# Statement of Basis

**Permit to Construct No. P-2013.0063**
**Project ID 61595**

**Commercial Creamery Company - Jerome Plant**
**Jerome, Idaho**

**Facility ID 053-00031**

**Final**

**September 22, 2016**
**Dan Pitman, P.E.**
**Permit Writer**

The purpose of this Statement of Basis is to satisfy the requirements of IDAPA 58.01.01.et seq, Rules for the Control of Air Pollution in Idaho, for issuing air permits.

## ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURE

| | |
|---|---|
| CFR | Code of Federal Regulations |
| DEQ | Department of Environmental Quality |
| EPA | U.S. Environmental Protection Agency |
| IDAPA | a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act |
| km | kilometers |
| lb/hr | pounds per hour |
| NAAQS | National Ambient Air Quality Standard |
| $PM_{2.5}$ | particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers |
| $PM_{10}$ | particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers |
| PTC | permit to construct |
| PTE | potential to emit |
| *Rules* | *Rules for the Control of Air Pollution in Idaho* |
| SCL | significant contribution limits |
| SM | synthetic minor |
| SM80 | synthetic minor facility with emissions greater than or equal to 80% of a major source threshold |
| T/day | tons per calendar day |
| $\mu g/m^3$ | micrograms per cubic meter |

## FACILITY INFORMATION

### Description

The facility operates several process production lines in parallel. Cheese powder is produced in two spray lines and a culture line that utilize gas-fired spray dryers (D1, D2, and D3). The spray lines are complemented with four blending lines that blend the cheese powder with additional flavoring ingredients, and a chunkette line that produces extruded product from the cheese powder. The baghouses that control product particulate emissions for the dryers (D1, D2, and D3) are integral to the dryer structure, and are inherent process equipment used to recover product. Ingredient dust from placement of material in blenders is controlled by dedicated filter units (P1 and P2) that also serve pneumatic transfers at these locations.

### Permitting History

The following information was derived from a review of the permit files available to DEQ. Permit status is noted as active and in effect (A) or superseded (S).

| | |
|---|---|
| March 28, 2014 | P-2013.0063, Proj. 61306 initial PTC for a cheese powder production facility (S) |
| April 4, 2014 | P-2013.0063, Proj. 61432 revised PTC for the addition of an additional boiler and product dryer (A, but will become S upon issuance of this permit) |

### Application Scope

This PTC is for a minor modification at an existing minor facility.

The applicant has proposed to:

- Remove Dryer #4; and
- Increase $PM_{10}$ and $PM_{2.5}$ emission rate limits for Dryers D1, D2, and D3
- Change the Btu values of some combustion equipment.

There are no other proposed changes to the facility.

### Application Chronology

| | |
|---|---|
| September 22, 2015 | DEQ received an application fee. |
| September 28, 2015 | DEQ received an application. |
| October 8 - 23, 2015 | DEQ provided an opportunity to request a public comment period on the application and proposed permitting action. |
| October 28, 2015 | DEQ determined that the application was incomplete. |
| November 30, 2015 | DEQ received supplemental information from the applicant. |
| December 29, 2015 | DEQ determined that the application was incomplete. |
| January 28, 2016 | DEQ received supplemental information from the applicant. |
| February 26, 2016 | DEQ determined that the application was complete. |
| May 18, 2016 | DEQ made available the draft permit and statement of basis for peer and regional office review. |
| May 24, 2016 | DEQ made available the draft permit and statement of basis for applicant review. |
| June 2, 2016 | DEQ received comments on the draft permit. |
| June 13, 2016 | DEQ received the permit processing fee. |

| | |
|---|---|
| September 22, 2016 | DEQ issued the final permit and statement of basis. |

## TECHNICAL ANALYSIS

### *Emissions Units and Control Equipment*

**Table 1 EMISSIONS UNIT AND CONTROL EQUIPMENT INFORMATION**

| Source (ID No.) | Control Equipment |
|---|---|
| Boiler 1 (B1)<br>Manufacturer: York Shipley<br>Model: 560-SPHV-150-N2 (150 HP)<br>Manufacture date: 1979<br>Maximum capacity: 6.1 MMBtu/hr and 5,905 scf/hr<br>Fuel: natural gas | (None) |
| Boiler 2 (B2)<br>Manufacturer: York Shipley<br>Model: 560-SPHV-125-N2 (125 HP)<br>Manufacture date: 1988<br>Maximum capacity: 6.1 MMBtu/hr and 5,905 scf/hr<br>Fuel: natural gas | (None) |
| Rogers Product Dryer 1 with Integral Baghouse (D1)<br>Manufacturer: Rogers<br>Model: NP1-LE Maxon Burner<br>Manufacture date: 2014<br>Maximum capacity: 12 MMBtu/hr<br>Fuel: natural gas<br>Maximum operation: 16 hr/day and 5,840 hr/yr<br>Maximum production: 24 tons/day (dry product) | Integral Baghouse (D1)<br>Model: Rogers |
| Rogers Product Dryer 2 with Integral Baghouse (D2)<br>Manufacturer: Rogers<br>Model: 3065 North American Burner<br>Manufacture date: 1960<br>Maximum capacity: 12 MMBtu/hr<br>Fuel: natural gas<br>Maximum operation: 16 hr/day and 5,840 hr/yr<br>Maximum production: 24 tons/day (dry product) | Integral Baghouse (D2)<br>Model: Rogers |
| Blaw Knox Spray Product Dryer with Integral Baghouse (D3)<br>Manufacturer: Blaw Knox<br>Model: Maxon Line-O-Flame B Burner<br>Manufacture date: ≤1958<br>Maximum capacity: 8 MMBtu/hr<br>Fuel: natural gas<br>Maximum operation: 16 hr/day and 5,840 hr/yr<br>Maximum production: 24 tons/day (dry product) | Integral Baghouse (D3)<br>Model: Hammerlund, pulse-type |
| | |

| Source | Control Equipment |
|---|---|
| Pneumatic Conveying, Loading, and Tote-Dumping Operations with Dedicated Dust Collectors and Baghouses (P1 and P2)<br>Maximum operation: 16 hr/day and 5,840 hr/yr<br>Maximum production: 32 tons/day (dry product) | (2) Dedicated Dust Collectors and Baghouses (P1 and P2)<br>Model: Azo, pulse-type |
| (2) Clothes Dryers (NR3A & NR3B)<br>Maximum capacity: 113,000 Btu/hr<br>Manufacturer: Carrier | (None) |
| (2) HVAC Units (NR4A & NR4B)<br>Maximum capacity: 275,000 Btu/hr<br>Manufacturer: Carrier | (None) |
| HVAC Units (NR4C)<br>Maximum capacity: 180,000 Btu/hr each<br>Manufacturer: Carrier | (None) |
| HVAC Unit (NR4I) 200,000 Btu/hr<br>Manufacturer Carrier | (None) |
| HVAC Unit (NR4J, NR4K)<br>Maximum capacity: 230,000 Btu/hr<br>Manufacturer Carrier | (None) |
| (2)HVAC Units<br>(NR4L,NR4M) 345,000 Btu/hr<br>Manufacturer Carrier | (None) |
| HVAC Unit (NR4D)<br>Maximum capacity: 74,000 Btu/hr<br>Manufacturer: Carrier | (None) |
| (3) HVAC Units (NR4E, NR4F, NR4G)<br>Maximum capacity: 125,000 Btu/hr<br>Manufacturer: Carrier | (None) |
| HVAC Unit (NR4H)<br>Maximum capacity: 225,000 Btu/hr<br>Manufacturer: Carrier | (None) |
| HVAC Unit (NR7A)<br>Maximum capacity: 195,000 Btu/hr<br>Manufacturer: Carrier | (None) |
| HVAC Unit (NR7B)<br>Maximum capacity: 195,000 Btu/hr<br>Manufacturer: Carrier | (None) |
| (2) HVAC Units (NR7C, NR7D)<br>Maximum capacity: 390,000 Btu/hr<br>Manufacturer: Carrier | (None) |
| HVAC Units (NR7E)<br>Maximum capacity: 250,000 Btu/hr<br>Manufacturer: Carrier | (None) |
| HVAC Units (NR7F)<br>Maximum capacity: 180,000 Btu/hr<br>Manufacturer: Carrier | (None) |
| (2) HVAC Units (NR7G, NR7H)<br>Maximum capacity: 180,000 Btu/hr<br>Manufacturer: Carrier | (None) |
| HVAC Units (NR7I)<br>Maximum capacity: 180,000 Btu/hr<br>Manufacturer: Carrier | (None) |

| | |
|---|---|
| HVAC Units (NR7J)<br>Maximum capacity: 115,000 Btu/hr<br>Manufacturer: Carrier | (None) |
| (2) HVAC Units (NR7K, NR7L)<br>Maximum capacity: 100,000 Btu/hr<br>Manufacturer: Modine | (None) |
| **Source** | **Control Equipment** |
| Water Heater (NR5A)<br>Manufacturer: AO Smith (100 gal Cat 4)<br>Maximum capacity: 75,000 Btu/hr | (None) |
| Water Heater (NR5B)<br>Manufacturer: AO Smith (100 gal Cat 4)<br>Maximum capacity: 199,000 Btu/hr | (None) |

### *Emissions Inventories*

**Potential to Emit**

The primary purpose of this permitting action is to increase the allowable pound per hour $PM_{10}$ and $PM_{2.5}$ emissions from Dryers D1, D2, and D3 based on the most recent source test results. The facility is also removing Dryer D4 from the facility. These changes are shown in the following Table.

Dryer Emission Limits

| Source | $PM_{10}$ lb/hr | $PM_{2.5}$ lb/hr |
|---|---|---|
| Rogers Product Dryer 1 with Integral Baghouse (D1) | 0.~~16~~228 | 0.~~03~~719 |
| Rogers Product Dryer 2 with Integral Baghouse (D2) | 0.~~16~~228 | 0.~~03~~719 |
| Blaw Knox Spray Product Dryer with Integral Baghouse (D3) | 0.~~16~~228 | 0.~~03~~719 |
| ~~Blaw Knox Drum Dryer (D4)~~ | ~~0.300~~ | |

These pounds per hour emission changes result in an annual permitted emissions increase of 0.26 tons per year of $PM_{10}$ and a 2.0 ton per year increase of $PM_{2.5}$, facility-wide controlled emission of $PM_{10}$ and $PM_{2.5}$ remain below 5 tons per year. The emission inventory that supports this permitting action, including the Btu rating changes of some of the combustion equipment, may be seen in the spreadsheet that was submitted as part of the application[1]. The facility-wide potential to emit is not repeated in this Statement of Basis.

### *Ambient Air Quality Impact Analyses*

The applicant has demonstrated pre-construction compliance to DEQ's satisfaction that emissions from this facility will not cause or significantly contribute to a violation of any ambient air quality standard.

An ambient air quality impact analyses document has been crafted by DEQ based on a review of the modeling analysis submitted in the application. That document is part of the final permit package for this permitting action (see Appendix A).

## REGULATORY ANALYSIS

### *Attainment Designation (40 CFR 81.313)*

The facility is located in Jerome County, which is designated as attainment or unclassifiable for $PM_{2.5}$, $PM_{10}$, $SO_2$, $NO_2$, CO, and Ozone. Refer to 40 CFR 81.313 for additional information.

1 TRIM Record Number 2016AAG1197

## *Facility Classification*

The facility classification does not change from the previous permit PTC P-2013.0063, Project 61342, issued April 4, 2014; the facility is a synthetic minor (SM) facility. The facility classification information is not repeated in this statement of basis.

## *NSPS/NESHAP*

This permitting action does not alter any NSPS or NESHAP applicability determination.

## *Permit to Construct (IDAPA 58.01.01.201)*

IDAPA 58.01.01.201 ..........................................Permit to Construct Required

The permittee has requested that a PTC be issued to the facility for the increase in allowable $PM_{10}$ and $PM_{2.5}$ emissions from Dryers D1, D2, and D3. After a draft permit was provided to the applicant it was requested that several of the Btu values of the combustion equipment be changed. Therefore, a permit to construct is required to be issued in accordance with IDAPA 58.01.01.220. This permitting action was processed in accordance with the procedures of IDAPA 58.01.01.200-228.

The Regulatory Analysis provided in the April 4, 2014 Statement of Basis that supports the issuance the most recent PTC No. P-2013.0063 Project 61342 does not change as a result of this permit action and is not repeated in this Statement of Basis.

## *Permit Conditions Review*

This section describes only those permit conditions that have been added, revised, modified or deleted as a result of this permitting action.

Existing Table 1.1 appears as follows in the existing permit.

| Permit Section | Source (ID No.) | Control Equipment |
|---|---|---|
| 2,3 | Boiler 1 (B1)<br>Manufacturer: York Shipley<br>Model: 560-SPHV-150-N2 (150 HP)<br>Manufacture date: 1979<br>Maximum capacity: 6.1 MMBtu/hr and 5,905 scf/hr<br>Fuel: natural gas | (None) |
| | Boiler 2 (B2)<br>Manufacturer: York Shipley<br>Model: 560-SPHV-125-N2 (125 HP)<br>Manufacture date: 1988<br>Maximum capacity: 6.1 MMBtu/hr and 5,905 scf/hr<br>Fuel: natural gas | (None) |
| 2,3 | Rogers Product Dryer 1 with Integral Baghouse (D1)<br>Manufacturer: Rogers<br>Model: NP1-LE Maxon Burner<br>Manufacture date: 2014<br>Maximum capacity: 12 MMBtu/hr<br>Fuel: natural gas<br>Maximum operation: 16 hr/day and 5,840 hr/yr<br>Maximum production: 24 tons/day (dry product) | Integral Baghouse (D1)<br>Model: Rogers |
| | Rogers Product Dryer 2 with Integral Baghouse (D2)<br>Manufacturer: Rogers<br>Model: 3065 North American Burner<br>Manufacture date: 1960<br>Maximum capacity: 12 MMBtu/hr<br>Fuel: natural gas<br>Maximum operation: 16 hr/day and 5,840 hr/yr<br>Maximum production: 24 tons/day (dry product) | Integral Baghouse (D2)<br>Model: Rogers |
| | Blaw Knox Spray Product Dryer with Integral Baghouse (D3)<br>Manufacturer: Blaw Knox | Integral Baghouse (D3)<br>Model: Hammerlund, pulse-type |

