

Louisville Metro Air Pollution Control District
850 Barret Ave., Louisville, Kentucky 40204

Title V Statement of Basis

Company: Brown Forman Distillery
Plant Location: 2921 Dixie Highway, Louisville, KY 40216

Application Received: 25 July 2005 **Administratively Complete:** 23 September 2005
6 April 2009
20 July 2011

Draft Permit: 4 March 2012 **Proposed Permit:** 4 March 2012
District Engineer: Rick Williams **Permit No:** 136-97-TV (R1)
Permit Issued: 27 April 2012

Plant ID: 0244 **SIC Code:** 2085 **NAICS:** 312140 **AFS:** 00244

Introduction:

This permit will be issued pursuant to: (1) Regulation 2.16, (2) Title 40 of the Code of Federal Regulations Part 70, and (3) Title V of the Clean Air Act Amendments of 1990. Its purpose is to identify and consolidate existing District and Federal air requirements and to provide methods of determining continued compliance with these requirements.

Jefferson County is classified as an attainment area for lead (Pb), sulfur dioxide (SO₂), nitrogen dioxide (NO₂), carbon monoxide (CO), 1 hr and 8 hr ozone (O₃), and particulate matter less than 10 microns (PM₁₀); and is a non-attainment area for particulate matter less than 2.5 microns (PM_{2.5}).

Application Type/Permit Activity:

- Initial Issuance
- Permit Revision
 - Administrative
 - Minor
 - Significant
- Permit Renewal
- Construction

Compliance Summary:

- Compliance certification signed
- Source is out of compliance
- Compliance schedule included
- Source is operating in compliance

I. Source Information

1. **Product Description:** Brown-Forman Distillery produces a variety of distilled spirits.
2. **Process Description:** Brown-Forman Distillery produces distilled spirits through several major production processes:

Grain, generally consisting of corn, rye, and malted barley, is received, cleaned, and milled. The milled grain is mixed with water and cooked to produce mash. The mash is mixed with yeast to ferment the mixture. The fermented mixture is processed in a column still to concentrate the alcohol. The spent grains are dried and sold as animal feed. The alcohol is discharged from the stills into tanks, located in the cistern room. This raw whiskey is diluted by adding filtered water to achieve the proper proof prior to transfer to barrels. The filled barrels are transported to warehouses for storage while the whiskey matures. The matured whiskey is then drained from the barrels and the barrels are rinsed. The matured whiskey is stored in stainless steel tanks, loaded on tank trucks, and transported off-site. Barrels of whiskey are also received from other distilleries for storage and maturation; these barrels are then shipped back off-site once the maturation period is complete.

On a separate low-alcohol bottling line, beverage alcohol is transported to the facility by tank truck and off-loaded into storage tanks. Various flavorings and additives are mixed with the beverage alcohol in blending tanks. The processed beverage is carbonated, bottled, labeled, and packaged.

3. **Site Determination:** There are no other facilities that are contiguous or adjacent and under common control.
4. **Emission Unit Summary:**

U1 - Grain Handling Operation: Grain (corn, rye, and malted barley) is received by either railroad car or truck. After cleaning, the grain is transferred to temporary storage until it is milled. Milling breaks the outer protective wall of the grain kernel, exposing the internal starchy structure. From the mills, the grain is transferred to smaller storage bins, awaiting the next step in the process. Grain mashing involves cooking the grains in water and mixing with malt to convert the soluble starches in the grain to "grain sugar."

U1A – Fermentation: Fermentation converts the grain sugars to ethanol and CO₂ after the mash is mixed with yeast. The fermentation process normally is completed in three to five days. After the fermentation process is complete, the grain/alcohol mixture (now called "beer") is agitated to suspend the solids and pumped to the "beer well" for temporary storage before distillation.

U2 - Barrel Filling Operations: Following the mashing, fermentation and distillation processes, the distillate is transferred into stainless steel cistern tanks and diluted with filtered water to the desired alcohol concentration. From the cistern tanks, the distilled spirits are transferred to the barreling operation and loaded into wooden barrels or loaded into tank trucks for shipment off-site.

U2A - Barrel Dumping Operations: After aging, the whiskey is removed from the barrels, stored in stainless steel cistern tanks, mixed with filtered water to the desired alcohol concentration, and loaded in tank trucks for transfer to an off-site bottling facility. Barrels of mature whiskey are also transported off-site *via* truck.

U3 - By-products Processing and Handling: Whole stillage from the bottom of the distillation columns is passed through a set-back screen to separate the grain (thick) stillage from the liquid (thin) stillage. The thick stillage is loaded into a storage tank prior to being transferred into a paddle screen and rotary press for further separation. The thick stillage then enters a rotary dryer to drive off the remaining moisture. The Distillers Dried Grain is then loaded into a by-products storage tank prior to being conveyed onto trucks for off-site shipment. The thin stillage is pumped from the set-back and paddles screens into the backset storage tanks for subsequent use in the mashing units. Thin stillage overflow is pumped into one of the thin stillage storage tanks. This thin stillage then enters a steam-heated evaporator that concentrates the stillage by driving off the moisture, and is transferred into the bulk syrup tank. The syrup tank feeds the dehydrators that further drive off moisture from the thin stillage. The dried product (Solubles) is transferred via cyclones to a final cyclone that conveys the material to storage.

U4 - Power Generation: The company operates one 90 MMBtu/hr which can be fired with either coal or natural gas, designated as Boiler #1, and one 55 MMBtu/hr natural-gas fired boiler, designated as Boiler #2. These boilers are used to generate process steam. Steam generated by the boilers is used in the mashing units, distillation columns, multiple-effect evaporators, steam tube dryers, dehydrators, the low-alcohol bottling line, and the warehouse.

U5 - Low Alcohol Beverage Line: The Company operates a bottling line to produce a 5% alcohol product. Beverage alcohol and other ingredients are blended on site prior to bottling. Finished goods are shipped from this location.

U6 - Whiskey Maturation Warehouses: The barrels are transported from the barreling operations to maturation warehouses and stored for a period of three to ten years to allow maturation. Matured barrels are removed from the warehouses and either taken to the dump room where the whiskey is drained, or transferred off-site *via* truck.

