

July 5, 2000

MEMORANDUM

TO: Stephen West, Regional Administrator
Boise Regional Office

FROM: Gary Gates, Air Quality Analyst 
Technical Services Office

SUBJECT: **PERMIT TO CONSTRUCT TECHNICAL ANALYSIS**
P-000078, Mountain Home Redi-Mix, Inc., Portable
(Standard Concrete Batch Plant Permit to Construct No. 777-00265; Including
Aggregate, Asphalt, and Concrete Production when Collocated in Attainment Areas)

PURPOSE

The purpose of this memorandum is to satisfy the requirements of IDAPA 16.01.01.200 (*Rules for the Control of Air Pollution in Idaho*) for issuing Permits to Construct (PTC).

PROJECT DESCRIPTION

Mountain Home Redi-Mix, Inc., is proposing to commence construction of a portable concrete batching facility. Mountain Home Redi-Mix is requesting a PTC be issued to cover the operations of the concrete batching facility in both attainment and nonattainment areas throughout the state of Idaho. Note that the Standard PTC for a portable concrete batching facility also includes provisions for collocated operations in attainment areas with one other portable source (i.e., rock crusher, hot-mix asphalt, or concrete batch plant). The concrete batch plant's maximum hourly throughput is one hundred cubic yards per hour (100 cy/hr). The facility includes a 150-kilowatt (150-kW), diesel-fired electrical generator set.

SUMMARY OF EVENTS

On June 14, 2000, the Idaho Department of Health and Welfare, Division of Environmental Quality (DEQ) received a PTC application for a portable concrete batching facility.

DISCUSSION

1. **Process Description**

Concrete is produced by combining water, sand and gravel, and portland cement. A portable concrete batch plant consists of storage bins for the sand and gravel, a storage silo for the cement, weigh bins that weigh each component, a conveyor, a water supply, and a control panel. Sand and gravel are either produced on site or purchased elsewhere. Typically, three or four different sizes of gravel and one or two different sizes of sand are stockpiles for varying job specifications. Cement is delivered by truck and pneumatically transferred to its storage silo. A baghouse is mounted above the silo to capture cement as air is displaced in the silo. For this source category, the baghouse is considered process equipment primarily, and air pollution control equipment secondarily. Power to run the facility is provided by the local utility, or a gasoline-fired or diesel-fired generator.

After all the storage bins are filled, the production process begins when sand and gravel are drop-fed into their respective weigh bins. When a pre-determined amount of each is weighed, the sand and gravel is drop-fed onto an inclined conveyor which transfers the mixture into a cement truck. A pre-determined amount of cement is also weighed and drop-fed through a rubber chute into the cement truck. The rubber chute directs the cement and provides a measure of dust control. Sometimes, a separate baghouse is used to capture cement dust from the cement weigh bin. Water is then added, and the components are mixed in the truck on the way to the job site.

The Standard PTC requested will allow this concrete batching facility to collocate and simultaneously operate with one 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 concrete batching facility is then part of a single, larger source engaged in the production of either concrete, aggregate and/or asphalt, depending upon which type of portable plant the concrete batching facility 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 concrete batching facility 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 concrete batching facility will collocate must also contain specific collocation requirements based on the same conservative assumptions and calculations used in this Standard PTC.

2. Equipment Listing

The analysis upon which this facility is permitted assumes the following equipment would be used:

2.1 Portable Concrete Batch Plant

Manufacturer	-	Ross
Model	-	Sidewinder
Maximum Capacity (cy/hr)	-	100

2.2 Cement Storage Silo Baghouse

Stack Height (ft)	-	19
Stack Diameter (ft)	-	3.17
Exit Air Flowrate (acfm)	-	560
Capture Efficiency	-	100 %

2.4 Generator

Manufacturer/Model:	-	Onan Model #DGFA 150
Rated Power Output (kW or hp)	-	150 kW

Stack Diameter (ft)	-	0.417
Stack Height (ft)	-	12
Exhaust Gas Flowrate (acfm)	-	1170
Exhaust Gas Temperature (°F)	-	1045
Fuel Type (diesel or gasoline)	-	diesel
Fuel Usage (gallons per hour)	-	9.9

