January 10, 2001

MEMORANDUM

TO: Stephen West, Administrator
Boise Regional Office

FROM: Tom Anderson, Air Quality Engineer
State Technical Services Office

SUBJECT: *PERMIT TO CONSTRUCT TECHNICAL ANALYSIS*
P-000092, Ruschman Sand & Gravel, Portable Rock Crusher Plant Modification
(Standard Rock Crusher Permit to Construct No.777-00224; Including Aggregate, Asphalt, and Concrete Production when Collocated in Attainment Areas)

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

Ruschman Sand & Gravel is proposing to modify a portable rock crushing facility. Ruschman Sand & Gravel Inc. is requesting a PTC modification to be issued to allow the operations of the rock crushing facility in attainment and non-attainment areas throughout the State of Idaho, with portable electric generators of different kilowatt ratings. Note that the Standard PTC for a portable rock crusher also includes provisions for collocated operations in attainment areas with one (1) other portable source (i.e., rock crusher, hot-mix asphalt, or concrete batch plant). The rock crushing facility's maximum hourly production rate is 400 tons per hour (400 T/hr). The facility can include one (1) of the following: a 460-kilowatt (460-kW), no more than a 365-kilowatt (365-kW), or a 320- kilowatt (320-kW), diesel-fired electrical generator.

SUMMARY OF EVENTS

On August 4, 2000, the Idaho Department of Environmental Quality (DEQ) received an application from Ruschman Sand & Gravel Inc., to modify Permit to Construct (PTC) # 777-00252. The modifications consist of changing the permit number back to 777-00224, removing the initial performance testing requirements, and adding the capability to use 3 different kilowatt sizes for electrical generation during operations when collocated, and operations in nonattainment areas. On September 5, 2000, the application was declared complete.

DISCUSSION

1. Process Description

The majority of rock crushing facilities in Idaho mine rock deposits from pits using front-end loaders. However, rock may also be mined from quarries by drilling and blasting, or dredged from stream beds. Rock crushing facilities generally produce three to four sizes of aggregate by employing a series of crushers and screens.

At this facility, the rock is transferred to a vibrating grizzly to segregate large from small material. The large material is conveyed to the primary crusher where it is reduced from 3 to 12 inches in diameter, to less than 3/4 inches in diameter. The crushed material is transferred to a three deck screen where it is screened into three size ranges. The oversized material is conveyed back to the primary crusher, and the smaller material is stockpiled.

Particulate matter (PM) emissions are generated at all points of crushing, screening, and material transfer. The use of water spray is the most common method used to control particulate emissions. If an electrical generation unit is used, the combustion of fuel also results in PM emissions, as well as oxides of nitrogen (NO_x), oxides of sulfur (SO_x), carbon monoxide (CO), and volatile organic compounds (VOCs). Fugitive PM emissions are generated by the mining activities, the aggregate storage piles, and front-end loader and truck traffic. A Fugitive Dust Plan must be submitted to the appropriate Regional Office for DEQ approval. This plan will require the facility to identify all areas of operation where fugitive dust may be generated, the type(s) of control methods used to control fugitive dust, and procedures for using the control methods. A copy of the method used to document compliance with the plan shall also be submitted to the appropriate Regional Office for DEQ approval.

The Standard PTC requested will allow this rock crushing facility to collocate and simultaneously operate with one (1) other portable plant (i.e., rock crusher, hot-mix asphalt, or concrete batch plant) in attainment areas. It is important to note that during collocated operations, this crusher is then part of a single, larger source engaged in the production of either hot-mix asphalt, concrete, and/or aggregate, depending upon which type of portable plant the crusher 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 rock crusher 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 rock crusher will collocate must also contain specific collocation requirements based on the same conservative assumptions and calculations used in this Standard PTC.

In the permit issued May 12, 2000, a new PTC number (777-00252) was inadvertently assigned to the facility. Also, the initial compliance test required by the original PTC dated July 15, 1998, was completed and approved by DEQ on January 31, 2000. Additionally, the applicant wishes to have the flexibility to use 3 different size electrical generators when operating in a nonattainment area, or when collocating.

2. Equipment Listing

The analysis upon which this permit was based assumed that the following equipment would be used:

2.1 Primary Crusher

Manufacturer/Type:	Eljay 45 inch roller cone
Date of Manufacture:	1999
Maximum Capacity:	400 tons per hour (T/hr), 2 inch minus

2.2 Secondary Crusher

Manufacturer/Type:	None
Date of Manufacture:	None
Maximum Capacity:	N/A

2.3 Tertiary Crusher

Manufacturer/Type:	None (N/A)
Date of Manufacture:	N/A
Maximum Capacity:	N/A

2.4 Additional Crusher(s)

Manufacturer/Type:	None (N/A)
Date of Manufacture:	N/A

2.5 Generator (3 kilowatt ratings, 460, 365, and 320)

Manufacturer:	Variable
Model:	Variable
Serial Number:	Not Provided
Rated Power Output(kW):	460 kW, 365 kW, and 320 kW, generator
Fuel Type (gasoline/diesel):	Diesel
Fuel Usage (gal/hr):	25.4 at 460 kW, 25.9 at 365 kW, and 24 at 320 kW
Stack Diameter(ft):	0.5 for 460 kW, and 0.56 for 365 kW, and 320 kW
Stack Height(ft):	13 for 460 kW, and 8 for 365 kW, and 320 kW
Exhaust Flared(acfm):	3130 for 460 kW, 2982 for 365 kW, and 2563 for 320 kW
Exhaust Temperature(°F):	870 for 460 kW, 1029 for 365 kW, and 1011 for 320 kW

Note: This crusher runs primarily on public utilities (electricity). A generator, of the specifications supplied in the permit application, will be rented and used where utility power is unavailable.

2.6 Generator Emission Factors

460 Kilowatt

PM/PM-10 (lb/MM Btu):	0.0697/0.0573
NOx (lb/MM Btu):	3.100
CO (lb/MM Btu):	0.810
SO_2 (lb/MM Btu):	0.505
TOC (lb/MM Btu):	0.100

365 Kilowatt

PM (lb/hr):	3.24
NOx (lb/hr):	8.73
CO (lb/hr):	10.99
SO_2 (lb/hr):	0.73
TOC (lb/hr):	0.100

320 Kilowatt

PM (lb/hr):	1.26
NOx (lb/hr):	9.57
CO (lb/hr):	4.37
SO_2 (lb/hr):	0.68
TOC (lb/hr):	0.15

Note: The standardized spreadsheet's emission factors were not altered for this project.

When collocated, this crusher is then part of a single, larger source that produces either hot-mix asphalt, concrete, and/or aggregate, depending upon which type of portable plant the crusher is collocated with. The equipment used by this single, larger source would include the crusher 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 rock crushing facility is a portable source and may operate in both attainment and non-attainment areas throughout Idaho.

4. Emission Estimates

Emission estimates to determine the potential to emit (PTE) for aggregate processing and handling are conservatively determined using a spreadsheet specifically developed for rock crushing facilities. The spreadsheet has been developed using emission factors from AP-42, Table 11.19.2-2, 1/95 Edition to estimate the facility's emissions from crushers, screens, and transfer points. Fugitive emissions from sources that are not affected facilities, pursuant to 40 CFR 60.670, are not included in determining PTE. Likewise for collocated operations; fugitive emissions from hot-mix asphalt plant sources that are not affected facilities, pursuant to 40 CFR 60.90, are not included in determining PTE. PTE is used to determine if prevention of significant deterioration (PSD) or Title V Operating Permit requirements apply to the facility. Emissions from generators are also determined by the spreadsheet using emission factors from AP-42, Tables 3.3-2 and 3.4-2, 1/95 Edition. These emissions are included in the determination of PTE. Crusher, screen, and transfer point emissions are not limited to specific pound-per-hour or ton-per-year emission rates because of the margin of error inherent in the emission estimates, which are not source-specific, but rather are applicable to the broader source category of crushed stone processing. Also, generator emissions are not limited to specific emission rates.

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.

This facility's uncontrolled PTE is 127.5 (PM) tons per any consecutive 12-month period (T/yr) and 83.7 (NOx) T/yr with a 460 kW generator, 126.3 (PM) T/yr and 66.4 (Nox) T/yr with a 365 kW generator, and 125.7 (PM) T/yr and 58.3 (Nox) T/yr with a 320 kW generator. The controlled PM emission rate is 42 tons per any consecutive 12-month period (T/yr) with a 460 kW generator, 41 T/yr with a 365 kW and 320 kW generator. The emission estimates are included as Appendix A. The following narrative briefly explains the methods and assumptions used in the development of the source-specific spreadsheet.

This facility was viewed as having a maximum crushing capacity of 400 T/hr of 2 inch minus material. All material larger than this is screened off as reject material. Hourly and annual throughput values reflect this value in order not to adversely restrict the facility to the primary crusher's 300 T/hr production rate of 3/4 inch minus road mix material, which is the primary product of this facility. The primary crusher is intended to crush oversize material and the initial screening operation will create some amount of usable raw material.

ATTAINMENT AREA OPERATIONS

The spreadsheet inherently limits emissions below certain triggering levels (i.e., PSD and Title V thresholds) by limiting maximum throughput. If a generator is not used, throughput is solely limited to limit a facility's PTE to 99 T/yr of PM emissions. If a generator is used, throughput is limited based on the most limiting pollutant or pollutants (i.e., the pollutant whose emission rate is closest to 99 T/yr). The spreadsheet calculations incorporate the following to determine the throughput limit: the maximum hourly throughput of the primary crusher, the total number of crushers, the capacity of the generator (when used), the ambient impact from the generator, and the generator's fuel type and fuel consumption rate.

In the standard permit, two throughput limit options are available for attainment area operations. One is for an annual limit (annual is any consecutive 12-month period), and the other is for a daily and annual limit. The annual limit option is chosen only to limit emissions to 99 T/yr or less. The daily and annual limit option is chosen to protect a 24-hour ambient standard, an annual ambient standard, and to limit emissions to 99 T/yr. Depending on the circumstances, one or both options may be required.

NON-ATTAINMENT AREA OPERATIONS

For facilities that operate in a non-attainment area, throughput is limited to protect the standard(s) for which the area is designated as non-attainment. For example, when these facilities operate in a particulate matter with an aerodynamic diameter of less than or equal to a nominal ten (10) microns (PM-10) non-attainment area, throughput is, or may have to be, limited on a daily basis to protect the 24-hour standard, or annually to protect the annual standard. In either case, the spreadsheet automatically calculates the allowable throughput that protects these standards. When a generator is used, the spreadsheet takes into account its ambient impact and limits throughput accordingly. If the impacts are not significant, the spreadsheet limits throughput to keep emissions at or below 99 T/yr.

In the standard permit, two throughput options are available to chose from for operations in a non-attainment area. The first option states the rock crushing facility cannot operate in any PM-10 non-attainment area or proposed PM-10 non-attainment area without DEQ approval. The choice of this option is obvious. The second option is a daily and annual throughput limit. Imposing this limit not only protects the 24-hour limit and annual limit, but also ensures facility emissions will not exceed 99 T/yr.

COLLOCATED OPERATIONS IN ATTAINMENT AREAS

Standard PTCs will only allow collocation with one (1) other portable source (i.e., rock crusher, hot-mix asphalt, or concrete batch plant) which has also received a Standard PTC that specifically allows collocation. When a combination of one portable crusher unit and one other portable unit 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., 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 crusher 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). The spreadsheet calculations incorporate the following to determine the throughput limit: the maximum hourly throughput of the primary crusher, the total number of crushers, the capacity of the generator (if used), the ambient impact from the generator, and the generator's fuel type and fuel consumption rate.

