



**TECHNICAL REVIEW AND EVALUATION  
OF APPLICATION FOR  
AIR QUALITY PERMIT No. 96356**

**I. INTRODUCTION**

Class II Significant Permit Revision (SPR) No. 96265 to Operating Permit No. 89020 revises the emission limitation for the Mill Feed Breaker Baghouse established in Condition III.B.3 of Attachment “B” of the permit and re-evaluates the Kirkland Pozzolan Mine’s potential to emit and ambient air impacts in response to the identification of inaccurate information being presented as manufacturer’s specifications for various dust collection equipment in the initial permit application.

**A. Company Information**

Company Name: Eco Material Technologies, Inc.  
Mailing Address: 10701 South River Front Parkway, Suite 300  
South Jordan, Utah 84095  
Facility Name: Kirkland Pozzolan Mine  
Facility Location: 7855 S Iron Springs Rd  
Skull Valley, Arizona 86338

**B. Attainment Classification**

The Kirkland Pozzolan Mine is located in Yavapai County, which is designated attainment or unclassified for all pollutants.

**II. BACKGROUND**

Operating Permit No. 89020 designates emission limitations that are more stringent than the applicable emission limitations outlined in New Source Performance Standards (NSPS) Subpart OOO “Nonmetallic Mineral Processing Plants” for affected facilities with capture systems. Prior to conducting initial performance testing required by NSPS Subpart OOO and Operating Permit No. 89020, the Permittee reported to the Department that the emission limitation for the Mill Feed Breaker Discharge Baghouse was significantly lower than the actual manufacturer’s guarantee for grain loading despite previous information presented as manufacturer’s guarantees in the initial application being used to develop the limit. Upon further review, it was noted that the evaluation of emissions from the Mill Feed Breaker Discharge Baghouse, Mill Feed to Rotary Valve Filter, Product Storage Transfer Baghouse, Storage Silo Bin Vent 1, Storage Silo Bin Vent 2, and Off-Spec Bin Vent used inaccurate grain loading information in the evaluation of the facility’s potential to emit and ambient impacts. A Significant Permit Revision and revised ambient air impact analysis were submitted in response to the error in the initial application to revise Operating Permit No. 89020 and demonstrate that the proposed changes do not result in ambient concentrations of pollutants resulting from operation of the Kirkland Pozzolan Mine and processing facility exceeding the National Ambient Air Quality Standards (NAAQS).

### III. REVISION DESCRIPTION

SPR No. 96356 revises the permitted emission limitation for the Mill Feed Breaker Discharge Baghouse in Condition III.B.3 of Attachment “B” of Operating Permit No. 89020, re-evaluates the facility’s potential to emit after corrections to the Mill Feed Breaker Discharge Baghouse, Mill Feed to Rotary Valve Filter, Product Storage Transfer Baghouse, Storage Silo Bin Vent 1, Storage Silo Bin Vent 2, and Off-Spec Bin Vent grain loading based on accurate manufacturer’s specifications, and demonstrates continued compliance with the NAAQS despite re-evaluation of the facility’s potential to emit. The initial and revised grain loadings for the associated dust collection equipment are detailed in Table 1 below.

**Table 1: Initial and Revised Grain Loading**

Control Device	Capacity (cfm)	Initial Grain Loading (gr/dscf)	Revised Grain Loading (gr/dscf)
Mill Feed Breaker Discharge Baghouse	10,000	0.0000675	0.003
Mill Feed to Rotary Valve Filter	900	0.0000675	0.003
Product Storage Transfer Baghouse	2,350	0.0000675	0.003
Storage Silo Bin Vent 1	2,350	0.0000675	0.003
Storage Silo Bin Vent 2	2,350	0.0000675	0.003
Off-Spec Bin Vent	900	0.0000675	0.003

### IV. EMISSIONS

SPR No. 96356 authorizes revision to the emission limitation for the Mill Feed Breaker Discharge Baghouse established in Condition III.B.3 of Attachment “B” of Operating Permit No. 89020. In addition, the revised grain loading guarantee is used to evaluate emissions from auxiliary dust collection equipment, such as the Mill Feed to Rotary Valve Filter, Product Storage Transfer Baghouse, Storage Silo Bin Vents 1 and 2, and Off-Spec Bin Vent. Emissions were evaluated using the manufacturer’s grain loading guarantee and maximum capacity of the associated control equipment. The facility’s revised potential to emit is provided in Table 2 below:

**Table 2: Revised Potential to Emit**

<b>Pollutant</b>	<b>Initial PTE (tpy)</b>	<b>Revised PTE (tpy)</b>	<b>Change in PTE (tpy)</b>
PM	7.87	9.95	+2.08
PM <sub>10</sub>	7.87	9.95	+2.08
PM <sub>2.5</sub>	7.87	9.95	+2.08

## V. MINOR NEW SOURCE REVIEW (NSR)

Minor new source review is required if the emissions of a new source have the potential to emit any regulated air pollutant at an amount greater than or equal to the permitting exemption threshold.

In the initial permit application for Permit No. 89020, the Permittee had the option to implement reasonably available control technology (RACT) for emissions units with potential to emit greater than 20% of the permitting exemption threshold, or conduct dispersion modeling to satisfy the requirements of minor NSR. In the application, the Permittee proposed to implement RACT for applicable emissions units by electing to install control equipment with manufacturer's grain loading guarantees that are lower than the applicable emission limitations established in NSPS Subpart OOO. In accordance with Arizona Administrative Code (A.A.C.) R18-2-334.E, the Department required to Permittee to conduct an ambient air impact analysis to demonstrate compliance with the NAAQS.

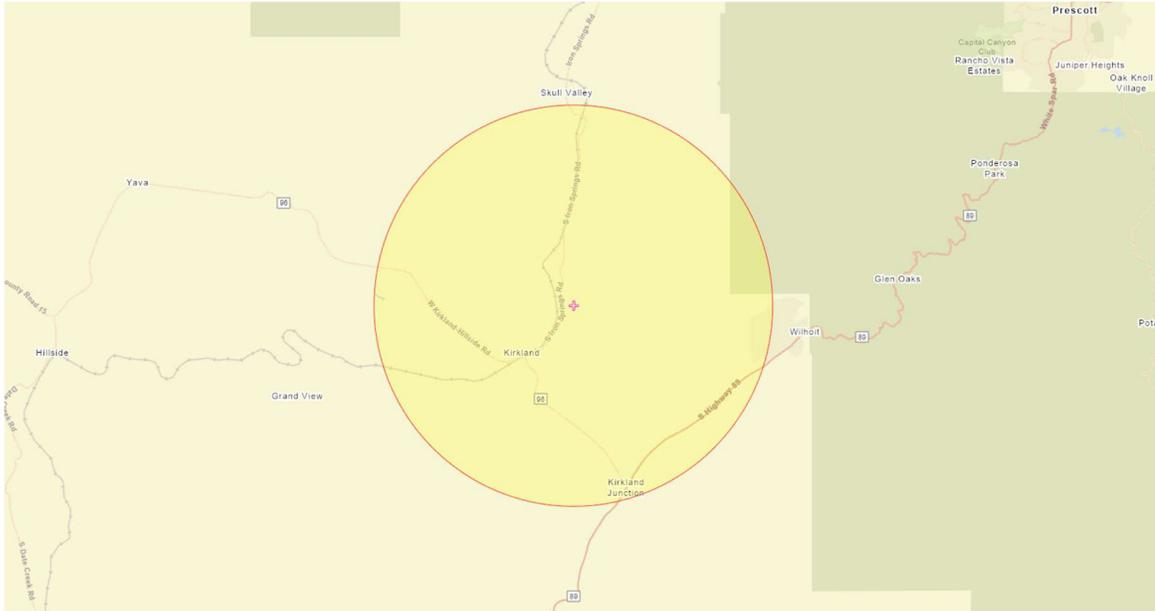
Significant Permit Revision No. 96356 authorizes the revisions to the facility's potential to emit and emission limitation for the Mill Feed Breaker Discharge Baghouse established under minor NSR. The Permittee conducted a revised ambient air impact analysis to supplement the proposed revision and demonstrate continued compliance with the NAAQS. A detailed discussion of the screen modeling analysis can be found in Section VII below.

