3397E-02
1425.00	0.1198E-01	3724.99	0.3367E-02
1449.99	0.1171E-01	3750.00	0.3337E-02
1475.00	0.1145E-01	3775.00	0.3307E-02
1500.00	0.1120E-01	3800.00	0.3278E-02
1525.00	0.1096E-01	3825.00	0.3250E-02
1550.00	0.1073E-01	3849.99	0.3222E-02
1575.00	0.1051E-01	3875.00	0.3194E-02
1600.00	0.1030E-01	3900.00	0.3167E-02
1625.00	0.1009E-01	3925.00	0.3140E-02
1650.00	0.9891E-02	3950.00	0.3113E-02
1674.99	0.9698E-02	3975.00	0.3087E-02
1700.00	0.9512E-02	4000.00	0.3061E-02
1725.00	0.9331E-02	4025.00	0.3036E-02
1750.00	0.9157E-02	4050.00	0.3011E-02
1774.99	0.8988E-02	4075.00	0.2986E-02
1800.00	0.8824E-02	4100.00	0.2962E-02
1824.99	0.8666E-02	4125.00	0.2938E-02
1850.00	0.8512E-02	4150.00	0.2915E-02
1875.00	0.8363E-02	4175.00	0.2891E-02
1899.99	0.8219E-02	4200.00	0.2868E-02
1924.99	0.8079E-02	4225.00	0.2846E-02
1950.00	0.7942E-02	4250.00	0.2823E-02
1975.00	0.7810E-02	4275.00	0.2801E-02
2000.00	0.7682E-02	4300.00	0.2780E-02
2025.00	0.7557E-02	4325.00	0.2758E-02
2050.00	0.7436E-02	4350.00	0.2737E-02
2075.00	0.7318E-02	4375.00	0.2716E-02
2100.00	0.7203E-02	4400.00	0.2696E-02
2124.99	0.7092E-02	4425.00	0.2675E-02
2150.00	0.6983E-02	4450.00	0.2655E-02
2175.00	0.6877E-02	4475.00	0.2635E-02
2199.99	0.6774E-02	4500.00	0.2616E-02
2224.99	0.6674E-02	4525.00	0.2597E-02
2250.00	0.6576E-02	4550.00	0.2577E-02
2275.00	0.6481E-02	4575.00	0.2559E-02
2300.00	0.6388E-02	4599.99	0.2540E-02
2325.00	0.6297E-02	4625.00	0.2522E-02
2350.00	0.6209E-02	4650.00	0.2504E-02
2375.00	0.6122E-02	4675.00	0.2486E-02
2399.99	0.6038E-02	4700.00	0.2468E-02
2425.00	0.5956E-02	4725.00	0.2451E-02
2449.99	0.5876E-02	4750.00	0.2433E-02
2475.00	0.5797E-02	4775.00	0.2416E-02
2500.00	0.5720E-02	4800.00	0.2400E-02
2525.00	0.5646E-02	4825.00	0.2383E-02
2550.00	0.5572E-02	4850.00	0.2367E-02
2575.00	0.5501E-02	4875.00	0.2350E-02
2600.00	0.5431E-02	4900.00	0.2334E-02
2625.00	0.5362E-02	4925.00	0.2318E-02
2650.00	0.5295E-02	4950.00	0.2303E-02
2675.00	0.5230E-02	4975.00	0.2287E-02
2700.00	0.5166E-02	5000.00	0.2272E-02

2725.00 K&D_Crushing-StoragePile-WindEorsion
 0.5103E-02

 ***** AERSCREEN MAXIMUM IMPACT SUMMARY *****

3-hour, 8-hour, and 24-hour scaled concentrations are equal to the 1-hour concentration as referenced in SCREENING PROCEDURES FOR ESTIMATING THE AIR QUALITY IMPACT OF STATIONARY SOURCES, REVISED (Section 4.5.4) Report number EPA-454/R-92-019 http://www.epa.gov/scram001/guidance_permit.htm under Screening Guidance