In the standard permit, two throughput limit options are available for collocated attainment area operations. One is for an annual limit (annual is any consecutive 12-month period), and the other is for a daily and annual limit. The annual limit option is chosen only to limit the combined emissions to 99 T/yr or less. The daily and annual limit option is chosen to protect a 24-hour ambient standard, an annual ambient standard, and to limit emissions to 99 T/yr. Depending on the circumstances, one or both options may be required.

FUGITIVE EMISSIONS AT THE PROPERTY BOUNDARY

In order to ensure the air quality at and beyond the facility boundary is not further degraded, the standard permit requires that no visible emissions cross the facility boundary. It is assumed if no emissions visibly cross the boundary, the air quality is protected and not further degraded. The permit requirement is offered in lieu of fugitive dust modeling.

5. Modeling

Estimated emissions due to aggregate crushing and handling are expected to vary considerably from the facility's actual emissions. Modeling results would reflect the emission estimates with an added level of conservatism built into the modeling. Because of the degree of uncertainty involved in the emissions estimate, modeling of fugitive dust emissions was not conducted. However, to ensure no ambient air quality standard will be violated due to emissions generated by crushing, screening, aggregate handling, and fugitive sources, the permit requires that emissions from these sources not be seen leaving the property boundary for more than three (3) minutes in any sixty (60) minute period. If visible emissions are not seen crossing the property boundary, no significant impact on ambient air quality nor a violation of National Ambient Air Quality Standards (NAAQS) will occur.

If a generator is used to provide power to the facility, an ambient impact analysis must be performed to ensure its emissions do not cause or contribute to a violation of any applicable ambient air quality standard. Normally, the EPA-approved SCREEN3 modeling program is used to predict the ambient impact from the generator. The spreadsheet then uses the modeling result and calculates a throughput limit based on the proposed operating area (attainment, non-attainment, or collocated attainment). For collocated operations, the crusher generator operation is 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-10 (attainment area) as an example, one-half of the allowable available impact would be equal to 32 $\mu g/m^3$, as follows:

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

where 150 $\mu g/m^3$ is the 24-hour average standard and 86 $\mu g/m^3$ is the conservative statewide 24-hour average background value. Then the generator operations would be limited as needed, based on the specific ambient impact modeling for this generator, so that its modeled 24-hour concentration does not exceed 32 $\mu g/m^3$ 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. The modeling estimates, and the modeling output files for the 3 generators included in this permit are included as Appendix B.

6. Facility Classification

Rock crushing 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 SIC code for this rock crushing facility is 1442, "Construction Sand and Gravel." The AIRS facility classification for this facility is "SM" because the uncontrolled potential to emit is greater than (100 T/yr). The spreadsheet included as Appendix A automatically determines the facility classification.

7. Regulatory Review

The following rules and/or regulations have been reviewed in this permit analysis:

IDAPA 58.01.01.201	Permit to Construct;
IDAPA 58.01.01.202	Application Procedures;
IDAPA 58.01.01.203	Permit Requirements for New and Modified Stationary Sources;
IDAPA 58.01.01.209	Procedures for Issuing Permits;
IDAPA 58.01.01.211	Conditions for Permits to Construct;
IDAPA 58.01.01.212	Obligation to Comply;
IDAPA 58.01.01.577	Ambient PM-10 Air Quality Standard;
IDAPA 58.01.01.625	Visible Emissions;
IDAPA 58.01.01.650	Rules for Control of Fugitive Dust;
IDAPA 58.01.01.676	Fuel Burning Equipment: and
IDAPA 58.01.01.728.02	Distillate Fuel Oil.

With regard to 40 CFR 60, Subpart OOO, Standards of Performance for Nonmetallic Mineral Processing Plants, this is an affected facility per the applicant's permit application.

8. Permit Coordination

This 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 an NSPS-affected facility (40 CFR Part 60, Subpart OOO), and therefore, it is a Tier I source as defined by IDAPA 58.01.01.006.104(b). In accordance with IDAPA 58.01.01.301.02(b), Tier I sources not located at major facilities do not require a Tier I Operating Permit until June 1, 2001, unless an earlier date is required by an applicable standard or EPA determines that no Tier I Operating Permit is required.

9. AIRS Information

Since this is not a new facility, no update to the AIRS Information system is not required.

FEES

The facility is not a major facility as defined in IDAPA 58.01.01.008.10. Therefore, registration and registration fees, according to IDAPA 58.01.01.526, are not applicable.

RECOMMENDATION

Based on review of application materials and all applicable state and federal rules and regulations, staff recommends that Ruschman Sand & Gravel be issued PTC No. 777-00252 for a portable rock crushing facility. No public comment period is recommended, no entity has requested a comment period, and the project does not involve PSD PTC requirements.

cc: Boise RO
DEQ State Office

JAN-10-2001 13:41 FROM-IDAHO DEQ 2083730143 T-242 P.010/037 F-455

DATA ENTRY

Company Name:	Rueshaven Sand & Gravel	Engineer:	Anderson
Project:	Portable Crusher	Date:	11-Mar-00
PTC #:	777-00252	Filename:	Rueshaven.wk4

Crusher Facility Information

Facility Production Capacity:	400 [=] tons/hr	
Applicant's		
Requested Hours of Operation:	24 [=] hrs/day	
	8,760 [=] hrs/yr	
Estimated Throughput:	3,504,000 [=] tons/yr	
Maximum Hours of Operation:	8,760 [=] hrs/yr	
Maximum Throughput:	3,504,000 [=] tons/yr	
Number of Crushers:	1	

Limitations

Annual Threshold Emission Limit:	(A = <100 Tons/yr; Below Title V Threshold) (B = <250 Tons/yr; PSD Threshold)
Selected Emission Limitation:	100 Tons/yr

Generator Information

Generator? (Y/N)	Y	
Generator Size:	440 [=] kW	616.722 Conversion Factor
Units:	B	(A = Horsepower) (B = Kilowatts)
Fuel Type:	A	(A = Diesel-Fired Generator) (B = Gasoline-Fired/Dual-Fired Generator)
Fuel Usage:	25.4 [=] gal/hr	
Fuel Heating Value:	1.456.051 [=] MMBtu/hr	
Modeled 1 hr Concentration:	23.33 (x) µg/m3, at emission rate of 1 lb/hr	

INPUTS TO PERMIT TO CONSTRUCT (PTC)		Value	Units
Section A.2 "Operating Requirements"			
Section A.2.1 Number of Generators:	Number of Crushers	1	
Section A.2.1 Number of Generators:	Number of Generators	1	
Section A.2.1 Number of Generators:	Size of Generators	440	[=]kW
Section B "Attainment Area When Not Collocated"			
Section B.1.1 Facility Throughput Limits:	Annual Throughput Limit	3,504,000	T/yr
Section B.1.3 Generator Hours of Operation:	Annual Hours of Operation	8,760	hrs/yr
	<<AND/OR>>		
	Daily Hours of Operation	NA	
Section C "Attainment Area When Collocated"			
Section C.1.3 Facility Throughput Limits:	Annual Throughput Limit	1,752,000	T/yr
Section C.1.4 Generator Hours of Operation:	Annual Hours of Operation	5,055	hrs/yr
	<<AND/OR>>		
	Daily Hours of Operation	NA	
Section D "Nonattainment Area"			
Section D.1.1 Facility Throughput Limits:	Annual Throughput Limits	3,504,000	T/yr
Section D.1.3 Generator Hours of Operation:	Annual Hours of Operation	3,474	hrs/yr
	<<AND/OR>>		
	Daily Hours of Operation	9.5	hrs/day

Haul Road Emission Factor

Mean Wind Speed (U)	10 [=] mph	
Material Moisture Content (M)	3.5 [=] %	
Particle Size Multiplier (k)		
PM-10 (<10 µm)	0.35 [=] dimensionless	
PM (<30 µm)	0.74 [=] dimensionless	
Emission Factor		
PM-10 (<10 µm)	0.0020 [=] lb/ton	
PM	0.0053 [=] lb/ton	
	0.0057 [=] lb/ton	

Notes: PM = (k*0.0032*((U/5)^1.3))/(M/2)^1.4))/2.0

Background Concentrations -- Attainment/Non-Classifiable Areas (µg/m3)

	1-hr	3-hr	8-hr	24-hr	Annual
PM					
PM-10					
CO	11,400		5,130	86.0	32.7
NO_x					
SO_2		311			40.0
TOC				111	23.1

Crusher Plant Emission Calculations and Impact Analysis

PERMIT LIMITS TABLE

	PERMIT LIMITS								
	Attainment Area		Non-Attainment Area		Conformed Attainment Areas				
Crusher Operating Requirements	T/day	MMT/yr	T/day	MMT/yr	T/day	MMT/yr			
	9,600	3.50	3,807	7.50	9,600	1.75	CO 1-Hr Standard	SO2 3-hr standard	CO 1-Hr Standard
Generator Operating Requirements	hrs/day	hrs/yr	hrs/day	hrs/yr	hrs/day	hrs/yr	minutes/1-hr	hr/3-hr	hr/8-hr
	24.0	8,760	9.5	3,474	24.0	5,055	60.0	3.0	4.0
Generator Emission Limits	Contaminant	T/yr	Contaminant	T/yr	Contaminant	T/yr			
	None	None	None	None	NOx	49.5			
AIRS Facility Classification	A2								

OUTPUT

Potential to Emit – Based on Applicant's Data

Crusher, Screens & Transfer Points	Uncontrolled Emissions	Controlled Emissions
PM	122 tons/yr	36 tons/yr
PM-10	46 tons/yr	14 tons/yr
Generator		
PM	3.9 tons/yr	3.9 tons/yr
PM-10	3.9 tons/yr	3.9 tons/yr
CO	18.0 tons/yr	18.0 tons/yr
NOx	83.7 tons/yr	83.7 tons/yr
SO2	5.3 tons/yr	5.3 tons/yr
TOC	6.7 tons/yr	6.7 tons/yr
Total Crusher + Generator		
PM	128 tons/yr	42 tons/yr
PM-10	52 tons/yr	20 tons/yr
PTE Summary	127.5 [+] T/yr of PM	83.7 [+] T/yr of NOx

Enforceable Limits – Based on Requested Operations				
Generator – Operation	24.0	hrs/day	8,760	hr/yr
Crusher – Production	9,600	T/day	3.50	MMT/yr
AIRS Facility Classification: A2				

Potential to Emit – Emissions Analysis Using Ambient Air Quality Standards

Emissions limited to less than: 100 Tons/yr

Assumptions: Plant operations limited by NAAQS from generator emissions, and, Crusher emissions back calculated to yield 99 Tons/yr of emissions

Attainment/Non-Classifiable Area

Uncontrolled Emissions	Controlled Emissions
122 tons/yr	36 tons/yr
46 tons/yr	14 tons/yr
3.9 tons/yr	3.9 tons/yr
3.9 tons/yr	3.9 tons/yr
18.0 tons/yr	18.0 tons/yr
83.7 tons/yr	83.7 tons/yr
5.3 tons/yr	5.3 tons/yr
6.7 tons/yr	6.7 tons/yr
128 tons/yr	42 tons/yr
52 tons/yr	20 tons/yr
127.5 [+] T/yr of PM	83.7 [+] T/yr of NOx

Enforceable Limits – Attainment Areas				
	24.0	hrs/day	8,760	hr/yr
	9,600	T/day	3.50	MMT/yr

Non-Attainment Area

Crusher	Uncontrolled Emissions	Controlled Emissions
PM	122 tons/yr	36 tons/yr
PM-10	46 tons/yr	14 tons/yr
Generator		
PM	2.1 tons/yr	2.1 tons/yr
PM-10	2.1 tons/yr	2.1 tons/yr
CO	7.2 tons/yr	7.2 tons/yr
NOx	33.2 tons/yr	33.2 tons/yr
SO2	2.2 tons/yr	2.2 tons/yr
TOC	2.6 tons/yr	2.6 tons/yr
Totals		
PM	124 tons/yr	39 tons/yr
PM-10	49 tons/yr	16 tons/yr
PTE Summary	124.0 [+] T/yr of PM	34.1 [+] T/yr of PM