5. Permit Revisions

| Title V Permit Revision History | | | | | | |
|--|---------------|--------------------|---------|---------------|---|------------|
| Revision | Issue Date | Public Notice Date | Type | Page # | Description | |
| Original | 22 Jan 2001 | 24 Sept 2000 | Initial | Entire Permit | Initial permit issuance | |
| R1 | 27 April 2012 | 4 March 2012 | Renewal | Entire Permit | Title V renewal application, incorporating: | 7/25/2005 |
| | | | | | Title V renewal revisions and supplemental information | 4/6/2009 |
| | | | | | Title V renewal revisions and supplemental information | 7/18/2011 |
| | | | | | RO change | 1/21/2004 |
| | | | | | RO change | 3/31/2005 |
| | | | | | RO change | 4/10/2007 |
| | | | | | RO change | 12/10/2009 |
| | | | | | 112(j) application, part 1 | 3/9/2009 |
| | | | | | 112(j) application, part 1, revised and part 2 | 2/15/2010 |
| | | | | | Construction permit: Packed tower scrubber. 109-00-C | 6/18/2000 |
| | | | | | Construction permit: Brewery equipment. 43-02-C (Installed and subsequently removed) | 2/28/2002 |
| | | | | | Construction permit: Distiller's dry grain storage tank. 350-05-C | 9/23/2005 |
| | | | | | Construction permit renewal: Distiller's dry grain storage tank. 350-05-C | 9/30/2006 |
| | | | | | Construction permit: bin vent for DDG storage tank. 351-05-C | 9/23/2005 |
| | | | | | Construction permit renewal: bin vent for DDG storage tank. 351-05-C | 9/30/2006 |
| | | | | | Request to void permits 350-05-C and 351-05-C | 1/3/2010 |
| | | | | | Construction permit: Two 12,000 gallon and one 8000 gallon storage tank. 352-05-C | 9/23/2005 |
| | | | | | Construction permit renewal: Two 12,000 gallon and one 8000 gallon storage tank. 352-05-C | 9/30/2006 |
| | | | | | Construction permit: install one new 10,000 gallon tank and change in service for another. 189-06-C | 7/31/2006 |
| | | | | | Construction permit renewal: install one new 10,000 gallon tank and change in service for another. 189-06-C | 7/31/2007 |
| | | | | | Construction permit: Replace coal storage silo. 313-08-C | 4/30/2008 |
| | | | | | Construction permit renewal: Replace coal storage silo. 313-08-C | 4/30/2009 |
| Construction permit: Replace 55 MMBtu/hr, gas-fired, low-NOx burner on Boiler #1 (E26). 314-08-C | 4/30/2008 | | | | | |
| Construction permit renewal: Replace 55 MMBtu/hr, gas-fired, low-NOx burner on Boiler #1 (E26). 314-08-C | 4/30/2009 | | | | | |
| Notice of removal of fuel oil storage tanks (E28) and oil burner on Boiler #2. | 5/26/2010 | | | | | |
| Coal combustion limit request letter | 4/21/2011 | | | | | |
| 40 CFR 63, Subpart JJJJJJ initial notification | 9/7/2011 | | | | | |

6. Fugitive Sources:

| Emission Unit | Emission Point | Description | Applicable Regulation |
|---------------|----------------|--|-----------------------|
| U1 | E1 | Truck/Rail Receiving - all grain | 1.14 |
| U1 | E3 | Screw and bucket conveyors: receiving pit to shaker, shaker to receiving silos, silos to mills, mills to storage bins, bins to weigh hoppers, weigh hoppers to mash room. (14 total) | 1.14 |
| U1 | E3a | Grain Cleaner | 1.14 |
| U3 | E55 | Truck Loading | 6.09 |
| U4 | E29 | Coal Unloading Pit | 1.14 |
| U6 | E35 | Barrel Filling (4 filling stations) | 1.05 |
| U6 | E17 | Barrel Storage Warehouses (8 warehouses, labelled B, G, H, I, J, K, L, and O) | 1.05 |
| U6 | E63 | Barrel Dumping (10 dump stations) | 1.05 |

7. Plantwide Emission Summary:

| Pollutant | Actual 2010 Emissions (tons/year) | Major Source Trigger (based on PTE) |
|-------------------|-----------------------------------|-------------------------------------|
| VOC | 1391. | no |
| CO | 45.7 | no |
| NO _x | 97. | Yes |
| SO ₂ | 268. | Yes |
| PM | 47.7 | Yes |
| PM ₁₀ | 10.2 | no |
| PM _{2.5} | 5.73 | no |
| CO ₂ | not determined | no |
| Single HAP | all HAPs < 1 ton/yr | Yes |
| Total HAPS | 11.8 | no |

The potential VOC emissions are 1934 tons, but 1888 tons of this is from the barrel storage warehouses and is exempt from consideration toward determination of status as a major source.

8. Applicable Requirements:

PSD NSPS SIP MACT
 NSR NESHAPS District-Origin Other

9. NESHAP Requirements:

- a. Emissions of hydrogen chloride from the coal-fired boiler must not exceed 10 tons per year.
- b. Emission of carbon monoxide from the coal-fired boiler shall not exceed 400 ppm, corrected to 3% oxygen, in the exhaust gas.
- c. Emission of mercury from the coal-fired boiler shall not exceed 4.8×10^{-6} lb/MMBtu.

10. Referenced Federal Regulations in Permit:

40 CFR 63, Subpart JJJJJJ – *National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources.*

40 CFR 60, Appendix B - Performance Specification 3—*Specifications and Test Procedures for O₂ and CO₂ Continuous Emission Monitoring Systems in Stationary Sources.*

40 CFR 98, Subpart C – *Mandatory Greenhouse Gas Reporting, General Stationary Fuel Combustion Sources.*

II. Regulatory Analysis**1. Acid Rain Requirements:**

The source is not subject to the Acid Rain Program.

2. Stratospheric Ozone Protection Requirements:

Title VI of the CAAA regulates ozone-depleting substances and requires a phase-out of their use. This rule applies to any facility that manufactures, sells, distributes, or otherwise uses any of the listed chemicals. This source does not manufacture, sell, or distribute any of the listed chemicals. The source's use of listed chemicals is that in fire extinguishers, chillers, air conditioners and other HVAC equipment.