CALCULATION PROCEDURE	MAXIMUM 1-HOUR CONC (ug/m3)	SCALED 3-HOUR CONC (ug/m3)	SCALED 8-HOUR CONC (ug/m3)	SCALED 24-HOUR CONC (ug/m3)	SCALED ANNUAL CONC (ug/m3)
FLAT TERRAIN	0.4752E-01	0.4752E-01	0.4752E-01	0.4752E-01	N/A
DISTANCE FROM SOURCE	472.44 meters				
IMPACT AT THE AMBIENT BOUNDARY	0.4752E-01	0.4752E-01	0.4752E-01	0.4752E-01	N/A
DISTANCE FROM SOURCE	472.44 meters				

K&D_Crushing-Stacker

AERSCREEN 16216 / AERMOD 16216r

01/02/18
14:12:51

TITLE: K&D_Crushing-Stacker

***** VOLUME PARAMETERS *****

SOURCE EMISSION RATE: 0.593E-05 g/s 0.470E-04 lb/hr
VOLUME HEIGHT: 2.74 meters 8.99 feet
INITIAL LATERAL DIMENSION: 0.21 meters 0.69 feet
INITIAL VERTICAL DIMENSION: 0.43 meters 1.41 feet
RURAL OR URBAN: RURAL
INITIAL PROBE DISTANCE = 5000. meters 16404. feet

***** BUILDING DOWNWASH PARAMETERS *****

BUILDING DOWNWASH NOT USED FOR NON-POINT SOURCES

***** PROBE ANALYSIS *****
25 meter receptor spacing: 472. meters - 5000. meters

Zo SECTOR	ROUGHNESS LENGTH	1-HR CONC (ug/m3)	DIST (m)	TEMPORAL PERIOD
1*	1.300	0.4595E-03	472.4	SUM

* = worst case flow sector

***** MAKEMET METEOROLOGY PARAMETERS *****

MIN/MAX TEMPERATURE: 250.0 / 310.0 (K)
MINIMUM WIND SPEED: 0.5 m/s
ANEMOMETER HEIGHT: 10.000 meters
SURFACE CHARACTERISTICS INPUT: AERMET SEASONAL TABLES
DOMINANT SURFACE PROFILE: Coniferous Forest
DOMINANT CLIMATE TYPE: Average Moisture
DOMINANT SEASON: Summer
ALBEDO: 0.12
BOWEN RATIO: 0.30
ROUGHNESS LENGTH: 1.300 (meters)
SURFACE FRICTION VELOCITY (U*) NOT ADJUSTED

K&D_Crushing-Stacker
 METEOROLOGY CONDITIONS USED TO PREDICT OVERALL MAXIMUM IMPACT

YR MO DY JDY HR
 10 01 02 2 12

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O	LEN	Z0	BOWEN	ALBEDO	REF	WS
1.78	0.115	0.100	0.020	19.	89.	-72.5	1.300	0.30	0.12	0.50		
HT	REF	TA	HT									
10.0	280.0	2.0										

METEOROLOGY CONDITIONS USED TO PREDICT AMBIENT BOUNDARY IMPACT

YR MO DY JDY HR
 10 01 02 2 12

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O	LEN	Z0	BOWEN	ALBEDO	REF	WS
1.78	0.115	0.100	0.020	19.	89.	-72.5	1.300	0.30	0.12	0.50		
HT	REF	TA	HT									
10.0	280.0	2.0										

***** AERSCREEN AUTOMATED DISTANCES *****
 OVERALL MAXIMUM CONCENTRATIONS BY DISTANCE

DIST (m)	MAXIMUM 1-HR CONC (ug/m3)	DIST (m)	MAXIMUM 1-HR CONC (ug/m3)
472.44	0.4595E-03	2750.00	0.1319E-03
475.00	0.4583E-03	2775.00	0.1310E-03
500.00	0.4464E-03	2800.00	0.1301E-03
525.00	0.4350E-03	2825.00	0.1293E-03
550.00	0.4241E-03	2850.00	0.1284E-03
575.00	0.4138E-03	2875.00	0.1276E-03
600.00	0.4039E-03	2900.00	0.1267E-03
625.00	0.3929E-03	2925.00	0.1259E-03
650.00	0.3819E-03	2950.00	0.1251E-03
675.00	0.3716E-03	2975.00	0.1243E-03
700.00	0.3619E-03	3000.00	0.1235E-03
725.00	0.3528E-03	3025.00	0.1227E-03
750.00	0.3442E-03	3050.00	0.1219E-03
775.00	0.3361E-03	3075.00	0.1212E-03
800.00	0.3284E-03	3100.00	0.1204E-03
825.00	0.3212E-03	3125.00	0.1197E-03
850.00	0.3143E-03	3150.00	0.1190E-03
875.00	0.3077E-03	3175.00	0.1183E-03
900.00	0.3014E-03	3200.00	0.1175E-03
925.00	0.2955E-03	3225.00	0.1168E-03

