Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection
Northeast Regional Office • 205B Lowell Street, Wilmington MA 01887 • 978-694-3200

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Commissioner

Date Stamped: May 03, 2012

Mr. Chuck Brandano
Multigrains Bakeries, Inc.
117 Water Street
Lawrence, MA 01842

RE: Lawrence
Transmittal No.: X235077
Application No.: NE-12-004
Class: *NM50*
FMF No.: 130938
AIR QUALITY PLAN APPROVAL

Dear Mr. Brandano:

The Massachusetts Department of Environmental Protection ("MassDEP"), Bureau of Waste Prevention, has reviewed your Non-major Comprehensive Plan Application ("Application") listed above. This Application concerns the operation of forty four rack type baking ovens and four deck type baking ovens at your commercial bakery facility located at 117 Water Street in Lawrence, Massachusetts ("Facility"). The Application bears the seal and signature of Eric A. Pearson Massachusetts Registered Professional Engineer number 39741.

This Application was submitted in accordance with 310 CMR 7.02 Plan Approval and Emission Limitations as contained in 310 CMR 7.00 "Air Pollution Control," regulations adopted by MassDEP pursuant to the authority granted by Massachusetts General Laws, Chapter 111, Section 142 A-J, Chapter 21C, Section 4 and 6, and Chapter 21E, Section 6. MassDEP's review of your Application has been limited to air pollution control regulation compliance and does not relieve you of the obligation to comply with any other regulatory requirements.

MassDEP has determined that the Application is administratively and technically complete and that the Application is in conformance with the Air Pollution Control regulations and current air pollution control engineering practice, and hereby grants this **Plan Approval** for said Application, as submitted, subject to the conditions listed below.

Please review the entire Plan Approval, as it stipulates the conditions with which the Facility owner/operator ("Permittee") must comply in order for the Facility to be operated in compliance with this Plan Approval.

1. DESCRIPTION OF FACILITY AND APPLICATION

Multigrains Bakery located at 117 Water Street, in Lawrence, Massachusetts ("the Facility") houses 44 existing rack and four existing deck type ovens that bake yeast-leavened bread. The 44 deck ovens are manufactured by three different manufacturers (Zucchelli, Adamatic, and Revent) but are all similar in effective design. The combined heat input capacity of the 44 rack ovens is 17.4 million British thermal units per hour (MMBtu/hr). The four deck type ovens are manufactured by Ideal and the combined heat input capacity of the four ovens is 1.6 MMBtu/hr. The Facility also houses a tunnel oven that is disconnected from all utilities and cannot be operated. In the event this oven is to be restarted, a written Approval must be obtained prior to operating the oven. In addition, the Facility houses several small space and hot water heaters. The non-operational tunnel oven and other small fuel burning equipment are not the focus of this Approval.

The primary air emissions from the bakery operations are volatile organic compounds (VOC) which are emitted by the bakery ovens. The primary VOC emitted is ethanol. In yeast-leavened breads, yeast metabolizes sugars in an anaerobic fermentation, producing carbon dioxide (CO_2) that is largely responsible for the bread rising. Besides the CO_2, equimolar amounts of ethanol and small amounts of other VOC are produced. The oven is the predominant emissions source since ethanol is emitted when the dough is exposed to high temperatures in the oven, with yeast concentration, total fermentation time, and amount of product produced being the critical factors in determining VOC emissions. VOC emissions are proportional to the amount of bread baked.

Presuming compliance with this Plan Approval, the Facility will be categorized as a minor source of air pollution with potential VOC and Nitrogen Oxides (NOx) emissions each less than fifty (50) tons per year.

2. EMISSION UNIT (EU) IDENTIFICATION

Each Emission Unit (EU) identified in Table 1 is subject to and regulated by this Plan Approval:

TABLE 1

Process	Description of equipment	Maximum oven design capacity in MMBtu/hr[1]	Fuel
EU-1 (Ovens 1 through 44)	Rack Ovens: Zucchelli, Adamatic, Revent	Total for all ovens = 17.4 MMBtu/hr	Natural Gas
EU-2 (Ovens 45-48)	Deck Ovens: Ideal, four tier six-foot wide ovens	Total for all ovens = 1.6 MMBtu/hr	

Table 1 Key:
1: MMBtu/hr means 1,000,000 British thermal units per hour

This facility stores flour in silos located inside the building and any exhaust from the silos is discharged inside the building. The flour is pneumatically conveyed from the storage silos through a totally enclosed delivery system to the mixing areas.

