



**Air Quality Permitting  
Technical Memorandum**

**Permit to Construct No. 777-00297**

**GRANITE CONSTRUCTION CO.**

**Portable Hot-mix Asphalt Plant**

**Prepared By:**

**Dustin Holloway  
Permit Writer**

**Project No. P-020304**

**Date Prepared:**

**April 22, 2002**

**Permit Status:**

**FINAL**

## **PURPOSE**

The purpose of this memorandum is to satisfy the requirements of IDAPA 58.01.01.200, *Rules for the Control of Air Pollution in Idaho*, for issuing permits to construct (PTC).

## **PROJECT DESCRIPTION**

Granite Construction Co. (Granite Construction) is proposing to commence construction of a portable hot-mix asphalt (HMA) plant to be operated in both attainment and nonattainment areas within the state of Idaho. Note that the standard PTC for a portable HMA plant also includes provisions for collocated operations in attainment areas with one other portable source (i.e., rock crusher, HMA, or concrete batch plant). The HMA plant's maximum hourly throughput is 400 tons per hour (T/hr) and the facility includes a 1600 hp electrical generator set. The HMA facility will be initially located near Juniper Pit, Idaho.

## **SUMMARY OF EVENTS**

February 11, 2002	The Idaho Department of Environmental Quality (DEQ) received an application from Granite Construction Co. for a portable HMA plant.
March 7, 2002	The application was determined complete.
April 12, 2002	An opportunity to request a public comment period was held. No request was received.

## **DISCUSSION**

### **1. Process Description**

The facility is a portable, drum-mix, HMA plant used for the production of asphaltic concrete. The dryer burner is permitted to be fired on fuel oil, natural gas, or propane gas.

The standard PTC requested will allow this HMA facility to collocate and simultaneously operate with one other portable plant (i.e., rock crusher, HMA plant, and/or concrete batch plant) in attainment areas. It is important to note that during collocated operations, this HMA plant is then part of a single, larger source engaged in the production of either asphalt, concrete, and/or aggregate, depending on the type of portable plant the HMA plant is collocated with. While collocated, the two portable plants are now considered to be one source, and the emissions of this single source is the sum of the emissions from the two portable plants. This single, larger source must comply with all applicable federal, state, and local requirements. To maintain compliance, specific requirements and limitations have been included in the standard PTC for this HMA plant for collocated operations. As described in the following sections of this technical memorandum, specific conservative assumptions and calculations were made to determine these standard PTC collocation requirements. For this reason, the permit for the other portable plant, with which this HMA plant will collocate, must also contain specific collocation requirements based on the same conservative assumptions and calculations used in this standard PTC.

### **2. Equipment Listing**

This standard permit analysis includes the following equipment as submitted in the application:

2.1 Portable HMA Plant

Manufacturer/model:	Barber Green
Type:	Drum-mix
Throughput capacity:	400 T/hr
Burner fuel type:	Waste oil
Dryer heat input:	92.00 million British thermal units

2.2 Air Pollution Control Device

Type:	Baghouse
Model:	BH 182-88411-00-3A

2.3 HMA Stack Information

Stack height:	40 ft
Stack diameter:	4 ft
Exhaust gas flowrate:	67,000 acfm
Stack exhaust temperature:	190°F

2.4 Generator

Manufacturer/Model:	CAT 3512
Rated power output:	1600 hp
Fuel type:	diesel
Fuel usage:	60 gallons per hour
Stack height:	12 ft
Stack diameter:	0.75 ft
Exhaust gas flowrate:	7,000 acfm
Stack exhaust temperature:	879°F

When collocated, this HMA plant is then part of a single, larger source that produces either HMA, concrete, and/or aggregate, depending on which type of portable plant the HMA plant is collocated with. The equipment used by this single, larger source would include the HMA plant equipment listed above, plus the equipment of the other portable plant. To see an equipment description for the other portable plant, see the corresponding permitting files for that plant.

3. Area Classification

The HMA facility is a portable source and may operate in both attainment and nonattainment areas throughout the state of Idaho.

4. Emission Estimates

Emission estimates for this HMA facility were calculated using an Excel spreadsheet and emission factors obtained from AP-42, Sections 11.1 and 1.3. For purposes of maximum flexibility, the spreadsheet calculates the potential to emit (PTE) based on the worst-case emission factor of all possible fuels to be used at the HMA plant (diesel fuel oils, propane, and natural gas). The following air pollutant emissions are calculated by the spreadsheet: PM (particulate matter), PM<sub>10</sub> (particulate matter with an aerodynamic diameter less than or equal to 10 micrometers), NO<sub>x</sub> (oxides of nitrogen), SO<sub>2</sub> (sulfur dioxide), and CO (carbon monoxide).