| Permit Section | Source | Control Equipment |
|---|---|---|
| | Model: Maxon Line-O-Flame B Burner<br>Manufacture date: ≤1958<br>Maximum capacity: 12 MMBtu/hr<br>Fuel: natural gas<br>Maximum operation: 16 hr/day and 5,840 hr/yr<br>Maximum production: 24 tons/day (dry product) | |
| | Blaw Knox Drum Dryer (D4)<br>Manufacturer: Blaw Knox<br>Model: steam-powered<br>Manufacture date: 1959<br>Maximum operation: 8 hr/day and 320 hr/yr<br>Maximum production: 4 tons/day (dry product) | (None) |
| **Permit Section** | **Source** | **Control Equipment** |
| 2,3 | Pneumatic Conveying, Loading, and Tote-Dumping Operations with Dedicated Dust Collectors and Baghouses (P1 and P2)<br>Maximum operation: 16 hr/day and 5,840 hr/yr<br>Maximum production: 32 tons/day (dry product) | (2) Dedicated Dust Collectors and Baghouses (P1 and P2)<br>Model: Azo, pulse-type |
| 2 | (2) Clothes Dryers (NR3A & NR3B)<br>Maximum capacity: 116,000 Btu/hr<br>Manufacturer: Carrier | (None) |
| 2 | (2) HVAC Units (NR4A & NR4B)<br>Maximum capacity: 275,000 Btu/hr<br>Manufacturer: Carrier | (None) |
| | (5) HVAC Units (NR4C, NR4I, NR4J, NR4K, NR4L)<br>Maximum capacity: 180,000 Btu/hr each<br>Manufacturer: Carrier | (None) |
| | HVAC Unit (NR4D)<br>Maximum capacity: 74,000 Btu/hr<br>Manufacturer: Carrier | (None) |
| | (3) HVAC Units (NR4E, NR4F, NR4G)<br>Maximum capacity: 125,000 Btu/hr<br>Manufacturer: Carrier | (None) |
| | HVAC Unit (NR4H)<br>Maximum capacity: 250,000 Btu/hr<br>Manufacturer: Carrier | (None) |
| | HVAC Unit (NR4M)<br>Maximum capacity: 45,000 Btu/hr<br>Manufacturer: Carrier | (None) |
| | HVAC Unit (NR7A)<br>Maximum capacity: 225,000 Btu/hr<br>Manufacturer: Carrier | (None) |
| | HVAC Unit (NR7B)<br>Maximum capacity: 200,000 Btu/hr<br>Manufacturer: Carrier | (None) |
| | (2) HVAC Units (NR7C, NR7D)<br>Maximum capacity: 230,000 Btu/hr<br>Manufacturer: Carrier | (None) |
| | (2) HVAC Units (NR7E, NR7F)<br>Maximum capacity: 345,000 Btu/hr<br>Manufacturer: Carrier | (None) |
| | (2) HVAC Units (NR7G, NR7H)<br>Maximum capacity: 195,000 Btu/hr<br>Manufacturer: Carrier | (None) |
| | (2) HVAC Units (NR7I, NR7J) | (None) |

| | | |
|---|---|---|
| | Maximum capacity: 390,000 Btu/hr<br>Manufacturer: Carrier | |
| | (2) HVAC Units (NR7K, NR7L)<br>Maximum capacity: 100,000 Btu/hr<br>Manufacturer: Carrier | (None) |
| **Permit Section** | **Source** | **Control Equipment** |
| 2 | Water Heater (NR5A)<br>Manufacturer: AO Smith (100 gal Cat 4)<br>Maximum capacity: 75,000 Btu/hr | (None) |
| | Water Heater (NR5B)<br>Manufacturer: AO Smith (100 gal Cat 4)<br>Maximum capacity: 199,900 Btu/hr | (None) |

Table 1.1 has been updated as follows to change many of the Btu values and some of the manufacturer names:

| Permit Section | Source (ID No.) | Control Equipment |
|---|---|---|
| 2,3 | Boiler 1 (B1)<br>Manufacturer: York Shipley<br>Model: 560-SPHV-150-N2 (150 HP)<br>Manufacture date: 1979<br>Maximum capacity: 6.1 MMBtu/hr and 5,905 scf/hr<br>Fuel: natural gas | (None) |
| | Boiler 2 (B2)<br>Manufacturer: York Shipley<br>Model: 560-SPHV-125-N2 (125 HP)<br>Manufacture date: 1988<br>Maximum capacity: 6.1 MMBtu/hr and 5,905 scf/hr<br>Fuel: natural gas | (None) |
| 2,3 | Rogers Product Dryer 1 with Integral Baghouse (D1)<br>Manufacturer: Rogers<br>Model: NP1-LE Maxon Burner<br>Manufacture date: 2014<br>Maximum capacity: 12 MMBtu/hr<br>Fuel: natural gas<br>Maximum operation: 16 hr/day and 5,840 hr/yr<br>Maximum production: 24 tons/day (dry product) | Integral Baghouse (D1)<br>Model: Rogers |
| | Rogers Product Dryer 2 with Integral Baghouse (D2)<br>Manufacturer: Rogers<br>Model: 3065 North American Burner<br>Manufacture date: 1960<br>Maximum capacity: 12 MMBtu/hr<br>Fuel: natural gas<br>Maximum operation: 16 hr/day and 5,840 hr/yr<br>Maximum production: 24 tons/day (dry product) | Integral Baghouse (D2)<br>Model: Rogers |
| | Blaw Knox Spray Product Dryer with Integral Baghouse (D3)<br>Manufacturer: Blaw Knox<br>Model: Maxon Line-O-Flame B Burner<br>Manufacture date: ≤1958<br>Maximum capacity: 8 MMBtu/hr<br>Fuel: natural gas<br>Maximum operation: 16 hr/day and 5,840 hr/yr<br>Maximum production: 24 tons/day (dry product) | Integral Baghouse (D3)<br>Model: Hammerlund, pulse-type |
| | | |

| Permit Section | Source | Control Equipment |
|---|---|---|
| 2,3 | Pneumatic Conveying, Loading, and Tote-Dumping Operations with Dedicated Dust Collectors and Baghouses (P1 and P2)<br>Maximum operation: 16 hr/day and 5,840 hr/yr<br>Maximum production: 32 tons/day (dry product) | (2) Dedicated Dust Collectors and Baghouses (P1 and P2)<br>Model: Azo, pulse-type |
| 2 | (2) Clothes Dryers (NR3A & NR3B)<br>Maximum capacity: 113,000 Btu/hr<br>Manufacturer: Carrier | (None) |
| 2 | (2) HVAC Units (NR4A & NR4B)<br>Maximum capacity: 275,000 Btu/hr<br>Manufacturer: Carrier | (None) |
| | HVAC Units (NR4C)<br>Maximum capacity: 180,000 Btu/hr each<br>Manufacturer: Carrier | (None) |
| | HVAC Unit (NR4I) 200,000 Btu/hr<br>Manufacturer Carrier | (None) |
| | HVAC Unit (NR4J, NR4K)<br>Maximum capacity: 230,000 Btu/hr<br>Manufacturer Carrier | (None) |
| | (2)HVAC Units (NR4L,NR4M) 345,000 Btu/hr<br>Manufacturer Carrier | (None) |
| | HVAC Unit (NR4D)<br>Maximum capacity: 74,000 Btu/hr<br>Manufacturer: Carrier | (None) |
| | (3) HVAC Units (NR4E, NR4F, NR4G)<br>Maximum capacity: 125,000 Btu/hr<br>Manufacturer: Carrier | (None) |
| | HVAC Unit (NR4H)<br>Maximum capacity: 225,000 Btu/hr<br>Manufacturer: Carrier | (None) |
| | HVAC Unit (NR7A)<br>Maximum capacity: 195,000 Btu/hr<br>Manufacturer: Carrier | (None) |
| | HVAC Unit (NR7B)<br>Maximum capacity: 195,000 Btu/hr<br>Manufacturer: Carrier | (None) |
| | (2) HVAC Units (NR7C, NR7D)<br>Maximum capacity: 390,000 Btu/hr<br>Manufacturer: Carrier | (None) |
| | HVAC Units (NR7E)<br>Maximum capacity: 250,000 Btu/hr<br>Manufacturer: Carrier | (None) |
| | HVAC Units (NR7F)<br>Maximum capacity: 180,000 Btu/hr<br>Manufacturer: Carrier | (None) |
| | (2) HVAC Units (NR7G, NR7H)<br>Maximum capacity: 180,000 Btu/hr<br>Manufacturer: Carrier | (None) |
| | HVAC Units (NR7I)<br>Maximum capacity: 180,000 Btu/hr<br>Manufacturer: Carrier | (None) |

| | | |
|---|---|---|
| | <u>HVAC Units (NR7J)</u><br>Maximum capacity: 115,000 Btu/hr<br>Manufacturer: ADP | (None) |
| | <u>(2) HVAC Units (NR7K, NR7L)</u><br>Maximum capacity: 100,000 Btu/hr<br>Manufacturer: Modine | (None) |
| **Permit Section** | **Source** | **Control Equipment** |
| 2 | <u>Water Heater (NR5A)</u><br>Manufacturer: AO Smith (100 gal Cat 4)<br>Maximum capacity: 75,000 Btu/hr | (None) |
| | <u>Water Heater (NR5B)</u><br>Manufacturer: AO Smith (100 gal Cat 4)<br>Maximum capacity: 199,000 Btu/hr | (None) |

Existing Permit Condition 1.2

Table 1.1 was revised to reflect that the Blaw Knox Dryer (Dryer 4, or D4) has been removed from the facility; it has been deleted from Table 1.1.

Section 3 of the Permit

The process description has been updated by deleting drum dryer (D4) from the text.

Permit Condition 3.1

The emission limits of Permit Condition 3.1 have been modified as shown below.

Dryer Emission Limits

| Source | $PM_{10}$ lb/hr | $PM_{2.5}$ lb/hr |
|---|---|---|
| Rogers Product Dryer 1 with Integral Baghouse (D1) | 0.~~162~~28 | 0.~~037~~19 |
| Rogers Product Dryer 2 with Integral Baghouse (D2) | 0.~~162~~28 | 0.~~037~~19 |
| Blaw Knox Spray Product Dryer with Integral Baghouse (D3) | 0.~~162~~28 | 0.~~037~~19 |
| ~~Blaw Knox Drum Dryer (D4)~~ | ~~0.300~~ | |

In accordance with Consent Order Case No. E-2015.0009 signed July 29, 2015 source testing showed apparent exceedance of the $PM_{2.5}$ emission limits appearing in Permit Condition 3.1. In accordance with Consent Order Provision 7 Commercial Creamy shall apply for a permit modification to increase emission rate limits for D1, D2 and D3 consistent with the December 8-13, 2014 performance test results (including an appropriate margin of compliance.

The following table from the Consent Order summarizes the results of the December 8-13, 2014 performance tests.

| Emission Unit | Measured $PM_{2.5}$ Emission Rate |
|---|---|
| Dryer D1 | 0.108 lb/hr |
| Dryer D2 | 0.043 lb/hr |
| Dryer D3 | 0.067 lb/hr |

Commercial Creamery proposed $PM_{2.5}$ emission limits for Dryers D1, D2, and D3 using the following methods.

The maximum individual source test run for all tests was determined to be 0.145 pounds per hour of $PM_{2.5}$ from run number 1 of the December 11, 2014 source test on Dryer D1. This value was increased by a factor of 1.11 to account for any uncertainty in the accuracy of the source test. This resulting value is 0.161 pounds per hour. This value was increase by a factor of 120% to provide for a compliance margin. The resulting proposed emission rate limit is then 0.193 pounds per hour. This proposed emission rate showed compliance with ambient air quality standards and is accepted as the new emission rate limit rounded to the nearest one hundredth of a pound (0.19 pound per hour.

On April 21, 2015 DEQ issued Commercial Creamery a letter summarizing the results of the testing conducted on the dryers in December of 2014. These results show that $PM_{10}$ emissions rates may be up to 1.45 times the $PM_{2.5}$ emission rate. Therefore Commercial Creamery requested new $PM_{10}$ emissions rate limits that are equivalent to 1.45 times the requested $PM_{2.5}$ emissions rate limits, or 0.28 pounds per hour. These emission rates were included in the air pollution dispersion model that demonstrated compliance with the ambient air quality standards and the permit has been modified accordingly.

Permit Condition 3.4

The existing permit included throughput restrictions for Dryer D4. That dryer has been removed from the facility and the throughput restriction for that dryer has been removed from the permit.

Permit Condition 3.7

The existing permit included throughput monitoring requirements for Dryer D4. That dryer has been removed from the facility and the monitoring requirement for that dryer has been removed from the permit.

Permit Conditions 3.10 – 3.14

These permit conditions required performance testing to demonstrate compliance with the emissions rate limits of Permit Condition 3.1. These permit conditions have been deleted from the permit because the permittee has requested emission rate limits that provide for an adequate margin for compliance that negates the need to conduct performance tests to reasonably assure ongoing compliance. The highest 3 test run average for $PM_{2.5}$ emission measured from Dryers D1, D2 and D2 from the December 8-13, 2014 performance tests is 0.108 pounds per hour. The proposed allowable emission rate is 0.193 pounds per hour, or 1.79 times the highest measured rate. This emission rate limit is proposed with a sufficiently high compliance buffer that ongoing testing is not required by the permit.

## PUBLIC REVIEW

### *Public Comment Opportunity*

An opportunity for public comment period on the application was provided in accordance with IDAPA 58.01.01.209.01.c. During this time, there were no comments on the application and there was not a request for a public comment period on DEQ's proposed action. Refer to the chronology for public comment opportunity dates.

# APPENDIX A – AMBIENT AIR QUALITY IMPACT ANALYSES

*MEMORANDUM*

**DATE:** September 19, 2016

**TO:** Dan Pitman, P.E., Permit Writer, Air Program

**FROM:** Darrin Mehr, Air Quality Analyst, Air Program

**PROJECT:** P-2013.0063 PROJ 61595 – PTC Modification Application for Commercial Creamery Company – $PM_{2.5}$ and $PM_{10}$ Permit Allowable Emission Rate Increases for Dryers and $NO_2$ Emission Increases for Other Existing Emissions Units for the Facility Located in Jerome, Idaho.