Enforceable Limits – Non-Attainment Areas				
Generator	9.5	hrs/day	3,474	hr/yr
Crusher	3,807	T/day	1.50	MMT/yr

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EMISSIONS ANALYSIS BASED ON APPLICANT'S DATA

Generator Emissions

Pollutant	Applicant's Data: Generator Emission Factor (-) lb/hp-hr	Generator Emission Rate (=) lb/hr	Hours of Operation (-) hr/day	(=) hr/year	Generator Emissions: lb/day	Hours of Operation: Day	Modeled Air Concentrations based on Entered SCREEN3 Data: Calculated 24-hr Impact (=) µg/m³	Calculated Annual Impact (=) µg/m³	Calculated Annual Export (=) Ot/yr
PM	0.0022	1.76	24.0	8,760	42.24	365	N/A	N/A	
PM-10	0.0022	1.76	24.0	8,760	42.24	365	12.6	2.5	
CO	0.0057	4.12	24.0	8,760	98.87	365	38.3	7.7	99.1
NOx	0.0110	19.12	24.0	8,760	458.84	365			67.1
SO2	0.0021	1.76	24.0	8,760	42.24	365	15.74	3.15	
TOC	0.0021	1.32	24.0	8,760	31.68	365	11.7	2.3	16.1
							6.67		

Generator Emissions Regulatory Analysis

Pollutant	BRC Evaluation		Significant Contribution Emission Rates		Non-Attainment Area Significant Contribution Ambient Air Concentration: 24-hr		Annual	Ambient Air Concentrations w/ Background Values (µg/m³): 1-hr	3-hr	8-hr	24-hr	Annual
PM	Above BRC	(25 T/yr)	No	(25 T/yr)								
PM-10	Above BRC	(15 T/yr)	No	(15 T/yr)	Significant	5 µg/m3	1 µg/m3					
CO	Above BRC	(10 T/yr)	No	(100 T/yr)	No	2000 ug/m3 (8-hour)	100 ug/m3 (8-hour)	11,956	5,197	1,369	788	35.3
NOx	Above BRC	(4 T/yr)	Significant	(40 T/yr)								
SO2	Above BRC	(4 T/yr)	No	(40 T/yr)				360		193.7		75.5
TOC												25.1

Rock Crusher Emissions

	Crusher: No. 1		Screens: No. 1		Transfer Points: Nos. 4 - 6	Nos. 5 - 7	Total Emissions	For Information purposes: Crusher Hours of Operation to Yield 99.0 T/yr Emissions: w/o Generator	w/ Generator
No. Units	1	0	1	0	1	2			
Throughput ([=] Tons/unit)	400	360	400	360	400	400	800		
Operation Schedule ([=] hrs/day)	24		24						8760
Throughput ([=] MM Tons/unit)	3.50	2.63	3.50	2.63	3.50		1.75		
Operation Schedule ([=] hrs/yr)	8,760		8,760						hrs/yr
Control Efficiency	70%	70%	70%	70%	70%		70%		
PM-10									
Emission Factors	0.0003	0.00324	0.0159	0.0710	0.00240		(0.0033)		
Uncontrolled Emissions ([=] lbs/hr)	0.11	0.50	5.00	0.50	0.23		1.21	10.5	
Controlled Emissions ([=] lbs/hr)	0.03	0.00	1.50	0.00	0.07		0.36	3.2	
Uncontrolled Emissions ([=] T/yr)	0.5	0.0	26.3	0.0	1.1		5.3	46.4	0.01 8760
Controlled Emissions ([=] T/yr)	0.1	0.0	7.9	0.0	0.3		1.6	13.9	
PM									
Emission Factors	0.0003	0.0036	0.0592	0.1464	0.0450		0.0055		
Uncontrolled Emissions ([=] lbs/hr)	0.28	0.90	18.75	0.90	4.50		5.20	27.8	
Controlled Emissions ([=] lbs/hr)	0.08	0.00	5.63	0.00	1.35		0.96	8.3	
Uncontrolled Emissions ([=] T/yr)	1.2	0.0	69.0	0.0	17.4		14.0	121.6	8760 8760
Controlled Emissions ([=] T/yr)	0.4	0.0	20.7	0.0	5.2		4.2	36.5	

Notes:
1. Number of Screens = Number of Crushers
2. Number of Transfer Points = 7*(Number of Crushers)
3. Emission factors from AP-42, Table 11.19.2-2. Where factors were given for one pollutant, the following conversion factors were used:
   TSP = PM<12.1; TSP = PM<10.0
   Hourly values are based on maximum daily production rates given above. Annual values are based on throughput values given above.

Total Emissions

Pollutant	Generator Emissions: lb/day	T/yr	Crusher Emissions (Controlled): lb/day	T/yr	Total Emissions: lb/day	T/yr
PM	53.92	3.91	149.9	36.5	133.5	41.1
PM-10	42.56	3.91	75.9	13.9	108.5	19.8
CO	98.87	18.04			98.9	18.0
NOx	458.84	83.71			458.8	83.7
SO2	30.24	5.51			30.2	5.5
TOC	16.56	3.67			16.6	3.7

Enforceable Limits

Generator - Operation	24.0	hr/day	8,760	hr/yr
Crusher - Production	9,600	T/y	3.50	MM T/yr

Crusher Fuel Emission Calculations and Impact Emissions

EMISSION ANALYSIS - BASED ON AMBIENT AIR QUALITY STANDARDS
Emissions limited to less than: 100 Tons/yr

Attainment Area

Pollutant	Generator Emission Factor [=] lb/hp-hr	Generator Emission Rate [=] lb/hr	Hours of Operation [=] hr/day	Hours of Operation [=] hr/year	Calculated Impacts: AAQS	Calculated Impacts: Hours of Operation [=] Other	Calculated Impacts: < 100 TPY: Hours of Operation [=] hr/year	Allowable Impacts: Generator Hours of Operation [=] hr/day	Allowable Impacts: Generator Hours of Operation [=] hr/year	Allowable Impacts: Crusher Hours of Operation [=] hr/year	Allowable Impacts: < 100 TPY: Calculated Emissions [=] ton/year	Maximum Throughput [=] MM T/year
PM	0.0022	1.36	N/S	N/S			8,760	24.0	8,760	8,760	42.12	3.50
PM-10	0.0022	1.36	24.0	8,760			8,760				19.10	3.50
CO	0.0067	4.12	N/S	N/S	1.0 [2]		8,760				13.04	
					8.0 [3]							
NO_x	0.0310	19.12	N/S	8,760			8,760				93.71	
SO_2	0.0021	1.36	24.0	8,760	3.0 [4]		8,760				5.31	
TOC	0.0025	1.12	N/S	N/S			8,760				6.67	

Pollutant	Generator Emissions: Calculated 24-hr Impact [=] µg/m3	Generator Emissions: Calculated Annual Impact [=] µg/m3	Generator Emissions: Calculated Impact [=] Other	Ambient Air Concentrations w/ Background Values (ug/m3) Based On Entered SCREEN4 Data: 1-hr	3-hr	8-hr	24-hr	Annual
PM	N/S	N/S						
PM-10	12.6	1.5						
CO	18.3	7.7	96 [2]	11,495		5,197		
			67 [3]					
NO_x	177.6	35.1						76
SO_2	11.7	2.3	26 [4]		569		156	25.8
TOC	11.2	2.8						

	Crushers: No. 1	Crushers: No. 2	Screens: No. 1	Screens: No. 2	Transfer Points: Nos. 1 - 4	Transfer Points: Nos. 5 - 7	Total Emissions	Allowable Hours of Operation w/ Emissions < 100 T/yr: w/o Generator	Allowable Hours of Operation w/ Emissions < 100 T/yr: w/ Generator
No. Units	1	0	1	0	1	1			
Throughput ([=] T/hr/unit)	400	300	400	300	400	200			
Throughput ([=] MM T/yr/unit)	3.50	2.63	3.50	2.63	3.50	1.75			
Operating Schedule ([=] hrs/yr)	8,760								
Control Efficiency	70%	70%	70%	70%	70%	70%			
PM-10									
Emission Factors	0.0003	0.0024	0.0150	0.0010	0.0020	0.0020			
Uncontrolled Emissions ([=] lb/hr)	0.11	0.00	6.00	0.00	0.23	1.21	10.5		
Controlled Emissions ([=] lb/hr)	0.03	0.00	1.80	0.00	0.07	0.35	3.2	8760	8760
Uncontrolled Emissions ([=] T/yr)	0.5	0.0	26.3	0.0	14.1	5.3	45.2		
Controlled Emissions ([=] T/yr)	0.1	0.0	7.9	0.0	4.2	1.6	13.9		
PM									
Emission Factors	0.0007	0.0063	0.0091	0.0064	0.0053	0.0053			
Uncontrolled Emissions ([=] lb/hr)	0.28	0.00	15.75	0.00	0.51	3.20	27.4		
Controlled Emissions ([=] lb/hr)	0.08	0.00	4.73	0.00	2.55	0.96	8.3	8760	8760
Uncontrolled Emissions ([=] T/yr)	1.2	0.0	69.0	0.0	37.4	11.0	121.6		
Controlled Emissions ([=] T/yr)	0.4	0.0	20.7	0.0	11.2	4.2	36.5		

Notes:
1 TPY calculations include crusher, screen and transfer point emissions
2 CO 1-hr Averaging Period
3 CO 8-hr Averaging Period
4 SO_2 3-hr Averaging Period
-- Daily and annual operation values are based on background data (as the modeled generator emissions (i.e., ambient air concentrations). Fact is, the generator hours of operation have been back-calculated from AAQS values. The crusher particulate emissions (controlled) are then used to back-calculate crusher operational times, assuming 99 Tons/yr less generator emissions.
-- Maximum throughput values are based on the minimum number of hours (crusher) that will yield a total of 99 Tons/yr, multiplied by the maximum daily production rates.
-- Hourly emission values are based on maximum daily production rates, given above.
-- Annual emission values are based on the maximum throughput values given above.