In calculating the PTE for each pollutant, the spreadsheet solves for the most-limiting pollutant, which will give the facility a PTE of less than 100 tons per any consecutive 12-month period (i.e., 99 T/yr). In addition, allowable operational limits for the facility, which corresponds to the PTE less than 100 T/yr, are given as part of the spreadsheet output. A copy of the spreadsheet showing all calculations and results is presented as *Appendix A of this memo*.

For collocated operations, a conservative approach is taken by limiting the emissions of each of the collocated units to half of the levels allowed when operating alone. Then the combined emissions of the two collocated sources will be within the allowable levels. See the information below for a more detailed description. This approach is designed to result in acceptable throughput limits for most collocation situations. In cases where the throughput limits are too restrictive, a site-specific analysis and permit amendment may be completed.

In summary, the emission estimates for this facility assume 400 T/hr throughput to a drum-mix HMA plant, one waste oil-fired dryer, one diesel-fired electrical generator set rated at 1600 hp, and fugitive dust emissions from specified sources (see the spreadsheet). The most-limiting pollutants, which give the facility a PTE of 99 T/hr, are NO<sub>x</sub> and SO<sub>2</sub>. The emissions factor for SO<sub>2</sub> is calculated from AP-42, Section 1.3. The emissions factors for SO<sub>2</sub> in Section 1.3 are based on sulfur content in the fuel and the assumption that half of the SO<sub>2</sub> emissions or 0.1lb/ton of asphalt, whichever is smaller, remains in the product. In order to remain within 99 T/yr for SO<sub>2</sub> emissions a fuel sulfur content of .95% or less is required.

#### 4.1 Collocated Operations in Attainment Areas

Standard PTCs will only allow collocation with one other portable source (i.e., rock-crushing plant, HMA plant, or concrete batch plant) which has also received a standard PTC that specifically allows collocation. When a combination of one portable HMA unit and one other portable plant are operated at a single location, the emissions of both units must be added together when determining PTE. Consistent with the approach taken for attainment area operations, the spreadsheet inherently limits the combined emissions of the two portable units to below certain triggering levels (i.e., Prevention of Serious Deterioration (PSD) and Title V thresholds) by limiting the maximum throughput of each. For collocated operations, half of the attainment area triggering levels are used as limits for calculating throughput for each source. The HMA plant throughput is then established based on the most-limiting pollutant or pollutants (i.e., the pollutant whose emission rate is closest to 49.5 T/yr). For collocated attainment area operations, the most-limiting pollutants, which give the HMA facility a PTE of 49.5 T/yr, are NO<sub>x</sub> and SO<sub>2</sub>.

#### 5. Modeling

Modeling of the asphalt plant stack emissions was conducted using an EPA-approved SCREEN 3 computer-run model. The maximum one-hour impact from the dryer stack was calculated to be 1.82 µg/m<sup>3</sup> using a 1 lb/hr unity emission rate input to the model. The maximum one-hour impact from the electrical generator set was calculated to be 13.46 µg/m<sup>3</sup>, also using a 1 lb/hr unity input. The spreadsheet calculates the ambient impact for each air pollutant (PM, PM<sub>10</sub>, NO<sub>x</sub>, SO<sub>2</sub>, and CO) based on the calculated pound-per-hour emission rate, averaging periods, and background concentrations. The spreadsheet solves for the most-limiting pollutant in attainment areas and gives appropriate operational limits, which protects the applicable National Ambient Air Quality Standard (NAAQS) as defined in IDAPA 58.01.01.577. In addition, the spreadsheet also calculates the most-limiting pollutant in nonattainment areas and gives operational limits to protect applicable significant contribution requirements, as defined in IDAPA 58.01.01.006.89. All SCREEN modeling output files are presented as Appendix B of this memo. Spreadsheet impact calculations and results are presented as Appendix A.

For collocated operations in attainment areas, operation of the HMA plant and its generator (if used) are limited as needed so that the modeled impacts will be half of the available allowable ambient impact. Likewise for collocated operations, the modeled impacts of the other portable facility will also be limited to half of the available allowable ambient impact so that the combined emissions of the two collocated sources will remain within the NAAQS. Using the 24-hour NAAQS standard for PM<sub>10</sub> (attainment area) as an example, one half of the allowable available impact would be equal to 32 µg/m<sup>3</sup>, as follows:

$$32 \mu\text{g}/\text{m}^3 = 0.5 \times [150 \mu\text{g}/\text{m}^3 - 86 \mu\text{g}/\text{m}^3],$$

where 150 µg/m<sup>3</sup> is the 24-hour average standard and 86 µg/m<sup>3</sup> is the conservative statewide 24-hour average background value. Then operation of the HMA plant and its generator (if used) would be limited as needed, based on the specific ambient impact modeling, so that the modeled 24-hour concentration does not exceed 32 µg/m<sup>3</sup> at or beyond the facility's property boundary. This approach is designed to result in acceptable operational limits for most collocation situations. In cases where these limits are too restrictive, a site-specific analysis and permit amendment may be completed. If a generator is used, the modeling estimates are included as Appendix B.