**SUBJECT:** Demonstration of Compliance with IDAPA 58.01.01.203.02 (NAAQS)

## Contents

## Acronyms, Units, and Chemical Nomenclature

| | |
|---|---|
| AAC | Acceptable Ambient Concentration of a non-carcinogenic TAP |
| AACC | Acceptable Ambient Concentration of a Carcinogenic TAP |
| acfm | Actual cubic feet per minute |
| AERMAP | The terrain data preprocessor for AERMOD |
| AERMET | The meteorological data preprocessor for AERMOD |
| AERMOD | American Meteorological Society/Environmental Protection Agency Regulatory Model |
| Appendix W | 40 CFR 51, Appendix W – Guideline on Air Quality Models |
| BPIP | Building Profile Input Program |
| BRC | Below Regulatory Concern |
| CFR | Code of Federal Regulations |
| CMAQ | Community Multi-Scale Air Quality Modeling System |
| CO | Carbon Monoxide |
| Commercial Creamery | Commercial Creamery Company |
| DEQ | Idaho Department of Environmental Quality |
| EL | Emissions Screening Level of a TAP |
| EPA | United States Environmental Protection Agency |
| FTP | File Transfer Protocol |
| GEP | Good Engineering Practice |
| hr | hours |
| HVAC | Heating, Ventilation, and Air Conditioning |
| Idaho Air Rules | Rules for the Control of Air Pollution in Idaho, located in the Idaho Administrative Procedures Act 58.01.01 |
| ISCST3 | Industrial Source Complex Short Term 3 dispersion model |
| K | Kelvin |
| m | Meters |
| m/sec | Meters per second |
| MMBtu | Million British Thermal Units |
| NAAQS | National Ambient Air Quality Standards |
| NED | National Elevation Dataset |
| NO | Nitrogen Oxide |
| $NO_2$ | Nitrogen Dioxide |
| NOx | Oxides of Nitrogen |
| NWS | National Weather Service |
| $O_3$ | Ozone |
| Pb | Lead |
| $PM_{10}$ | Particulate matter with an aerodynamic particle diameter less than or equal to a nominal 10 micrometers |
| $PM_{2.5}$ | Particulate matter with an aerodynamic particle diameter less than or equal to a nominal 2.5 micrometers |
| ppb | parts per billion |
| PRIME | Plume Rise Model Enhancement |
| PTC | Permit to Construct |
| PTE | Potential to Emit |
| SIL | Significant Impact Level |
| $SO_2$ | Sulfur Dioxide |

| | |
|---|---|
| TAP | Toxic Air Pollutant |
| T/yr | tons per year |
| USGS | United States Geological Survey |
| UTM | Universal Transverse Mercator |
| VOC | Volatile Organic Compounds |
| $\mu g/m^3$ | Micrograms per cubic meter of air |

# 1.0 Summary

## 1.1 General Project Summary

On September 28, 2015, the Commercial Creamery Company (Commercial Creamery) submitted a Permit to Construct (PTC) application for a modification to the existing PTC for the facility. Based on performance test results, Dryers 1, 2, and 3 are proposed to be permitted with increased allowable $PM_{10}$ and $PM_{2.5}$ emission rate limits. Dryer 4 will be permanently shut down. This project is being performed in accordance with DEQ Consent Order E-2015.0009.

This project scope was initially defined based on the consent order that limited the analyses to $PM_{2.5}$ emissions only. Because the requested allowable $PM_{2.5}$ emission rates exceeded the permitted allowable $PM_{10}$ emissions for the affected emissions units, the permit writer required the analyses to also address increased $PM_{10}$ emissions rates equal to or greater than the allowable $PM_{2.5}$ emission rates for all affected permitted emissions units. Toxic air pollutants (TAPs) and all other criteria air pollutants were outside of the scope of this project and air impact analyses were not performed for those pollutants. Following facility draft PTC review, Commercial Creamery and MEAS, LLC (MEAS), Commercial Creamery's permitting consultant, requested that DEQ include additional ambient impact analyses in this project to approve changes in potential emissions from various combustion units to reflect more accurate and current heat input capacities for certain HVAC emissions units included in the ambient impact analyses.

Project-specific air quality impact analyses involving atmospheric dispersion modeling of estimated emissions associated with the facility were submitted to DEQ to demonstrate that the facility would not cause or significantly contribute to a violation of any ambient air quality standard (IDAPA 58.01.01.203.02 [Idaho Air Rules Section 203.02]). MEAS submitted analyses and applicable information and data to enable DEQ to evaluate potential impacts to ambient air.

MEAS performed project-specific air quality impact analyses to demonstrate compliance with applicable air quality standards for facility-wide allowable $PM_{2.5}$, $PM_{10}$, and $NO_2$ emissions. The DEQ review summarized by this memorandum addressed only the rules, policies, methods, and data pertaining to the pollutant dispersion modeling analyses used to demonstrate that the estimated emissions associated with operation of the facility as modified will not cause or significantly contribute to a violation of the applicable air quality standards. This review did not evaluate compliance with other rules or analyses that do not pertain to the air impact analyses. This modeling review also did not evaluate the accuracy of emissions estimates. Evaluation of emissions estimates was the responsibility of the permit writer and is addressed in the main body of the DEQ Statement of Basis.

The submitted air quality impact analyses: 1) utilized appropriate methods and models according to established DEQ/EPA rules, policies, guidance, and procedures; 2) was conducted using reasonably accurate or conservative model parameters and input data (review of emissions estimates was addressed by the DEQ permit writer); 3) adhered to established DEQ guidelines for new source review dispersion modeling; 4) showed either a) that predicted pollutant concentrations from emissions associated with the facility as modeled were below Significant Impact Levels (SILs) or other applicable regulatory thresholds; or b) that predicted pollutant concentrations from applicable emissions associated with the project as modeled, when appropriately combined with co-contributing sources and background concentrations, were below applicable National Ambient Air Quality Standards (NAAQS) at ambient air locations where and when the project has a significant impact. Table 1 presents key assumptions and results to be considered in the development of the permit.

| Table 1. KEY CONDITIONS USED IN MODELING ANALYSES | |
|---|---|
| **Criteria/Assumption/Result** | **Explanation/Consideration** |
| **Dryer D4 – Steam-heated Blaw Knox Dryer**<br><br>Dryer 4 was not included in the air impact analyses. | The submitted modeling report stated that Dryer 4 was removed from service in September of 2015. |
| **Permit Allowable Particulate Matter Emission Rates**<br><br>Dryers 1, 2, and 3 were modeled for NAAQS compliance with increased allowable emission rates.<br><br>**Each unit was modeled at the following 24-hour averaged rates:**<br>$PM_{10}$: 0.187 pounds per hour (lb/hr) and 4.5 lb/day<br>$PM_{2.5}$: 0.129 lb/hr and 3.1 lb/day; 0.56 tons per year<br><br>Hours of operation were listed at 16 hours per day, which would provide maximum hourly emission rates for each source of:<br><br>$\frac{24\ hr/day}{16\ hr/day} * (0.187\ lb/hr\ PM_{10}) = 0.28\ lb/hr\ PM_{10}$<br><br>Similarly, for $PM_{2.5}$ emissions, the maximum hourly emission rate would be 0.19 lb/hr $PM_{2.5}$. | **Modeled Particulate Matter Emissions Rates for Affected Dryer Units:**<br><br>Dryer D1 – New Rogers Dryer<br>Dryer D2 – Existing Rogers Dryer<br>Dryer D3 – Existing Blaw Knox Dryer<br><br>Compliance with NAAQS has not been demonstrated for operational periods greater than 16 hours per day or for emissions rates greater than those listed in this memorandum.<br><br>Any short-term permit limit must specify the period over which emissions occur. As an example, $PM_{10}$ limits could be:<br><br>1) 0.187 lb/hr as averaged over 24-hours; or<br>2) 0.28 lb/hr maximum, with operations not to exceed 16 hrs/day. |
| **Annual Average NOx Emission Rates**<br><br>The revised annual average $NO_2$ NAAQS ambient impact analyses submitted by Commercial Creamery modeled appropriate hourly emissions reflecting potential emissions for the 1-hour $NO_2$ NAAQS analyses. However, the annual average $NO_2$ NAAQS analyses modeling reflected emissions equal to one tenth of potential emissions for emissions units Dryers 1, 2, and 3 (model IDs D1, D2, and D3).<br><br>Annual average $NO_2$ ambient impacts were relatively low for facility-wide emissions.<br><br>DEQ confirmed that the design value ambient impact, when combined with the approved ambient background concentration, still was below the annual $NO_2$ NAAQS by a very wide margin. | The facility's initial PTC, issued March 28, 2014, did not contain any enforceable $NO_2$ emissions limits. This project's evaluation by the permittee's consultant and verification analyses by DEQ modeling staff of compliance resulted in low enough ambient impacts that no additional operating requirements, restrictions, or emissions limits are recommended by DEQ modeling staff at this time. |

Air impact analyses are required by Idaho Air Rules to be conducted according to methods outlined in 40 CFR 51, Appendix W (Guideline on Air Quality Models). Appendix W requires that facilities be modeled using emissions and operations representative of design capacity or as limited by a federally enforceable permit condition. The submitted information and analyses demonstrated to the satisfaction of the Department, using DEQ/EPA established guidance, policies, and procedures, that operation of the proposed facility or modification will not cause or significantly contribute to a violation of any ambient air quality standard, provided the key conditions in Table 1 are representative of facility design capacity or operations as limited by a federally enforceable permit condition.

### *1.2 Summary of Submittals and Actions*

July 20, 2015: Representatives of DEQ, Commercial Creamery, and MEAS, Inc., (Commercial Creamery's modeling and permitting consultant) met in Boise for a project discussion meeting.

| | |
|---|---|
| July 29, 2015: | DEQ received a modeling protocol from MEAS, on behalf of Commercial Creamery. |
| August 27, 2015: | DEQ issued a modeling protocol approval with comments for the project to MEAS. |
| September 28, 2015: | DEQ received a PTC modification application from Commercial Creamery. |
| October 28, 2015: | DEQ declared the application incomplete. |
| November 30, 2015: | DEQ received a response to the incompleteness determination. |
| December 29, 2015: | DEQ declared the application incomplete. |
| January 22, 2016: | DEQ received a modeling protocol addendum from MEAS outlining revised methods of analyses for treatment of stacks terminating with a horizontal orientation. |
| January 28, 2016: | DEQ received an incompleteness response from Commercial Creamery. |
| January 29, 2016: | DEQ approved MEAS' addendum to the modeling protocol via email. |
| February 5, 2016: | DEQ received the revised electronic modeling files, via transfer from MEAS' FTP site. |
| February 8, 2016: | DEQ received text files for electronic modeling files. |
| February 26, 2016: | DEQ declared the permit application complete. |
| June 29, 2016: | Commercial Creamery submitted additional ambient impact analyses to reflect slight alterations in rated heat input capacities of some HVAC units. |
| July 7, 2016: | Commercial Creamery submitted the final revisions to the emissions calculations spreadsheet and the request for DEQ to incorporate the heat input rating changes in this project, regardless of the quantity of emission changes. |

## 2.0 Background Information

### *2.1 Permit Requirements for Permits to Construct*

PTCs are issued to authorize the construction of a new source or modification of an existing source or permit. Idaho Air Rules Section 203.02 requires that emissions from the new source or modification not cause or significantly contribute to a violation of an air quality standard, and Idaho Air Rules Section 203.03 requires that emissions from a new source or modification comply with applicable toxic air pollutant (TAP) increments of Idaho Air Rules Sections 585 and 586.

The facility and DEQ entered into an enforcement case consent order that required the facility to increase allowable emissions rates to a level equal to the source tested emissions rates. An additional margin of compliance was added to the requested allowable emissions rates.

### 2.2 Project Location and Area Classification

The facility is located in Jerome, Idaho, in Jerome County. The area is designated as attainment or unclassifiable for all pollutants.

### 2.3 Modeling Applicability for Criteria Pollutants

Idaho Air Rules Section 203.02 states that a PTC cannot be issued unless the application demonstrates to the satisfaction of DEQ that the new source or modification will not cause or significantly contribute to a NAAQS violation. Atmospheric dispersion modeling is used to evaluate the potential impact of a proposed project to ambient air and demonstrate NAAQS compliance.

Modeling applicability for this project was established by the facility's consent order, and a pre-application meeting with Commercial Creamery, MEAS (Commercial Creamery's consultant), DEQ's State Office Air Quality Program Enforcement, Permitting, and Modeling management, and DEQ Twin Falls Regional Office staff. A modeling protocol was submitted by MEAS to address the proposed methods for complying with the ambient standards of concern, which DEQ approved with comments. A cumulative impact analysis reflecting facility-wide potential to emit for all sources was required for the $PM_{2.5}$ 24-hour and annual average NAAQS.

In the event other processes or emissions units were determined to experience physical changes that affect dispersion characteristics as a result of this project, modeling applicability would be analyzed, as described by DEQ in Comment 5 of the August 27, 2015, modeling protocol approval letter.

Following submittal of the initial permit application and air impact analyses on September 28, 2015, DEQ permitting staff determined that $PM_{10}$ emission rate limits for Dryers 1, 2, and 3 must be increased to rates equal to or greater than this project's requested allowable $PM_{2.5}$ emission rates.

Commercial Creamery requested that DEQ incorporate slight revisions to combustion equipment heat input capacities. Commercial Creamery submitted revised cumulative 1-hour and annual average $NO_2$ NAAQS ambient impact analyses for this purpose on June 29, 2016. Evaluation of $NO_2$ modeling applicability per DEQ's BRC modeling exemption policy[1] or Level I and II modeling thresholds per the *Idaho Air Modeling Guideline*[2] was not conducted.

### 2.4 Significant and Cumulative NAAQS Impact Analyses

If maximum modeled pollutant impacts to ambient air from emissions sources associated with a new facility or the emissions increase associated with a modification exceed the SILs of Idaho Air Rules Section 006 (referred to as a significant contribution in Idaho Air Rules) or as incorporated by reference as per Idaho Air Rules Section 107.03.b, then a cumulative NAAQS impact analysis is necessary to demonstrate compliance with NAAQS and Idaho Air Rules Section 203.02. A cumulative NAAQS impact analysis may also be required for permit revisions driven by compliance/enforcement actions, any correction of emissions limits or other operational parameters that may affect pollutant impacts to ambient air, or other cases where DEQ believes NAAQS may be threatened by the emissions associated with the facility or proposed project.

A cumulative NAAQS impact analysis for attainment area pollutants involves assessing ambient impacts, according to established DEQ/EPA guidance, policies, and procedures, from applicable facility-wide emissions and emissions from any nearby co-contributing sources. A DEQ-approved background concentration value is then added to the modeled result that is appropriate for the criteria pollutant/averaging-time at the facility location and the area of significant impact. The resulting pollutant concentrations in ambient air are then compared to the NAAQS listed in Table 2. Table 2 also lists SILs and specifies the modeled design value that must be used for comparison to the NAAQS. NAAQS compliance is evaluated on a receptor-by-receptor basis.

