Form # P 01

ELECTRICAL PERMIT
City of Portland, Me.

(K)

To the Chief Electrical Inspector, Portland Maine:
The undersigned hereby applies for a permit to make electrical installations in accordance with the laws of Maine, the City of Portland Electrical Ordinance, National Electrical Code and the following specifications:

Date 11-30-00
Permit # 1043
CBL# 334-A-014

LOCATION: 16 MILLIKEN AVE **METER MAKE & #**
CMP ACCOUNT # **OWNER** MEGQUIRC HILL CORP
TENANT **PHONE #**

									TOTAL	EACH FEE
OUTLETS	10	Receptacles		Switches		Smoke Detector			.20	2.00
FIXTURES		Incandescent		Fluorescent		Strips			.20	
SERVICES		Overhead		Underground		TTL AMPS	<800		15.00	
		Overhead		Underground			>800		25.00	
Temporary Service		Overhead		Underground		TTL AMPS			25.00	
METERS		(number of)							25.00	
MOTORS	✓	(number of)	10						1.00	
RESID/COM		Electric units							2.00	20.00
HEATING		oil/gas units		Interior		Exterior			1.00	
APPLIANCES		Ranges		Cook Tops		Wall Ovens			5.00	
		Insta-Hot		Water heaters		Fans			2.00	
		Dryers		Disposals		Dishwasher			2.00	
		Compactors		Spa		Washing Machine			2.00	
		Others (denote)							2.00	
MISC. (number of)		Air Cond/win							2.00	
		Air Cond/cent							3.00	
		HVAC		EMS		Pools			10.00	
		Signs				Thermostat			5.00	
		Alarms/res							10.00	
		Alarms/com							5.00	
		Heavy Duty(CRKT)							15.00	
		Circus/Carnv							2.00	
		Alterations							25.00	
		Fire Repairs							5.00	
		E Lights							15.00	
		E Generators							1.00	
									20.00	
PANELS		Service		Remote		Main				
TRANSFORMER		0-25 Kva							4.00	
		25-200 Kva							5.00	
		Over 200 Kva							8.00	
									10.00	
		MINIMUM FEE/COMMERCIAL 45.00				TOTAL AMOUNT DUE				45
INSPECTION:		Will be ready				**MINIMUM FEE**		**35.00**		

or will call

CONTRACTORS NAME ELECTRICAL SYSTEMS OF MAINE **MASTER LIC. #** MAC 600 17181
ADDRESS WASHINGTON AVE HUDSON **LIMITED LIC. #**
TELEPHONE 783-7121

SIGNATURE OF CONTRACTOR Gerald Nightingale

Planning & Urban Development

384-A-414

Joseph E. Gray Jr.
Director

CITY OF PORTLAND

October 19, 2000

Peter Bolduc
Megquire Hill Farm
P.O.Box 219
Mechanic Falls, ME 04256

re: Odor Evaluation of Megquier Hill Farm Operation

Dear Mr. Bolduc:

On November 1, 2, and 3, our Odor Consultant, Martha O'Brien, from Odor Science and Engineering will be visiting Portland to conduct training workshops for our inspectors, as well as to provide an evaluation of the Barber Foods plant. While here, we have asked Ms. O'Brien to conduct an odor evaluation of the Megquier Hill plant on Milliken Street in order to confirm that the plant's operation does, in fact, meet our performance standard regarding odor.

As you know, we have received complaints from neighbors in the North Deering neighborhood and that the Inspection Division has confirmed those odors as generated by Megquier Hill. In order to advance the processing of your certificate of occupancy, we will require an odor evaluation to be completed by Ms. O'Brien.

We have received a cost breakdown from Ms. O'Brien which estimates a cost of $500.00 to visit your site and do an evaluation. We will bill you directly for that cost.

We expect Ms. O'Brien to conduct her evaluation between 11:00am and 1:00pm on Wednesday, November 1. Ms. O'Brien may require a tour of the operation, as well. Our request to you is to have all equipment running at full capacity during the evaluation. We will need a typical (or excessive) operating benchmark from which to test.

The City does appreciate your cooperation and we look forward to having your plant up and running without incident.

Please call if you have any questions.

Sincerely,

Sarah Hopkins
Senior Planner

389 Congress Street • Portland, Maine 04101 • (207) 874-8721 • FAX 756-8258 • TTY 874-8936

cc.: Joseph E. Gray, Jr., Director of Planning and Urban Development
Alex Jaegerman, Chief Planner
Mike Nugent, Inspections Manager
Penny Littell, Associate Corporation Counsel
Jack Lufkin, Economic Development

Mike Nugent

Memorandum

TO: **Sarah Hopkins**
Senior Planner
City of Portland, ME **Fax: (207) 756-8258**
6 pages

FROM: **Martha O'Brien**
Odor Science & Engineering, Inc.

344-A-014

DATE: **November 10, 2000**

RE: **Odor Issues Addressed During my November 1st – 3rd Visit**
OS&E Project No. 1083-M-00

Sarah, the following is a summary of the odor issues addressed during my trip to Portland on November 1st – 3rd, 2000:

Wednesday, November 1, 2000
Megquier Hill Site Visit

Ambient odor monitoring was conducted between approximately 12:00-1:00 PM in the closest residential areas downwind of the Megquire Hill facility. Winds were from the north at approximately 10-12 mph. Despite the high wind speed, this is actually one of the worst-case dispersion conditions for the stack emissions at Magquier Hill due to the effect of downwashing. Because of the relatively short stack heights relative to the height of the building, the stack emissions get trapped in the wake effect of the building and get brought down to the ground at a relatively short downwind distance. These conditions allowed for the detection of plant-related odors downwind.

Two types of odor were detected downwind – the strongest, and perhaps the more objectionable in character, was described as a "burnt electrical" type odor. It was measured at an intensity level of 1.5 on the 8-point n-butanol scale. Occasionally an odor described as a more "bakery/grain/yeast" type odor could also be detected in areas downwind measuring up to an intensity level of 1.0.

A plant tour and review of the Meguire Hill process took place from approximately 1:00-2:00PM. The odor observations made from the production floor included:

Raw Material Receiving/Storage Area:
A low intensity "yeast/bread/rotten dough" - type odor

Rotary Drum Drier & Thermal Oxidizer Area:
A much more intense "burnt electrical"/ "burnt chemical" - type odor

Cooler & Final Product Storage Area:
A less intense "grain/meal"- type odor

Conclusions:
Based on my downwind odor observations of 11/1/00, the highest odor intensity of Maguire Hill-related odors was a butanol level of 1.5. This was described as a "burnt electrical" type odor. Occasionally a less intense (intensity 1.0) "bread/meal" type odor could also be detected. At the observed levels the odors were readily detectable if one was looking to find them – yet would be at an intensity level that would be in compliance with the City's Odor Ordinance limit of 3.0.

Based on a plant tour and process review the apparent source of the off-site odors were:

"Burnt Electrical"- associated with the product drying and subsequent thermal incineration of the dryer exhaust. The odor character appears to be due to the use of sawdust as fuel.

"Bread/Grain" – associated with the cooler exhaust stack.

Other potential odor sources would be fugitive odors escaping from the general production area either through the open doors or by the roof exhaust fans (if used). The roof fans were not in operation during the 11/01/00 site visit.

Thursday, November 02, 2000
Barber Foods – Site Visit, Downwind Monitoring & Meeting

8:30 – 10:10 AM: Meeting with Ben Palaima Director of Engineering, Barber Foods, Plant Tour and collection of fryer exhaust sample:

I reviewed the process with Ben and was updated on the recent odor mitigation efforts and odor control research by Barber.

The high intensity odor emission sources at Barber are limited to the 3 fryer exhaust stacks. There are oil mist eliminators in each stack which consist of a 6" thick stainless steel mesh. Currently these are changed 2x/day with cleaning of the filters being conducted during 3rd shift. Ben mentioned that others in the industry are changing the filters more frequently and he is considering purchasing more filter to allow for more frequent changing.

The fryer stacks are cleaned 2x/week (Wednesday & Saturday PM). This is done by spraying a caustic solution in the stack through fixed spray nozzles to remove any oil build-up from the stack walls.

Barber has installed an atomized spray system using a dilute solution of an odor neutralizer product in each of the 3 fryer exhaust stacks. It has been in use for 5-6 months now. The effect of this is unknown – in Barber's opinion if has been effective and they feel it is beneficial to continue its use. The observations made by the resident odor observers in the Western Promenade neighborhood show little or no reduction in on odors since the spray system has been installed.

In order to address an opacity problem at the fryer exhaust stacks, Barber is considering installing a Rotoclone on one (or each) of the fryer stacks. The Rotoclone is designed for particulate removal and its effect in reducing stack odors is not known nor can be guaranteed by the supplier. It may be that by reducing the particulate in the exhaust stream and by having the exhaust stream come in contact with a fine water spray that there would be some reduction in the fryer stack odor emissions as well.

In our meeting later that afternoon, Barber proposed to go ahead with the purchase and installation of one Rotoclone unit. OS&E will then be asked to return to Barber and collect odor emission samples from locations before and after the Rotoclone. The samples will be returned to OS&E's Olfactory Laboratory to be quantified and characterized by a trained and screened odor panel. This will quantify the odor removal efficiency of the Rotoclone. If further odor reduction efforts are required, other potential odor control methods must be investigated.

Due to the high intensity of the fryer emissions together with the unique topography surrounding the site location (the elevation of the receptors on the West Prom.) dilution techniques that are sometimes achieved by raising the height of the exhaust stacks or adding dilution air to the stacks would not be effective in the Barber situation.

Odor control of the fryer exhaust odors is difficult due to the complex nature of the emissions and expensive due to the relatively high volume of exhaust air to be treated. Although they may not be considered to be economically feasible, add-on odor control alternatives would be:

Add-on Odor Control Technologies	**Limitations**
Thermal Incineration	Cost
Wet Scrubbing	cost, cooling, chemical usage, odor removal efficiency
Dry Scrubbing (carbon adsorption)	cost, cooling, replacement of media
Biofilter	cost, cooling/humidification, space limitations

Ben has investigated what others in the food frying industry are currently doing for odor control of the fryer emissions. Ben described a system that has been installed at the Fishery Products plant in Danvers, MA. This is a system that involves a multistage process of cooling, conditioning, filtering and finally dry scrubbing (carbon) the exhaust gas prior to release to atmosphere: In the Danver's installation the fish fryer exhaust is first cooled in NH_3 condenser units. It is then conditioned by adding ambient air from the general plant area. It then passes through a series of filters (fabric, electrostatic, HEPA) for removal of particulate followed filtration by carbon for removal of residual odorous compounds. The effectiveness of the odor removal of the carbon greatly depends of the design of the carbon filters. Thin bed filters would have limited effectiveness. Filtration by a deep bed carbon unit

at this stage of the treatment could provide extremely efficient odor control. Technical feasibility of this type of system may be investigated further by Barber.

Downwind Odor Monitoring

Odor surveys were conducted by OS&E in the areas surrounding Barber Foods on November 2, 2000. During the surveys winds were from the north at approximately 10-15 MPH. Skies were clear with an ambient temperature of 48-50°F. Barber was in a full production mode and running their Italian Finger product which is thought by some to be a more odorous flavor. Given the wind direction, the Barber odors were detected in areas to the south of the facility. The strongest odors detected off-site were on RT 1 and beneath RT 1 on Commercial Street between Portland Welding Supply and the entrance to the scrap yard. The intensity of the odors in these areas exceeded 3.0 on the butanol scale and were fairly consistent. Access to areas further downwind was limited due to the water. Areas on the other side of the RT 1 Bridge in South Portland were surveyed along Lincoln Street from Broadway to Central. The only odors detected in these areas were that of petroleum, gasoline and garbage due to emissions from terminal tanks and storage/transfer stations. The intensity of these odors was in the 1-2 range.

Friday, November 3, 2000
Odor Training

Four individuals (one City employee and three employees from Portland-based environmental consulting firms) were screened for their olfactory acuity to determine if they would be acceptable candidates for participating in odor monitoring and enforcement activities as may be required to determine compliance with the City's Odor Ordinance. At the invitation of the City two representatives from Barber Foods also took part in the odor training program. The screening tests have documented each individual's sensitivity to odors. The classroom instruction and field training exercises have instructed them in the techniques and procedures to be used in responding to community odor complaints and/or determining compliance with the City Odor Ordinance.

The olfactory screening took place on Friday, November 3, 2000 in the Green Room of the Portland's Downtown Auditorium. During this session, each candidate was evaluated using OS&E's standard odor evaluation procedure. This procedure involved:

- Triangle test of aqueous butanol solutions to determine that the subject is not anosmic (unable to smell). In this test the subject is presented with three (3) flasks two of which contain only distilled water while the third contains a very dilute aqueous solution of 1-butanol. With each presentation the concentration of the 1-butanol solution is increased. The subject must select the flask containing the 1-butanol solution.

- 8-point butanol odor intensity scale (ASTM E-544) training which includes becoming familiar with the odor of butanol and the perceived odor intensity at the first six of the eight bottles, along with sniffing procedures.

- Matching "unknown" aqueous butanol samples to the butanol intensity scale.

- Evaluation of samples on the forced-choice triangular dilution olfactometer to determine each subject's sensitivity to various Portland-related odors. For screening purposes, a sample was obtained from Barber Foods as a representative "frying" type odor. A second sample was prepared using trimethyl amine to test each individual's sensitivity to a "fishy" odor character.

Additionally, the group participated in odor character referencing activities using a variety of odor samples prepared from OS&E's chemical library of odorants.

Each candidate was scored on their ability to:

- correctly select the butanol samples in the aqueous triangle test,

- correctly match butanol unknowns on the butanol scale, and

- detect the frying & fishy odor emission samples at diluted levels on the dynamic olfactometer.

All candidates successfully passed the odor screening tests. The list of qualified odor monitors is provided in Table 1 and their odor training certificates are attached.

Course manuals were distributed to each attendee during the training sessions. The manuals contain the information presented by OS&E during the training session including the properties of odor, odor measurement methodology, meteorological factors affecting odor dispersion, proposed odor monitoring procedures and complaint response forms.

We appreciate the opportunity to be of continued service to the City of Portland. Please feel free to call me if you have any comments or questions regarding the issues addressed during my November 2000 trip.

Sincerely,
ODOR SCIENCE & ENGINEERING, INC.

Martha O'Brien
Principal

TABLE 1.
CITY OF PORTLAND, ME
QUALIFIED ODOR INSPECTORS
NOVEMBER 2000

1) Sarah Hopkins	City of Portland
2) Valerie Giguere	Dufresne-Henry
3) Randee McDonald	Environmental Eng. & Remediation
4) Stephen Bradstreet	Environmental Eng. & Remediation
5) Marilena Preda	Barber Foods
6) Roger McRae	Barber Foods