## 6. Facility Classification

HMA plants (including collocated operations producing asphalt, concrete, and aggregate) are not designated facilities, as defined in IDAPA 58.01.01.006.27. This facility is not a major facility as defined in IDAPA 58.01.01.006.55 and IDAPA 58.01.01.008.10. The Standard Industrial Classification code for this HMA facility is 2951. The AIRS facility classification for this facility is "SM" because allowable emissions are less than all thresholds for Tier I permits. The spreadsheet included as Appendix A automatically determines the facility classification.

## 7. Regulatory Review

The following rules and regulations were reviewed for this permit analysis:

- |    |                             |   |
|----|-----------------------------|---|
| a. | <u>IDAPA 58.01.01.201</u>   | Permit to Construct   |
| b. | <u>IDAPA 58.01.01.202</u>   | Application Procedures                                      |
| c. | <u>IDAPA 58.01.01.203</u>   | Permit Requirements for New and Modified Stationary Sources |
| d. | <u>IDAPA 58.01.01.209</u>   | Procedures for Issuing Permits                              |
| e. | <u>IDAPA 58.01.01.211</u>   | Conditions for Permits to Construct                         |
| f. | <u>IDAPA 58.01.01.212</u>   | Obligation to Comply  |
| g. | <u>IDAPA 58.01.01.577</u>   | Ambient Air Quality Standards                               |
| h. | <u>IDAPA 58.01.01.625</u>   | Visible Emissions   |
| i. | <u>IDAPA 58.01.01.650</u>   | Rules for Control of Fugitive Dust                          |
| j. | <u>IDAPA 58.01.01.725</u>   | Rules for Sulfur Content of Fuels                           |
| k. | <u>IDAPA 58.01.01.805</u>   | Rules for the Control of Hot-mix Asphalt Plants             |
| l. | <u>40 CFR 60, Subpart I</u> | Standards and Performance for Hot-mix Asphalt Facilities    |

This facility is an affected facility and is subject to regulation in accordance with 40 CFR Part 60, Subpart I, "Standards of Performance for Hot-mix Asphalt Facilities."

8. Permit Coordination

This HMA facility is not a major facility as defined by IDAPA 58.01.01.006.55 and IDAPA 58.01.01.008.10. However, the applicant has indicated that it is a New Source Performance Standard (NSPS)-affected facility (40 CFR Part 60, Subpart I), and as such, it is a Tier I source as defined by IDAPA 58.01.01.006.104(b). In accordance with IDAPA 58.01.01.313.01.e.ii, facilities that become Tier I sources after January 1, 2000, but before January 1, 2005 must either:

- 1) Submit a Tier I application within 12 months after commencing construction, or
2. Register the source with DEQ by submitting the information in Subsection 313.01.f within 12 months after commencing operation.

9. Permit Requirements

*Since this facility is using a short-term source factor for carcinogenic pollutants it must not remain in one location for more than five consecutive years.*

10. AIRS Information

**AIRS/AFS<sup>a</sup> FACILITY-WIDE CLASSIFICATION<sup>b</sup> DATA ENTRY FORM**

AIR PROGRAM	SIP <sup>c</sup>	PSD <sup>d</sup>	NSPS <sup>e</sup> (Part 60)	NESHAP <sup>f</sup> (Part 61)	MACT <sup>g</sup> (Part 63)	TITLE V	AREA CLASSIFICATION A – Attainment U – Unclassifiable N – Nonattainment
POLLUTANT							
SO <sub>2</sub> <sup>h</sup>	SM						Portable
NO <sub>x</sub> <sup>i</sup>	SM						Portable
CO <sup>j</sup>	B						Portable
PM <sub>10</sub> <sup>k</sup>	SM						Portable
PT (Particulate) <sup>l</sup>	SM		SM				
VOC <sup>m</sup>	B						Portable
THAP (Total HAPs) <sup>n</sup>	B						
			<b>APPLICABLE SUBPART</b>				
			I				

<sup>a</sup> Aerometric Information Retrieval System (AIRS) Facility Subsystem (AFS)

<sup>b</sup> AIRS/AFS Classification Codes:

- A = Actual or potential emissions of a pollutant are above the applicable major source threshold. For NESHAP only, class "A" is applied to each pollutant which is below the 10 T/yr threshold, but which contributes to a plant total in excess of 25 T/yr of all NESHAP pollutants.
- SM = Potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable regulations or limitations.
- B = Actual and potential emissions below all applicable major source thresholds.
- C = Class is unknown.
- ND = Major source thresholds are not defined (e.g., radionuclides).

