Engineering Evaluation Report
Mission Valley Coffee Roasting Company
151 Washington Blvd.
Fremont, CA 94539
Plant # 17262
Application # 13231

I. BACKGROUND

The Mission Valley Coffee Roasting Company is relocating their facility in mid September 2005. They lost their lease at the current site. They are applying for an A/C and P/O for their coffee roaster. The coffee roaster is the same one that was operating at the current location at 40059 Mission Blvd in Fremont (Plant 11759). This new location is within a 1000 foot from four K-12 schools. Public noticing will be required. The roaster is a small, natural gas-fired unit (48,000 BTU/hr). They are applying for an Authority to Construct and a Permit to Operate for the following equipment:

S-1 BATCH COFFEE ROASTER; Diedrich Model IR-12K, 25 pounds per hour capacity

The applicant requested the same parameters be used to evaluate this permit that were used for the permit at their previous location. The same permit conditions will also be imposed. Green coffee throughput will be limited to 10 tons per year, which was the limit at the previous location. The maximum operating rate and hours are 25 lbs per hour and 8 hours per day respectively.

II. EMISSION CALCULATIONS

Emissions from combustion of natural gas at the batch roaster

Basis:

- Coffee Throughput = 10 TPY
- Maximum Operating Rate: 25 lbs/hr
- Operation hours = 20,000 lbs/yr/25 lb/hr = 800 hrs/yr
- Roaster Firing Rate = 0.048 MM BTU/hr
- Total fuel throughput = 0.048 MMBTU/hr (800 hr/yr) = 38.4 MMBTU/yr of natural gas.
- Heat capacity = 1,050 MMBtu/10^6 ft^3 natural gas
- Emission factors taken from AP-42, Table 1.4-2 (revised 7/1/98) for small boiler <100 MMBtu/hr
  NOx = (100 lb/ MMscf)/(1050 MMBtu/10^6 ft^3) = 0.095 lb/MMBtu
  CO = (84 lb/ MMscf)/(1050 MMBtu/10^6 ft^3) = 0.08 lb/MMBtu
  SO2 = (0.6 lb/MMscf)/(1050 MMBtu/10^6 ft^3) = 0.00057 lb/MMBtu
  PM10 = (7.6 lb/MMscf)/(1050 MMBtu/10^6 ft^3) = 0.00724 lb/MMBtu
  POC = (5.5 lb/MMscf)/(1050 MMBtu/10^6 ft^3) = 0.00524 lb/MMBtu
  NPOC = (2.3 lb/MMscf)/(1050 MMBTU/10^6 ft^3) = 0.00219 lb/MMBtu

Combustion Emission Calculations:

NOx =	38.4 MMBtu/yr X 0.095 lb/MMBtu =	3.65 lb/yr
CO =	38.4 MMBtu/yr X 0.08 lb/MMBtu =	3.07 lb/yr
SO2 =	38.4 MMBtu/yr X 0.00057 lb/MMBtu =	0.02 lb/yr
PM10 =	38.4 MMBtu/yr X 0.00724 lb/MMBtu =	0.28 lb/yr
POC =	38.4 MMBtu/yr X 0.00524 lb/MMBtu =	0.20 lb/yr,
NPOC =	38.4 MMBtu/yr X 0.00219 lb/MMBtu =	0.08 lb/yr

Emissions from batch roaster:

Emission factors for emissions of particulate, NOx, PM10 and POC are taken from Permit Handbook Section 11, Chapter 3.

Pollutants	Emission Factors (lb/ton)	Throughput (tons/yr)	Daily Maximum Emissions (lb/day)	Daily Annual Average Emissions (lb/day)	Annual Emissions (lb/yr)	Annual Emissions (TPY)
NO_x	0.1	10	< 0.01	< 0.01	1	< 0.01
PM_{10}	4.2	10	0.16	0.11	42	0.02
POC	0.86	10	0.03	0.02	8.6	< 0.01

(4.2 lbs/ton)(10 tons/yr)/260 days/yr = 0.16 lb/day – daily max emissions
(4.2 lbs/ton)(10 tons/yr)/365 days/yr = 0.11 lb/day – annual average emissions

Compliance with Regulation 6
Regulation 6-310 Particulate Weight Limitation:

Basis: 1 hour of roaster operation
25 lbs/hr roaster capacity
roaster emission point: 340 cfm @ 425 degrees F
Limitation of 0.15 grain/dscf

Grain Loading calculation from coffee roasting process:
[42 lb PM_{10}/yr X 7000 grain/lb] / [60 min/hr X 800 hr/yr X 340 cfm] = 0.02 grain/dscf.