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EMISSION ANALYSIS – BASED ON AMBIENT AIR QUALITY STANDARDS

Emissions limited to less than: 100 Tons/yr

Non-Attainment Area

Pollutant	Generator Emission Factor (=) lb/hp-hr	Generator Emission Rate (=) lb/hr	Hours of Operation (=) hr/day	Hours of Operation (=) hr/year	Calculated Impacts: AAQS	Hours of Operation (=) Other	< 100 TPY: Hours of Operation (=) hr/year	Allowable Impacts: Generator Hours of Operation (=) hr/day	Generator Hours of Operation (=) hr/year	Crusher Hours of Operation (=) hr/year	< 100 TPY: Calculated Emissions (=) ton/year	Maximum Throughput (=) MMBTU/year
PM	0.0022	1.36	N/S	N/S			8,760	9.3	1,191	8,760	39.83	3.30
PM-10	0.0022	1.36	9.1	3,471			8,760				15.71	3.30
CO	0.0367	4.82	N/S	N/S	1.0 x		8,760				7.16	
					8.0 x							
NOx	0.0310	19.12	N/S	8,760			8,760				33.21	
SO2	0.0021	1.26	24.0	8,760	5.0 x		8,760				1.20	
TOC	0.0013	1.52	N/S	N/S			8,760				1.63	

Pollutant	Generator Emissions: Calculated 24-hr Impact (=) µg/m3	Calculated Annual Impact (=) µg/m3	Calculated Impact (=) Other	Ambient Air Concentrations w/ Background Values (µg/m3): Based On Exceeding SILs (1.0)			
PM	N/S	N/S		1 hr	3 hr	8 hr	24 hr	Annual
PM-10	5.0	1.0					
CO	15.2	3.0	96 x	11,936		3,497	
			67 x				
NOx	20.5	1.0					
SO2	4.2	0.2	25 x				
TOC	3.6	1.1			369	149	22.4

	Crushers: No. 1		Screens: No. 1		Transfer Points: Nos. 1 - 4	Nos. 5 - 7	Total Emissions	Allowable Hours of Operation w/ Emissions < 100 T/yr: w/o Generator	w/ Generator
No. Units	1	0	1	0	4	3			
Throughput ([=] T/hr/unit)	400	300	800	300	250	250			
Throughput ([=] MM T/yr/unit)	3.50	2.63	7.01	2.63	7.50	1.75			
Operation Schedule ([=] hrs/yr)	8,760								
Control Efficiency	50%	70%	70%	70%	70%	70%			
PM-10									
Emission Factor	0.0054	0.0021	0.0330	0.0210	0.0029	0.0029			
Uncontrolled Emissions ([=] lb/hr)	0.81	0.00	6.60	0.00	1.21	0.73			
Controlled Emissions ([=] lb/hr)	0.03	0.00	1.98	0.00	0.97	0.58	18.9		
Uncontrolled Emissions ([=] T/yr)	3.5	0.0	28.9	0.0	10.6	3.2	57.2	8,760	4750
Controlled Emissions ([=] T/yr)	0.1	0.0	8.7	0.0	4.2	1.4	16.2		
PM							13.9		
Emission Factor	0.0367	0.0363	0.0391	0.1466	0.0033	0.0033			
Uncontrolled Emissions ([=] lb/hr)	0.24	0.00	11.75	0.00	0.13	0.08			
Controlled Emissions ([=] lb/hr)	0.09	0.00	4.70	0.00	2.56	0.56	27.8		
Uncontrolled Emissions ([=] T/yr)	1.2	0.0	49.0	0.0	13.4	4.1	67.8	4750	8760
Controlled Emissions ([=] T/yr)	0.4	0.0	20.7	0.0	11.3	1.2	33.5		

Notes

- TPY calculations include crusher, screen and transfer point emissions
- CO 1-hr Averaging Period
- CO 8-hr Averaging Period
- SO2 3-hr Averaging Period
- *Daily and annual operation values are based on background data less the modeled generator emissions (i.e., ambient air concentrations). That is, the generator hours of operation have been back-calculated from AAQS values. The crusher particulate emissions for normally are then used to back out what crusher operational time occurring 99 hours/yr less generator emissions.*
- *Maximum throughput values are based on the maximum number of hours (crusher) that will add a total of 99 hours/yr, multiplied by the maximum daily production rates.*
- *Hourly emission values are based on maximum daily production rates, given above.*
- *Annual emission values are based on the maximum throughput values given above.*
- *Non-Attainment Area hours of operation calculations as over 750 emissions are non-attainment or PM-10 non-attainment areas. Therefore, operation is limited by significant impact limits.*

Attainment Area - Collected Units - Calculations

Collected Ambient Air Concentrations - Attainment Area Calculations (1-hr, 3-hr, 8-hr, & 24-hr standards are cut in half for collocation)					
Pollutant	1-hr	3-hr	8-hr	24-hr	Annual (Max Hours to Achieve 19.1 Ft/yr)
PM					
PM-10				19.3	7.0
CO	14,201		2,364		
NO_x					6.8
SO_2		352		99	15.0
TOC					

Background Concentrations - Attainment/Non-Classifiable Areas (ug/m3)					
Pollutant	1-hr	3-hr	8-hr	24-hr	Annual
PM					
PM-10				86.0	32.7
CO	11,000		3,110		
NO_x					40.0
SO_2		341		114	23.5
TOC					

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DATA ENTRY

Company Name:	Ruschman Sand & Gravel	Engineer:	Anderson
Project:	Portable Crusher	Date:	31-Mar-00
PTC #:	777-00252	Filename:	RuschmanWk4

Crusher Facility Information

Facility Production Capacity: 400 [=] tons/hr

Applicant's
Requested Hours of Operation: 24 [=] hrs/day
8,760 [=] hrs/yr
Estimated Throughput: 3,504,000 [=] tons/yr

Maximum Hours of Operation: 8,760 [=] hrs/yr
Maximum Throughput: 3,504,000 [=] tons/yr

Number of Crushers: 1

Limitations

Annual Threshold Emission Limit: (A = <100 Tons/yr, Below Title V Threshold)
(B = <250 Tons/yr, PSD Threshold)
Selected Emission Limitation: 100 Tons/yr

Generator Information

Generator? (Y/N): Y
Generator Size: 365 [=] kW 489.3555 Conversion Factor

Units: B (A = Horsepower)
(B = Kilowatts)

Fuel Type: A (A = Diesel-Fired Generator)
(B = Gasoline-Fired/Dual-Fired Generator)

25.9

Modified 1-hr Concentration: 37.79 [=] ug/m3, at emission rate of 1 lb/hr

Drop Point Emission Factors

Mean Wind Speed (U)	10	[=] m/s
Material Moisture Content (M)	2.5	[=] %
Particle Size Multiplier (k)		
PM-10 (<10 µm)	0.35	[=] Dimensionless
PM (<30 µm)	0.74	[=] Dimensionless
Emission Factors		
PM-10 (<10 µm)	0.00050	[=] lb/ton
PM	0.0053	[=] lb/ton
	0.0082	[=] lb/ton

Note: PM = (k*0.0032*((U/5)^1.3)/((M/2)^1.4)) lb/ton

Background Concentrations - Attainment/Unclassifiable Areas (ug/m3)

	1-hr	3-hr	8-hr	24-hr	Annual
PM					
PM-10				46.0	32.7
CO	11,300		5,150		
NOx					60
SO2		343		114	23
TOC					

INPUTS TO PERMIT TO CONSTRUCT (PTC)		Value	Units
Section A.2 "Operating Requirements"			
Section A.2.1 Number of Generators	Number of Crushers	1	
Section A.2.1 Number of Generators	Number of Generators	1	
Section A.2.1 Number of Generators	Size of Generators	365	[=] kW
Section B "Attainment Area When Not Collocated"			
Section B.1.1 Facility Throughput Limits	Annual Throughput Limit	3,504,000	T/yr
Section B.1.3 Generator Hours of Operation	Annual Hours of Operation	8,760	hrs/yr
	<<AND/OR>>		
	Daily Hours of Operation	NA	
Section C "Attainment Area When Collocated"			
Section C.1.1 Facility Throughput Limits	Annual Throughput Limit	1,752,000	T/yr
Section C.1.4 Generator Hours of Operation	Annual Hours of Operation	4,380	hrs/yr
	<<AND/OR>>		
	Daily Hours of Operation	NA	
Section D "Nonattainment Area"			
Section D.1.1 Facility Throughput Limits	Annual Throughput Limit	3,504,000	T/yr
Section D.1.3 Generator Hours of Operation	Annual Hours of Operation	2,691	hrs/yr
	<<AND/OR>>		
	Daily Hours of Operation	7.4	hrs/day

Crusher Plant Emissions Calculations and Impact Limits

PERMIT LIMITS TABLE

	PERMIT LIMITS								
	Attainment Area		Non-Attainment Area		Collocated Attainment Areas				
Crusher	T/day	MMT/yr	T/day	MMT/yr	T/day	MMT/yr			
Operating Requirements	9,600	3.50	2,950	3.50	9,600	1.75	CO 1-hr Standard	SO2 3-hr standard	CO 8-hr Standard
Generator	hrs/day	hrs/yr	hrs/day	hrs/yr	hrs/day	hrs/yr	minutes/1-hr	hr/0-hr	hr/0-hr
Operating Requirements	24.0	1,760	7.1	2,691	24.0	1,340	0.0	1.0	8.0
Generator	Contaminant	T/yr	Contaminant	T/yr	Contaminant	T/yr			
Emission Limits	None	None	None	None	NO_x	19.5			
AIRS Facility Classification		A2							

OUTPUT

Potential to Emit – Based on Applicant's Data

Crusher, Screens & Transfer Points	Uncontrolled Emissions	Controlled Emissions
PM	122 tons/yr	36 tons/yr
PM-10	46 tons/yr	14 tons/yr
Generator		
PM	4.7 tons/yr	1.7 tons/yr
PM-10	4.7 tons/yr	1.7 tons/yr
CO	11.3 tons/yr	11.3 tons/yr
NO_x	66.4 tons/yr	66.4 tons/yr
SO_2	1.4 tons/yr	4.1 tons/yr
TOC	5.3 tons/yr	5.3 tons/yr
Total Crusher + Generator		
PM	126 tons/yr	41 tons/yr
PM-10	51 tons/yr	19 tons/yr
PTE Summary	126.1 [+] T/yr of PM	66.4 [+] T/yr of NO_x
Enforceable Limits – Based on Requested Operations		
Generator – Operation	24.0 hrs/day	8,760 hr/yr
Crusher – Production	9,600 T/day	3.50 MMT/yr
AIRS Facility Classification	A2	

Potential to Emit – Emissions Analysis Using Ambient Air Quality Standards

Emissions limited to less than: 100 Tons/yr

Assumptions: Plant operations limited by NAAQS from generator emissions, and Crusher emissions back-calculated to yield 99 Tons/yr of emissions.

Attainment/Non-Classifiable Area			Non-Attainment Area		
Uncontrolled Emissions	Controlled Emissions		Crusher	Uncontrolled Emissions	Controlled Emissions
122 tons/yr	36 tons/yr		PM	122 tons/yr	36 tons/yr
46 tons/yr	14 tons/yr		PM-10	46 tons/yr	14 tons/yr
			Generator		
4.7 tons/yr	1.7 tons/yr		PM	1.1 tons/yr	1.1 tons/yr
4.7 tons/yr	1.7 tons/yr		PM-10	1.1 tons/yr	1.1 tons/yr
11.3 tons/yr	11.3 tons/yr		CO	4.1 tons/yr	1.1 tons/yr
66.4 tons/yr	66.4 tons/yr		NO_x	21.4 tons/yr	21.4 tons/yr
1.4 tons/yr	4.1 tons/yr		SO_2	1.4 tons/yr	1.4 tons/yr
5.3 tons/yr	5.3 tons/yr		TOC	1.6 tons/yr	1.6 tons/yr
			Totals		
126 tons/yr	41 tons/yr		PM	123 tons/yr	38 tons/yr
51 tons/yr	19 tons/yr		PM-10	48 tons/yr	15 tons/yr
126.1 [+] T/yr of PM	66.4 [+] T/yr of NO_x		PTE Summary	123.0 [+] T/yr of PM	37.9 [+] T/yr of PM
Enforceable Limits – Attainment Areas				Enforceable Limits – Non-Attainment Areas	
24.0 hrs/day	8,760 hr/yr		Generator	7.1 hrs/day	2,691 hr/yr
9,600 T/day	3.50 MMT/yr		Crusher	2,950 T/day	3.50 MMT/yr

EMISSION ANALYSIS BASED ON APPLICANT'S DATA

Generator Emissions

Pollutant	Generator Emission Factor [*] lb/hp-hr	Generator Emission Rate [=] lb/hr	Applicant's Data: Hours of Operation [=] hr/day	[*] hr/year	Generator Emissions: lb/day	Hours of Operation: *Day	Modeled Air Concentrations Based On Entered SCREEN3 Data: Calculated 24-hr Impact [=] µg/m3	Calculated Annual Impact [=] µg/m3	Calculated Annual Impact [=] Other
PM	0.0027	1.08	24.0	8,760	25.81	4.72	N.S	N.S	
PM-10	0.0022	1.08	24.0	8,760	25.84	4.72	16.3	3.11	
CO	0.0167	3.27	24.0	8,760	78.13	14.32	49.4	9.9	121 ;
NOx	0.030	11.17	24.0	1,760	161.56				36.1
SO2	0.0021	1.10	24.0	8,760	24.78	4.54		4.59	
TOC	0.0023	1.21	24.0	8,760	29.01	5.29	13.2	3.0	11.4