<sup>c</sup> State Implementation Plan

<sup>d</sup> Prevention of Significant Deterioration

<sup>e</sup> New Source Performance Standards

<sup>f</sup> National Emission Standards for Hazardous Air Pollutants

<sup>g</sup> Maximum Achievable Control Technology

<sup>h</sup> sulfur dioxide

<sup>i</sup> nitrogen oxides

<sup>j</sup> carbon monoxide

<sup>k</sup> particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers

<sup>l</sup> particulate matter

<sup>m</sup> volatile organic compounds

<sup>n</sup> hazardous air pollutants

## **PUBLIC COMMENT**

After the application was determined complete a 30-day opportunity for public comment was provided beginning on April 12, 2002. No request for a comment period was received.

## **FEES**

This facility is not a major facility as defined in IDAPA 58.01.01.008.10. Therefore, registration and registration fees in accordance with IDAPA 58.01.01.526 are not applicable.

## **RECOMMENDATION**

Based on review of application materials and state and federal rules and regulations, staff recommends Granite Construction Co. be issued a PTC for a portable HMA facility. No public comment period is recommended, no entity has requested a comment period, and the project does not involve PSD PTC requirements.

DH/DS/bh            G:\Air Permits\PT C\Granite Construction\IP-020304 Tech Memo.docx

cc:            Tiffany Floyd, Pocatello Regional Office  
                Sherry Davis, Technical Services  
                Joan Lechtenberg, Air Quality Division

**APPENDIX A**  
**Emissions Calculations**

**INPUT SECTION - enter info in highlighted areas only**

**Company:** Granite Construction Company  
**Permit Engineer:** Dustin Holloway  
**Date:** 3/28/02  
**Filename:** HMA Emissions Estimate

**Enter the HMA Plant Type:** B (A = Batch Mix; Hot Mix Asphalt Plant)  
 (B = Drum Mix; Hot Mix Asphalt Plant)

**Dryer Fuel Type:** B (A = Natural Gas-Fired Dryer)  
 (B = Oil-Fired Dryer)

**Enter Dryer Stack Flow Rate:** 67,000 actual cubic feet per minute (acfm)  
**Enter Dryer Stack Temperature:** 194 temperature (°F)  
**Enter Dryer Stack Moisture:** 12.00 moisture wt % (Default 10 wt%)  
**Enter Dryer Stack Pressure:** 29.91 stack pressure (Default 29.92 "Hg)  
**Calculated Corrected Flow Rate:** 44,033 dry standard cubic feet per minute (dscfm)

**Enter HMA Maximum Capacity:** 400 Tons/hr (Asphalt Throughput)

**Enter HMA Model Concentration:** 1.87 µg/m<sup>3</sup> (1-hr concentration @ 1 Mi/hr)

**Is a PM performance test required for this HMA plant?** Y (Y or N based on 40 CFR 60.99 Requirements)

**Does Plant Require a Generator?** Y (Y or N)  
**Enter Generator Size:** 1600 hp (A = Horsepower or B = Kilowatts)  
**Enter Units:** A Horsepower

**Calculated Generator Size:** 1600.00 Horsepower (A = Wind-Fired Generator)  
 (B = Gas/Oil-Fired or Dual-Fuel Generator)

**Enter Generator Fuel Usage:** 60 gal/hr  
**Calculated Generator Heat Output:** 2.15 MM/Btu/hr  
**Enter gen. modeled concentration:** 13.46 µg/m<sup>3</sup> (1-hr concentration @ 1 Mi/hr)

**SPREADSHEET DATA - Information used by spreadsheet**

State Wide Background Concentrations for Criteria Air Pollutants					
	1-hr	3-hr	8-hr	24-hr	Annual
PM-10					31.7
CO	11000		5130	86	40
NO <sub>x</sub>					40
SO <sub>x</sub>		543		144	31.5

**Parameters used in the Facility Emissions Calculations**

Winds Wind Speed (U)  
 Material Moisture Content (M)  
 Particle Size Multiplier (N)  
 PM-10 (<10 µm)  
 PM-10 (<16 µm)  
 Emission Factor<sup>1</sup>  
 PM<sup>2</sup>

Notes:  
<sup>1</sup> EF = 1\*0.0037\*(USP-1.37(M/3)^1.4  
 Drop-Peak Equation, Rating "A" - AP-42, 50.24, p.13.2.6-2.  
 Assumptions: Wind Speed = 10 mph; Moisture = 2.5%; and  
 Aggregate = 94% of product.

**FACILITY CLASSIFICATION INPUT**

**Enter Annual Emission Limit:** 100 T/yr  
**Notes:** Use 100 T/yr for Title V Limitation  
 Use 250 T/yr for PSD Limitation  
 For the standard HMA permit, use 100 T/yr.