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

4. Emission Estimates

A spreadsheet has been developed specifically for concrete batching facilities to determine their potential to emit (PTE). PTE is used to determine if Prevention of Significant Deterioration (PSD) or Title V Operating Permit requirements apply. In determining PTE, the spreadsheet uses production data supplied by the applicant and emission factors from EPA's AP-42. For concrete batching facilities, PTE is based on emissions from the cement storage silo baghouse, and the cement weigh bin baghouse (if one is used). If the facility includes a generator, its emissions are also included in the determination of the facility's PTE. Because these facilities are not designated facilities or NSPS-affected facilities, fugitive emissions from concrete batch plants do not count toward determining PTE. This facility's PTE is thirty two and nine tenths tons per any consecutive 12-month period (32.9 T/yr) based on PM₁₀ emissions.

The spreadsheet inherently limits emissions below certain triggering levels (i.e., PSD and Title V thresholds) by limiting throughput. If a generator is not used, throughput is solely limited to limit a facility's PTE below 99 T/yr of PM-10 emissions. If a generator is used, throughput is limited to protect the NAAQS and it is limited to keep emissions below the 99 T/yr triggering level. The throughput limits for this facility are presented below. The spreadsheet used to calculate the PTE and throughput limit is included as Appendix A of this document.

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.

4.1 Attainment Area Operations

In the standard permit, two throughput limit options are available to choose from. One option limits annual throughput (annual is any consecutive 12-month period) only and the other option limits daily and annual throughput. The annual throughput limit option is chosen to limit emissions to 99 T/yr or less. This option is most likely chosen if the facility does not include a generator. The daily and annual limit is chosen when throughput has to be limited to protect the 24-hr PM-10 NAAQS and to limit facility emissions to 99 T/yr or less.

For this concrete batch plant, the concrete throughput is unlimited while operating in any attainment or unclassifiable area.

4.2 Nonattainment Area Operations

For facilities that use a generator in a PM-10 nonattainment area or proposed PM-10 nonattainment area, throughput is limited to protect the PM-10 nonattainment area 24-hour and annual ambient impact limits (5.0 ug/m³ and 1.0 ug/m³, respectively). When a generator is not used, throughput is limited to keep PM-10 emissions below 99 T/yr.

For this concrete batch plant, the concrete throughput is limited to five hundred three cubic yards per day (503 cy/day) and one hundred eighty-three thousand, six hundred seventy-eight cubic yards per consecutive 12-month period (183,678 cy/yr) while operating in PM-10 nonattainment area or proposed PM-10 nonattainment area.

4.3 Collocated Operations in Attainment Areas

Standard PTCs will only allow collocation with one other portable source (i.e., rock crusher, hot-mix asphalt plant, or concrete batch plant) which has also received a Standard PTC that specifically allows collocation. When a combination of one portable concrete batching 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 concrete batch 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).

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. For this concrete batch plant, the concrete throughput is limited to four hundred thirty eight thousand cubic yards per consecutive 12-month period (438,000 cy/yr) when collocated with another concrete batch plant, rock crushing plant, or hot-mix asphalt plant in any attainment or unclassifiable area.

4.4 Fugitive Emissions

Even though fugitive dust emissions are not included to determine PTE, they must be reasonably controlled at all times. In order to ensure the air quality is not degraded beyond the facility boundary, the standard permit requires that no visible emissions be seen crossing the facility boundary. It is assumed if no emissions visibly cross the boundary, the air quality is protected. This provision is included in the standard permit in lieu of fugitive dust modeling.

5. Modeling of Point Sources

5.1 Baghouse

The EPA-approved SCREEN3 model was used in this analysis using stack data provided by the applicant to predict the impact the baghouse emissions may have on the ambient air. A one (1) pound-per-hour emission rate was input into the model which calculated a maximum 1-hour concentration of 530 $\mu\text{g}/\text{m}^3$ for the cement silo baghouse. This information was input into the spreadsheet which calculated the allowable throughput.

5.2 Generator

The SCREEN3 model was used in this analysis using stack data provided by the applicant to predict the impact the generator emissions may have on the ambient air. A one (1) pound-per-hour emission rate was input into the model which calculated a maximum one 1-hour concentration of 50.89 $\mu\text{g}/\text{m}^3$. The 1-hour concentration was then input into the spreadsheet which was used to calculate the facility's allowable throughput.