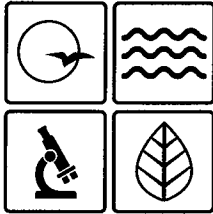
K&D_Crushing-Stacker

950.00	0.2898E-03	3250.00	0.1162E-03
975.00	0.2844E-03	3275.00	0.1155E-03
1000.00	0.2792E-03	3300.00	0.1148E-03
1025.00	0.2742E-03	3325.00	0.1141E-03
1050.00	0.2694E-03	3350.00	0.1135E-03
1075.00	0.2648E-03	3375.00	0.1128E-03
1100.00	0.2604E-03	3400.00	0.1122E-03
1125.00	0.2562E-03	3425.00	0.1116E-03
1150.00	0.2521E-03	3450.00	0.1109E-03
1175.00	0.2481E-03	3475.00	0.1103E-03
1200.00	0.2443E-03	3500.00	0.1097E-03
1225.00	0.2407E-03	3525.00	0.1091E-03
1250.00	0.2371E-03	3550.00	0.1085E-03
1275.00	0.2337E-03	3575.00	0.1079E-03
1300.00	0.2304E-03	3600.00	0.1074E-03
1325.00	0.2272E-03	3625.00	0.1068E-03
1350.00	0.2241E-03	3650.00	0.1062E-03
1375.00	0.2211E-03	3675.00	0.1057E-03
1400.00	0.2182E-03	3700.00	0.1051E-03
1425.00	0.2154E-03	3725.00	0.1046E-03
1450.00	0.2127E-03	3750.00	0.1040E-03
1475.00	0.2100E-03	3775.00	0.1035E-03
1500.00	0.2074E-03	3800.00	0.1029E-03
1525.00	0.2049E-03	3825.00	0.1024E-03
1550.00	0.2025E-03	3850.00	0.1019E-03
1575.00	0.2001E-03	3875.00	0.1014E-03
1600.00	0.1978E-03	3900.00	0.1009E-03
1625.00	0.1955E-03	3925.00	0.1004E-03
1650.00	0.1933E-03	3950.00	0.9989E-04
1675.00	0.1912E-03	3975.00	0.9939E-04
1700.00	0.1891E-03	4000.00	0.9891E-04
1725.00	0.1871E-03	4025.00	0.9843E-04
1750.00	0.1851E-03	4050.00	0.9795E-04
1775.00	0.1831E-03	4075.00	0.9748E-04
1800.00	0.1813E-03	4100.00	0.9702E-04
1825.00	0.1794E-03	4125.00	0.9656E-04
1850.00	0.1776E-03	4150.00	0.9610E-04
1875.00	0.1758E-03	4175.00	0.9565E-04
1900.00	0.1741E-03	4200.00	0.9520E-04
1925.00	0.1724E-03	4225.00	0.9476E-04
1950.00	0.1708E-03	4250.00	0.9432E-04
1975.00	0.1692E-03	4275.00	0.9389E-04
2000.00	0.1676E-03	4300.00	0.9346E-04
2025.00	0.1661E-03	4325.00	0.9303E-04
2050.00	0.1645E-03	4350.00	0.9261E-04
2075.00	0.1631E-03	4375.00	0.9219E-04
2100.00	0.1616E-03	4400.00	0.9178E-04
2125.00	0.1602E-03	4425.00	0.9137E-04
2150.00	0.1588E-03	4450.00	0.9096E-04
2175.00	0.1574E-03	4475.00	0.9056E-04
2200.00	0.1561E-03	4500.00	0.9017E-04
2225.00	0.1548E-03	4525.00	0.8977E-04
2250.00	0.1535E-03	4550.00	0.8938E-04
2275.00	0.1522E-03	4575.00	0.8899E-04
2300.00	0.1510E-03	4600.00	0.8861E-04
2325.00	0.1498E-03	4625.00	0.8823E-04
2350.00	0.1486E-03	4650.00	0.8785E-04
2375.00	0.1474E-03	4675.00	0.8748E-04
2400.00	0.1462E-03	4700.00	0.8711E-04
2425.00	0.1451E-03	4725.00	0.8674E-04
2450.00	0.1440E-03	4750.00	0.8638E-04
2475.00	0.1429E-03	4775.00	0.8602E-04
2500.00	0.1418E-03	4800.00	0.8566E-04

