PUBLIC NOTICE and PUBLIC HEARING NOTICE

The applicant is Jack Daniel Distillery, Lem Motlow, Prop., Inc. with a mailing address of P. O. Box 702, Lynchburg, TN 37352. They seek to obtain an air contaminant permit (Division identification numbers: 64-0001/981970 and 64-0013/982183) from the Tennessee Division of Air Pollution Control (TDAPC) for the modification of existing Distillery and Whiskey Warehousing Operations located at and near 280 Lynchburg Highway, Lynchburg, TN 37352. The proposed modification would involve physical construction. The following existing processes will be modified:

- Source 64-0001-25 [Grain receiving, handling, storage, and milling operations/mash cookers]: installation of two new grain storage silos and four new mash cookers;
- Source 64-0001-26 [Fermentation and charcoal mellowing]: increase the permitted capacity of the existing fermenters and charcoal mellowing vats; install 30 new fermenters, 48 new charcoal mellowing vats, and 12 new whiskey processing and storage tanks;
- Source 64-0001-28 [Boilers]: install two new natural gas-fired boilers; and
- Source 64-0013-03 [Barrel filling, maturation warehouses, and barrel dumping for Tracts I, II, and III]: increase the permitted storage capacity of the existing maturation warehouses and install 22 new maturation warehouses.

The following new emission units will be installed:

- Source 64-0001-37: one, 220 horsepower, diesel-fired emergency fire pump engine
- Source 64-0013-16: two, 220 horsepower, diesel-fired emergency fire pump engines

Additional existing sources will see increased utilization as a result of this proposed expansion.

Regulated air contaminants are/would be emitted by each of the above sources. Ms. S. Kaiser is the assigned TDAPC permit writer and may be reached at sarosh.kaiser@tn.gov or 615-532-0585.

The project is subject to review under the Tennessee rule for Prevention of Significant Deterioration (PSD) of air quality, paragraph 1200-03-09-.01(4) of the Tennessee Air Pollution Control Regulations, which requires a public notification and thirty-day public comment period.

The TDAPC has reviewed the proposed project with respect to the above referenced PSD rule. The TDAPC has made the determination that the proposed modification can be approved if certain conditions are met. A copy of the application materials submitted by Jack Daniel Distillery, Lem Motlow, Prop., Inc., the PSD preliminary determination, and the draft construction permits are available for public inspection on the Department of Environment and Conservation's (TDEC's) dataviewer found at https://dataviewers.tdec.tn.gov/dataviewers/f?p=19031:2:::::: or during normal business hours at the following locations:

Columbia Environmental Field Office Division of Air Pollution Control 1421 Hampshire Pike Columbia, TN 38401	and	Tennessee Department of Environment and Conservation Division of Air Pollution Control William R. Snodgrass Tennessee Tower 312 Rosa L. Parks Avenue, 15th Floor Nashville, TN 37243

Public Hearing Participation Instructions

A public hearing will be held by TDAPC pursuant to TAPCR 1200-03-09-.01(4)(l)(v). On Thursday, April 25, 2024, at **5:30 p.m. CST**, a public hearing will be held for participants to submit verbal comments concerning the TDAPC's consideration and review of this proposed expansion. Prior to the public hearing, a public information session will be held to discuss the technical and regulatory air pollution-related issues concerning the permitting of the proposed expansion at **5:00 p.m. CST**. The information session will have a question-and-answer format and will include a presentation on the proposed permit action by TDAPC staff.

The hearing location will be:

American Legion Post 192
119 Booneville Highway
Lynchburg, TN 37352

Interested parties may also participate virtually by joining the hearing online via Teams using this link:
Join the meeting now
Meeting ID: 292 912 651 648
Passcode: 67unk5

Or Dial-in by phone
+1 629-209-4396, 640489140# United States, Nashville
Phone conference ID: 640 489 140#

Interested persons are invited to review these materials and comment on the proposed modification. Comments should be addressed to Michelle W. Owenby, Director, Tennessee Division of Air Pollution Control, William R. Snodgrass Tennessee Tower, 312 Rosa L. Parks Avenue, 15th Floor, Nashville, TN 37243, and may be submitted by email at Air.Pollution.Control@tn.gov. Written comments must be received by TDAPC by **4:30 p.m. CST** on April 25, 2024, and must include the phrase "Comments on Jack Daniel PSD Construction Permit" in the subject line.

A final determination will be made after weighing all relevant comments.

Individuals with disabilities who wish to participate should contact TDEC to discuss any auxiliary aids or services needed to facilitate such participation. Such contact may be in person, by writing, telephone, or other means, and should be made by April 11, 2024, to allow time to provide such aid or services. Contact the Tennessee Department of Environment and Conservation ADA Coordinator, 22nd Floor, William R. Snodgrass Tennessee Tower, 312 Rosa L. Parks Avenue, Nashville, TN 37243, 1-866-253-5827. Hearing impaired callers may use the Tennessee Relay Service, 1-(800)-848-0298. If it is hard for you to read, speak, or understand English, TDEC may be able to provide translation or interpretation services free of charge. Please contact Air Pollution Control at (615) 532-0554 for more information.

STATE OF TENNESSEE
AIR POLLUTION CONTROL BOARD
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
NASHVILLE, TENNESSEE

PERMIT TO CONSTRUCT / MODIFY AIR CONTAMINANT SOURCE(S)

Permit Number: 980501 (PSD) [PROPOSED DRAFT]

Facility (Permittee): Jack Daniel Distillery, Lem Motlow Prop., Inc. (JDD Inc.)

Facility ID: 64-0001

Facility Address: 280 Lynchburg Highway, Lynchburg
Moore County

Facility Classification: Title V

Federal Requirements: 40 CFR 51.166 Prevention of Significant Deterioration of Air Quality (PSD)
40 CFR 60, Subpart Dc
40 CFR 60, Subpart IIII
40 CFR 63, Subpart ZZZZ

Facility Description: Whiskey manufacturing operation (distillery)

Permit 980501 (PSD), consisting of 35 pages is hereby issued [DRAFT], pursuant to the Tennessee Air Quality Act and by the Technical Secretary, Tennessee Air Pollution Control Board, Department of Environment and Conservation. This permit expires on [DRAFT]. The holder of this permit shall comply with the conditions contained in this permit as well as all applicable provisions of the Tennessee Air Pollution Control Regulations (TAPCR).

Michelle W. Owenby
Technical Secretary
Tennessee Air Pollution Control Board

No Authority is Granted by this Permit to Operate, Construct, or Maintain any Installation in Violation of any Law, Statute, Code, Ordinance, Rule, or Regulation of the State of Tennessee or any of its Political Subdivisions.

Section I – Sources Included in this Construction Permit

FACILITY DESCRIPTION			
Source Number	**Source Description**	**Status**	**Control Device/Equipment**
04	Charcoal Production	Existing	Afterburner
25	Grain Receiving, Handling, Storage and Milling Operations/Mash Cookers	Modified	Baghouses
26	Fermentation and Charcoal Mellowing	Modified	None
28	Four Natural Gas-Fired Boilers	Modified	None
36	Tract I Tanker Loadout	Existing	None

Section II – Permit Record

Permit Type	Description of Permit Action	Issue Date
Initial	Initial issuance of PSD construction permit	[DRAFT]

Section III - General Permit Conditions

G1. Responsible Person

The application that was utilized in the preparation of this construction permit is dated November 21, 2023 (with updates received January 15, 2024, March 5, 2024, and March 22, 2024), and is signed by Melvin H. Keebler, SVP General Manager, the Responsible Person for the permittee. The Responsible Person may be the owner, president, vice-president, general partner, plant manager, environmental/health/safety coordinator, or other person that is able to represent and bind the facility in environmental permitting affairs. If this Responsible Person terminates their employment or is assigned different duties and is no longer the person to represent and bind the permittee in environmental permitting affairs, the new Responsible Person for the permittee shall notify the Technical Secretary of the change in writing. The Notification shall include the name and title of the new Responsible Person assigned by the permittee to represent and bind the permittee in environmental permitting affairs, and the date the new Responsible Person was assigned these duties.

Should a change in the Responsible Person occur, the new Responsible Person must submit the Notification provided in Appendix 1 of this permit no later than 30 days after the change. A separate notification shall be submitted for each subsequent change in Responsible Person.

TAPCR 1200-03-09-.03(8)

G2. Application and Agreement Letters

This source shall operate in accordance with the terms of this permit, the information submitted in the approved permit application(s) referenced in **Condition G1**, and any documented agreements made with the Technical Secretary.

TAPCR 1200-03-09-.01(1)(d)

G3. Submittals

Unless otherwise specified within this permit, the permittee shall submit, preferably via email and in Adobe Portable Document format (PDF), all applicable plans, checklists, certifications, notifications, test protocols, reports, and applications to the attention of the following Division Programs at the email addresses indicated in the table below:

<table>
<tr><th>Permitting Program</th><th>Compliance Validation Program</th><th>Field Services Program</th></tr>
<tr><td>• Notifications
• Startup certifications
• Applications
• NSPS reports
• MACT/GACT/NESHAP reports
• Emission statements
• Construction permit extension requests</td><td>• Test protocols
• Emission test reports
• Visible emission evaluation reports</td><td>• Semiannual reports
• Annual compliance certifications/status reports</td></tr>
<tr><td colspan="2">Before June 1, 2024State of Tennessee
Department of Environment and Conservation
Division of Air Pollution Control
William R. Snodgrass TN Tower, 15th Floor
312 Rosa L. Parks Avenue
Nashville, TN 37243
Air.Pollution.Control@tn.gov</td><td rowspan="2">Columbia Environmental Field Office
Division of Air Pollution Control
1421 Hampshire Pike
Columbia, TN 38401
APC.ColuEFO@tn.gov</td></tr>
<tr><td colspan="2">On and after June 1, 2024
State of Tennessee
Department of Environment and Conservation
Division of Air Pollution Control
Davy Crockett Tower, 7th Floor
500 James Robertson Parkway
Nashville, TN 37243
Air.Pollution.Control@tn.gov</td></tr>
</table>

The permittee shall submit the information identified above as requested in this permit. In lieu of submitting this information to the email addresses above, the permittee may submit the information to the attention of the respective Division Programs at the mailing addresses listed above.

TAPCR 1200-03-09-.03(8)

G4. Notification of Changes

The permittee shall notify the Technical Secretary for any of the following changes to a permitted air contaminant source which would not be a modification requiring a new construction permit:

- change in air pollution control equipment that does not result in an increase or otherwise meet the definition of a modification
- change in stack height or diameter
- change in exit velocity of more than 25 percent or exit temperature of more than 15 percent based on absolute temperature.

The permittee must submit the Notification provided in Appendix 2 of this permit 30 days before the change is commenced.

TAPCR 1200-03-09-.02(7)

G5. Permit Transference

A. This permit is not transferable from one air contaminant source to another air contaminant source or from one location to another location. The permittee must submit a construction permit application for a new source to the Permitting Program not less than 90 days prior to the estimated starting date of these events. If the new source will be subject to major New Source Review, the application must be submitted not less than 120 days in advance of the estimated starting date of these events.

TAPCR 1200-03-09-.03(6)(b) and 1200-03-09-.01(1)(b)

B. In the event an ownership change occurs at this facility, the new owner must submit the notification provided in Appendix 3 of this permit. The written notification must be submitted by the new owner to the Permitting Program no later than 30 days after the ownership change occurs. If the change in ownership results in a change in Responsible Person for the facility, notification of the change in Responsible Person must also be submitted, as specified in **Condition G1**.

TAPCR 1200-03-09-.03(6)(a) and (b)

G6. Operating Permit Application Submittal

The permittee shall apply for a significant modification to incorporate the changes authorized by this permit into the active Title V permit (at the time of significant modification application) no later than 90 days after initial startup of the first new or modified emission source or no later than September 30, 2025, whichever comes first. This application shall be made using forms made available by the Technical Secretary.

TAPCR 1200-03-09-.02(11)(d)1 and 1200-03-09-.02(11)(f)5(iv)(II)

G7. Temporary Operating Permit

A. This construction permit shall serve as a temporary operating permit from the date of issuance, until the Technical Secretary issues a modified Title V operating permit provided the permittee submits a significant modification application within the timeframe specified in **Condition G6**.

TAPCR 1200-03-09-.02(1), 1200-03-09-.02(2), and 1200-03-09-.02(11)(d)1(i)(V)

B. If construction of the air contaminant source(s) cannot be completed and/or an operating permit application cannot be filed with the Technical Secretary by the expiration date of this permit, the permittee must submit a permit extension request 30 days prior to permit expiration.

TAPCR 1200-03-09-.02(1) and 1200-03-09-.02(3)

G8. Startup Certification for New or Modified Source(s)

The startup certification provided in Appendix 4 shall be submitted to the Permitting Program once an air contaminant source has started up. Startup of the air contaminant source shall be the date the first new or modified emission unit that is part of a new or modified air contaminant source (as identified in Section I) began operation for the production of product for sale, use as raw materials, or steam or heat production under the terms of this permit. A separate startup certification must be submitted for each air contaminant source included in this permit.

TAPCR 1200-03-09-.03(8)

Compliance Method: The startup certification provided in Appendix 4 shall be submitted no later than 30 days after each air contaminant source has begun startup.

G9. Fees

The air contaminant source(s) identified in this permit shall comply with the requirements for payment of applicable annual emission fees to the Tennessee Division of Air Pollution Control.

TAPCR 1200-03-26-.02

G10. General Recordkeeping Requirements

A. All recordkeeping requirements for all data required to be recorded shall follow the following schedules:

For Daily Recordkeeping	For Weekly Recordkeeping	For Monthly Recordkeeping
No later than seven days from the end of the day for which the data is required.	No later than seven days from the end of the week for which the data is required.	No later than 30 days from the end of the month for which the data is required.

B. The information contained in logs, records, and submittals required by this permit shall be kept at the facility's address, unless otherwise noted, and provided to the Technical Secretary or a Division representative upon request. Computer-generated logs are acceptable. Compliance is assured by retaining the logs, records, and submittals specified in this permit for a period of not less than five years at the facility's address.

TAPCR 1200-03-10-.02(2)(a)

G11. Routine Maintenance Requirements

The permittee shall maintain and repair the emission source, associated air pollution control device(s), and compliance assurance monitoring equipment as required to maintain and assure compliance with the specified emission limits.

TAPCR 1200-03-09-.03(8)

Compliance Method: Records of all repair and maintenance activities required above shall be recorded in a suitable permanent form and kept available for inspection by the Division. These records must be retained for a period of not less than five years. The date each maintenance and repair activity began shall be entered in the log no later than seven days following the start of the repair or maintenance activity, and the completion date shall be entered in the log no later than seven days after activity completion.

G12. Visible and Fugitive Emissions

A. Unless otherwise specified, visible emissions from this facility shall not exhibit greater than 20% opacity, except for one six-minute period in any one-hour period, and for no more than four six-minute periods in any 24-hour period. A stack is defined as any chimney, flue, conduit, exhaust, vent, or opening of any kind whatsoever, capable of, or used for, the emission of air contaminants.

TAPCR 1200-03-05-.01(1) and 1200-03-05-.03(6)

Compliance Method: When required to demonstrate compliance, visible emissions shall be determined by EPA Method 9, as published in the current 40 CFR 60, Appendix A (six-minute average).

B. The permittee shall not cause, suffer, allow, or permit any materials to be handled, transported, or stored; or a building, its appurtenances, or a road to be used, constructed, altered, repaired, or demolished without taking reasonable precautions to prevent particulate matter from becoming airborne. Reasonable precautions shall include, but are not limited to, the following:

(a) Use, where possible, of water or chemicals for control of dust in demolition of existing buildings or structures, construction operations, grading of roads, or the clearing of land;
(b) Application of asphalt, water, or suitable chemicals on dirt roads, material stockpiles, and other surfaces which can create airborne dusts;
(c) Installation and use of hoods, fans, and fabric filters to enclose and vent the handling of dusty materials. Adequate containment methods shall be employed during sandblasting or other similar operations.

The permittee shall not cause, suffer, allow, or permit fugitive dust to be emitted in such manner to exceed five minutes per hour or 20 minutes per day as to produce a visible emission beyond the property line of the property on which the emission originates, excluding malfunction of equipment as provided in TAPCR 1200-03-20. A malfunction is defined as, any sudden and unavoidable failure of process equipment or for a process to operate in an abnormal and unusual manner. Failures that are caused by poor maintenance, careless operation, or any other preventable upset condition or preventable equipment breakdown shall not be considered malfunctions.

TAPCR 1200-03-08-.01(1) and 1200-03-08-.01(2)

Compliance Method: When required to demonstrate compliance, fugitive emissions shall be determined by Tennessee Visible Emissions Evaluation Method 4 as adopted by the Tennessee Air Pollution Control Board on April 16, 1986.

C. Fugitive emissions from roads and parking areas shall not exhibit greater than 10% opacity.

TAPCR 1200-03-08-.03

Compliance Method: When required to demonstrate compliance, fugitive emissions from roads and parking areas shall be determined by utilizing Tennessee Visible Emissions Evaluation (TVEE) Method 1, as adopted by the Tennessee Air Pollution Control Board on April 29, 1982, as amended on September 15, 1982, and August 24, 1984.

G13. Facility-wide Limitations

The combined maximum emission rate from all pollutant-emitting sources located at JDD Inc. (64-0001) and JDD Prop (64-0013), including insignificant emission units, for any single hazardous air pollutant (HAP) listed pursuant to Section 112(b) of the Federal Act, shall not exceed 9.9 tons during any period of 12 consecutive months. Total emissions of all HAP from all pollutant-emitting sources located at JDD Inc. (64-0001) and JDD Prop (64-0013), including insignificant emission units, shall not exceed 24.9 tons during any period of 12 consecutive months.

TAPCR 1200-3-07-.07(2) and the agreement letter dated March 26, 2024 (Appendix 7)

Compliance Method: The permittee shall demonstrate compliance with this condition by calculating the actual quantities of each individual HAP and total HAP emitted from each emission source, including insignificant emission units and activities, during each calendar month and during each period of 12 consecutive months. For sources designated as insignificant activities, the permittee may calculate actual HAP emissions or use the potential to emit from each emission unit. Records of these emissions shall be compiled in the following logs, or logs with a similar format that provide the same required information. These records shall be retained in accordance with **Condition G10.** A copy of the log shall be provided with the semiannual reports required by **Condition E2(a)** of each current Title V permit (at the time of semiannual report submittal).

Monthly HAP Emission Log					
Month/Year:					
Emission Source Number	**Emissions (tons per month)**				
	HAP_1	**HAP_2**	**HAP_3**	**HAP_n[1]**	**Total HAP**
64-0001-04					
64-0001-07					
64-0001-11					
64-0001-15					
64-0001-21					
64-0001-23					
64-0001-24					
64-0001-25					
64-0001-26					
64-0001-28					
64-0001-36					
64-0013-01					
64-0013-03					
64-0013-04					
64-0013-12					
64-0013-15					
Insignificant Units					
Total					

1. The table should be expanded to include additional individual HAP as needed.

12 Consecutive Month HAP Emission Log								
Month/Year	**HAP_1 (ton/mo)**	**HAP_1 (ton/12 mo)[1]**	**HAP_2 (ton/mo)**	**HAP_2 (ton/12 mo)[1]**	**HAP_n[2] (ton/mo)**	**HAP_n (ton/12 mo)[1]**	**Total HAP (ton/mo)**	**Total HAP (ton/12 mo)[1]**

1. The Tons per 12 Month value is the sum of the HAP emissions in the 11 months preceding the month just completed + the HAP emissions in the month just completed. Use additional columns as required for the number of different hazardous air pollutants.
2. The table should be expanded to include additional individual HAP as needed.

G14. NSPS/NESHAP/MACT/GACT Standards

The following source(s) are subject to and shall comply with all applicable requirements of each NSPS/NESHAP/MACT/GACT standard as indicated in the table below, including the General Provisions identified in Appendix 9.

Source Number	NESHAP/MACT/GACT	NSPS
04	*Not Applicable*	*Not Applicable*
25	*Not Applicable*	*Not Applicable*
26	*Not Applicable*	*Not Applicable*
28	*Not Applicable*	40 CFR 60, Subpart Dc
36	*Not Applicable*	*Not Applicable*

The following insignificant activities are subject to and shall comply with all applicable requirements of each NSPS/NESHAP/MACT/GACT standard as indicated in the table below.

Source Number	NESHAP/MACT/GACT	NSPS
37	40 CFR 63, Subpart ZZZZ	40 CFR 60, Subpart IIII

TAPCR 1200-03-09-.03(8), 0400-30-38-.01, and 0400-30-39

Compliance Method: Compliance methods for sources other than insignificant activities are provided in the conditions in **Section IV** of this permit.

G15. VOC and NO_X Emission Statement

Not Applicable

G16. Permit Supersedes Statement

This permit supersedes all previously issued permits for these source(s).

TAPCR 1200-03-09-.03(8)

G17. Source Testing Requirements

Not Applicable

G18. Prevention of Significant Deterioration of Air Quality

A. This permit allows the expansion of operations at the Jack Daniel Number 2 (JD2) Distillery site consisting of construction or modification of the sources listed in this permit and in permit 982183 (PSD) in addition to the insignificant activities listed in **Condition G18.C**. This expansion is subject to the Prevention of Significant Deterioration (PSD) review provisions of TAPCR 1200-03-09-.01(4) for significant emissions of volatile organic compounds (VOC) and greenhouse gases expressed as carbon dioxide equivalent (CO_2e) associated with the proposed project. This source shall operate in accordance with the terms of this permit and the information submitted in the approved permit application. Approval to construct shall not relieve any owner or operator of the responsibility to comply fully with the applicable provisions under this Division 1200-03 and any other requirements under local, State, or Federal law.

TAPCR 1200-03-09-.01(1)(d), 1200-03-09-.01(4), and the PSD application dated November 21, 2023

B. Approval to construct shall become invalid if construction is not commenced within 18 months after the issue date of this permit, if construction is discontinued for a period of 18 months or more, or if construction is not completed within 18 months of the completion date specified on the construction permit application (September 30, 2025 [Phase 2] and November 30, 2026 [Phase 3]). The Tennessee Air Pollution Control Board may grant an extension to complete construction of the source, provided the permittee submits a written extension request and adequate justification is presented. The extension request must be submitted no later than 15 months after the completion date specified on the construction permit application (September 30, 2025 [Phase 2] and November 30, 2026 [Phase 3]). An extension shall not exceed 18 months in time.

TAPCR 1200-03-09-.01(4)(a)4 and the PSD application dated November 21, 2023

C. The permittee shall apply Best Available Control Technology (BACT) as specified below for the following insignificant emission units. The permittee shall maintain documentation and/or allow physical inspection, as appropriate, for the source upon request by the Technical Secretary or Division Representative in order to determine compliance with the BACT requirement.

Source Number	Source Description	Pollutant(s)	Emission Limit	Best Available Control Technology
33	Whiskey Process and Storage Tanks (12 new tanks)	VOC	10.38 tons during any period of 12 consecutive months	Submerged fill/proper design and good operation and maintenance
37	One 220 hp Emergency Diesel-Fired Fire Pump Engine	VOC	0.12 g/hp-hr	Good combustion practices and compliance with applicable requirements of 40 CFR 60, Subpart IIII
		CO_2e	82.38 tons/year CO_2e	Good combustion, operating and maintenance practices

TAPCR 1200-03-09-.01(4)(j)3

D. Full utilization of Boiler 16 (64-0001-28) and/or Boiler 17 (64-0001-28) would result in a significant emission increase of nitrogen oxides (NO_X) and carbon monoxide (CO). However, the projected actual emissions under TAPCR 1200-03-09-.01(4)(b)38(i)(III) included in the PSD application do not result in significant emissions increases for these pollutants.

Before beginning actual construction of the project, the permittee shall document and maintain a record of the following information:

(1) A description of the project;
(2) Identification of the emissions unit(s) whose emissions of a regulated NSR pollutant could be affected by the project; and
(3) A description of the applicability test used to determine that the project is not a major modification for any regulated NSR pollutant, including the baseline actual emissions, the projected actual emissions, the amount of emissions excluded under TAPCR 1200-03-09-.01(4)(b)38(i)(III) and an explanation for why such amount was excluded, and any netting calculations, if applicable.

TAPCR 1200-03-09-.01(4)(a)11(i)

Compliance Method: The PSD application dated March 5, 2024, shall serve as this documentation.

E. The permittee shall monitor the emissions of any regulated NSR pollutant that could increase as a result of the project and that is emitted by any emissions unit identified in subparagraph D(2) of this condition; and calculate and maintain a record of the annual emissions, in tons per year on a calendar year basis, for a period of five years following resumption of regular operations after the change, or for a period of 10 years following the resumption of regular operations after the change if the project increases the design capacity or potential to emit of that regulated NSR pollutant at such emissions unit.

TAPCR 1200-03-09-.01(4)(a)11(iii)

Compliance Method: The permittee shall monitor and record the actual emissions of NO_X and CO from Boiler 16, Boiler 17, and Charcoal production during each month and for each calendar year. These logs shall be retained in accordance with **Condition G10**.

F. If the annual emissions, in tons per year, calculated in accordance with subparagraph E of this condition, exceed the baseline actual emissions documented as described in subparagraph D of this condition, by a significant amount for that regulated NSR pollutant, and if such emissions differ from the preconstruction projection as documented and maintained pursuant to subparagraph D of this condition, the permittee shall submit a report to the Technical Secretary within 60 days after the end of such year. The report shall contain the following:

(1) The name, address, and telephone number of the major stationary source;
(2) The annual emissions as calculated pursuant to subparagraph E of this condition; and
(3) Any further information that the permittee wishes to include in the report (e.g., an explanation as to why the emissions differ from the preconstruction projection).

TAPCR 1200-03-09-.01(4)(a)11(v)

Section IV – Federal and/or State Only Requirements

F1. 40 CFR 60, Subpart Dc Requirements

F1-1. The boilers listed below are subject to and shall comply with all applicable requirements of 40 CFR 60, Subpart Dc – *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units* (Subpart Dc). Pursuant to 40 CFR §60.40c(a), the affected facility to which Subpart Dc applies is each steam generating unit for which construction, modification, or reconstruction is commenced after June 9, 1989, and that has a maximum design heat input capacity of 100 million British thermal units per hour (MMBtu/hr) or less, but greater than or equal to 10 MMBtu/hr. Per §60.41c, a steam generating unit is defined, in part, as a device that combusts any fuel and produces steam or heats water or any heat transfer medium.

Source Number	Emission Source Description	Rated Heat Input Capacity (MMBtu/hr)	Fuel
28	Boiler 16	73.036	Natural gas, No. 2 fuel oil (backup)
	Boiler 17	73.036	Natural gas, No. 2 fuel oil (backup)
	Boiler 18	82.6	Natural gas
	Boiler 19	70.8	Natural gas

F1-2. The permittee shall record and maintain records of the amount of fuel combusted by each affected facility during each calendar month.

40 CFR §60.48c(g)(1) and (2)

Compliance Method: A log of the actual quantity of natural gas and/or No. 2 fuel oil combusted in each boiler during each calendar month must be maintained at the facility (Log 33, or a similar log that contains the same information). The log shall be compiled and retained in accordance with **Condition G10**. A copy of the log shall be provided with the semiannual reports required by **Condition E2(a)** of the current Title V permit (at the time of semiannual report submittal).

Log 33: Monthly Fuel Combustion Log (64-0001-28)								
	Natural Gas Combusted (ft^3)				**No. 2 Fuel Oil Combusted (gallons)**			
Month/Year	**Boiler 16**	**Boiler 17**	**Boiler 18**	**Boiler 19**	**Boiler 16**	**Boiler 17**	**Boiler 18**	**Boiler 19**

F1-3. The permittee shall prepare and submit reports consistent with the provisions of 40 CFR §60.48c(d) and (e) for Boilers 16 and 17. Reports shall cover each six-month period (January 1 – June 30 and July 1 – December 31) and must be postmarked by the 60th day following the end of each reporting period. Subsequent reports shall cover each six-month reporting period following the first report and must be postmarked by the 60th day following the end of each reporting period.

Each report shall include the following information:

(a) Calendar dates covered in the reporting period.
(b) Records of fuel supplier certification used to demonstrate compliance with Section (c) of this condition that includes:
   (i) The name of the oil supplier.
   (ii) A statement from the oil supplier that the oil complies with the specifications under the definition of distillate oil in 40 CFR §61.41c, and
   (iii) The sulfur content of the oil.
(c) A certified statement signed by the permittee that the records of fuel supplier certification submitted represent all of the fuel combusted during the reporting period.

40 CFR 60.48c(d), (e), and (f)(1)

Compliance Method: Compliance with this condition is assured by preparing the required reports and submitting them within the timeframe specified above. All reports shall be submitted to the U.S. EPA and the Technical Secretary within the specified timeframes. Reports submitted to the Technical Secretary shall be addressed to the Permitting Program and submitted to the address listed in **Condition G3**. Reports submitted to the U.S. EPA shall be addressed to EPA Region IV and submitted to the address provided in 40 CFR §60.4(a).

F1-4. The permittee must comply with the requirements of 40 CFR Part 60, Subpart A, according to the applicability of 40 CFR Part 60, Subpart A as identified in Appendix 9 of this permit. In the event of a discrepancy between the requirements shown in Appendix 9 and the requirements of Subpart A as published in the Federal Register, the Federal Register language shall be controlling.

40 CFR §60.1(a) and 40 CFR 60, Subpart Dc

Section V - Source Specific Permit Conditions

Source Number	Source Description
04	**Charcoal Production:** Maple wood is burned to produce charcoal for the charcoal mellowing process. White whiskey is used as fuel to start the burning process. The charcoal burner is controlled by a hooded natural gas-fired afterburner (rated at 9.2 MMBtu/hr) to control carbon monoxide (CO), particulate matter (PM), and VOC. Water spray is used to control the burn rate and char the wood as desired.

S1-1. Input Limitation(s) or Statement(s) of Design

A. The maximum amount of wood burned shall not exceed 1,536 tons during any period of 12 consecutive months.

TAPCR 1200-03-09-.01(1)(d) and the agreement letter dated March 26, 2024 (Appendix 7). This annual limit was requested to avoid PSD review.

Compliance Method: The permittee shall record the actual amount of wood burned during each month and calculate the amount burned during each period of 12 consecutive months (Log 1, or a similar log that provides the same information). All logs shall be maintained as specified in **Condition G10**. A copy of this log shall be provided with the semiannual reports required by **Condition E2(a)** of the current Title V permit (at the time of semiannual report submittal).

Log 1: Monthly and 12 Month Log of Wood Burned		
Month/Year	**Monthly Total Wood Burned (tons/month)**	**Total Amount of Wood Burned (tons/12 months)**

B. The stated heat input capacity of the afterburner is 9.2 million British thermal units per hour (MMBtu/hr). Should the permittee need to modify the source(s) in a manner that increases the design heat input capacity, the permittee shall pursue the appropriate Title V procedure in accordance with TAPCR 1200-03-09-.02(11). If a construction permit is applied for, this shall be done in accordance with TAPCR 1200-03-09-.01(1).

TAPCR 1200-03-09-.03(8)

Compliance Method: The permittee shall maintain documentation to demonstrate the design heat input capacity of the afterburner. Documentation may include, but is not limited to, purchase records, operating manuals, or a tag affixed to the unit by the manufacturer. These documents shall be kept readily available/ accessible and made available upon request by the Technical Secretary or a Division representative.

C. Only natural gas shall be used as fuel for the afterburner. Should the permittee need to modify the afterburner to allow the use of a fuel other than natural gas, the permittee shall pursue the appropriate Title V procedure in accordance with TAPCR 1200-03-09-.02(11). If a construction permit is applied for, this shall be done in accordance with TAPCR 1200-03-09-.01(1).

TAPCR 1200-03-09-.03(8)

Compliance Method: The permittee shall maintain documentation to demonstrate the type of fuel used in the afterburner. Documentation shall include, but is not limited to, manufacturer's specifications, purchase records, operating manuals, or a tag affixed to the unit by the manufacturer. These documents shall be kept readily available/accessible and made available upon request by the Technical Secretary or a Division representative.

S1-2. Production Limitation(s)

Not Applicable

S1-3. Operating Hour Limitation(s)

Not Applicable

S1-4. Emission Limitation(s)

A. Particulate matter ($PM/PM_{10}/PM_{2.5}$) emitted from this source shall not exceed 0.02 grain per dry standard cubic foot (gr/dscf) (3.7 pounds per hour [lbs/hr] on a daily average basis).

TAPCR 1200-03-07-.01(5) and the agreement letter dated March 26, 2024 (Appendix 7)

Compliance Method: The permittee shall operate and maintain an afterburner to control emissions of PM. This source shall not operate (wood shall not be burned or charred) without use of the afterburner control. The permittee shall utilize the current approved Compliance Assurance Monitoring (CAM) Plan to assure compliance with this requirement. The permittee shall do the following:

(i) All batch burns to char maple wood shall utilize afterburner control.
(ii) If the afterburner temperature falls below 1,200°F, the charcoal production unit shall be shut down as soon as feasible.
(iii) Operators shall visually verify the afterburner temperature during each batch burn to ensure the afterburner temperature does not fall below 1,200°F.
(iv) Afterburner temperature shall be recorded once during each batch burn and documented in a log (Log 2, or a similar log that provides the same information). The data entries to this log shall be completed at the end of each day this unit operates. This log shall be submitted semiannually in accordance with **Condition E2(a)** of the current Title V permit (at the time of semiannual report submittal) and shall be maintained as specified in **Condition G10**.
(v) A monthly log of maintenance performed on the afterburner shall be maintained in accordance with **Condition E3-3** of the current Title V permit for Facility ID 64-0001. Information related to routine maintenance and repair shall be kept in Log 3, or a similar log that provides the same information.

Log 2: Daily Afterburner Temperature Log					
Month/Year:					
	Temperature (°F)			Person(s) Making Log Entry	Action taken when Temperature falls below 1,200°F
Date	Batch 1	Batch 2	Batch n[1]		

Log 3: Monthly Maintenance Log		
Date	Repair/Maintenance Performed	Person Making Log Entry

B. Sulfur dioxide (SO_2) emitted from this source shall not exceed 2.1 lbs/hr on a daily average basis.

TAPCR 1200-03-14-.01(3) and the agreement letter dated March 26, 2024 (Appendix 7)

Compliance Method: Compliance with this emission limit is assured by compliance with **Condition S1-1**, using the emission factor of 0.6 pounds per million cubic feet (lbs/MMscf) of natural gas combusted from AP-42 Table 1.4-2 and the emission factor of 0.025 lb/MMBtu of heat input from AP-42 Table 1.6-2 and the default heating value for wood from 40 CFR 98, Table 1-C of 17.48 MMBtu/ton.