PERMIT REQUIREMENTS SECTION - enforceable permit limits  
 AIRS Facility Classification: A2

Non-attainment Area		Attainment Area	
Allowable Emission Limits		Allowable Emission Limits	
HMA Dryer Stack:	15.3 lb/hr of PM NA T/yr	HMA Dryer Stack:	15.3 lb/hr of PM 53.7 T/yr of NOx
Generator:	8.8 hr/day 3,204.40 hr/year NA T/yr	Generator:	24.0 hr/day 3,579.95 hr/year 45.3 T/yr of NOx
HMA Plant Throughput Limits:	3,512 T/day 1,281,759 T/yr	HMA Plant Throughput Limits:	NA 1,431,979 T/yr

Collocated Attainment Areas		CO 1-hr Standard		SO2 3-hr standard		CO 8-hr Standard	
HMA Dryer Stack:	15.3 lb/hr of PM 26.8 T/yr of NOx	minutes/hr	60.0	hr/3-hr	3.0	hr/8-hr	8.0
Generator:	24.0 hr/day 1,789.97 hr/year 22.7 T/yr of NOx						
HMA Plant Throughput Limits:	NA T/day 715,989 T/yr						

INPUTS TO PERMIT TO CONSTRUCT (PTC)	Value	Units
Section B "Attainment Area When Not Collocated"		
Section B.1.1 Facility Throughput Limits: Annual Throughput Limit	1,431,979	T/yr
<<OR>>		
Daily Throughput Limit	NA	T/day
Annual Throughput Limit	1,431,979	T/yr
Section B.1.3 Generator Hours of Operation: Annual Hours of Operation	3,580	hr/year
<<AND/OR>>		
Daily Hours of Operation	24	hr/day
Section C "Attainment Area When Collocated"		
Section C.1.3 Facility Throughput Limits: Annual Throughput Limit	715,989	T/yr
<<OR>>		
Daily Throughput Limit	NA	T/day
Annual Throughput Limit	715,989	T/yr
Section C.1.4 Generator Hours of Operation: Annual Hours of Operation	1,790	hr/year
<<AND/OR>>		
Daily Hours of Operation	24.0	hr/day
Section D "Nonattainment Area"		
Section D.1.1 Facility Throughput Limits: Annual Throughput Limit	1,281,759	T/yr
<<OR>>		
Daily Throughput Limit	3,512	T/day
Annual Throughput Limit	1,281,759	T/yr
Section D.1.3 Generator Hours of Operation: Annual Hours of Operation	3,204	hr/year
<<AND/OR>>		
Daily Hours of Operation	8.8	hr/day



FUGITIVE EMISSION CALCULATIONS FOR ATTAINMENT AREAS

	PM	PM-10
Pre-Dryer Source Emissions (lb/hr)		
Loader -> Cold Aggregate Bin	2.01	0.76
Cold Aggregate Bin -> Conveyor	2.01	0.76
Conveyor -> Drum Dryer	2.01	0.76
Total Pre-Dryer Source Emissions	6.02	2.28
Post-Dryer Source Emissions		
Screening Process	#N/A	#N/A
Screen -> Hot Bins	#N/A	#N/A
Hot Bins -> Weigh Hopper	#N/A	#N/A
Weigh Hopper -> Pug Mill	#N/A	#N/A
Total Post-Dryer Source Emissions	#N/A	#N/A
Scavenger Control Efficiency	#N/A	#N/A
Total Uncontrolled Emissions (lb/hr)	6.02	2.28
Total Uncontrolled Emissions (T/yr)	10.77	4.87
Total Controlled Emissions (lb/hr)	6.02	2.28
Total Controlled Emissions (T/yr)	10.77	4.87

FUGITIVE EMISSION CALCULATIONS FOR NONATTAINMENT AREAS

	PM	PM-10
Pre-Dryer Source Emissions (lb/hr)		
Loader -> Cold Aggregate Bin	2.01	0.76
Cold Aggregate Bin -> Conveyor	2.01	0.76
Conveyor -> Drum Dryer	2.01	0.76
Total Pre-Dryer Source Emissions	6.02	2.28
Post-Dryer Source Emissions 1		
Screening Process	#N/A	#N/A
Screen -> Hot Bins	#N/A	#N/A
Hot Bins -> Weigh Hopper	#N/A	#N/A
Weigh Hopper -> Pug Mill	#N/A	#N/A
Total Post-Dryer Source Emissions	#N/A	#N/A
Scavenger Control Efficiency	#N/A	#N/A
Total Uncontrolled Emissions (lb/hr)	6.02	2.28
Total Uncontrolled Emissions (T/yr)	9.64	3.65
Total Controlled Emissions (lb/hr)	6.02	2.28
Total Controlled Emissions (T/yr)	9.64	3.65