**Table 2. APPLICABLE REGULATORY LIMITS**

| Pollutant | Averaging Period | Significant Impact Levels[a] ($\mu g/m^3$)[b] | Regulatory Limit[c] ($\mu g/m^3$) | Modeled Design Value Used[d] |
|---|---|---|---|---|
| $PM_{10}$[e] | 24-hour | 5.0 | 150[f] | Maximum 6th highest[g] |
| $PM_{2.5}$[h] | 24-hour | 1.2 | 35[i] | Mean of maximum 8th highest[j] |
| | Annual | 0.3 | 12[k] | Mean of maximum 1st highest[l] |
| Carbon monoxide (CO) | 1-hour | 2,000 | 40,000[m] | Maximum 2nd highest[n] |
| | 8-hour | 500 | 10,000[m] | Maximum 2nd highest[n] |
| Sulfur Dioxide ($SO_2$) | 1-hour | 3 ppb[o] (7.8 $\mu g/m^3$) | 75 ppb[p] (196 $\mu g/m^3$) | Mean of maximum 4th highest[q] |
| | 3-hour | 25 | 1,300[m] | Maximum 2nd highest[n] |
| Nitrogen Dioxide ($NO_2$) | 1-hour | 4 ppb (7.5 $\mu g/m^3$) | 100 ppb[s] (188 $\mu g/m^3$) | Mean of maximum 8th highest[t] |
| | Annual | 1.0 | 100[r] | Maximum 1st highest[n] |
| Lead (Pb) | 3-month[u] | NA | 0.15[r] | Maximum 1st highest[n] |
| | Quarterly | NA | 1.5[r] | Maximum 1st highest[n] |
| Ozone ($O_3$) | 8-hour | 40 TPY VOC[v] | 75 ppb[w] | Not typically modeled |

a. Idaho Air Rules Section 006 (definition for significant contribution) or as incorporated by reference as per Idaho Air Rules Section 107.03.b.
b. Micrograms per cubic meter.
c. Incorporated into Idaho Air Rules by reference, as per Idaho Air Rules Section 107.
d. The maximum 1st highest modeled value is always used for the significant impact analysis unless indicated otherwise. Modeled design values are calculated for each ambient air receptor.
e. Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.
f. Not to be exceeded more than once per year on average over 3 years.
g. Concentration at any modeled receptor when using five years of meteorological data.
h. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.
i. 3-year mean of the upper 98th percentile of the annual distribution of 24-hour concentrations.
j. 5-year mean of the 8th highest modeled 24-hour concentrations at the modeled receptor for each year of meteorological data modeled. For the SIL analysis, the 5-year mean of the 1st highest modeled 24-hour impacts at the modeled receptor for each year.
k. 3-year mean of annual concentration.
l. 5-year mean of annual averages at the modeled receptor.
m. Not to be exceeded more than once per year.
n. Concentration at any modeled receptor.
o. Interim SIL established by EPA policy memorandum.
p. 3-year mean of the upper 99th percentile of the annual distribution of maximum daily 1-hour concentrations.
q. 5-year mean of the 4th highest daily 1-hour maximum modeled concentrations for each year of meteorological data modeled. For the significant impact analysis, the 5-year mean of 1st highest modeled 1-hour impacts for each year is used.
r. Not to be exceeded in any calendar year.
s. 3-year mean of the upper 98th percentile of the annual distribution of maximum daily 1-hour concentrations.
t. 5-year mean of the 8th highest daily 1-hour maximum modeled concentrations for each year of meteorological data modeled. For the significant impact analysis, the 5-year mean of maximum modeled 1-hour impacts for each year is used.
u. 3-month rolling average.
v. An annual emissions rate of 40 ton/year of VOCs is considered significant for $O_3$.
w. Annual 4th highest daily maximum 8-hour concentration averaged over three years. The $O_3$ standard was revised (the notice was signed by the EPA Administrator on October 1, 2015) to 70 ppb. However, this standard will not be applicable for permitting purposes until it is incorporated by reference *sine die* into Idaho Air Rules.

If the cumulative NAAQS impact analysis shows a violation of the standard, the permit cannot be issued if the proposed project or facility has a significant contribution (exceeding the SIL) to the modeled violation. This evaluation is made specific to both time and space. The facility or project does not have a significant contribution to a violation if impacts are below the SIL at all specific receptors showing violations during the time periods when modeled violations occurred.

Compliance with Idaho Air Rules Section 203.02 is demonstrated if: a) specific applicable criteria pollutant emissions increases are at a level defined as Below Regulatory Concern (BRC), using the criteria established by DEQ regulatory interpretation[1]; or b) all modeled impacts of the SIL analysis are below the applicable SIL or other level determined to be inconsequential to NAAQS compliance; or c) modeled design values of the cumulative NAAQS impact analysis (modeling applicable emissions from the facility and co-contributing sources, and adding a background concentration) are less than applicable NAAQS at receptors where impacts from the proposed facility/modification exceeded the SIL or other identified level of consequence; or d) if the cumulative NAAQS analysis showed NAAQS violations, the impact of proposed facility/modification to any modeled violation was inconsequential (typically assumed to be less than the established SIL) for that specific receptor and for the specific modeled time when the violation occurred.

For this project, cumulative impact analyses for facility-wide $PM_{2.5}$ emissions, and subsequently $PM_{10}$ emissions, were required. Air impact analyses were not triggered for any other pollutant since there were no changes to any other equipment and there was no increased utilization capacity above levels currently allowed by the existing PTC. However, there were slight increases and decreases in heat input capacities for small HVAC units that Commercial Creamery represented in facility-wide 1-hour and annual average $NO_2$ NAAQS impact analyses.

### *2.5 Toxic Air Pollutant Analyses*

Emissions of toxic substances are generally addressed by Idaho Air Rules Section 161:

> *Any contaminant which is by its nature toxic to human or animal life or vegetation shall not be emitted in such quantities or concentrations as to alone, or in combination with other contaminants, injure or unreasonably affect human or animal life or vegetation.*

Permitting requirements for toxic air pollutants (TAPs) from new or modified sources are specifically addressed by Idaho Air Rules Section 203.03 and require the applicant to demonstrate to the satisfaction of DEQ the following:

> *Using the methods provided in Section 210, the emissions of toxic air pollutants from the stationary source or modification would not injure or unreasonably affect human or animal life or vegetation as required by Section 161. Compliance with all applicable toxic air pollutant carcinogenic increments and toxic air pollutant non-carcinogenic increments will also demonstrate preconstruction compliance with Section 161 with regards to the pollutants listed in Sections 585 and 586.*

Per Section 210, if the total project-wide emissions increase of any TAP associated with a new source or modification exceeds screening emission levels (ELs) of Idaho Air Rules Section 585 or 586, then the ambient impact of the emissions increase must be estimated. If ambient impacts are less than applicable Acceptable Ambient Concentrations (AACs) for non-carcinogens of Idaho Air Rules Section 585 and Acceptable Ambient Concentrations for Carcinogens (AACCs) of Idaho Air Rules Section 586, then compliance with TAP requirements has been demonstrated.

Idaho Air Rules Section 210.20 states that if TAP emissions from a specific source are regulated by the Department or EPA under 40 CFR 60, 61, or 63, then a TAP impact analysis under Section 210 is not required for that TAP. The DEQ permit writer evaluates the applicability of specific TAPs to the Section 210.20 exclusion. TAPs modeling was not triggered for this project.

There were no TAPs emission increases described in the submittals to compare against allowable ELs, and thus no modeled impacts to compare against allowable TAPs increments for this project.

## 3.0 Analytical Methods and Data

### 3.1 Modeling Methodology

This section describes the modeling methods used by the applicant's consultant, MEAS, to demonstrate compliance with applicable air quality standards.

#### *3.1.1 Overview of Analyses*

MEAS performed project-specific air impact analyses that were determined by DEQ to be reasonably representative of the facility, using established DEQ policies, guidance, and procedures. Results of the submitted analyses, in combination with DEQ's analyses, demonstrated compliance with applicable air quality standards to DEQ's satisfaction, provided the facility is operated as described in the submitted application and in this memorandum.

Table 3 provides a brief description of parameters used in the modeling analyses.

**Table 3. MODELING PARAMETERS**

| Parameter | Description/Values | Documentation/Addition Description |
|---|---|---|
| General Facility Location | Jerome, Idaho | The area is an attainment or unclassified area for all criteria pollutants. |
| Model | AERMOD | AERMOD with the PRIME downwash algorithm, version 15181. The non-default Beta algorithms for capped and horizontal releases for point sources were used for this project. |
| Meteorological Data | Jerome | 2008-2012 - See Section 3.3 of this memorandum. Surface data from the Jerome airport and upper air data from Boise, Idaho. |
| Terrain | Considered | Receptor elevations were determined using a USGS NED map file based on the WGS84 datum. |
| Building Downwash | Considered | Plume downwash was considered for the structures associated with the facility and numerous nearby structures. |
| Receptor Grid | Grid 1 | 5-meter spacing exterior to the facility's ambient air boundary and in regions of elevated impacts. |
| | Grid 2 | 15-meter spacing in a 300-meter (x) by 300-meter (y) rectangular grid centered on the facility's primary processing buildings. |
| | Grid 3 | 40-meter spacing in a 1,000-meter (x) by 1,000-meter (y) rectangular grid located with the facility in the south central region of the grid. |
| | Grid 4 | 100-meter spacing in a 3,000-meter (x) by 3,000-meter (y) square grid centered on the facility. |
| | Grid 5 | 500-meter spacing in a 10,000-meter (x) by 10,000-meter (y) square grid centered on the facility. |
| | Grid 6 | Several discrete receptors were placed at the location of various schools, a senior center, and a hospital. |

### *3.1.2 Modeling Protocol*

A modeling protocol was submitted to DEQ prior to submittal of the application. DEQ issued a modeling protocol approval with comments. Following a DEQ incompleteness determination, MEAS submitted a protocol addendum addressing the use of non-regulatory Beta algorithms for horizontal releases. DEQ approved the protocol addendum. Final project-specific modeling was generally conducted using data and methods described in the modeling protocol and protocol addendum and the *Idaho Air Modeling Guideline*[2].

### *3.1.3 Model Selection*

Idaho Air Rules Section 202.02 requires that estimates of ambient concentrations be based on air quality models specified in 40 CFR 51, Appendix W (Guideline on Air Quality Models). The refined, steady state, multiple-source, Gaussian dispersion model AERMOD was promulgated as the replacement model for ISCST3 in December 2005. AERMOD retains the single straight line trajectory of ISCST3, but includes more advanced algorithms to assess turbulent mixing processes in the planetary boundary layer for both convective and stable stratified layers.

$NO_2$ 1-hour impacts can be assessed using a tiered approach to account for $NO/NO_2/O_3$ chemistry. Tier 1 assumes full conversion of NO to $NO_2$. Tier 2 ARM assumes a 0.80 default ambient ratio of $NO_2/NO_x$ for 1-hour $NO_2$ and 0.75 for annual average $NO_2$.

Tier 2 ARM2 is a more refined method of estimating the conversion of NO to $NO_2$ for the 1-hour $NO_2$ standard than the established Tier 2 ARM. Tier 2 ARM2 relies on a considerable body of EPA Air Quality System (AQS) monitoring data analyzing the $NO_2/NO_x$ ratios of the nationwide data. As described in the underlying technical paper submitted to EPA[3] and EPA's related guidance,[4] the nationwide EPA data was separated into groups or "bins" of data values spaced in increments of 10 parts per billion (ppb) where NOx monitoring values were less than 200 ppb and 20 ppb "bins" for values greater than 200 ppb. Within each 10 ppb and 20 ppb bin, the $98^{th}$ percentile value for the $NO_2/NO_x$ ratio was determined and used in the dataset to create a sixth order polynomial regression equation that is used to calculate a $NO_2/NO_x$ ratio based on total $NO_x$.

Tier 3 is a more refined assessment of the NO to $NO_2$ conversion, using a supplemental modeling program with AERMOD to better account for $NO/NO_2/O_3$ atmospheric chemistry. Either the Plume Volume Molar Ratio Method (PVMRM) or the Ozone Limiting Method (OLM) can be specified within the AERMOD input file for the Tier 3 approach. EPA guidance (Memorandum: from Tyler Fox, Leader, Air Quality Modeling Group, C439-01, Office of Air Quality Planning and Standards, USEPA; to Regional Air Division Directors. *Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour $NO_2$ National Ambient Air Quality Standard.* March 01, 2011) has not indicated a preference for one option over the other (PVMRM vs OLM) for particular applications. The Tier 2 ARM2 and both Tier 3 methods are considered to be non-regulatory guideline methods and must be approved by DEQ for the applicant's use on a case-by-case basis. MEAS elected to use the Tier 2 ARM approach for the 1-hr $NO_2$ NAAQS analyses. DEQ approval is not required for this method.

AERMOD version 15181 was used by MEAS for the modeling analyses to evaluate impacts of the facility. This is the current version of this regulatory guideline model. DEQ approved the use of the non-regulatory Beta algorithms for treatment of point sources with horizontal release orientation.

### 3.2 Background Concentrations

A background concentration tool was used to establish ambient background concentrations for this project. A beta version of the background concentration tool was developed by the Northwest International Air Quality Environmental Science and Technology Consortium (NW Airquest) and provided through Washington State University (located at http://lar.wsu.edu/nw-airquest/lookup.html). The tool uses regional scale modeling of pollutants in Washington, Oregon, and Idaho, with modeling results adjusted according to available monitoring data. The background is added to the design value for each pollutant and averaging period.

DEQ requested that Commercial Creamery's NAAQS compliance demonstration use the NW AIRQUEST backgrounds concentration tool to obtain ambient backgrounds for the project. DEQ emailed the values to MEAS on April 14, 2015. Background values applied to NAAQS compliance demonstrations for this project included the 24-hour $PM_{10}$, 24-hour, annual $PM_{2.5}$, 1-hour $NO_2$, and annual $NO_2$. The DEQ-recommended background values used for the project are listed in Table 4.

**Table 4. BACKGROUND CONCENTRATIONS**

| Pollutant and Averaging Period | NW AIRQUEST Background Concentration ($\mu g/m^3$)[a] |
|---|---|
| $PM_{10}$[b] 24-hour | 52[d] |
| $PM_{2.5}$[c] 24-hour | 24 |
| $PM_{2.5}$ annual | 8 |
| $NO_2$[e], 1-hour | 24.4 (13 ppb[f]) |
| $NO_2$, annual | 4.1 (2.2 ppb) |

a. Micrograms per cubic meter, except where noted otherwise.
b. Particulate matter with a mean aerodynamic diameter of ten microns or less.
c. Particulate matter with a mean aerodynamic diameter of 2.5 microns or less.
d. Extreme values were removed.
e. Nitrogen dioxide.
f. Parts per billion.

### 3.3 Meteorological Data

DEQ provided MEAS, via an April 14, 2015 email, with a model-ready meteorological dataset processed from Jerome surface and Boise upper air meteorological data covering the years 2008-2012. The model-ready dataset for this project was generated from monitored data collected at Jerome County airport (FAA airport code KJER) for surface and Automated Surface Observing System (ASOS) data and upper air data from the National Weather Service (NWS) Station site (site code BOI). Surface characteristics were determined by DEQ staff using AERSURFACE version 13016. AERMINUTE version 11325 was used to process ASOS wind data for use in AERMET. AERMET Version 12345 was used to process surface and upper air data and generate a model-ready meteorological data input file. DEQ determined these data were representative for the Commercial Creamery site in Jerome, Idaho, and approved use of this dataset for the project.