## VI. ENVIRONMENTAL JUSTICE ANALYSIS

The EPA (Environmental Protection Agency) defines Environmental Justice (EJ) to include the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and polices. The goal of completing an EJ assessment in permitting is to provide an opportunity for overburdened populations or communities to allow for meaningful participation in the permitting process. Overburdened is used to describe the minority, low-income, tribal and indigenous populations or communities that potentially experience disproportionate environmental harms and risks due to exposures or cumulative impacts or greater vulnerability to environmental hazards.

The EPA developed EJSCREEN, a publicly available tool that uses nationally consistent data, to produce maps and reports detailing environmental and demographic indicators that can be used to evaluate EJ concerns. The EPA selected an 90<sup>th</sup> percentile threshold for this action to evaluate the potential for EJ concerns in a community, meaning that if the area of interest exceeds the 90<sup>th</sup> percentile for one or more of the EJ indexes, the EPA considers that area to have a high potential for EJ concerns. The ADEQ mapped the location of the Kirkland Pozzolan Mine and reviewed a

five-mile radius around the facility for potential environmental justice concerns (see Figure 1 below).



**Figure 1: Five-mile radius of the Kirkland Pozzolan Mine**

**A. Demographics**

The ADEQ relied on data from the EPA EJ Screen tool to assess the demographics of the communities near the initial location for this proposed facility. The EJSCREEN report shows that the Demographic Indicators for Minority Population, Low Income Population, Linguistically Isolated Population, Population with Less Than High School Education, and Population Under 5 years of age, and Population over 64 years of age are all below the 80th percentile threshold. In this case, the EJ index for “Population over 64 years of age” exceeds the 80<sup>th</sup> percentile threshold, being in the 91<sup>st</sup> percentile for the State of AZ and 97<sup>th</sup> percentile for the USA. Eco Material Technologies, Inc. was required to performed air quality dispersion modeling to ensure that the emissions from the facility do not contribute to any exceedances of the NAAQS. ADEQ requires public notice in two newspapers that circulate within the surrounding community, in addition to publishing the notice electronically to ensure that the community has ample opportunity to provide comments on the draft documents prior to a final permitting decision. ADEQ will be holding a public hearing in an effort to ensure the community has ample opportunity to provide comments prior to the final permitting decision.

**B. Summary of Air Quality**

All air quality related environmental indicators within a 5-miles radius of the facility were below the 80<sup>th</sup> percentile for both Arizona and the USA averages. Additionally, ADEQ conducted air quality dispersion modeling to determine if emissions from the Kirkland Pozzolan Mine will contribute to a NAAQS exceedance. A complete review of the air quality analysis can be found in Section VIII below. Based on the modeling analysis results, ADEQ has determined that the issuance of the significant permit revision will not

interfere with attainment of the NAAQS, and will not have adverse health impacts on the community.

### C. Conclusion

The ADEQ concludes that the protections afforded by Arizona Revised Statutes (A.R.S.) § 49-426, which is imposed through the permit, ensure that the public health and environment in Arizona are protected and that the public notice and comment opportunities afforded to the community on this new permit application satisfy the public participation component of the EPA EJ Guidance. The dispersion modeling ADEQ conducted further concludes that modeling conducted by the Permittee demonstrates compliance with the NAAQS and that the emissions from the facility will not result in any significant environmental or public health impacts.

## VII. LEARNING SITE EVALUATION

In accordance with ADEQ's Environmental Permits and Approvals near Learning Sites Policy, the Department is required to conduct an evaluation to determine if any nearby learning sites would be adversely impacted by the facility. Learning sites consist of all existing public schools, charter schools and private schools the K-12 level, and all planned sites for schools approved by the Arizona School Facilities Board. The learning sites policy was established to ensure that the protection of children at learning sites is considered before a permit approval is issued by ADEQ.

An analysis was conducted and the Department concluded there are Impacted Learning Site(s) within 2.0 miles of the source's location. A modeling analysis was conducted to demonstrate that this facility will not have adverse health impacts on the community. A detailed discussion of the modeling analysis can be found in Section VIII below.