The SCREEN3 output for each applicable point source is presented as Appendix B of this document.

5.3 Collocated Operations

For collocated operations in attainment areas, operation of the concrete batch 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-10 (attainment area) as an example, one half of the allowable available impact would be equal to 32 $\mu\text{g}/\text{m}^3$, 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 $150 \mu\text{g}/\text{m}^3$ is the 24-hour average standard and $86 \mu\text{g}/\text{m}^3$ is the conservative statewide 24-hour average background value. Then operation of the concrete batch 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 $32 \mu\text{g}/\text{m}^3$ 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.

6. Facility Classification

This facility is not a major facility as defined in IDAPA 16.01.01.006.55 and IDAPA 16.01.01.008.10. Portable concrete batch plants are not designated facilities as defined in IDAPA 16.01.01.006.27. Concrete batch plants are not subject to federal New Source Performance Standards (NSPS) or National Emission Standards for Hazardous Air Pollutants (NESHAPS) regulation. The SIC code for concrete batch plants is 3273. The AIRS facility classification for this facility is "B" because the uncontrolled potential to emit is less than (100 T/yr). The spreadsheet included as Appendix A automatically determines the facility classification.

7. Regulatory Review

The following rules and regulations have been reviewed for this permit analysis:

<u>IDAPA 16.01.01.201</u>	Permit to Construct;
<u>IDAPA 16.01.01.202</u>	Application Procedures;
<u>IDAPA 16.01.01.203</u>	Permit Requirements for New and Modified Stationary Sources;
<u>IDAPA 16.01.01.209</u>	Procedures for Issuing Permits;
<u>IDAPA 16.01.01.211</u>	Conditions for Permits to Construct;
<u>IDAPA 16.01.01.212</u>	Obligation to Comply;
<u>IDAPA 16.01.01.577</u>	Ambient PM-10 Air Quality Standard;
<u>IDAPA 16.01.01.625</u>	Visible Emissions;
<u>IDAPA 16.01.01.650</u>	Rules for Control of Fugitive Dust;
<u>IDAPA 16.01.01.676</u>	Fuel Burning Equipment - Particulate Matter; and
<u>IDAPA 16.01.01.728.02</u>	Distillate Fuel Oil.

8. Permit Coordination

This concrete batching facility is not a major facility as defined by IDAPA 16.01.01.006.55 and IDAPA 16.01.01.008.10, and it is not an NSPS-affected facility. Therefore, coordination with the Operating Permit Section is not necessary.

9. AIRS Information

Since this facility is considered a new facility for AIRS purposes, an update to the AIRS data base is required. The information necessary to update the data base is included as Appendix C of this technical analysis.

FEES

The facility is not a major facility as defined in IDAPA 16.01.01.008.10. Therefore, registration and registration fees in accordance with IDAPA 16.01.01.526 are not applicable.

RECOMMENDATION

Based on review of application materials and all applicable state and federal rules and regulations, staff recommend that Mountain Home Redi-Mix be issued a PTC for a portable concrete batching facility. No public comment period is recommended, no entity has requested a comment period, and the project does not involve PSD PTC requirements.

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cc: DEQ State Office
Boise Regional Office
EPA Region X

Appendix A

Emission Estimate Calculations

Concrete Batch Plant, Portable

Company Name: Mountain Home Redi-Mix, Inc.
 Permit No.: 777-00265
 Project: Concrete Batch Plants
 Engineer: Gary Gates
 Date: 27-Jun-00
 File: P000078.WK4

TON per Year Emission Limit: 100 [-] Tons/yr
 Concrete Batch Plant Information
 Facility Production Capacity: 100 [-] yd/hr
 Maximum Annual Hours of Operation: 8,760 [-] hr/yr
 Cement Silo: 530 [-] µg/m³, at emission rate of 1 lb/hr
 Baghouse Control Efficiency: 99.00% %
 Cement Hopper: 0 [-] µg/m³, at emission rate of 1 lb/hr
 Modelled 1-hr Concentrations: 99.00% %
 Baghouse Control Efficiency