3. APPLICABLE REQUIREMENTS

A. OPERATIONAL, PRODUCTION and EMISSION LIMITS

The Permittee is subject to, and shall not exceed the Operational, Production, and Emission Limits as contained in Table 2 below:

Table 2

EU#	Operational / Production Limit	Air Contaminant	Emission Limit
Facility-Wide	1. 4,369 tons of baked product per month	VOC	7.9 tons TPM
	2. 17,363 tons of baked product per consecutive twelve month period	VOC	31.1 tons TPY
	3. CO_2 from the Facility, including the combustion of natural gas and from the process of yeast fermentation of sugar	CO_2	2950 tons of CO_2 TPM
		CO_2	16700 tons of CO_2 TPY
	4. The visible emissions from this Facility shall not exceed 10 percent opacity.	Opacity	Less than or equal to ten(10) percent

Table 2 Key:
EU# = Emission Unit Number
VOC = Volatile Organic Compound
CO_2 = Carbon Dioxide
TPM = tons per month
TPY = tons per consecutive12-month period

B. COMPLIANCE DEMONSTRATION

The Permittee is subject to, and shall comply with, the monitoring, testing, record keeping, and reporting requirements as contained in Tables 3, 4, and 5 below:

Table 3

EU#	Monitoring and Testing Requirements
Facility-wide	1. Monitor the following on a daily basis: a. The name and type of each product baked; b. The baker's percent of yeast used to the nearest tenth of a percent, for each product baked; c. The fermentation time (total yeast action time) in hours to the nearest tenth of an hour, for each product baked; d. The amount of product baked in tons, for each product baked; e. The corresponding VOC emission factor based on the following formula: $EF=0.95Y + 0.195T - 0.51S - 0.86ST + 1.90$ Where: EF = VOC emission factor in pounds of VOC per ton of product baked Y = initial baker's percent of yeast T = total yeast action time in hours S = final (spike) baker's percent of yeast ST = spiking time in hours CO_{2bread} = VOC (unless based on actual emissions test data) Where: CO_{2bread} = emissions of CO_2 from bread baking in pounds per day VOC = emissions in pounds per day
	2. Monitor the natural gas usage of all combustion equipment at the facility on a monthly basis. Natural gas consumption billing records are acceptable. The corresponding monthly emission rate of CO_2 emitted from the combustion equipment shall be based on the following formula (unless based on actual emissions testing data): $CO_{2ovens} = NG_{usage}$ x (60 tons CO_2/MMscf) Where: CO_{2ovens}= emissions of CO_2 in tons from combusting natural gas per month including ovens, heaters, and air make-up units. NG_{usage} = monthly natural gas used in the combustion equipment at the facility in million standard cubic feet MMscf = million standard cubic feet
	3. For each product baked, monitor the actual monthly production in tons of baked product, actual monthly VOC emissions in tons, and actual monthly CO_2 emissions in tons.
	4. For each product baked, monitor the actual consecutive twelve month time period production in tons of baked product, actual consecutive twelve month time period VOC emissions in tons, and actual consecutive twelve month time period CO_2 emissions in tons.
	5. Monitor facility operations such that the total facility-wide monthly and twelve month time period emissions of VOC and CO_2 do not exceed the emissions limits established in Section 3.A. of this Approval.

Table 3

EU#	Monitoring and Testing Requirements
Facility-wide	6. Monitor facility operations such that the total facility-wide monthly and twelve month rolling tons of total product produced do not exceed the production restrictions established in Section 3.A. of this Approval, provided that VOC emissions do not exceed the VOC emission limits contained in Table 2, paragraph 1, above.
	7. Monitor facility operations such that accurate reports regarding Greenhouse Gas emissions (i.e. CO_2) can be submitted in accordance with applicable requirements contained in 310 CMR 7.71.
	8. Monitor all operations to ensure sufficient information is available to comply with 310 CMR 7.12 Source Registration.
	9. If and when MassDEP requires it, the Permittee shall conduct emission testing in accordance with USEPA Reference Test Methods and regulation 310 CMR 7.13.