Source: National Asphalt Pavement Association

\* CO 1-hr Averaging Period

\* CO 8-hr Averaging Period

\* SO<sub>2</sub> 3-hr Averaging Period

SPREADSHEET SUMMARY - results of emission and modeling calcs for all pollutants

ATTAINMENT & UNCLASSIFIABLE AREAS		NONATTAINMENT AREAS	
Uncontrolled	Controlled	Dryer	Uncontrolled
13603.8 T/yr	27.4 T/yr	PM	12176.7 T/yr
3078.8 T/yr	27.4 T/yr	PM-10	2755.8 T/yr
25.8 T/yr	25.8 T/yr	CO	23.1 T/yr
53.7 T/yr	53.7 T/yr	NOx	48.1 T/yr
85.4 T/yr	85.4 T/yr	SO <sub>2</sub>	76.5 T/yr
Generator		Controlled	
1.0 T/yr	1.0 T/yr	PM	0.9 T/yr
0.8 T/yr	0.8 T/yr	PM-10	0.7 T/yr
11.8 T/yr	11.8 T/yr	CO	10.6 T/yr
45.3 T/yr	45.3 T/yr	NOx	40.5 T/yr
7.4 T/yr	7.4 T/yr	SO <sub>2</sub>	6.6 T/yr
Fugitives			
10.8 T/yr	10.8 T/yr	PM	9.6 T/yr
4.1 T/yr	4.1 T/yr	PM-10	3.6 T/yr
Total <sup>1</sup>			
13615.6 T/yr	39.2 T/yr	PM	12187.3 T/yr
3083.7 T/yr	32.3 T/yr	PM-10	2760.2 T/yr
37.6 T/yr	37.6 T/yr	CO	33.7 T/yr
99.0 T/yr	99.0 T/yr	NOx	88.6 T/yr
92.8 T/yr	92.8 T/yr	SO <sub>2</sub>	83.1 T/yr
3083.7 [-] T/yr		2760.2 T/yr	
of PM-10		of PM-10	
13615.6 [-] T/yr		12187.3 T/yr	
of PM		of PM	
Enforceable Limits - Attainment Areas		Enforceable Limits - Non-Attainment Areas	
24.0 hr/day	3,586 hr/yr	8.8 hr/day	3,204 hr/yr
Dryer Controlled Emission Rates		Dryer Controlled Emission Rates	
153 lb/hr	27.4 T/yr	15.3 lb/hr	24.5 T/yr
14.4 lb/hr	25.8 T/yr	14.4 lb/hr	23.1 T/yr
30.0 lb/hr	53.7 T/yr	30.0 lb/hr	48.1 T/yr
47.7 lb/hr	85.4 T/yr	47.7 lb/hr	76.5 T/yr
Generator Controlled Emission Rates		Generator Controlled Emission Rates	
0.5 lb/hr	0.8 T/yr	0.5 lb/hr	0.7 T/yr
6.6 lb/hr	11.8 T/yr	6.6 lb/hr	10.6 T/yr
25.3 lb/hr	45.3 T/yr	25.3 lb/hr	40.5 T/yr
4.1 lb/hr	7.4 T/yr	4.1 lb/hr	6.6 T/yr

a1. Total in the dryer, generator and fugitives added together for total PTE.

a2. This V PTE summary does not account for PM, only PM-10.

Attainment Area - Collocated Units - Calculations						
Collocation Ambient Air Quality Standards - Calculations						
Pollutant	(1-hr, 3-hr, 6-hr, 8-hr, 24-hr standards are cut in half for collocation)					
	1-hr	3-hr	6-hr	8-hr	24-hr	Annual (50% Attainment Hours)
PM <sub>10</sub>	14184.75546		2354.328825		18.33128379	8.091401003
CO		250.2923959			53.51884261	23.53800719
NO <sub>x</sub>						23.92135284
SO <sub>x</sub>						
TOC						
Background Concentrations - Attainment/Non-Classifiable Areas (ug/m3)						
Pollutant	1-hr	3-hr	6-hr	8-hr	24-hr	Annual
PM <sub>10</sub>	11400				86	32.7
CO			5130			40
NO <sub>x</sub>		543			144	23.5
SO <sub>x</sub>						
TOC						