3. Prevention of Accidental Releases 112(r):

The source does not manufacture, process, use, store, or otherwise handle one or more of the regulated substances listed in 40 CFR Part 68, Subpart F, and District Regulation 5.15, *Chemical Accident Prevention Provisions*, in a quantity in excess of the corresponding specified threshold amount.

4. Basis of Regulation Applicability**a. Plant-wide**

Brown-Forman Distillery is a major source for VOC, NO_x, SO₂, PM, and a single hazardous air pollutant, Hydrogen Chloride (HCl). Regulation 2.16 – *Title V Operating Permits* establishes requirements for major sources.

The permittee currently operates with a plant-wide NO_x emission limit of 100 tons per year. This limit will remain in effect for the new permit, with the clarification that the limit is for any twelve consecutive-month period

and that the emission total must be recalculated at the end of each month for the preceding twelve-month period.

With the issuance of this Title V permit, the permittee will become subject to a plant-wide individual-HAP emission limit of less than 10 tons in any twelve consecutive-month period. The only known HAP that will be affected by this limit is hydrogen chloride, and the only known emission source for HCl is the #1 coal-fired boiler, identified as emission point E26. The HAP emission limit was taken to avoid applicability of 40 CFR 63, subpart DDDDD - *National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters*. This limit will insure that the permittee is classified as an area source for HAP emissions, which will instead subject them to 40 CFR 63, Subpart JJJJJ - *National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources*.

Regulations 5.01, 5.21, and 5.23 (STAR Program) establish requirements for environmental acceptability of toxic air contaminants (TACs) and the requirement to comply with all applicable emission standards.

In the *Category 1 TAC Demonstration of Environmental Acceptability* report, dated 19 December 2006 and revised on 11 May 2007, all Category 1 TACs were shown to either be *de minimis* or were modeled with risks less than the environmentally acceptable goal.

The *Category 2 TAC Demonstration of Environmental Acceptability* report, dated 6 March 2008, noted that only Category 2 TACs reported in the 2006 TRI must be considered [Regulation 5.21, section 4.1] and that there were no Category 2 TACs reported on that submission.

b. Emission Units

Emission Unit U1 – Grain Handling

| Emission Point | Description | Applicable Regulation | Control ID |
|----------------|---|-----------------------|------------|
| E1 | Truck/Rail Receiving - all grain | 1.14 | Fugitive |
| E2a | Corn storage silo #1 | 6.09, 40 CFR 64 | C1a |
| E2b | Corn storage silo #2 | 6.09, 40 CFR 64 | C1b |
| E3 | Grain cleaner | 1.14 | Fugitive |
| E3 | Grain conveyors: receiving pit screw to shaker; 2 screws and one bucket elevator from shaker to receiving silos. | 1.14 | Fugitive |
| E3 | Grain conveyors: Silo to mill (x2), elevator from mill to meal storage (x2), meal storage bin to weigh hopper (x3), weigh hopper to mash room (x3). | 6.09, 40 CFR 64 | C2 |
| E4 | Cage Mill (corn) | 6.09, 40 CFR 64 | C2 |
| E5 | [2] Internal Grain Storage Bins (corn) | 7.08, 40 CFR 64 | C2 |
| E6 | Weigh Hopper (corn) | 6.09, 40 CFR 64 | C2 |
| E8a | Small Grain Storage Silo #1 | 6.09, 40 CFR 64 | C3a |
| E8b | Small Grain Storage Silo #2 | 6.09, 40 CFR 64 | C3b |
| E10 | Cage Mill (small grain) | 6.09, 40 CFR 64 | C2 |
| E11 | [4] Internal Grain Storage Bins (2 malt and 2 rye) | 7.08, 40 CFR 64 | C2 |
| E12 | Weigh Hopper for yeast cooker | 6.09, 40 CFR 64 | C2 |
| E12a | Weigh Hopper for malt slurry | 6.09, 40 CFR 64 | C2 |

Emission Unit U1A – Fermentation

| Emission Point | Description | Applicable Regulation | Control ID |
|----------------|-------------------------------------|-----------------------|------------|
| E40a | Fermentation Tank (42,000 gallons) | 6.24 | none |
| E40b | Fermentation Tank (42,000 gallons) | | |
| E40c | Fermentation Tank (42,000 gallons) | | |
| E40d | Fermentation Tank (42,000 gallons) | | |
| E40e | Fermentation Tank (42,000 gallons) | | |
| E40f | Fermentation Tank (42,000 gallons) | | |
| E40g | Fermentation Tank (42,000 gallons) | | |
| E40h | Fermentation Tank (42,000 gallons) | | |
| E40i | Fermentation Tank (42,000 gallons) | | |
| E40j | Fermentation Tank (42,000 gallons) | | |
| E40k | Fermentation Tank (42,000 gallons) | | |
| E40l | Fermentation Tank (42,000 gallons) | | |
| E41 | Beer well tank (50,000 gallons) | | |
| E42 | Heads and Tails Tank (1200 gallons) | 6.13 | none |

Emission Unit U2 – Barrel-Filling Operations

| Emission Point | Description | Applicable Regulation | Control ID |
|-----------------------|---------------------------|------------------------------|-------------------|
| E13 | Cistern Tank (30,000 gal) | 6.13, 1.05 | none |
| E14 | Cistern Tank (30,000 gal) | 6.13, 1.05 | none |
| E15 | Cistern Tank (30,000 gal) | 6.13, 1.05 | none |
| E16 | Cistern Tank (30,000 gal) | 6.13, 1.05 | none |
| E52 | Bulk loadout station | 6.22 | none |