III. PLANT CUMULATIVE INCREASE

Pollutant	Current TPY	Annual Emissions (lbs/yr)	Annual Emissions (TPY)
NO_x	0	4.65	0.002
PM_{10}	0	45.07	0.02
POC	0	8.80	0.004
CO	0	3.07	0.002
NPOC	0	0.08	Negligible
SO2	0	0.02	Negligible

IV. TOXIC RISK SCREENING ANALYSIS

Emission factors for emissions of formaldehyde are taken from Permit Handbook Section 11, Chapter 3.

Toxic Pollutants	Emission Factors (lb/ton)	Annual Emissions (lbs/yr)	Trigger Level (lb/yr)
Formaldehyde	0.054	0.54	33

(Based on 10 tons per year production)
No toxic risk screening is required.

V. BACT ANALYSIS

BACT is not required for S-1 (Coffee Roaster), because criteria pollutant emissions do not exceed 10 pounds per worst-case day.

VI. OFFSET ANALYSIS

Offsets are not required since facility POC and NOx emissions do not exceed 10 ton/yr.

VII. CEQA REVIEW

This application is considered to be ministerial under the District's CEQA guidelines (Regulation 2-1-311) and therefore is not subject to CEQA review. The engineering review for this project requires only the application of standard permit conditions and standard emission factors in accordance with Permit Handbook Chapter 11.3.

VIII. STATEMENT OF COMPLIANCE

Source S-1 will comply with Regulation 6 as the estimated particulate emission of 0.02 gr/dscf will comply with the 0.15 gr/dscf standard allowed per Regulation 6-310.

District records show no complaints were received and no violation history at the previous location (P# 11759) since the initial operation of the coffee roaster in 1993 to the present.

NSPS, PSD, and NESHAPS are not triggered.

This facility is located within 1000 feet of the following schools:

Montessori School of Fremont and Alsion Montessori Middle High School
155 Washington Blvd
Fremont, CA 94539
Phone (510) 445-1127 or (510) 490-1993
School Enrollment – 150 Students

Dominican Kindergarten
43326 Mission Blvd.
Fremont, CA 94539
Phone (510) 651-7978
School Enrollment – 34 Students

St Joseph's School
43222 Mission Blvd.
Fremont, CA 94539
Phone: (510) 656-6525
Student Enrollment – 300 Students

Mission Valley Coffee Roasting Company is subject to the public notification requirements of Regulation 2-1-412. A public notice will be prepare and posted on the Internet and mailed to all parents and guardians of students enrolled at the above schools. In addition, public notices will be mailed to all residential neighbors located within 1000 feet of Mission Valley Coffee Roasting Company's facility.

VIII. PERMIT CONDITIONS

1. **The owner/operator shall not roast more than 10 tons of green coffee beans at Coffee Roaster, S-1, in any consecutive 12-month period. [Basis: Cumulative Increase]**

2. **The owner/operator of S-1, Coffee Roaster shall use only natural gas fuel at S-1. [Basis: Regulation 6-301, Cumulative Increase]**

3. **The permit to operate for S-1 Coffee Roaster is contingent upon compliance with Regulation 1-301, Standard for Public Nuisance, and Regulation 7, Odorous Substances. Upon receipt of a violation for either of these statues, the APCO may require the owner/operator to curtail operations until either the operation can be modified or the meteorological conditions change, such that the community is no longer adversely impacted. [Basis: Regulation 1-301, 7-301, 7-302, 7-303]**

4. **To demonstrate compliance with the above conditions, the owner/operator shall maintain the following records and provide all of the data necessary to evaluate compliance with the above conditions, including the following information:**

   a. **Daily records of the quantity of green coffee beans roasted at S-1.**

   b. **Daily roaster operating times.**

   c. **Daily usage records shall be totaled monthly.**

   All records shall be retained onsite for two years from the date of entry, and made available for inspection by District staff upon request. These record-keeping requirements shall not replace the record-keeping requirements contained in any applicable District Regulations. [Basis: Cumulative Increase]

IX. RECOMMENDATION

It is recommended that an Authority to Construct be granted to The Mission Valley Coffee Roasting Company for:

S-1 BATCH COFFEE ROASTER; Diedrich Model IR-12K, 25 pounds per hour capacity

By:_____ _____

Nancy Yee
Air Quality Engineer

Date