### 3.4 Terrain Effects

MEAS used a National Elevation Dataset (NED) file in the World Geodetic System 1984 (WGS84), to calculate elevations of receptors. A 1/3 arc second file provided 10-meter resolution of elevation data. The terrain preprocessor AERMAP version 11103 was used to extract the elevations from the DEM file and assign them to receptors in the modeling domain in a format usable by AERMOD. AERMAP also determined the hill-height scale for each receptor. The hill-height scale is an elevation value based on the surrounding terrain which has the greatest effect on that individual receptor. AERMOD uses those heights to evaluate whether the emissions plume has sufficient energy to travel up and over the terrain or if the plume will travel around the terrain.

Figure 1 shows the extents of the receptor grid and NED file used in the AERMAP run as exported into the Google earth® imagery program. The area is relatively flat with elevation increasing slightly, moving eastward.

**Figure 1. TERRAIN DATA COVERAGE AND RECEPTOR DOMAIN**


### *3.5 Building Downwash Effects on Modeled Impacts*

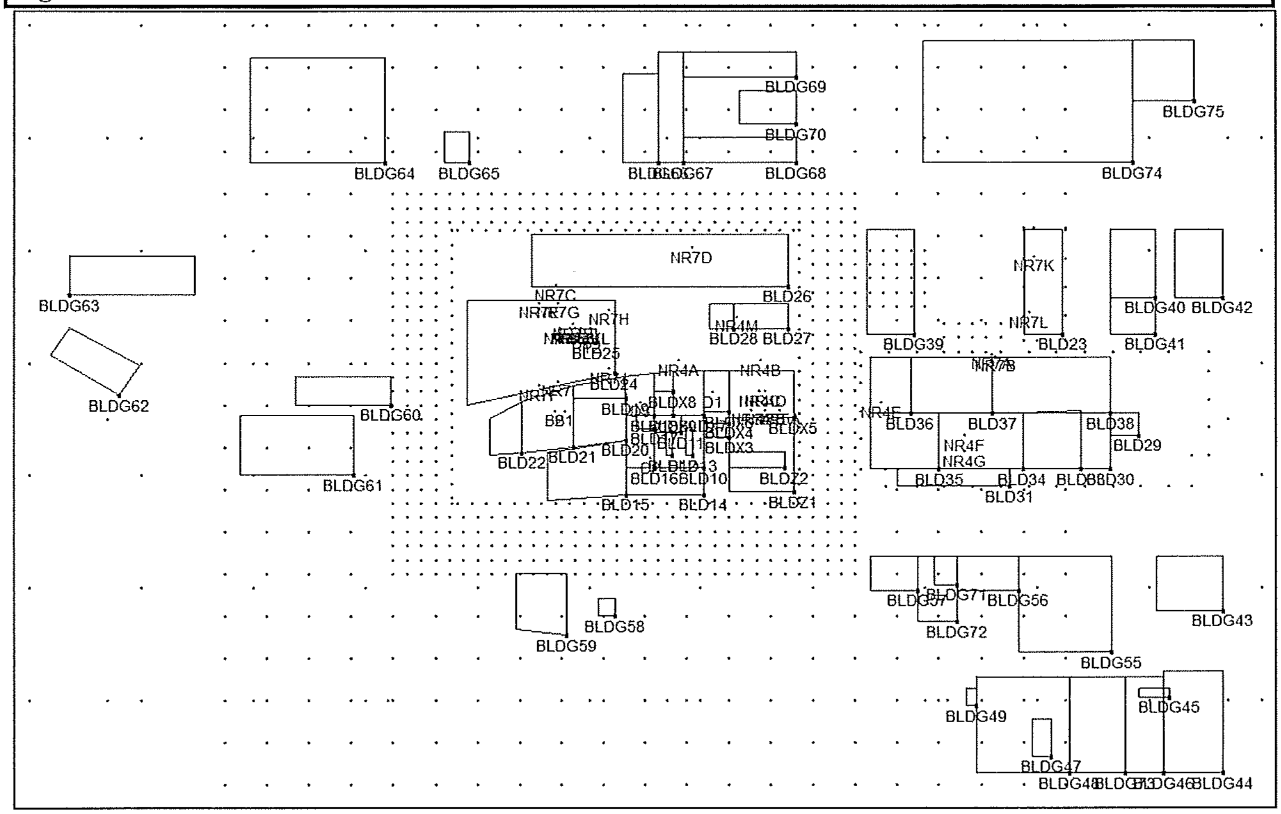
Potential downwash effects on emissions plumes were accounted for in the model by using building parameters as described by MEAS. The Building Profile Input Program for the PRIME downwash algorithm (BPIP-PRIME) was used to calculate direction-specific dimensions and Good Engineering Practice (GEP) stack height information from building dimensions/configurations and release parameters for input to AERMOD. Tier heights for the Commercial Creamery buildings were listed in Figures 5.4-1 and 5.4-2 of the submitted modeling report. All modeled structures are depicted in Figure 2.

DEQ requested that the NAAQS compliance demonstration modeling documentation verify that all structures that could cause plume downwash be included in the impact assessment. EPA guidance has determined that emissions points within a distance equal to or less than five times the lesser of the building height or projected building width of the structure being examined could be subject to downwash caused by that structure. MEAS created a BPIP file with a number of structures surrounding the facility.

The locations of the structures appeared reasonably accurate when compared with the locations and dimensions represented in the Google earth® imagery. DEQ review concluded that the building downwash was appropriately evaluated.

Building and stack source base elevations were determined using the AERMAP program. The Jerome site NED elevation data produced values that were similar and appropriate for a flat elevation profile, which is expected for a downtown Jerome location.

**Figure 2. COMMERCIAL CREAMERY AND MODELED NEARBY STRUCTURES**

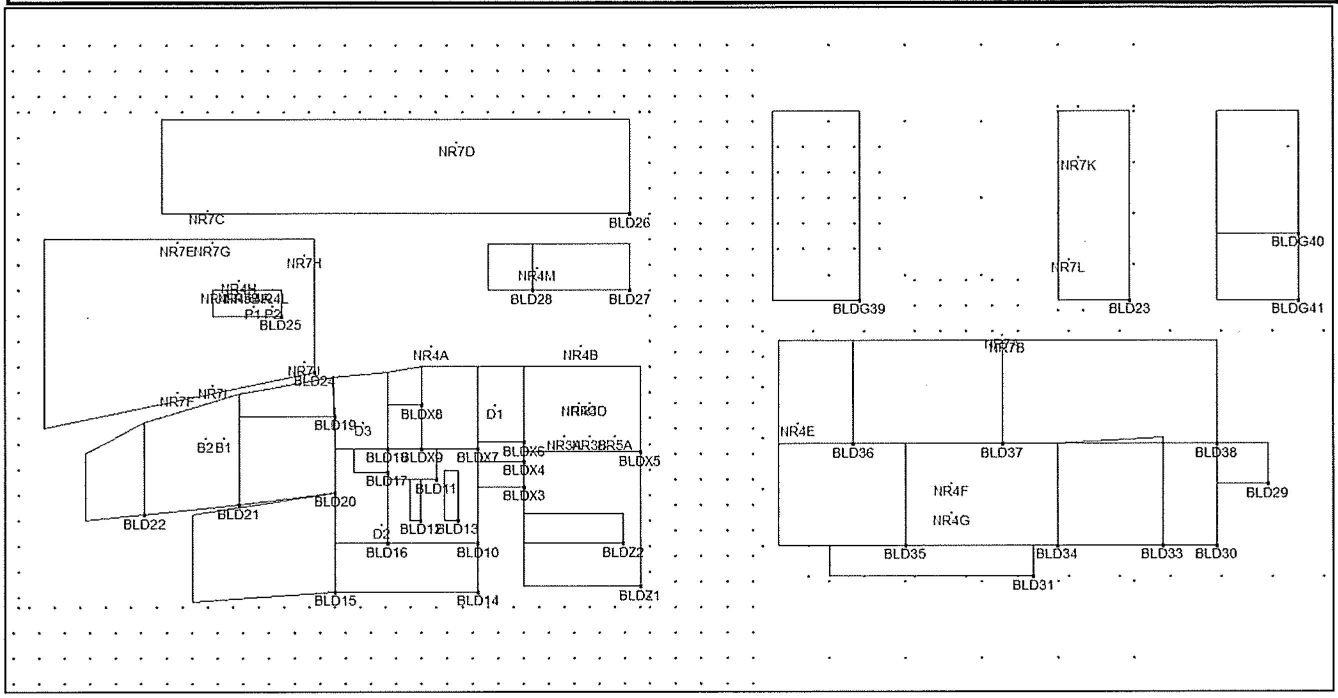



The structures that are part of the Commercial Creamery facility are shown below in Figure 3. Buildings 39, 40, and 41 shown in Figure 3 are not part of the Commercial Creamery facility.

### *3.6 Facility Layout*

Commercial Creamery's modeled emission points, structures, and ambient air boundary are shown in Figure 3. The facility's structure locations and horizontal dimensions matched the web-based mapping program Google earth relatively well. The layout matched the facility plot plans for primary and secondary sources submitted with the modeling report, except for sources NR4A and NR4B which were input in the model setup 30 meters and 27 meters north of the location specified in the February 3, 2016 modeling report submittal's plot plan, respectively. Each of these vents is a stack from an HVAC unit with 0.002 lb/hr of $PM_{2.5}$ and $PM_{10}$. DEQ modeling staff determined this setup discrepancy could not affect NAAQS compliance for this project based on the level of emissions from the sources and the large margin of compliance with all $PM_{10}$ and $PM_{2.5}$ NAAQS as demonstrated by the submitted analyses.

**Figure 3. COMMERCIAL CREAMERY FACILITY LAYOUT**




### *3.7 Ambient Air Boundary*

The ambient air boundary used for this project was established as areas immediately exterior to all Commercial Creamery structures bordered by a publicly-accessible sidewalk. The facility is located in downtown Jerome. Paved access areas that Commercial Creamery uses for deliveries and facility-only access for the main processing buildings were excluded from ambient air. The facility does not operate a retail outlet on site where the general public would be present. All public sidewalks and public roadways were considered as ambient air, with model impact receptors placed for evaluation. DEQ review concluded that the ambient air boundary employed in the final air impact analyses was accurate and effectively precluded public access based on the methods described in the modeling report according to the criteria described in DEQ's *Modeling Guideline*[2].

### *3.8 Receptor Network*

Table 3 describes the receptor network used in the submitted modeling analyses. DEQ determined that the receptor network was adequate to reasonably assure compliance with applicable air quality standards at all ambient air locations. Figures 4 and 5 below present the modeled receptor network for the project. Each dot in the figures represents a discrete receptor location.

**Figure 4. COMMERCIAL CREAMERY FULL RECEPTOR GRID**

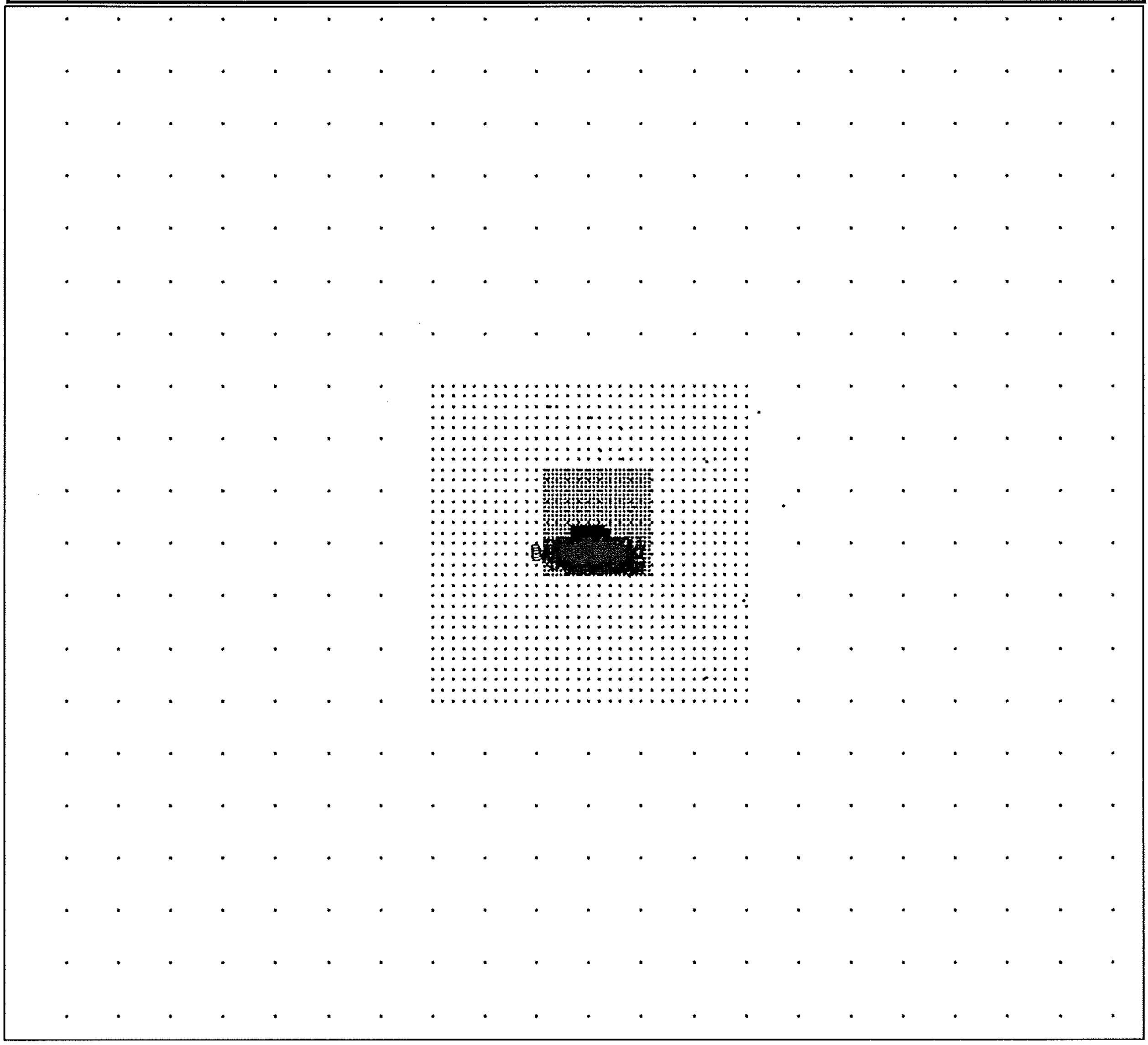
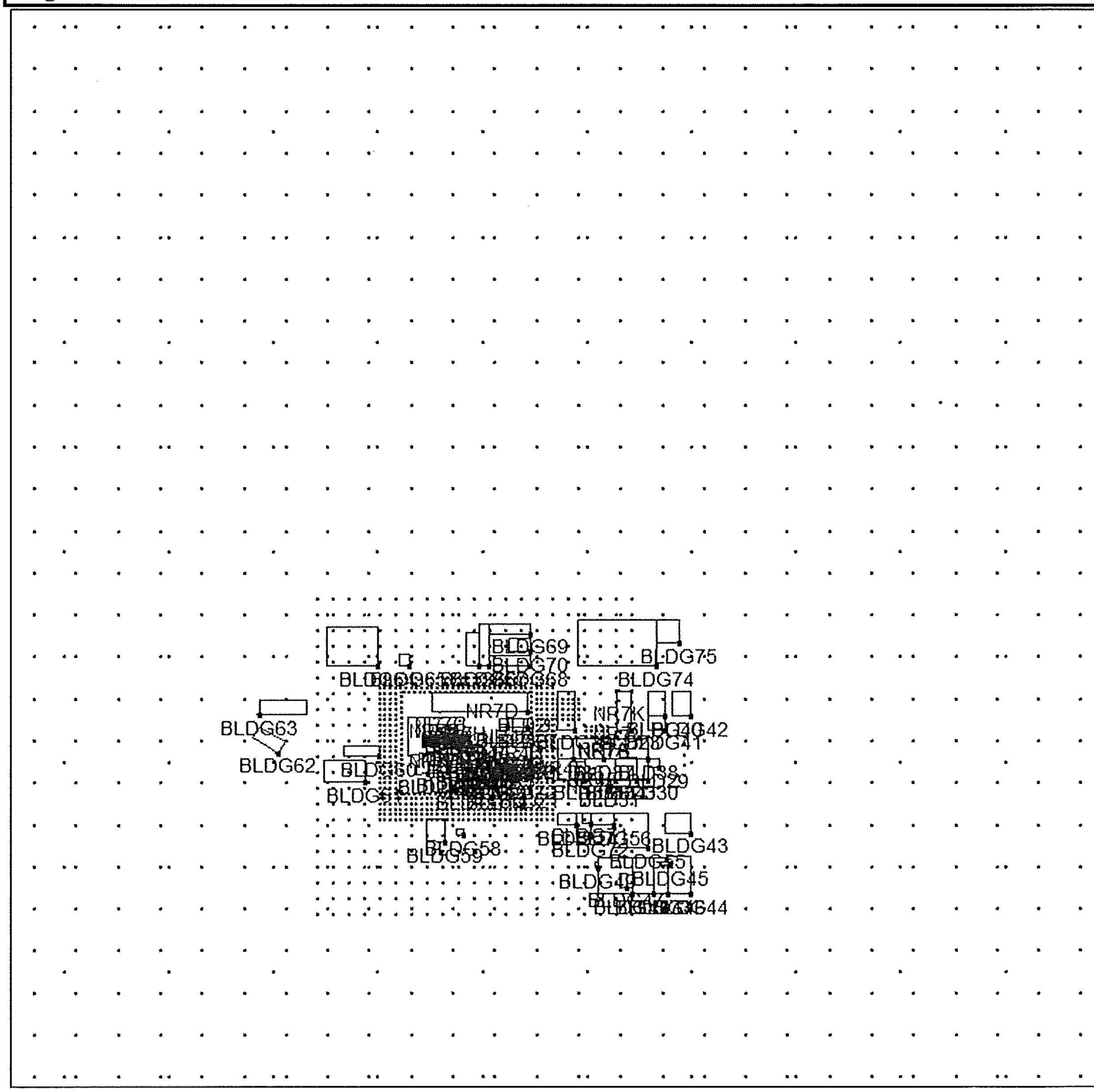