Generator Emissions Regulatory Analysis

Pollutant	BRC Evaluation		Significant Contribution Emission Rates		Non-Attainment Area Significant Contribution Ambient Air Concentration: 24-hr		Annual	Ambient Air Concentrations w/ Background Values (µg/m3): 1-hr	3-hr	8-hr	24-hr	Annual
PM	Above BRC	(25 T/yr)	No	(25 T/yr)								
PM-10	Above BRC	(15 T/yr)	No	(15 T/yr)	Significant	Impact (µg/m3)	Impact (µg/m3)					
NOx	Above BRC	(40 T/yr)	No	(120 T/yr)	No	2560 ug/m3 (8-hour)	560 ug/m3 (8-hour)	11,324		5,216	107.5	36.0
SO2	Above BRC	(4 T/yr)	Significant	(40 T/yr)					377		139.2	45.9
TOC	Above BRC	(4 T/yr)	No	(40 T/yr)								26.5

Rock Crusher Emissions

	Crushers		Screens		Transfer Points		Total Emissions	For information purposes: Crusher Hours of Operation to Yield 99.0 Tpy Emissions	
No. Units	No. 1	2	No. 1	2	Nos. 1 - 1	Nos. 1 - 2		w/o Generator	w/ Generator
Throughput [=] T/hr(ave)	300	300	600	300	600	300			
Operation Schedule [=] (hrs/day)	24						24		4750
Throughput [=] MM T/yr(ave)	3.50	2.63	3.50	2.63	3.50		1.31		
Operation Schedule [=] hr/yr	8,760								hrs/yr
Control Efficiency	70%	70%	70%	70%	70%		70%		
PM-10									
Emission Factors	0.0001	0.0024	0.0130	0.0745	0.0020		0.0020		
Uncontrolled Emissions [=] lb/hr	0.11	0.00	6.50	0.00	3.75		1.21	105	
Controlled Emissions [=] lb/hr	0.03	0.00	1.95	0.00	0.97		0.55	3.4	
Uncontrolled Emissions [=] T/yr	0.5	0.0	28.5	0.0	16.4		5.3	461	8760
Controlled Emissions [=] T/yr	0.1	0.0	7.9	0.0	4.1		1.6	139	
PM									
Emission Factors	0.0037	0.0063	0.0194	0.1825	0.0051		0.0051		
Uncontrolled Emissions [=] lb/hr	0.78	0.00	13.75	0.00	8.53		3.01	263	
Controlled Emissions [=] lb/hr	0.08	0.00	4.73	0.00	2.56		0.86	8.3	
Uncontrolled Emissions [=] T/yr	1.2	0.0	69.0	0.0	37.4		13.0	1216	8760
Controlled Emissions [=] T/yr	0.4	0.0	20.7	0.0	11.2		3.8	36.5	

Notes:
- Number of Screens = Number of Crushers
- Number of Transfer Points = 2*(Number of Crushers)
- Emission Factors from AP-42, Table 11.19.2-2. Where lack of size was given for one pollutant, the following conversion factors were used:
  TSP = PM-10 * 2.1; TSP = PM-30 *

Hourly values are based on maximum daily production rates given above. Annual values are based on throughput values given above.

Pollutant	Generator Emissions: lb/day	Generator Emissions: T/yr	Crusher Emissions (Controlled): lb/day	Crusher Emissions (Controlled): T/yr	Total Emissions: lb/day	Total Emissions: T/yr
PM	25.84	1.32	199.9	36.5	225.7	41.2
PM-10	25.84	1.32	199.9	13.9	101.8	18.6
CO	78.13	11.32			28.5	11.3
NOx	364.56	66.84			364.1	66.8
SO2	24.78	4.59			24.1	4.4
TOC	29.01	1.29			27.0	3.3

Enforceable Limits

Generator -- Operation	24.0	hr/day	8,760	hr/yr
Crusher -- Production	2,600	T/hr	1.50	MM T/yr

EMISSION ANALYSIS – BASED ON AMBIENT AIR QUALITY STANDARDS
Emissions limited to less than: 110 Tons/yr

Attainment Area

Pollutant	Generator Emission Factor [=] lb/hp-hr	Generator Emission Rate [=] lb/hr	Hours of Operation [=] hr/day	Hours of Operation [=] hr/year	Calculated Impacts AAQS Hours of Operation [=] Other	Calculated Impacts < 100 TPY Hours of Operation [=] hr/year	Allowable Impacts Generator Hours of Operation [=] hr/day	Allowable Impacts Generator Hours of Operation [=] hr/year	Allowable Impacts Crusher Hours of Operation [=] hr/year	Allowable Impacts < 100 TPY Calculated Emissions [=] ton/year	Maximum Throughput [=] MMTF/year
PM	0.0022	1.04	N/S	N/S		8,760	24.0	8,760	8,760	11.19	1.50
PM-10	0.0022	1.04	24.0	8,760		8,760				18.57	1.50
CO	0.0067	1.27	N/S	N/S	1.0 ±	8,760				11.72	
					8.0 ±						
NOx	0.0310	13.87	N/S	8,760		8,760				66.44	
SO2	0.0021	1.00	24.0	8,760	3.0 ±	8,760				1.39	
TOC	0.0025	1.21	N/S	N/S		8,760				1.29	

Pollutant	Generator Emissions Calculated 24-hr Impact [=] µg/m3	Generator Emissions Calculated Annual Impact [=] µg/m3	Generator Emissions Calculated Impact [=] Other	Ambient Air Concentrations w/ Background Values (µg/m3) Based On Entered SCREEN1 Data 1-hr	3-hr	8-hr	24-hr	Annual
PM	N/S	N/S						
PM-10	16.3	3.3						
CO	19.4	9.9	124 ±	11,121		5,216		
			46 ±					
NOx	229.1	13.9						86
SO2	15.2	7.0	31 ±		177		119	26.5
TOC	18.3	3.7						

	Crushers No. 1	Crushers	Screens No. 1	Screens	Transfer Points Nos. 1 - 4	Transfer Points Nos. 5 - 7	Total Emissions	Allowable Hours of Operation w/ Emissions < 110 T/yr w/o Generator	Allowable Hours of Operation w/ Emissions < 110 T/yr w/ Generator
No. Units	1	0	1	0	1	3			
Throughput ([=] T/hr/unit)	400	100	400	100	400	200			
Throughput ([=] MM T/yr/unit)	3.50	2.63	3.50	2.63	3.50	1.75			
Operation Schedule ([=] hrs/yr)	8,760								
Control Efficiency	70%	70%	70%	70%	70%	70%			
PM-10									
Emission Factors	0.0003	0.0024	0.0150	0.0710	0.0020	0.0020			
Uncontrolled Emissions ([=] lb/hr)	0.11	0.10	6.00	0.00	1.23	1.21	10.5		
Controlled Emissions ([=] lb/hr)	0.03	0.00	1.80	0.00	0.92	0.36	3.2	8760	8760
Uncontrolled Emissions ([=] T/yr)	0.1	0.0	26.1	0.0	11.1	5.3	45.2		
Controlled Emissions ([=] T/yr)	0.1	0.0	7.9	0.0	1.7	1.6	13.9		
PM									
Emission Factors	0.0007	0.0063	0.0994	0.1864	0.0003	0.0055			
Uncontrolled Emissions ([=] lb/hr)	0.23	0.00	11.73	0.00	8.33	3.20	27.8		
Controlled Emissions ([=] lb/hr)	0.08	0.00	4.73	0.00	2.55	0.96	8.3	8760	8760
Uncontrolled Emissions ([=] T/yr)	1.7	0.0	69.0	0.0	37.1	14.0	121.6		
Controlled Emissions ([=] T/yr)	0.4	0.0	20.7	0.0	11.2	4.2	36.5		

Notes:
- TPY calculations include crusher, screen and transfer point emissions.
- CO 1-hr Averaging Period
- CO 8-hr Averaging Period
- SO2 3-hr Averaging Period
- *Daily and annual operation values are based on background data less the modeled generator emissions (i.e., ambient air concentrations). That is, the generator hours of operation have been back calculated from AAQS values. The crusher particulate emissions (controlled) are then used to back-calculate crusher operational times, assuming 99 Tons/yr less generator emissions.*
- *Maximum throughput values are based on the maximum number of hours (crusher) that will yield a total of 99 Tons/yr, multiplied by the maximum daily production rates.*
- *Hourly emission values are based on maximum daily production rates, given above.*
- *Annual emission values are based on the maximum throughput values given above.*

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EMISSION ANALYSIS – BASED ON AMBIENT AIR QUALITY STANDARDS
Emissions limited to less than: 100 Tons/yr

Non-Attainment Area

Pollutant	Generator Emission Factor [=] lb/hp-hr	Generator Emission Rate [=] lb/hr	Hours of Operation [=] hr/day	Hours of Operation [=] hr/year	Calculated Impacts: AAQS Hours of Operation [=] Other	Allowable Impacts: < 100 TPY: Generator Hours of Operation [=] hr/year	Generator Hours of Operation [=] hr/day	Generator Hours of Operation [=] hr/year	Crusher Hours of Operation [=] hr/year	< 400 TPY: Calculated Emissions [=] lb/year	Maximum Throughput [=] MMBTU/year
PM	0.00721	1.01	N/S	N/S		8,760	7.1	1,291	8,760	17.91	3.58
PM-10	0.00322	1.01	7.1	2,591		8,760				15.38	3.58
CO	0.0567	3.27	N/S	N/S	1.0 x	8,760				4.49	
					4.0 x						
NOx	0.0010	11.17	N/S	8,760		8,760				1	
SO2	0.5021	1.10	24.0	8,760	1.0 x	8,760				53.41	
TOC	0.0155	1.21	N/S	N/S		8,760				1.15	
						8,760				8.53	

Pollutant	Generator Emissions: Calculated 24-hr Impact [=] µg/m³	Calculated Annual Impact [=] µg/m³	Calculated Impact [=] Other	Ambient Air Concentrations at Background Values (µg/m³) Based On Entered SCREEN Data: 1-hr	3-hr	8-hr	24-hr	Annual
PM	N/S	N/S						
PM-10	3.0	1.0						
CO	15.2	3.0	12.1 x	11,521		3,129		
			0.3 x					
NOx	29.5	14.1						54
SO2	4.7	0.9	3.8 x		577		119	21.1
TOC	3.6	1.1						

	Crushers		Screens		Transfer Points		Total Emissions	Allowable Hours of Operation w/ Emissions < 100 T/yr	
	No. 1		No. 1		Nos. 1 - 4	Nos. 5 - 7		w/o Generator	w/ Generator
No. Units	1	0	1	0	4	3			
Throughput [=] T/hr(Max)	600	550	900	550	600	200			
Throughput [=] MM Ty/Unit	3.50	2.63	1.97	2.63	3.50	1.75			
Operation Schedule [=] hrs/yr	8,760								
Control Efficiency	70%	70%	70%	70%	70%	70%			
PM-10									
Emission Factors	0.0030	0.0021	0.0130	0.0075	0.0020	0.0030			
Uncontrolled Emissions [=] lb/hr	0.18	0.03	0.50	0.05	0.03	0.01			
Controls Efficiencies [=] lb/hr	0.03	0.00	0.38	0.03	0.02	0.00	1.11	10.3	
Uncontrolled Emissions [=] T/yr	0.3	0.0	2.5	0.0	0.1	0.0	0.36	3.2	8760
Controlled Emissions [=] T/yr	0.1	0.0	2.9	0.0	0.1	0.0	3.3	46.2	
							1.0	11.9	8760
PM									
Emission Factors	0.0097	0.0063	0.0391	0.0854	0.0060	0.0090	0.0053		
Uncontrolled Emission [=] lb/hr	0.28	0.03	1.51	0.03	0.14	0.03	1.31	27.6	
Controlled Emissions [=] lb/hr	0.08	0.01	1.73	0.01	0.04	0.01	0.36	4.3	8760
Uncontrolled Emissions [=] T/yr	1.2	0.1	6.6	0.1	0.6	0.1	1.9	121.0	
Controlled Emissions [=] T/yr	0.4	0.0	7.6	0.0	0.2	0.0	2.2	26.1	8760