## VIII. AMBIENT AIR IMPACT ANALYSIS

Due to revisions to the grain loading for the evaluated emission control devices, the ambient air impact analysis for particulate matter with nominal aerodynamic diameter less than 10 microns (PM<sub>10</sub>) and particulate matter with nominal aerodynamic diameter less than 2.5 microns (PM<sub>2.5</sub>) conducted in support of Permit No. 89020 are considered to be invalid. While changes to the model selection, meteorological data, and background concentration are not required due to this information remaining consistent between permitting actions, it is necessary to re-evaluate ambient air impacts while accounting for the revised potential to emit for the impacted sources. As such, the Permittee conducted an additional ambient air impact analysis utilizing the revised grain loading guarantees to demonstrate that the facility will continue to comply with the NAAQS. The results of the revised ambient air impact analysis are documented in Table 3 below.

**Table 3: Revised Ambient Air Impact Analysis Results**

<b>Pollutant</b>	<b>Averaging Period</b>	<b>Modeled Concentration (µg/m<sup>3</sup>)</b>	<b>Background Concentration (µg/m<sup>3</sup>)</b>	<b>Maximum Ambient Concentration (µg/m<sup>3</sup>)</b>	<b>NAAQS (µg/m<sup>3</sup>)</b>
PM <sub>10</sub>	24-hour	48.95	70.0	118.95	150
PM <sub>2.5</sub>	24-hour	6.55	4.2	10.75	12

	Annual	12.99	9.7	22.69	35
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Additionally, the modeling analysis for hazardous air pollutants conducted in accordance with the Learning Site Evaluation discussed in Section VI above required revision due to the increase in particulate matter emissions containing low levels of metal hazardous air pollutants (HAPS) in the form of arsenic, chromium, and nickel as identified in laboratory analysis of soil samples taken on-site. Table 4 below evaluates the modeled concentration for the aforementioned HAPs against the Acute (1-hour) and Chronic (annual) Ambient Air Concentrations (AAC) outlined in the Arizona Ambient Air Quality Guidelines (AAAQGs).

**Table 4: Learning Site Policy HAPs Modeling Results**

Pollutant	Averaging Period	Modeled Concentration (µg/m <sup>3</sup> )	Acute AAC (µg/m <sup>3</sup> )	Chronic AAC (µg/m <sup>3</sup> )	Pass/Fail
Arsenic	1-Hour	3.79×10 <sup>-6</sup>	2.5	--	Pass
	Annual	6.25×10 <sup>-9</sup>	--	4.41×10 <sup>-7</sup>	Pass
Chromium	1-Hour	3.09×10 <sup>-5</sup>	0.1	--	Pass
	Annual	5.62×10 <sup>-8</sup>	--	1.58×10 <sup>-7</sup>	Pass
Nickel	1-Hour	1.44×10 <sup>-5</sup>	5	--	Pass
	Annual	2.61×10 <sup>-8</sup>	--	7.9×10 <sup>-6</sup>	Pass

As demonstrated in Table 3 and 4 above, the revised emission limitation and potential to emit for the Kirkland Pozzolan Mine will not result in an exceedance of the applicable NAAQS or AAAQGs.

**IX. LIST OF ABBREVIATIONS**

- AAAQG ..... Arizona Ambient Air Quality Guidelines
- A.A.C. .... Arizona Administrative Code
- AAC ..... Ambient Air Concentrations
- ADEQ ..... Arizona Department of Environmental Quality
- A.R.S. .... Arizona Revised Statutes
- EJ ..... Environmental Justice
- EPA ..... Environmental Protection Agency
- HAP ..... Hazardous Air Pollutant
- NAAQS ..... National Ambient Air Quality Standard
- NSPS ..... New Source Performance Standards
- PM ..... Particulate Matter
- PM<sub>10</sub> ..... Particulate Matter less than 10 µm nominal aerodynamic diameter
- PM<sub>2.5</sub> ..... Particulate Matter less than 2.5 µm nominal aerodynamic diameter
- PTE ..... Potential to Emit
- RACT ..... Reasonably Available Control Technology
- SPR ..... Significant Permit Revision
- TPY ..... Tons per Year