Emission Unit U2A – Barrel-Dumping Operations

| Emission Point | Description | Applicable Regulation | Control ID |
|-----------------------|---------------------------------|------------------------------|-------------------|
| E18a | 10,000 gallon Bulk Storage Tank | 7.12, 1.05 | none |
| E18b | 10,000 gallon Bulk Storage Tank | 7.12, 1.05 | none |
| E18c | 10,000 gallon Bulk Storage Tank | 7.12, 1.05 | none |
| E18d | 30,000 gallon Bulk Storage Tank | 7.12, 1.05 | none |
| E18e | 30,000 gallon Bulk Storage Tank | 7.12, 1.05 | none |
| E18f | 30,000 gallon Bulk Storage Tank | 7.12, 1.05 | none |
| E18g | 30,000 gallon Bulk Storage Tank | 7.12, 1.05 | none |
| E18h | 7,300 gallon Blending Tank | 7.12, 1.05 | none |
| E18i | 7,300 gallon Blending Tank | 7.12, 1.05 | none |
| E18j | 7,300 gallon Blending Tank | 7.12, 1.05 | none |
| E18k | 7,300 gallon Blending Tank | 7.12, 1.05 | none |
| E18m | 7,300 gallon Blending Tank | 7.12, 1.05 | none |
| E18n | 7,300 gallon Blending Tank | 7.12, 1.05 | none |
| E18p | 7,300 gallon Blending Tank | 7.12, 1.05 | none |
| E18q | 7,300 gallon Blending Tank | 7.12, 1.05 | none |
| E18r | 20,000 gallon Blending Tank | 7.12, 1.05 | none |
| E53 | Truck Loading Rack | 7.22, 1.05 | none |
| E54 | Truck Loading Rack | 7.22, 1.05 | none |

Emission Unit U3– By-products Processing and Handling

| Emission Point | Description | Applicable Regulation | Control ID |
|-----------------------|-----------------------------------|------------------------------|-------------------|
| E19 | Dehydrator #1 | 6.09 40 CFR 64 | C7 |
| E19a | Process cyclone for Dehydrator #1 | 6.09 | none |
| E20 | Dehydrator #2 | 6.09 40 CFR 64 | C7 |
| E20a | Process cyclone for Dehydrator #2 | 6.09 | none |
| E21 | Dehydrator #3 | 6.09 40 CFR 64 | C7 |
| E21a | Process cyclone for Dehydrator #3 | 6.09 | none |
| E22 | Dehydrator #4 | 6.09 40 CFR 64 | C7 |
| E22a | Process cyclone for Dehydrator #4 | 6.09 | none |
| E23 | Minerals Storage Tank | 6.09 40 CFR 64 | C8 |
| E24 | Solubles Storage Tank | 6.09 40 CFR 64 | C9 |
| E25 | Distillers Dry Grain Storage Tank | 7.08 40 CFR 64 | C10 |
| E31 | Rotary Dryer #1 | 6.09 | none |
| E32 | Rotary Dryer #2 | 6.09 | none |
| E55 | Truck loading | 6.09 | fugitive |

Emission Unit U4 – Power Generation

| Emission Point | Description | Applicable Regulation | Control ID |
|-----------------------|---|--|-------------------|
| E26 | Boiler #1 - Henry Vogt; Maximum permitted capacity: 90 MMBtu/hr; Installation date: 1965 Primary fuel: bituminous coal (spreader stoker); Secondary fuel: natural gas | 6.07; 40 CFR 63, subpart JJJJJ; 40 CFR 64 | C11 |
| E27 | Boiler #2 - Henry Vogt; Maximum permitted capacity: 55MMBtu/hr; Installation date: 1973; Fuel: natural gas | 7.06 | none |
| E29 | Coal Unloading pit | 1.14 | fugitive |
| E29a | Coal Storage Silo | 7.08, 40 CFR 64 | C12 |
| E30 | Coal Ash (fly and bottom) Storage Silo | 6.09, 40 CFR 64 | C13 |
| E30a | Coal Ash Handling | 1.14 | none |

Emission Unit U5 – Low-Alcohol Bottling Line

| Emission Point | Description | Applicable Regulation | Control ID |
|----------------|---|-----------------------|------------|
| E33 | Slurry Tank - (450 gal) | 7.12, 1.05 | none |
| E34 | Ingredient Tank (12,000 gal) | 7.12, 1.05 | none |
| E35 | Batch Tank #1 (10,000 gal) | 7.12, 1.05 | none |
| E36 | Batch Tank #2 (10,000 gal) | 7.12, 1.05 | none |
| E37 | Batch Tank #3 (10,000 gal) | 7.12, 1.05 | none |
| E57 | Ingredient tank (30,000 gal) | 7.12, 1.05 | none |
| E58 | Ingredient Tank (20,000 gal) | 7.12, 1.05 | none |
| E59 | Ingredient Tank (10,000 gal) | 7.12, 1.05 | none |
| E60 | Ingredient Tank (7,000 gal) | 7.12, 1.05 | none |
| E61 | Ingredient Tank (10,490 gal) | 7.12, 1.05 | none |
| E62 | Bottle Filler: H&K model WF100-16, with associated 250 gallon buffer tank | 7.25, 1.05 | none |

Emission Unit U6 – Barrel Storage and Aging Warehouse

| Emission Point | Description | Applicable Regulation | Control ID |
|----------------|---|-----------------------|------------|
| E64 | Barrel Filling (4 filling stations) | 1.05 | Fugitive |
| E17 | Barrel Storage Warehouses (8 warehouses, labelled B, G, H, I, J, K, L, and O) | 1.05 | Fugitive |
| E63 | Barrel Dumping (10 dump stations) | 1.05 | Fugitive |

c. Basis for Applicability

| Applicable Regulation | Basis for Applicability |
|----------------------------|--|
| 1.05 | Applicable to process equipment emitting VOCs. |
| 1.14 | Applicable for fugitive particulate emissions. |
| 6.01 | Requires reporting of VOC emissions not otherwise regulated. |
| 6.07 | Applicable to indirect heat exchangers >1MMBTU/hr, constructed before 19 April 1972. |
| 6.09 | Applicable to PM emissions from facilities constructed before 1 September 1976 and not otherwise regulated. |
| 6.13 | Applicable to VOC storage tanks >250capacity constructed before 1 September 1976. |
| 6.22 | Applicable to all facilities in operation prior to 14 July 1976 that load >200 gallons per day of volatile organic material onto tank trucks, trailers, or railroad tank cars. |
| 7.06 | Applicable to indirect heat exchangers <250 MMBTU/hr constructed after 9 April 1972. |
| 7.08 | Applicable to indirect heat exchangers >1MMBTU/hr, constructed after 19 April 1972. |
| 7.12 | Applicable to VOC storage tanks >250capacity constructed after 1 September 1976. |
| 7.25 | Applicable to facilities with the potential to emit more than 5 tons per year of VOCs constructed after 14 July 1976 and not otherwise regulated. |
| 40 CFR 63 Subpart JJJJJJ | Applicable to facilities with industrial coal-fired boilers greater than 10 MMBTU/hr that are an area source of hazardous air pollutants. |
| 40 CFR 60, Appendix B, PS3 | Referenced in 40 CFR 64, Subpart JJJJJJ for testing O ₂ and CO ₂ continuous Emission monitors |
| 40 CFR 64 | Applicable to emission units that use control devices to achieve compliance with an emission limit or standard. |
| 40 CFR 98, Subpart C | Applicable to facilities that "contain one or more stationary fuel combustion sources." |

d. Standards**i. Particulate Matter**

1. Emission Unit U1

The PM emission standard for relevant emission points in this unit are based on the maximum throughput stated by Brown-Forman in their application and Table 1 in either Regulation 6.09 or Regulation 7.08, as applicable for the particular equipment. As part of the application received by the District on 20 July 2011, Brown-Forman submitted potential-to-emit calculations that showed that the relevant PM standard could never be exceeded at maximum process rates when relevant controls (if any) were operating. District engineers verified these calculations.