Notes:
- TPY calculations include crusher, screen and transfer point emissions.
- CO 1-hr Averaging Period
- CO 8-hr Averaging Period
- SO2 3-hr Averaging Period
- Daily and annual operation values are based on background data less the modeled generator emissions (i.e., emissions are conservative). That is, the generator hours of operation have been backed out/deleted from AAQS values. The crusher permissible emissions (controlled) are then used to back calculate crusher operational hours, assuming 10 Tons/hr hourly generator emissions.
- Maximum throughput values are based on the minimum number of hours (crusher) that will yield a total of 100 Tons/yr, multiplied by the maximum daily production rates.
- Hourly emission values are based on maximum daily production rates, given above.
- Annual emission values are based on the maximum throughput values given above.
- Non-Attainment Area basis of operation calculations assume TSP emissions are not considered in PM-10 non-attainment areas. Therefore, operation is limited by aggregate net impact limits.

DATA ENTRY

Company Name:	Ruschman Sand & Gravel	Engineer:	Anderson
Project:	Portable Crusher	Date:	11-Mar 00
PTC #:	777-00252	Filename:	Ruschman.wk4

Crusher Facility Information

Facility Production Capacity: 400 [=] tons/hr

Applicant's
Requested Hours of Operatio 24 [=] hrs/day
8,760 [=] hrs/yr
Estimated Throughput: 1,504,000 [=] tons/yr

Maximum Hours of Operatio 8,760 [=] hrs/yr
Maximum Throughput: 1,504,000 [=] tons/yr

Number of Crushers: 1

Limitations

Annual Threshold Emission L A (A = <100 Tons/yr; Below Title V Threshold)
(B = <250 Tons/yr; PSD Threshold)

Selected Emission Limitation: 100 Tons/yr

Generator Information

Generator? (Y/N) Y
Generator Size: 320 [=] kW 429.024 Conversion Factor

Units: B (A = Horsepower)
(B = Kilowatts)

Fuel Type: A (A = Diesel-Fired Generator)
(B = Gasoline-Fired/Dual-Fired Generator)

24

Modeled 1-hr Concentration: 42.42 [=] ug/m3, at emission rate of 1 lb/hr

INPUTS TO PERMIT TO CONSTRUCT (PTC)		Value	Units
Section A.2 "Operating Requirements"			
Section A.2.1 Number of Generators:	Number of Crushers	1	
Section A.2.1 Number of Generators:	Number of Generators	1	
Section A.2.1 Number of Generators:	Size of Generators	320	[=] kW
Section B "Attainment Area When Not Collocated"			
Section B.1.1 Facility Throughput Limits:	Annual Throughput Limit	3,504,000	T/yr
Section B.1.3 Generator Hours of Operation:	Annual Hours of Operation	8,760	hrs/yr
	<<AND/OR>>		
	Daily Hours of Operation	NA	
Section C "Attainment Area When Collocated"			
Section C.1.3 Facility Throughput Limits:	Annual Throughput Limit	1,752,000	T/yr
Section C.1.4 Generator Hours of Operation:	Annual Hours of Operation	4,380	hrs/yr
	<<AND/OR>>		
	Daily Hours of Operation	NA	
Section D "Nonattainment Area"			
Section D.1.1 Facility Throughput Limits:	Annual Throughput Limits	1,504,000	T/yr
Section D.1.3 Generator Hours of Operation:	Annual Hours of Operation	2,715	hrs/yr
	<<AND/OR>>		
	Daily Hours of Operation	7.5	hrs/day

Drop Point Emission Factors

Mean Wind Speed (U) 10 [=] mph
Material Moisture Content (M) 2.5 [=] %
Particle Size Multiplier (k)
PM-10 (<10 µm) 0.35 [=] dimensionless
PM (<30 µm) 0.74 [=] dimensionless
Emission Factors
PM-10 (<10 µm) 0.0020 [=] lb/ton
PM 0.0053 [=] lb/ton
0.0067 [=] lb/ton

Notes: PM = (k*0.0032*(U/5)^1.3)/(M/2)^1.4)-0.8

Background Concentrations – Attainment/Non-Classifiable Areas (ug/m3)

	1-hr	3-hr	8-hr	24-hr	Annual
PM					
PM-10				16.0	32.7
CO	11,400		1,130		
NOx					60.0
SO2		347		114	23.5
TOC					

Crusher Plant Emissions Calculations and Impact Estimates

PERMIT LIMITS TABLE

	PERMIT LIMITS								
	Attainment Area		Non-Attainment Area		Collected Attainment Areas				
Crusher Operating Requirements	T/day	MMT/yr	T/day	MMT/yr	T/day	MMT/yr			
	9,600	3.50	2,977	3.50	9,600	1.75	CO 1-hr Standard	SO2 2-hr standard	CO 1-hr Standard
Generator Operating Requirements	hrs/day	hrs/yr	hrs/day	hrs/yr	hrs/day	hrs/yr	mins/24-hr	hr/3-hr	hr/8-hr
	24.0	8,760	7.5	2,735	24.0	4,380	0.0	3.0	8.0
Generator Emission Limits	Contaminant	T/yr	Contaminant	T/yr	Contaminant	T/yr			
	None	None	None	None	NOx	49.5			
AIRS Facility Classification		A2							

OUTPUT

Potential to Emit – Based on Applicant's Data

Crusher, Screens & Transfer Points	Uncontrolled Emissions	Controlled Emissions
PM	122 tons/yr	36 tons/yr
PM-10	46 tons/yr	14 tons/yr
Generator		
PM	4.1 tons/yr	4.1 tons/yr
PM-10	4.1 tons/yr	4.1 tons/yr
CO	12.6 tons/yr	12.6 tons/yr
NOx	58.3 tons/yr	58.3 tons/yr
SO2	3.9 tons/yr	3.9 tons/yr
TOC	1.6 tons/yr	4.5 tons/yr
Total Crusher + Generator		
PM	126 tons/yr	41 tons/yr
PM-10	50 tons/yr	18 tons/yr
PTE Summary	125.7 [+] T/yr of PM	58.3 [+] T/yr of NOx

Enforceable Limits – Based on Requested Operations				
Generator – Operation	24.0	hrs/day	8,760	hr/yr
Crusher – Production	9,600	T/day	3.50	MMT/yr
AIRS Facility Classification	A2			

Potential to Emit – Emissions Analysis Using Ambient Air Quality Standards

Emissions limited to less than: 100 Tons/yr

Assumptions: Plant operations limited by NAAQS from generator emissions, and Crusher emissions back-calculated to yield 99 Tons/yr of emissions

Attainment/Non-Classifiable Area

Uncontrolled Emissions	Controlled Emissions
122 tons/yr	36 tons/yr
46 tons/yr	14 tons/yr
4.1 tons/yr	4.1 tons/yr
4.1 tons/yr	4.1 tons/yr
12.6 tons/yr	12.6 tons/yr
58.3 tons/yr	58.3 tons/yr
3.9 tons/yr	3.9 tons/yr
4.6 tons/yr	4.6 tons/yr
126 tons/yr	41 tons/yr
50 tons/yr	18 tons/yr
125.7 [+] T/yr of PM	58.3 [+] T/yr of NOx

Enforceable Limits – Attainment Areas

24.0	hrs/day	8,760	hr/yr	
9,600	T/day	3.50	MMT/yr	

Non-Attainment Area

Crusher	Uncontrolled Emissions	Controlled Emissions
PM	122 tons/yr	36 tons/yr
PM-10	46 tons/yr	14 tons/yr
Generator		
PM	4.1 tons/yr	4.1 tons/yr
PM-10	4.1 tons/yr	4.1 tons/yr
CO	3.9 tons/yr	3.9 tons/yr
NOx	18.2 tons/yr	18.2 tons/yr
SO2	1.2 tons/yr	1.2 tons/yr
TOC	1.1 tons/yr	1.1 tons/yr
Totals:		
PM	123 tons/yr	38 tons/yr
PM-10	47 tons/yr	15 tons/yr
PTE Summary	122.9 [+] T/yr of PM	33.3 [+] T/yr of PM

Enforceable Limits – Non-Attainment Areas

Generator	7.5	hrs/day	2,735	hr/yr
Crusher	2,977	T/day	3.50	MMT/yr

EMISSION ANALYSIS BASED ON APPLICANT'S DATA

Generator Emissions

Pollutant	Generator Emission Factor [=] lb/hp-hr	Generator Emission Rate [=] lb/hr	Applicant's Data: Hours of Operation [=] hr/day	[=] hr/year	Generator Emissions: lb/day	Hours of Operation	*Ton	Modeled Air Concentrations (based on Tiered SCREEN3 Data): Calculated 24-hr Impact [=] ug/m3	Calculated Annual Impact [=] ug/m3	Calculated Annual Impact [=] Other
PM	0.0032	0.50	24.0	8,760	12.65		4.13	16.5	16.5	
PM-10	0.0022	0.34	24.0	8,760	12.65		4.13	16.0	3.2	
CO	0.0167	2.47	24.0	8,760	68.74		12.55	18.6	9.7	121.2
NOx	0.0810	13.10	24.0	8,760	319.19		58.25		25.1	25.1
SO2	0.0021	0.85	24.01	8,760	21.11		3.45	11.9	3.0	11.9
TOC	0.0033	1.06	24.0	8,760	23.13		4.64			

Generator Emissions

Generator Emissions Regulatory Analysis

Pollutant	BRC Evaluation		Significant Contribution Emission Rates		Non-Attainment Area Significant Contribution Ambient Air Concentration: 24-hr		Annual	Ambient Air Concentrations of Background Values (ug/m3): 1-hr	3-hr	8-hr	24-hr	Annual
PM	Above BRC	(2.5 T/yr)	No	(25 T/yr)								
PM-10	Above BRC	(1.5 T/yr)	No	(15 T/yr)	Significant	1 ug/m3	(ug/m3)					39.9
CO	Above BRC	(10 T/yr)	No	(100 T/yr)	No	2,000 ug/m3 (8-hour)	500 ug/m3 (24-hour)	11,522	5,215			
NOx	Above BRC	(4 T/yr)	Significant	(40 T/yr)								
SO2	BRC	(4 T/yr)	No	(40 T/yr)					377		154.9	26.5
TOC												

Rock Crusher Emissions

	Crushers: No. 1		Screens: No. 1		Transfer Points: Nos. 1 - 4	Transfer Points: Nos. 5 - 7	Total Emissions	For information purposes: Crusher Hours of Operation to Yield 99.0 Tpy Emissions: w/o Generator	w/ Generator
No. Units	1	0	1	0	4	3			
Throughput ([=] T/hr/unit)	400	300	400	300	400	300			
Operation Schedule ([=] hrs/day)	24					24.0			
Throughput ([=] MM T/yr/unit)	3.50	2.63	3.50	2.63	14.02	7.88			
Operation Schedule ([=] hrs/yr)	8,760								8760
Control Efficiency	70%	70%	70%	70%	70%	70%			70%
PM-10									
Emission Factor	0.0003	0.00124	0.00459	0.01710	0.01101		0.01101		
Uncontrolled Emissions ([=] lb/hr)	0.11	0.08	6.01	0.00	7.25		1.21	16.5	
Controlled Emissions ([=] lb/hr)	0.03	0.03	1.80	0.00	0.97		0.36	3.2	
Uncontrolled Emissions ([=] T/yr)	0.5	0.0	26.3	0.0	31.1		3.3	65.2	8760
Controlled Emissions ([=] T/yr)	0.1	0.0	7.9	0.0	3.2		0.9	13.9	4760
PM									
Emission Factor	0.0027	0.00865	0.03201	0.13361	0.08531		0.08531		
Uncontrolled Emissions ([=] lb/hr)	0.28	0.00	15.75	0.00	8.53		3.20	27.6	
Controlled Emissions ([=] lb/hr)	0.08	0.00	4.73	0.00	2.56		0.96	4.3	
Uncontrolled Emissions ([=] T/yr)	1.2	0.0	68.9	0.0	37.4		14.0	121.6	8760
Controlled Emissions ([=] T/yr)	0.3	0.0	20.7	0.0	11.2		4.2	36.1	8760

Notes:
1 - Number of Screens + Number of Crushers
2 - Number of Transfer Points = 7*(Number of Crushers)
3 - Emission Factors from AP-42, Table 11.19.2-2. Where factors were given for one pollutant, the following conversion factors were used:
TSP = PM + PM-10; TSP = PM-30 x
Hourly values are based on maximum daily production rates given above. Annual values are based on throughput values given above.