Analysis for Non-Carcinogenic Pollutants

Pollutant	Emission Factor, lb/ton	Generator Emission Factor, lb/MMBtu	Actual, lb/hr	EL Standard, lb/hr	Modeled 1 hr concentration at 1 lb/hr	Actual 24 hr. Ambient Conc., ug/m <sup>3</sup>	AAC, ug/m <sup>3</sup> (24 Hour average)	Allowable Hours Per Day
Phosphorous	2.80E-05		1.12E-02	0.007	1.82	1.86E-02	5	24
Silver	4.80E-07		1.92E-04	0.007		2.85E-04	5	24
Zinc	6.10E-05		2.44E-02	0.667		3.62E-02	500	24
Chromium	5.50E-06		2.20E-03	0.033		3.26E-03	25	24
Copper	3.10E-06		1.24E-03	0.013		1.84E-03	10	24
Manganese	7.7E-06		3.08E-03	0.067		4.57E-03	50	24
Mercury	2.6E-06		1.04E-03	0.0001		1.54E-03	1	24
Acrolein	2.6E-05	7.9E-06	1.04E-02	0.017		1.54E-02	13	24
Methyl Ethyl Ketone	2E-05		8.00E-03	0.007		1.19E-02	6	24
Propionaldehyde	0.00013		5.20E-02	0.0287		7.72E-02	22	24
Quinone	0.00016		6.40E-02	0.027		9.50E-02	20	24
Toluene	0.0029	2.81E-04	1.16E+00	25		1.72E+00	18,750	24
Acetone	0.00083		3.32E-01	1.33		4.93E-01	1,000	24
Crotonaldehyde	8.6E-05		3.44E-02	0.38		5.10E-02	285	24
Valeraldehyde	6.7E-05		2.68E-02	11.7		3.98E-02	8,750	24
Ethylbenzene	0.00024		9.60E-02	29		1.42E-01	21,750	24
Methyl chloroform	4.8E-05		1.92E-02	127		2.85E-02	95,500	24
Xylene	0.0002	1.93E-04	8.00E-02	29		1.19E-01	21,750	24
Naphthalene	0.00065	1.30E-04	2.60E-01	3.33		3.86E-01	2,500	24
Selenium	3.50E-07		1.40E-04	1.30E-02		2.08E-04	10	24
Thallium	4.10E-09		1.64E-06	0.007		2.43E-06	5	24
Antimony	1.80E-07		7.20E-05	0.033		1.07E-04	25	24
Barium	5.80E-06		2.32E-03	0.033		3.44E-03	25	24
Hexane	0.00092		3.68E-01	12		5.46E-01	9,000	24
Heptane	9.40E-03		3.76E+00	109		5.58E+00	82,000	24
Pentane	2.10E-04		8.40E-02	0.033		1.25E-01	25	24

Source: AP-42, 12/00, Tables 11.1-10 and 11.1-12.

Ton/yr  
Throughput 400

Emissions Analysis for Carcinogenic Pollutants

Pollutant	HMA Emission Factor, lb/ton	Generator Emission Factor, lb/MMBtu	Actual, lb/hr	EL Standard, lb/hr	Modeled 1 hr concentration at 1 lb/hr	Actual Annual Ambient Conc., ug/m <sup>3</sup>	AACC, ug/m <sup>3</sup> (annual average)	Annual Hours of Operation to Meet AACC or EL	Annual Tonnage Limit to Meet AACC
Arsenic	5.60E-07		2.24E-04	1.56E-06	1.82	5.10E-05	2.30E-03		
Nickel AP-42 Lab analysis	6.30E-05 1.23E-05		2.52E-02 4.92E-03	2.70E-05 2.70E-05		5.73E-03 1.12E-03	4.20E-02		
Cadmium	4.10E-07		1.64E-04	0.0000037		3.73E-05	5.6E-03		
Hexavalent Chromium*	4.5E-07		1.80E-04	5.6E-07		4.10E-05	8.30E-04		
Acetaldehyde	0.0013	2.52E-05	5.20E-01	3E-03		1.18E-01	9.5E+00		
Benzene*	0.00039	7.76E-04	1.56E-01	8.0E-04		3.55E-02	1.2E+00		
Formaldehyde*	3.1E-03	7.9E-05	1.24E+00	5.1E-04		2.82E-01	7.7E-01		
Benzo(a)pyrene	9.8E-09	2.6E-07	3.92E-06	2E-06		8.92E-07	3E-03		
Beryllium	0.00E+00			2.80E-05			0.042		
	Ton/Hr	400							
	Throughput								

\* Note: Hexavalent chromium, nickel, formaldehyde and benzene emission factors are identical to that analyzed for #2 fuel oil in standard PTC review.

Source: AP-42, 12/00, Tables 11.1-10 and 11.1-12, and 3.4-3 and 3.4-4.

**Lead Emissions**

Emission Factor, lb/ton	Actual Emission Rate, tons/year	Significant Level Concentration at 1 lb/hr	Modeled Concentration at 1 lb/hr	Actual Ambient Concentration, hourly, ug/m3	Actual Ambient Concentration, quarterly, ug/m3	Ambient Concentration Standard, Quarterly
1.50E-05 lb/ton	0.03 tons/yr	0.6 ton/yr	1.82	0.01092 ug/m3	0.002457 ug/m3	1.5 ug/m3

Source: AP-42, 12/00, Tables 11.1-10 and 11.1-12.