K&D_Crushing-Stacker				
2525.00	0.1407E-03	4825.00	0.8531E-04	
2550.00	0.1397E-03	4850.00	0.8496E-04	
2575.00	0.1387E-03	4875.00	0.8461E-04	
2600.00	0.1377E-03	4900.00	0.8427E-04	
2625.00	0.1367E-03	4925.00	0.8393E-04	
2650.00	0.1357E-03	4950.00	0.8359E-04	
2675.00	0.1347E-03	4975.00	0.8325E-04	
2700.00	0.1338E-03	5000.00	0.8292E-04	
2725.00	0.1329E-03			

 ***** AERSCREEN MAXIMUM IMPACT SUMMARY *****

CALCULATION PROCEDURE	MAXIMUM 1-HOUR CONC (ug/m3)	SCALED 3-HOUR CONC (ug/m3)	SCALED 8-HOUR CONC (ug/m3)	SCALED 24-HOUR CONC (ug/m3)	SCALED ANNUAL CONC (ug/m3)
FLAT TERRAIN	0.4595E-03	0.4595E-03	0.4136E-03	0.2757E-03	0.4595E-04
DISTANCE FROM SOURCE	472.44 meters				
IMPACT AT THE AMBIENT BOUNDARY	0.4595E-03	0.4595E-03	0.4136E-03	0.2757E-03	0.4595E-04
DISTANCE FROM SOURCE	472.44 meters				



Missouri Department of dnr.mo.gov

NATURAL RESOURCES

Eric R. Greitens, Governor

Carol S. Comer, Director

FEB 20 2018

Ms. Kenda Hopkins
Corporate Secretary
K&D Crushing, Inc. 29 Mine Area - Viburnum Mine
15343 East State Highway 8
Mineral Point, MO 63660

RE: New Source Review Permit - Project Number: 2013-02-064

Dear Ms. Hopkins:

Enclosed with this letter is your permit to construct. Please study it carefully and refer to Appendix A for a list of common abbreviations and acronyms used in the permit. Also, note the special conditions on the accompanying pages. The document entitled, "Review of Application for Authority to Construct," is part of the permit and should be kept with this permit in your files. Operation in accordance with these conditions, your new source review permit application and with your amended operating permit is necessary for continued compliance. The reverse side of your permit certificate has important information concerning standard permit conditions and your rights and obligations under the laws and regulations of the State of Missouri.

This permit may include requirements with which you may not be familiar. If you would like the department to meet with you to discuss how to understand and satisfy the requirements contained in this permit, an appointment referred to as a Compliance Assistance Visit (CAV) can be set up with you. To request a CAV, please contact your local regional office or fill out an online request. The regional office contact information can be found at the following website: <http://dnr.mo.gov/regions/>. The online CAV request can be found at <http://dnr.mo.gov/cav/compliance.htm>.

If you were adversely affected by this permit decision, you may be entitled to pursue an appeal before the administrative hearing commission pursuant to Sections 621.250 and 643.075.6 RSMo. To appeal, you must file a petition with the administrative hearing commission within thirty days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed; if it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the administrative hearing commission, whose contact information is: Administrative Hearing Commission, United States Post Office Building, 131 West High Street, Third Floor, P.O. Box 1557, Jefferson City, Missouri 65102, phone: 573-751-2422, fax: 573-751-5018, website: www.oa.mo.gov/ahc.



Recycled paper

Ms. Kenda Hopkins
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If you have any questions regarding this permit, please do not hesitate to contact Chad Stephenson, at the department's Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102 or at (573) 751-4817. Thank you for your attention to this matter.

Sincerely,

AIR POLLUTION CONTROL PROGRAM



Susan Heckenkamp
New Source Review Unit Chief

SH:csj

Enclosures

c: Southeast Regional Office
PAMS File: 2013-02-064

Permit Number: 022018-004