Table 3 Key:
EU# = Emission Unit Number

Table 4

EU#	Record Keeping Requirements
Facility-wide	1. Maintain the following records, on a daily basis: a. The name and type of each product baked; b. The baker's percent of yeast used to the nearest tenth of a percent, for each product baked; c. The fermentation time (total yeast action time) in hours to the nearest tenth of an hour, for each product baked; d. The amount of product baked in tons, for each product baked; e. The corresponding daily emission rate for each product baked, based on the specified emission factors and formulas specified in Table 2 above.
	2. Record the natural gas usage of all combustion equipment at the facility on a monthly basis. Natural gas consumption billing records are acceptable. The corresponding monthly emission rate of CO_2 emitted from the combustion equipment shall be based on the following formula: $CO_{2ovens} = NG_{usage}$ x (60 tons CO_2/MMscf) Where: CO_{2ovens}= emissions of CO_2 in tons from combusting natural gas per month including ovens, heaters, and air make-up units. NG_{usage} = monthly natural gas used in the combustion equipment at the facility in million standard cubic feet. MMscf = million standard cubic feet.
	3. For each product baked, maintain a record of the actual monthly production in tons of baked product per month, actual monthly VOC emissions in tons, and actual monthly CO_2 emissions in tons.

Table 4	
EU#	**Record Keeping Requirements**
Facility-wide	4. For each product baked, maintain a record of the actual consecutive twelve month time period production in tons of baked product, actual consecutive twelve month time period VOC emissions in tons, and actual consecutive twelve month time period CO_2 emissions in tons.
	5. Maintain facility records such that accurate reports regarding Greenhouse Gas emissions (i.e. CO_2) can be submitted in accordance with applicable requirements contained in 310 CMR 7.71.
	1. Maintain adequate records on-site to demonstrate compliance with all operational, production, and emission limits contained in Table 2 above. Records shall also include the actual emissions of air contaminant(s) emitted for each calendar month and for each consecutive twelve month period (current month plus prior eleven months). These records shall be compiled no later than the 15th day following each month. An electronic version of the MassDEP approved record keeping form, in Microsoft Excel format, can be downloaded at http://www.mass.gov/dep/air/approvals/aqforms.htm#report .
	2. Maintain records of monitoring and testing as required by Table 3.
	3. Maintain a copy of this Plan Approval, underlying Application and the most up-to-date SOMP for the EUs approved herein on-site.
	4. Maintain a record of routine maintenance activities performed on the approved EUs. The records shall include, at a minimum, the type or a description of the maintenance performed and the date and time the work was completed.
	5. Maintain a record of all malfunctions affecting air contaminant emission rates on the approved EUs. At a minimum, the records shall include: date and time the malfunction occurred; description of the malfunction; corrective actions taken; the date and time corrective actions were initiated and completed; and the date and time emission rates returned to compliant operation.
	6. Maintain records to ensure sufficient information is available to comply with 310 CMR 7.12 Source Registration.
	7. Maintain records required by this Plan Approval on-site for a minimum of five (5) years.
	8. Make records required by this Plan Approval available to MassDEP and USEPA personnel upon request.

Table 4 Key:
EU# = Emission Unit Number
PCD = Pollution Control Device
SOMP = Standard Operating and Maintenance Procedure
USEPA = United States Environmental Protection Agency

Table 5	
EU#	**Reporting Requirements**
Facility-wide	1. The Permittee shall submit semi-annual reports to this office containing actual emissions rates, both monthly and running 12-month totals, for each air contaminant specified in Table 2 above by January 30 and July of each year. The electronic version of the MassDEP approved Report Form in Microsoft Excel format can be downloaded at http://www.mass.gov/dep/air/approvals/aqforms.htm#report.
	2. By April 15th of each year, the Facility shall report and certify direct emissions of greenhouse gases for the previous calendar year in accordance with applicable requirements contained in 310 CMR 7.71(5) through (7).
	3. Submit to MassDEP all information required by this Plan Approval over the signature of a "Responsible Official" as defined in 310 CMR 7.00 and shall include the Certification statement as provided in 310 CMR 7.01(2)(c).
	4. Notify the Northeast Regional Office of MassDEP, BWP C&E Chief by telephone [978-694-3200], email, Nero.Air@MassMail.State.MA.US or fax [978-694-3499], as soon as possible, but no later than one (1) business day after discovery of an exceedance(s) of Table 2 requirements. A written report shall be submitted to the C&E Chief at MassDEP within three (3) business days thereafter and shall include: identification of exceedance(s), duration of exceedance(s), reason for the exceedance(s), corrective actions taken, and action plan to prevent future exceedance(s).
	5. Report annually to MassDEP, in accordance with 310 CMR 7.12, all information as required by the Source Registration/Emission Statement Form. The Permittee shall note therein any minor changes (under 310 CMR 7.02(2)(e), 7.03, 7.26, etc.), which did not require Plan Approval.
	6. Provide a copy to MassDEP of any record required to be maintained by this Plan Approval within 30-days from MassDEP's request.
	7. Submit to MassDEP for approval a stack emission pretest protocol, at least 30 days prior to any emission testing, for emission testing as defined in Table 3 Monitoring and Testing Requirements.
	8. Submit to MassDEP a final stack emission test results report, within 45 days after any emission testing, for emission testing as defined in Table 3 Monitoring and Testing Requirements.

Table 5 Key:
EU# = Emission Unit Number

4. SPECIAL TERMS AND CONDITIONS

The Permittee is subject to, and shall comply with, the following special terms and conditions:

A. The Permittee shall comply with the Special Terms and Conditions as contained in Table 6 below:

Table 6	
EU#	**Special Terms and Conditions**
Facility-wide	1. The Permittee shall not reconnect and operate the existing tunnel oven unless first submitting a plan application and then obtaining a written Plan Approval from Mass DEP to do so.

Table 6 Key:
EU# = Emission Unit Number

B. The Permittee shall install and use exhaust stacks, as required in Table 7, on each of the Emission Units that is consistent with good air pollution control engineering practice and that discharges so as to not cause or contribute to a condition of air pollution. Each exhaust stack shall be configured to discharge the gases vertically and shall not be equipped with any part or device that restricts the vertical exhaust flow of the emitted gases, including but not limited to rain protection devices known as "shanty caps" and "egg beaters." The Permittee shall install and utilize exhaust stacks with the following parameters, as contained in Table 7 below, within 60 days of issuance of this Plan Approval, for the Emission Units that are regulated by this Plan Approval. The Permittee shall notify MassDEP in writing within seven (7) days of the completion of modifications to the existing stacks. The notifications shall be sent to the attention of the BWP C&E, MassDEP Northeast Regional Office. The notification shall include the date when each stack modification was completed and a photograph of each modified stack.

Table 7				
EU#	**Stack Height Above Ground (feet)**	**Stack Inside Exit Dimensions** *(Feet)*	**Stack Gas Exit Velocity Range (feet per second)**	**Stack Gas Exit Temperature Range (^{o}F)**
EU-1, EU-2	35 feet above ground and/or 10 feet above roof top	0.8-1.2	10-40	100-350

Table 7 Key:
EU# = Emission Unit Number
^{o}F = Degree Fahrenheit

5. GENERAL CONDITIONS

The Permittee is subject to, and shall comply with, the following general conditions:

A. Pursuant to 310 CMR 7.01, 7.02, 7.09 and 7.10, should any nuisance condition(s), including but not limited to smoke, dust, odor or noise, occur as the result of the operation of the

Facility, then the Permittee shall immediately take appropriate steps including shutdown, if necessary, to abate said nuisance condition(s).

B. If asbestos remediation/removal will occur as a result of the approved construction, reconstruction, or alteration of this Facility, the Permittee shall ensure that all removal/remediation of asbestos shall be done in accordance with 310 CMR 7.15 in its entirety and 310 CMR 4.00.

C. If construction or demolition of an industrial, commercial or institutional building will occur as a result of the approved construction, reconstruction, or alteration of this Facility, the Permittee shall ensure that said construction or demolition shall be done in accordance with 310 CMR 7.09(2) and 310 CMR 4.00.

D. Pursuant to 310 CMR 7.01(2)(b) and 7.02(7)(b), the Permittee shall allow MassDEP and / or USEPA personnel access to the Facility, buildings, and all pertinent records for the purpose of making inspections and surveys, collecting samples, obtaining data, and reviewing records.

E. This Plan Approval does not negate the responsibility of the Permittee to comply with any other applicable Federal, State, or local regulations now or in the future.

F. Should there be any differences between the Application and this Plan Approval, the Plan Approval shall govern.

G. Pursuant to 310 CMR 7.02(3)(k), MassDEP may revoke this Plan Approval if the construction work is not commenced within two years from the date of issuance of this Plan Approval, or if the construction work is suspended for one year or more.

H. This Plan Approval may be suspended, modified, or revoked by MassDEP if MassDEP determines that any condition or part of this Plan Approval is being violated.

I. This Plan Approval may be modified or amended when in the opinion of MassDEP such is necessary or appropriate to clarify the Plan Approval conditions or after consideration of a written request by the Permittee to amend the Plan Approval conditions.

J. The Permittee shall conduct emission testing, if requested by MassDEP, in accordance with USEPA Reference Test Methods and regulation 310 CMR 7.13. If required, a pretest protocol report shall be submitted to MassDEP at least 30 days prior to emission testing and the final test results report shall be submitted within 45 days after emission testing.

K. Pursuant to 310 CMR 7.01(3) and 7.02(3)(f), the Permittee shall comply with all conditions contained in this Plan Approval. Should there be any differences between

provisions contained in the General Conditions and provisions contained elsewhere in the Plan Approval, the latter shall govern.

6. MASSACHUSETTS ENVIRONMENTAL POLICY ACT

MassDEP has determined that the filing of an Environmental Notification Form (ENF) with the Secretary of Energy & Environmental Affairs, for air quality control purposes, was not required prior to this action by MassDEP. Notwithstanding this determination, the Massachusetts Environmental Policy Act (MEPA) and 301 CMR 11.00, Section 11.04, provide certain "Fail-Safe Provisions," which allow the Secretary to require the filing of an ENF and/or an Environmental Impact Report (EIR) at a later time.

7. APPEAL PROCESS

This Plan Approval is an action of MassDEP. If you are aggrieved by this action, you may request an adjudicatory hearing. A request for a hearing must be made in writing and postmarked within twenty-one (21) days of the date of issuance of this Plan Approval.

Under 310 CMR 1.01(6)(b), the request must state clearly and concisely the facts, which are the grounds for the request, and the relief sought. Additionally, the request must state why the Plan Approval is not consistent with applicable laws and regulations.

The hearing request along with a valid check payable to the Commonwealth of Massachusetts in the amount of one hundred dollars ($100.00) must be mailed to:

Commonwealth of Massachusetts
Department of Environmental Protection
P.O. Box 4062
Boston, MA 02211

This request will be dismissed if the filing fee is not paid, unless the appellant is exempt or granted a waiver as described below. The filing fee is not required if the appellant is a city or town (or municipal agency), county, or district of the Commonwealth of Massachusetts, or a municipal housing authority.

MassDEP may waive the adjudicatory hearing-filing fee for a person who shows that paying the fee will create an undue financial hardship. A person seeking a waiver must file, together with the hearing request as provided above, an affidavit setting forth the facts believed to support the claim of undue financial hardship.

Should you have any questions concerning this Plan Approval, please contact Thomas Hannah by telephone at 978-694-3287, or in writing at the letterhead address.

Very truly yours,

This final document copy is being provided to you electronically by the Department of Environmental Protection. A signed copy of this document is on file at the DEP office listed on the letterhead.

Thomas A. Hannah
Environmental Engineer

James Belsky
Permit Chief
Bureau of Waste Prevention

ecc: Lawrence Board of Health, c-ganley@cityoflawrence.com
Fire Headquarters, M_Gaffney@cityoflawrence.com
MassDEP/Boston - Yi Tian
Eric A. Pearson, ESS Group, Consultant Name

cc: MassDEP/NERO- Marc Altobelli, Dave Labrode (E-Copy & Hard Copy), Mary Persky, Tom Hannah