Generator Set Information
 Generator? (Y/N) Y
 Generator Size: 150 [-] kW
 Units: B (A = Horsepower)
 (B = Kilowatts)
 Fuel Type: A (A = Diesel-Fired Generator)
 (B = Gasoline-Fired or Dual-Fired Generator)
 Conversion Factor: 201.105
 Modelled 1-hr Concentrations: 50.89 [-] µg/m³, at emission rate of 1 lb/hr

Background Concentrations	1-hr	3-hr	1-hr	24-hr	Annual
PM ₁₀	11400	5130	5130	86	32.7
CO					
NO _x					
SO _x		543		144	40
TSP					23.5

INPUTS TO PERMIT TO CONSTRUCT (ETC)	Value	Units
Section B "Attainment Area When Not Collocated"		
Section B.1.1 Facility Throughput Limits:		
Annual Throughput Limit	Estimated	yd/yr
Daily Throughput Limit	Estimated	yd/day
Annual Hours of Operation	8,760	hr/yr
Daily Hours of Operation	24.0	hr/day
Section B.1.3 Generator Hours of Operation:		
Annual Throughput Limit	438,000	yd/yr
Daily Throughput Limit	Estimated	yd/day
Annual Hours of Operation	438,000	yr/yr
Daily Hours of Operation	4,380	hr/day
Section C "Attainment Area When Collocated"		
Section C.1.3 Facility Throughput Limits:		
Annual Throughput Limit	24.0	hr/day
Daily Throughput Limit	Estimated	yd/day
Annual Hours of Operation	438,000	yr/yr
Daily Hours of Operation	4,380	hr/day
Section C.1.4 Generator Hours of Operation:		
Annual Throughput Limit	183,678	yd/yr
Daily Throughput Limit	503	yd/day
Annual Hours of Operation	183,678	yr/yr
Daily Hours of Operation	1,837	hr/day
Section D "Nonattainment Area"		
Section D.1.1 Facility Throughput Limits:		
Annual Throughput Limit	5.0	hr/day
Daily Throughput Limit	Estimated	yd/day
Annual Hours of Operation	183,678	yr/yr
Daily Hours of Operation	1,837	hr/day
Section D.1.3 Generator Hours of Operation:		
Annual Throughput Limit	5.0	hr/day
Daily Throughput Limit	Estimated	yd/day
Annual Hours of Operation	183,678	yr/yr
Daily Hours of Operation	1,837	hr/day

PERMIT LIMITS TABLE

Production Rate:	Non-Attainment Area	Attainment Area	Collocated Attainment Area
Operational Schedule:	100 yd/hr	100 yd/hr	100 yd/hr
Throughput Limits:	5.0 hr/day	24.0 hr/day	24.0 hr/day
Limiting Pollutant:	PM ₁₀		
APES Facility Classification:	B	B	B
	Estimated	Estimated	Estimated
	8,760 hr/yr	8,760 hr/yr	4,380 hr/yr
	438,000 yd/yr	438,000 yd/yr	438,000 yd/yr
CO 1-hr Standard	SO ₂ 3-hr Standard	CO 8-hr Standard	CO 8-hr Standard
minutes/1-hr	hr/3-hr	hr/8-hr	hr/8-hr
60.00	3.00	3.00	3.00
5.00	5.00	5.00	5.00

Pollutant	1-hr		3-hr		24-hr		Annual
	PM ₁₀	CO	PM ₁₀	CO	PM ₁₀	CO	
PM ₁₀	11.658		5.178		1.0		37
CO							45
SO ₂							23
TSP							

NON-ATTAINMENT AREAS

Pollutant	PM ₁₀ Emissions		PM _{2.5} Emissions		PM ₁₀ Emissions		PM _{2.5} Emissions	
	PM ₁₀	PM _{2.5}	PM ₁₀	PM _{2.5}	PM ₁₀	PM _{2.5}	PM ₁₀	PM _{2.5}
Concrete Batch Plant Loading (Nonroad)	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
Concrete Batch Plant Loading (Concrete)	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
Total	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14