**Figure 5. COMMERCIAL CREAMERY IMPACT RESOLUTION RECEPTOR GRID**




### *3.9 Emission Rates*

Emissions of $NO_2$, $PM_{10}$, and $PM_{2.5}$ resulting from operation of the facility were provided by MEAS for various applicable averaging periods.

Review and approval of estimated emissions is the responsibility of the DEQ permit writer, and the representativeness and accuracy of emissions estimates is not addressed in this modeling memorandum. DEQ air impact analyses review included verification that the potential emissions rates provided in the emissions inventory were properly used in the model. The rates listed must represent the maximum allowable rate as averaged over the specified period.

Emissions rates used in the dispersion modeling impact analyses, as listed in this memorandum, should be reviewed by the DEQ permit writer and compared with those in the final emissions inventory. All modeled criteria air pollutant and TAP emissions rates must be equal to or greater than the facility's potential emissions calculated in the PTC emissions inventory or proposed permit allowable emissions rates. DEQ verification analyses for the annual average $NO_2$ cumulative impact analyses confirmed that compliance with the ambient standard was established using request potential emissions for Dryers 1, 2, and 3, as noted in Table 6.

### *3.9.1 Criteria Pollutant Emissions Rate*

Table 5 lists criteria pollutant continuous (24 hours per day) emissions rates used to evaluate NAAQS compliance for standards with averaging periods of 24 hours or less. Table 6 lists criteria pollutant continuous (8,760 hours/year) emissions rates used to evaluate NAAQS compliance for standards with an annual averaging period. These modeled rates must be equal or greater than allowable facility-wide emissions for the listed averaging period.

| Table 5. SHORT-TERM EMISSIONS RATES USED IN MODELING ANALYSES | | | | |
|---|---|---|---|---|
| Emissions Point | Description | $PM_{10}$[a] (lb/hr)[b] | $PM_{2.5}$[c] (lb/hr) | NOx[d] (lb/hr) |
| D1 | New Rogers DRYER 1 | 0.1867 | 0.1288 | 1.162 |
| D2 | Existing Rogers --1960 Rogers - DRYER 2 | 0.1867 | 0.1288 | 1.162 |
| D3 | Existing Blaw Knox Spray Dryer since 1985 - DRYER 3 | 0.1867 | 0.1288 | 0.775 |
| B1 | Boiler 150 hp York Shipley | 0.0449 | 0.0449 | 0.591 |
| B2 | Pending New Boiler 125 hp York Shipley | 0.0449 | 0.0449 | 0.591 |
| NR3A | Clothes Dryer | 0.0008 | 0.0008 | 0.0103 |
| NR3B | Clothes Dryer | 0.0008 | 0.0008 | 0.0103 |
| NR5A | Water Heater 1 | 0.0006 | 0.0006 | 0.0068 |
| NR5B | Water Heater 3 | 0.0015 | 0.0015 | 0.0181 |
| P1 | Tote-Dump Dust Collector at Ruberg Blenders | 0.1436 | 0.0325 | 7.94E-10 |
| P2 | Tote-Dump Dust Collector below Ruberg blenders | 0.1436 | 0.0325 | 7.94E-10 |
| NR4H | Break Room - Carrier HVAC | 0.0017 | 0.0017 | 0.0205 |
| NR4I | Blend Room - Carrier HVAC-1 | 0.0015 | 0.0015 | 0.0182 |
| NR4J | Blend Room - Carrier HVAC-2 | 0.0017 | 0.0017 | 0.0209 |
| NR4K | Blend Room - Carrier HVAC-3 | 0.0017 | 0.0017 | 0.0209 |
| NR4L | Blend Room - Carrier HVAC-4 | 0.0025 | 0.0025 | 0.0314 |
| NR4M | Shop - Carrier HVAC | 0.0025 | 0.0025 | 0.0314 |
| NR7A | E Side - Modine Unit Heater Down | 0.0014 | 0.0014 | 0.0177 |
| NR7B | E Side - Modine Unit Heater Up | 0.0014 | 0.0014 | 0.0177 |
| NR7C | Ph I ADP Unit Heater 1 | 0.0029 | 0.0029 | 0.0355 |
| NR7D | Ph I ADP Unit Heater 2 | 0.0029 | 0.0029 | 0.0355 |
| NR7K | E Shop- Modine Unit Heater 1 | 0.0007 | 0.0007 | 0.0091 |
| NR7L | E Shop- Modine Unit Heater 2 | 0.0007 | 0.0007 | 0.0091 |
| NR4A | Proc'B - Carrier HVAC | 0.0020 | 0.0020 | 0.0250 |
| NR4B | Blend'C - Carrier HVAC | 0.0020 | 0.0002 | 0.0250 |
| NR4C | QA - Carrier HVAC | 0.0013 | 0.0013 | 0.0164 |
| NR4D | QC - Carrier HVAC | 0.0005 | 0.0005 | 0.0067 |
| NR4E | E Side - Carrier HVAC Office | 0.0009 | 0.0009 | 0.0114 |
| NR4F | E Side - Carrier HVAC Bartelt | 0.0009 | 0.0009 | 0.0114 |
| NR4G | Littleford - Carrier HVAC-1 | 0.0009 | 0.0009 | 0.0114 |
| NR7E | Ph II ADP Unit Heater 1 | 0.0018 | 0.0018 | 0.0227 |
| NR7F | Ph II ADP Unit Heater 2 | 0.0013 | 0.0013 | 0.0164 |
| NR7G | Ph III ADP Unit Heater N-1 | 0.0013 | 0.0013 | 0.0164 |
| NR7H | Ph III ADP Unit Heater N-2 | 0.0013 | 0.0013 | 0.0164 |
| NR7I | Ph III ADP Unit Heater S-1 | 0.0013 | 0.0013 | 0.0164 |
| NR7J | Ph III ADP Unit Heater S-2 | 0.0008 | 0.0008 | 0.0105 |

a. Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.
b. Pounds per hour.
c. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.
d. Nitrogen oxides.

| Table 6. LONG-TERM EMISSIONS RATES USED IN MODELING ANALYSES | | | |
|---|---|---|---|
| **Emissions Point** | **Description** | **$PM_{2.5}$[a] (lb/hr)[b]** | **NOx[c] (lb/hr)** |
| D1 | New Rogers DRYER 1 | 0.1288 | 0.0774 (0.774)[d] |
| D2 | Existing Rogers --1960 Rogers - DRYER 2 | 0.1288 | 0.0774 (0.774)[d] |
| D3 | Existing Blaw Knox Spray Dryer since 1985 - DRYER 3 | 0.1288 | 0.0516 (0.516)[d] |
| B1 | Boiler 150 hp York Shipley | 0.0449 | 0.5905 |
| B2 | Pending New Boiler 125 hp York Shipley | 0.0449 | 0.5905 |
| NR3A | Clothes Dryer | 0.0008 | 0.0103 |
| NR3B | Clothes Dryer | 0.0008 | 0.0103 |
| NR5A | Water Heater 1 | 0.0006 | 0.0068 |
| NR5B | Water Heater 3 | 0.0015 | 0.0181 |
| P1 | Tote-Dump Dust Collector at Ruberg Blenders | 0.0325 | 7.94E-10 |
| P2 | Tote-Dump Dust Collector below Ruberg blenders | 0.0325 | 7.94E-10 |
| NR4H | Break Room - Carrier HVAC | 0.0017 | 0.0205 |
| NR4I | Blend Room - Carrier HVAC-1 | 0.0015 | 0.0182 |
| NR4J | Blend Room - Carrier HVAC-2 | 0.0017 | 0.0209 |
| NR4K | Blend Room - Carrier HVAC-3 | 0.0017 | 0.0209 |
| NR4L | Blend Room - Carrier HVAC-4 | 0.0025 | 0.0314 |
| NR4M | Shop - Carrier HVAC | 0.0025 | 0.0314 |
| NR7A | E Side - Modine Unit Heater Down | 0.0014 | 0.0177 |
| NR7B | E Side - Modine Unit Heater Up | 0.0014 | 0.0177 |
| NR7C | Ph I ADP Unit Heater 1 | 0.0029 | 0.0355 |
| NR7D | Ph I ADP Unit Heater 2 | 0.0029 | 0.0355 |
| NR7K | E Shop- Modine Unit Heater 1 | 0.0007 | 0.0091 |
| NR7L | E Shop- Modine Unit Heater 2 | 0.0007 | 0.0091 |
| NR4A | Proc'B - Carrier HVAC | 0.0020 | 0.0250 |
| NR4B | Blend'C - Carrier HVAC | 0.0002 | 0.0250 |
| NR4C | QA - Carrier HVAC | 0.0013 | 0.0164 |
| NR4D | QC - Carrier HVAC | 0.0005 | 0.0067 |
| NR4E | E Side - Carrier HVAC Office | 0.0009 | 0.0114 |
| NR4F | E Side - Carrier HVAC Bartelt | 0.0009 | 0.0114 |
| NR4G | Littleford - Carrier HVAC-1 | 0.0009 | 0.0114 |
| NR7E | Ph II ADP Unit Heater 1 | 0.0018 | 0.0227 |
| NR7F | Ph II ADP Unit Heater 2 | 0.0013 | 0.0164 |
| NR7G | Ph III ADP Unit Heater N-1 | 0.0013 | 0.0164 |
| NR7H | Ph III ADP Unit Heater N-2 | 0.0013 | 0.0164 |
| NR7I | Ph III ADP Unit Heater S-1 | 0.0013 | 0.0164 |
| NR7J | Ph III ADP Unit Heater S-2 | 0.0008 | 0.0105 |

a. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.

b. Pounds per hour.

c. Nitrogen oxides.

d. Commercial Creamery's annual $NO_2$ NAAQS demonstration modeled dryer emissions equal to one tenth the requested allowable hourly emissions rates based on annual hours of operation (5,840 hours per year at rated natural gas combustion capacity) for Dryers D1, D2, and D3. DEQ modeling staff performed a verification run applying the emission rates based on the annual emissions in the final emissions spreadsheet for this project under the "Emissions Roll-Up" tab in the section titled "Post-Project Potential to Emit for NSR Regulated Pollutants" with 3.39 tons per year for Dryers D1 and D2 and 2.26 tons per year for Dryer D3. Hourly emissions were determined by averaging the annual emissions over 8,760 hours per year. Theese aree the same emission rates used in the modeling analyses for the existing PTC (P-2013.0065, Project 61306, issued 3/28/2014).

## 3.10 Emission Release Parameters

Tables 7a and 7b list emissions release parameters for modeled sources. There are no emission points that are capped stacks. The majority of the heating units were modeled with horizontal releases. The primary sources of particulate matter emissions for this project are the three dryer units. Each of the dryer unit stacks was modeled with a vertical and uninterrupted release.