Pollutant	Generator Emissions: lb/day	T/yr	Crusher Emissions (Controlled): lb/day	T/yr	Total Emissions: lb/day	*T/yr
PM	12.65	4.13	199.9	16.1	212.5	20.3
PM-10	12.65	4.13	73.9	13.9	98.5	18.0
CO	68.74	12.55			68.1	12.5
NOx	319.19	58.25			319.2	58.3
SO2	23.11	3.65			21.1	3.7
TOC	23.13	4.64			15.4	2.6

Enforceable Limits				
Generator -- Operation	24.0	hr/day	8,760	hr/yr
Crusher -- Production	9,600	T/hr	110	MM T/yr

EMISSION ANALYSIS – BASED ON AMBIENT AIR QUALITY STANDARDS
Emissions limited to less than: 100 Tons/yr

Attainment Area

Pollutant	Generator Emission Factor [=] lbs/hp-hr	Generator Emission Rate [=] lbs/hr	Hours of Operation [=] hr/day	Hours of Operation [=] hr/year	Calculated Impacts AAQS	Hours of Operation [=] Other	<100 TPY: Hours of Operation [=] hr/day	<100 TPY: Hours of Operation [=] hr/year	Allowable Impacts Generator Hours of Operation [=] hr/day	Generator Hours of Operation [=] hr/year	Crusher Hours of Operation [=] hr/year	<100 TPY: Calculated Emissions [=] ton/year	Maximum Throughput [=] MMTY/year
PM	0.0022	0.74	N/S	N/S				4,760	7.40	4,760	4,760	51.67	0.50
PM-10	0.0022	0.74	24.0	8,760				4,760				12.59	1.50
CO	0.0067	2.47	N/S	N/S	1st:			4,760				12.35	
					8th:								
NO_x	0.0310	11.30	N/S	8,760									
SO_2	0.0021	0.83	24.0	8,760	3rd:			8,760				53.75	
TOC	0.0013	1.06	N/S	N/S				8,760				3.85	
								8,760				4.61	

Pollutant	Generator Emissions: Calculated 24-hr Impact [=] µg/m³	Generator Emissions: Calculated Annual Impact [=] µg/m³	Generator Emissions: Calculated Impact [=] Other	Ambient Air Concentrations w/ Background Values (µg/m³) Based On Entered SOURCE Data: 1-hr	3-hr	8-hr	24-hr	Annual
PM	N/S	N/S						
PM-10	16.0	1.1						
CO	48.0	9.7	872.2					
			65.1	11,532		3,215		
NO_x	125.7	45.1						
SO_2	14.9	3.0	11.2					85
TOC	18.0	3.6			527		159	36.1

No. Units	Crushers: No. 1		Screens: No. 1		Transfer Points: Nos. 1 - 4	Nos. 5 - 7	Total Emissions	Allowable Hours of Operation w/ Emissions <100 T/yr: w/o Controls	w/ Controls
	1	0	1	0	4	3			
Throughput ([=] Ton/hr)	600	900	600	500	400	200			
Throughput ([=] MM Tons/yr)	4.50	2.63	3.50	2.63	3.50	1.75			
Operation Schedule ([=] hrs/yr)	8,760								
Control Efficiency	70%	70%	70%	70%	70%	70%			
PM-10									
Emission Factor	0.0033	0.0024	0.0330	0.0330	0.0020	0.0020			
Uncontrolled Emissions ([=] lbs/hr)	1.11	0.90	6.60	0.00	3.15	1.31	14.15		
Controlled Emissions ([=] lbs/hr)	0.33	0.30	1.80	0.00	0.97	0.36	3.77	8760	8760
Uncontrolled Emissions ([=] T/yr)	4.9	0.0	28.9	0.0	14.1	1.3	46.4		
Controlled Emissions ([=] T/yr)	1.4	0.0	7.9	0.0	4.1	0.6	13.9		
PM									
Emission Factor	0.0033	0.0063	0.0330	0.0884	0.0053	0.0053			
Uncontrolled Emissions ([=] lbs/hr)	0.28	0.00	15.75	0.00	8.31	3.50	27.84		
Controlled Emissions ([=] lbs/hr)	0.08	0.00	4.73	0.00	2.56	0.95	8.32	3760	4500
Uncontrolled Emissions ([=] T/yr)	1.2	0.0	69.0	0.0	37.4	3.1	121.6		
Controlled Emissions ([=] T/yr)	0.3	0.0	20.7	0.0	11.2	1.4	36.5		

Notes:
- TPY calculations include crusher, screen and transfer point emissions
- 1st 1-hr Averaging Period
- 8th 1-hr Averaging Period
- 3rd 3-hr Averaging Period
- *Daily and annual operation values are based on background data less the modeled generator emissions (i.e., ambient air concentrations). That is, the generator hours of operation have been back calculated from AAQS values. The crusher percentage emissions (presumably) are then used to back calculate crusher operational times, assuming 99 Tons/hr for generator emissions.*
- *Maximum throughput values are based on the minimum number of hours (crusher) that will yield a total of 99 Tons/hr, multiplied by the maximum daily production rates.*
- *Hourly emission values are based on maximum daily production rates, given above.*
- *Annual emission values are based on the maximum throughput values given above.*

JAN-10-2001 13:46 FROM-IDAHO DEQ 2083730143 T-242 P.026/037 F-455

EMISSION ANALYSIS – BASED ON AMBIENT AIR QUALITY STANDARDS
Emissions limited to less than: 100 Tons/yr

Non-Attainment Area

Pollutant	Generator Emission Factor [*] lb/hp-hr	Generator Emission Rate [=] lb/hr	Hours of Operation [=] hr/day	Hours of Operation [=] hr/year	Calculated Impacts AAQS Hours of Operation [=] Other	< 100 TPY: Hours of Operation [=] hr/year	Allowable Impacts Generator Hours of Operation [=] hr/day	Generator Hours of Operation [=] hr/year	Crusher Hours of Operation [=] hr/year	< 100 TPY: Calculated Emissions [=] ton/year	Maximum Throughput [=] MWH/year
PM	0.0022	0.91	N/S	N/S		8,760	7.5	2,737	8,760	17.77	1.95
PM-10	0.0022	0.94	7.5	2,737		8,760				13.15	3.51
CO	0.0057	1.87	N/S	N/S	1.9	8,760				3.97	
NOx	0.0510	13.10	N/S	8,760	0.0						
SO2	0.0021	0.88	24.0	8,760	3.0	8,760				11.49	
TOC	0.0025	1.06	N/S	N/S		4,260				1.09	
										1.43	

Pollutant	General Emissions: Calculated 24-hr Impact [*] µg/m3	Calculated Annual Impact [=] µg/m3	Calculated Impact [=] Other	Ambient Air Concentrations w/ Background Values (µg/m3) Based On Entered CURRENT Data: 1-hr	3-hr	8-hr	24-hr	Annual
PM	N/S	N/S						
PM-10	3.0	1.0						
CO	19.2	5.0	822.2	11,522		5,100		
			0.0					
NOx	20.1	14.1						
SO2	4.7	0.9	14.0					
TOC	5.6	1.1			377		149	214

	Crushers No. 1		Screens No. 1		Screens Nos. 1 - 4	Screens Nos. 5 - 7	Transfer Points	Total Emissions	Allowable Hours of Operation w/ Emissions < 100 T/yr: w/o Generator	w/ Generator
No. Units	1	0	1	0	1		3			
Throughput [*] T/hr(ave)	900	300	900	300	900		2700			
Throughput [*] MM T/yr(ave)	3.50	2.67	3.50	2.63	3.50		11.29			
Operation Schedule [*] hr/yr	8,760		8,760		8,760					
Control Efficiency	75%		75%		75%		75%			
PM-10										
Emission Factor	0.0400	0.0024	0.0040	0.0016	0.0020		0.0020			
Uncontrolled Emissions [*] lb/hr	9.11	0.00	9.20	0.00	3.33		12.53			
Controlled Emissions [=] lb/hr	9.76	0.00	1.00	0.00	0.97		2.76	19.5		
Uncontrolled Emissions [*] T/yr	0.5	0.0	36.5	0.0	14.1		50.6	1.2	4760	4760
Controlled Emissions [=] T/yr	0.1	0.0	7.9	0.0	1.2		11.1	55.2		
PM							1.6	13.9		
Emission Factor	0.0087	0.0063	0.0091	0.0168	0.0053		0.0053			
Uncontrolled Emissions [*] lb/hr	0.29	0.00	16.71	0.00	8.33		25.33			
Controlled Emissions [*] lb/hr	0.00	0.00	1.77	0.00	2.16		3.93	22.8		
Uncontrolled Emissions [*] T/yr	1.2	0.0	69.0	0.0	35.1		105.3	9.3	8760	8760
Controlled Emissions [=] T/yr	0.1	0.0	20.7	0.0	11.2		32.0	131.6		
							1.2	36.1		

Notes
- TOC calculations include crushers, screens and transfer point emissions.
- CO 1-hr Averaging Period
- CO 8-hr Averaging Period
- SO2 3-hr Averaging Period
- *Daily and annual operation values are based on background data less the modeled generator emissions (i.e., ambient air concentrations). That is, the generator hours of operation have been back calculated from AAQS values. The crusher particulate emissions (controlled) are then used to back calculate crusher operational hours, assuming 50 Tons/hr. See generator emissions.*
- *Maximum throughput values are based on the maximum number of hours in a year that will yield a total of 50 Tons/hr, multiplied by the maximum daily production rates.*
- *Hourly emission rates are based on maximum daily production rates, given above.*
- *Annual emission values are based on the maximum throughput values given above.*
- *Interpretation of Area hours of operation calculations assume TSP emissions are non-attainment in PM-10 non-attainment areas. Therefore, operation is limited by a specific set impact limit.*

Crushed Rock Fence on Calculations and Impact Estimates

Attainment Area - Collocated Units - Calculations

Pollutant	Collocated Ambient Air Concentrations - Attainment Area Calculations (1-hr, 3-hr, 8-hr, & 24-hr standards are cut in half for collocation) 1-hr	3-hr	8-hr	24-hr	Annual (Max. Hours to Achieve 49.5 T/yr)
PM					
PM-10				16.9	5.7
CO	11,179		2,350		
NO_x					11.1
SO_2		315		96	31.8
TOC					