Generator and Concrete Batch Plant Source Emissions - Non-Attainment Areas

Pollutant	Generator Emissions		Concrete Batch Plant Emissions		PM ₁₀ Emissions		PM _{2.5} Emissions		Hours of Operation		Emission Rate		PM ₁₀ Emissions		PM _{2.5} Emissions		Annual Impacts		Calculated 24-hr Impacts		Calculated Annual Impacts		Calculated 1-hr Impacts		
	PM ₁₀	PM _{2.5}	PM ₁₀	PM _{2.5}	PM ₁₀	PM _{2.5}	PM ₁₀	PM _{2.5}	PM ₁₀	PM _{2.5}	PM ₁₀	PM _{2.5}	PM ₁₀	PM _{2.5}	PM ₁₀	PM _{2.5}	PM ₁₀	PM _{2.5}	PM ₁₀	PM _{2.5}	PM ₁₀	PM _{2.5}	PM ₁₀	PM _{2.5}	
PM ₁₀	0.0023	0.0023	0.0023	0.0023	0.0023	0.0023	0.0023	0.0023	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837
PM _{2.5}	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837
CO	0.0310	0.0310	0.0310	0.0310	0.0310	0.0310	0.0310	0.0310	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837
SO ₂	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837
TSP	0.0051	0.0051	0.0051	0.0051	0.0051	0.0051	0.0051	0.0051	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837

Note: 1. TSP calculations include concrete batch plant source emissions.

2. CO 1-hr Averaging Period

3. CO 3-hr Averaging Period

4. SO₂ 3-hr Averaging Period

** Annual ambient TSP concentration based on PM₁₀ in PM₁₀ Non-Attainment Areas.

Attainment Area - Collocated Unit - Calculations

Pollutant	Collocated Ambient Air Quality Standards - Calculations		Annual (99th Percentile)	
	1-hr	3-hr	24-hr	Annual
PM ₁₀	1251.6533	2481.147248173	8.13384564	-1.68319774
CO				
SO ₂				
TSP				

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

Pollutant	1-hr		3-hr		24-hr		Annual
	PM ₁₀	CO	PM ₁₀	CO	PM ₁₀	CO	
PM ₁₀	11.000		31.50		86		317
CO							40
SO ₂							23.5
TSP							

Appendix B

Modeling

Concrete Batch Plant, Portable

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

Mt. Home Redi-Mix ~~Generator~~ *Baghouse*

SIMPLE TERRAIN INPUTS:

SOURCE TYPE = AREA
EMISSION RATE (G/(S-M**2)) = 0.428250
SOURCE HEIGHT (M) = 5.7912
LENGTH OF LARGER SIDE (M) = 0.9653
LENGTH OF SMALLER SIDE (M) = 0.3048
RECEPTOR HEIGHT (M) = 0.0000
URBAN/RURAL OPTION = RURAL

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

MODEL ESTIMATES DIRECTION TO MAX CONCENTRATION

BUOY. FLUX = 0.000 M**4/S**3; MOM. FLUX = 0.000 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)	U10M STAB	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
1.	0.000	1	1.0	1.0	320.0	5.79 0.
100.	484.0	5	1.0	1.0	10000.0	5.79 1.
200.	464.9	6	1.0	1.0	10000.0	5.79 0.
300.	372.8	6	1.0	1.0	10000.0	5.79 0.
400.	276.7	6	1.0	1.0	10000.0	5.79 0.
500.	209.1	6	1.0	1.0	10000.0	5.79 0.
600.	162.7	6	1.0	1.0	10000.0	5.79 0.
700.	130.1	6	1.0	1.0	10000.0	5.79 0.
800.	107.6	6	1.0	1.0	10000.0	5.79 0.

900.	90.67	6	1.0	1.0	10000.0	5.79	0.
1000.	77.65	6	1.0	1.0	10000.0	5.79	0.
1100.	67.68	6	1.0	1.0	10000.0	5.79	0.
1200.	59.64	6	1.0	1.0	10000.0	5.79	0.
1300.	53.06	6	1.0	1.0	10000.0	5.79	0.
1400.	47.59	6	1.0	1.0	10000.0	5.79	0.
1500.	42.99	6	1.0	1.0	10000.0	5.79	0.
1600.	39.08	6	1.0	1.0	10000.0	5.79	0.
1700.	35.72	6	1.0	1.0	10000.0	5.79	0.
1800.	32.81	6	1.0	1.0	10000.0	5.79	0.
1900.	30.27	6	1.0	1.0	10000.0	5.79	0.
2000.	28.03	6	1.0	1.0	10000.0	5.79	0.
2100.	26.16	6	1.0	1.0	10000.0	5.79	0.
2200.	24.49	6	1.0	1.0	10000.0	5.79	0.
2300.	22.99	6	1.0	1.0	10000.0	5.79	0.
2400.	21.65	6	1.0	1.0	10000.0	5.79	0.
2500.	20.43	6	1.0	1.0	10000.0	5.79	0.
2600.	19.32	6	1.0	1.0	10000.0	5.79	0.
2700.	18.32	6	1.0	1.0	10000.0	5.79	0.
2800.	17.39	6	1.0	1.0	10000.0	5.79	0.
2900.	16.54	6	1.0	1.0	10000.0	5.79	0.
3000.	15.77	6	1.0	1.0	10000.0	5.79	0.
3500.	12.81	6	1.0	1.0	10000.0	5.79	0.
4000.	10.70	6	1.0	1.0	10000.0	5.79	0.
4500.	9.124	6	1.0	1.0	10000.0	5.79	0.
5000.	7.914	6	1.0	1.0	10000.0	5.79	0.
5500.	6.958	6	1.0	1.0	10000.0	5.79	0.
6000.	6.187	6	1.0	1.0	10000.0	5.79	0.
6500.	5.553	6	1.0	1.0	10000.0	5.79	0.
7000.	5.024	6	1.0	1.0	10000.0	5.79	0.
7500.	4.592	6	1.0	1.0	10000.0	5.79	0.
8000.	4.222	6	1.0	1.0	10000.0	5.79	0.
8500.	3.902	6	1.0	1.0	10000.0	5.79	0.
9000.	3.623	6	1.0	1.0	10000.0	5.79	0.
9500.	3.376	6	1.0	1.0	10000.0	5.79	0.
10000.	3.159	6	1.0	1.0	10000.0	5.79	0.
15000.	1.866	6	1.0	1.0	10000.0	5.79	0.
20000.	1.318	6	1.0	1.0	10000.0	5.79	0.
25000.	1.007	6	1.0	1.0	10000.0	5.79	0.
30000.	0.8088	6	1.0	1.0	10000.0	5.79	0.
40000.	0.5837	6	1.0	1.0	10000.0	5.79	0.
50000.	0.4525	6	1.0	1.0	10000.0	5.79	0.

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

52. 530.1 3 1.0 1.0 320.0 5.79 2.

*** SUMMARY OF SCREEN MODEL RESULTS ***

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
----- SIMPLE TERRAIN	----- 530.1	----- 52.	----- 0.

06/27/00
13:28:30

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

Mt. Home Redi-Mix Generator

SIMPLE TERRAIN INPUTS:

SOURCE TYPE = POINT
EMISSION RATE (G/S) = 0.126000
STACK HEIGHT (M) = 3.6576
STK INSIDE DIAM (M) = 0.1268
STK EXIT VELOCITY (M/S) = 43.7294
STK GAS EXIT TEMP (K) = 835.9278
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 = 1.119 M**4/S**3; MOM. FLUX = 2.696 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)	U10M STAB	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	SIGMA DWASH	
1.	0.000	1	1.0	1.0	320.0	26.97	1.21	1.16	NO
100.	48.93	4	8.0	8.0	2560.0	6.57	8.24	4.73	NO
200.	41.60	4	3.5	3.5	1120.0	10.32	15.68	8.71	NO
300.	33.20	4	2.0	2.0	640.0	15.31	22.85	12.54	NO
400.	27.23	4	1.5	1.5	480.0	19.20	29.79	15.90	NO

500.	23.18	4	1.5	1.5	480.0	19.20	36.42	18.83	NO
600.	19.99	4	1.0	1.0	320.0	26.97	43.23	22.23	NO
700.	18.05	4	1.0	1.0	320.0	26.97	49.64	24.94	NO
800.	16.11	4	1.0	1.0	320.0	26.97	55.97	27.60	NO
900.	14.32	4	1.0	1.0	320.0	26.97	62.24	30.21	NO
1000.	13.08	6	1.0	1.0	10000.0	29.27	34.67	15.76	NO
1100.	13.42	6	1.0	1.0	10000.0	29.27	37.68	16.53	NO
1200.	13.60	6	1.0	1.0	10000.0	29.27	40.68	17.28	NO
1300.	13.63	6	1.0	1.0	10000.0	29.27	43.66	18.02	NO
1400.	13.56	6	1.0	1.0	10000.0	29.27	46.62	18.75	NO
1500.	13.41	6	1.0	1.0	10000.0	29.27	49.57	19.46	NO
1600.	13.20	6	1.0	1.0	10000.0	29.27	52.51	20.16	NO
1700.	12.95	6	1.0	1.0	10000.0	29.27	55.42	20.84	NO
1800.	12.67	6	1.0	1.0	10000.0	29.27	58.33	21.52	NO
1900.	12.37	6	1.0	1.0	10000.0	29.27	61.22	22.18	NO
2000.	12.05	6	1.0	1.0	10000.0	29.27	64.09	22.83	NO
2100.	11.70	6	1.0	1.0	10000.0	29.27	66.96	23.38	NO
2200.	11.36	6	1.0	1.0	10000.0	29.27	69.81	23.93	NO
2300.	11.03	6	1.0	1.0	10000.0	29.27	72.65	24.46	NO
2400.	10.71	6	1.0	1.0	10000.0	29.27	75.47	24.98	NO
2500.	10.40	6	1.0	1.0	10000.0	29.27	78.29	25.50	NO
2600.	10.09	6	1.0	1.0	10000.0	29.27	81.10	26.00	NO
2700.	9.803	6	1.0	1.0	10000.0	29.27	83.89	26.50	NO
2800.	9.522	6	1.0	1.0	10000.0	29.27	86.67	26.99	NO
2900.	9.253	6	1.0	1.0	10000.0	29.27	89.45	27.47	NO
3000.	8.993	6	1.0	1.0	10000.0	29.27	92.21	27.95	NO
3500.	7.844	6	1.0	1.0	10000.0	29.27	105.90	29.89	NO
4000.	6.919	6	1.0	1.0	10000.0	29.27	119.39	31.69	NO
4500.	6.164	6	1.0	1.0	10000.0	29.27	132.70	33.38	NO
5000.	5.539	6	1.0	1.0	10000.0	29.27	145.85	34.98	NO
5500.	5.015	6	1.0	1.0	10000.0	29.27	158.86	36.50	NO
6000.	4.571	6	1.0	1.0	10000.0	29.27	171.73	37.95	NO
6500.	4.190	6	1.0	1.0	10000.0	29.27	184.49	39.33	NO
7000.	3.861	6	1.0	1.0	10000.0	29.27	197.13	40.66	NO
7500.	3.581	6	1.0	1.0	10000.0	29.27	209.67	41.81	NO
8000.	3.335	6	1.0	1.0	10000.0	29.27	222.11	42.91	NO
8500.	3.117	6	1.0	1.0	10000.0	29.27	234.45	43.97	NO
9000.	2.924	6	1.0	1.0	10000.0	29.27	246.72	45.00	NO
9500.	2.751	6	1.0	1.0	10000.0	29.27	258.90	45.99	NO
10000.	2.595	6	1.0	1.0	10000.0	29.27	271.00	46.96	NO
15000.	1.621	6	1.0	1.0	10000.0	29.27	388.50	55.37	NO
20000.	1.174	6	1.0	1.0	10000.0	29.27	501.00	60.74	NO
25000.	0.9113	6	1.0	1.0	10000.0	29.27	609.79	65.27	NO
30000.	0.7404	6	1.0	1.0	10000.0	29.27	715.63	69.22	NO
40000.	0.5394	6	1.0	1.0	10000.0	29.27	920.25	74.85	NO

50000. 0.4217 6 1.0 1.0 10000.0 29.27 1117.45 79.53 NO

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

65. 50.89 3 5.0 5.0 1600.0 8.32 8.59 5.26 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	MAX CONC	DIST TO TERRAIN	
PROCEDURE	(UG/M**3)	MAX (M)	HT (M)

SIMPLE TERRAIN	50.89	65.	0.
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Appendix C

AIRS Database Update Form

Concrete Batch Plants, Portable