2. Emission Unit U3

The PM emission standard for relevant emission points in this unit are based on the maximum throughput stated by Brown-Forman in their application and Table 1 in Regulation 6.09. As part of the application received by the District on 20 July 2011, Brown-Forman submitted potential-to-emit calculations that showed that the relevant PM standard could never be exceeded at maximum process rates when relevant controls (if any) were operating. District engineers verified these calculations.

3. Emission Unit U4

The coal-fired emission standard for Boiler #1 (E26) is based on the maximum firing rate of 90 MMBtu/hr for this boiler, using the formula in Regulation 6.07, Table 1 to determine the maximum allowable PM emission rate. The natural gas-fired standard for this boiler is based on the maximum firing rate of 55 MMBtu/hr, using the formula in Regulation 7.06, Section 4.1.3.

The emission standard for Boiler #2 (E27) is based on the maximum firing rate of 55 MMBtu/hr for this boiler and a total installed capacity of 145 MMBtu/hr, using the formula described in Regulation 7.06, section 4.1.3.

The PM standard for the coal storage silo (E29a) is calculated based on the maximum filling rate for the silo and Table 1 in Regulation 7.08. A one-time compliance demonstration was performed for the coal storage silo on 4/21/2008, as part of the PTE calculation for construction permit #313-08-C, and it was shown that the PM emission standard for this silo cannot be exceeded uncontrolled.

The emission rate limit for E30 was determined using the formula in Table 1 of Regulation 6.09. The process rate was calculated based on the maximum coal usage determined by multiplying 90 MMBtu/hr by the assumed coal heat content of 12,500 BTU/lb, and assuming ash content of 7%, based on historical typical values.

ii. Opacity

1. Emission Unit U1

Pursuant to Regulations 1.14, 6.09, and 7.08, visible emissions shall not equal or exceed 20% opacity.

2. Emission Unit U3

Pursuant to Regulations 1.14, 6.09, and 7.08, visible emissions shall not equal or exceed 20% opacity.

3. Emission Unit U4

Pursuant to Regulations 1.14, 6.07, 6.09, 7.06 and 7.08, visible emissions shall not equal or exceed 20% opacity, except for certain exceptions described in the relevant regulations.

iii. Volatile Organic Compounds

1. Emission Unit U1A

(a) The fermentation tanks (E40) and the beer well (E41) were put into service prior to 1979 are covered by Regulation 6.24 for existing sources that use VOCs, as they are not regulated elsewhere in Chapter 6. These facilities, individually, are limited to emissions not to exceed 3000 pounds per day or 450 pounds per hour.

(b) The Heads and Tails tank (E42) is covered by Regulation 6.13 for existing volatile organic compound storage vessels. Specific requirements for this vessel only apply if the material has a vapor pressure of greater than 1.5 psia. This pressure will not be exceeded for temperatures that can reasonably be expected at the facility. (This temperature is 100°F for 130 proof material, and higher for lower proofs.) Consequently, there are no specific standards for this tank.

2. Emission Unit U2

There are four 30,000-gallon cistern tanks (E13-E16) for storing the distilled whiskey prior to loading it into barrels for aging. These tanks were installed in 1966 and are

subject to Regulation 6.13, requiring a submerged-fill system for the tanks, if the ethanol vapor partial pressure exceeds 1.5 psia. As described in II.4.d.iii.1.(b), this pressure cannot be exceeded.

The equipment for filling the barrels is physically located with the cistern tanks, but the emissions from the operation of filling the barrels is included in the site-specific emission factor for whiskey aging, discussed in the section for U6, below.

The bulk loadout station, E52, is for loading tanker trucks from the cistern tanks. This load-out station, which was also installed in the 1960's, is subject to Regulation 6.22, with specific standards defined by the daily throughput. As with the cistern tanks, these standards only apply if the ethanol vapor partial pressure exceeds 1.5 psia. As this pressure cannot reasonably be exceeded, there are no VOC emission limits for this equipment.

3. Emission U2A

There are sixteen storage tanks, E18, with volumes ranging from 7,300 to 20,000 gallons for receiving the aged whiskey after it has been removed from the barrels. All of these tanks were installed after 1990. Section 3.3 of Regulation 7.12, requiring a submerged-fill system for the tanks, applies if the partial pressure of the ethanol exceeds 1.5 psia.

There are two tank-truck loading stations (E53 and E54) for transfer of the whiskey from the storage tanks. These loading stations, which were also installed after 1990, are regulated by Regulation 7.22, with specific standards defined by the daily throughput. As with the cistern tanks, these standards only apply if the partial pressure of the ethanol exceeds 1.5 psia.

As described in II.4.d.iii.1.(b), there are no applicable standards for any of the affected equipment because the vapor pressure cannot exceed 1.5 psia.

The equipment for emptying the barrels is physically located with these tanks, but the emissions from the operation of emptying the barrels is included in the site-specific emission factor for whiskey aging, discussed in the section for U6, below.

4. Emission Unit U5

There are ten storage tanks (E33-E37 and E57-E61), with volumes ranging from 450 to 30,000 gallons for containing various ingredients of the finished product. All of these

tanks were installed in 1997. Section 3.3 of Regulation 7.12, requiring a submerged-fill system for the tanks, applies if the partial pressure of the ethanol exceeds 1.5 psia. As described in II.4.d.iii.1.(b), there are no applicable standards for any of the affected equipment because the vapor pressure cannot exceed 1.5 psia.

The bottling equipment (E62) was also installed in 1997. The relevant District Regulation 7.25 requires a BACT analysis for affected facilities emitting more than 5 tons of VOC in a twelve consecutive-month period. Brown Forman has chosen to establish a production limit to insure VOC emissions less than 5 tons. AP-42 lists an emission factor for bottling malt beverages (beer) but does not list the alcohol content for the products used to determine this emission factor. However, beers are typically near 5% alcohol, which is the alcohol percentage for the product bottled on this line. Therefore, the District has adopted the emission factor used in AP-42, Chapter 9.12.1, table 2, SCC 3-02-009-53 of 17 lb/(1000 barrels) and 31 gallons per barrel, yielding an emission factor of 0.548 lb_{VOC}/1000-gallons. This value will be used to calculate emissions from this source unless Brown Forman performs tests to determine a different value. Using the adopted value and an emission limit of 4.9 tons/year, the production limit is established at 17,900,000 gallons.

5. Emission Unit U6

There are no applicable emission standards for the processes described in this emission unit. However, under Regulation 1.05 §4.1.2, the company was required to propose calculations and record-keeping requirements to the District for determination of VOC emissions from a source not otherwise regulated. This requirement was met and the District indicated approval on 30 August 1993, establishing a VOC emission factor 10.5 lb_{VOC}/(bbl•yr) for the warehouse and associated barrel filling and dumping equipment.

iv. Greenhouse Gasses

1. Emission Unit U1A

The only GHG emission from this unit is CO₂. This emission is from a biogenic source (fermentation of sugars). GHG emissions from biogenic sources are currently not considered in Federal, state, or local regulations.

2. Emission Unit U4

Two boilers in this emission unit release GHG, primarily CO₂, and, to a much smaller degree, CH₄ and N₂O. There are no emission standards for any of these gasses.

v. **Nitrogen Oxides (NO_x)**

1. Emission Unit U4

There are no applicable NO_x emission standards in Regulation 7.06.

To avoid the RACT requirements of District Regulation 6.42 for major NO_x-emitting sources, Brown-Forman has requested a limit of 100 ton per year on emissions of this pollutant.

Boiler #1 (E26) operates with over-fire air (OFA). According to AP42, §1.1.4.3, OFA provides a NO_x reduction of 20-30% from the uncontrolled value. The District will allow a 20% reduction from the uncontrolled NO_x emission factor for this boiler when coal is being burned. The most recent version of AP42 (dated 9/98) lists the uncontrolled emission factor as 11 lb_{NO_x}/ton_{coal}, yielding an effective factor of 11*0.8 = 8.8 lb_{NO_x}/ton_{coal}. This emission factor will be used in calculating NO_x emission rates unless a different emission factor or different method of calculation is approved by the District.

When natural gas is burned in either boiler, the NO_x emission factor published in AP42, Chapter 1.4 will be used to determine NO_x emissions. The most recent version (dated 7/98) lists this as 100 lb_{NO_x}/10⁶ scf. This emission factor will be used in calculating NO_x emission rates unless a different emission factor or different method of calculation is approved by the District.

vi. **Sulfur Dioxide (SO₂)**

1. Emission Unit U4

From Regulation 6.07, Table 2, SO₂ the limit is 1.75 lb_{SO₂}/hr for boiler #1 (E26) and from Regulation 7.06, section 5.1.1 the SO₂ limit is 1.0 lb_{SO₂}/hr for boiler #2 (E27). This emission factor will be used in calculating SO₂ emission rates unless a different emission factor or different method of calculation is approved by the District.

vii. Hydrogen Chloride (HCl)

1. Emission Unit U4

Federal Regulation 40 CFR 63, subpart DDDDD applies to all coal-fired boilers that are major sources of HAPs. Using emission factors published in AP-42, Boiler #1 (E26) has total HAP emissions that are less than the major source limit of 25 tons/year, but HCl emissions exceed the single-HAP limit of 10 tons/year. Brown-Forman requested a limit of less than 10 tons of HCL per year, to remain non-major for HAP emissions. Based on the HCl emission factor ($1.2 \text{ lb}_{\text{HCl}}/\text{ton}_{\text{coal}}$) presented in AP-42, Table 1.1-15, the District will presume that combustion of greater than 16,600 tons of coal per year will result in emission of more than 10 tons of HCl per year, unless a different emission factor or different method of determining HCl emissions is approved by the District.

Coal-fired boilers that are area sources for HAPs are subject to 40 CFR 62, subpart JJJJJ. This regulation does not go into effect until 21 March 2014. At that time, Brown-Forman will be required to perform a stack test to determine their site-specific HCl emission rate. From the date of the completion of this test, HAP emissions will be determined using this emission factor rather than the factor found in AP-42.

viii. Carbon Monoxide (CO) (as a surrogate for organic HAP)

1. Emission Unit U4

The emission limits and monitoring requirements for Boiler #1 (E26) are specified in the paragraphs of 40 CFR 63, Subpart JJJJJ referenced in the text of the permit. This regulation currently has an effective date of 21 March 2014.

ix. Mercury (Hg)

1. Emission Unit U4

The emission limits and monitoring requirements for Boiler #1 (E26) are specified in the paragraphs of 40 CFR 63, Subpart JJJJJ referenced in the text of the permit. This regulation currently has an effective date of 21 March 2014.

x. Toxic Air Contaminants

1. Plantwide

Environmental Acceptability of toxic air contaminant emissions has previously been demonstrated. According to District STAR regulations (5.01, 5.21, 5.23) Brown-Forman

must not increase any TAC emissions above those previously demonstrated without notification to the District and approval of a revised model within six months of the date of the change.

xi. Work Practice Standards and Management Practices

1. Emission Unit U4

Various work standards and management practices required for the operation of Boiler #1 (E26) are specified in the paragraphs of 40 CFR 63, Subpart JJJJJJ referenced in the text of the permit. This regulation currently has an effective date of 21 March 2014.

e. Monitoring and Recordkeeping

Regulation 2.16, Section 4.1.9 establishes general requirements for recordkeeping and monitoring of air-pollution producing equipment and related control equipment. Requirements that are common to all records include "monitoring data and support information shall be retained for five years from the date of the monitoring sample, measurement, report, or application." Support information includes all calibration and maintenance records and all original strip chart recordings or computer data and log files for continuous monitoring instrumentation, and copies of all other records required by the permit. These records shall include:

- The type and quantity of fuel combusted in each boiler every operating day;
- The hours of operation of each boiler every operating day;
- And, the following pollutant-specific data:

i. Particulate Matter

1. Emission Unit U1

Emission limits are calculated using the maximum throughput provided by Brown-Forman for each piece of equipment and table 1 of the appropriate regulation (6.09 or 7.08) for each piece of equipment. Brown-Forman established in their PTE that the relevant emission standards cannot be exceeded at the maximum throughput of the various pieces of equipment that are present in this emission unit when the corresponding controls are in operation. Records of throughput must be presented to provide assurance that this claimed maximum has not been exceeded, and emissions must be explicitly calculated when these controls are bypassed.

2. Emission Unit U3

Emission limits are calculated using the maximum throughput provided by Brown-Forman for each piece of equipment and Table 1 of the appropriate regulation (6.09 or 7.08) for each piece of equipment. Brown-Forman established in their PTE that the relevant emission standards cannot be exceeded at the maximum throughput of the various pieces of equipment that are present in this emission unit when the corresponding controls are in operation. Records of throughput must be presented to provide assurance that this claimed maximum has not been exceeded, and emissions must be explicitly calculated when these controls are bypassed.

Visually inspecting the control devices helps to ensure that these devices are performing properly and they have not developed, nor are they in danger of developing, damage that would reduce the control effectiveness of the control mechanism. Log sheets serve to establish accountability for completion of these inspections.

3. Emission Unit U4

Recording the pressure drop across the C11 baghouse assures compliance with the differential pressure operating range standard for this equipment, as described in 40 CFR 64.4.

Determining the heating value and ash content of the coal ensures compliance with the PM emission standard from coal combustion, as described in 40 CFR 64.4.

ii. Opacity

1. Emission Unit U1

Log sheets verifying visual monitoring, and records of actions taken if emissions are observed provides assurance of compliance with the opacity standards of the permit, as described in 40 CFR 64.4.

2. Emission Unit U3

Log sheets verifying visual monitoring, and records of actions taken if emissions are observed provides assurance of compliance with the opacity standards of the permit, as described in 40 CFR 64.4.

3. Emission Unit U4

Log sheets verifying visual monitoring, and records of actions taken if emissions are observed provides assurance of compliance with the opacity standards of the permit, as described in 40 CFR 64.4.

iii. Volatile Organic Compounds

1. Emission Unit U1A

Regulation 6.24, paragraph 4.2 provides that the company must supply the District with evidence of the manner and amount of VOC emitted from the relevant process.

2. Emission Unit U2

Regulations 6.13 and 6.22 establish equipment requirements if the vapor pressure of the VOC-containing material being handled exceeds 1.5 psia. Records of the ethanol content and temperature of the product permit the vapor pressure to be determined and establish whether this threshold has been exceeded.

3. Emission Unit U2A

Regulations 7.12 and 7.22 establish equipment requirements if the vapor pressure of the VOC-containing material being handled exceeds 1.5 psia. Records of the ethanol content and temperature of the product permit the vapor pressure to be determined and establish whether this threshold has been exceeded.

4. Emission Unit U5

Regulations 6.12 establishes equipment requirements if the vapor pressure of the VOC-containing material being handled exceeds 1.5 psia. Records of the ethanol content and temperature of the product permit the vapor pressure to be determined and establish whether this threshold has been exceeded.

Regulation 7.25 requires that emissions from regulated equipment not exceed 5 tons per year. The volume of product bottled at emission point E62 establishes whether this threshold has been exceeded.

5. Emission Unit U6

Although there are no regulatory standards limiting the VOCs released from this emission unit, the District must maintain awareness of the total volume of VOC emission in the community. The requirement for records establishing

the volume of these emissions is present in Regulation 2.16, Section 4.1.9.1.2.

iv. Greenhouse Gasses

There are currently no monitoring or recordkeeping requirements for this class of pollutants.

v. Nitrogen Oxides

1. Emission Unit U4

The company has requested establishment of a 100-ton emission limit for this pollutant. Records of NO_x emissions must be retained to ensure compliance with this limit. The NO_x emissions can be determined by measuring the volume of fuel combusted and established emission factors.

vi. Sulfur Dioxide

1. Emission Unit U4

Regulations 6.07 and 7.06 establish limits on SO₂ emission rates for the company's boilers. The emission factors for this pollutant are based on the sulfur contents of the fuels. Therefore, sulfur content of the fuels must be established to determine the emission rate.

vii. Hydrogen Chloride

1. Emission Unit U4

The company has requested establishment of a 10-ton emission limit for this pollutant. Records of HCl emissions must be retained to ensure compliance with this limit. The HCl emissions can be determined by measuring the volume of fuel combusted and established emission factors.

viii. Carbon Monoxide

1. Emission Unit U4

After 21 March 2014 (or other date on which 40 CFR 63, Subpart JJJJJ becomes effective) readings of stack gas oxygen from a calibrated oxygen sensor will serve as a surrogate for CO emissions, to ensure compliance with the CO emission standard in the regulation

Records of CEMS calibration are required to ensure that the readings obtained remain an accurate representation of the CO emissions. [40 CFR 63.11224(a)(2)]

ix. Mercury**1. Emission Unit U4**

After 21 March 2014 (or other date on which 40 CFR 63, Subpart JJJJJ becomes effective) Brown-Forman must keep records appropriate to the compliance method chosen, to ensure compliance with the Hg emission standard in the regulation.

x. Toxic Air Contaminants

There are currently no monitoring or recordkeeping requirements for this class of pollutants.

f. Reporting

District Regulation 2.16, Section 4.1.9.3 requires semi-annual reporting of the emission data indicated in the permit, and any deviations from the permit requirements.

Additional reporting requirements mandated by 40 CFR 63, Subpart JJJJJ become effective on the applicability date of that Regulation.

III. Other Requirements**1. Temporary Sources:**

The source did not request to operate any temporary facilities.

2. Short Term Activities:

The source did not report any short-term activities.

3. Emissions Trading:

N/A

4. Operational Flexibility:

The source did not request any operational flexibility for the emission point.

5. Compliance History:

The source signed and submitted a Title V compliance certification. Past compliance history is provided in this table:

| Incident Date | Regulation Violated | Result |
|---------------|---|-------------------------|
| 10/12/1970 | Smoke | Settled |
| 12/10/1971 | Smoke | Settled |
| 12/16/1971 | Smoke | Settled |
| 2/9/1974 | Smoke | Settled |
| 4/2/1982 | KRS 77.155 (Opacity) | Settled |
| 3/4/1983 | KRS 77.155 (Opacity) | Settled |
| 2/24/1984 | KRS 77.155 (Opacity) | Settled |
| 9/22/1989 | Reg. 6.07 Section 3(b) Existing Boilers | Settled |
| 3/25/1991 | Reg. 6.07 Section 3(b) Existing Boiler | Settled |
| 5/27/1993 | Reg. 1.14 Control of Fugitive Particulate Emissions | Board Order (9/15/1993) |
| 10/7/1999 | Reg. 1.09 | Settled |
| 12/1/1999 | Reg. 1.09 | Settled |

6. Insignificant Activities:

- a. Insignificant Activities are only those activities or processes falling into the general categories defined in District Regulation 2.02, Section 2, and not associated with a specific operation or process for which there is a specific regulation. Equipment associated with a specific operation or process (Emission Unit) shall be listed with the specific process even though there may be no applicable requirements. Information contained in the permit and permit summary shall clearly indicate that those items identified with negligible emissions have no applicable requirements.
- b. Activities identified in District Regulation 2.02, Section 2, may not require a permit and may be insignificant with regard to application disclosure requirements but may still have generally applicable requirements that continue to apply to the source.
- c. For all insignificant activities that emit regulated air pollutants for which the company has accepted a plant-wide limit, the company shall maintain sufficient records to calculate the emissions and report those emissions in the semi-annual compliance reports and the annual emissions inventory report.
- d. The Insignificant Activities table is correct as of the date the permit was proposed for review by the USEPA, Region 4. The company shall submit an updated list of insignificant activities annually with the Title V compliance certification pursuant to District Regulation 2.16, section 4.3.5.3.6.
- e. In lieu of recording annual throughputs for each Insignificant Activity, the owner or operator may elect to report the potential-to-emit quantity as the

annual emission for each piece of equipment, since the emissions from the source's Insignificant Activities are minor.

f. The activities determined to be Insignificant Activities at this facility are:

| INSIGNIFICANT ACTIVITIES | | |
|---|----------|-----------------------------------|
| Description | Quantity | Basis |
| Portable gasoline storage | 5 | Regulation 2.02, section 2.3.23 |
| Diesel storage, 1 @ 300 gallon, 1 @ 550 gallon. Turnover < 2/yr | 2 | Regulation 2.02, section 2.2.25 |
| Waste oil storage, VP < 10 mm _{Hg} . 300 gallon | 1 | Regulation 2.02, section 2.3.9.2 |
| Internal combustion engines | 14 | Regulation 2.02, section 2.2 |
| Combustion sources < 10 MMBtu/hr (gas-fired water heaters) | 7 | Regulation 2.02, section 2.1.1 |
| Brazing, soldering, and welding equipment | 2 | Regulation 2.02, section 2.3.4 |
| Emergency relief vents | 30 | Regulation 2.02, section 2.3.10 |
| Laboratory ventilation systems | 2 | Regulation 2.02, section 2.3.11 |
| Benchtop grit blasting systems | 2 | Regulation 2.16, section 1.23.1.2 |
| Cooling towers, 1 @ 2700 gal/min, max; 1 @ 1500 gal/min, max | 2 | Regulation 2.16, section 1.23.1.2 |
| Cold cleaner parts washers | 2 | Regulation 2.16, section 1.23.1.2 |
| Mash Cookers | 3 | Regulation 2.16, section 1.23.1.2 |
| Malt Slurry Tub | 6 | Regulation 2.16, section 1.23.1.2 |
| Yeast Cooker | 2 | Regulation 2.16, section 1.23.1.2 |
| Beer heaters | 2 | Regulation 2.16, section 1.23.1.2 |
| Stills | 2 | Regulation 2.16, section 1.23.1.2 |
| Thumpers | 2 | Regulation 2.16, section 1.23.1.2 |
| Condensers | 2 | Regulation 2.16, section 1.23.1.2 |
| Product tank | 1 | Regulation 2.16, section 1.23.1.2 |
| Dona tub - 26 gal (yeast growth) | 1 | Regulation 2.16, section 1.23.1.2 |
| Dona tub - 300 gal each | 2 | Regulation 2.16, section 1.23.1.2 |
| Yeast tubs - 1500 gal each | 8 | Regulation 2.16, section 1.23.1.2 |
| Barrel marker (rolled ink printer) | 1 | Regulation 2.16, section 1.23.1.2 |
| Setback screens | 2 | Regulation 2.16, section 1.23.1.2 |
| Thick stillage tank | 1 | Regulation 2.16, section 1.23.1.2 |
| Drag screens | 2 | Regulation 2.16, section 1.23.1.2 |
| Thick stillage presses (roller presses) | 2 | Regulation 2.16, section 1.23.1.2 |
| Setback tank | 1 | Regulation 2.16, section 1.23.1.2 |
| Overflow tank | 1 | Regulation 2.16, section 1.23.1.2 |
| Slop storage tanks | 3 | Regulation 2.16, section 1.23.1.2 |
| Multi-effect evaporators and finisher | 4 | Regulation 2.16, section 1.23.1.2 |
| Syrup holding tanks | 2 | Regulation 2.16, section 1.23.1.2 |
| Case coder (ink jet printer) | 1 | Regulation 2.16, section 1.23.1.2 |
| Citric Acid storage tank (5800 gal) | 1 | Regulation 2.16, section 1.23.1.2 |
| HFCS Storage tank | 1 | Regulation 2.16, section 1.23.1.2 |
| Sweco filter with 120 gallon surge tank and 400 gallon process tank | 1 | Regulation 2.16, section 1.23.1.2 |
| Treated water storage tanks (2 tanks in the Distillery and 1 tank in Warehouse B, of 4000 gallons capacity each.) | 3 | Regulation 2.16, section 1.23.1.2 |
| Bulk CO ₂ tank (outside) | 1 | Regulation 2.16, section 1.23.1.2 |