Pollutant	Background Concentrations - Attainment/Non-Classifiable Areas (ug/m3) 1-hr	3-hr	8-hr	24-hr	Annual
PM					
PM-10				16.0	32.7
CO	11,400		5,130		
NO_x					40.0
SO_2		545		144	23.1
TOC					

Appendix B

Modeling Results

P-000091
Ruschman Sand & Gravel

07/12/00
08:24:52

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

RS&G460

SIMPLE TERRAIN INPUTS:
SOURCE TYPE = POINT
EMISSION RATE (G/S) = 0.126000
STACK HEIGHT (M) = 3.9624
STK INSIDE DIAM (M) = 0.1524
STK EXIT VELOCITY (M/S)= 85.6345
STK GAS EXIT TEMP (K) = 738.7056
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 = 2.941 M**4/S**3; MOM. FLUX = 16.898 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
3.	0.000	1	1.0	1.0	320.0	52.08	3.32	3.16	NO
100.	22.23	3	8.0	8.0	2560.0	9.98	12.58	7.64	NO
200.	19.05	4	8.0	8.0	2560.0	9.98	15.66	8.67	NO
300.	15.70	4	4.5	4.5	1440.0	14.65	22.82	12.47	NO
400.	13.02	4	3.5	3.5	1120.0	17.71	29.72	15.77	NO

500.	11.09	4	3.0	3.0	960.0	20.00	36.44	18.86	NO
600.	9.701	4	2.5	2.5	800.0	23.21	43.07	21.91	NO
700.	8.618	4	2.0	2.0	640.0	28.02	49.67	25.00	NO
800.	7.751	4	2.0	2.0	640.0	28.02	56.00	27.65	NO
900.	7.003	4	1.5	1.5	480.0	36.04	62.56	30.86	NO
1000.	6.506	4	1.5	1.5	480.0	36.04	68.74	33.38	NO
1100.	6.008	4	1.5	1.5	480.0	36.04	74.87	35.33	NO
1200.	5.635	6	1.0	1.0	10000.0	39.31	41.27	18.63	NO
1300.	5.928	6	1.0	1.0	10000.0	39.31	44.21	19.32	NO
1400.	6.165	6	1.0	1.0	10000.0	39.31	47.14	20.00	NO
1500.	6.352	6	1.0	1.0	10000.0	39.31	50.06	20.67	NO
1600.	6.495	6	1.0	1.0	10000.0	39.31	52.97	21.32	NO
1700.	6.598	6	1.0	1.0	10000.0	39.31	55.86	21.97	NO
1800.	6.666	6	1.0	1.0	10000.0	39.31	58.74	22.61	NO
1900.	6.704	6	1.0	1.0	10000.0	39.31	61.61	23.25	NO
2000.	6.717	6	1.0	1.0	10000.0	39.31	64.47	23.87	NO
2100.	6.670	6	1.0	1.0	10000.0	39.31	67.32	24.40	NO
2200.	6.612	6	1.0	1.0	10000.0	39.31	70.15	24.92	NO
2300.	6.545	6	1.0	1.0	10000.0	39.31	72.98	25.43	NO
2400.	6.470	6	1.0	1.0	10000.0	39.31	75.79	25.93	NO
2500.	6.389	6	1.0	1.0	10000.0	39.31	78.60	26.43	NO
2600.	6.304	6	1.0	1.0	10000.0	39.31	81.39	26.92	NO
2700.	6.214	6	1.0	1.0	10000.0	39.31	84.18	27.40	NO
2800.	6.123	6	1.0	1.0	10000.0	39.31	86.95	27.87	NO
2900.	6.029	6	1.0	1.0	10000.0	39.31	89.72	28.34	NO
3000.	5.935	6	1.0	1.0	10000.0	39.31	92.48	28.80	NO
3500.	5.422	6	1.0	1.0	10000.0	39.31	106.13	30.69	NO
4000.	4.962	6	1.0	1.0	10000.0	39.31	119.60	32.45	NO
4500.	4.555	6	1.0	1.0	10000.0	39.31	132.89	34.10	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 3. M:

80.	23.23	3	10.0	10.0	3200.0	8.77	10.33	6.26	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	23.23	80.	0.

07/12/00
08:30:50

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

RS&G365

SIMPLE TERRAIN INPUTS:
SOURCE TYPE = POINT
EMISSION RATE (G/S) = 0.126000
STACK HEIGHT (M) = 2.4384
STK INSIDE DIAM (M) = 0.1707
STK EXIT VELOCITY (M/S)= 61.5043
STK GAS EXIT TEMP (K) = 827.0389
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 = 2.836 M**4/S**3; MOM. FLUX = 9.767 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
3.	0.000	1	1.0	1.0	320.0	49.26	2.82	2.62	NO
100.	34.36	4	15.0	15.0	4800.0	5.56	8.25	4.74	NO
200.	23.71	4	5.0	5.0	1600.0	11.80	15.79	8.91	NO
300.	18.52	4	4.0	4.0	1280.0	14.14	22.86	12.55	NO
400.	14.82	4	3.0	3.0	960.0	18.05	29.79	15.91	NO

500.	12.43	4	2.5	2.5	800.0	21.17	36.54	19.06	NO
600.	10.67	4	2.5	2.5	800.0	21.17	43.05	21.88	NO
700.	9.466	4	2.0	2.0	640.0	25.85	49.64	24.95	NO
800.	8.371	4	2.0	2.0	640.0	25.85	55.97	27.61	NO
900.	7.643	4	1.5	1.5	480.0	33.65	62.52	30.79	NO
1000.	7.013	4	1.5	1.5	480.0	33.65	68.71	33.31	NO
1100.	6.587	6	1.0	1.0	10000.0	37.36	38.29	17.87	NO
1200.	6.919	6	1.0	1.0	10000.0	37.36	41.24	18.57	NO
1300.	7.181	6	1.0	1.0	10000.0	37.36	44.18	19.26	NO
1400.	7.379	6	1.0	1.0	10000.0	37.36	47.12	19.94	NO
1500.	7.521	6	1.0	1.0	10000.0	37.36	50.04	20.61	NO
1600.	7.615	6	1.0	1.0	10000.0	37.36	52.94	21.27	NO
1700.	7.668	6	1.0	1.0	10000.0	37.36	55.84	21.92	NO
1800.	7.685	6	1.0	1.0	10000.0	37.36	58.72	22.56	NO
1900.	7.673	6	1.0	1.0	10000.0	37.36	61.59	23.19	NO
2000.	7.636	6	1.0	1.0	10000.0	37.36	64.45	23.82	NO
2100.	7.543	6	1.0	1.0	10000.0	37.36	67.30	24.35	NO
2200.	7.441	6	1.0	1.0	10000.0	37.36	70.14	24.87	NO
2300.	7.332	6	1.0	1.0	10000.0	37.36	72.96	25.38	NO
2400.	7.217	6	1.0	1.0	10000.0	37.36	75.78	25.89	NO
2500.	7.099	6	1.0	1.0	10000.0	37.36	78.58	26.38	NO
2600.	6.978	6	1.0	1.0	10000.0	37.36	81.38	26.87	NO
2700.	6.856	6	1.0	1.0	10000.0	37.36	84.16	27.36	NO
2800.	6.733	6	1.0	1.0	10000.0	37.36	86.94	27.83	NO
2900.	6.610	6	1.0	1.0	10000.0	37.36	89.71	28.30	NO
3000.	6.488	6	1.0	1.0	10000.0	37.36	92.46	28.76	NO
3500.	5.867	6	1.0	1.0	10000.0	37.36	106.12	30.65	NO
4000.	5.326	6	1.0	1.0	10000.0	37.36	119.59	32.41	NO
4500.	4.856	6	1.0	1.0	10000.0	37.36	132.88	34.07	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 3. M:

67.	37.79	4	20.0	20.0	6400.0	4.78	5.76	3.37	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	37.79	67.	0.

09/01/00
14:35:42

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

RS&G365

SIMPLE TERRAIN INPUTS:
SOURCE TYPE = POINT
EMISSION RATE (G/S) = 0.126000
STACK HEIGHT (M) = 2.4384
STK INSIDE DIAM (M) = 0.1707
STK EXIT VELOCITY (M/S)= 61.5023
STK GAS EXIT TEMP (K) = 827.0389
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 = 2.836 M**4/S**3; MOM. FLUX = 9.767 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
3.	0.000	1	1.0	1.0	320.0	49.26	2.82	2.62	NO
100.	34.36	4	15.0	15.0	4800.0	5.56	8.25	4.74	NO
200.	23.71	4	5.0	5.0	1600.0	11.80	15.79	8.91	NO
300.	18.52	4	4.0	4.0	1280.0	14.14	22.86	12.55	NO
400.	14.82	4	3.0	3.0	960.0	18.05	29.79	15.91	NO

500.	12.43	4	2.5	2.5	800.0	21.17	36.54	19.06	NO
600.	10.67	4	2.5	2.5	800.0	21.17	43.05	21.88	NO
700.	9.466	4	2.0	2.0	640.0	25.85	49.64	24.95	NO
800.	8.371	4	2.0	2.0	640.0	25.85	55.97	27.61	NO
900.	7.643	4	1.5	1.5	480.0	33.65	62.52	30.79	NO
1000.	7.013	4	1.5	1.5	480.0	33.65	68.71	33.31	NO
1100.	6.587	6	1.0	1.0	10000.0	37.36	38.29	17.86	NO
1200.	6.919	6	1.0	1.0	10000.0	37.36	41.24	18.57	NO
1300.	7.181	6	1.0	1.0	10000.0	37.36	44.18	19.26	NO
1400.	7.379	6	1.0	1.0	10000.0	37.36	47.12	19.94	NO
1500.	7.521	6	1.0	1.0	10000.0	37.36	50.04	20.61	NO
1600.	7.615	6	1.0	1.0	10000.0	37.36	52.94	21.27	NO
1700.	7.668	6	1.0	1.0	10000.0	37.36	55.84	21.92	NO
1800.	7.685	6	1.0	1.0	10000.0	37.36	58.72	22.56	NO
1900.	7.673	6	1.0	1.0	10000.0	37.36	61.59	23.19	NO
2000.	7.636	6	1.0	1.0	10000.0	37.36	64.45	23.82	NO
2100.	7.544	6	1.0	1.0	10000.0	37.36	67.30	24.35	NO
2200.	7.441	6	1.0	1.0	10000.0	37.36	70.14	24.87	NO
2300.	7.332	6	1.0	1.0	10000.0	37.36	72.96	25.38	NO
2400.	7.218	6	1.0	1.0	10000.0	37.36	75.78	25.89	NO
2500.	7.099	6	1.0	1.0	10000.0	37.36	78.58	26.38	NO
2600.	6.979	6	1.0	1.0	10000.0	37.36	81.38	26.87	NO
2700.	6.856	6	1.0	1.0	10000.0	37.36	84.16	27.35	NO
2800.	6.733	6	1.0	1.0	10000.0	37.36	86.94	27.83	NO
2900.	6.610	6	1.0	1.0	10000.0	37.36	89.71	28.30	NO
3000.	6.488	6	1.0	1.0	10000.0	37.36	92.46	28.76	NO
3500.	5.867	6	1.0	1.0	10000.0	37.36	106.12	30.65	NO
4000.	5.326	6	1.0	1.0	10000.0	37.36	119.59	32.41	NO
4500.	4.856	6	1.0	1.0	10000.0	37.36	132.88	34.07	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 3. M:

67.	37.79	4	20.0	20.0	6400.0	4.78	5.76	3.37	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	37.79	67.	0.