**Table 7a. EMISSIONS RELEASE PARAMETERS (METRIC UNITS)**

| Release Point | Description | UTM[a] Coordinates, Zone 11 | | Stack Base Elevation (m) | Stack Height (m) | Modeled Diameter (m) | Stack Gas Temp (K)[c] | Stack Flow Velocity (m/s)[d] | Stack Release Type |
|---|---|---|---|---|---|---|---|---|---|
| | | Easting (m)[b] | Northing (m) | | | | | | |
| D1 | New Rogers DRYER 1 | 702844.4 | 4732979.5 | 1141.6 | 17.98 | 1.27 | 322.3 | 11.36 | Default[e] |
| D2 | Existing Rogers --1960 Rogers - DRYER 2 | 702822.1 | 4732956.1 | 1141.3 | 15.24 | 1.27 | 317.8 | 12.44 | Default |
| D3 | Existing Blaw Knox Spray Dryer since 1985 - DRYER 3 | 702818.5 | 4732976.2 | 1141.3 | 15.24 | 1.09 | 311.1 | 8.79 | Default |
| B1 | Boiler 150 hp York Shipley | 702791.2 | 4732973 | 1140.9 | 14.94 | 0.3048 | 374.8 | 14.04 | Default |
| B2 | Pending New Boiler 125 hp York Shipley | 702787.6 | 4732973 | 1140.8 | 14.33 | 0.3048 | 374.8 | 11.64 | Default |
| NR3A | Clothes Dryer | 702858 | 4732973.4 | 1141.8 | 6.4 | 0.080 | 333.2 | 15.02 | Default |
| NR3B | Clothes Dryer | 702863 | 4732973.4 | 1141.8 | 6.4 | 0.080 | 333.2 | 15.02 | Default |
| NR5A | Water Heater 1 | 702868 | 4732973.4 | 1141.9 | 6.4 | 0.080 | 322.0 | 3.76 | Default |
| NR5B | Water Heater 3 | 702795 | 4733002.2 | 1141.0 | 10.97 | 0.100 | 344.3 | 3.00 | Default |
| P1 | Tote-Dump Dust Collector at Ruberg Blenders | 702797 | 4732999 | 1141.1 | 14.94 | 0.080 | 366.5 | 23.47 | Default |
| P2 | Tote-Dump Dust Collector below Ruberg blenders | 702800.7 | 4732999 | 1141.1 | 14.94 | 0.080 | 366.5 | 23.47 | Default |
| NR4H | Break Room - Carrier HVAC | 702794.2 | 4733004 | 1141.0 | 9.75 | 0.15 | 308.2 | 3.07 | Default |
| NR4I | Blend Room-Carrier HVAC-1 | 702789.5 | 4733002.2 | 1141.0 | 6.71 | 0.15 | 305.4 | 2.67 | Default |
| NR4J | Blend Room-Carrier HVAC-2 | 702793.2 | 4733002.2 | 1141.0 | 6.71 | 0.13 | 316.5 | 4.09 | Default |
| NR4K | Blend Room-Carrier HVAC-3 | 702796.9 | 4733002.2 | 1141.1 | 6.71 | 0.13 | 316.5 | 4.09 | Default |
| NR4L | Blend Room-Carrier HVAC-4 | 702800.6 | 4733002.2 | 1141.1 | 11.28 | 0.15 | 316.5 | 4.67 | Default |
| NR4M | Shop - Carrier HVAC | 702852.7 | 4733006.5 | 1141.8 | 11.28 | 0.15 | 316.5 | 4.67 | Default |
| NR7A | E Side - Modine Unit Heater Down | 702944 | 4732993.2 | 1142.8 | 11.28 | 0.13 | 322.1 | 0.001 | Horizontal |
| NR7B | E Side - Modine Unit Heater Up | 702945 | 4732992.3 | 1142.8 | 11.28 | 0.13 | 322.1 | 0.001 | Horizontal |
| NR7C | Ph I ADP Unit Heater 1 | 702788 | 4733017.6 | 1141.0 | 11.28 | 0.15 | 333.2 | 5.34 | Default |
| NR7D | Ph I ADP Unit Heater 2 | 702837 | 4733031 | 1141.7 | 11.28 | 0.15 | 333.2 | 5.34 | Default |
| NR7K | E Shop-Modine Unit Heater 1 | 702959 | 4733028 | 1143.2 | 6.71 | 0.15 | 330.4 | 1.34 | Default |
| NR7L | E Shop-Modine Unit Heater 2 | 702957 | 4733008 | 1143.1 | 6.71 | 0.15 | 330.4 | 1.34 | Default |
| NR4A | Proc'B - Carrier HVAC | 702832 | 4732991 | 1141.5 | 7.31 | 0.080 | 410.9 | 0.001 | Horizontal |
| NR4B | Blend'C - Carrier HVAC | 702861.4 | 4732991 | 1141.9 | 5.79 | 0.080 | 410.9 | 0.001 | Horizontal |
| NR4C | QA - Carrier HVAC | 702861 | 4732980 | 1141.8 | 6.4 | 0.080 | 372.1 | 0.001 | Horizontal |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| NR4D | QC - Carrier HVAC | 702863 | 4732980 | 1141.9 | 7.31 | 0.150 | 372.1 | 0.001 | Horizontal |
| NR4E | E Side - Carrier HVAC Office | 702904 | 4732976 | 1142.3 | 7.62 | 0.080 | 399.8 | 0.001 | Horizontal |
| NR4F | E Side - Carrier HVAC Bartelt | 702934 | 4732964.3 | 1142.4 | 6.1 | 0.080 | 388.7 | 0.001 | Horizontal |
| NR4G | Littleford - Carrier HVAC-1 | 702934 | 4732958.5 | 1142.3 | 6.1 | 0.080 | 388.7 | 0.001 | Horizontal |
| NR7E | Ph II ADP Unit Heater 1 | 702782 | 4733011.4 | 1140.9 | 10.97 | 0.080 | 399.8 | 0.001 | Horizontal |
| NR7F | Ph II ADP Unit Heater 2 | 702782 | 4732982 | 1140.8 | 10.97 | 0.080 | 388.7 | 0.001 | Horizontal |
| NR7G | Ph III ADP Unit Heater N-1 | 702789 | 4733011.4 | 1141.0 | 10.97 | 0.080 | 388.7 | 0.001 | Horizontal |
| NR7H | Ph III ADP Unit Heater N-2 | 702807 | 4733009 | 1141.2 | 10.97 | 0.080 | 388.7 | 0.001 | Horizontal |
| NR7I | Ph III ADP Unit Heater S-1 | 702789 | 4732983.5 | 1140.9 | 10.97 | 0.080 | 388.7 | 0.001 | Horizontal |
| NR7J | Ph III ADP Unit Heater S-2 | 702807 | 4732988 | 1141.2 | 7.32 | 0.080 | 360.9 | 0.001 | Horizontal |

a. Universal Transverse Mercator.
b. Meters.
c. Temperature in Kelvin.
d. Meters per second.
e. Default = uninterrupted vertical release.

| Table 7b. EMISSIONS RELEASE PARAMETERS (ENGLISH UNITS) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Release Point** | **Description** | **UTM[a] Coordinates, Zone 11** | | **Stack Base Elevation (ft)[b]** | **Stack Height (ft)** | **Modeled Diameter (ft)** | **Stack Gas Temperature (°F)[c]** | **Stack Flow Velocity (fps)[d]** | **Stack Release Type** |
| | | **Easting (m)[b]** | **Northing (m)** | | | | | | |
| D1 | New Rogers DRYER 1 | 702844.4 | 4732979.5 | 3745.5 | 59.0 | 4.17 | 120.5 | 37.27 | Default[e] |
| D2 | Existing Rogers --1960 Rogers - DRYER 2 | 702822.1 | 4732956.1 | 3744.4 | 50.0 | 4.17 | 112.3 | 40.81 | Default |
| D3 | Existing Blaw Knox Spray Dryer since 1985 - DRYER 3 | 702818.5 | 4732976.2 | 3744.3 | 50.0 | 3.58 | 100.3 | 28.84 | Default |
| B1 | Boiler 150 hp York Shipley | 702791.2 | 4732973 | 3743.1 | 49.0 | 1.00 | 215.0 | 46.05 | Default |
| B2 | Pending New Boiler 125 hp York Shipley | 702787.6 | 4732973 | 3742.8 | 47.0 | 1.00 | 215.0 | 38.20 | Default |
| NR3A | Clothes Dryer | 702858 | 4732973.4 | 3745.9 | 21.0 | 0.26 | 140.0 | 49.28 | Default |
| NR3B | Clothes Dryer | 702863 | 4732973.4 | 3746.2 | 21.0 | 0.26 | 140.0 | 49.28 | Default |
| NR5A | Water Heater 1 | 702868 | 4732973.4 | 3746.4 | 21.0 | 0.26 | 120.0 | 12.32 | Default |
| NR5B | Water Heater 3 | 702795 | 4733002.2 | 3743.5 | 36.0 | 0.33 | 160.1 | 9.86 | Default |
| P1 | Tote-Dump Dust Collector at Ruberg Blenders | 702797 | 4732999 | 3743.6 | 49.0 | 0.26 | 200.0 | 77.01 | Default |
| P2 | Tote-Dump Dust Collector below Ruberg blenders | 702800.7 | 4732999 | 3743.8 | 49.0 | 0.26 | 200.0 | 77.01 | Default |
| NR4H | Break Room - Carrier HVAC | 702794.2 | 4733004 | 3743.5 | 32.0 | 0.49 | 95.1 | 10.08 | Default |
| NR4I | Blend Room-Carrier HVAC-1 | 702789.5 | 4733002.2 | 3743.3 | 22.0 | 0.49 | 90.1 | 8.76 | Default |
| NR4J | Blend Room-Carrier HVAC-2 | 702793.2 | 4733002.2 | 3743.4 | 22.0 | 0.43 | 110.0 | 13.42 | Default |
| NR4K | Blend Room-Carrier | 702796.9 | 4733002.2 | 3743.6 | 22.0 | 0.43 | 110.0 | 13.42 | Default |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | HVAC-3 | | | | | | | | |
| NR4L | Blend Room-Carrier HVAC-4 | 702800.6 | 4733002.2 | 3743.8 | 37.0 | 0.49 | 110.0 | 15.33 | Default |
| NR4M | Shop - Carrier HVAC | 702852.7 | 4733006.5 | 3746.1 | 37.0 | 0.49 | 110.0 | 15.33 | Default |
| NR7A | E Side - Modine Unit Heater Down | 702944 | 4732993.2 | 3749.3 | 37.0 | 0.43 | 120.0 | 0.003 | Horizontal |
| NR7B | E Side - Modine Unit Heater Up | 702945 | 4732992.3 | 3749.3 | 37.0 | 0.43 | 120.0 | 0.003 | Horizontal |
| NR7C | Ph I ADP Unit Heater 1 | 702788 | 4733017.6 | 3743.3 | 37.0 | 0.49 | 140.1 | 17.52 | Default |
| NR7D | Ph I ADP Unit Heater 2 | 702837 | 4733031 | 3745.8 | 37.0 | 0.49 | 140.1 | 17.52 | Default |
| NR7K | E Shop-Modine Unit Heater 1 | 702959 | 4733028 | 3750.6 | 22.0 | 0.49 | 135.1 | 4.38 | Default |
| NR7L | E Shop-Modine Unit Heater 2 | 702957 | 4733008 | 3750.2 | 22.0 | 0.49 | 135.1 | 4.38 | Default |
| NR4A | Proc'B - Carrier HVAC | 702832 | 4732991 | 3745.1 | 24.0 | 0.26 | 280.0 | 0.003 | Horizontal |
| NR4B | Blend'C - Carrier HVAC | 702861.4 | 4732991 | 3746.3 | 19.0 | 0.26 | 280.0 | 0.003 | Horizontal |
| NR4C | QA - Carrier HVAC | 702861 | 4732980 | 3746.2 | 21.0 | 0.26 | 210.1 | 0.003 | Horizontal |
| NR4D | QC - Carrier HVAC | 702863 | 4732980 | 3746.3 | 24.0 | 0.49 | 210.1 | 0.003 | Horizontal |
| NR4E | E Side - Carrier HVAC Office | 702904 | 4732976 | 3747.7 | 25.0 | 0.26 | 260.0 | 0.003 | Horizontal |
| NR4F | E Side - Carrier HVAC Bartelt | 702934 | 4732964.3 | 3748.0 | 20.0 | 0.26 | 240.0 | 0.003 | Horizontal |
| NR4G | Littleford - Carrier HVAC-1 | 702934 | 4732958.5 | 3747.8 | 20.0 | 0.26 | 240.0 | 0.003 | Horizontal |
| NR7E | Ph II ADP Unit Heater 1 | 702782 | 4733011.4 | 3743.0 | 36.0 | 0.26 | 260.0 | 0.003 | Horizontal |
| NR7F | Ph II ADP Unit Heater 2 | 702782 | 4732982 | 3742.7 | 36.0 | 0.26 | 240.0 | 0.003 | Horizontal |
| NR7G | Ph III ADP Unit Heater N-1 | 702789 | 4733011.4 | 3743.3 | 36.0 | 0.26 | 240.0 | 0.003 | Horizontal |
| NR7H | Ph III ADP Unit Heater N-2 | 702807 | 4733009 | 3744.2 | 36.0 | 0.26 | 240.0 | 0.003 | Horizontal |
| NR7I | Ph III ADP Unit Heater S-1 | 702789 | 4732983.5 | 3743.2 | 36.0 | 0.26 | 240.0 | 0.003 | Horizontal |
| NR7J | Ph III ADP Unit Heater S-2 | 702807 | 4732988 | 3744.0 | 24.0 | 0.26 | 190.0 | 0.003 | Horizontal |

a. Universal Transverse Mercator.
b. Feet.
c. Degrees Fahrenheit.
d. Feet per second.
e. Default = uninterrupted vertical release.

DEQ's permitting policies and guidance require that each permit application have stand-alone documentation to support the appropriateness of release parameters used in the air impact analyses. Commercial Creamery's February 3, 2016, incompleteness response submittal (Section 0.3.2) addressed DEQ questions and concerns on release parameters and clarified assumptions made by MEAS for release parameter values used in the analyses. Appendix E of that submittal includes Commercial Creamery staff documentation of release parameters in Exhibits 1A, 1B, and 1C. Each exhibit is a more recent re-evaluation of the parameters than the preceding exhibit. Exhibit 1C is the most recent version and thus, the relevant justification documentation.

**Dryers D1, D2, and D3**

The primary sources of particulate matter are the three dryer units. The modeling report indicated there are over 200 unique dried cheese product "recipes" with varying material type, dryer unit process temperature, process air flow rate, and other process parameters. Commercial Creamery and MEAS did not find a linear relationship with the product type, temperature, flow rate, or other process parameters.

Thus, the dryer units are operated as "batch" processes that have unique temperature and exhaust flow volume. The submittal did not adequately document that the worst-case parameters were modeled; however, DEQ is satisfied that typical representative release parameters have been used in the modeling air impact analyses for the three dryer unit stacks. Actual source test volumetric flow rates and temperatures were used for model inputs and DEQ concluded that these values are appropriate based on the submitted description of the facility's operations.