C. Nitrogen oxides (NO_X) emitted from this source shall not exceed 3.2 tons during any period of 12 consecutive months.

TAPCR 1200-03-07-.07(2)

Compliance Method: Compliance with this emission limit is assured by compliance with **Condition S1-1**, using the emission factor of 100 lbs/MMscf of natural gas from AP-42 Table 1.4-1 and the emission factor of 4.0 lbs/ton of wood burned from footnote n to AP-42 Table 2.5-5.

D. VOC emitted from this source shall not exceed 0.7 tons during any period of 12 consecutive months.

TAPCR 1200-03-07-.07(2)

Compliance Method: The permittee shall operate and maintain an afterburner with a control efficiency of at least 95% for VOC. This source shall not operate (wood shall not be burned or charred) without use of the afterburner control, as specified in **Condition S1-4A**. Compliance with the monitoring and recordkeeping requirements of **Condition S1-4A** shall assure compliance with this limit.

E. Carbon monoxide (CO) emitted from this source shall not exceed 5.4 tons during any period of 12 consecutive months.

TAPCR 1200-03-07-.07(2)

Compliance Method: The permittee shall operate and maintain an afterburner with a control efficiency of at least 95% for CO. This source shall not operate (wood shall not be burned or charred) without use of the afterburner control, as specified in **Condition S1-4A**. Compliance with the monitoring and recordkeeping requirements of **Condition S1-4A** shall assure compliance with this limit.

S1-5. Source-Specific Visible Emissions Limitation(s)

Not Applicable

Source Number	Source Description
25	**Grain Receiving, Handling, Storage, and Milling Operations/Mash Cookers:** This process consists of grain receiving, grain storage silos, grain cleaning, and associated conveyors for grain handling. The milling operation consists of hammermills for grinding, grain receiving bins, scale hoppers, and associated conveyors. Ground grain is transferred to the steam-heated mash cookers. Emissions from the grain receiving, grain handling, milling, and mash cooking operations are controlled by five baghouses (M-4, M-5, M-6, M-7, and the grainery truck unloading filter). This construction permit allows expansion of this operation by adding two grain storage silos and four mash cookers (9, 10, 11, and12). The four mash cookers are exhausted to existing mill area baghouse M-4 for control of PM emissions. The two grain storage silos are each insignificant activity units.

S2-1. Input Limitation(s) or Statement(s) of Design

The total throughput rate of the grain receiving, handling, storage, and milling operations shall not exceed 320,000.0 tons of grain during any period of 12 consecutive months.

TAPCR 1200-03-09-.01(1) and the PSD application dated November 21, 2023

Compliance Method: Compliance with this throughput limitation shall be demonstrated through recordkeeping. The permittee shall record the tons of grain processed during each calendar month and during each period of 12 consecutive months (Log 4, or a similar log that provides the same information). This log shall be submitted semiannually in accordance with **Condition E2(a)** of the current Title V permit (at the time of semiannual report submittal) and shall be maintained as specified in **Condition G10**.

Log 4: Monthly and 12 Month Log of Grain Throughput		
Month/Year	Monthly Total Grain Processed (tons/month)	Total Amount of Grain Processed (tons/12 months)

S2-2. Production Limitation(s)

Not Applicable

S2-3. Operating Hour Limitation(s)

Not Applicable

S2-4. Emission Limitation(s)

PM/PM_{10} emitted from this source shall not exceed 0.003 gr/dscf (0.81 pounds per hour on a daily average basis).

TAPCR 1200-03-07-.01(5) and the agreement letter dated March 26, 2024 (Appendix 7)

$PM_{2.5}$ emitted from this source shall not exceed 0.61 tons during any period of 12 consecutive months.

TAPCR 1200-03-09-.01(4)

Compliance Method: The permittee shall operate pressure gauges to measure the pressure differentials (ΔP) in inches of water column between the air flow inlet and outlet of the affected baghouses. The permittee shall assure compliance with this limitation by maintaining a minimum pressure differential across each baghouse; recording one pressure differential reading for each baghouse each day while the source is in operation; conducting visual inspections of the exterior of each baghouse and the baghouse ductwork, including the baghouse exhaust; and maintaining this information in a log (see Appendix 8 for an example log).

Upon issuance of this permit, the permittee shall compile 30 consecutive operating days of pressure differential readings across baghouse M-7 and the grainery truck unloading filter. The designated person(s) shall note any relevant baghouse conditions/problems/concerns when recording the values. The records shall also include the initials of the person performing the pressure differential reading, any corrective action(s), along with the date, time, and any relevant comments. Days that the source is not in operation shall be noted. The permittee shall submit the pressure differential data for baghouse M-7 and the grainery truck unloading filter, including a **proposed minimum pressure differential value** for each unit, to the Division no later than 15 days after completion of the initial 30 consecutive operating days of pressure differential readings. The permittee shall use the proposed minimum pressure differential value(s) for baghouse M-7 and the grainery truck unloading filer to assure continued compliance, unless notified by the Division that an alternate value must be used.

The minimum pressure differentials are as follows:

Baghouse ID	Exhaust Flow Rate (dscfm)	Minimum Pressure Differential (in H_2O)
M-4	4,200	0.2
M-5	8,000	0.2
M-6	10,200	0.2
M-7	4,200	TBD
Grainery Truck Unloading Filter	5,000	TBD

If the permittee finds that a sub-minimum pressure differential, abrasion hole, emissions problem, or plugging problem has developed during an inspection of the baghouses, the permittee shall initiate corrective action within 24 hours and complete corrective action as expediently as practical. The permittee shall record all corrective actions taken including the initiation and completion of all corrective actions in the log.

For lower pressure differential reading(s) resulting from replacement of bags, the permittee shall record the deviation(s) as such in their daily records. Due allowance will be made for lower pressure differential reading(s) which follow replacement of bags provided the permittee establishes to the satisfaction of the Technical Secretary that these lower readings resulted from the replacement of bags.

A monthly log of maintenance on each baghouse shall be kept in accordance with **Condition E3-3** of the current Title V permit for Facility ID 64-0001 and shall be maintained as specified in **Condition G10**.

S2-5. Source-Specific Visible Emissions Limitation(s)

Not Applicable

Source Number	Source Description
26	**Fermentation and Charcoal Mellowing Operations:** This source consists of 14 fermentation tanks (D-64 through D-77) and 16 charcoal mellowing vats. Cooked mash and yeast are combined with setback (spend stillage) and water in the fermentation tanks which are heated using steam. The fermented grain alcohol mixture is transferred to the distillation process, which separates and concentrates the alcohol from the fermented grain mash. The alcohol (white whiskey) from the distillation process is transferred to outside receiving vats, then to the charcoal mellowing vats. This construction permit allows expansion of this process to include the addition of 30 fermentation tanks (D-78 through D-108), for a total of 44, and 48 charcoal mellowing vats, for a total of 64.

S3-1. Input Limitation(s) or Statement(s) of Design

The maximum throughput rate of the fermentation tanks shall not exceed 11,090,560 bushels of grain during any period of 12 consecutive months. The maximum throughput rate of the charcoal mellowing process shall not exceed 60,000,000 proof gallons of white whiskey during any period of 12 consecutive months.

TAPCR 1200-03-09-.01(1) and the PSD application dated November 21, 2023

Compliance Method: Compliance with these throughput limitations shall be demonstrated through recordkeeping. The permittee shall record the actual quantity of grain input to the fermenters and the actual quantity of proof gallons produced in the charcoal mellowing process during each calendar month and each period of 12 consecutive months in a log (Log 5 in **Condition S3-4A**, or a similar log that provides the same information). This log shall be submitted semiannually in accordance with **Condition E2(a)** of the current Title V permit (at the time of semiannual report submittal) and shall be maintained as specified in **Condition G10**.

S3-2. Production Limitation(s)

Not Applicable

S3-3. Operating Hour Limitation(s)

Not Applicable

S3-4. Emission Limitation(s)

A. VOC emitted from the fermentation tanks and charcoal mellowing vats shall not exceed the limits specified below during any period of 12 consecutive months. The permittee shall utilize Pollution Prevention (P2) as specified in **Condition S3-6** for the fermentation tanks and charcoal mellowing vats. These emission limitations and the use of pollution prevention shall represent BACT for VOC emissions from the fermentation tanks and charcoal mellowing vats.

Emission Units	VOC Limit (tons)
Fermentation Tanks D-64 to D-108	79.3
Charcoal Mellowing Vats 1 - 64	495.0

TAPCR 1200-03-09-.01(4)(j)3 and the PSD application dated November 21, 2023

Compliance Method: Compliance with these emission limitations shall be demonstrated by calculating the actual VOC emissions from the fermentation tanks and the charcoal mellowing vats during each calendar month and during all intervals of 12 consecutive months and by utilizing P2 for all emission units as described in **Condition S3-6**. The permittee shall maintain a log of the information in the following format (Logs 5 and 6) or equivalent format that provides the same information. A material balance log shall be maintained to demonstrate compliance with the applicable VOC limit. These logs shall be submitted semiannually in accordance with **Condition E2(a)** of the current Title V permit (at the time of semiannual report submittal) and shall be maintained as specified in **Condition G10**.

Log 5: Monthly VOC Emission Log					
Month/Year:					
Emission Units	**VOC Emission Factors**	**Throughput**		**VOC Emissions**	
				(lbs/month)	**(tons/month)**
Fermentation Tanks D-64 to D-108	14.3 lbs VOC/ 1,000 bushels [1]	(bushels/ month)	(bushels/12 consecutive months)		
Charcoal Mellowing Vats 1 - 64	0.0165 lb VOC/ proof gallon [2]	(proof gallons/month)	(proof gallons/12 consecutive months)		

[1] Emission Factor from AP-42 Table 9.12.3-1

[2] Emission factor provided by JDD Inc. resulting from 0.5% loss during charcoal mellowing:
Pounds of VOC emitted/proof gallon = (0.5% loss) x (6.6 lb/gal ethanol) x (1 gallon/2 proof gallons)

Log 6: 12 Consecutive Month VOC Emission Log				
Month/Year	**VOC Emissions - Fermentation Tanks D-64 to D-108**		**VOC Emissions - Charcoal Mellowing Vats 1 - 64**	
	tons/mo	**tons/12 mo[1]**	**tons/mo**	**tons/12 mo[1]**

[1] The tons per 12 month value is the sum of the VOC emissions in the 11 months preceding the month just completed plus the VOC emissions in the month just completed.

B. Emissions of greenhouse gases, expressed as carbon dioxide equivalents (CO_2e) from the new and existing fermentation tanks (Tanks D-64 to D-108) shall not exceed 88,724 tons during any period of 12 consecutive months. The permittee shall utilize P2 as specified in **Condition S3-6** for the fermentation tanks. This limit and the use of pollution prevention shall represent BACT for emissions of CO_2e from the new and existing fermentation tanks.

TAPCR 1200-03-09-.01(4)(j)3 and the PSD application dated November 21, 2023

Compliance Method: Compliance with this condition is assured by compliance with **Conditions S3-1, S3-2, and S3-6** and using the approved emissions factor of 16.0 pounds of CO_2 per bushel of grain, provided by the permittee.

S3-5. Source-Specific Visible Emissions Limitation(s)

Not Applicable

S3-6. The permittee shall utilize Pollution Prevention (P2) for all fermentation tanks (D-64 to D-108) and all charcoal mellowing vats (1 – 64). The utilization of P2 for this process shall represent BACT for this source.

P2 for the fermentation tanks shall include:
- Maintaining the stainless steel cover on each fermenter and ensuring the cover is securely fastened during the fermentation cycle
- Performing periodic maintenance and inspection of the fermenters, covers, pumps, piping, etc. to maintain structural integrity and optimal performance
- Initiating corrective actions as expeditiously as practicable when an issue is identified
- Maintaining and utilizing a Fermentation Process Operations Procedure (Work Instruction).

P2 for the charcoal mellowing vats shall include:
- Equipping each charcoal mellowing vat with a cover and using the cover to minimize evaporative losses during the mellowing process
- Performing periodic maintenance and inspection of the vats, covers, pumps, piping, etc. to maintain structural integrity and optimal performance
- Rinsing the charcoal prior to replacement to minimize evaporative losses during the replacement process
- Maintaining and utilizing a Charcoal Mellowing Operations Procedure.

TAPCR 1200-03-09-.01(4)(j)3 and the PSD application dated November 21, 2023

Compliance Method: Compliance with this condition shall be assured by documenting all routine maintenance as required by **Condition G11** and maintaining and utilizing an updated Operations Procedure for both the fermentation and charcoal mellowing operation. The permittee shall notify the Technical Secretary and provide an updated copy of the Operations Procedure within 60 days of making a change to the approved procedure.

Source Number	Source Description
28	**Natural Gas Fired Boilers:** This source consists of two natural gas-fired boilers (16 and 17), each with a rated heat input of 73.036 MMBtu/hr. No. 2 fuel oil is used for backup. These boilers are equipped with low-NO_X burners. This construction permit allows for expansion of this process to include two additional natural gas-fired boilers (18 and 19), with rated heat inputs of 82.6 MMBtu/hr and 70.8 MMBtu/hr, respectively. These boilers are equipped with low-NO_X burners. 40 CFR 60, Subpart Dc requirements are specified in Section F1

S4-1. Input Limitation(s) or Statement(s) of Design

A. The stated design heat input capacity of each boiler is listed in the following table. Should the permittee need to modify the source in a manner that increases the design heat input capacity, the permittee shall pursue the appropriate Title V procedure in accordance with TAPCR 1200-03-09-.02(11). If a construction permit is applied for, this shall be done in accordance with TAPCR 1200-03-09-.01(1).

Boiler Number	Capacity (MMBtu/hr)	Fuel	Subject to 40 CFR 60, Subpart Dc
Boiler 16	73.036	Natural gas, No.2 Fuel oil (backup only)	Yes
Boiler 17	73.036	Natural gas, No.2 Fuel oil (backup only)	Yes
Boiler 18	82.6	Natural gas	Yes
Boiler 19	70.8	Natural gas	Yes

TAPCR 1200-03-09-.01(1) and the PSD application dated November 21, 2023

Compliance Method: The permittee shall maintain documentation to demonstrate the design heat input capacity of each boiler. Documentation may include, but is not limited to, purchase records, operating manuals, or a tag affixed to the unit by the manufacturer. These documents shall be kept readily available/accessible and made available upon request by the Technical Secretary or a Division representative.

B. Only natural gas and No. 2 fuel oil shall be used as fuel for Boilers 16 and 17. Only natural gas shall be used as fuel for Boilers 18 and 19. Should the permittee need to modify any unit to allow the use of a fuel other than natural gas or No. 2 fuel oil, the permittee shall pursue the appropriate Title V procedure in accordance with TAPCR 1200-03-09-.02(11). If a construction permit is applied for, this shall be done in accordance with TAPCR 1200-03-09-.01(1).

TAPCR 1200-03-09-.01(1)(d) and the PSD application dated November 21, 2023

Compliance Method: The permittee shall maintain documentation to demonstrate the type of fuel used by each boiler. Documentation shall include, but is not limited to, manufacturer's specifications, purchase records, operating manuals, or a tag affixed to the unit by the manufacturer. These documents shall be kept readily available/accessible and made available upon request by the Technical Secretary or a Division representative.

C. The sulfur content of the No. 2 fuel oil used shall be less than or equal to 0.5% by weight.

TAPCR 1200-03-09-.03(8) and 40 CFR §60.42c(d)

Compliance Method: Fuel oil supplier certification shall be obtained for each batch of fuel oil received and stored on site. Certifications shall include a statement from the oil supplier that the oil complies with the specifications under the definition of distillate oil in 40 CFR §60.41c, and the sulfur content or maximum sulfur content of the oil. Certifications shall be maintained and kept available for inspection by the Technical Secretary or a Division representative in accordance with **Condition G10.**

S4-2. Production Limitation(s)

Not Applicable

S4-3. Operating Hour Limitation(s)

Not Applicable

S4-4. Emission Limitation(s)

A. Emissions of PM/PM_{10}/$PM_{2.5}$ from each boiler shall not exceed the following:

Boiler Number	Emission Limit (lb/hr)	Emission Limit (tons/12 months)
Boiler 16	1.73	2.4
Boiler 17	1.73	2.4
Boiler 18	0.1	-
Boiler 19	0.1	-

TAPCR 1200-03-06-.01(7), PSD Permit 966419F (Amendment 3), and the agreement letter dated March 26, 2024 (Appendix 7). The annual PM limits for Boilers 16 and 17 were requested to avoid PSD applicability for PM_{10} and $PM_{2.5}$.

Compliance Method: Compliance with these emission limitations is assured by compliance with **Condition S4-1,** maintaining a monthly log of fuel usage as required by **Condition F1-2**, the use of emission factors from AP-42 Table 1.4-2 for natural gas combustion and Tables 1.3-1 and 1.3-2 for No. 2 fuel oil combustion for Boilers 16 and 17, and the use of emission factors for Industrial, Commercial, and Institutional (ICI) natural gas and distillate oil combustion from the 2014 National Emissions Inventory (NEI), Version 2 Technical Support Document (May 2018) for Boilers 18 and 19.

B. Emissions of SO_2 from each boiler shall not exceed the following:

Boiler Number	Emission Limit (lb/hr)	Emission Limit (tons/12 months)
Boiler 16	37.15	0.20
Boiler 17	37.15	0.20
Boiler 18	0.1	-
Boiler 19	0.1	-

TAPCR 1200-03-14-.01(3) and the agreement letter dated March 26, 2024 (Appendix 7)

Compliance Method: Compliance with this condition is assured by compliance with **Condition S4-1,** maintaining a monthly log of fuel usage as required by **Condition F1-2**, and the use of emission factors for ICI natural gas and distillate oil combustion from the 2014 NEI, Version 2 Technical Support Document (May 2018) (Boilers 18 and 19).

C. Emissions of CO from each boiler shall not exceed the following during any period of 12 consecutive months:

Boiler Number	Emission Limit (tons/12 months)
Boiler 16	26.3
Boiler 17	26.3
Boiler 18	29.8
Boiler 19	25.5

TAPCR 1200-03-06-.03(2)

Compliance Method: Compliance with this condition shall be assured by compliance with **Condition S4-1**, maintaining a monthly log of fuel usage as required by **Condition F1-2**, and the use of emission factors for ICI natural gas and distillate oil combustion from the 2014 NEI, Version 2 Technical Support Document (May 2018).

D. Emissions of NO_X from each boiler shall not exceed the following during any period of 12 consecutive months:

Boiler Number	Emission Limit (tons/12 months)
Boiler 16	15.7
Boiler 17	15.7
Boiler 18	12.96
Boiler 19	11.1

TAPCR 1200-03-06-.01(7), 1200-03-06-.03(2), and the agreement letter dated March 26, 2024 (Appendix 7). The limits for Boilers 16 and 17 were requested to avoid PSD applicability.

Compliance Method: Compliance with this condition is assured by compliance with **Condition S4-1**, maintaining a monthly log of fuel usage as required by **Condition F1-2**, and the use of low-NO_X burners that achieve emission rates of 50 pounds of NO_X per million cubic feet of natural gas combusted and 16 pounds of NO_X per 1,000 gallons of No. 2 fuel oil combusted. The permittee has specified that all boilers are equipped with low-NO_X burners. These units shall not operate unless the low-NO_X burners are fully operational. Documentation from the boiler manufacturer or vendor for each unit which specifies this feature is present, and which also provides confirmation of these NO_X emission rates, shall be retained in accordance with **Condition G10**.

E. Emissions of VOC from each boiler shall not exceed the following:

Boiler Number	Emission Limit (lb/MMBtu)
Boiler 16	0.0054
Boiler 17	0.0054
Boiler 18	0.0054
Boiler 19	0.0054

These emission limits shall represent BACT for emissions of VOC from these boilers.

TAPCR 1200-03-09-.01(4)(j)3 and the PSD application dated November 21, 2023

Compliance Method: Compliance with this condition is assured by compliance with **Condition S4-1**, maintaining a monthly log of fuel usage as required by **Condition F1-2**, good equipment design, the use of good combustion techniques, and the use of emission factors from for ICI natural gas and distillate oil combustion from the 2014 NEI, Version 2 Technical Support Document (May 2018).

F. Emissions of CO_2e shall not exceed the following:

Boiler Number	Emission Limit (tons/12 months)
Boiler 18	42,364
Boiler 19	36,312

These limits shall represent BACT for emissions of CO_2e from these boilers.

TAPCR 1200-03-09-.01(4)(j)3 and the PSD application dated November 21, 2023

Compliance Method: Compliance with this condition is assured by compliance with **Condition S4-1**, good equipment design, the use of good combustion techniques, and the use of emission factors for natural gas combustion presented in 40 CFR 98 Subpart C.

S4-5. Source-Specific Visible Emissions Limitation(s)

Not Applicable

S4-6. In order for Boilers 16 and 17 to qualify as gas-fired boilers, as defined in §63.11237, the permittee agrees that these boilers will meet the following operational definition:

Gas-fired boiler includes any boiler that burns gaseous fuels not combined with any solid fuels and burns liquid fuel only during periods of gas curtailment, gas supply interruption, startups, or periodic testing, maintenance, or operator training on liquid fuel. Periodic testing, maintenance, or operator training on liquid fuel shall not exceed a combined total of 48 hours during any calendar year.

Per §63.11195(e), boilers that meet the definition of a gas-fired boiler are not subject to 40 CFR 63, Subpart JJJJJJ – National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources.

TAPCR 1200-03-09-.03(8) and the PSD application dated July 9, 2012

Compliance Method: The permittee shall maintain a record of the hours when liquid fuel is combusted in Boilers 16 and 17 in the following format (Log 7) or a similar format that provides the same information. The log must specify the reason for use of liquid fuel for each occurrence (gas curtailment or supply interruption, startups, periodic testing, maintenance, or operator training on liquid fuel). This log shall be submitted semiannually in accordance with **Condition E2(a)** of the current Title V permit (at the time of semiannual report submittal) and shall be maintained as specified in **Condition G10**.

Log 7: Calendar Year Fuel Oil Use Log

Date	Fuel Oil Usage (hours)		Purpose for Other Use
	Gas Curtailment, Supply Interruption, Startup, Periodic Testing, Maintenance or Operator Training	Other	
Calendar Year Total			

Source Number	Source Description
36	**Tract I Tanker Loadout:** This source consists of equipment used to transfer distillate produced at JDD Inc. to tanker trucks for transfer offsite or to JDD Prop (64-0013) to be placed in barrels for aging.

S5-1. Input Limitation(s) or Statement(s) of Design

The maximum throughput rate of this source shall not exceed 108,266,400 proof gallons of white whiskey during any period of 12 consecutive months.

TAPCR 1200-03-09-.01(1) and the PSD application dated March 4, 2024

Compliance Method: Compliance with this throughput limitation shall be demonstrated through recordkeeping. The permittee shall record the actual amount of proof gallons processed during each calendar month and each period of 12 consecutive months in a log (Log 8, or a similar log that provides the same information). This log shall be submitted semiannually in accordance with **Condition E2(a)** of the current Title V permit (at the time of semiannual report submittal) and shall be maintained as specified in **Condition G10**.

Log 8: Monthly and 12 Month Log of Proof Gallon Throughput – Tract I Tanker Loadout		
Month/Year	Monthly Total Proof Gallons Loaded (proof gallons/month)	Total Amount of Proof Gallons Loaded (proof gallons/12 months)

S5-2. Production Limitation(s)

Not Applicable

S5-3. Operating Hour Limitation(s)

Not Applicable

S5-4. Emission Limitation(s)

Emissions of VOC from this source shall not exceed 17.9 tons during any period of 12 consecutive months.

TAPCR 1200-03-07-.07(2)

Compliance Method: Compliance with this emission limitation is assured by compliance with **Condition S5-1** and using the approved emission factor of 0.331 pounds of VOC per 1,000 proof gallons loaded.

S5-5. Source-Specific Visible Emissions Limitation(s)

Not Applicable

(end of conditions)

The permit application gives the location of this source as 35.2848 Latitude and -86.3676 Longitude

Appendix 1: Notification of Change in Responsible Person

Facility (Permittee): Jack Daniel Distillery, Lem Motlow, Prop., Inc. (JDD Inc.)

Facility ID: 64-0001

Former Responsible Person: ____________________ Name ____________________ Title

New Responsible Person: ____________________ Name ____________________ Title

____________________ Email

____________________ Mailing Address

____________________ Phone (Office) ____________________ Phone (cell)

Date New Responsible Person was assigned this duty: ____________________

As the Responsible Person of the above mentioned facility (permittee), I certify that the information contained in this Notification is accurate and true to the best of my knowledge. As specified in Tennessee Code Annotated Section 39-16-702(a)(4), this declaration is made under penalty of perjury.

Signature		Date
Signer's name (print)	Title	Phone (with area code)

Appendix 2: Notification of Changes

Facility (Permittee): Jack Daniel Distillery, Lem Motlow Prop., Inc. (JDD Inc.)

Facility ID: 64-0001

Source Number: ____________________

	Control Equipment	Stack Height (Feet)	Stack Diameter (Feet)	Exit Velocity (Feet/Second)	Exit Temperature (ºF)
Current					
Proposed					
Current					
Proposed					
Current					
Proposed					

Comments:

As the Responsible Person of the above mentioned facility (permittee), I certify that the information contained in this Notification is accurate and true to the best of my knowledge. As specified in Tennessee Code Annotated Section 39-16-702(a)(4), this declaration is made under penalty of perjury.

Signature		Date
Signer's name (print)	Title	Phone (with area code)

Appendix 3: Notification of Ownership Change

Facility (Permittee): Jack Daniel Distillery, Lem Motlow Prop., Inc. (JDD Inc.) (Previous Owner)

Facility ID: 64-0001

Facility (Permittee): ______________________ (New Owner) ______________________ Date of Ownership Change

Secretary of State Control Number: ______________________ [as registered with the TN Secretary of State (SOS)]

Responsible Person/Authorized Contact	Email Address
Mailing Address	Phone with area code
Principal Technical Contact	Email Address
Mailing Address	Phone with area code
Billing Contact	Email Address
Mailing Address	Phone with area code

As the responsible person for the new owner or operator of the above mentioned facility (permittee):

- I agree to not make any changes to the stationary source(s) that meet the definition of modification as defined in Division 1200-03 or Division 0400-30[1], and
- I agree to comply with the conditions contained in **the permits listed below**, Division 1200-03 and Division 0400-30 of the Tennessee Air Pollution Control Regulations, the Tennessee Air Quality Act, and any documented agreements made by the previous owner to the Technical Secretary.

List all active permits issued to the facility for which the owner wishes to assume ownership:

The information contained in this Notification is accurate and true to the best of my knowledge. As specified in Tennessee Code Annotated Section 39-16-702(a)(4), this declaration is made under penalty of perjury.

Signature		Date
Signer's name (print)	Title	Phone (with area code)

[1] Appropriate application forms must be submitted prior to modification of the stationary source(s).

Appendix 4: Startup Certification

Facility (Permittee): Jack Daniel Distillery, Lem Motlow Prop., Inc. (JDD Inc.)

Facility ID: 64-0001

Startup Certification for Source Number: ______________

The permittee shall certify the startup date for each new or modified air contaminant source regulated by construction permit 980501 by submitting this document.

Date of startup: ____________________ / _________ / ___________
Month Day Year

As the Responsible Person of the above mentioned facility (permittee), I certify that the information contained in this Startup Certification is accurate and true to the best of my knowledge. As specified in Tennessee Code Annotated Section 39-16-702(a)(4), this declaration is made under penalty of perjury.

Signature		Date
Signer's name (print)	Title	Phone (with area code)

Appendix 5: Fees

Not Applicable

Appendix 6: Emission Statement for VOC and NO_X

Not Applicable

Appendix 7: Agreement Letters

The Oldest Registered Distillery in the U.S.A.

JACK DANIEL DISTILLERY

LEM MOTLOW PROPRIETOR, INC.
DISTILLERS AND BOTTLERS OF THE FAMOUS

Phone 931 759-4221

AWARDED THE HIGHEST GOLD MEDALS AT
ST. LOUIS, MO EXPOSITION, 1904
LIEGE, BELGIUM, 1905
GHENT BELGIUM, 1913
ANGLO-AMERICAN EXPOSITION, LONDON, 1914
CERTIFICATE OF THE INST. OF HYGIENE, LONDON, 1915
STAR OF EXCELLENCE, BRUSSELS, BELGIUM, 1954
GOLD MEDAL WITH PALM LEAVES, AMSTERDAM, 1981

JACK DANIEL'S OLD No. 7 BRAND OLD TIME SOUR MASH WHISKEY

P.O. BOX 199
LYNCHBURG, TENN.
37352

FINE WHISKEYS
PLACED IN THE NATIONAL REGISTER OF HISTORIC PLACES BY THE UNITED STATES GOVERNMENT

March 26, 2024

VIA E-MAIL: Air.Pollution.Control@tn.gov

Ms. Michelle Owenby
Technical Secretary
Permitting & Regulatory Development
Tennessee Department of Environment
and Conservation
Division of Air Pollution Control (TDAPC)
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 15th Floor
Nashville, TN 37243

RE: Emissions Limitation Agreement
Jack Daniel Distillery, Lem Motlow Prop., Inc.
Emission Source Reference No. 64-0001

Dear Ms. Owenby:

By means of this correspondence, the Jack Daniel Distillery, Lem Motlow Prop., Inc. (JDD Inc.) facility in Lynchburg, Tennessee is submitting this agreement letter for specific process throughputs and emission rates as requested via email from your staff via email correspondence and in-person meeting on March 21, 2024 pertaining to the draft Prevention of Significant Deterioration construction permit as described below. Additionally, a revised APC 10 form for Source 64-0001-26: Existing and New Fermenters is attached to update throughput information as discussed in the March 21, 2014 in-person meeting.

Condition G13:

JDD Inc. agrees to limit facility-wide hazardous air pollutants (HAPs) to 24.9 tons during any period of 12 consecutive month and individual HAPs to 9.9 tons during any period of 12 consecutive months.

Condition S1-1:

JDD Inc. agrees to accept a wood combustion limit for charcoal production of 1,536 tons during any period of 12 consecutive months.

Condition S1-4 A and B:

JDD Inc. agrees to accept a particulate matter (PM) limit that is lower than allowable under applicable standards. Specifically, JDD Inc. agrees to a PM limit of 0.02 grain per dry standard cubic food (dscf).

JDD Inc. agrees to accept a sulfur dioxide (SO_2) limit that is lower than allowable under applicable standards. Specifically, JDD Inc. agrees to a SO_2 limit of 2.1 pound per hour.

Condition S2-4:

JDD Inc. agrees to accept a PM limit that is lower than allowable under applicable standards. Specifically, JDD Inc. agrees to a PM limit of 0.003 grain per dscf.

Condition S4-4:

JDD Inc. agrees to accept limits of PM and SO2 for boilers 16, 17, 18, and 19 that are lower than allowable under applicable standards. Specifically, JDD Inc. agrees to the following limitations:

Boiler Number	PM Emission Limit (lb/hr)	PM Emission Limit (tons/12 months)
Boiler 16	1.73*	2.4
Boiler 17	1.73*	2.4
Boiler 18	0.1	--
Boiler 19	0.1	--

*PM emission rate based on US EPA AP-42 Section 1.3 Fuel Oil Combustion, Table 1.3-1; PM emission rate of 3.3 pounds/1000 gallon for filterable and condensable PM.

Boiler Number	SO2 Emission Limit (lb/hr)	SO2 Emission Limit (tons/12 months)
Boiler 16	37.15*	0.2
Boiler 17	37.15*	0.2
Boiler 18	0.1	--
Boiler 19	0.1	--

*SO_2 emission rate based on 0.5% sulfur content as referenced for #2 fuel oil limitations for Boiler 8 (Source 64-0001-23) and in 40 CFR 60, Subpart Dc.

JDD Inc. agrees to the following Nitrogen Oxide (NOx) limitations for natural gas combustion:

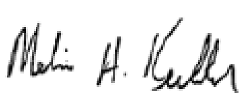
Boiler Number	Natural Gas Emission Limit (tons/12 months)
Boiler 16	15.7
Boiler 17	15.7
Boiler 18	12.96
Boiler 19	11.1

If you have any questions or need additional information, please let me know.

Based on information and belief formed after reasonable inquiry, the statements and information in this document are true, accurate, and complete.

Respectfully,

JACK DANIEL DISTILLERY
Lem Motlow Prop., Inc.



Melvin H. Keebler
SVP General Manager

Appendix 8: Example Logs

20*XX* Daily Baghouse Pressure Drop Readings (64-0001-25)								
JAN☐ FEB☐ MAR☐ APR☐ MAY☐ JUN☐ JUL☐ AUG☐ SEP☐ OCT☐ NOV☐ DEC☐								
Control Device ID:								
Day	Reading Time	*<Process Source>* operating?		*<Control Device>* operating?		*<Monitored Parameter>* <units>	Comments / Corrective Actions	Initials
		Yes	No	Yes	No			
1		☐	☐	☐	☐			
2		☐	☐	☐	☐			
3		☐	☐	☐	☐			
4		☐	☐	☐	☐			
5		☐	☐	☐	☐			
6		☐	☐	☐	☐			
7		☐	☐	☐	☐			
8		☐	☐	☐	☐			
9		☐	☐	☐	☐			
10		☐	☐	☐	☐			
11		☐	☐	☐	☐			
12		☐	☐	☐	☐			
13		☐	☐	☐	☐			
14		☐	☐	☐	☐			
15		☐	☐	☐	☐			
16		☐	☐	☐	☐			
17		☐	☐	☐	☐			
18		☐	☐	☐	☐			
19		☐	☐	☐	☐			
20		☐	☐	☐	☐			
21		☐	☐	☐	☐			
22		☐	☐	☐	☐			
23		☐	☐	☐	☐			
24		☐	☐	☐	☐			
25		☐	☐	☐	☐			
26		☐	☐	☐	☐			
27		☐	☐	☐	☐			
28		☐	☐	☐	☐			
29		☐	☐	☐	☐			
30		☐	☐	☐	☐			
31		☐	☐	☐	☐			

Appendix 9: General Provisions for 40 CFR 60, Subpart Dc

You are required to comply with the following General Provisions of the federal Standards of Performance for New Stationary Sources (NSPS):

General Provisions Citation 40 CFR	Subject of Citation	Applies to Subpart	Explanation
§60.1	General applicability of the General Provisions	Yes ☒ No ☐	General/Initial applicability determination; applicability after standard established.
§60.2	Definitions	Yes ☒ No ☐	General Definitions. Additional Terms defined in §60.41c.
§60.3	Units and abbreviations	Yes ☒ No ☐	General Units and Abbreviations.
§60.4	Address	Yes ☒ No ☐	Addresses for regional EPA offices and State/Local Agencies.
§60.5	Determination of construction or modification	Yes ☒ No ☐	Outlines Administrator's (Technical Secretary) authority on whether actions by the owner/operator are construction or modification.
§60.6	Review of plans	Yes ☒ No ☐	Outlines Administrator's (Technical Secretary) authority to review plans and provide technical advice to owner/operator due to construction or modification.
§60.7	Notification and Recordkeeping	Yes ☒ No ☐	General notification and recordkeeping guidelines.
§60.8	Performance tests	Yes ☒ No ☐	General performance test guidelines. §60.8(f) does not apply to this subpart.
§60.9	Availability of information	Yes ☒ No ☐	General notification to the public of information obtained by the Administrator (Technical Secretary)
§60.10	State Authority	Yes ☒ No ☐	Outlines the State/local authority regarding emission standards, limitations, permit approvals, etc.
§60.11	Compliance with standards and maintenance requirements	Yes ☒ No ☐	General compliance and maintenance requirements.
§60.12	Circumvention	Yes ☒ No ☐	Circumventing standards applicable to a source.
§60.13	Monitoring requirements	Yes ☒ No ☐	General monitoring requirements.
§60.14	Modification	Yes ☒ No ☐	General requirements pertaining to modification of a source.
§60.15	Reconstruction	Yes ☒ No ☐	General requirements pertaining to reconstruction of a source.
§60.16	Priority list	Yes ☐ No ☒	Prioritized major source categories.
§60.17	Incorporations by reference	Yes ☒ No ☐	Outline of materials incorporated by reference per the Director of Federal Register.
§60.18	General control device requirements	Yes ☒ No ☐	General requirements for control devices used to comply with applicable subparts of 40 CFR parts 60 and 61.
§60.19	General notification and reporting requirements	Yes ☒ No ☐	General requirements for notification and reporting.

Appendix 10: Opacity Matrix Decision Tree for Sources Utilizing EPA Method 9

Decision Tree PM for Opacity for Sources Utilizing EPA Method 9*

Notes:

PM = Periodic Monitoring required by 1200-03-09-.02(11)(e)(iii).

This Decision Tree outlines the criteria by which major sources can meet the periodic monitoring and testing requirements of Title V for demonstrating compliance with the visible emission standards set forth in the permit. It is not intended to determine compliance requirements for EPA's Compliance Assurance Monitoring (CAM) Rule (formerly referred to as Enhanced Monitoring – Proposed 40 CFR 64).

Examine each emission unit using this Decision Tree to determine the PM required.*

Use of continuous emission monitoring systems eliminates the need to do any additional periodic monitoring.

Visible Emission Evaluations (VEEs) are to be conducted utilizing EPA Method 9. The observer must be properly certified to conduct valid evaluations.

Typical Pollutants
Particulates, VOC, CO, SO_2, NO_x, HCl, HF, HBr, Ammonia, and Methane.

Initial observations are to be repeated within 90 days of startup of a modified source, if a new construction permit is issued for modification of the source.

A VEE conducted by TAPCD personnel after the Title V permit is issued will also constitute an initial reading.

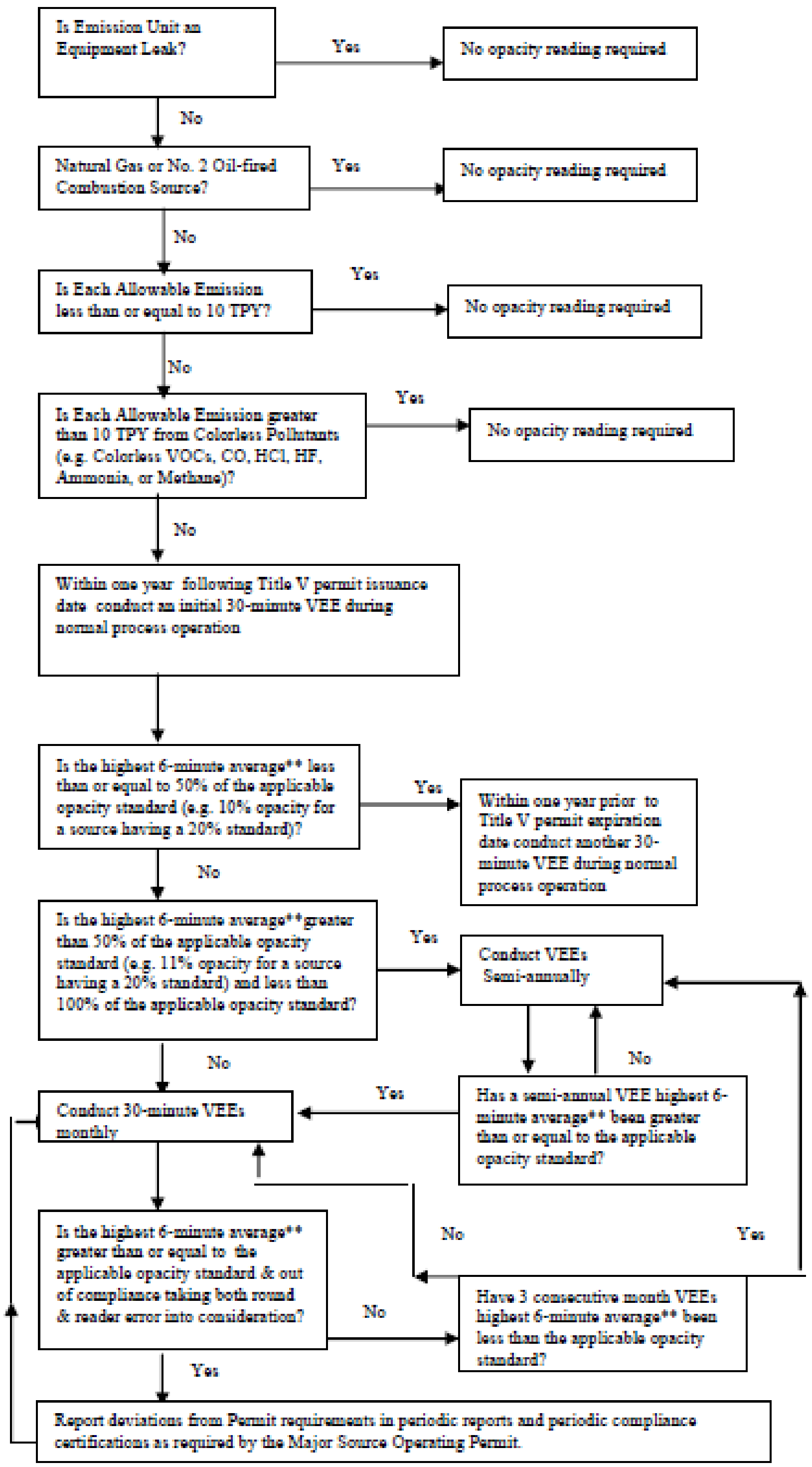
Reader Error
EPA Method 9, Non-NSPS or NESHAPS stipulated opacity standards:
The TAPCD guidance is to declare non-compliance when the highest six-minute average** exceeds the standard plus 6.8% opacity (e.g. 26.8% for a 20% standard).

EPA Method 9, NSPS or NESHAPS stipulate opacity standards:
EPA guidance is to allow only engineering round. No allowance for reader error is given.

*Not applicable to Asbestos manufacturing subject to 40 CFR 61.142

**Or second highest six-minute average, if the source has an exemption period stipulated in either the regulations or in the permit.

Dated June 18, 1996
Amended September 11, 2013



STATE OF TENNESSEE
AIR POLLUTION CONTROL BOARD
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
NASHVILLE, TENNESSEE

PERMIT TO CONSTRUCT / MODIFY AIR CONTAMINANT SOURCE(S)

Permit Number:	982183 (PSD) [PROPOSED DRAFT]
Facility (Permittee):	Jack Daniel Distillery, Lem Motlow Prop., Inc. (JDD Prop)
Facility ID:	64-0013
Facility Address:	1926 Fayetteville Highway, Lynchburg Moore County
Facility Classification:	Title V
Federal Requirements:	40 CFR 51.166 Prevention of Significant Deterioration of Air Quality (PSD) 40 CFR 60, Subpart IIII 40 CFR 63, Subpart ZZZZ
Facility Description:	Wholesale distribution of distilled spirits

Permit 982183 (PSD), consisting of 19 pages is hereby issued [DRAFT], pursuant to the Tennessee Air Quality Act and by the Technical Secretary, Tennessee Air Pollution Control Board, Department of Environment and Conservation. This permit expires on [DRAFT]. The holder of this permit shall comply with the conditions contained in this permit as well as all applicable provisions of the Tennessee Air Pollution Control Regulations (TAPCR).

Michelle W. Owenby
Technical Secretary
Tennessee Air Pollution Control Board

No Authority is Granted by this Permit to Operate, Construct, or Maintain any Installation in Violation of any Law, Statute, Code, Ordinance, Rule, or Regulation of the State of Tennessee or any of its Political Subdivisions.

Section I – Sources Included in this Construction Permit

FACILITY DESCRIPTION			
Source Number	**Source Description**	**Status**	**Control Device/Equipment**
03	Barrel Filling, Maturation Warehouses, and Barrel Dumping for Tracts I, II, and III	Modified	None

Section II – Permit Record

Permit Type	Description of Permit Action	Issue Date
Initial	Initial issuance of PSD construction permit	[DRAFT]

Section III - General Permit Conditions

G1. Responsible Person

The application that was utilized in the preparation of this construction permit is dated November 21, 2023 (with updates received January 15, 2024, and March 5, 2024), and is signed by Melvin H. Keebler, SVP General Manager, the Responsible Person for the permittee. The Responsible Person may be the owner, president, vice-president, general partner, plant manager, environmental/health/safety coordinator, or other person that is able to represent and bind the facility in environmental permitting affairs. If this Responsible Person terminates their employment or is assigned different duties and is no longer the person to represent and bind the permittee in environmental permitting affairs, the new Responsible Person for the permittee shall notify the Technical Secretary of the change in writing. The Notification shall include the name and title of the new Responsible Person assigned by the permittee to represent and bind the permittee in environmental permitting affairs, and the date the new Responsible Person was assigned these duties.

Should a change in the Responsible Person occur, the new Responsible Person must submit the Notification provided in Appendix 1 of this permit no later than 30 days after the change. A separate notification shall be submitted for each subsequent change in Responsible Person.

TAPCR 1200-03-09-.03(8)

G2. Application and Agreement Letters

This source shall operate in accordance with the terms of this permit, the information submitted in the approved permit application(s) referenced in **Condition G1**, and any documented agreements made with the Technical Secretary.

TAPCR 1200-03-09-.01(1)(d)

G3. Submittals

Unless otherwise specified within this permit, the permittee shall submit, preferably via email and in Adobe Portable Document format (PDF), all applicable plans, checklists, certifications, notifications, test protocols, reports, and applications to the attention of the following Division Programs at the email addresses indicated in the table below:

<table>
<tr><th>Permitting Program</th><th>Compliance Validation Program</th><th>Field Services Program</th></tr>
<tr><td>• Notifications
• Startup certifications
• Applications
• NSPS reports
• MACT/GACT/NESHAP reports
• Emission statements
• Construction permit extension requests</td><td>• Test protocols
• Emission test reports
• Visible emission evaluation reports</td><td>• Semiannual reports
• Annual compliance certifications/status reports</td></tr>
<tr><td colspan="2">Before June 1, 2024
State of Tennessee
Department of Environment and Conservation
Division of Air Pollution Control
William R. Snodgrass TN Tower, 15th Floor
312 Rosa L. Parks Avenue
Nashville, TN 37243
Air.Pollution.Control@tn.gov</td><td rowspan="2">Columbia Environmental Field Office
Division of Air Pollution Control
1421 Hampshire Pike
Columbia, TN 38401
APC.ColuEFO@tn.gov</td></tr>
<tr><td colspan="2">On and after June 1, 2024
State of Tennessee
Department of Environment and Conservation
Division of Air Pollution Control
Davy Crockett Tower, 7th Floor
500 James Robertson Parkway
Nashville, TN 37243
Air.Pollution.Control@tn.gov</td></tr>
</table>

The permittee shall submit the information identified above as requested in this permit. In lieu of submitting this information to the email addresses above, the permittee may submit the information to the attention of the respective Division Programs at the mailing addresses listed above.

TAPCR 1200-03-09-.03(8)

G4. Notification of Changes

The permittee shall notify the Technical Secretary for any of the following changes to a permitted air contaminant source which would not be a modification requiring a new construction permit:

- change in air pollution control equipment that does not result in an increase or otherwise meet the definition of a modification
- change in stack height or diameter
- change in exit velocity of more than 25 percent or exit temperature of more than 15 percent based on absolute temperature.

The permittee must submit the Notification provided in Appendix 2 of this permit 30 days before the change is commenced.

TAPCR 1200-03-09-.02(7)

G5. Permit Transference

A. This permit is not transferable from one air contaminant source to another air contaminant source or from one location to another location. The permittee must submit a construction permit application for a new source to the Permitting Program not less than 90 days prior to the estimated starting date of these events. If the new source will be subject to major New Source Review, the application must be submitted not less than 120 days in advance of the estimated starting date of these events.

TAPCR 1200-03-09-.03(6)(b) and 1200-03-09-.01(1)(b)

B. In the event an ownership change occurs at this facility, the new owner must submit the notification provided in Appendix 3 of this permit. The written notification must be submitted by the new owner to the Permitting Program no later than 30 days after the ownership change occurs. If the change in ownership results in a change in Responsible Person for the facility, notification of the change in Responsible Person must also be submitted, as specified in **Condition G1**.

TAPCR 1200-03-09-.03(6)(a) and (b)

G6. Operating Permit Application Submittal

The permittee shall apply for a significant modification to incorporate the changes authorized by this permit into the active Title V permit (at the time of significant modification application) no later than 90 days after initial startup of the first new maturation warehouse. This application shall be made using forms made available by the Technical Secretary.

TAPCR 1200-03-09-.02(11)(d)1 and 1200-03-09-.02(11)(f)5(iv)(II)

G7. Temporary Operating Permit

A. This construction permit shall serve as a temporary operating permit from the date of issuance, until the Technical Secretary issues a modified Title V operating permit provided the permittee submits a significant modification application within the timeframe specified in **Condition G6**.

TAPCR 1200-03-09-.02(1), 1200-03-09-.02(2), and 1200-03-09-.02(11)(d)1(i)(V)

B. If construction of the air contaminant source(s) cannot be completed and/or an operating permit application cannot be filed with the Technical Secretary by the expiration date of this permit, the permittee must submit a permit extension request 30 days prior to permit expiration.

TAPCR 1200-03-09-.02(1) and 1200-03-09-.02(3)

G8. Startup Certification for New or Modified Source(s)

The startup certification provided in Appendix 4 shall be submitted to the Permitting Program once an air contaminant source (maturation warehouse) has started up. Startup of a maturation warehouse shall be the date the new maturation warehouse began storing whiskey barrels for aging under the terms of this permit. A separate startup certification must be submitted for each new maturation warehouse included in this permit.

TAPCR 1200-03-09-.03(8)

Compliance Method: The startup certification provided in Appendix 4 shall be submitted no later than 30 days after each air contaminant source has begun startup.

G9. Fees

The air contaminant source(s) identified in this permit shall comply with the requirements for payment of applicable annual emission fees to the Tennessee Division of Air Pollution Control.

TAPCR 1200-03-26-.02

G10. General Recordkeeping Requirements

A. All recordkeeping requirements for all data required to be recorded shall follow the following schedules:

For Daily Recordkeeping	For Weekly Recordkeeping	For Monthly Recordkeeping
No later than seven days from the end of the day for which the data is required.	No later than seven days from the end of the week for which the data is required.	No later than 30 days from the end of the month for which the data is required.

B. The information contained in logs, records, and submittals required by this permit shall be kept at the facility's address, unless otherwise noted, and provided to the Technical Secretary or a Division representative upon request. Computer-generated logs are acceptable. Compliance is assured by retaining the logs, records, and submittals specified in this permit for a period of not less than five years at the facility's address.

TAPCR 1200-03-10-.02(2)(a)

G11. Routine Maintenance Requirements

The permittee shall maintain and repair the emission source, associated air pollution control device(s), and compliance assurance monitoring equipment as required to maintain and assure compliance with the specified emission limits.

TAPCR 1200-03-09-.03(8)

Compliance Method: Records of all repair and maintenance activities required above shall be recorded in a suitable permanent form and kept available for inspection by the Division. These records must be retained for a period of not less than five years. The date each maintenance and repair activity began shall be entered in the log no later than seven days following the start of the repair or maintenance activity, and the completion date shall be entered in the log no later than seven days after activity completion.

G12. Visible and Fugitive Emissions

A. Unless otherwise specified, visible emissions from this facility shall not exhibit greater than 20% opacity, except for one six-minute period in any one-hour period, and for no more than four six-minute periods in any 24-hour period. A stack is defined as any chimney, flue, conduit, exhaust, vent, or opening of any kind whatsoever, capable of, or used for, the emission of air contaminants.

TAPCR 1200-03-05-.01(1) and 1200-03-05-.03(6)

Compliance Method: When required to demonstrate compliance, visible emissions shall be determined by EPA Method 9, as published in the current 40 CFR 60, Appendix A (six-minute average).

B. The permittee shall not cause, suffer, allow, or permit any materials to be handled, transported, or stored; or a building, its appurtenances, or a road to be used, constructed, altered, repaired, or demolished without taking reasonable precautions to prevent particulate matter from becoming airborne. Reasonable precautions shall include, but are not limited to, the following:

(a) Use, where possible, of water or chemicals for control of dust in demolition of existing buildings or structures, construction operations, grading of roads, or the clearing of land;
(b) Application of asphalt, water, or suitable chemicals on dirt roads, material stockpiles, and other surfaces which can create airborne dusts;
(c) Installation and use of hoods, fans, and fabric filters to enclose and vent the handling of dusty materials. Adequate containment methods shall be employed during sandblasting or other similar operations.

The permittee shall not cause, suffer, allow, or permit fugitive dust to be emitted in such manner to exceed five minutes per hour or 20 minutes per day as to produce a visible emission beyond the property line of the property on which the emission originates, excluding malfunction of equipment as provided in TAPCR 1200-03-20. A malfunction is defined as, any sudden and unavoidable failure of process equipment or for a process to operate in an abnormal and unusual manner. Failures that are caused by poor maintenance, careless operation, or any other preventable upset condition or preventable equipment breakdown shall not be considered malfunctions.

TAPCR 1200-03-08-.01(1) and 1200-03-08-.01(2)

Compliance Method: When required to demonstrate compliance, fugitive emissions shall be determined by Tennessee Visible Emissions Evaluation Method 4 as adopted by the Tennessee Air Pollution Control Board on April 16, 1986.

C. Fugitive emissions from roads and parking areas shall not exhibit greater than 10% opacity.

TAPCR 1200-03-08-.03

Compliance Method: When required to demonstrate compliance, fugitive emissions from roads and parking areas shall be determined by utilizing Tennessee Visible Emissions Evaluation (TVEE) Method 1, as adopted by the Tennessee Air Pollution Control Board on April 29, 1982, as amended on September 15, 1982, and August 24, 1984.

G13. Facility-wide Limitations

The combined maximum emission rate from all pollutant-emitting sources located at JDD Prop (64-0013) and JDD Inc. (64-0001), including insignificant emission units, for any single hazardous air pollutant (HAP) listed pursuant to Section 112(b) of the Federal Act, shall not exceed 9.9 tons during any period of 12 consecutive months. Total emissions of all HAP from all pollutant-emitting sources located at JDD Prop (64-0013) and JDD Inc. (64-0001), including insignificant emission units, shall not exceed 24.9 tons during any period of 12 consecutive months.

TAPCR 1200-3-07-.07(2) and the agreement letter dated March 22, 2024 (Appendix 7)

Compliance Method: The permittee shall demonstrate compliance with this condition by calculating the actual quantities of each individual HAP and total HAP emitted from each emission source, including insignificant emission units and activities, during each calendar month and during each period of 12 consecutive months. For sources designated as insignificant activities, the permittee may calculate actual HAP emissions or use the potential to emit from each emission unit. Records of these emissions shall be compiled in the following logs, or logs with a similar format that provide the same required information. These records shall be retained in accordance with **Condition G10.** A copy of the log shall be provided with the semiannual reports required by **Condition E2(a)** of each current Title V Permit (at the time of semiannual report submittal).

Monthly HAP Emission Log					
Month/Year:					
	Emissions (tons per month)				
Emission Source	HAP_1	HAP_2	HAP_3	HAP_n[1]	Total HAP
64-0001-04					
64-0001-07					
64-0001-11					
64-0001-15					
64-0001-21					
64-0001-23					
64-0001-24					
64-0001-25					
64-0001-26					
64-0001-28					
64-0001-36					
64-0013-01					
64-0013-03					
64-0013-04					
64-0013-12					
64-0013-15					
Insignificant Units					
Total					

1. The table should be expanded to include additional individual HAP as needed.

12 Consecutive Month HAP Emission Log								
Month/Year	HAP 1 (ton/mo)	HAP 1 (ton/12 mo)[1]	HAP 2 (ton/mo)	HAP 2 (ton/12 mo)[1]	HAP n[2] (ton/mo)	HAP n (ton/12 mo)[1]	Total HAP (ton/mo)	Total HAP (ton/12 mo)[1]

1. The Tons per 12 Month value is the sum of the HAP emissions in the 11 months preceding the month just completed + the HAP emissions in the month just completed. Use additional columns as required for the number of different hazardous air pollutants.
2. The table should be expanded to include additional individual HAP as needed.

G14. NSPS/NESHAP/MACT/GACT Standards

The following insignificant activities are subject to and shall comply with all applicable requirements of each NSPS/NESHAP/MACT/GACT standard as indicated in the table below.

Source Number	NESHAP/MACT/GACT	NSPS
16	40 CFR 63, Subpart ZZZZ	40 CFR 60, Subpart IIII

TAPCR 1200-03-09-.03(8), 0400-30-38-.01, and 0400-30-39

G15. VOC and NO_X Emission Statement

Not Applicable

G16. Permit Supersedes Statement

This permit supersedes all previously issued permits for these source(s).

TAPCR 1200-03-09-.03(8)

G17. Source Testing Requirements

Not Applicable

G18. Prevention of Significant Deterioration of Air Quality

A. This permit allows the expansion of operations at the JDD Prop site consisting of construction or modification of the sources listed in this permit and in permit 980501 (PSD) in addition to the insignificant activities listed in **Condition G18.C**. This expansion is subject to the Prevention of Significant Deterioration (PSD) review provisions of TAPCR 1200-03-09-.01(4) for significant emissions of volatile organic compounds (VOC) and greenhouse gases expressed as carbon dioxide equivalent (CO_2e) associated with the proposed project. This source shall operate in accordance with the terms of this permit and the information submitted in the approved permit application(s). Approval to construct shall not relieve any owner or operator of the responsibility to comply fully with the applicable provisions under this Division 1200-03 and any other requirements under local, State, or Federal law.

TAPCR 1200-03-09-.01(1)(d), 1200-03-09-.01(4), and the PSD application dated November 21, 2023

B. Approval to construct shall become invalid if construction is not commenced within 18 months after the issue date of this permit, if construction is discontinued for a period of 18 months or more, or if construction is not completed within 18 months of the completion date specified on the construction permit application (April 30, 2030). The Tennessee Air Pollution Control Board may grant an extension to complete construction of the source, provided the permittee submits a written extension request and adequate justification is presented. The extension request must be submitted no later than 15 months after the completion date specified on the construction permit application (April 30, 2030). An extension shall not exceed 18 months in time.

TAPCR 1200-03-09-.01(4)(a)4 and the update to the PSD application dated November 21, 2023.

C. The permittee shall apply Best Available Control Technology (BACT) as specified below for the following insignificant emission units. The permittee shall maintain documentation and/or allow physical inspection, as appropriate, for the source upon request by the Technical Secretary or Division Representative in order to determine compliance with the BACT requirement.

Source Number	Source Description	Pollutant(s)	Emission Limit	Best Available Control Technology
16	Two Emergency Diesel-Fired Fire Pump Engines (220 hp each)	VOC	0.12 g/hp-hr	Good combustion practices and compliance with applicable requirements of 40 CFR 60 Subpart IIII
		CO_2e	82.38 tons during any period of 12 consecutive months, each	Good combustion, operating and maintenance practices

TAPCR 1200-03-09-.01(4)(j)3

Section IV - Source Specific Permit Conditions

Source Number	Source Description
03	**Barrel Filling, Maturation Warehouses, and Barrel Dumping for Tracts I, II, and III:** New charred oak barrels are filled with white whiskey following gauging in the cistern of JDD Inc. (64-0001) or JDD Prop. VOC emissions occur when the vapors are displaced from the barrel headspace during filling and incidental spillage. The filled barrels are transported to one of 96 maturation warehouses. VOC emissions from the barrel contents are released through building openings, windows, doors, and by ventilation at the warehouses while stored for four or more years. Following maturation, the barrels are dumped prior to the processing and bottling operations. VOC emissions are released during dumping from the evaporation during exposure to the atmosphere. The whiskey may be stored in one of 13 bulk outdoor storage tanks prior to gauging in Tract II. This construction permit allows for expansion of this operation by adding 22 new whiskey maturation warehouses, for a total of 118.

S1-1. Input Limitation(s) or Statement(s) of Design

The maximum storage capacity of the maturation warehouses shall not exceed 4,590,304 barrels, total, and the individual capacity for each warehouse specified in the confidential submittal dated February 23, 2023.

TAPCR 1200-03-09-.01(1)(d) and the PSD application dated November 11, 2023

Compliance Method: The permittee shall maintain monthly records of the total number of barrels stored in each warehouse. The logs shall be retained in accordance with **Condition G10**.

S1-2. Production Limitation(s)

Not Applicable

S1-3. Operating Hour Limitation(s)

Not Applicable

S1-4. Emission Limitation(s)

Volatile organic compound (VOC) emissions from barrel filling, the maturation warehouses, and barrel dumping processes at Tracts I, II, and III shall not exceed 16,869.4 tons during any period of twelve consecutive months.

Emissions of VOC from the 22 new maturation warehouses shall not exceed 5,378.8 tons during any period of 12 consecutive months. The permittee shall utilize good operating and maintenance practices as specified in **Condition S1-6** as BACT to minimize VOC emissions from the new maturation warehouses.

TAPCR 1200-03-09-.01(4)(j)3, and the PSD application dated November 21, 2023

Compliance Method: The permittee shall calculate the actual VOC emissions from this source during each calendar month and during all intervals of 12 consecutive months using the emission factor from the Brown-Forman Barrel Study (conducted from 1989-1993) of 7.35 pounds of VOC/barrel/year (Appendix 8). The permittee shall maintain a log of the information in the following format (LOG 1 and 2) or equivalent format that provides sufficient information to demonstrate compliance. These logs shall be maintained onsite and made readily available/accessible for inspection by the Technical Secretary or a Division representative as specified in **Condition G10**. A summary of this information shall be submitted semiannually in accordance with **Condition E2(a)** of the current Title V permit (at the time of semiannual report submittal).

LOG 1: Monthly VOC Emissions Log					
Month/Year:					
Location	Warehouse ID[1]	Capacity (barrels)	Material Processed (barrels per month)	VOC Emission Factor (lbs VOC/barrel/mo.)	VOC Emissions (tons/month)
Tract I	1-01			0.6125*	
	1-02				
Tract II	2-01				
	2-02				
Tract III	3-01				
	3-02				
				Monthly Total from all Warehouses:	
				Monthly Total from New Warehouses:	

1. The log shall be expanded to include a row for each warehouse.

LOG 2: 12 Consecutive Month VOC Log				
	VOC Emissions			
	All Warehouses		New Warehouses	
Month/Year	Tons/month	Tons/12 consecutive months[1]	Tons/month	Tons/12 consecutive months[1]

1. The Tons per 12 consecutive months value is the sum of the VOC emissions in the 11 months preceding the month just completed + the VOC emissions in the month just completed.

S1-5. Source-Specific Visible Emissions Limitation(s)

Not Applicable

S1-6. The permittee shall utilize good operating and maintenance practices as BACT to minimize VOC emissions from the new maturation warehouses. The utilization of good operating and maintenance practices shall represent BACT for this source.

The permittee shall operate and maintain the new maturation warehouses on Tract I through III in a manner consistent with safety and good air pollution control practices for minimizing VOC emissions, including the following:

- Follow industry standard aging practices to minimize the release of VOCs.
- Develop and maintain a list of work practice standards onsite.

TAPCR 1200-03-09-.01(4)(j)3 and the PSD application dated November 21, 2023

Compliance Method: The permittee shall maintain records to document that the work practice standards are being followed. All records shall be maintained in accordance with **Condition G10**.

(end of conditions)

The permit application gives the location of this source as 35.2368 Latitude and -86.4149 Longitude

Appendix 1: Notification of Change in Responsible Person

Facility (Permittee): Jack Daniel Distillery, Lem Motlow Prop., Inc. (JDD Prop)

Facility ID: 64-0013

Former Responsible Person: ______________ ______________
Name Title

New Responsible Person: ______________ ______________
Name Title

____
Email

____
Mailing Address

______________ ______________
Phone (Office) Phone (cell)

Date New Responsible Person was assigned this duty: ______________

As the Responsible Person of the above mentioned facility (permittee), I certify that the information contained in this Notification is accurate and true to the best of my knowledge. As specified in Tennessee Code Annotated Section 39-16-702(a)(4), this declaration is made under penalty of perjury.

Signature		Date
Signer's name (print)	Title	Phone (with area code)

Appendix 2: Notification of Changes

Facility (Permittee): Jack Daniel Distillery, Lem Motlow Prop., Inc. (JDD Prop)

Facility ID: 64-0013

Source Number: ____________________

	Control Equipment	Stack Height (Feet)	Stack Diameter (Feet)	Exit Velocity (Feet/Second)	Exit Temperature (ºF)
Current					
Proposed					
Current					
Proposed					
Current					
Proposed					

Comments:

As the Responsible Person of the above mentioned facility (permittee), I certify that the information contained in this Notification is accurate and true to the best of my knowledge. As specified in Tennessee Code Annotated Section 39-16-702(a)(4), this declaration is made under penalty of perjury.

Signature		Date
Signer's name (print)	Title	Phone (with area code)

Appendix 3: Notification of Ownership Change

Facility (Permittee): Jack Daniel Distillery, Lem Motlow Prop., Inc. (JDD Prop) (Previous Owner)

Facility ID: 64-0013

Facility (Permittee): ____________________ (New Owner) ____________________
Date of Ownership Change

Secretary of State Control Number: ____________________ [as registered with the TN Secretary of State (SOS)]

Responsible Person/Authorized Contact	Email Address
Mailing Address	Phone with area code
Principal Technical Contact	Email Address
Mailing Address	Phone with area code
Billing Contact	Email Address
Mailing Address	Phone with area code

As the responsible person for the new owner or operator of the above mentioned facility (permittee):

- I agree to not make any changes to the stationary source(s) that meet the definition of modification as defined in Division 1200-03 or Division 0400-30[1], and
- I agree to comply with the conditions contained in **the permits listed below**, Division 1200-03 and Division 0400-30 of the Tennessee Air Pollution Control Regulations, the Tennessee Air Quality Act, and any documented agreements made by the previous owner to the Technical Secretary.

List all active permits issued to the facility for which the owner wishes to assume ownership:

The information contained in this Notification is accurate and true to the best of my knowledge. As specified in Tennessee Code Annotated Section 39-16-702(a)(4), this declaration is made under penalty of perjury.

Signature		Date
Signer's name (print)	Title	Phone (with area code)

[1] Appropriate application forms must be submitted prior to modification of the stationary source(s).

Appendix 4: Startup Certification

Facility (Permittee): Jack Daniel Distillery, Lem Motlow Prop., Inc. (JDD Prop)

Facility ID: 64-0013

Startup Certification for Source Number: ______________

The permittee shall certify the startup date for each new or modified air contaminant source regulated by construction permit 982183 (PSD) by submitting this document.

Date of startup: ____________________ / _________ / __________
Month Day Year

As the Responsible Person of the above mentioned facility (permittee), I certify that the information contained in this Startup Certification is accurate and true to the best of my knowledge. As specified in Tennessee Code Annotated Section 39-16-702(a)(4), this declaration is made under penalty of perjury.

Signature		Date
Signer's name (print)	Title	Phone (with area code)

Appendix 5: Fees

Not Applicable

Appendix 6: Emission Statement for VOC and NO_X

Not Applicable

Appendix 7: Agreement Letters

The Oldest Registered Distillery in the U.S.A.

JACK DANIEL DISTILLERY

DISTILLERS AND BOTTLERS OF THE FAMOUS

JACK DANIEL'S OLD TIME No 7 SOUR MASH WHISKEY

FINE WHISKEYS
PLACED IN THE NATIONAL REGISTER OF HISTORIC PLACES BY THE UNITED STATES GOVERNMENT

P.O. BOX 199
LYNCHBURG, TENN.
37352

March 22, 2024

VIA E-MAIL: Air.Pollution.Control@tn.gov

Ms. Michelle Owenby
Technical Secretary
Permitting & Regulatory Development
Tennessee Department of Environment
and Conservation
Division of Air Pollution Control (TDAPC)
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 15th Floor
Nashville, TN 37243

RE: **Emissions Limitation Agreement**
Jack Daniel Distillery, Lem Motlow Proprietor
Emission Source Reference No. 64-0013

Dear Ms. Owenby:

By means of this correspondence, the Jack Daniel Distillery, Lem Motlow Proprietor (JDD Prop.) facility in Lynchburg, Tennessee is submitting this agreement letter for emission rates as requested via email from your staff via email correspondence and in-person meeting on March 21, 2024 pertaining to the draft Prevention of Significant Deterioration construction permit as described below:

Condition G13:

JDD Prop. agrees to limit facility-wide hazardous air pollutants (HAPs) to 24.9 tons during any period of 12 consecutive month and individual HAPs to 9.9 tons during any period of 12 consecutive months.

If you have any questions or need additional information, please let me know. Based on information and belief formed after reasonable inquiry, the statements and information in this document are true, accurate, and complete.

Respectfully,

JACK DANIEL DISTILLERY
Lem Motlow Proprietor

Melvin H. Keebler
SVP General Manager

Appendix 8: Brown-Forman Barrel Study

Early Times Plant Alcohol Losses
(Emissions to Air)

Estimated losses for the Louisville, Kentucky, Early Times plant were calculated, by a Brown-Forman Corporation Project Engineer, using as reference a 1989 study entitled, "Emission Factors from Kentucky Emissions Inventory System," provided by a Jefferson County, Kentucky, air pollution control engineer.

The purpose of the calculations was to estimate ethanol losses for the plant based on calculations furnished by the air pollution control engineer. Actual production data from individual production processes was utilized in calculating the losses.

Warehouse (whisky aging) ethanol losses of cycled (heated) barrels at the Early Times plant were estimated to be 10 lbs per (50 gal) barrel per year in the 1989 study, which referenced emission factors furnished by the air pollution control engineer. The study calculated losses per month from twelve cycled whisky warehouses using 1988 data.

Brown-Forman Barrel Study

A study was conducted from 1989 – 1993 by the Manager, Analytical Services, of Brown-Forman Corporation, to determine ethanol loss per barrel from evaporation during the maturation process. During production, the yield can be determined based on the difference between original entry and measured regauge. However, this method overstates the rate of evaporation because it includes the volume of spirit adsorbed by the barrel wood. Therefore, this experiment was designed to measure the rate of evaporation by measuring the change in weight over time and the weight of material adsorbed per barrel. To do this, 250 barrels were weighed empty, then filled. This process was repeated at 12 month intervals through 51 months of age. At each point the barrels were sampled to ensure ethanol concentration to allow conversion of weight to proof gallons. The rate of evaporation was shown to be 7.35 lbs. of ethanol per barrel (50 gal) per year.

PREVENTION OF SIGNIFICANT DETERIORATION
PRECONSTRUCTION REVIEW AND PRELIMINARY DETERMINATION
FOR
JACK DANIEL DISTILLERY, LEM MOTLOW PROP., INC.
IN MOORE COUNTY, TENNESSEE

This review was performed by the Tennessee Air Pollution Control Division in accordance with the Rules for Prevention of Significant Deterioration (PSD).

TABLE OF CONTENTS

I. Rule Background

On June 3, 1981, the State of Tennessee adopted Tennessee Air Pollution Control Regulations (TAPCR) paragraph 1200-03-09-.01(4), Prevention of Significant Air Quality Deterioration (PSD). This paragraph has been subsequently amended, with the latest amendments effective December 28, 2022. Under these regulations, a new major stationary source that is included in one of 28 source categories and has the potential to emit 100 tons per year (tons/yr) or more of any criteria pollutant, or 250 tons/yr or more of any criteria pollutant located in an attainment area, must be reviewed with regard to significant deterioration prior to construction. In addition, any major stationary source which makes a major modification in an attainment area that causes a significant emissions increase must be reviewed with the same regard.

To comply with the amended PSD regulations, a source with potential emissions greater than significant amounts of a regulated pollutant must meet several criteria. The first criterion is that Best Available Control Technology (BACT) must be applied to all emission points for the applicable PSD pollutant. The second criterion is that the proposed source or modification must not cause or contribute to any violation of the National Ambient Air Quality Standards (NAAQS – see **Table 1**). Finally, increases in ambient concentrations of sulfur dioxide (SO_2), nitrogen dioxide (NO_2), and particulate matter (PM_{10} and $PM_{2.5}$) resulting from emissions discharged by the proposed source must not exceed the increments specified by the PSD regulations (**Table 2**).

Table 1: National Ambient Air Quality Standards

Pollutant		Averaging Period	Standard
Particulate Matter	(PM_{10})	24-hour (primary and secondary)	150 µg/m^3 [1]
	($PM_{2.5}$)	Annual	12.0 µg/m^3 (primary) [2]
			15.0 µg/m^3 (secondary) [2]
		24-hour (primary and secondary)	35 µg/m^3(or 100 µg/m^3) [3]
Nitrogen Dioxide (NO_2)		Annual (primary and secondary)	53 ppb [4]
		1-hour (primary)	100 ppb (or 100 µg/m^3) [5]
Carbon Monoxide (CO)		8-hour	9 ppm (or 10,000 µg/m^3) [6]
		1-hour	35 ppm (or 40,000 µg/m^3) [6]
Sulfur Dioxide (SO_2)		1-hour (primary)	75 ppb (or 197 µg/m^3) [7]
		3-hour (secondary)	0.5 ppm (or 1,300 µg/m^3) [6]
Lead		3-month (primary and secondary)	0.15 µg/m^3 [8]
Ozone		8-hour (primary and secondary)	0.070 ppm (or 140 µg/m^3) [9]

1. Not to be exceeded more than once per year on average over three years.
2. Annual mean, averaged over three years.
3. 98th percentile, averaged over three years.
4. Annual mean.
5. 98th percentile of 1-hour daily maximum concentration, averaged over three years.
6. Not to be exceeded more than once per year.
7. 99th percentile of 1-hour daily maximum concentrations, averaged over three years.
8. Not to be exceeded.
9. Annual fourth-highest daily maximum 8-hour concentration, averaged over three years.

Table 2: Maximum Allowable Increases (μg/m³) for Class II Areas	
Pollutant	**μg/m³**
PM_{10}, annual arithmetic mean	17
PM_{10}, 24-hour maximum	30
$PM_{2.5}$, annual arithmetic mean	4
$PM_{2.5}$, 24-hour maximum	9
SO_2, Annual arithmetic mean	20
SO_2, 24-hour maximum	91
SO_2, 3-hour maximum	512
NO_2, Annual arithmetic mean	25

II. Project Background and Description

Jack Daniel Distillery, Lem Motlow Prop., Inc. (Jack Daniel) is proposing to expand its whiskey manufacturing operations at their Lynchburg, Tennessee distillery located in Moore County. The proposed facility expansion will provide for additional distillery capacity and operational flexibility at the Jack Daniel Number 2 (JD2) location currently permitted in Title V Operating Permit Number 569520 (Facility ID 64-0001). Also included in Title V Operating Permit Number 569520 are emission sources that comprise the Jack Daniel Number 1 (JD1) location. The distillery operations at JD1 and JD2 are collectively referred to as JDD Inc. and are located on Tract I (see **Figure 1**). Following the charcoal mellowing process, the distillate is gauged and proofed then transferred from JDD Inc. to Jack Daniel Distillery, Lem Motlow Proprietor (JDD Prop) for barrel filling, maturation, barrel dumping, and bottling or loadout. The processes that comprise JDD Prop are permitted as Facility ID 64-0013 (Title V Permit Number 572445) and are located on Tracts I, II, and III. A summary of the existing permitted sources is shown in **Table 3**. With the exception of the charcoal production operation which provides charcoal to both distillery locations, and the Tract I tanker loadout, the processes at JD1 and JD2 are independent of each other.

Table 3: Current Permitted Sources at JD1 and JD2		
Source Number	**Source Description**	**Location**
64-0001-04	Charcoal production	JD1/JD2
64-0001-07	Grain grinding and milling operations	JD1
64-0001-11	Grain drying process	JD1
64-0001-15	Six process mash cookers, yeast cooker, and bins	JD1
64-0001-21	Fermentation and charcoal mellowing	JD1
64-0001-23	Boiler 8 (72.3 MMBtu/hr, natural gas/No.2 oil)	JD1
64-0001-24	Boiler 15 (90.0 MMBtu/hr, natural gas/No. 2 oil)	JD1
64-0001-25	Grain receiving, milling, and handling operation	JD2
64-0001-26	Fermentation and charcoal mellowing	JD2
64-0001-28	Two natural gas boilers (16 and 17)	JD2
64-0001-36	Tract I tanker loadout	JD1/JD2
64-0013-01	17 Boilers	-
64-0013-03	Barrel filling, maturation warehouses, and barrel dumping for Tracts I, II, and III	-
64-0013-04	Processing and bottling operations	-
64-0013-12	11 Boilers	-

A *stationary source* is defined in 40 CFR §52.21(b) as any building, structure, facility, or installation which emits or may emit a regulated NSR pollutant.[1] The same regulations define a *building, structure, facility, or installation* as all of the pollutant-emitting activities which (1) belong to the same industrial grouping, (2) are located on one or more contiguous or adjacent properties, and (3) are under the control of the same person (or persons under common control) except the activities of any vessel. Pollutant-emitting activities shall be considered as part of the same industrial grouping if they belong to the same "Major Group" (*i.e.*, which have the same first two-digit code) as described in the *Standard Industrial Classification Manual, 1972*, as amended by the 1977 Supplement (U.S. Government Printing Office stock numbers 4101-0066 and 003-005-00716-0, respectively).[2] The pollutant-emitting activities in question must meet all three of these criteria to be considered a single stationary source for PSD purposes.

Jack Daniel has classified the processes that comprise JDD Inc. (JD1 and JD2) to be ***whiskey manufacturing*** which falls under SIC Major Group 20: Food and Kindred Products. This major group includes establishments manufacturing or processing foods and beverages for human consumption, and certain related products, such as manufactured ice, chewing gum, vegetable and animal fats and oils, and prepared feeds for animals and fowls. The distillate produced by JDD Inc. is sold to one or more separate legal entities (including JDD Prop) where it is further processed by aging, proofing, and bottling. In addition to distillate, JDD Inc. produces secondary products including charcoal, spent stillage in the form of dried distiller's grains, whole stillage, wet cake, and syrup, which are sold to as commodities to third parties.

The processes at JDD Prop have been classified as ***whiskey distribution*** under SIC Major Group 51: Wholesale Trade-non-durable Goods. This major group includes establishments primarily engaged in the wholesale distribution of non-durable goods. While the barrel filling, maturation, barrel dumping, and bottling operations of JDD Prop are used to barrel, age, proof, and bottle whiskeys produced by JDD Inc., JDD Prop also bottles products produced by other distilleries. These products are delivered by tanker truck from distilleries in other locations to be bottled and packaged for distribution by JDD Prop. Additionally, certain products aged at JDD Prop are transported to other facilities for bottling and distribution.

The United States Environmental Protection agency (EPA) discusses the concept of support facilities in the preamble to the Final Rule for Part 52, published in the Federal Register on August 7, 1980, by saying "Each source is to be classified according to its primary activity, which is determined by its principal product or groups of products produced or distributed, or services rendered. This one source classification encompasses both primary and support facilities, even when the latter includes units with a different two-digit SIC code. Support facilities are typically those which convey, store, or otherwise assist in the production of the principal product."[3] While not defined in federal regulations, EPA has provided guidance to States and sources regarding support facilities or support activities, including guidance provided in the Meadowbrook Energy and Keystone Landfill Common Control Analysis (Meadowbrook letter).[4] In this letter, EPA states that the support facility analysis is accommodated within the industrial grouping (2-digit SIC code) prong of the source determination framework. EPA further states that "When determining which pollutant-emitting activities should be considered part of the same "major source" under the title V operating permit program, and/or part of the same "stationary source" under the New Source Review (NSR) program, permitting authorities should assess the three factors contained in EPA's title V and NSR regulations – same industrial grouping, location on contiguous or adjacent property, and common control – on a case-by-case basis."

Following extensive discussions with EPA Region IV and review of additional information provided by Jack Daniel, it has been determined that the processes that comprise JDD Prop would be a support facility to JDD Inc., and as such, would be considered part of the same industrial grouping. Because these processes are also located on contiguous or adjacent properties and are under common control, they meet all three criteria for being considered one stationary source for New Source Review (NSR) and Title V permitting purposes.

[1] 40 CFR §52.21(b)(5).
[2] 40 CFR §52.21(b)(6)(i).
[3] Federal Register, Vol. 45, No. 154, page 52695, August 7, 1980.
[4] Letter dated April 30, 2018, from William L. Wehrum, Assistant Administrator, U.S. EPA to The Honorable Patrick McDonnell, Secretary of the Pennsylvania Department of Environmental Protection.

As discussed earlier, a major stationary source is one that is included in one of 28 listed source categories and that emits, or has the potential to emit, 100 tons/yr or more of any regulated NSR pollutant, or any other stationary source that emits, or has the potential to emit, 250 tons per year or more of any regulated NSR pollutant. While distillation is not on the list of 28 source categories, Jack Daniel operates a charcoal production process and fossil-fuel boilers totaling more than 250 million British thermal units per hour (MMBtu/hr) of heat input, both of which are listed source categories. Additionally, facility-wide emissions of VOC are greater than 250 tons per year. Therefore, the Jack Daniel facility is a PSD major stationary source.

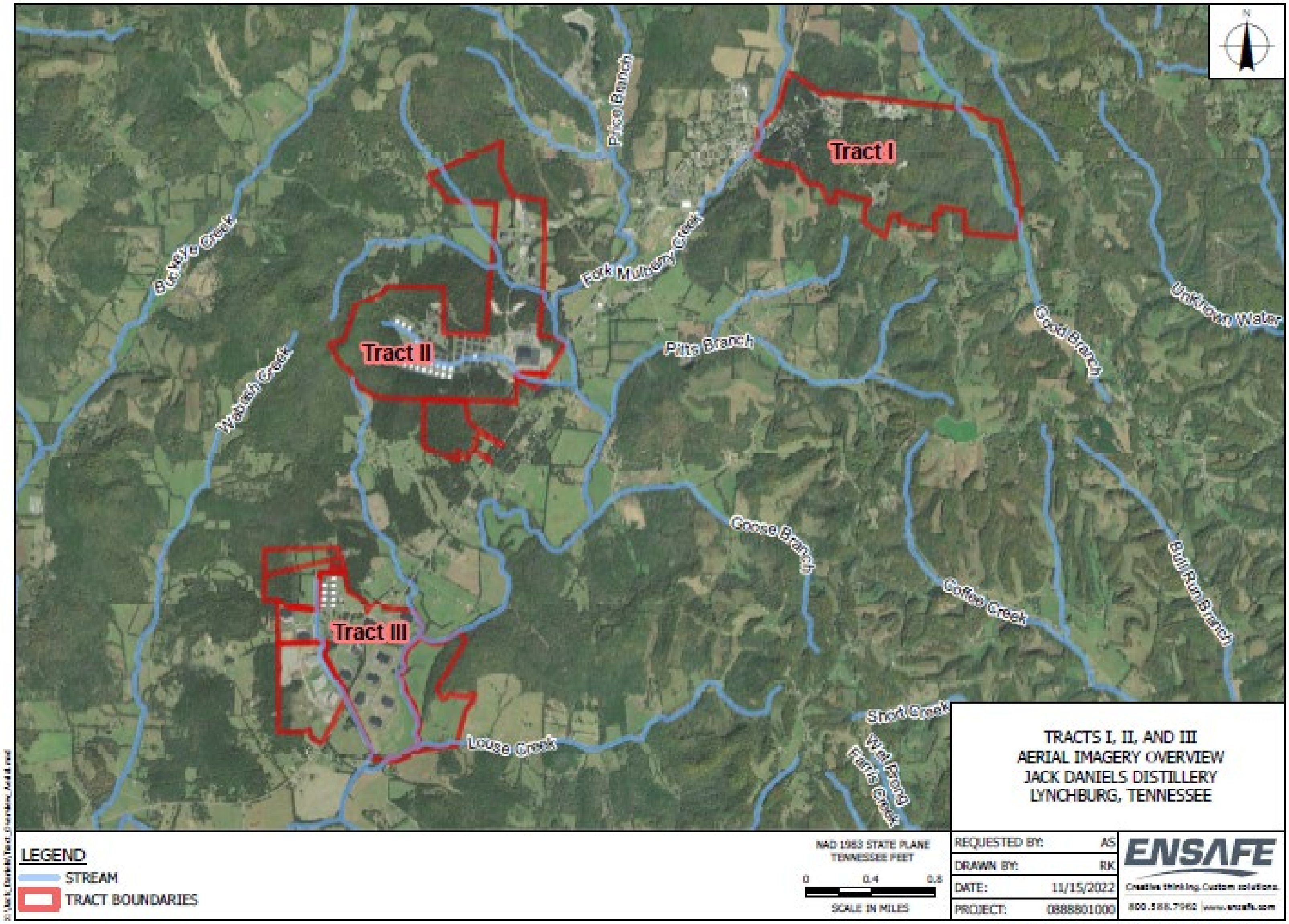
The proposed expansion at Jack Daniel is a multi-phase project, and the current application (dated November 21, 2023, with updates received January 15, 2024, and March 5, 2024) covers both phases. To accommodate the proposed increase in distillery capacity to 60,000,000 original proof gallons (OPG) of whiskey produced per year at JD2, the following modifications are necessary:

- Source 64-0001-25: install two new grain storage silos [identified as insignificant emissions units, defined at TAPCR 1200-03-09-.04(5)(a)4] and four new mash cookers;
- Source 64-0001-26: increase the permitted throughput capacity of the existing fermenters and charcoal mellowing vats; install 30 new fermenters (total of 44 after expansion), 48 new charcoal mellowing vats (total of 64 after expansion), and 12 new whiskey processing and storage tanks (total of 19 after expansion) [identified as insignificant emissions units, defined at TAPCR 1200-03-09-.04(5)(a)4];
- Source 64-0001-28: install two natural gas-fired boilers;
- Source 64-0013-03: increase the permitted storage capacity of the existing warehouses; install 22 new maturation warehouses; and

The proposed modifications will result in significant emission increases of volatile organic compounds (VOC) and greenhouse gases (GHG) expressed as carbon dioxide equivalents (CO_2e)[5]. The project is therefore subject to review under the regulations governing PSD.

[5] CO_2e is calculated as the sum of the three well-mixed GHGs (carbon dioxide [CO_2], methane [CH_4], and nitrous oxide [N_2O]) with applicable global warming potentials per 40 CFR 98.

Figure 1: Locations of Tracts I, II, and III



III. Information Used in Analysis

The applicant provided the following information in their November 21, 2023 (with updates received on January 15, 2024, March 5, 2024, and March 22, 2024), permit application (Appendix A). In addition to the modification to existing emission sources described in **Section II**, the proposed expansion project will consist of installation of the following new emission sources [identified as insignificant emissions units, defined at TAPCR 1200-03-09-.04(5)(a)4]:

- 64-0001-33: installation of 12 new whiskey processing and storage tanks;
- 64-0001-37: installation of one, 220 horsepower (hp), diesel-fired emergency fire pump engine; and
- 64-0013-16: installation of two, 220 hp, diesel-fired emergency fire pump engines

As part of the proposed expansion project, some existing emission sources that are not being modified will experience increased utilization following the expansion. Those emission sources are:

- 64-0001-04: Charcoal production
- Charcoal resizing (designated an insignificant emission unit)
- 64-0001-25: Grain receiving, handling, storage, and milling; mash cooking
- 64-0001-28: Boiler 16 and Boiler 17
- 64-0001-36: Tract I tanker loadout
- 64-0013-03: Barrel filling, maturation warehouses, and barrel dumping for Tracts I, II, and III
- 64-0013-04: Processing and bottling operations
- 64-0013-17: Process and storage tanks

Distillate produced by JDD Inc. is transferred to JDD Prop where it is aged and then bottled or loaded into tanker trucks for shipment off-site. It is anticipated that additional bottling capacity will be needed to accommodate the increased distillate production rate at JD2, however, given the need to age the distillate prior to bottling (typically for a period of at least four years), the design of the additional bottling line(s) is unknown at this time. To address the emissions that would result from increased utilization of the existing bottling lines and any additional bottling capacity in the future, Jack Daniel compared the potential emission rate assuming all additional capacity due to the expansion is bottled versus all additional capacity from the expansion being loaded into tanker trucks for shipment offsite. Based on the methodology described in the PSD application and the emission factors developed, it was determined that more emissions would result from the tanker loadout process. Therefore, for the purposes of evaluating project-related emissions due to the expansion, it will be assumed that the increase in distillate produced at JDD Inc. will be loaded into tanker trucks at JDD Prop after aging instead of being bottled. This conservative assumption would result in a higher rate of emissions from the proposed project.

Emissions from the increased utilization of these processes have been evaluated and are included in the pre- and post-modification emission summary (**Table 4**).

IV. Emissions Analysis

Projected emission increases from the proposed project (**Table 4**) were obtained from the information and assumptions given in the November 21, 2023, permit application and subsequent revisions received January 15, 2024, March 5, 2024, and March 22, 2024.

This proposed expansion project will involve both new and existing emission units. In order to determine whether the proposed project would result in a significant emissions increase, emissions from both new and existing emission units were evaluated, as well as emissions resulting from increased utilization of existing emission units that are not being modified. Baseline actual emissions from existing emission units were calculated using actual production data during the lookback period of May 2020, through April 2022. A copy of the calculations used in the PSD analysis, which includes a summary of the data used to determine baseline emissions and identifies the emissions test used for each emission source, is provided in Appendix E.

The charcoal production process, Tract I tanker loadout, processing and bottling operations, and existing Boilers 16 and

17 will see some increased utilization as a result of the expansion. Jack Daniel utilized the baseline actual-to-projected actual emissions test for the existing boilers in the PSD determination. These boilers are currently permitted to emit more than the projected actual amount used in the determination. As such, language will be included in the PSD permit requiring the facility to submit a report to the Technical Secretary if the annual emissions, in tons per year, from the project exceed the baseline actual emissions by a significant amount for each regulated pollutant that was not subject to PSD review as part of this project.

Table 4: Pre- and Post-Modification Emissions Comparison

		Baseline Actual	Future Actual/Potential	Net Emissions Increase
Source ID	**Source Description**	**VOC Emissions (tons/yr)**		
64-0001-04	Charcoal production	0.31	0.73	0.42
64-0001-26	Fermentation (existing and new)	10.86	79.30	68.44
	Charcoal mellowing vats (existing and new)	67.62	495.00	427.38
64-0001-33	Whiskey processing and storage tanks	--	10.38	10.38
64-0001-28	Boilers 16 and 17 (existing)	0.73	1.61	0.88
	Boilers 18 and 19 (new)	--	3.62	3.62
64-0001-36	Tract I tanker loadout	7.20	17.93	10.73
64-0001-37	Emergency fire pump engine	--	0.01	0.01
64-0013-03	Barrel filling, maturation warehouses (existing and new), and barrel dumping	9,874.53	16,869.37	6,994.83
64-0013-04	Processing and bottling operations (Aged whiskey loadout)	296.40	305.20	8.80
64-0013-16	Two emergency fire pump engines	--	0.03	0.03
64-0013-17	Processing and storage tanks	16.07	48.51	32.44
	Total:	10,273.72	17,831.69	**7,557.97**
Source ID	**Source Description**	**PM Emissions (tons/yr)**		
64-0001-04	Charcoal production	1.22[1]	2.20	0.98
	Charcoal resizing	0.007	0.013	0.006
64-0001-25	Grain receiving, handling, storage, and milling operations; mash cookers	0.77	2.76	2.00
	Two additional grain silos	--	0.16	0.16
64-0001-28	Boilers 16 and 17 (existing)	1.01	2.22	1.21
	Boilers 18 and 19 (new)	--	0.34	0.34
64-0001-37	Emergency fire pump engine	--	0.02	0.02
64-0013-16	Two emergency fire pump engines	--	0.03	0.03
	Total:	3.01	7.74	**4.74**
Source ID	**Source Description**	**PM_{10} Emissions (tons/yr)**		
64-0001-04	Charcoal production	1.22[1]	2.20	0.98
	Charcoal resizing	0.007	0.013	0.006
64-0001-25	Grain receiving, handling, storage, and milling operations; mash cookers	0.77	2.76	2.00
	Two additional grain silos	--	0.16	0.16
64-0001-28	Boilers 16 and 17 (existing)	1.01	2.22	1.21
	Boilers 18 and 19 (new)	--	0.34	0.34
64-0001-37	Emergency fire pump engine	--	0.02	0.02
64-0013-16	Two emergency fire pump engines	--	0.03	0.03
	Total:	3.01	7.74	**4.74**

Table 4: Pre- and Post-Modification Emissions Comparison				
		Baseline Actual	**Future Actual/Potential**	**Net Emissions Increase**
Source ID	**Source Description**	**$PM_{2.5}$ Emissions (tons/yr)**		
64-0001-04	Charcoal production	1.22[1]	2.20	0.98
	Charcoal resizing	0.007	0.013	0.006
64-0001-25	Grain receiving, handling, storage, and milling operations; mash cookers	0.13	0.47	0.34
	Two additional grain silos	--	0.03	0.03
64-0001-28	Boilers 16 and 17 (existing)	1.01	2.22	1.21
	Boilers 18 and 19 (new)	--	0.28	0.28
64-0001-37	Emergency fire pump engine	--	0.02	0.02
64-0013-16	Two emergency fire pump engines	--	0.03	0.03
	Total:	2.37	5.26	**2.89**
Source ID	**Source Description**	**CO_2e Emissions (short tons/yr)**		
64-0001-04	Charcoal production	1,243	2,902	1,659
64-0001-26	Fermentation	12,154	88,724	76,571
64-0001-28	Boilers 16 and 17 (existing)	15,970	35,130	19,160
	Boilers 18 and 19 (new)	--	78,676	78,676
64-0001-37	Emergency fire pump engine	--	82	82
64-0013-16	Two emergency fire pump engines	--	165	165
	Total:	29,367	205,679	**176,312**
Source ID	**Source Description**	**NO_X Emissions (tons/yr)**		
64-0001-04	Charcoal Production	1.34	3.15	1.80
64-0001-28	Boilers 16 and 17 (existing)	6.67	14.66	8.00
	Boilers 18 and 19 (new)	--	24.07	24.07
64-0001-37	Emergency fire pump engine	--	0.46	0.46
64-0013-16	Two emergency fire pump engines	--	0.92	0.92
	Total:	8.01	43.26	**35.25**
Source ID	**Source Description**	**CO Emissions (tons/yr)**		
64-0001-04	Charcoal Production	2.28	5.38	3.10
64-0001-28	Boilers 16 and 17 (existing)	11.15	24.53	13.38
	Boilers 18 and 19 (new)	--	55.33	55.33
64-0001-37	Emergency fire pump engine	--	0.15	0.15
64-0013-16	Two emergency fire pump engines	--	0.29	0.29
	Total:	13.43	85.68	**72.25**
Source ID	**Source Description**	**SO_2 Emissions (tons/yr)**		
64-0001-04	Charcoal Production	0.14	0.34	0.19
64-0001-28	Boilers 16 and 17 (existing)	0.21	0.32	0.11
	Boilers 18 and 19 (new)	--	0.40	0.40
64-0001-37	Emergency fire pump engine	--	0.001	0.001
64-0013-16	Two emergency fire pump engines	--	0.002	0.002
	Total:	0.35	1.06	**0.70**

1. Emissions of $PM/PM_{10}/PM_{2.5}$ from charcoal production provided by the facility were estimated based on exhaust flow rate, not actual wood and natural gas combustion. Since the values provided by the facility resulted in a higher net emission increase, those values were used in the PSD determination.

As demonstrated in **Table 5**, the net emission increase of each pollutant, when compared to the PSD SER thresholds, indicate emissions of VOC and greenhouse gases (expressed as carbon dioxide equivalent [CO_2e]), each exceed their respective SER. Therefore, the proposed project is PSD major for VOC and CO_2e.

Table 5: PSD Applicability Summary

Pollutant	Net Emission Increase (tons/yr)	PSD Significant Emission Rate (tons/yr)	Subject to PSD Review?
PM	4.74	25	No
PM_{10}	4.74	15	No
$PM_{2.5}$	2.89	10	No
VOC	7,557.96	40	**Yes**
NO_X	35.25	40	No
CO	72.25	100	No
SO_2	0.70	40	No
CO_2e	176,312	75,000	**Yes**

V. Regulatory Applicability

V.1 New Source Performance Standards (NSPS)

The New Source Performance Standards (NSPS) are national emission standards that apply to specific categories of new stationary sources. As stated in the Clean Air Act Amendments of 1977, these standards "shall reflect the degree of emission limitation and the percentage reduction achievable through application of the best technological system of continuous emission reduction the Administrator determines has been adequately demonstrated."

V.1.1 Small Industrial-Commercial-Institutional Steam Generating Units (Natural Gas-fired Boilers)

40 CFR 60, Subpart Dc – *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units* (Subpart Dc) regulates each steam generating unit for which construction, modification, or reconstruction begins after June 9, 1989, and that has a maximum design heat input capacity of 100 million British thermal units per hour (MMBtu/hr) or less, but greater than or equal to 10 MMBtu/hr. As natural gas-fired units, the two boilers proposed for installation at JDD Inc. (Boiler 18 – 82.6 MMBtu/hr and Boiler 19 – 70.8 MMBtu/hr) are subject only to the requirements of §60.48c(g)(1) or (2) to record and maintain records of the amount of fuel combusted in each unit on either a daily or monthly basis. Alternatively, the facility may elect to record and maintain records of the total amount of fuel delivered to the property during each calendar month, per §60.48c(g)(3).

V.1.2 Stationary Compression Ignition Internal Combustion Engines (Diesel-fired Emergency Fire Pump Engines)

40 CFR 60, Subpart IIII - *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines* (Subpart IIII) applies to stationary compression ignition internal combustion engines that are manufactured after April 1, 2006, and NFPA fire pump engines that are manufactured after July 1, 2006, and commence construction after July 11, 2005. Jack Daniel is proposing to install three diesel-fired emergency fire pump engines, one at JDD Inc. (rated at 220 hp) and two at JDD Prop (rated at 220 hp each).

§60.4205(c) and Table 4 to 60 Subpart IIII limit emissions from fire pump engines, model year 2009 and later, with a maximum engine power between 175 and 300 hp as follows:

- NO_X+NMHC emission standard of 4.0 grams per kilowatt-hour (g/kW-hr)
- CO emission standard of 3.5 g/kW-hr
- PM emission standard of 0.20 g/kW-hr

The permittee will be required to operate, maintain, install, and configure each fire pump engine per the manufacturer's instructions to assure these emission limits are attained. Other NSPS requirements, such as monitoring and record keeping are applicable, and are provided in 40 CFR 60 Subpart A and 60 Subpart IIII. Each of the fire pump engines is considered an insignificant emission unit.

V.2 National Emission Standards for Hazardous Air Pollutants (NESHAP)

EPA has promulgated National Emission Standards for Hazardous Air Pollutants (NESHAP) for various industrial source categories. Sources in these categories that emit 10 tons per year or more of a single hazardous air pollutant (HAP) or 25 tons per year of total HAPs are subject to major source NESHAPs. The proposed expansion will not result in facility-wide emissions of HAP to exceed the major source thresholds. The facility has requested limits to maintain area source status.

V.2.1 Industrial, Commercial and Institutional Boilers Area Sources (Natural Gas-fired Boilers)

40 CFR 63, Subpart JJJJJJ, National Emission Standards for Hazardous Air Pollutants (NESHAP) for Industrial, Commercial, and Institutional Boilers at Area Sources (Subpart JJJJJJ) regulates existing and new industrial, commercial, and institutional boilers located at area source facilities. An area source facility emits or has the potential to emit less than 10 tons/yr of any single hazardous air pollutant (HAP) or less than 25 tons/yr of any combination of total HAP. Subpart JJJJJJ applies to boilers located at area source facilities that burn coal, oil, biomass, or non-waste materials, but <u>not</u> boilers that burn only gaseous fuels (including but not limited to natural gas, process gas, landfill gas, hydrogen, LPG) and or any solid waste as defined in 40 CFR Part 241.

The two proposed boilers (Boiler 18 – 82.6 MMBtu/hr and Boiler 19 – 70.8 MMBtu/hr) at the Jack Daniel facility will be fired solely on natural gas and will meet the definition of a gas-fired boiler per §63.11237. As such, the proposed boilers will not be subject to Subpart JJJJJJ.

V.2.2 Stationary Reciprocating Internal Combustion Engines (Diesel-fired Emergency Fire Pump Engines)

40 CFR 63, Subpart ZZZZ – *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines* (Subpart ZZZZ) regulates stationary reciprocating internal combustion engines located at major and area sources of HAP emissions. As noted in Section V.1.2, Jack Daniel is proposing to install one diesel-fired emergency fire pump engine (rated at 220 hp each) at JDD Inc., and two diesel-fired emergency fire pump engines (rated at 220 hp each) at JDD Prop. These engines will be new affected sources under Subpart ZZZZ.

- §63.6590(c)(1) specifies that new stationary RICE located at an area source of HAP emissions must meet the requirements of Subpart ZZZZ by meeting the requirements of 40 CFR 60, Subpart IIII for compression ignition engines.

All emergency engines will comply with the applicable requirements of 40 CFR 63, Subpart ZZZZ by compliance with the applicable requirements of 40 CFR 60, Subpart IIII.

VI. <u>Best Available Control Technology (BACT) Analysis Review</u>

Pursuant to subparagraph 1200-03-09-.01(4)(j)3 of the TAPCR, Jack Daniel is required to apply best available control technology (BACT) for VOC and CO_2e, since significant net emission increases are expected for each pollutant. This requirement applies to each proposed emissions unit at which a net emission increase in VOC and/or CO_2e would occur as a result of a physical change or change in the method of operation of the unit. The units included as part of this expansion that have potential emissions of VOC and/or CO_2e for which a BACT analysis is required are the fermentation tanks (64-0001-26), charcoal mellowing vats (64-0001-26), the new natural gas-fired boilers (Boiler 18 and 19, 64-0001-28), the new process and storage tanks (64-0001-33), the new maturation warehouses (64-0013-04), and the new diesel-fired emergency fire pump engines (64-0001-37 and 64-0013-16).

BACT means an emission limitation (including a visible emission standard) based on the maximum degree of reduction for each regulated NSR pollutant which would be emitted from any proposed major stationary source or major modification which the Technical Secretary, <u>*on a case-by-case basis, taking into account energy, environmental, and*</u>

economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques, for control of such pollutant.

In no event shall application of BACT result in emissions of any pollutant which would exceed the emissions allowed by any applicable standard under 40 CFR part 60 or 61. If the Technical Secretary determines that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emissions standard infeasible, a design, equipment, work practice, operational standard or combination thereof, may be prescribed instead to require the application of BACT. Such standard shall, to the degree possible, set forth the emissions reduction achievable by implementation of such design, equipment, work practice or operation, and shall provide for compliance by means which achieve equivalent results.

The EPA policy memorandum dated December 1, 1987, directs applicants and permit reviewers to consider all technically feasible alternatives, including those more stringent than the BACT selection. This is referred to as the "top-down BACT analysis approach". The Air & Waste Management Association's New Source Review Manual (Updated edition, August 2019) summarizes the top-down BACT analysis in the following steps:

1. Identify all available control technologies
2. Eliminate technically infeasible options
3. Rank remaining control technologies by control effectiveness
4. Evaluate most effective controls and document results (Economic, energy, and environmental impacts)
5. Select BACT

Identify all available control technologies: Under Step 1 of a criteria pollutant top-down BACT analysis, the permittee is to identify all available control options, including inherently lower-emitting processes/practices/designs, add-on controls, and combinations of inherently lower-emitting processes/practices/designs and add-on controls. To satisfy the statutory requirements of BACT, EPA believes that the permittee must focus on technologies that have been demonstrated to achieve the highest levels of control for the pollutant in question, regardless of the source type in which the demonstration has occurred. However, EPA has also recognized that a Step 1 list of control technologies need not necessarily include inherently lower-emitting processes that would fundamentally redefine the nature of the source. BACT should generally not be applied to regulate the permittee's purpose or objective of the proposed facility.[6]

The following resources are typically consulted when identifying demonstrated and potentially applicable control technology alternatives:

- The EPA's RACT/BACT/LAER Clearinghouse (RBLC)
- EPA's Clean Air Technology Center
- Determinations of BACT by regulatory agencies for other similar sources or air permits and permit files from federal and state agencies
- Engineering experience with similar control technologies
- Control technology vendors
- Technical journals, reports, and newsletters

Searches of the RBLC database and air permits issued by other regulatory agencies for similar sources were conducted to identify the emission control technologies and emission levels established by permitting authorities as BACT for units comparable to those planned for installation at the Jack Daniel Distillery.

Eliminate technically infeasible options: In Step 2 of the process, the control options identified in Step 1 are evaluated with respect to source-specific factors. An identified control technology may be eliminated from further consideration if it is not technically feasible for the specific source under review. A demonstration of technical infeasibility should be clearly documented and should show, based on physical, chemical, or engineering principles, that technical difficulties

[6] *PSD and Title V Permitting Guidance for Greenhouse Gases*, EPA-457/B-11-00, March 2011.

would preclude the successful use of the control option on the emissions unit under review. EPA generally considers a technology to be technically feasible if it (1) has been demonstrated and operated successfully on the same type of source under review, or (2) is available and applicable to the source under review.[7]

Rank remaining control technologies by control effectiveness: In Step 3 of the process, those control technologies not determined to be technically infeasible, are to be listed in order of overall control effectiveness for the pollutant being evaluated. In other words, the control technology that achieves the highest overall control efficiency (resulting in the lowest emission rate) would be listed at the top. The control achieving the second-highest overall control efficiency would be listed next, and so on.

Evaluate most effective controls and document results (Economic, energy, and environmental impacts): After all technically feasible control options have been ranked in order of overall control efficiency, the environmental, energy, and economic impacts associated with the use of a control option are considered to arrive at the final level of control. The top (most stringent) control option should be established as BACT unless the permittee is able to demonstrate that the environmental, energy, or economic impacts justify a conclusion that the technology is not achievable.

Select BACT: The most effective control option (achieving the highest overall control efficiency) not eliminated during the process is proposed as BACT for the pollutant and the emission unit under review.

The results of the BACT analysis performed by Jack Daniel are summarized in **Tables 6** and **7** and discussed in Sections VI.1 and VI.2.

Table 6: Summary of BACT Analysis

Emission Source	Pollutant	Emission Limit	Control Technology	Compliance Method
46-0001-26: Fermentation tanks D-64 through D-108 (existing and new)	VOC	79.3 tons during any period of 12 consecutive months	Pollution Prevention (P2)	P2 for the fermentation tanks shall include: - Maintaining the stainless steel cover on each fermenter and ensuring the cover is securely fastened during the fermentation cycle - Performing periodic maintenance and inspection of the fermenters, covers, pumps, piping, etc. to maintain structural integrity and optimal performance - Initiating corrective actions as expeditiously as practicable when an issue is identified - Maintaining and utilizing a Fermentation Process Operations Procedure (Work Instruction).
	CO_2e	88,724 tons during any period of 12 consecutive months	P2	P2 for the fermentation tanks shall include: - Maintaining the stainless steel cover on each fermenter and ensuring the cover is locked during the cook cycle - Performing periodic maintenance and inspection of the fermenters, covers, pumps, piping, etc. to maintain structural integrity and optimal performance - Initiating corrective actions as expeditiously as practicable when an issue is identified - Maintaining and utilizing a Fermentation Process Operations Procedure (Work Instruction).

[7] *PSD and Title V Permitting Guidance for Greenhouse Gases*, EPA-457/B-11-00, March 2011.

Table 6: Summary of BACT Analysis

Emission Source	Pollutant	Emission Limit	Control Technology	Compliance Method
46-0001-26: Charcoal mellowing vats 1 through 64 (existing and new)	VOC	495.0 tons during any period of 12 consecutive months	P2	P2 for the charcoal mellowing vats shall include: - Equipping each charcoal mellowing vat with a cover and using the cover to minimize evaporative losses during the mellowing process - Performing periodic maintenance and inspection of the vats, covers, pumps, piping, etc. to maintain structural integrity and optimal performance - Rinsing the charcoal prior to replacement to minimize evaporative losses during the replacement process - Maintaining and utilizing a Charcoal Mellowing Operations Procedure.
46-0001-28: Natural gas-fired boilers 18 and 19	VOC	0.0054 lb/MMBtu	Good combustion practices	Good combustion practices for the boilers shall include: - The use of natural gas only as fuel - Good equipment design and operation
	CO_2e	42,364 short tons (Boiler 18) and 36,312 short tons (Boiler 19) during any period of 12 consecutive months		
46-0013-04: Maturation Warehouses (22 new warehouses)	VOC	5,623.3 tons during any period of 12 consecutive months	Good operation and maintenance practices	Good operation and maintenance practices for the maturation warehouses shall include: - Operating and maintaining the warehouses in a manner consistent with safety and good air pollution control practices to minimize VOC emissions, including following industry standard aging practices to minimize the release of VOC - Maintaining records to demonstrate work practice standards are satisfied

Table 7: Summary of BACT Analysis – Insignificant Activities

Emission Source	Pollutant	Emission Limit	Control Technology	Compliance Method
64-0001-33: Process and storage tanks	VOC	8.09 tons/yr	Submerged Fill/Pollution Prevention (P2)	Design of the tanks includes submerged fill for product delivery to the tanks. P2 will entail utilizing good housekeeping practices and maintaining the structural integrity of each tank.
64-0001-37: One diesel-fired emergency fire pump engine	VOC	0.12 g/hp-hr	Good combustion practices	Good combustion practices for the fire pump engine shall include: - Purchasing a certified emergency fire pump engine - Operating the engine according to manufacturer's specifications
	CO_2e	82.38 tons/yr		
64-0013-16: Two diesel-fired emergency fire pump engines	VOC	0.12 g/hp-hr	Good combustion practices	Good combustion practices for the fire pump engine shall include: - Purchasing a certified emergency fire pump engine - Operating the engine according to manufacturer's specifications
	CO_2e	82.38 tons/yr, each engine		

VI.1 VOC BACT Analysis Review

VI.1.1 VOC BACT Analysis – Fermenters

The fermentation process, which usually lasts three to five days for whiskey, uses yeast to convert the grain sugars into ethanol and CO_2. Fermentation is a batch process, and both the flow rate of the vent stream and the emission rate of ethanol are highly variable over the time of fermentation. Ethanol is the primary VOC produced during fermentation. Ethanol volatilization is primarily a result of equilibrium between the gas phase and liquid phase of the fermenting mixture. The liquid phase is mostly water with the minor components consisting of sugars and ethanol. The gas phase is mostly CO_2 with trace amounts of water and ethanol. The gas stream leaving a fermentation tank varies in ethanol concentration and flow rate depending on the fermentation temperature, the volume of fermenting liquid in the tank, and how complete the conversion of sugar to ethanol has progressed. Higher fermentation temperature and greater liquid volumes in the tank cause a greater emission rate.

Jack Daniel reviewed the RBLC database as part of the BACT analysis for this project and found one potential control technology for controlling VOC emissions from fermentation tanks at distilled beverage facilities (Central Coast Wine Services located in California). Jack Daniel also noted several instances in which VOC emissions from fermenters at biorefining, alcohol fuel, and other non-beverage ethanol production facilities were controlled, most commonly via wet scrubber. While not a BACT source, the Jim Beam Brands Co. (Beam Suntory) facility located in Boston, Kentucky, was issued an air quality permit that included installation of four recirculating packed bed scrubbers to control emissions from their 58 fermentation tanks. These scrubbers have estimated construction dates in 2023 and 2024.

A review of the analysis provided by Jack Daniel is presented below.

VI.1.1.1 Identify Available Control Technologies

Jack Daniel provided the following list of technologies as being applicable for the control of VOC emissions from fermenters:

- Oxidation (e.g., thermal, catalytic)
- Absorption (e.g., scrubbers)
- Adsorption (e.g., activated carbon)
- Condensation
- Biological control systems (e.g., bio-filters or bio-scrubbers)
- Pollution prevention (e.g., temperature control of fermentation [refrigeration] to reduce the evaporative ethanol emissions)

As noted by Jack Daniel, all but the pollution prevention (P2) option listed above are classified as capture and control systems and therefore all share a common requirement for a capture system. Jack Daniel indicated that most of the technological uncertainties and potential issues associated with the installation of capture and control systems on fermentation tanks are associated with the operability of the ductwork (capture) system and the potential impact of the ductwork system on fermentation tank operation. They provided the following list of features as being essential to the ductwork system for the proposed fermentation tanks:

- The system must connect multiple tanks to a common control device. The primary reason for this is that the batch nature of the fermentation tank operation requires that multiple tanks be manifolded together to provide an averaging effect for reasonably continuous operation of a common control device. Due to the batch operation of each tank, the design capacity of a control device dedicated to a single tank would only be needed a few hours per week at the most and would operate a significant amount of time with zero or near-zero flow from the tanks. The result would be excessive operating cost for the control device and/or excessive turndown and cycling of the control device.

- The system must be capable of handling entrained liquids from the fermentation tanks and of preventing cross-contamination between tanks. A reasonable design will include features to avoid entry of entrained liquid from each tank into the common header that interconnects the tanks and will then continuously slope the main header from a high point, where the tank connects to the header, down to the knockout vessel located at the control device to ensure that liquids entering the header are not distributed to any of the connected tanks.

- The system must include provisions for cleaning and sterilization to meet the requirements for handling of consumable products. In addition, cleanliness and corrosion-resistance considerations, dictate that the ductwork be constructed of stainless steel.[8]

Jack Daniel states that their product (beverage alcohol) is both a food grade product and a consumer product whose consumer acceptance is heavily influenced by style issues, and in order to be considered technologically feasible, an emission control system for the fermentation tanks must 1) be designed to operate in accordance with the cleanliness and sanitation standards of the distilled spirits industry and with other requirements of state and local health authorities, and 2) have no impact on the operation of the fermentation tank with respect to style, quality, or consistency of quality of the beverage produced. An emission control system must be able to operate reasonably under a batch operation scenario and be able to accommodate an emission stream that contains a high level of moisture.

VI.1.1.2 Evaluate Control Options for Technical Feasibility

Oxidation (e.g., thermal, catalytic): Thermal oxidizers control VOC emissions by thermal incineration. They utilize temperatures in excess of 1,000°F to oxidize VOC into CO_2 and water. Catalytic oxidizers operate similar to thermal oxidizers, except they utilize a catalyst to accomplish oxidation of VOC at a lower temperature than is possible in a thermal oxidizer. They operate at temperatures of 800°F to 1,000°F. The proper temperature for oxidizer operation would require significant heating to raise the exhaust gas streams from the fermenters (typically 75°F to 90°F) to the required temperatures for effective incineration. Additionally, Jack Daniel noted that the VOC concentration during the fermentation cycle is variable, requiring a thermal device to combust fuel at a constant rate to maintain proper incineration conditions. Jack Daniel determined that oxidation control systems, both thermal and catalytic, were technically infeasible due to these additional operational requirements.

Adsorption: When adsorption is used for emission control, the pollutant is adsorbed on the surface of the adsorbent material. The adsorbed pollutant is held physically and can be released (desorbed) from the surface, typically using heat or vacuum. A common adsorbent is activated carbon. With carbon adsorption, VOC vapors condense on the surface of the carbon. When the surface has adsorbed nearly as much as it can, the VOC is either desorbed as part of regenerating the adsorbent, or the carbon, with the VOC still adsorbed, is disposed of. Jack Daniel cited the potential for a significant amount of grain solids in the fermenter exhaust stream that could quickly render control systems, such as carbon adsorption, inoperable[9] when evaluating the technical feasibility of carbon adsorption for control of VOC emissions from the fermenters. Jack Daniel states that adsorption and other similar control processes would require the addition of upstream exhaust treatment to remove solids and prevent fouling of the carbon beds, making the use of adsorption technically infeasible for control of VOC emissions from the fermenters. However, the use of adsorption was further evaluated by Jack Daniel as a potential control technology for the fermenters.

Condensation: A condenser is a control device that is used to cool an emission stream containing organic vapors, changing the vapors to a liquid. Condensed organic vapors can be recovered, refined, and reused, preventing their release to the ambient air. Condensation is typically feasible when VOC concentrations in the exhaust stream are greater than 5,000 parts per million (ppm)[10,11]. Jack Daniel stated that the concentration in the fermenter exhaust stream, although

[8] San Joaquin Unified Air Pollution Control District's 2007 Ozone Plan — Appendix K: *RACT Analysis for Wine Fermentation, Wine Storage Tanks, and Brandy Aging* (April 30, 2007)
[9] *AP-42: Compilation of Air Emissions Factors from Stationary Sources*, Section 9.12.3.3.2 – U.S. EPA (March 1997)
[10] *Recovery of Volatile Organic Compounds from Small Industrial Sources* – NCDENR P2 Program (September 1986)
[11] U.S. EPA Handbook: *Control Technologies for Hazardous Air Pollutants* (June 1991), Section 3.2.1.7

highly variable, is expected to be below this concentration. While the VOC concentration in the fermenter exhaust is expected to be too low to result in effective control using condensation, control of VOC emissions from the fermenters by condensation was further evaluated by Jack Daniel as a potential control technology.

Biological control systems (e.g., bio-filters or bio-scrubbers): Biological control systems were considered by Jack Daniel to be technologically infeasible for application to distilled beverage fermentation because whiskey is a food-grade product that requires stringent sterilization practices from the standpoint of eliminating contamination and preserving product quality. The introduction of a system containing microorganisms is not considered feasible within the sterilization practices normally employed. The microorganisms could potentially be a health risk due to potential contamination of the product.

P2 (e.g., temperature control of fermentation [refrigeration] to reduce the evaporative ethanol emissions): Temperature control of fermentation, the only P2 option identified by Jack Daniel, was eliminated due to a lack of empirical data regarding the emission control likely to be achieved, and due to potential issues concerning the impact of fermentation temperature control on the style of whiskey produced.

Absorption (e.g., scrubbers): With a wet scrubber, the organic vapors from the process are dissolved in a liquid. Wet scrubbers utilize large surface areas to allow contact between the liquid and gas stream. The creation of large surface areas is accomplished by passing the liquid over a variety of media (packing, meshing, grids, or trays) or by creating a spray of droplets. Wet scrubber designs include tower, tray-type, and packed bed scrubbers, which are generally referred to as low-energy scrubbers. Packed bed scrubbers are commonly used for controlling vapors like ethanol. This type of scrubber spreads the liquid over packing material to provide a large surface area for liquid/gas interaction. The control efficiency of a wet scrubber depends on the concentration of the VOC in the vapor and the solubility of the VOC in the scrubbing liquid or absorbent.

One example of a scrubber applied to a beverage alcohol operation (Central Coast Wine Services located in California) was identified in the RBLC database for "Alcoholic Beverage Production, Process Category 70.110.". The BACT analysis was part of a Santa Barbara County Air Pollution Control District review for which the facility received a revised determination for fermenter controls via wet scrubber because the District chose to add a class and category limitation of closed-top tanks 30,000 gallons or less. The existing fermenters at JD2 each have a capacity of 40,000 gallons, while the proposed fermenters will have a capacity of 80,000 gallons each.

While there are differences between the ethanol production and beverage alcohol production processes, some similarities exist. Jack Daniel noted that a number of fermentation units at ethanol production plants routinely employ emission controls, typically wet scrubbers. Seven ethanol production facilities were identified in the RBLC database for process type 70.120, "Alcohol Fuel Production". Of those, four included fermentation operations, one indicated wet scrubber controls; no control information was listed for the other units. This finding is consistent with other references, which indicate that wet scrubbers are the typical VOC control device installed on fermentation units at ethanol plants.[9] Since wet scrubbers are commonly applied on fermentation units at ethanol plants, it seems reasonable to infer that scrubbers are a technologically feasible control technology for control of VOC emissions from fermenters at beverage alcohol facilities. Therefore, scrubbers were further evaluated as a potential control technology.

VI.1.1.3 Rank Remaining Control Technologies by Control Effectiveness

Following review of the available control technologies, adsorption via activated carbon, condensation, absorption via wet scrubber, and P2 remained as technically feasible control options.

Table 8 ranks the VOC control technologies in descending order of maximum control efficiency.

Table 8: Ranked VOC Control Options - Fermenters		
Rank	**Control Option**	**Control Efficiency (%)**
1	Absorption (wet scrubber)	95%
	Adsorption (activated carbon)	95%
	Condensation	95%
2	P2	Unquantified

A review of the energy, environmental, and economic impacts from the use of these control options are presented in the next section.

VI.1.1.4 Evaluate Most Effective Controls

Absorption (wet scrubber) - Economic Impact Analysis: Jack Daniel evaluated the economic impact of using a wet scrubber to reduce VOC emissions from the fermentation units by determining the cost per ton of VOC removed. For purposes of calculating the tons per year of VOC removed, the total VOC emission rate from the existing and proposed fermentation units (79.3 tons per year) was used. An emission reduction of 95 percent, based on available control rates and requests from vendors regarding similar operations was used for the wet scrubber.

Unlike other industries where the preferred method of emission/pollutant control is to eliminate the emissions, the fermenter exhaust stream is primarily CO_2 with ethanol that could be recovered, rather than destroyed or bound in a media bed which is undesirable due to the loss of an otherwise marketable product. Per the analysis provided by Jack Daniel, the estimated total annualized cost would be $879,339 for operation of the wet scrubber, resulting in an average cost of $11,673 per ton of VOC removed. This includes a credit for the value of the ethanol recovered. The cost was considered by Jack Daniel to be prohibitively expensive, and the use of a wet scrubber is regarded as economically infeasible for control of VOC emissions from the fermenters.

Adsorption (activated carbon) – Economic Impact Analysis: As discussed previously, Jack Daniel stated that the fermenter exhaust stream characteristics include a high moisture content with the potential for grain solids to be entrained in the gas that would need to be removed from the gas stream prior to treatment by pollution control equipment such as carbon adsorbers or refrigerated condensers. As such, Jack Daniel included the addition of a scrubber (to remove PM emissions) to the cost analysis for a carbon adsorber. The estimated total annualized cost of the carbon adsorber, including the pollution control equipment and infrastructure required to manage air and wastewater discharges, was estimated to be $2,122,970. This resulted in an average cost of $28,193 per ton of VOC removed, which Jack Daniel considered to be prohibitively expensive. As such, the use of a carbon adsorber to control emissions of VOC from the fermenters is regarded as economically infeasible.

Condensation – Economic Impact Analysis: Similar to the carbon adsorber, Jack Daniel included the addition of a scrubber to the cost analysis of the refrigerated condenser. The estimated total annualized cost of the refrigerated condenser, including the pollution control equipment and infrastructure required to manage air and wastewater discharges, was estimated to be $2,882,812. This resulted in an average cost of $38,269 per ton of VOC removed, which Jack Daniel considered to be prohibitively expensive. As such, the use of a refrigerated condenser to control emissions of VOC from the fermenters is regarded as economically infeasible.

Additional information related to the cost analysis of VOC control options for the fermenters is included in Appendix B of the application dated November 21, 2023 (and updates received on January 15, 2024, and March 5, 2024). A summary of the results of the cost analysis are presented in **Table 9**.

Table 9: Cost Analysis of VOC Control Options - Fermenters				
Control Option	**Overall Control Efficiency (%)**	**VOC Emission Reduction (tons per year)**	**Annualized Control Cost ($)**	**Cost Effectiveness ($/ton)**
Absorption (wet scrubber)	95%	75.3	$879,339	$11,673
Adsorption (activated carbon)	95%	75.3	$2,122,970	$28,193
Condensation	95%	75.3	$2,882,812	$38,269

The cost per ton of VOC removal for each control option was determined to be prohibitively expensive. Thus, the control options evaluated to control emissions of VOC from the fermenters were eliminated from further consideration in the VOC BACT analysis and no further evaluation of energy and environmental impacts was performed.

The use of P2 to reduce emissions of VOC from the fermenters has no negative economic, environmental, or energy impacts.

VI.1.1.5 Select BACT

Jack Daniel proposed a BACT emission limit of 79.3 tons of VOC per year for the existing and new fermenters. As noted above, Jack Daniel proposed no control for VOC emissions from the fermentation tanks.

VI.1.1.6 VOC BACT Determination – Fermenters

The Division proposes a BACT emission limit of 79.3 tons of VOC during any period of 12 consecutive months for the existing and new fermenters. The Division proposes using pollution prevention, including maintenance of an Operating Procedure, to reduce emissions and equipment leaks from the fermentation process as BACT for this source.

Pursuant to TAPCR 1200-03-09-.01(4)(j)3, the following limit is established as BACT for VOC emissions from the existing and new fermenting vats:

- An emission limit of 79.3 tons of VOC during any period of 12 consecutive months, total, for the existing and new fermentation tanks

Compliance with this limit shall be assured by use of the following pollution prevention procedures:

- Maintaining the stainless steel cover on each fermenter and ensuring the cover is locked during the cook cycle;
- Performing periodic maintenance and inspection of the fermenters, covers, pumps, piping, etc. to maintain structural integrity and optimal performance;
- Initiating corrective actions as expeditiously as practicable when an issue is identified; and
- Maintaining and utilizing a Fermentation Process Operations Procedure (Work Instruction).

VI.1.2 VOC BACT Analysis – Charcoal Mellowing Vats

Charcoal mellowing is a process unique to the production of Tennessee whiskey at Jack Daniel and is a mandatory step in the production of Tennessee whiskey. The charcoal mellowing vats are made up of 6- and 7-foot diameter stainless steel cylinders, packed 10 feet deep with water-washed, crushed-to-size, sugar maple charcoal. The whiskey is slowly dripped over the charcoal bed, taking approximately 24 hours for a drop of whiskey to flow through the 10 feet of charcoal. Emissions of VOC from the charcoal mellowing process occur from the passive evaporation of ethanol from the whiskey during its flow through the charcoal mellowing vats. These emissions escape from around the unsealed cover. It is noted that current ton-per-year estimates of VOC emissions from the existing charcoal mellowing process have been derived via mass-balance, using gage measurements from points upstream and downstream in the process. Direct measurement of emissions is not feasible given the process configuration and variability in factors that likely influence emission rate (e.g., ambient temperature, barometric pressure). Jack Daniel believes that current estimates for VOC emissions from the charcoal mellowing process are conservative.

During review of the JD2 expansion project, it was determined that production rates of the fermenters have increased, resulting in increased throughput to the charcoal mellowing vats. Therefore, the existing charcoal mellowing vats have been included in this BACT analysis to allow for increased allowable emissions set through previous PSD permit actions.

VI.1.2.1 Identify Available Control Technologies

Utilizing the RBLC and other available sources of data, Jack Daniel identified the following control technologies for the control of VOC emissions from the charcoal mellowing vats:

- Oxidation (conversion of the VOC to CO_2)
- Absorption (e.g., scrubbers)
- Adsorption (e.g., activated carbon)
- Condensation
- Biological control systems (e.g., bio-filters or bio-scrubbers)
- Pollution prevention (e.g., covering to minimize volatilization)

As discussed in **Section VI.1.1.1**, all of the control technologies listed above, with the exception of P2, are classified as capture and control systems and therefore all share a common requirement for a capture system. Jack Daniel has indicated that this presents a significant impediment with regard to application of any of these control technologies to VOC emissions from the charcoal mellowing vats, for the reasons described below.

The existing charcoal mellowing vats are not themselves actively ventilated, neither is the room in which charcoal mellowing is conducted. Jack Daniel asserts that to construct a permanent total enclosure to capture emissions from the existing and proposed new mellowing vats would alter the rate of airflow across/in the mellowing vats, thus upsetting the natural rate of ethanol evaporation from the vats. Specifically, at present, ethanol evaporates from the mellowing vats at a rate dependent upon a number of factors, including the concentration of ethanol in the whiskey, the temperature of the whiskey, the temperature of the air with which the whiskey comes in contact, and the velocity/volume of air that contacts the surface of the whiskey.

If hoods or some other form of active emission capture device are added to the charcoal mellowing vats, the natural flow of air across the surface of the whiskey in the process will be disrupted. Jack Daniel states that the addition of active emission capture will impact product quality. Jack Daniel asserts that the air flow disruption will likely cause an increase in the rate at which ethanol evaporates from the process due to the removal of air with higher concentrations of ethanol away from the surface of the whiskey and its replacement with make-up air with lower concentrations. This will steepen the natural concentration gradient and induce more evaporation/volatilization and may actually increase the rate of VOC emission per unit of whiskey that flows through the charcoal mellowing process. Increasing the rate of ethanol evaporation from the whiskey in the charcoal mellowing process is undesirable to Jack Daniel due to the loss of otherwise marketable product and associated cost.

VI.1.2.2 Evaluate Control Options for Technical Feasibility

Oxidation (e.g., thermal, catalytic): Similar to the review of oxidation controls for the fermentation process in **Section VI.1.1.2**, Jack Daniel determined that oxidation control systems, both thermal and catalytic, were technically infeasible for the control of VOC emissions from the charcoal mellowing process due to additional operational requirements, such as the need to heat the exhaust stream significantly to reach the required operating temperature for the incinerator, and the low and variable VOC concentration of the air exhausted from the room in which the charcoal mellowing vats are located.

Absorption, **Adsorption**, **Condensation**, and **Biological Control Systems:** All of these options for actively controlling VOC emissions from charcoal mellowing would entail, in one form or another, active ventilation of the process. Given the potential for disruption to the natural air patterns and subsequent probability of impact to product quality and product loss, Jack Daniel determined that each of these control technologies would be ineffective for control of VOC emissions from the charcoal mellowing process, and therefore considered technically infeasible. However, Jack Daniel included

these control options in their analysis for the charcoal mellowing process.
Absorption (wet scrubber) – Economic Impact Analysis:

P2 (e.g., covering to minimize volatilization): Covering the charcoal mellowing vats and implementing work practices to minimize the volatilization/loss of product, was determined to be a technically feasible option for controlling emissions of VOC from the charcoal mellowing vats.

VI.1.2.3 Rank Remaining Control Technologies by Control Effectiveness

Following review of the available control technologies, adsorption via activated carbon, condensation, absorption via wet scrubber, and P2 remained as technically feasible control options.

Table 10 ranks the VOC control technologies in descending order of maximum control efficiency.

Table 10: Ranked VOC Control Options – Charcoal Mellowing

Rank	Control Option	Control Efficiency (%)
1	Absorption (wet scrubber)	95%
	Adsorption (activated carbon)	95%
	Condensation	95%
2	P2	Unquantified

A review of the energy, environmental, and economic impacts from the use of these control options are presented in the next section.

VI.1.2.4 Evaluate Most Effective Controls

Absorption, **Adsorption**, **Condensation**, and **Biological Control Systems:** Jack Daniel reviewed documents to determine how emissions from the charcoal mellowing operation would be collected (captured) and routed to the identified control device(s). Jack Daniel determined that the collection system would involve exhausting the air from the entire room of the post-expansion building in which the mellowing vats are located using an exhaust fan. Jack Daniel suggests that such collection system would have an expected capture efficiency less than the efficiency of a hood placed directly over the charcoal mellowing vats since the system would be designed to collect emissions from a number of individual sources and direct them to a single point for routing through the control device. Additionally, it is necessary for Jack Daniel to open the large roll-up doors to the building periodically for maintenance of the mellowing vats including replacement of the charcoal media once per year per vat. Jack Daniel estimated a capture efficiency of 50% for the collection system.

Absorption (wet scrubber) - Economic Impact Analysis: Jack Daniel evaluated the use of a water-based scrubber for this analysis. The estimated total annualized cost of the pollution control equipment and infrastructure to manage air and wastewater discharges was determined to be $3,117,793. Assuming 95% control of the captured VOC, an average cost per ton of $13,260 was calculated. This cost was considered by Jack Daniel to be prohibitively expensive, and the use of a wet scrubber is regarded as economically infeasible for control of VOC emissions from the charcoal mellowing process.

Absorption (wet scrubber) - Energy Impact Analysis: A scrubber, evaluated by Jack Daniel as the primary control technology, would consume electrical energy, estimated by Jack Daniel to be approximately 51 megawatt hours per year.

Absorption (wet scrubber) - Environmental Impact Analysis: A scrubber, evaluated by Jack Daniel as the primary control technology, would consume resources in the form of electricity and water. The water resulting from operation of the wet scrubber was estimated by Jack Daniel to result in an additional discharge of approximately 5.8 million gallons per year.

Adsorption (activated carbon) – Economic Impact Analysis: The estimated total annualized cost of a carbon adsorber, including the infrastructure necessary to manage air and wastewater discharges, was estimated by Jack Daniel to be $2,659,379. Assuming 95% control of the captured VOC, an average cost per ton of $11,311 was calculated. Jack Daniel considered this to be prohibitively expensive, and the use of a carbon adsorber is regarded as economically infeasible for control of VOC emissions from the charcoal mellowing process.

Condensation (refrigerated condenser) – Economic Impact Analysis: The estimated total annualized cost of a refrigerated condenser, including the infrastructure necessary to manage air and wastewater discharges, was estimated by Jack Daniel to be $3,764,195. Assuming 95% control of the captured VOC, an average cost per ton of approximately $15,960 was calculated. Jack Daniel considered this to be prohibitively expensive, and the use of a refrigerated condenser is regarded as economically infeasible for control of VOC emissions from the charcoal mellowing process.

P2 (e.g., covering to minimize volatilization): The use of P2 to reduce emissions of VOC from the charcoal mellowing vats has no negative economic, environmental, or energy impacts.

Additional information related to the cost analysis of VOC control options for charcoal mellowing is included in Appendix B of the application update received March 22, 2024. A summary of the results of the cost analysis are presented in **Table 11**.

Table 11: Cost Analysis of VOC Control Options – Charcoal Mellowing

Control Option	Overall Control Efficiency (%)	VOC Emission Reduction (tons per year)	Annualized Control Cost ($)	Cost Effectiveness ($/ton)
Absorption (wet scrubber)	95%	235.1	$3,117,793	$13,262
Adsorption (activated carbon)	95%	235.1	$2,659,379	$11,312
Condensation	95%	235.1	$3,764,195	$16,011

The cost effectiveness for each control option was determined to be prohibitively expensive. Thus, the control options evaluated to control emissions of VOC from charcoal mellowing were eliminated from further consideration in the VOC BACT analysis.

VI.1.2.5 Select BACT

Jack Daniel proposed to control emissions from the new and existing charcoal mellowing vats via pollution prevention, specifically by covering the vats and implementing work practices to minimize the volatilization/loss of product. This control method is currently employed at JD1 and on existing units at JD2. Jack Daniel proposes a BACT VOC limit of 495.0 tons per year (total) from the new and existing charcoal mellowing vats at JD2.

VI.1.2.6 VOC BACT Determination – Charcoal Mellowing Vats

The Division proposes a BACT VOC limit of 495.0 tons of VOC during any period of 12 consecutive months (total) from the new and existing charcoal mellowing vats. Jack Daniel will utilize pollution prevention to reduce emissions from the charcoal mellowing vats, specifically by covering the vats and implementing work practices to minimize the volatilization/loss of product.

Pursuant to TAPCR 1200-03-09-.01(4)(j)3, the following limit is established as BACT for VOC emissions from the new and existing charcoal mellowing vats:

- An emission limit of 495.0 tons of VOC during any period of 12 consecutive months (total) from the charcoal mellowing vats.

Compliance with this limit shall be assured by use of the following pollution prevention procedures:

- Equipping each charcoal mellowing vat with a cover and using the cover to minimize evaporative losses during the mellowing process;
- Performing periodic maintenance and inspection of the vats, covers, pumps, piping, etc. to maintain structural integrity and optimal performance;
- Rinsing the charcoal prior to replacement to minimize evaporative losses during the replacement process; and
- Maintaining and utilizing a Charcoal Mellowing Operations Procedure.

VI.1.3 VOC BACT Analysis – Natural Gas-Fired Boilers

Jack Daniel proposes to install two natural gas-fired boilers that will be used to provide heat and steam necessary for operation of various processes and equipment at JD2. The boilers will have a maximum heat input capacity of 82.6 MMBtu/hr (Boiler 18) and 70.8 MMBtu/hr (Boiler 19) and will be fired solely on natural gas. Emissions of VOC from the natural gas-fired boilers are a result of incomplete combustion of fuel.

VI.1.3.1 Identify Available Control Technologies

Jack Daniel identified the following options for control of VOC emissions from the natural gas-fired boilers:

- Oxidation catalyst
- Good combustion practices

VI.1.3.2 Evaluate Control Options for Technical Feasibility

Oxidation Catalyst (CatOx): Oxidation catalysts are exhaust treatment devices which enhance oxidation of VOC, without the addition of any chemical reagents, because there is sufficient oxygen in the exhaust gas stream for the oxidation reactions to proceed in the presence of the catalyst alone. Typically, precious metals are used as the catalyst to promote oxidation. The activity of oxidation catalysts is dependent on the amount of particulate in the flue gas stream and the flue gas temperature.

The rate of VOC emissions from boilers depends on combustion efficiency, as the VOC emitted from natural gas-fired boilers are mainly a result of incomplete combustion. VOC emissions are typically minimized by combustion practices that promote high combustion temperatures, long residence times at those temperatures, and turbulent mixing of fuel and combustion air. Trace amounts of VOC species in the natural gas fuel can result in VOC emissions if they are not completely combusted in the boiler.

While a review of the RBLC database by Jack Daniel did not indicate instances in which add-on controls for VOC had been applied to small (<100 MMBtu/hr) natural gas-fired boilers as BACT, oxidation catalyst is considered a technically feasible option for control of VOC emissions from the boilers.

Good Combustion Practices: The use of good combustion practices optimizes combustion in the natural gas combustors. Ensuring that the temperature and oxygen availability are adequate for complete combustion minimizes VOC emissions. This technique includes continued operation of the boilers at the appropriate oxygen range and temperature. Good combustion practices are a technically feasible control option for VOC emissions from the boilers.

VI.1.3.3 Rank Remaining Control Technologies by Control Effectiveness

Table 12 ranks the VOC control technologies in descending order of maximum control efficiency.

Table 12: Ranked VOC Control Options - Boilers

Rank	Control Option	Control Efficiency (%)
1	Oxidation Catalyst	98% - 99%
2	Good Combustion Practices	Unquantified

VI.1.3.4 Evaluate Most Effective Controls

Oxidation Catalyst: Jack Daniel used a conservative annualized control cost analysis for applying CatOx to the boilers for VOC emission control which resulted in an annualized control cost in excess of $113,000 per ton of VOC removed for Boiler 18 and $132,000 per ton of VOC removed for Boiler 19. The details of the cost analysis are included in Appendix B of the application update received March 5, 2024. Jack Daniel considers these costs to be excessive and that installing a large-scale control system for the boilers is not cost effective. As such, CatOx was eliminated from further consideration in the VOC BACT analysis and no further evaluation of energy and environmental impacts was performed.

VI.1.3.5 Select BACT

Jack Daniel proposed an emission limit of 0.0054 pounds of VOC per MMBtu and utilizing proper design and good combustion practices as BACT for the new natural gas-fired boilers.

VI.1.3.6 VOC BACT Determination – Natural Gas-Fired Boilers

The Division proposes a BACT limitation of 0.0054 pounds of VOC per MMBtu for the two new natural gas-fired boilers. Utilizing proper boiler design and good combustion practices will be used to assure compliance with this limit.

Pursuant to TAPCR 1200-03-09-.01(4)(j)3, the following limit will be established as BACT for VOC emissions from the boilers:

- An emission limit of 0.0054 pounds of VOC per MMBtu

Compliance with this limit shall be assured through good equipment design and utilization of proper combustion techniques.

VI.1.4 VOC BACT Analysis – Maturation Warehouses

Jack Daniel is proposing to install 23 new maturation warehouses on Tracts 1 through III. The capacity of each new warehouse will be 66,528 barrels. The location of the new warehouses (by Tract) is provided in the confidential document submitted February 13, 2023.

New charred oak barrels are filled with white whiskey following gauging in the cistern at JDD Inc. or JDD Prop. The filled barrels are transported to one of the maturation warehouses for storage and maturation. During the maturation process, the distilled whiskey/spirits within each new wooden barrel will have losses into the barrel itself as it reaches saturation as well as losses from the wooden stave interlocks, plugs, and/or cracks/gaps (i.e., the "angel's share"). In subsequent years, VOC losses occur over the entire surface area of the barrel. The angel's share is released into the building's interior and then naturally vented to the atmosphere through vents, unsealed openings, windows, pedestrian doors, roll-up doors, and other openings.

Each warehouse is designed with approximately 25 scupper vents and 4 relief vents. The scupper vents are fixed vents located six inches above the floor. The scuppers are designed to remain open at all times. The relief vents are located towards the top of the warehouse and remain in a closed position during normal operations. They are designed to open if the internal building pressure exceeds the design pressure rating. During whiskey maturation, emissions exit the warehouse via the scuppers and relief vents (if activated). During barrel entry or removal, when employees are present, emissions can exit the warehouse via the scuppers, the relief vents (if activated), the pedestrian door, and the roll up door used for forklift access.

Jack Daniel's warehouse design maintains safe work conditions inside the warehouse (i.e., an LEL of less than 3%, per Brown-Forman design specifications, which is below the OSHA LEL for ethanol of 3.3%), complies with industry recommended life safety guidelines[12], and ensures barrel and building integrity. Jack Daniel states that there is no way to mechanically force air out of or otherwise remove air from the warehouse. All air that leaves the warehouse does so

[12] DISCUS Guidelines (4th Edition) 3-6 and 5-7.

via natural draft and the natural ventilation occurs at all times. Additionally, Jack Daniel states that the warehouses do not rely on or use a ventilation exhaust system, nor do they incorporate any type of central heating ventilation and air conditioning (HVAC) system. As such, Jack Daniel states that VOC emissions from the warehouses are fugitive because the emissions cannot *reasonably* pass through a stack, chimney, vent, or other functionally equivalent opening to allow capture of the emissions.

Jack Daniel noted that EPA, multiple state air permitting agencies, and the courts have determined on numerous occasions that controls for whiskey aging warehouses are not feasible, as discussed further in the application revision received on March 5, 2024.

VI.1.4.1 Identify Available Control Technologies

Jack Daniel identified the following options for control/reduction of VOC emissions from the maturation warehouses:

- Add-on controls, such as thermal oxidation, condensation, and adsorption
- Lower-emitting processes and low-VOC material formulations
- Good operating and maintenance practices

VI.1.4.2 Evaluate Control Options for Technical Feasibility

Add-on Controls: The application of add-on controls to the whiskey aging process would require capture of VOC emissions from the individual barrels in aggregate, or from the warehouse itself, as an enclosure. Jack Daniel describes the aging/maturation process as a critical step in the production of whiskey, and states that whiskey aging can only be achieved through the natural heating and cooling cycles and natural draft airflow provided by the warehouse design. Without the heating and cooling cycles and natural air flow, the liquid stored in the barrels would not achieve the desired character, taste, and flavor. Jack Daniel states that the implementation of a permanent total enclosure, as would be necessary to effectively operate and add-on control device, would fundamentally change their aging process and the resulting product. As such, the use of add-on controls such as thermal oxidation, condensation, and adsorption for the control of VOC emissions from the maturation warehouses is considered technically infeasible.

Lower-Emitting Processes and Low-VOC Material Formulations: the products produced by Jack Daniel contain specified levels of ethanol. Aging/maturation is a necessary step in the production or whiskey, and an alternative process with lower VOC emissions is not available. Therefore, the use of lower-emitting processes or low-VOC material formulations for control of VOC emissions from the maturation warehouses is considered technically infeasible.

Good operating and maintenance practices: Good operating and maintenance practices can serve to reduce VOC emissions without the implementation of add-on control technologies. Certain operational strategies can prevent excessive evaporative losses of VOC-containing materials. Good management practices are considered technically feasible for minimizing emissions of VOC from the maturation warehouses.

VI.1.4.3 Rank Remaining Control Technologies by Control Effectiveness

Following review of all potential control options, only good operating and maintenance practices remain as a possible option. The reduction in VOC emissions realized by the use of good operating and maintenance practices is not known.

VI.1.4.4 Evaluate Most Effective Controls

The use of good operating and maintenance practices to reduce emissions of VOC from the maturation warehouses has no negative economic, environmental, or energy impacts.

VI.1.4.5 Select BACT

Jack Daniel proposed the use of good operating and maintenance practices as BACT for VOC emissions from the new maturation warehouses.

VI.1.4.6 VOC BACT Determination – Maturation Warehouses

The Division proposes a BACT limitation of 5,623.3 tons of VOC during any period of 12 consecutive months from the proposed new maturation warehouses. The use of good operating and maintenance practices will be used to assure compliance with this limitation.

Pursuant to TAPCR 1200-03-09-.01(4)(j)3, the following limit is established as BACT for VOC emissions from the new maturation warehouses:

- An emission limit of 5,623.3 tons of VOC during any period of 12 consecutive months.

Compliance with this limit shall be assured by use of the following good operating and maintenance practices:

- Follow industry standard aging practices to minimize the release of VOCs;
- Develop and maintain a list of work practice standards onsite;
- Maintain records to demonstrate the work practice standards are being followed.

VI.1.5 VOC BACT Analysis – Whiskey Process and Storage Tanks

As part of the expansion at JD2, additional in-line process tanks and storage tanks will be added to control the flow of product through the system post-distillation. As per TAPCR 1200-03-09-.04(5)(a)4(i), each of these tanks would qualify for designation as an insignificant emission unit as emissions from each tank will be at a rate of less than five tons per year of each regulated air pollutant that is not a hazardous air pollutant, and less than 1,000 pounds per year of each hazardous air pollutant. Emissions of VOC will result from working losses during filling of the tanks and standing losses during intermediate storage of whiskey.

Specifically, the expansion will include the proposed tanks shown in **Table 13**:

Table 13: List of Proposed Process and Storage Tanks

Tank Name	Number of Tanks	Capacity (gallons)	Annual VOC Emissions (tpy)
Pre-Mellowing Tank	7	10,147 (each)	0.56 (each)
Heads and Tails Tank	2	6,768 (each)	0.03 (each)
Bull Pen Tank	1	50,500	1.37
Post-Mellowing Tank	2	5,196 (each)	1.42 (each)

VI.1.5.1 Identify Available Control Technologies

Jack Daniel identified the following options for control of VOC emissions from the whiskey process and storage tanks:

- Wet scrubber (absorption)
- Thermal oxidation/incineration
- Flare
- Catalytic oxidation/incineration
- Condensation
- Adsorption
- Internal floating roof
- External floating roof
- Submerged fill
- Proper design and good operation and maintenance.

VI.1.5.2 Evaluate Control Options for Technical Feasibility

Wet Scrubber (absorption): With a wet scrubber, the organic vapors from the tank are dissolved in a liquid. Types of different wet scrubbers are described in Section VI.1.1.2. Wet scrubbers are considered technically feasible for control of VOC from the whiskey process tanks.

Thermal Oxidation/Incineration (TO): Thermal oxidizers/incinerators can be used to reduce emissions from a variety of stationary sources, including tanks. A description of thermal oxidizers/incinerators is provided in Section VI.1.1.2. It is noted that a thermal oxidizer would typically be used to control VOC emissions from very large tanks that have large breathing and working losses, thus a higher vapor flow rate.

Fire protection is a concern in the distillery industry due to the low flash point of ethanol. Whiskey, which contains about 40% ethanol (80-proof), has a flash point of 79°F, which is not much higher than typical room temperatures. Consequently, the control options involving flame, or the possibility of spark creation, are considered technically infeasible, and Jack Daniel eliminated them from further consideration in the BACT analysis.

Flare: Flares can be used to control VOC streams, and can typically handle large fluctuations in VOC concentration, flow rate, heating value, and inert species content. Flares can reduce VOC emissions by 98%. For the reasons specified in the discussion of thermal oxidizers, flares are considered technically infeasible for control of VOC emissions from the whiskey process tanks and have been eliminated from further consideration.

Catalytic Oxidation/Incineration: A description of catalytic oxidation/incineration (CatOx) is provided in Section VI.1.3.2. Jack Daniel stated that CatOx is not typically used to control emissions from tanks, and it was considered technically infeasible for control of VOC emissions from the whiskey process tanks for the reasons specified in the discussion of thermal oxidizers.

Condensation: A condenser is a control device that is used to cool an emission stream having organic vapors, thus changing the vapors to a liquid. Condensed organic vapors can be recovered, refined, and reused, preventing their release to the ambient air. Condensers can reduce VOC emissions by 98% or more. Condensers are considered technically feasible for control of VOC emissions from the whiskey process tanks.

Adsorption: A description of carbon adsorption is provided in Section VI.1.1.2. Carbon adsorption is considered technically feasible for control of VOC emissions from the whiskey process tanks.

Internal Floating Roof: An internal floating roof tank has both a permanent fixed roof and a floating roof inside. There are two basic types of internal floating roof tanks: tanks in which the fixed roof is supported by vertical columns within the tank, and tanks with a self-supporting fixed roof and no internal support columns. An internal floating roof minimizes evaporative losses of the stored liquid. Evaporative losses from floating roofs may come from deck fittings, nonwelded deck seams, and the annular space between the deck and tank wall. Internal floating roofs can reduce VOC emissions due to breathing losses by 75-80%. Due to the potential for spark creation, the use of internal floating roof tanks is considered technically infeasible and has been removed from further consideration.

External Floating Roof: A typical external floating roof tank consists of an open-topped cylindrical steel shell equipped with a roof that floats on the surface of the stored liquid. The floating roof consists of a deck, fittings, and rim seal system. Floating decks are of two general types: pontoon and double deck. The purpose of the floating roof and rim seal system is to reduce evaporative loss of the stored liquid. Some annular space remains between the seal system and the tank wall. The external floating roof design is such that evaporative losses from the stored liquid are limited to losses from the rim seal system and deck fittings (breathing loss) and any exposed liquid on the tank walls (withdrawal loss). External floating roofs can reduce VOC emissions by 75-80%. Due to the potential for spark creation, the use of external floating roof tanks is considered technically infeasible and has been removed from further consideration.

Submerged Fill: With submerged fill, the fill pipe extends almost to the bottom of the tank, allowing most of the filling to occur while the fill pipe opening is below the liquid surface level. Liquid turbulence is controlled significantly, resulting in much lower vapor generation than encountered during filling without submerged fill. Submerged fill can reduce VOC emissions by 10-25% and is considered technically feasible for control of VOC emissions from the whiskey process tanks.

Proper Design and Good Operation and Maintenance: Proper tank design along with good operation and regular maintenance, in accordance with vendor recommendations, can reduce emissions due to poorly operating and/or malfunctioning tanks. Proper design along with good operation and maintenance practices are considered technically feasible for control of VOC emissions from the whiskey process tanks.

VI.1.5.3 Rank Remaining Control Technologies by Control Effectiveness

The remaining control options described above were ranked by Jack Daniel in their relative order of control effectiveness (see **Table 14**).

Table 14: Ranked VOC Control Options – Whiskey Process and Storage Tanks

Rank	Control Option	Approximate VOC Control Efficiency
1	Wet Scrubber (absorption)	98%
	Condensation	98%
	Adsorption	98%
2	Submerged Fill	10 - 25%
3	Proper Design, Good Operation and Maintenance	Unquantified [1]

1. Proper design and good operation and maintenance is considered the baseline.

VI.1.5.4 Evaluate Most Effective Controls

Jack Daniel performed a search of the RBLC for VOC controls on Volatile Organic Liquid Storage Tanks (Process Type 42.009). The search resulted in 49 records, and a copy of the search results is included in Appendix A of the application dated November 21, 2023 (with revisions received January 15, 2024, and March 5, 2024).

The energy and environmental impacts of the remaining control technologies, as provided by Jack Daniel, are summarized in **Table 15**:

Table 15: Summary of the Energy and Environmental Impacts of Remaining VOC Control Options

Control Option	Energy Impacts	Environmental Impacts
Wet Scrubber	Electricity required to power pumps, etc.	Possible treatment and disposal of scrubber blowdown
Condensation	Electricity required to power pumps, fans, blowers, etc.	Non-consumptive use of river water — likely to be minimal
Adsorption	Electricity required to power pumps, fans, blowers, etc.	Possible disposal of ethanol recovered from the adsorbent or disposal of the adsorbent containing the acetic acid
Submerged Fill	Nothing additional	Nothing additional
Proper Design, Good Operation and Maintenance	Nothing additional	Nothing additional

An economic analysis of the application of each remaining control technology was performed by Jack Daniel using the combined emissions of the largest tank with the highest level of uncontrolled VOC emissions – the 500k Tank. A summary of the results of that analysis is shown below and the details are provided in Appendix B of the application dated November 21, 2023 (with revisions received January 15, 2024, and March 5, 2024). The design of the wet scrubber was based on the specifications of an existing scrubber being used to control VOC emissions at another facility and the EPA Control Cost Manual. The analyses for the condenser and carbon adsorption were made using EPA's CO$T-AIR Control Cost Spreadsheets for a refrigerated condenser and carbon adsorption, respectively, and are summarized in **Table 16**.

Table 16: Cost Analysis of Remaining VOC Control Options – Whiskey Process Tanks

Control Option	Cost of Control
Wet Scrubber	$58,790/ton
Condensation	$50,130/ton
Adsorption	$49,266/ton

The lowest annual cost per ton to control VOC emissions from the 500k Tank is in excess of $40,000. Based on this analysis and in consideration of the energy and environmental impacts described, Jack Daniel believes the application of add-on controls to any of the tanks is cost prohibitive.

VI.1.5.5 Select BACT

Jack Daniel proposed the use of fixed roof tanks with submerged fill, proper design, and good operation and maintenance as BACT for each whiskey process tank.

VI.1.5.6 VOC BACT Determination –Whiskey Process and Storage Tanks

The Division proposes a BACT limitation of 10.38 tons of VOC during any period of 12 consecutive months from the proposed new whiskey process tanks. The use of fixed roof tanks with submerged fill, proper design, and good operation and maintenance will be used to assure compliance with this limit.

Pursuant to TAPCR 1200-03-09-.01(4)(j)3, the following is proposed as BACT for VOC emissions from the whiskey process and storage tanks:

- An emission limit of 10.38 tons of VOC during any period of 12 consecutive months.

Compliance with this limit shall be assured through the use of fixed roof tanks with submerged fill, proper design, and good operation and maintenance practices.

VI.1.6 VOC BACT Analysis – Stationary Internal Combustion Engines (Emergency Fire Pump Engines)

The proposed expansion includes the installation of one emergency fire pump with stationary compression ignition (CI) reciprocating internal combustion engine (RICE) at JDD Inc. and two emergency fire pumps with stationary CI RICE at JDD Prop. All three RICE will be identical in size. Emissions of VOC from the RICE are the result of diesel combustion and are emitted through the exhaust stack.

VI.1.6.1 Identify Available Control Technologies

Jack Daniel identified the following options for control of VOC emissions from the RICE:

- Good combustion practices (GCP)
- Diesel oxidation catalyst (DOC)

VI.1.6.2 Evaluate Control Options for Technical Feasibility

Good combustion practices (GCP): GCP for CI RICE for VOC control consist of minimizing startup and idling time. This is achieved in normal practice for emergency-use engines that, by design, only operate for maintenance purposes, readiness testing, and during emergency events.

Diesel oxidation catalyst (DOC): DOC utilizes a catalyst such as palladium or platinum to further oxidize the engine's exhaust which includes hydrocarbons and converts them to CO_2 and water. Use of DOC can result in up to 90 percent reduction in some HC/VOC species.[13] Jack Daniel reviewed the RBLC for small internal combustion engines <500 hp (process type code 17.210) and found no installations of DOC on emergency, diesel-fired engines. However, the use of DOC for control of VOC emissions from CI RICE is considered technically feasible.

VI.1.6.3 Rank Remaining Control Technologies by Control Effectiveness

Table 17 ranks the VOC control technologies in descending order of maximum control efficiency.

Table 17: Ranked VOC Control Options – Stationary CI RICE

Rank	Control Option	Approximate VOC Control Efficiency
1	DOC	90%
2	GCP	Unquantified

VI.1.6.4 Evaluate Most Effective Controls

DOC: Jack Daniel states that the use of DOC reduces the reduces the effective power output of the CI RICE and results in generation of a solid waste stream. Additionally, emergency engines are typically used only a few hours per year, resulting in a minimal reduction of emissions. DOC was eliminated by Jack Daniel as an option for control of VOC emissions from the CI RICE.

GCP: GCP is part of normal operating practices for emergency engines. Therefore, there are no environmental, energy, or economic impacts associated with the use of GCP for reduction of VOC emissions from CI RICE.

VI.1.6.5 Select BACT

Jack Daniel proposed a VOC emission limit of 0.12 gram/horsepower-hour (g/hp-hr) and the use of GCP as BACT for VOC emissions from the proposed emergency fire pump engines.

VI.1.6.6 VOC BACT Determination – Stationary Internal Combustion Engines (Emergency Fire Pump Engines)

The Division proposes a BACT limitation for VOC of 0.12 g/hp-hr. Compliance with all applicable requirements of 40 CFR 60, Subpart IIII and the use of good combustion practices will assure compliance with this limit.

Pursuant to TAPCR 1200-03-09-.01(4)(j)3, the following is proposed as BACT for VOC emissions from the emergency fire pump engines:

- An emission limit of 0.12 g/hp-hr

Compliance with this limit shall be assured by compliance with all applicable requirements of 40 CFR 60, Subpart IIII and the use of good combustion practices.

[13] Alternative Control Techniques Document: Stationary Diesel Engines, EPA, March 5, 2010.

VI.2 Greenhouse Gas (CO_2e) BACT Analysis

VI.2.1 CO_2e BACT Analysis – Fermenters

See Section VI.1.1 for a summary of the fermentation process.

VI.2.1.1 Identify Available Control Technologies

Jack Daniel identified the following options for control of CO_2/CO_2e emissions from the fermentation tanks:

- Carbon Capture and Sequestration (or Storage) (CCS)
- Conversion of Carbon Dioxide to Liquified Gas and Dry Ice

VI.2.1.2 Evaluate Control Options for Technical Feasibility

Carbon Capture and Sequestration (or Storage) (CCS): CCS technology involves capturing CO_2, transporting it, as necessary, and permanently storing it instead of releasing it into the atmosphere. It is notable that CCS technology does not involve conversion of CO_2 or destruction of CO_2 at the source as is typical of a more traditional BACT-level add-on pollution control equipment installation.

Jack Daniel stated that isolation of relatively pure CO_2 from the fermentation process is technically feasible as the existing gas stream has an estimated CO_2 concentration of 90-95%, although additional steps such as the concentration of the CO_2 and removal of water and ethanol, may be required as part of this operation.

Storage and Geologic Formations: There are several options for permanent storage of CO_2. They include gaseous storage in various geological formations (including saline formations, exhausted oil and gas fields, and un-mineable coal seams), and liquid storage in the ocean. Jack Daniel did not consider liquid storage in the ocean in their analysis since the Jack Daniel Lynchburg facility location is at least 300 miles from the nearest ocean.

The geologic formations considered appropriate for CO_2 storage are layers of porous rock deep underground that are capped by a layer or multiple layers of non-porous rock above them. In this application, a well is drilled down into the porous rock and pressurized CO_2 is injected into it. Under high pressure, CO_2 turns to liquid and can move through a formation as a fluid. Once injected, the liquid CO_2 tends to be buoyant and will flow upward until it encounters a barrier of non-porous rock, which can trap the CO_2 and prevent further upward migration.

The following information about these potential storage options was provided by Jack Daniel:

Exhausted oil and gas fields are formations that held crude oil and natural gas at some time in the past. In general, they are characterized by a layer of porous rock with a layer of non-porous rock which forms a dome. This dome offers great potential to trap CO_2 and makes these formations excellent storage opportunities. According to the Southeast Regional Carbon Sequestration Partnership (SECARB), there are no known oil or gas reservoirs providing CO_2 sequestration opportunities within the immediate vicinity of the JD2 facility in Moore County, Tennessee, but there may be some potential storage capacity in southwestern Virginia, approximately 200 miles from the facility. Although no extensive investigation has been undertaken, these oil fields potentially provide a storage opportunity that can be considered technically feasible.

Un-mineable coal seams are those that are too deep or too thin to be mined economically. It is estimated that 150 to 200 billion metric tons of CO_2 sequestration potential exists in un-mineable coal seams identified by the U.S. Department of Energy's Regional Carbon Sequestration Partnerships (RCSP) (which includes SECARB). According to RCSP, none of these seams are in the vicinity of the JD2 facility, but there may be some potential storage capacity in un-mineable seams of the central Appalachian coal basin of southwestern Virginia, approximately 200 miles from the facility. Although no extensive investigation has been undertaken, these un-mineable coal seams potentially provide a sequestration opportunity that can be considered technically feasible.

Saline formations are layers of porous rock that are saturated with brine. They are much more commonplace than coal seams or oil and gas bearing rock and represent an enormous potential for CO_2 storage capacity. Such saline formations do not exist in the vicinity of the JD2 facility, but according to RCSP, there may be some potential storage capacity in the Mt. Simon basin of middle Tennessee, approximately 35 miles from the facility.

The RCSP estimates a range of 3,300 to 12,000 billion metric tons of sequestration potential in saline formations. However, much less is known about saline formations than is known about crude oil reservoirs and coal seams, and there is a greater amount of uncertainty associated with their ability to store CO_2. Saline formations contain minerals that could react with injected CO_2 to form solid carbonates. The carbonate reactions have the potential to be both a positive and a negative. When this is done intentionally it is called mineral carbonation which is discussed in the following section. They can increase permanence, but they also may plug up the formation in the immediate vicinity of an injection well.

The capture and sequestration of CO_2 emissions from the fermentation tanks was determined to be technically feasible.

Conversion of Carbon Dioxide to Liquified Gas and Dry Ice: The identified reduction of CO_2 by conversion to dry ice involves the collection of CO_2, purification to eliminate ethanol and water vapor, compression to manufacture liquid CO_2 then additional conversion to a dry ice product, and sales and distribution of either a liquid or solid CO_2 product. Compressed carbon dioxide and dry ice is utilized for a variety of industries including medical applications, breweries and beverage manufactures, food preservatives, and e-commerce frozen fulfillment. Although this method does not stop the release of CO_2, the CO_2 is released in an alternative method. This method can be accomplished in two ways: for large scale CO_2 producers it may be beneficial to construct and operate a CO_2 collection and dry ice manufacturing operation. For smaller sources of CO_2, the CO_2 may be transported to the closest facility via compressed gas vehicles. The viability of this technology depends on the purity of the emissions and consistency of the exit flow.

The conversion of CO_2 from the fermenters to dry ice would require purification of the emissions, concentration, and storage prior to shipping or further distribution into commerce. Although there are commercial purposes that may offset the cost of the equipment used to convert the CO_2 to dry ice, Jack Daniel noted that EPA has not historically considered the BACT requirement as a means to redefine the fundamental design of a source, which the manufacture of dry ice would arguably entail (i.e., this facility manufactures distilled spirits - the manufacture of dry ice would be an unrelated collateral manufacturing operation). Based upon available information, economic feasibility of converting CO_2 to a liquid or solid product (dry ice) would be achievable if the end product could be distributed and sold. To do this is outside the scope of the Jack Daniel's business model. Therefore, this technology was excluded by Jack Daniel based on it requiring a fundamental change to the nature of the source, and because the conversion to dry ice does not ultimately affect a reduction in the emissions of the pollutant in question.

VI.2.1.3 Evaluate Most Effective Controls

CCS - Energy Impact Analysis: The compression of CO_2 to pump supersaturated CO_2 into geologic formations as required for CCS requires significant energy resources.

CCS - Environmental Impact Analysis: CCS is a relatively new technology still undergoing research. There is the possibility that CCS may leak CO_2 into the environment. There are also concerns that the technology may result in increased seismic activity.

CCS - Economic Impact Analysis: Based on their analysis of geologic storage options, Jack Daniel estimated that CO_2 from the fermentation process at the JD2 facility would have to be transported by pressurized pipeline at least 35 miles (56 kilometers [km]). Based on Figure 4.3 of the IPPC Special Report on Carbon Dioxide Capture and Storage (page 191), the initial investment <u>for just the pipeline</u>, not including booster stations and not accounting for the hilly, mountainous terrain of middle Tennessee, ranges from \$400,000 to \$1,000,000 per km. Based on a pipeline 56 km long, the investment just for the JD2 pipeline would be at least \$22,400,000 which is equal to an annualized cost of approximately \$3,200,000, estimated over a seven-year period. These numbers should be considered conservative due to the global supply chain issues which have resulted in construction material price increases. At this conservative annual cost, the cost per ton of CO_2 transported would be about \$75. For this reason, Jack Daniel determined that the transport of the CO_2 from the JD2 fermentation process to a saline formation was economically infeasible and no further analysis of storage in geologic formations was conducted.

VI.2.1.4 Select BACT

Jack Daniels proposed a BACT CO_2/CO_2e emission limit of 88,724 tons per year for the existing and new fermenters. The only add-on control that was regarded as technologically feasible was determined to be prohibitively expensive and no P2 options were identified by the facility; therefore, no controls were proposed by Jack Daniel for control of CO_2/CO_2e emissions from the fermenters.

VI.2.1.5 CO_2e BACT Determination – Fermenters

The Division proposes a BACT emission limit of 88,724 tons of CO_2/CO_2e per year for the existing and new fermenters. The Division proposes using pollution prevention and maintaining an Operating Procedure to reduce emissions of CO_2/CO_2e and equipment leaks from the fermentation process as BACT for this source.

Pursuant to TAPCR 1200-03-09-.01(4)(j)3, the following limit is established as BACT for CO_2/CO_2e emissions from the fermenters:

- An emission limit of 88,724 tons of CO_2/CO_2e during any period of 12 consecutive months for the existing and new fermentation tanks

Compliance with this limit shall be assured by the following:

- Maintaining the stainless steel cover on each fermenter and ensuring the cover is locked during the cook cycle;
- Performing periodic maintenance and inspection of the fermenters, covers, pumps, piping, etc. to maintain structural integrity and optimal performance;
- Initiating corrective actions as expeditiously as practicable when an issue is identified; and
- Maintaining and utilizing a Fermentation Process Operations Procedure (Work Instruction).

VI.2.2 CO_2e BACT Analysis – Natural Gas-Fired Boilers

As described earlier, Jack Daniel proposes to install two natural gas-fired boilers that will be used to provide heat and steam needed to operate various processes and equipment at the facility. The boilers will each have a maximum heat input capacity of 70.8 MMBtu/hr and will be fired solely on natural gas. Emissions of CO_2/CO_2e from the natural gas-fired boilers are a result of fuel combustion. The rate of CO_2/CO_2e emissions from boilers depends on combustion efficiency, as some CO_2e (nitrogen oxide and menthane) emitted from natural gas-fired boilers is the result of incomplete combustion. CO_2/CO_2e emissions may be minimized by combustion practices that promote high combustion temperatures, long residence times at those temperatures, and turbulent mixing of fuel and combustion air.

VI.2.2.1 Identify Available Control Technologies

Jack Daniel identified the following options for control of CO_2/CO_2e emissions from the boilers:

- Carbon Capture and Sequestration (or Storage) (CCS)
- Use of natural gas
- Good Combustion Practices

VI.2.2.2 Evaluate Control Options for Technical Feasibility

Carbon Capture and Sequestration (or Storage) (CCS): Please refer to Section VI.2.1.2 for a detailed discussion of this control option. The capture and sequestration of CO_2 emissions from the boilers was determined to be technically feasible.

Use of Natural gas/Good combustion practices: Jack Daniel noted that boilers typically do not have add-on controls for CO_2/CO_2e, in part because the combustion process destroys most organic pollutants.[14] In addition, a review of the

[14] *Preferred and Alternative Methods for Estimating Air Emissions from Boilers — Eastern Research Group, Inc. (January 2001)*

RBLC database did not indicate instances in which add-on controls for CO_2/CO_2e had been applied to small (<100 MMBtu/hr) natural gas-fired boilers as BACT; proper design and good combustion practices were the predominant control methods as described in Section VI.1.3**,** VOC BACT analysis for natural gas fired boilers.

Jack Daniel contends that P2, in the form of proper design and good combustion practices, is the "top" option in the control hierarchy. Further, these boilers will be equipped with low-NO_X burners as required per Tennessee Division of Air Pollution Control (TDAPC) policy, and although Jack Daniel does not necessarily consider low-NOx burners to be a form of CO_2/CO_2e control, it is noted that low-NO_X burners were the only VOC add-on control referenced in any of the BACT or LAER determinations reviewed as part of this analysis.

VI.2.2.3 Rank Remaining Control Technologies by Control Effectiveness

Table 18 ranks the CO_2/CO_2e control technologies in descending order of maximum control efficiency.

Table 18: Ranked CO_2/CO_2e Control Options - Boilers

Rank	Control Option	Control Efficiency (%)
1	CCS	90% - 95% (estimated)
2	Good Combustion Practices	Unquantified

VI.2.2.4 Evaluate Most Effective Controls

Please refer to Section VI.2.1.2 for an evaluation of CCS and why it was determined by Jack Daniel to be economically infeasible and not cost effective for control of CO_2/CO_2e emissions from the natural gas fired boilers.

VI.2.2.5 Select BACT

Jack Daniels proposed a BACT CO_2/CO_2e limit of 42,364 short tons per year for Boiler 18 and 36,312 short tons per year for Boiler 19. Jack Daniel proposes to utilize proper design and good combustion practices to assure compliance with the BACT limits.

VI.2.2.6 CO_2e BACT Determination – Boilers

The Division proposes a BACT CO_2/CO_2e emission limit of 42,364 short tons during any period of 12 consecutive months for Boiler 18 and 36,312 short tons during any period of 12 consecutive months for Boiler 19. The Division proposes using proper equipment design and good combustion practices to assure compliance with this BACT limit.

Pursuant to TAPCR 1200-03-09-.01(4)(j)3, the following limits are established as BACT for CO_2/CO_2e emissions from the boilers:

- An emission limit of 42,364 short tons during any period of 12 consecutive months of CO_2/CO_2e for Boiler 18 and 36,312 short tons during any period of 12 consecutive months of CO_2/CO_2e for Boiler 19.

Compliance with these limits shall be assured by using natural gas as fuel, proper equipment design, and proper combustion practices.

VI.2.3 CO_2e BACT Analysis – Stationary Internal Combustion Engines (Emergency Fire Pump Engines)

As discussed earlier, the proposed expansion includes the installation of one emergency fire pump with stationary CI RICE at JDD Inc. and two emergency fire pumps with stationary CI RICE at JDD Prop. All three RICE will be identical in size. Emissions of CO_2/CO_2e from the RICE are the result of diesel combustion and are emitted through the exhaust stack.

VI.2.3.1 Identify Available Control Technologies

Jack Daniel identified the following options for control of CO_2/CO_2e emissions from the emergency CI RICE:

- Fuel selection
- Good Design and Operating Practices

VI.2.3.2 Evaluate Control Options for Technical Feasibility

Fuel Selection: Different fuels emit different amounts of CO_2 in relation to the energy they produce when burned. The amount of CO_2 produced when a fuel is burned is a function of the carbon content of the fuel. By selecting a low carbon fuel such as natural gas or diesel, CO_2 emissions are minimized.

Jack Daniel states that while natural gas represents a lower carbon fuel, diesel is the standard fuel type for emergency engine, given its ease of handling and storage, its suitability for use in emergency equipment with highly variable operations, and its prevalence of use in engine technology. Diesel is preferred over natural gas for emergency use engines because the storage of diesel fuel with the engine ensures fuel availability even during periods when natural gas may not be available. Therefore, Jack Daniel eliminated use of natural gas as a lower-emitting fuel option, stating that it would redefine the proposed source. Fuel selection was determined to be technically infeasible.

Good design and operating practices: The use of good design and operating practices to reduce CO_2/CO_2e emissions from CI RICE consists of minimizing startup and idling time, in addition to good air to fuel mixing to promote complete combustion. By operating a combustion unit as efficiently as possible, emissions of CO_2/CO_2e are minimized. Jack Daniel states that this is achieved in normal practice for emergency-use engines that, by design, only operate for maintenance purposes, readiness testing, and during emergency events.

VI.2.3.3 Rank Remaining Control Technologies by Control Effectiveness

The use of good design and operating practices are normal practice for emergency-use engines, therefore, reduction of CO_2/CO_2e emissions due to its use is not quantifiable.

VI.2.3.4 Evaluate Most Effective Controls

There are no significant economic, environmental, or energy impacts associated with the use of good design and operating practices.

VI.2.3.5 Select BACT

Jack Daniels proposed a BACT CO_2/CO_2e limit of 82.38 tons per year for each of the proposed emergency fire pump engines. Jack Daniel proposes to utilize good combustion, operating, and maintenance practices to assure compliance with this BACT limit.

VI.2.3.6 CO_2e BACT Determination – Stationary Internal Combustion Engines (Emergency Fire Pump Engines)

The Division proposes a BACT CO_2/CO_2e emission limit of 82.38 tons during any period of 12 consecutive months for each emergency fire pump engine. The Division proposes utilizing good combustion, operating, and maintenance practices to assure compliance with this BACT limit.

Pursuant to TAPCR 1200-03-09-.01(4)(j)3, the following limit is established as BACT for CO_2/CO_2e emissions from the emergency fire pump engines:

- An emission limit of 82.38 tons during any period of 12 consecutive months of CO_2/CO_2e for each proposed emergency fire pump engine.

Compliance with this limit shall be assured by utilizing good combustion, operating, and maintenance practices.

VII. <u>Air Quality Analysis</u>

VII.1 Introduction and Project Overview

This section of the PSD Analysis describes the assessment of ambient impacts resulting from the increase in emissions from the proposed permitting action (installation of new equipment and increased utilization of existing equipment). JDD Inc. distillery operations (JD1 and JD2) are located on what the company describes as Tract I of their extensive Lynchburg area operations. Tract I operations are located just east of the center of the City of Lynchburg. The distillery operations are currently permitted as Facility ID 64-0001 and operate under Title V permit 569520. The company also has distilled spirits processing, storage, and distribution facilities located at 1926 Fayetteville Highway and 3760 Fayetteville Highway, both also in Lynchburg, which are located just south of the intersection with Highway 50, and approximately 2 miles southwest and 4 miles southwest of the center of the City of Lynchburg, respectively. These two locations are described as Tract II and Tract III of the company's Lynchburg operations. The operations located on Tracts II and III, as well as similar operations located on Tract I (12 maturation warehouses and a single barrel bottling line), all identified as JDD Prop, are currently permitted as Facility ID 64-0013 and operate under Title V permit 572445. For the purposes of this NSR permit action, the processes that comprise JDD Inc. (64-0001) and JDD Prop (64-0013) are considered one stationary source.

The facility in Moore County is located at 280 Lynchburg Highway, which is about 64 miles south-southeast of downtown Nashville, Tennessee. The area is considered a rural Class II area. The closest Class I areas are the Sipsey Wilderness Area in north central Alabama (80 miles [mi] or 128 kilometers [km] southwest), the Cohutta Wilderness Area in northern Georgia (99 mi or 160 km east-southeast), Mammoth Cave National Park in central Kentucky (126 mi or 203 km north), the Joyce Kilmer-Slickrock Wilderness Area (134 mi or 215 km east), and Great Smoky Mountains National Park (134 mi or 215 km east), both located along the border between Tennessee and North Carolina. **Figure 2** shows the near-field within 1 km surrounding and centered on the JD2 facility (Tract I), with highlighted grid squares of 1 km distance.

Figure 2 – Jack Daniels Distillery at 280 Lynchburg Highway in Lynchburg Tennessee
Near field with 1 km UTM Grid overlay (Google Earth image where each green grid box is 1 km square)

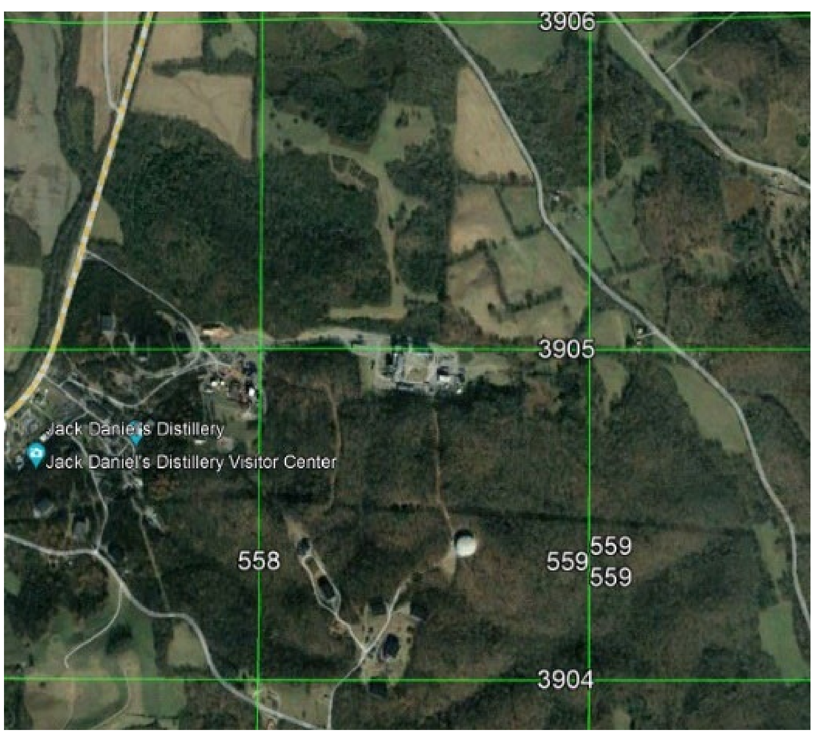


Table 5 (see Section IV) shows the net emissions increases from the project compared to the PSD applicability levels

(significant emission rate [SER]) for those pollutants emitted at the facility. Net emission increases from the project that are greater than the applicability level necessitate preliminary modeling analyses for those pollutants.

As required by the PSD regulations, after it is determined that a facility has significant impacts, a typical air quality impact assessment may include some, or all, of the following steps:

1. Determination of the Significant Impact Area (SIA), if any, for each pollutant with a Class II Significant Impact Level (SIL)
2. monitoring *de minimis* analysis for the proposed emission increase.

Also, when proposed new impacts are significant:

3. a comprehensive PSD increment consumption analysis for the surrounding Class II area, and any Class I areas close enough to have significant impacts,
4. a comprehensive Ambient Air Quality Standards impact analysis, and
5. an additional airshed impact assessment of the effects on Visibility, Soils, Vegetation, Associated Growth, and Nonattainment Areas, as well as Class I area Air Quality Related Values (AQRVs), if applicable.

The net emission increase of PM_{10} is below the significant emission rate (SER) of 15 tons/yr for PSD applicability, and it is also below the SER threshold for total or filterable PM of 25 tons/yr, while the net increase in $PM_{2.5}$ emissions are below the SER of 10 tons/yr. Also, since the net emission increases from the proposed expansion are below the respective SERs for NO_X and SO_2, significant secondarily formed $PM_{2.5}$ is not an anticipated air pollutant. Hence, all forms of PM may be considered below the SER thresholds for PM, which makes further PM analysis unnecessary for this permit application.

On the other hand, since the net emission increase in VOC is above the SER of 40 tons/yr for PSD applicability, EPA guidance recommends that proposed emission increases of both VOC and NO_X be used to estimate ozone impacts using Modeled Emission Rates for Precursors (MERPs), even though the emission rate for NO_X is below the SER (40 tons/yr).

Since this facility is only a major PSD source for VOC (emissions of CO_2e are not required to be addressed in the Air Quality Analysis, as CO_2e is not a criteria pollutant and there is no NAAQS for CO_2e), many of the typical ambient PSD analysis steps involving refined modeling with the latest version of the AERMOD dispersion model were unnecessary for this analysis. For this case, only an analysis using MERPs was necessary to evaluate the facility's impact on ozone creation from the sources proposed increases in VOC and NO_X emissions.

VII.2 Class II Modeling: Single-Source Impact Analysis

The following sections summarize the methodology used to evaluate the facility's air quality impacts in Class II areas. The analysis described was performed in accordance with the EPA "Guideline on Air Quality Models" (GAQM, contained in 40 CFR Part 51, Appendix W) (EPA, 2017a), the New Source Review (NSR) Workshop Manual (EPA, 1990), all applicable EPA clarification memorandums and guidance documents, and direction and regulatory guidance provided by the Tennessee Department of Environment and Conservation (TDEC) and EPA Region IV. The modeling analysis focused on demonstrating that the ambient impact of proposed emissions from the Jack Daniel expansion project will be in compliance with all applicable NAAQS and PSD Class II increments.

VII.2.1 Dispersion Modeling Methodology

Since VOC emissions are the target of this analysis, EPA's work to define a screening methodology to evaluate precursor emission impacts on ozone formation using EPA's work with photochemical grid modeling (PGM) methods was relied on for this analysis, instead of using the American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) gaussian dispersion model, which is typically used to determine predicted impacts in the Class II area surrounding the facility.

In December 2016, the EPA developed a simple screening methodology to estimate single source impacts on secondary pollutants which they described as Modeled Emission Rates for Precursors or MERPs. MERPs reflect levels of increased precursor emissions that are not expected to cause a significant contribution to ozone (O_3) for PSD applications. A MERP can relate:

- VOC emissions to O_3; and
- NO_X emissions to O_3.

MERPs modeling methods are intended to conservatively estimate secondary pollutant impacts, in what is also termed a Tier 1 screening analysis, to demonstrate ambient compliance before a more refined and resource intensive Tier 2 analysis, using detailed photochemical grid modeling, is necessary.

The EPA December 2016 guidance memorandum provided a framework on how to develop source-specific or site-specific MERPs. The guidance document did not endorse a specific MERP value, though it did provide illustrative MERPs from the EPA's modeling of two hypothetical sources in various locations across the United States.

EPA's initial 2016 MERPs guidance memorandum was finalized by EPA in April of 2019. Tennessee also provided more customized MERPs guidance for sources in Tennessee in November 2019[15]. According to EPA and Tennessee guidance, sources are required to estimate both the impacts of primarily emitted and secondarily formed pollutants as part of the PSD program. This is normally done using a Tier 1 MERPs analysis first, and if a Tier 1 analysis fails to demonstrate ambient compliance, a Tier 2 analysis using photochemical grid modeling techniques may be used, if necessary.

VII.2.2 Assessment of Secondary Pollutant Impacts

Significant Impact Levels (SILs) are used to determine if a new or modified stationary source may cause or contribute to a violation of the NAAQS or PSD increments. If a new or modified stationary source's predicted impacts are greater than or equal to the SIL values, then a cumulative impact analysis is required. A cumulative impact analysis considers other nearby sources within the Significant Impact Area (SIA) of the proposed or modified stationary source as well as existing ambient pollution background levels. Modeled impacts from a source of air pollution are considered significant if they equal or exceed the SIL values.

Since SILs are minimal predicted pollutant impact levels which contribute significantly to ambient concentrations, then any predicted impact less that a SIL from a proposed source or emissions increase can normally be considered to have an insignificant contribution to ambient impacts in the area surrounding the source. Hence, any predicted impact less than the SIL for a pollutant may be considered to have an insignificant contribution to air quality, and therefore demonstrates that the proposal is not expected to increase ambient concentrations above any corresponding NAAQS and PSD increments.

EPA's recommended SIL for ozone (O_3) is 1 part-per-billion (ppb)[16]. This value was used to conservatively demonstrate that the potential impacts from Jack Daniel's proposed net emissions increases do not cause or contribute to a violation of the NAAQS for ozone. The recommended SIL for O_3 was used to assess potential secondary ozone generation from the proposed VOC and NO_X emission increases due to the expansion project.

The precursors to ground-level ozone formation are VOC and NO_X, and any increase in either pollutant may result in an increase in O_3 levels. Since this proposed project exceeded the SER for VOC, Jack Daniel considered how the interaction between the proposed significant increase in VOC and their insignificant increase in NO_X would contribute to an increase in ozone downwind from the facility to comprehensively analyze O_3 impacts as a part of this assessment.

[15] Tennessee Guidance on the Use of EPA's MERPs to Account for Secondary Ozone and Fine Particulate Formation in Tennessee Under the New Source Review (NSR) Prevention of Significant Deterioration (PSD) Program, Permit Modeling Unit, Regulatory Development and Complex Sources Section, Air Permitting Program, APCD, November 22, 2019.

[16] EPA Memorandum: Guidance on Significant Impact Levels for Ozone and Fine Particles in the Prevention of Significant Deterioration Permitting Program, April 17, 2018

Tennessee's guidance regarding MERPs was used to assess the potential impact of secondarily formed O_3 which could be expected from the chemical interaction of Jack Daniel's proposed emissions increases of VOC and NO_X. In the MERPs analysis, emissions of VOC as well as NO_X were assessed using default MERPs for Tennessee and comparing the screening level impact to that of the SIL associated with the NAAQS for O_3.

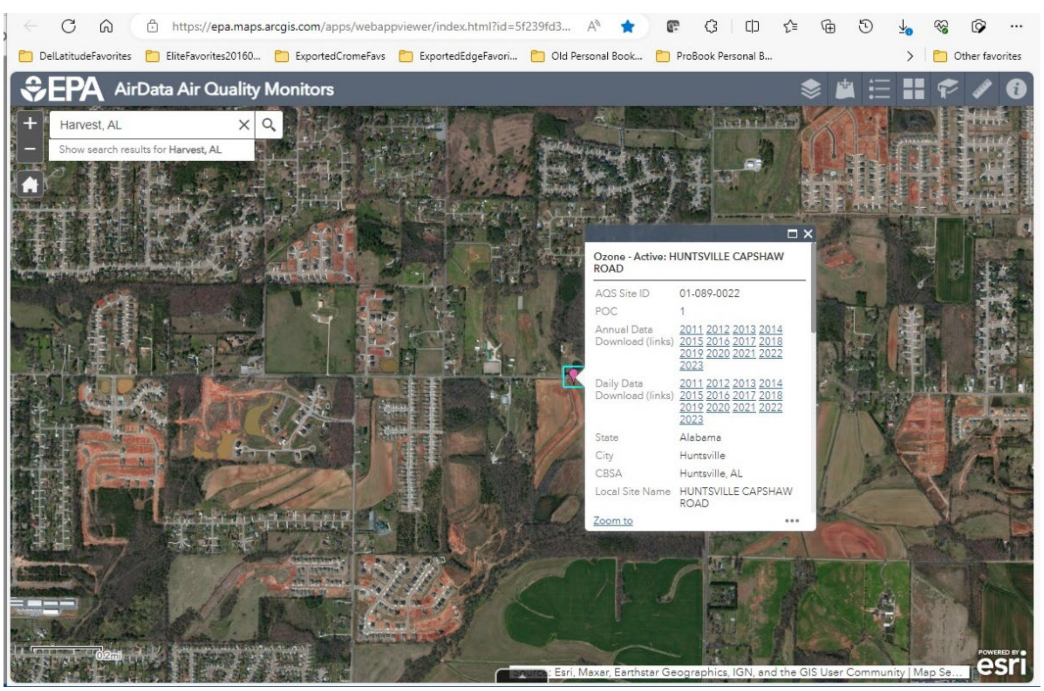
Since VOC emissions are evaluated "from the facility" versus being evaluated "from individual emission points" as with emissions of other pollutants, and since MERPs analyses are based on total facility emissions in tons per year rather than a breakout of individual source emissions and discharge parameters for each pollutant and for each modeled scenario, information for each emission point was unnecessary for this analysis. Therefore, the net emission increase summary provided in **Table 5** will suffice instead of a detailed description of emission sources and locations which would be pertinent to many other PSD analyses for criteria pollutants.

Finally, although it is only required for a comprehensive analysis (which is used whenever a SILs analysis fails to demonstrate compliance), representative O_3 background data for the MERPs analysis was found for the Lynchburg area, so the preconstruction monitoring requirement was waived based on the availability of representative data. Specifically, the Capshaw Road regional O_3 monitor (monitor ID: 01-089-0022, lat-lon:34.77240611857349, -86.75643434896216) located in Huntsville, Alabama, was deemed to be the closest and most representative of the project site, among the 8 monitors considered by Jack Daniel. Division staff agrees with this assessment.

The Huntsville Capshaw Road monitor is located approximately 67.7 km southwest of the Jack Daniel facilities. The areas around the Huntsville monitor and Lynchburg appear similar, although the populations of approximately 216,963 and 6,396, respectively, make the Huntsville Capshaw Road monitor much less rural than Lynchburg. Since a large component of O_3 background concentration can be attributed to vehicle use, the probable vehicle use around the more suburban Huntsville would likely make O_3 concentrations higher at the Huntsville Capshaw Road monitor than O_3 concentrations expected in the more rural Lynchburg area. This makes the comparison more conservative.

Design value data for the Huntsville Capshaw Road monitor is available for the previous twelve years (2011 – 2023). The Huntsville Capshaw Road monitor location is shown in **Figure 3**.

Figure 3 – Huntsville Capshaw Road Monitor Location
(from: Interactive Map of Air Quality Monitors | US EPA)



Additional information and data regarding the specific monitor are provided in **Table 19**.

Table 19: Representative Ozone Monitor Data		
Monitor Location	**Monitor ID**	**2020 Design Value (ppb)**
Huntsville Capshaw Road, 1130 Capshaw Road, Harvest, AL 35749	01-089-0022	58.8

VII.2.2.1 Ozone Assessment The TDEC MERPs guidance document was customized for sources in Tennessee by the TDAPC using the Photochemical Grid Modeling (PGM) results EPA used in their MERPs guidance. The secondary O_3 analysis provided by Jack Daniel relied upon the Tennessee guidance document and the net increases in VOC and NO_X emissions from the proposed expansion project (as shown in **Table 5**) to conservatively predict secondary O_3 impacts resulting from the synergy between VOC and NO_X emissions from the Jack Daniel facility. The default MERPs values provided in **Table 20** are the most conservative values for hypothetical sources and can be used for Tier 1 demonstrations in Tennessee without further justification.

Table 20: Default MERP Values (tons/yr) for Tennessee PSD Applications	
Precursor	**8-hour Ozone**
NO_X	156
VOC	1,542

VII.2.2.2 Single-Source Impact Assessment Results

This section will provide a summary of results for each significantly emitted pollutant and averaging time.

O_3 – The NAAQS for O_3 is 70 ppb, which equates to 140 µg/m^3 (8-hour average). The SIL for O_3 is 1 ppb. Since O_3 is a secondary pollutant formed in the atmosphere by precursor VOC and NO_X pollutants, the source was evaluated using single source MERPs methodology to determine if the source will cause or contribute to a violation of the NAAQS for O_3.

The secondary O_3 impact assessment is compared to the established SIL for Ozone of 1 ppb. The default MERPs values for Tennessee PSD applications (**Table 20**), are used in the following equation provided in the TDEC MERPs guidance document to determine if the emission increases from the proposed project at Jack Daniel will result in secondary impacts that are above the SIL.

$$\frac{EMIS\_NOx}{MERP\_NOx} + \frac{EMIS\_VOC}{MERP\_VOC} < 1$$

For the Class II significant impact analysis, the maximum predicted impact was compared to the only pertinent PSD Class II SIL, which was the SIL for O_3. The impacts for the Tier 1 secondary pollutant analysis scenario are summarized below.

Since the source does not emit primary ozone but emits both precursors to secondary ozone formation, the analysis centers around the two precursors, VOC and NO_X. Using the equation above, the MERPs values provided in **Table 20**, and the VOC and NO_X values provided in **Table 5**, the sum of the computed ratios for VOC and NO_X is greater than one as seen below.

$$\frac{35.25\ tons/yr\ of\ NOx}{156} + \frac{7{,}557.96\ tons/yr\ of\ VOC}{1{,}542} = 0.226 + 4.901$$

$$0.226 + 4.901 = 5.127$$

$$5.127 > 1$$

Since this conservative analysis estimated that the maximum predicted O_3 impact exceeded the SIL, a more comprehensive analysis of O_3 impacts was required. For this more comprehensive analysis, Jack Daniel expanded the ambient analysis further to use site-specific MERPs (as opposed to using the default MERPs) to determine whether the proposed expansion project will contribute to O_3 NAAQS violations.

As mentioned earlier, the EPA's MERPs methodology provides guidance on how to develop site-specific MERPs. The document provides illustrative MERPs from the EPA's modeling of two hypothetical sources in various locations across the United States. Further, the EPA provides examples of factors that may be used to describe the comparability of two different geographic areas (i.e., the PSD project area and a modeled hypothetical industrial source) including:

- Average and peak temperatures;
- Humidity;
- Terrain;
- Rural or urban nature of the area;
- Nearby local and regional sources of pollutants, and
- Ambient concentrations of relevant pollutants where available.

Table 21 lists a summary of the hypothetical source locations nearest the Lynchburg facility, as provided by Jack Daniel. The table also indicates Moore County (Lynchburg facility) for comparison against the hypothetical source locations. The nearest hypothetical source to the Lynchburg facility is located in Giles County, Tennessee. The Giles County source has the most similar average terrain to the Lynchburg facility out of any candidate hypothetical source location. Additionally, the post-project VOC and NO_X emissions for Moore County are relatively similar to Giles County, which is an indication that the project emissions will be subject to similar photochemical processes in the atmosphere. Finally, the Lynchburg facility is located in an overwhelmingly rural area and the Giles County hypothetical source location is similarly located in a predominately rural location. Therefore, JDD has selected the Giles County hypothetical source location for the ozone ambient impact analysis.

Table 21: MERP Hypothetical Source Location Comparison to Lynchburg Facility

Climate Zone	State	County	FIPS Code	Average Terrain[2] (m)	Max Nearby Urban[3] (%)	VOC Emissions[4] (tons/yr)	NO_X Emissions[4] (tons/yr)	Distance to Jack Daniel (km)
Ohio Valley	Tennessee	Moore	47127	301	1.4	12,320	291	--[1]
Ohio Valley	Tennessee	Giles	47055	248	8.4	15,706	1,459	47.5
Ohio Valley	Kentucky	Barren	21009	229	4.5	8,645	1,306	178.7
Ohio Valley	Tennessee	Anderson	47001	366	25.4	12,295	1,621	219.6
Southeast	Alabama	Tallapoosa	01123	183	10.0	24,179	1,217	275.7
Southeast	Alabama	Autauga	01001	96	25.0	21,108	1,520	307.4
Ohio Valley	Tennessee	Shelby	47157	79	42.4	34,591	11,702	330.1
Ohio Valley	Missouri	Pemiscot	29155	82	5.1	6,369	1,942	330.7

1. Blue line item in the table above represents the location of the Lynchburg facility, not a hypothetical source location modeled by EPA. Terrain, urban, and emissions data is provided here for comparison purposes.
2. For hypothetical source locations, average terrain within 50 km of the source was retrieved from EPA's MERPS View Qlik website. For the Lynchburg facility (Moore County), National Elevation Data (NED) was averaged within 50 km of the facility.
3. For hypothetical source locations, the maximum grid cell urban landcover fraction within 50 km of the source was retrieved from EPA's MERPs View Qlik website. For the Lynchburg facility (Moore County), the max nearby urban percentage was calculated based on 2021 National Land Cover Data and a 12-km grid cell centered on the Jack Daniel facility.
4. Emissions were queried from 2020 National Emissions Inventory (NEI) Data Retrieval Tool. The emissions from Moore County include the potential emissions associated with the planned expansion.

For a given hypothetical source location, EPA provides MERP values for sources with various release characteristics. Specifically, EPA provides MERPs for emission rates varying from 500 tons/yr to 3,000 tons/yr and for stack heights of either 10 meters (m) or 90 m. The project-related net emissions increase from the JD2 expansion project are 35 tpy of

NO_X and 7,554 tpy of VOC. As shown in **Table 22** below, Jack Daniel selected MERP values that are most representative of the projected net emission increases for NO_X and VOC. The VOC and NO_X emissions releases from the planned expansion are most accurately characterized as surface level (~10 meters) releases. As such, Jack Daniel selected the NO_X MERP value corresponding to the surface level release height. However, no surface level VOC MERP value was available for the hypothetical 3,000 tpy emission rate. As such, the VOC MERP value corresponding to a high-level release (~90-meters) was selected instead.

Table 22: Ozone 8-hour MERPs for Giles County, Tennessee

Precursor	State	County	Emissions (tons/yr)	Stack Height (m)	8-hour Ozone MERP (tons/yr)	8-hour Ozone Impact (ppb)	Proposed MERP Value?
NO_X	Tennessee	Giles	500	10	191	2.62	Yes
NO_X	Tennessee	Giles	500	90	156	3.21	No
NO_X	Tennessee	Giles	1,000	90	186	5.39	No
NO_X	Tennessee	Giles	3,000	90	290	10.36	No
VOC	Tennessee	Giles	500	10	13,595	0.04	No
VOC	Tennessee	Giles	1,000	10	11,564	0.09	No
VOC	Tennessee	Giles	1,000	90	11,797	0.08	No
VOC	Tennessee	Giles	3,000	90	4,789	0.63	Yes

Based on the selected MERP values and ozone background monitor, Jack Daniel compiled a MERP analysis to evaluate expected compliance with the O_3 8-hours NAAQS. A summary of the analysis is provided in **Tables 23** and **24**.

Table 23: Ozone SIL Analysis

Averaging Period	Precursor	Critical Air Quality Threshold (ppb)	Hypothetical Source[1] Modeled ER (tons/yr)	Hypothetical Source[1] Release Hight (m)	Hypothetical Source[1] Modeled Impact (ppb)	Ozone MERP (tons/yr)	Net Emissions Increase (tons/yr)	Ozone Project Impact (ppb)	SIL (ppb)
8-hour	NO_X	1.0	500	10	2.62	191	35.25	0.18	
	VOC	1.0	3,000	90	0.63	4,789	7,557.96	1.58	
							Total	**1.76**	**1.0**

1. Hypothetical source is located in Giles County, Tennessee from the spreadsheet referenced in the Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier I Demonstration Tool for Ozone and PM2.5 under the PSD Permitting Program, April 30, 2019. The hypothetical source emission rate represents the closes value available in the MERPs guidance to the expansion project net emission increases for NO_X and VOC.

Table 24: Ozone NAAQS Analysis

Averaging Period	Pollutant	Ozone Project Impact (ppb)	Ozone Background Concentration[1] (ppb)	Cumulative Ozone Impact (ppb)	NAAQS (ppb)
8-hour	Ozone	1.76	58.8	**60.56**	**70**

1. Three-year average for 2020-2022 of the annual 4^{th} highest daily maximum 8-hour concentrations measured at the Huntsville Capshaw Road monitor (01-089-0022).

Based on the more refined cumulate MERPs evaluation, the net emission increase of VOC from the proposed expansion at Jack Daniel would be expected to have an impact less than the NAAQS of 70 ppb for O_3. Therefore, the proposed expansion would not cause or contribute to a violation of the NAAQS.

VII.3 Class I Area Ambient Air Quality Impact Assessment

Class I areas are federally protected areas for which more stringent air quality standards apply to protect unique natural, cultural, recreational, and/or historic values. Analyses to support the PSD application for the Jack Daniel Class I area ambient air quality assessment include the following:

1. Determination of the facility potential pollutant emission quantities relative to PSD significant emission rates as defined in PSD rules (40 CFR 52.21).

2. Determination of the source location and distance within 300 km of any Class I area. Facility impacts at Class I areas located beyond 300 km from the PSD source are considered insignificant.

3. Determination of compliance with the Federal Land Manager (FLM) air quality related values (AQRVs) in addressing regional haze visibility and acidic deposition.

4. Determination of whether facility impacts at Class I areas located within 300 km from the PSD source are considered significant. If so, a determination of compliance with the EPA's NAAQS and PSD increments for those triggered criteria pollutants that have Class I area increments.

Jack Daniel completed the first two steps above by identifying which pollutant increases were significant and which Class I areas were within 300 km. The company submitted separate analyses to assess impacts on AQRVs and on the Class I SILs for the NAAQS and PSD increments in Appendix C and D of their application dated November 21, 2023 (and updated January 15, 2024, and March 5, 2024).

Correspondence between the Division and the FLMs indicated that there would be no significant impact to AQRVs in the Class I areas within 300 km of the source. The company's ambient analysis also demonstrates that there is no significant impact to Class I increment, or any of the NAAQS standards at these areas.

VII.3.1 Initial Screening Criteria for AQRVs

The Federal Land Managers (FLM) have the authority and responsibility to protect AQRVs in Class I areas, and to consider, in consultation with the permitting authority, whether a proposed major emitting facility will have an adverse impact on such values. Class I AQRVs for which PSD modeling is typically conducted include visibility impairment, O_3 effects on vegetation, and effects of sulfur and nitrogen deposition on soils and surface waters.

The FLMs developed an initial screening criteria, Q/D, to determine if sources greater than 50 km away from a Class I area need to perform any further Class I AQRV impact analyses. The Q/D ratio is calculated by summing the annual VOC, SO_2, NO_X, PM, and sulfuric acid (H_2SO_4) emissions (in tons per year, based on 24-hour maximum allowable emissions and adjusted as if the source were operated for 8,760 hours per year), then dividing by the distance (in kilometers) to the nearest Class I area. If the Q/D value is less than or equal to 10, the source is considered to have negligible impacts on AQRVs in the Class I area and no further analyses are needed.

The following Class I areas are located within 300 km of the facility (shown with the approximate distance to the facility listed):

- Sipsey National Wilderness Area (~ 120 km)
- Cohutta Wilderness Area (~ km)
- Mammoth Cave National Park (~ 203 km)
- Joyce Kilmer-Slickrock Wilderness Area (~213 km)
- Great Smoky Mountain National Park (~215 km)

The Class I AQRV analysis was prepared in accordance with the Federal Land Managers' Air Quality Related Values Work Group (FLAG) Phase I Report – Revised (2010) and utilizing the Q/D screening criteria described above. A summary of the AQRV analysis for the Class I Areas of concern can be found in **Table 25**.

The total of all AQRV-impairing emissions, which could impact Class I areas, including PM, SO_2, and NO_X, is approximately 40.7 tons/yr.

Table 25: Q/D ratios for Class I Areas within 300 km of Jack Daniel

Class I Area	D (km)	Q/D
Sipsey Wilderness Area	128	0.32
Cohutta Wilderness Area	160	0.25
Mammoth Cave National Park	203	0.20
Joyce Kilmer-Slickrock Wilderness Area	215	0.19
Great Smoky Mountain National Park	215	0.19

The Q/D ratios for each of the Class I Areas are well below the threshold of 10; therefore, it is presumed there are no adverse impacts from the proposed project, and no further analysis is required.

VII.3.2 Class I Increment Analysis

The proposed expansion at Jack Daniel does not result in a significant increase of PM/PM_{10}/$PM_{2.5}$ emissions, so an analysis of significant PM impacts vs. PM increments or PM NAAQS was not necessary. Additionally, since there is no Class I PSD increment established for VOC, any other increment analysis for this project would not be applicable.

VII.3.3 Class I NAAQS Analysis

Since the computed MERP ratio in the Class II area for the combination of NO_X and VOC is less than the O_3 NAAQS, the combined MERP ratio at the much greater distances to the Class I areas is assumed to be even less, making anticipated Class I O_3 impacts minimal as well.

VII.3.4 Class I Visibility Analysis

Facilities that emit PM, NO_X, and SO_2 can produce a plume that may be visible from within a Class I area. Typically, sources with high Q/D ratios within 300 km of a Class I area model emissions to assess visibility impacts. Typical models such as VISCREEN and PLUVUE-II are recommended for such analysis. With regards to this project, the only significant pollutant considered for visibility analysis would be VOC. However, emissions of VOC are not generally considered to present visibility concerns and are more of an issue related to VOC's contribution to secondary ozone development in Class I areas. The typical models, such as VISCREEN, do not include VOC data as a model input. Therefore, visibility modeling was not performed for emissions from the proposed expansion.

Additionally, data presented on the EPA website (Visibility in Mandatory Federal Class I Areas (1994–1998): A Report to Congress, November 2001) and included in Appendix D of the permit application dated November 21, 2023 (and updated January 15, 2024, and March 5, 2024), regarding visibility at the Sipsey National Wildlife Area, indicated that pollutants contributing to reduced visibility were primarily sulfates, organic carbon particles, nitrates, elemental carbon (soot), and crustal material, rather than VOC.

The VOC emissions from the proposed expansion are primarily composed of ethanol from the fermentation process and evaporation of the whiskey product as it moves through the charcoal mellowing process or while it's aged in barrels in the maturation warehouses. Based on the monitored data discussed earlier, these types of emissions should not contribute significantly to visibility impacts at the closest Class I area.

VIII. Additional Impacts Analysis

PSD applies to new major sources or major modifications at existing sources located in an area where the air quality is classified as attainment (or unclassifiable) with the NAAQS for pollutants emitted from the proposed project. Jack Daniel is a major source of VOC, a precursor to ozone. Jack Daniel is located in the city of Lynchburg, county of Moore in the state of Tennessee, which is designated attainment for ozone.

A PSD major source subject to PSD review is required to conduct an air quality analysis and an additional impacts analysis, among other requirements. Pursuant to 40 CFR §52.21(o), the additional impacts analysis consists of three parts: growth analysis, soils and vegetation impacts analysis, and visibility impairment analysis. Each of these analyses is addressed below.

VIII.1 Growth Analysis

Jack Daniel is located on the east side of Lynchburg, Tennessee. Lynchburg is in southern middle Tennessee, south-southeast of Nashville, west-northwest of Chattanooga, and nearly equidistant from Nashville and Chattanooga. The general vicinity outside of the industrial development is mainly agricultural pastureland and woodland with the highest concentration of residential development west of the plant in the heart of Lynchburg.

Jack Daniel estimates that the proposed plant expansion will generate approximately four new jobs due to the implementation of automated controls and current staffing at the JD2 facility; as such, the proposed expansion would not necessitate the development of new residential or commercial areas. The proposed expansion would be totally self-sufficient from a manufacturing standpoint. No support industry would locate to the Lynchburg area, nor would any existing industry be required to expand. From this information, it can be determined that growth associated with this expansion will have no noticeable effect on air quality.

VIII.2 Soils and Vegetation Impacts Analysis

Particulate Matter and Volatile Organic Compounds: The criteria for evaluating impacts on soils and vegetation is taken from A Screening Procedure for the Impacts of Air Pollution Sources on Plants, Soils, and Animals (EPA, 1980). According to EPA, for "…sources more than 10 km from any Class I areas, exemptions provide that no analysis of impairment need be done if emission increases are below specified limits." The specified limits referenced here are the SER values found at 40 CFR §52.21(b)(23)(i), shown in **Table 5**.

The Jack Daniel facility is located more than 10 km from any Class I areas in the region. The criteria air pollutants emitted by the proposed project include particulate matter (PM), PM_{10} and $PM_{2.5}$. The projected net emissions increase of PM, PM_{10}, and $PM_{2.5}$ are all below the significance levels found at 40 CFR §52.21(b)(23)(i).

The proposed net emission increase of VOC is above the significance value of 40 tons/yr, but screening concentrations are not available for VOC. VOC is a precursor to ozone and since ozone is identified as a regulated pollutant, EPA indicates that a screening concentration for O_3 is available. Additionally, a simple procedure for estimating the ozone impact of a single source is currently available through the use of MERPs.

Additionally, the secondary NAAQS were established at concentration levels below which no harmful effects to either soil or vegetation is expected[17]. As discussed above, EPA has developed a two-tiered evaluation for secondary ozone formation from VOC. As demonstrated above, the VOC emissions from the proposed project are well below the default TDEC MERPs value, indicating that no adverse impact to compliance with the ozone NAAQS is expected and indeed any impact would be insignificant since the impact was estimated to be below the SIL. As such, VOC emissions from the proposed expansion will not negatively affect soil and vegetation in the surrounding area.

Other than VOC, the proposed project will not emit any criteria pollutants above their respective significance thresholds.

[17] U.S. EPA, Office of Air Quality Planning and Standards, *New Source Review Workshop Manual (Draft)*, U.S. EPA, Research Triangle Park, NC, October 1990

VIII.3 Visibility Impairment Analysis

EPA prescribes the use of the methodologies described in its Workbook for Plume Visual Screening and Analysis (Revised) [October 1992 (EPA-454/R92-023)] for the purpose of conducting a visibility impairment analysis. A visibility impairment analysis is generally required to determine the impact on sensitive areas such as state parks, wilderness areas, airports, scenic sites, and overlooks.

The VISCREEN model is recommended for the Level 1 visibility screening. The VISCREEN model primarily considers increases in emissions of NO_2 and PM associated with a project. VISCREEN does not consider or calculate visibility impacts from ozone and does not include VOC data as a model input; therefore, visibility modeling was not performed for emissions from the proposed expansion, since VOC is the only criteria pollutant triggering PSD review.

Additionally, data presented on the EPA website (and included in Appendix D of the permit application dated November 21, 2023, and updated January 15, 2024, and March 5, 2024) regarding visibility at the Sipsey National Wildlife Area, indicates that pollutants contributing to reduced visibility were primarily sulfates, organic carbon particles, nitrates, elemental carbon (soot), and crustal material. The VOC emissions from the proposed expansion are primarily composed of ethanol from the fermentation process and evaporation of the whiskey product as it moves through the charcoal mellowing process. Based on the monitored data, these types of emissions should not contribute significantly to visibility impacts at any Class I areas.

New emissions, though not contributing to visibility impairment, can contribute to regional haze. Contributions to regional haze are primarily from fine particles in the air such as sulfur, nitrogen, organics, elemental carbon, and fugitive dust (soil). Emissions of VOC are not typically considered when determining impacts on regional haze. Therefore, given the type of emissions from this proposed project (VOC and CO_2) and the characteristics of the emissions (ethanol), in-depth regional haze calculations were unnecessary.

In consideration of the location of Jack Daniel with respect to the nearest Class I areas and type of pollutant emitted, no significant Class I visibility impacts are reasonably anticipated, and no in-depth visibility analysis was conducted as part of this PSD analysis.

IX. <u>Conclusions and Conditions of Approval</u>

Projected emissions of VOC from the proposed modification exceed the PSD significance level at maximum operating rate and maximum hours of operation. This major modification is subject to review under the regulations for the Prevention of Significant Deterioration contained in TAPCR 1200-03-09-.01(4). The proposed control technology and pollution prevention procedures satisfy the requirement to install BACT, as required by the PSD regulations. The BACT requirements are incorporated into the permit to be issued for the proposed modification. The proposed changes will not result in ambient impacts that would exceed any NAAQS or PSD Increments and will not cause or contribute to adverse impacts on AQRVs in nearby Class I areas.

After review of the information submitted with the PSD application, it is concluded that the proposed modification qualifies for approval, subject to the terms and conditions of the proposed PSD construction permit (Appendix A).

APPENDIX A

Application for Proposed PSD Construction Permit

A copy of the application was provided electronically to EPA.
An electronic copy of the application is available on the Air Pollution Control Permits & Inspections Data Viewer

APPENDIX B

Draft PSD Construction Permits 981970 and 982183

APPENDIX C

Emission Summaries for PSD Construction Permits 981970 and 982183

Emission Summary

Permit Number: 981970 and 982183 **Permit Status:** New ☒ Renewal ☐

Emission Source Number: 64-0001-00 and 64-0013-00

Previous Permit Number: Construction: ________ Operating: 569520 and 572445

Source Status: New ☐ Modification ☐ Expansion ☒ Relocation ☐

PSD ☒ NSPS ☐ NESHAP ☐

	Pounds/Hour			Tons/Year				Date of Data	*	Applicable Standard 1200-03-
	Actual	Potential	Allowable	Actual	Potential	Allowable[1]	Net Change			
Individual HAP						9.9		11/21/23 01/15/24		07-.07(2)
Total HAP						24.9		11/21/23 01/15/24		07-.07(2)

* Source of data: Application dated November 21, 2023, updated January 15, 2024, and March 5, 2024

PERMITTING ENGINEER: SK DATE: March 26, 2024

Emission Summary

Permit Number: 981970 **Permit Status:** New ☒ Renewal ☐

Emission Source Number: 64-0001-04

Previous Permit Number: Construction: ______ Operating: 569520

Source Status: New ☐ Modification ☐ Expansion ☐ Relocation ☐

PSD ☒ NSPS ☐ NESHAP ☐

	Pounds/Hour			Tons/Year				Date of Data	*	Applicable Standard 1200-03-
	Actual	Potential	Allowable	Actual	Potential	Allowable[1]	Net Change			
PM[2]	3.66	3.66	3.7	0.57	2.20	2.20	-	11/21/23 01/15/24		07-.01(5)
PM_{10}	3.66	3.66	3.7	0.53	2.20	2.20	--	11/21/23 01/15/24		09-.01(4)
$PM_{2.5}$	3.66	3.66	3.7	0.53	2.20	2.20	--	11/21/23 01/15/24		09-.01(4)
SO_2	0.03	0.08	2.1	0.14	0.34	0.34	-	11/21/23 01/15/24		14-.01(3)
NO_X	0.31	0.72	--	1.34	3.14	3.14	-	11/21/23 01/15/24		07-.07(2)
VOC	0.07	0.17	--	0.31	0.73	0.73	-	11/21/23 01/15/24		07-.07(2)
CO	0.52	1.23	--	2.28	5.38	5.38	-	11/21/23 01/15/24		07-.07(2)
Acetaldehyde[3]	0.26	0.26	--	0.04	0.04	--	--	11/21/23 01/15/24		

* Source of data: Application dated November 21, 2023, updated January 15, 2024, and March 5, 2024

1. Annual allowable emissions are based on combustion of 1,535 tons of wood during any period of 12 consecutive months and 9.97 MMscf of natural gas (projected actual based on facility calculations). The facility has requested to limit the amount of wood combusted to ensure the future emissions from this process do not cause this project to exceed the PSD thresholds for NO_X and CO.
2. PM allowable emissions would be based on TAPCR 1200-03-07-.03(1) (process weight rate), however the facility previously requested a limit of 0.02 grain (3.7 pounds per hour).
3. HAP emissions calculated using the emission factor from the EPA FIRE database for SCC 5-03-002-01.

PERMITTING ENGINEER: SK DATE: March 26, 2024

Emission Summary

Permit Number: 981970 **Permit Status:** New ☒ Renewal ☐

Emission Source Number: 64-0001-25

Previous Permit Number: Construction: ______ Operating: 569520

Source Status: New ☐ Modification ☒ Expansion ☒ Relocation ☐

PSD ☒ NSPS ☐ NESHAP ☐

	Pounds/Hour			Tons/Year				Date of Data	*	Applicable Standard 1200-03-
	Actual	Potential	Allowable	Actual	Potential	Allowable	Net Change			
Grain Receiving, Handling, Storage, and Milling/Mash Cookers										
PM[1]	0.59	0.81	0.81	2.57	3.56	3.56		11/21/23 01/15/24		07-.01(5)
PM_{10}	0.27	0.81	0.81	1.97	3.56	3.56		11/21/23 01/15/24		07-.01(5)
$PM_{2.5}$	0.05	0.14	0.14	1.67	0.61	0.61		11/21/23 01/15/24		09-.01(4)
Two new grain storage silos [identified as insignificant emission units]										
PM[2]	0.036	0.036	--	0.16	0.16	--		11/21/23 01/15/24		
PM_{10}	0.036	0.036	--	0.16	0.16	--		11/21/23 01/15/24		
$PM_{2.5}$	0.007	0.007	--	0.03	0.03	--		11/21/23 01/15/24		

* Source of data: Application dated November 21, 2023, updated January 15, 2024, and March 5, 2024

1. PM allowable emissions would be based on TAPCR 1200-03-07-.04(2) (0.25 gr/dscf), however the facility previously requested a limit of 0.003 grain/dscf (0.81 lbs/hr). The lbs/hr equivalent rate is higher than the rate of 0.58 lbs/hr listed in the current Title V permit MM2 to 569520) because two additional baghouses (M-7 and the grainery truck unloading filter) were added through operational flexibility in 2018, increasing the total dscfm from 22,400 to 31,600.

PERMITTING ENGINEER: SK DATE: March 26, 2024

Emission Summary

Permit Number: 981970 **Permit Status:** New ☒ Renewal ☐

Emission Source Number: 64-0001-26, 64-0001-33

Previous Permit Number: Construction: ______ Operating: 569520

Source Status: New ☐ Modification ☒ Expansion ☒ Relocation ☐

PSD ☒ NSPS ☐ NESHAP ☐

	Pounds/Hour			Tons/Year				Date of Data	*	Applicable Standard 1200-03-
	Actual	Potential	Allowable	Actual	Potential	Allowable	Net Change			
Fermentation Tanks D64 – D108 (existing and new)										
VOC				10.86	79.3	79.3		11/21/23 01/15/24		09-.01(4)(j)3
Fermentation Tanks D78 – D108 (new tanks only)										
CO_2e				12,154	88,724	88,724		11/21/23 01/15/24		09-.01(4)(j)3
Charcoal Mellowing Vats 1 – 98 (existing and new)										
VOC				67.62	495.0	495.0	--	11/21/23 01/15/24		09-.01(4)(j)3
Eleven Whiskey Process and Storage Tanks [identified as insignificant emission units] (new)										
VOC				9.46	10.38	10.38		11/21/23 01/15/24		09-.01(4)(j)3

* Source of data: Application dated November 21, 2023, updated January 15, 2024, and March 5, 2024

PERMITTING ENGINEER: SK DATE: March 26, 2024

Emission Summary

Permit Number: 981970 **Permit Status:** New ☒ Renewal ☐

Emission Source Number: 64-0001-28

Previous Permit Number: Construction: ______ Operating: 569520

Source Status: New ☐ Modification ☒ Expansion ☒ Relocation ☐

PSD ☒ NSPS ☒ NESHAP ☐

	Pounds/Hour			Tons/Year				Date of Data	*	Applicable Standard 1200-03-
	Actual[1]	Potential	Allowable	Actual[1]	Potential	Allowable	Net Change			
Boiler 16 (existing)										
$PM/PM_{10}/PM_{2.5}$	0.54	1.72	1.73	2.37	2.4	2.4	--	11/21/23 01/15/24		06-.01(7)
SO_2	0.04	37.04	37.15	0.18	0.20	0.20	--	11/21/23 01/15/24		14-.01(3)
NO_X	3.58	8.35	--	15.68	15.7	15.7	--	11/21/23 01/15/24		06-.01(7)
CO	6.01	6.01	--	26.3	26.3	26.3	--	11/21/23 01/15/24		06-.03(2)
VOC	0.39	0.39	--	1.71	1.71	1.71	--	11/21/23 01/15/24		09-.01(4)(j)3
Boiler 17 (existing)										
$PM/PM_{10}/PM_{2.5}$	0.54	1.72	1.73	2.37	2.4	2.4	--	11/21/23 01/15/24		06-.01(7)
SO_2	0.04	37.04	37.15	0.18	0.20	0.20	--	11/21/23 01/15/24		14-.01(3)
NO_X	3.58	8.35	--	15.68	15.7	15.7	--	11/21/23 01/15/24		06-.01(7)
CO	6.01	6.01	--	26.3	26.3	26.3	--	11/21/23 01/15/24		06-.03(2)
VOC	0.39	0.39	--	1.71	1.71	1.71	--	11/21/23 01/15/24		09-.01(4)(j)3
Boiler 18 (new)										
$PM/PM_{10}/PM_{2.5}$	0.04	0.04	0.1	0.18	0.18	0.4		11/21/23 01/15/24		06-.01(7)
SO_2	0.05	0.05	0.1	0.21	0.21	0.4		11/21/23 01/15/24		14-.01(3)
NO_X	2.96	2.96	--	12.86	12.86	12.96		11/21/23 01/15/24		06-.03(2)
CO	6.80	6.80	--	29.79	29.79	29.8		11/21/23 01/15/24		06-.03(2)
VOC	0.45	0.45	--	1.95	1.95	1.95		11/21/23 01/15/24		09-.01(4)(j)3
CO_2e	9,672	9,672	--	42,364	42,364	42,364		11/21/23 01/15/24		09-.01(4)(j)3

Boiler 19 (new)	Pounds/Hour			Tons/Year				Date of Data	*	Applicable Standard 1200-03-
	Actual[1]	Potential	Allowable	Actual[1]	Potential	Allowable	Net Change			
$PM/PM_{10}/PM_{2.5}$	0.04	0.04	0.1	0.18	0.18	0.4		11/21/23 01/15/24		06-.01(7)
SO_2	0.04	0.04	0.1	0.18	0.18	0.4		11/21/23 01/15/24		14-.01(3)
NO_X	2.54	2.54	--	11.1	11.1	11.1		11/21/23 01/15/24		06-.03(2)
CO	5.83	5.83	--	25.5	25.5	25.5		11/21/23 01/15/24		06-.03(2)
VOC	0.38	0.38	--	1.66	1.66	1.66		11/21/23 01/15/24		09-.01(4)(j)3
CO_2e	8,290	8,290	--	36,312	36,312	36,312		11/21/23 01/15/24		09-.01(4)(j)3

* Source of data: Application dated November 21, 2023, updated January 15, 2024, and March 5, 2024

1. Actual emissions are based on combustion of natural gas, the primary fuel for all four boilers.
2. Potential hourly emissions are based on combustion of the worst-case fuel for boilers 16 and 17. Potential annual emissions are based on the lesser of the combustion of the worst-case fuel or the permittee's requested limit for boilers 16 and 17. Boilers 18 and 19 are limited to combustion of natural gas only.

PERMITTING ENGINEER: SK DATE: March 26, 2024

Emission Summary

Permit Number: 981970 **Permit Status:** New ☒ Renewal ☐

Emission Source Number: 64-0001-36

Previous Permit Number: Construction: ________ Operating: ________

Source Status: New ☒ Modification ☐ Expansion ☐ Relocation ☐

PSD ☒ NSPS ☐ NESHAP ☐

	Pounds/Hour			Tons/Year				Date of Data	*	Applicable Standard 1200-03-
	Actual	Potential	Allowable	Actual	Potential	Allowable	Net Change			
VOC				9.58	17.9	17.9		11/21/23 01/15/24		07-.07(2)

* Source of data: Application dated November 21, 2023, updated January 15, 2024, and March 5, 2024

PERMITTING ENGINEER: SK DATE: March 26, 2024

Emission Summary

Permit Number: 982183 **Permit Status:** New ☒ Renewal ☐

Emission Source Number: 64-0013-03

Previous Permit Number: Construction: ________ Operating: 572445

Source Status: New ☐ Modification ☒ Expansion ☒ Relocation ☐

PSD ☒ NSPS ☐ NESHAP ☐

	Pounds/Hour			Tons/Year				Date of Data	*	Applicable Standard 1200-03-
	Actual	Potential	Allowable	Actual	Potential	Allowable	Net Change			
All Warehouses (118)										
VOC				10,607.0	16,869.4	16,869.4		11/21/23 01/15/24		09-.01(4)(j)3
New Warehouses (22)										
VOC				5,378.8	5,378.8	5,378.8		11/21/23 01/15/24		09-.01(4)(j)3

* Source of data: Application dated November 21, 2023, updated January 15, 2024, and March 5, 2024

PERMITTING ENGINEER: SK DATE: March 26, 2024

APPENDIX D

Public Notice

APPENDIX E

PSD Determination Calculations

APPENDIX F

Dispersion Modeling Correspondence

Message String 1

From: Ghazal Majidi-Weese - FS, Asheville - FS, NC <ghazal.majidi-weese@usda.gov>
Sent: Thursday, December 7, 2023 9:46 AM
To: Richard Smrz <Richard.Smrz@tn.gov>; Ming, Jaron E <jaron_ming@fws.gov>; 'Catherine_Collins@fws.gov' <Catherine_Collins@fws.gov>; kirsten_king@nps.gov; Pitrolo, Melanie - FS, NC <melanie.pitrolo@usda.gov>; Howard.Chirs@epa.gov; Gillam, Rick <gillam.rick@epa.gov>; Bae, Estelle (she/her/hers) <Bae.Estelle@epa.gov>; Shepard.Lorinda@epa.gov; Tim <Allen@fws.gov>
Cc: Haidar Alrawi <Haidar.Alrawi@tn.gov>; Michelle Oakes <Michelle.Oakes@tn.gov>
Subject: [EXTERNAL] PSD Permit Application FLM Notification RE: PSD Permit Application with Modeling Analysis for Jack Daniel's Distillery

December 7, 2023

Dear Richard:

Thank you for sending the modeling protocol for the proposed Jack Daniel's Distillery project near Lynchburg, Moore County, TN. Based on the emission rates and distances from the Class I areas listed below, the United States Department of Agriculture (USDA) anticipates that modeling would not show any significant additional impacts to Air Quality Related Values (AQRV) at the Class I areas administered by the USDA Forest Service. Therefore, we are not requesting that a Class I AQRV analysis be included in the PSD permit application. Our screening of this analysis does not indicate agreement with any AQRV analysis protocols or conclusions applicants may make independent of Federal Land Manager review. Please note that we are specifically addressing the need for an AQRV analysis for Class I areas managed by the USDA Forest Service.

Class I Area	**Distance to Facility (km)**	**Annual Emissions (tpy [1])**
Sipsey Wilderness	128	37
Cohutta Wilderness	160	37
Joyce Kilmer-Slickrock Wilderness	215	37

1. Sulfur dioxide, nitrogen oxides, total fine particulate matter (PM, PM_{10}, and $PM_{2.5}$), and sulfuric acid mist.

The state and/or EPA may have a different opinion regarding the need for a Class I increment analysis. Should the emissions or the nature of the project change significantly, please contact myself, Gisele Majidi-Weese (ghazal.majidi-weese@usda.gov, 828-337-2323) of the USDA Forest Service so that we might re-evaluate the project proposal.

Thank you for keeping us informed and involving the USDA Forest Service in the project review.

Regards,
Gisele

Gisele Majidi-Weese, PE (she/her)
Air Resource Specialist
Environmental Engineer

Forest Service
Southern Region

mobile: 828-337-2323
ghazal.majidi-weese@usda.gov

Remote from Asheville, NC
www.fs.fed.us

Caring for the land and serving people

From: Richard Smrz <Richard.Smrz@tn.gov>
Sent: Thursday, November 30, 2023 1:30 PM

To: Ghazal Majidi-Weese - FS, Asheville - FS, NC <ghazal.majidi-weese@usda.gov>; Tim <Allen@fws.gov>; Ming, Jaron E <jaron_ming@fws.gov>; 'Catherine_Collins@fws.gov' <Catherine_Collins@fws.gov>; John_Vimont@nps.gov; kirsten_king@nps.gov; melanie.petrolo@usda.gov; Howard.Chirs@epa.gov; Gillam, Rick <gillam.rick@epa.gov>; Bae, Estelle (she/her/hers) <Bae.Estelle@epa.gov>; Shepard.Lorinda@epa.gov
Cc: Haidar Alrawi <Haidar.Alrawi@tn.gov>; Michelle Oakes <Michelle.Oakes@tn.gov>
Subject: FW: PSD Permit Application with Modeling Analysis for Jack Daniel Distillery

As promised attached is the recently received modeling analysis for this VOC modification project for Jack Daniels Distillery in Lynchburg, TN.
Please note that the PSD analysis document by Trinity Consultants starts on page 84 of the portable document format (PDF) file, and their "SECONDARY OZONE AMBIENT IMPACT ANALYSIS" starts on page 118 of the PDF.

Please let me know if you have any questions or need anything else.

Thank you for your review and response.
Richard A. Smrz | Environmental Consultant

TN Department of Environment & Conservation

Air Pollution Control Division,
Regulatory Development and Complex Sources Section
Permit Modeling Program
Knoxville Environmental Field Office
3711 Middlebrook Pike, Knoxville, TN 37921-6538
Office: 865-594-5567, Receptionist: 865-594-6035
E-mail: Richard.Smrz@tn.gov

From: Richard Smrz
Sent: Monday, November 13, 2023 4:07 PM
To: ghazal.majidi-weese@usda.gov; 'Tim_Allen@fws.gov' <Tim_Allen@fws.gov>; Ming, Jaron E <jaron_ming@fws.gov>; 'Catherine_Collins@fws.gov' <Catherine_Collins@fws.gov>; john_vimont@nps.gov; kirsten_king@nps.gov; melanie.pitrolo@usda.gov; Howard, Chris <Howard.Chris@epa.gov>; Gillam, Rick <gillam.rick@epa.gov>; Bae.Estelle@epa.gov; Shepherd.Lorinda@epa.gov
Cc: Haidar Alrawi <Haidar.Alrawi@tn.gov>; Michelle Oakes <Michelle.Oakes@tn.gov>
Subject: FW: Modeling Protocol for Jack Daniel Distillery

Attached is an updated modeling protocol for this VOC modification project for Jack Daniels Distillery in Lynchburg, TN.
Please let me know if you have any questions or need anything else.
We will forward the permit application with ambient analysis when we receive it.

Thank you for your help and review,
Richard A. Smrz | Environmental Consultant

TN Department of Environment & Conservation

Air Pollution Control Division,
Regulatory Development and Complex Sources Section
Permit Modeling Program
Knoxville Environmental Field Office
3711 Middlebrook Pike, Knoxville, TN 37921-6538
Office: 865-594-5567, Receptionist: 865-594-6035
E-mail: Richard.Smrz@tn.gov

From: Haidar Alrawi <Haidar.Alrawi@tn.gov>
Sent: Thursday, November 9, 2023 10:15 AM
To: Richard Smrz <Richard.Smrz@tn.gov>
Cc: Michelle Oakes <Michelle.Oakes@tn.gov>
Subject: FW: Modeling Protocol for Jack Daniel Distillery

Richard, FYI.
Here is the modeling protocol for the JD2 expansion project.

From: Brian Otten <botten@trinityconsultants.com>
Sent: Wednesday, November 8, 2023 6:57 PM
To: Air.Pollution Control <Air.Pollution.Control@tn.gov>
Cc: Haidar Alrawi <Haidar.Alrawi@tn.gov>; Donna Clark <donna_clark@b-f.com>; Amy Spann <aspann@ensafe.com>; Donna Willis <donna_willis@b-f.com>; Maren Seibold <MSeibold@trinityconsultants.com>
Subject: [EXTERNAL] Modeling Protocol for Jack Daniel Distillery

***** This is an EXTERNAL email. Please exercise caution. DO NOT open attachments or click links from unknown senders or unexpected email - STS-Security. *****
To Whom It May Concern,

Please find attached the modeling protocol for the secondary ozone ambient impact analysis for the Jack Daniel Distillery (JDD). As detailed in the protocol, JDD is proposing to expand its whiskey manufacturing operations at the JD2 distillery, which is referenced in the current Title V Operating Permit Number 569520 with emission source ID 64-0001. JD2 is a stand-alone, fully functional distillery operation and separate from the original JDD Inc. distillery (referred to as JD1). Both JD1 and JD2 are included in Title V Operating Permit Number 569520. JDD Prop. is currently permitted separately under Title V Operating Permit Number 572445 with emission source ID 64-0013.

If you should have any questions pertaining to the protocol, please don't hesitate to reach out.

Best Regards,

Brian Otten
Senior Consultant

P 859.341.8100 x1808 **M** 812.584.8090
909 Wright's Summit Pkwy, Ste 230 | Covington, Kentucky 41011
Email: botten@trinityconsultants.com | File Drop

Trinity Consultants

Message String 2

From: Allen, Tim <tim_allen@fws.gov>
Sent: Wednesday, December 6, 2023 11:33 AM
To: Richard Smrz <Richard.Smrz@tn.gov>; Salazer, Holly <Holly_Salazer@nps.gov>
Subject: Fw: [EXTERNAL] PSD Permit Application with Modeling Analysis for Jack Daniel Distillery in Lynchburg, TN

Hi Richard,

Thank you for the modeling analysis. I don't see a Class I area identified for impact and we don't use VOC emissions as part of our typical Q/d screening. I can screen this source out for FWS air quality permitting review. If you make significant changes, please reach out again.

FYI... John Vimont retired from the NPS at the end of 2022. I am forwarding this to Holly Salazer. She is the NPS air permit branch manager and can identify an updated contact for.

Happy Holidays to you and family!
Tim

From: Richard Smrz <Richard.Smrz@tn.gov>
Sent: Wednesday, December 6, 2023 9:19 AM
To: john_vimont@nps.gov <john_vimont@nps.gov>; Allen, Tim <tim_allen@fws.gov>
Subject: [EXTERNAL] PSD Permit Application with Modeling Analysis for Jack Daniel Distillery in Lynchburg, TN

This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.

As promised attached is the recently received modeling analysis for this VOC modification project for Jack Daniels Distillery in Lynchburg, TN.
Please note that the attached portion of the application contains the PSD analysis document by Trinity Consultants
This analysis is part of the larger portable document format (PDF) application by EnSafe which was too large to e-mail in its entirety (>20 MB). If you wish to see the remaining portion of the application, please let me know and I will be happy to send it to you.

Please let me know if you have any questions or need anything else.

Thank you for your review and response.
Richard A. Smrz | Environmental Consultant

TN Department of Environment & Conservation

Air Pollution Control Division,
Regulatory Development and Complex Sources Section
Permit Modeling Program
Knoxville Environmental Field Office
3711 Middlebrook Pike, Knoxville, TN 37921-6538
Office: 865-594-5567, Receptionist: 865-594-6035
E-mail: Richard.Smrz@tn.gov

Please visit https://www.tn.gov/environment/program-areas/apc-air-pollution-control-home.html for information on our mission to maintain air resources in Tennessee.

To see the recent air quality in your area and check out the latest air quality forecast go to: http://www.airnow.gov/ . You can also subscribe to http://enviroflash.info/signup.cfm with the local forecast. Enjoy the forecast and pass it on to anyone who is sensitive to poor air quality.

We also invite you to visit us on-line at: https://www.tn.gov/environment/about-tdec/contact-tdec-customer-service-form.html to give us feedback using our TDEC Customer Survey. We value your opinion.

From: Richard Smrz
Sent: Monday, November 13, 2023 4:07 PM
To: ghazal.majidi-weese@usda.gov; 'Tim_Allen@fws.gov' <Tim_Allen@fws.gov>; Ming, Jaron E <jaron_ming@fws.gov>; 'Catherine_Collins@fws.gov' <Catherine_Collins@fws.gov>; john_vimont@nps.gov; kirsten_king@nps.gov; melanie.pitrolo@usda.gov; Howard, Chris <Howard.Chris@epa.gov>; Gillam, Rick <gillam.rick@epa.gov>; Bae.Estelle@epa.gov; Shepherd.Lorinda@epa.gov
Cc: Haidar Alrawi <Haidar.Alrawi@tn.gov>; Michelle Oakes <Michelle.Oakes@tn.gov>
Subject: FW: Modeling Protocol for Jack Daniel Distillery

Attached is an updated modeling protocol for this VOC modification project for Jack Daniels Distillery in Lynchburg, TN.
Please let me know if you have any questions or need anything else.
We will forward the permit application with ambient analysis when we receive it.

Thank you for your help and review,
Richard A. Smrz | Environmental Consultant

TN Department of Environment & Conservation

Air Pollution Control Division,
Regulatory Development and Complex Sources Section
Permit Modeling Program
Knoxville Environmental Field Office
3711 Middlebrook Pike, Knoxville, TN 37921-6538
Office: 865-594-5567, Receptionist: 865-594-6035
E-mail: Richard.Smrz@tn.gov

Message String 3

From: Howard, Chris <Howard.Chris@epa.gov>
Sent: Tuesday, December 12, 2023 7:37 AM
To: Richard Smrz <Richard.Smrz@tn.gov>
Cc: Shepherd, Lorinda (she/her/hers) <Shepherd.Lorinda@epa.gov>; Gillam, Rick <gillam.rick@epa.gov>; Lusky, Katy <Lusky.Kathleen@epa.gov>; Ferrando, Emily (she/her/hers) <Ferrando.Emily@epa.gov>
Subject: [EXTERNAL] RE: PSD Permit Application with Modeling Analysis for Jack Daniel Distillery

Richard,

We have concluded our review of the secondary ozone impact analysis for the proposed Jack Daniels modification project, and we have no comments. It should be noted that these comments do not include any comments that the EPA Region 4 ARD Permits Section may have regarding permitting or BACT issues.

-Chris

Christopher M. Howard
Regional Meteorologist
US EPA Region 4 - Atlanta
404/562-9036
Howard.chris@epa.gov

From: Richard Smrz <Richard.Smrz@tn.gov>
Sent: Thursday, November 30, 2023 1:53 PM
To: Howard, Chris <Howard.Chris@epa.gov>
Cc: Shepherd, Lorinda (she/her/hers) <Shepherd.Lorinda@epa.gov>; melanie.pitrolo@usda.gov
Subject: FW: PSD Permit Application with Modeling Analysis for Jack Daniel Distillery

Caution: This email originated from outside EPA, please exercise additional caution when deciding whether to open attachments or click on provided links.

As promised attached is the recently received modeling analysis for this VOC modification project for Jack Daniels Distillery in Lynchburg, TN.
Please note that the PSD analysis document by Trinity Consultants starts on page 84 of the portable document format (PDF) file, and their "SECONDARY OZONE AMBIENT IMPACT ANALYSIS" starts on page 118 of the PDF.

Please let me know if you have any questions or need anything else.

Thank you for your review and response.
Richard A. Smrz | Environmental Consultant

TN Department of Environment & Conservation

Air Pollution Control Division,
Regulatory Development and Complex Sources Section
Permit Modeling Program
Knoxville Environmental Field Office
3711 Middlebrook Pike, Knoxville, TN 37921-6538
Office: 865-594-5567, Receptionist: 865-594-6035
E-mail: Richard.Smrz@tn.gov

Please visit https://www.tn.gov/environment/program-areas/apc-air-pollution-control-home.html for information on our mission to maintain air resources in Tennessee.

To see the recent air quality in your area and check out the latest air quality forecast go to: http://www.airnow.gov/ . You can also subscribe to http://enviroflash.info/signup.cfm with the local forecast. Enjoy the forecast and pass it on to anyone who is sensitive to poor air quality.

We also invite you to visit us on-line at: https://www.tn.gov/environment/about-tdec/contact-tdec-customer-service-form.html to give us feedback using our TDEC Customer Survey. We value your opinion.

From: Richard Smrz
Sent: Monday, November 13, 2023 4:07 PM
To: ghazal.majidi-weese@usda.gov; 'Tim_Allen@fws.gov' <Tim_Allen@fws.gov>; Ming, Jaron E <jaron_ming@fws.gov>; 'Catherine_Collins@fws.gov' <Catherine_Collins@fws.gov>; john_vimont@nps.gov; kirsten_king@nps.gov; melanie.pitrolo@usda.gov; Howard, Chris <Howard.Chris@epa.gov>; Gillam, Rick <gillam.rick@epa.gov>; Bae.Estelle@epa.gov;

Shepherd.Lorinda@epa.gov
Cc: Haidar Alrawi <Haidar.Alrawi@tn.gov>; Michelle Oakes <Michelle.Oakes@tn.gov>
Subject: FW: Modeling Protocol for Jack Daniel Distillery

Attached is an updated modeling protocol for this VOC modification project for Jack Daniels Distillery in Lynchburg, TN.
Please let me know if you have any questions or need anything else.
We will forward the permit application with ambient analysis when we receive it.

Thank you for your help and review,
Richard A. Smrz | Environmental Consultant

TN Department of Environment & Conservation

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APPENDIX G

Draft Permit Correspondence

APPENDIX H

Response to EPA/Public Comments on Draft Permits