Tons per Hour Throughput 400

**APPENDIX B**  
**Modeling Output**

03/07/02  
13:58:24

\*\*\* SCREEN3 MODEL RUN \*\*\*  
\*\*\* VERSION DATED 96043 \*\*\*

No Title

SIMPLE TERRAIN INPUTS:

SOURCE TYPE = POINT  
EMISSION RATE (G/S) = 0.126000  
STACK HEIGHT (M) = 3.6576  
STK INSIDE DIAM (M) = 0.2286  
STK EXIT VELOCITY (M/S) = 80.4906  
STK GAS EXIT TEMP (K) = 743.7056  
AMBIENT AIR TEMP (K) = 293.1500  
RECEPTOR HEIGHT (M) = 0.0000  
URBAN/RURAL OPTION = RURAL  
BUILDING HEIGHT (M) = 0.0000  
MIN HORIZ BLDG DIM (M) = 0.0000  
MAX HORIZ BLDG DIM (M) = 0.0000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.  
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

BUOY. FLUX = 6.247 M\*\*4/S\*\*3; MOM. FLUX = 33.363 M\*\*4/S\*\*2.

\*\*\* FULL METEOROLOGY \*\*\*

\*\*\*\*\*  
\*\*\* SCREEN AUTOMATED DISTANCES \*\*\*  
\*\*\*\*\*

\*\*\* TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES \*\*\*

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	0.000	1	1.0	1.0	320.0	88.32	2.72	2.70	NO
100.	12.82	4	20.0	20.0	6400.0	7.89	8.25	4.74	NO
200.	11.24	4	10.0	10.0	3200.0	12.12	15.75	8.84	NO
300.	9.181	4	8.0	8.0	2560.0	14.24	22.81	12.47	NO
400.	7.344	4	5.0	5.0	1600.0	20.59	29.85	16.02	NO
500.	6.431	4	5.0	5.0	1600.0	20.59	36.47	18.93	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

118.	13.46	4	20.0	20.0	6400.0	7.89	9.69	5.51	NO
------	-------	---	------	------	--------	------	------	------	----

DWASH= MEANS NO CALC MADE (CONC = 0.0)  
DWASH=NO MEANS NO BUILDING DOWNWASH USED  
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED  
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED  
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3\*LB

\*\*\*\*\*  
\*\*\* SUMMARY OF SCREEN MODEL RESULTS \*\*\*  
\*\*\*\*\*

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
----- SIMPLE TERRAIN	----- 13.46	----- 118.	----- 0.

03/20/02  
15:39:52

\*\*\* SCREEN3 MODEL RUN \*\*\*  
\*\*\* VERSION DATED 96043 \*\*\*

Granite HMA

SIMPLE TERRAIN INPUTS:

SOURCE TYPE = POINT  
EMISSION RATE (G/S) = 0.126000  
STACK HEIGHT (M) = 12.1920  
STK INSIDE DIAM (M) = 1.2192  
STK EXIT VELOCITY (M/S) = 27.0850  
STK GAS EXIT TEMP (K) = 360.9278  
AMBIENT AIR TEMP (K) = 293.1500  
RECEPTOR HEIGHT (M) = 0.0000  
URBAN/RURAL OPTION = RURAL  
BUILDING HEIGHT (M) = 0.0000  
MIN HORIZ BLDG DIM (M) = 0.0000  
MAX HORIZ BLDG DIM (M) = 0.0000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.  
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

BUOY. FLUX = 18.535 M\*\*4/S\*\*3; MOM. FLUX = 221.420 M\*\*4/S\*\*2.

\*\*\* FULL METEOROLOGY \*\*\*

\*\*\*\*\*  
\*\*\* SCREEN AUTOMATED DISTANCES \*\*\*  
\*\*\*\*\*

\*\*\* TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES \*\*\*

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	0.000	1	1.0	1.0	320.0	200.94	4.80	4.79	NO
100.	0.2439E-01	5	1.0	1.1	10000.0	89.07	22.80	22.25	NO
200.	1.188	3	10.0	10.2	3200.0	30.95	23.97	14.60	NO
300.	1.822	3	10.0	10.2	3200.0	30.95	34.70	21.01	NO
400.	1.699	3	8.0	8.2	2560.0	35.65	45.15	27.28	NO
500.	1.607	4	15.0	15.5	4800.0	24.58	36.32	18.64	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

310.	1.826	3	10.0	10.2	3200.0	30.95	35.85	21.68	NO
------	-------	---	------	------	--------	-------	-------	-------	----

DWASH= MEANS NO CALC MADE (CONC = 0.0)  
 DWASH=NO MEANS NO BUILDING DOWNWASH USED  
 DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED  
 DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED  
 DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3\*LB

\*\*\* INVERSION BREAK-UP FUMIGATION CALC. \*\*\*

CONC (UG/M\*\*3) = 1.953  
DIST TO MAX (M) = 2551.56

\*\*\*\*\*  
 \*\*\* SUMMARY OF SCREEN MODEL RESULTS \*\*\*  
 \*\*\*\*\*

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
-----	-----	-----	-----
SIMPLE TERRAIN	1.826	310.	0.
INV BREAKUP FUMI	1.953	2552.	--

**APPENDIX C**  
**AIRS INFORMATION**