Stack dimensions for Dryers D2 and D3 were established by measurement during stack testing. Each stack is a rectangular stack with the exit dimensions the same as the test port location dimensions. The source test cross sectional area was 13.33 square feet for Dryer D2, which provides a 49.4-inch equivalent diameter for each of these stacks. Dryer D2 was modeled with a 50-inch diameter stack. Dryer D3 had a cross sectional area 10.0 square feet, or 42.8 inches in equivalent diameter. Dryer D2 was modeled with a 43-inch diameter stack. Commercial Creamery accurately modeled these stack diameter values.

The derivation of Dryer D1 stack diameter was clarified in Section 3.0 of the Feb 3, 2016 revised application submittal. The schematic diagram specified an inner stack 50 inches in diameter that is connected to the process unit at ground level. A wind shroud of 68 inches in diameter extends approximately 3 feet above the termination of the inner stack. Rain flaps open and move out of way during operation of the dryer. The diagram lists a 50-inch diameter stack and this closely matches the source test velocity traverse data, which indicated the stack had a 13.36 square feet release area, equivalent to a 49.5-inch stack diameter.

Stack heights for the three dryers were documented in Exhibit 1C of Appendix E of the February 3, 2016 submittal. Exhibit 1C documentation placed the release heights of the Dryers 1, 2, and 3 at 58 feet, 48, feet, and 48 feet above grade, respectively. Commercial Creamery's model setup used release heights for Dryers 1, 2, and 3 at 59 feet, 50 feet, and 50 feet above grade, respectively. These small differences will not affect the compliance status of the project with any applicable NAAQS.

Dryers 2 and 3 were modeled with uninterrupted vertical releases points. DEQ observation of these stacks using Google Earth® images indicated door flap rain covers were present. DEQ requested substantiation that these stacks were not operated with impeded flow. Commercial Creamery's January 28, 2016 submittal titled "Response to DEQ's 29 Dec 2015 *Request for Information*" contained a narrative description and photos, marked with a 2014 date, of the termination points of these stacks. The door flap rain covers that were observed on Google Earth® images are not installed on the stacks at this time and Commercial Creamery certified that these stacks vent vertically and uninterrupted at all times during operation.

**Boilers B1 and B2:**
The boilers were modeled with vertical uninterrupted releases. Exit temperatures for each boiler were listed as 215 degrees Fahrenheit (°F). This appears to be a conservative value for the boiler exhaust, based on typical exhaust temperatures used in other DEQ permitting applications, and the temperatures were accepted without additional justification.

Exhaust flow rates appeared accurate, given that EPA F-Factor flow rate for natural gas combustion was consistent with the modeled flow rate for each boiler. The F-Factor flow rate was corrected from standard temperature and pressure to the atmospheric pressure at 3,500 feet of elevation at the site and 215 °F exit temperature. The manufacturer's exhaust flue diameter at the location where the stack and flue connect was listed as 11.5 inches. The measured boiler stack diameter at release of the exhaust to the atmosphere was 12 inches for each boiler. The boiler exhaust flow specification and the flow using a 12-inch diameter is identical to that listed in Appendix E-Exhibit 1A: Engineer's Source Data Transcription contained in the February 3, 2016 submittal (Exhibit 1A) and updated on-site validation records by Commercial Creamery staff listed in Exhibits 1B and 1C. The stack release heights were confirmed by Commercial Creamery engineering staff and the modeled value is the height above grade rounded down to the nearest foot value. Modeled stack release heights were slightly higher for the two boilers than what was indicated in supporting documentation. Boiler 1 and 2 were modeled at 49 feet and 47 feet above grade, respectively. Exhibit 1C places the stack release heights for both boilers at 45 feet above grade. These discrepancies were accepted by DEQ for this project because the ambient impacts facility-wide will not approach any of the applicable NAAQS **for this project** with the reduced stack heights.

**Other Natural Gas Combustion Sources-Hot Water Heaters, Clothes Dryers, HVAC Units:**
DEQ spot checked these sources' modeled release parameters versus the support documentation, finding general consistency with the support documentation presented in the modeling report's Exhibit 1C. Any changes made as a result of the June 29, 2016, and July 7, 2016, submittals have been accepted without additional review by DEQ modeling staff.

DEQ accepted the final modeling's release parameters as submitted as appropriate values for the project.

## 4.0 Results for Air Impact Analyses

### *4.1 Results for Significant Impact Analyses*

Commercial Creamery did not perform significant impacts level (SIL) analyses for those pollutants modeled. DEQ requested that a cumulative impact analysis be performed for the new allowable $PM_{2.5}$ emissions. A cumulative $PM_{10}$ NAAQS demonstration was also requested. Commercial Creamery presented cumulative impact analyses, also titled as a "full-impact analysis," for 24-hour $PM_{10}$, annual $PM_{2.5}$, and 24-hour $PM_{2.5}$. No other pollutant emissions increases were associated with this project.

### *4.2 Results for Cumulative NAAQS Impact Analyses*

The results for the cumulative impact analyses are listed in Table 8. Ambient impacts for the facility were well below the applicable NAAQS.

| Table 8. RESULTS FOR CUMULATIVE IMPACT ANALYSES | | | | | | |
|---|---|---|---|---|---|---|
| **Pollutant** | **Averaging Period** | **Modeled Design Value Concentration ($\mu g/m^3$)[a]** | **Background Concentration ($\mu g/m^3$)** | **Total Ambient Impact ($\mu g/m^3$)** | **NAAQS[b] ($\mu g/m^3$)** | **Percent of NAAQS** |
| $PM_{2.5}$[c] | 24-hour | 2.7[e] | 24 | 26.7 | 35 | 76% |
| | Annual | 1.0[f] | 8 | 9 | 12 | 75% |
| $PM_{10}$[d] | 24-hour | 8.9[g] | 52 | 61.9 | 150 | 41% |
| $NO_2$[l] | 1-hour | 93.9[h] (67.5)[i] | 24.4 | 120.0 (91.9) | 188 | 64% (49%) |
| | Annual | 5.24[j] (6.21)[k] | 4.1 | 9.3 (10.2) | 100 | 9% (10%) |

a. Micrograms per cubic meter.
b. National ambient air quality standards.
c. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.
d. Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.
e. Modeled design value is the maximum 5-year mean of 8th highest 24-hour values from each year of a 5-year meteorological dataset.
f. Modeled design value is the maximum 5-year mean of annual average values from each year of a 5-year meteorological dataset.
g. Modeled design value is the maximum of 6th highest 24-hour values from a 5-year meteorological dataset.
h. Modeled design value included in Commercial Creamery's submitted AERMOD output file was 93.9 $\mu g/m^3$, 1-hr average, 8th highest value of 5 years of meteorological data. This is not in the form of the 1-hour $NO_2$ NAAQS design impact. See Figure 6 below to review AERMOD program processing comments. The design value listed in the supplied results table titled "NAAQS Impact Analysis Summary" contained a design value of 95.60 $\mu g/m^3$.
i. DEQ's verification analyses design impact does not match Commercial Creamery's revised NAAQS table impact of 95.6 $\mu g/m^3$. This is because EPA guidance established the design impact as the maximum 8th highest maximum daily 1-hour average impact averaged over 5 years of meteorological data, which is considerably less conservative than the maximum 8th high 1-hour value over the entire 5-year dataset. DEQ verification results are listed in parentheses.
j. Maximum annual value averaged over 5 years of meteorological data. This impact was established using Dryers D1, D2, and D3 with NOx emission rates equal to 10 percent of the requested allowable NOx emissions on an annual average basis.
k. DEQ verification analyses results are listed in parentheses. Design value is the maximum annual value of 5 individual years of meteorological data. Emissions for Dryers D1, D2, and D3 were increased to requested allowable rates in DEQ verification analyses.
l. Nitrogen dioxide.

### *4.3 Results for DEQ Verification Analyses*

DEQ modeling staff performed additional analyses for the 1-hour average $NO_2$ NAAQS analyses and the annual average $NO_2$ NAAQS analyses. The following is a description of issues relating to the submitted analyses that were later addressed through DEQ verification analyses.

- The 1-hour average $NO_2$ analyses scenario must be run separately from other averaging periods for AERMOD to employ the special processing algorithms that calculate a design impact in the form of the ambient standard—namely the maximum 8th highest maximum daily 1-hour impact averaged over a 5-year meteorological dataset. Figure 6 shows the AERMOD output file message regarding processing multiple averaging periods when processing the 1-hour average period for $NO_2$.
- The annual average $NO_2$ analyses increased the modeled total NOx emission rate for Dryers 1 and 2 to 0.77 lb/hr, each, and to 0.52 lb/hr for Dryer 3. These emissions were modeled for 8,760 hours per year.

**Figure 6. $NO_2$ Processing Comment from AERMOD Output File**

```
**The User Specified a Pollutant Type of:  NO2

**NOTE: Special processing requirements applicable for the 1-hour NO2 NAAQS have been disabled!!!
        User has specified H1H on the POLLUTID keyword.
        High ranked 1-hour values are NOT averaged across the number of years modeled, and
        complete years of data are NOT required.

**Model Calculates  1 Short Term Average(s) of:   1-HR
    and Calculates ANNUAL Averages
```

The results of the verification analyses are listed in Table 9.

| **Table 9. RESULTS FOR DEQ $NO_2$ VERIFICATION ANALYSES** | | | | | | |
|---|---|---|---|---|---|---|
| **Pollutant** | **Averaging Period** | **Modeled Design Value Concentration ($\mu g/m^3$)[a]** | **Year of Meteorological Data** | **Receptor UTM[b] Coordinates, Zone 11** | | |
| | | | | **Easting (m)[d]** | **Northing (m)** | **Elevation (m)** |
| $NO_2$[c] | Annual | **6.21[e]** | **2008** | **702,910** | **4,733,005** | **1,142.5** |
| | | 5.77 | 2009 | 702,895 | 4,732,995 | 1,142.3 |
| | | 5.45 | 2010 | 702,875 | 4,732,982 | 1,142.03 |
| | | 6.03 | 2011 | 702,875 | 4,733,007 | 1,142.12 |
| | | 5.67 | 2012 | 702,875 | 4,733,007 | 1,142.12 |
| | 1-hour | **67.55** | **5 years** | **702,947.0** | **4,732,994.0** | **1,142.8** |

a. Micrograms per cubic meter.
b. Universal Transverse Mercator.
c. Nitrogen dioxide.
d. Meters.
e. Modeled design value is the maximum 5-year mean of 8th highest 24-hour values from each year of a 5-year meteorological dataset.
f. Modeled design value is the maximum 5-year mean of annual average values from each year of a 5-year meteorological dataset.
g. Modeled design value is the maximum of 6th highest 24-hour values from a 5-year meteorological dataset.
h. Modeled design value included in Commercial Creamery's submitted AERMOD output file was 93.9 $\mu g/m^3$, 1-hr average, 8th highest value of 5 years of meteorological data. This is not in the form of the 1-hour $NO_2$ NAAQS design impact. See Figure 6 below to review AERMOD program processing comments. The design value listed in the supplied results table titled "NAAQS Impact Analysis Summary" contained a design value of 95.60 $\mu g/m^3$.
i. DEQ verification analyses design impact does not match Commercial Creamery's revised NAAQS table impact of 95.6 $\mu g/m^3$. This is because the design impact is the maximum 8th highest maximum daily 1-hour average impact averaged over 5 years of meteorological data, which is considerably less conservative than the maximum 8th high 1-hour value over the entire 5 year dataset. DEQ verification results in parentheses.
j. Maximum annual value averaged over 5 years of meteorological data. This impact was established using Dryers D1, D2, and D3 with NOx emission rates equal to 10 percent of the requested allowable NOx emissions on an annual average basis.
k. DEQ verification analyses in parentheses. Design value is the maximum annual value averaged over a 5-year meteorological dataset. Emissions for Dryers D1, D2, and D3 were increased to requested allowable rates in DEQ verification analyses.

## 5.0 Conclusions

The submitted ambient air impact analyses, in combination with DEQ verification analyses, demonstrated to DEQ's satisfaction that emissions from the Commercial Creamery facility will not cause or significantly contribute to a violation of the 1-hour $NO_2$, annual $NO_2$, 24-hour $PM_{10}$, 24-hour $PM_{2.5}$, and annual $PM_{2.5}$ NAAQS.

## References


1. *Policy on NAAQS Compliance Demonstration Requirements of IDAPA 58.01.01.203.02 and 01.403.02.* Idaho Department of Environmental Quality Policy Memorandum. Tiffany Floyd, Administrator, Air Quality Division, June 10, 2014.

2. *State of Idaho Guideline for Performing Air Quality Impact Analyses.* Idaho Department of Environmental Quality. September 2013. State of Idaho DEQ Air Doc. ID AQ-011. Available at http://www.deq.idaho.gov/media/1029/modeling-guideline.pdf.

3. *Ambient Ratio Method Version 2(ARM2) for use with AERMOD for1-hr $NO_2$ Modeling Development and Evaluation Report,* Prepared for American Petroleum Institute, 1220 L Street NW, Washington, DC 20005, by M. Podrez, RTP Environmental Associates, Inc., 2031 Broadway, Suite 2, Boulder, Colorado 80302, September 20, 2013.

4. *Clarification on the Use of AERMOD Dispersion Modeling for Demonstrating Compliance with the $NO_2$ National Ambient Air Quality Standard,* R. Chris Owen and Roger Brode, Environmental Protection Agency, Office of Air Quality Planning and Standards, September 30, 2014.

## APPENDIX B – PROCESSING FEE

## PTC Fee Calculation

**Instructions:**
**Fill in the following information and answer the following questions with a Y or N. Enter the emissions increases and decreases for each pollutant in the table.**

**Company:** **Commercial Creamery Company**
**Address:** **218 South Birch Street**
**City:** **Jerome**
**State:** **Idaho**
**Zip Code:** **83338**
**Facility Contact:** **Norman Ricks**
**Title:** **Permitting Contact**
**AIRS No.:** **053-00031**

**N** Does this facility qualify for a general permit (i.e. concrete batch plant, hot-mix asphalt plant)? Y/N

**Y** Did this permit require engineering analysis? Y/N

**N** Is this a PSD permit Y/N (IDAPA 58.01.01.205.04)

| Emissions Inventory | | | |
|---|---|---|---|
| Pollutant | Annual Emissions Increase (T/yr) | Annual Emissions Reduction (T/yr) | Annual Emissions Change (T/yr) |
| $NO_X$ | 0.0 | 0 | 0.0 |
| $SO_2$ | 0.0 | 0 | 0.0 |
| CO | 0.0 | 0 | 0.0 |
| PM10 | 2.0 | 0 | 2.0 |
| VOC | 0.0 | 0 | 0.0 |
| TAPS/HAPS | 0.0 | 0 | 0.0 |
| Total: | 0.0 | 0 | **2.0** |
| | | | |
| Fee Due | **$ 2,500.00** | | |

Comments: