NORTH CAROLINA DIVISION OF AIR QUALITY

Application Review

Issue Date:

Region: Fayetteville Regional Office
County: Anson
NC Facility ID: 0400043
Inspector's Name: Joshua Loehman
Date of Last Inspection: 02/15/2023
Compliance Code: 3 / Compliance - inspection

Facility Data

Applicant (Facility's Name): Triangle Brick Company - Wadesboro Brick Manufacturing Plant

Facility Address:
Triangle Brick Company - Wadesboro Brick Manufacturing Plant
2960 US Hwy 52 North
Wadesboro, NC 28170

SIC: 3251 / Brick and Structural Clay Tile
NAICS: 327121 / Brick and Structural Clay Tile Manufacturing

Facility Classification: Before: Title V **After:** Title V
Fee Classification: Before: Title V **After:** Title V

Permit Applicability (this application only)

SIP: 02D .0515, .0516, .0521, .0524, .1100, .1111
NSPS: 40 CFR 60 OOO and UUU
NESHAP: 02D .0317 (MACT Avoidance)
PSD: NA
PSD Avoidance: 02D .0317 (for SO_2)
NC Toxics: 02D .1100; 02Q .0711,
112(r): NA
Other: 02D .1806

Contact Data

Facility Contact	Authorized Contact	Technical Contact
Alex Walls Plant Manager (704) 690-0802 2960 US Hwy 52 North Wadesboro, NC 28170	Howard Brown, Jr. President & CEO (919) 544-1796 6523 NC Highway 55 Durham, NC 27713	Howard Brown, Jr. President & CEO (919) 544-1796 6523 NC Highway 55 Durham, NC 27713

Application Data

Application Number: 0400043.22A
Date Received: 12/06/2022
Application Type: Renewal
Application Schedule: TV-Renewal

Existing Permit Data
Existing Permit Number: 08179/T11
Existing Permit Issue Date: 07/13/2018
Existing Permit Expiration Date: 06/30/2023

Total Actual emissions in TONS/YEAR:

CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
2021	33.01	13.87	7.03	63.49	41.89	2.21	0.6645 [Hydrogen chloride (hydrochlori]
2020	28.62	12.02	5.99	55.05	36.33	1.92	0.5762 [Hydrogen chloride (hydrochlori]
2019	30.40	12.77	6.15	58.47	38.59	2.05	0.6119 [Hydrogen chloride (hydrochlori]
2018	30.26	12.71	6.19	58.20	38.42	2.04	0.6092 [Hydrogen chloride (hydrochlori]
2017	28.42	11.89	5.76	53.90	35.57	1.89	0.5638 [Hydrogen chloride (hydrochlori]

Review Engineer: Eric L. Crump, P.E.

Review Engineer's Signature: **Date:**

Comments / Recommendations:
Issue 08179/T12
Permit Issue Date:
Permit Expiration Date:

1. Purpose of Application

Triangle Brick Company - Wadesboro Brick Manufacturing Plant (hereinafter referred to as Triangle Brick) is a brick manufacturing plant located in Wadesboro, Anson County, North Carolina. The facility currently operates under Title V Permit No. 08179T11 with an expiration date of June 30, 2023. Triangle Brick has applied for renewal of their Title V air quality permit. The renewal application was received on December 6, 2022, or at least six months prior to the expiration date as required by General Condition 3.K of the current permit. Therefore, the existing permit shall not expire until the renewal permit has been issued or denied. All terms and conditions of the existing permit shall remain in effect until the renewal permit has been issued or denied.

Triangle Brick is not requesting any changes to their air permit in permit renewal application No. 0400043.22A.

2. Facility Description

Triangle Brick manufactures a variety of bricks using a mixture of clay and shale mined on-site. The clay and shale are trucked uphill from the mine to the facility where they are fed through a sizing grate. Smaller material passes via conveyors to a storage shelter; oversized material is crushed to reduce the size before heading to the storage shelter. The stored material is fed into a scalper (oversized material is sent to a hammer mill. The material, which is now the consistency of cornmeal is then conveyed to storage silos. From the silos, the material is sent through two pug mills in series where it is mixed with water into an even consistency; the material is then extruded into a slab, treated with a decorative coating, cut into bricks, and transported to the dryer and two tunnel-style brick kilns. After two days of firing, the bricks are packaged by robot into skid loads and stored for purchase and shipment. Each kiln has a dry lime adsorber (DLA) for control of hydrogen fluoride (HF) and hydrogen chloride (HCl) emissions.

3. Application Chronology

July 13, 2018	Division of Air Quality (DAQ) issues Permit No. 08179T11 to Triangle Brick as a Title V renewal.
December 6, 2022	DAQ receives permit renewal application.
June 8, 2023	Draft permit and review sent for DAQ supervisory review.
June 13, 2023	Email from E. Crump, DAQ to K. Eldridge, ERM and Howard Brown, Triangle Brick requesting information regarding calculation of HAP emissions (HF and HCl) from the brick kilns.
June 16, 2023	Fayetteville Regional Office (FRO) issues P&O review for Triangle Brick facility.
June 19, 2023	Phone conversation between K. Eldridge, ERM and E. Crump, DAQ to discuss calculation of HAP emissions from the brick kilns. K.Eldridge sends email to E. Crump with 2016 stack test and 2021 emissions inventory to clarify emissions calculation methodology used by Triangle Brick.
June 27, 2023	DAQ supervisor provides comments on draft permit and review.
June 27, 2023	DAQ sends draft permit to Triangle Brick, Stationary Source Compliance Branch (SSCB) and FRO for review and comment.

July 7, 2023	DAQ receives comments on draft permit from SSCB.
July 11, 2023	DAQ receives comments on draft permit from FRO.
xxx	Permit renewal notice published, 30-day public notice and comment period begins, and 45-day EPA comment period begins.
xxx	30-day public notice and comment period ends.
xxx	45-day EPA comment period ends.

4. Changes to Permit and Title V Equipment Editor (TVEE) Discussion

The following table summarizes changes made to the current Triangle Brick permit in this permit renewal:

Page No.	Section	Description of Changes
Cover and throughout	---	• Updated all dates and permit revision numbers • Updated all limits/standards summary tables to current standard format • Changed all citations of 15A NCAC 2D to 15A NCAC 02D • Changed all citations of 15A NCAC 2Q to 15A NCAC 02Q
Insignificant Activities List	Attachment	Moved to Section 3 of permit
1	Cover page	• Added due date for submitting an application for permit renewal • Added NAICS code
2	Table of Contents	Changed Section 3 from "General Conditions" to "Insignificant Activities per 15A NCAC 02Q .0503(8)" Added new Section 4, "General Conditions"
3	List of Acronyms	Relocated here (formerly last page of permit)
8	2.1 A.1	Updated section to reflect the most current stipulations for 15A NCAC 02D .0515
10	2.1 A.3.c	Updated monitoring section to reflect the most current stipulations for 15A NCAC 02D .0521
11	2.1 A.4 2.1 A.4.b 2.1 A.4.e	Updated section to reflect the most current stipulations for 15A NCAC 02Q .0317 Added requirement to test one of the brick kilns within 180 days of permit renewal to determine emission factors for HF and HCl Added "or if the grade of limestone is not the same grade of limestone and/or from the same source as was used during the performance test" to end of paragraph.
12	2.1 A.4.k	Added equations with emission factors for calculating emissions of HF and HCl. Also added new subparagraph iv, requiring submittal of permit application to revise HAP emission factors after testing.
13	2.1 A.4.l	Removed requirement to keep record of applicability determination on site. Re-lettered paragraph m (Reporting) as paragraph l.
14	2.1 B.2	Updated section to reflect the most current stipulations for 15A NCAC 02D .0524 (40 CFR Part 60, Subpart UUU)

Page No.	Section	Description of Changes
15	2.1 B.2.e.iv(B) and v 2.1 B.2.f	Included option (from EPA Region IV) to use test Method 22 in lieu of Method 9 to determine opacity from dryer emissions
17	2.1 C.1	Updated section to reflect the most current stipulations for 15A NCAC 02D .0524 (40 CFR Part 60, Subpart OOO)
19	2.1 D.1	Updated section to reflect the most current stipulations for 15A NCAC 02D .0524 (40 CFR Part 60, Subpart OOO)
20	2.1 D.1.h	Inserted logbook recordkeeping requirement for the NSPS Subpart OOO-affected clay grinding plant. The reporting requirement was renumbered as Section 2.1 D.1.i.
22	2.1 E.1.h	Inserted logbook recordkeeping requirement for the loam/sawdust preparation area. The reporting requirement was renumbered as Section 2.1 E.1.i.
24	2.1 F.1.h	Inserted logbook recordkeeping requirement for the NSPS Subpart OOO-affected secondary clay grinding plant. The reporting requirement was renumbered as Section 2.1 F.1.i.
25	2.2 A.1	Updated section to reflect the most current stipulations for 15A NCAC 02D .1806
28	2.2 B.1.e	Deleted first sentence (repetitive).
31	3	Section 3 is now "Insignificant Activities per 15A NCAC 02Q .0503(8)"
32-40	4	Updated General Conditions to Version 6.0 dated January 7, 2022

No changes were required to the TVEE due to this renewal.

5. Description of Changes and Estimated Emissions

Triangle Brick has not reported the addition, removal, or modification of any sources at the facility. No changes in emissions are expected.

6. Regulatory Review

Triangle Brick is subject to the following state regulations, in addition to the requirements in the General Conditions:

15A NCAC 02D .0515: Particulates from Miscellaneous Industrial Processes. This rule addresses emissions of particulate matter from stacks, vents, or outlets for any industrial process for which no other particulate emission control standards apply. For such processes, the allowable emission rates shall not exceed the level calculated using one of the following equations, as appropriate for the process rate of the source:

$E = 4.10(P)^{0.67}$ for process rates less than or equal to 30 tons per hour (ton/hr)
$E = 55.0(P)^{0.11} - 40$ for process rates greater than 30 ton/hr

Where:
E = allowable emissions limit for particulate matter in pounds per hour (lb/hr), and

P = process rate in ton/hr (i.e., the total weight per hour of all materials introduced into a specific process that may cause any emission of particulate matter. Liquid and gaseous fuels and combustion air are not included in the process weight).

The two natural gas/No. 2 fuel oil/No. 6 fuel oil-fired brick tunnel kilns (K-1 and K-2) are subject to this regulation. Triangle Brick is required to perform semiannual visual inspections of the kilns' emissions ductwork systems for leaks, holes, or disrepair, and semiannual visual inspections of the kilns' fuel combustion systems. The inspection results along with records on any corrective actions taken shall be kept in a logbook on site. In addition, a summary report of monitoring and recordkeeping activities shall be submitted semi-annually. All instances of deviations from the requirements of this permit must be clearly identified.

This permit renewal does not affect the status of this facility concerning 02D .0515. Continued compliance is expected.

15A NCAC 02D .0516, Sulfur Dioxide Emissions from Combustion Sources. Under this regulation, emissions of sulfur dioxide (SO_2) from any source of combustion discharged from any vent, stack, or chimney shall not exceed 2.3 pounds of SO_2 per million British thermal units (MMBtu) input. SO_2 formed by the combustion of sulfur in fuels, wastes, ores, and other substances shall be included when determining compliance with this regulation.

The two natural gas/No. 2 fuel oil/No. 6 fuel oil brick tunnel kilns (K-1 and K-2) and the natural gas-fired rotary coatings dryer (SD-1) are subject to this regulation. No monitoring or recordkeeping is required for SO_2 emissions from the combustion of natural gas/No. 2 fuel oil in these sources. However, since No. 6 fuel oil has a higher sulfur content than the other two fuels, the following requirements extend to both kilns onsite:

- No more than 216 of the 310 burners in each kiln shall be fired with No. 6 fuel oil at one time, because the preheat section (94 burners) of each kiln can only be fired with natural gas and No. 2 fuel oil.
- The sulfur content of any No. 6 fuel oil received and burned in the brick tunnel kilns shall not exceed 2.1 percent by weight.
- Triangle Brick must monitor the sulfur and Btu content of the No. 6 fuel oil using fuel oil supplier certification for each shipment received, and record the fuel oil supplier certifications in a logbook (written or electronic format) on a quarterly basis, including the following information:
  - name of the fuel oil supplier;
  - maximum sulfur content of the fuel oil received during the quarter;
  - method used to determine the maximum sulfur content of the fuel oil; and
  - a certified statement signed by the responsible official that the records of fuel oil supplier certification submitted represent all of the No. 6 fuel oil fired during the period.

This permit renewal does not affect the status of this facility concerning 02D .0516. Continued compliance is expected.

15A NCAC 02D .0521, Control of Visible Emissions. This regulation establishes opacity limits for visible emissions generated by fuel burning operations and industrial processes where visible emissions are expected to occur (except during startups, shutdowns, and malfunctions approved according to procedures in 15A NCAC 02D .0535, Excess Emissions Reporting and Malfunctions). The regulation establishes opacity limits for visible emissions from sources based on the date the sources were manufactured.

The two natural gas/No. 2 fuel oil/No. 6 fuel oil-fired brick tunnel kilns (K-1 and K-2) are subject to this regulation. Because the kilns at the Triangle Brick facility were built after July 1, 1971, this regulation limits them to 20 percent opacity averaged over a six-minute period. The six-minute averaging periods may not exceed 20 percent more than once in any hour, and not more than four times in any 24-hour period. In no event shall the six-minute average exceed 87 percent opacity.

Triangle Brick must observe the emission points for each kiln once a month for any visible emissions above normal. If visible emissions are observed to be above normal, Triangle Brick must either act appropriately to correct the above-normal emissions as soon as practicable and within the monitoring period and record the action taken; or demonstrate that the percent opacity is below the established limit in accordance with 15A NCAC 02D .2610 (Method 9). The results of the monitoring, corrective actions, or testing shall be maintained in a logbook (written or electronic format) on-site and made available to an authorized representative upon request.

This permit renewal does not affect the status of this facility concerning 02D .0521. Continued compliance is expected.

15A NCAC 02D .0524, New Source Performance Standards – see Section 8 of this review.

15A NCAC 02D .1100, Control of Toxic Air Pollutants – see Section 12 of this review.

15A NCAC 02D .1111, Maximum Achievable Control Technology – see Section 7 of this review.

15A NCAC 02D .1806, Control and Prohibition of Odorous Emissions **(State Enforceable Only)**. This rule, which applies facility-wide and is state-enforceable only, provides for the control and prohibition of objectionable odorous emissions. The rule requires Triangle Brick to implement management practices or install and operate odor control equipment sufficient to prevent odorous emissions from causing or contributing to objectionable odors beyond the facility's boundary.

The permit requires that if the Director of DAQ should find that Triangle Brick is emitting an objectionable odor, and issues a written notice of the requirement in 15A NCAC 02D .1806(h) to implement maximum feasible controls, Triangle Brick shall do the following by the dates specified:

- within 180 days of receiving notice:
    - complete the determination process outlined in 15A NCAC 02D .1807,
    - submit to DAQ a completed maximum feasible control determination process, a permit application for maximum feasible controls and a compliance schedule.
- within 18 months of receiving notice, install and begin operating maximum feasible controls.

This permit renewal does not affect the status of this facility concerning 02D .1806. Continued compliance is expected.

15A NCAC 02Q .0711, Emission Rates Requiring a Permit. See Section 12 of this review.

15A NCAC 02Q .0317, Avoidance Conditions. The Triangle Brick permit includes avoidance conditions for the following regulations:

- 02D .0530, Prevention of Significant Deterioration - see Section 9 of this review.
- 02D .1111, Maximum Achievable Control Technology – see Section 7 of this review.

Note: The permit has been updated to reflect the most current stipulations for all applicable regulations.

7. National Emission Standards for Hazardous Air Pollutants (NESHAPS): Maximum and/or Generally Achievable Control Technology (MACT/GACT)

To avoid applicability of MACT standards (in particular, 40 CFR 63 Subpart JJJJJ, National Emission Standards for Hazardous Air Pollutants for Brick And Structural Clay Products Manufacturing), Triangle Brick has accepted an avoidance condition in their permit which requires that facility emissions be less than 10 tons per year of each hazardous air pollutant (HAP), and 25 tons per year of all HAPs combined. To ensure these limits are not exceeded, the following monitoring and recordkeeping requirements apply to the two brick tunnel kilns (K-1 and K-2) and their respective DLAs (CD-K1 and CD-K2):

- The DLAs shall be operated at all times the brick tunnel kilns are in operation, except during periods of startup, shutdown, malfunction, or during operation in bypass mode for routine maintenance of the DLAs.
- At all times, Triangle Brick shall maintain an adequate amount of limestone in the limestone hopper, the storage bin located at the top of the DLAs, and the DLAs. Triangle Brick shall check daily to ensure that this requirement is met and record each check in a logbook.
    - As observed during a February 15, 2023 facility inspection, the hopper/storage bin displayed a low-level indicator light from June to October 2022. During this time, no limestone deliveries were made to the facility. Triangle Brick stated to FRO inspectors that it takes three weeks from the time the low-level indicator light comes on until the hopper/storage bin is empty. They further stated that they used limestone from the silos to fill the DLA. To better clarify the definition of "adequate amount of limestone", the following language has been added in this permit renewal: "The hopper and storage bin shall be resupplied with limestone whenever the low-level indicator is activated."
- Triangle Brick shall use the same grade of limestone at the DLAs from the same source that was used during the performance test and shall maintain records of the source and grade of limestone used. in a logbook.
- Triangle Brick shall maintain the limestone feeder settings at the DLAs at or above the level established during the performance test. Triangle Brick shall check daily to ensure that this requirement is met and record each check in a logbook.
- Once per calendar month, Triangle Brick shall ensure that the limestone feed system on the DLAs replaces limestone at least as frequently as the schedule set during the performance test. Triangle Brick shall record each check in a logbook.
- Triangle Brick shall monitor the bypass damper position for the DLAs at the brick tunnel kilns using the following procedure and record the monitoring results in a logbook:
    - Secure the bypass damper in a closed and locked position.
    - Conduct a visual inspection of the bypass damper once per day to ensure that the damper is maintained in a closed and locked position.
    - If the lock has been broken or if the damper position has changed, except for periods of routine maintenance, monitor and record the bypass damper position at least every 15 minutes for the DLAs until the bypass damper has been returned to a closed and locked position.
    - Record the total time the kilns were operated in bypass mode.
- Triangle Brick shall maintain a logbook with records of each period the brick tunnel kilns are operated while bypassing the DLAs to perform routine maintenance. The records shall include the start time/date and stop time/date of the maintenance, the total time the kilns have operated in bypass mode during maintenance, and descriptions of the maintenance performed.

- Triangle Brick shall keep records of each period the brick tunnel kilns are operated while bypassing the DLAs during periods of startup, shutdown, and malfunction (SSM). The records shall include the start time/date and stop time/date of each SSM event, and the total time the kilns have operated in bypass mode during each SSM event.
- Triangle Brick shall keep records of the production rates on a fired-product basis and HAP emissions for each brick tunnel kiln, to include:
    - The quantity of bricks produced from each brick tunnel kiln each month and for the 12-month period ending on that month.
    - the total time the kilns were operated in bypass mode each month and for the 12-month period ending on that month.
    - Calculations of HAP emissions in pounds each month and for the 12-month period ending on that month. In the current permit, HAP emissions (HF and HCl) when the kilns are operated in bypass mode or when the DLAs are not in operation during SSM events must be based on uncontrolled emissions factors from 2003 testing of brick tunnel kiln K-1, unless other representative emission factors are developed.[1] In this permit renewal, equations with controlled emission factors based on 2016 emissions testing[2] have been added to the permit for the calculation of controlled HAP emissions.

The previous permit required Triangle Brick to keep a record of the applicability determination (i.e., request for minor HAP source status) on site at the source for a period of five years after the determination, or until the source becomes an affected source. The determination was to have included the analysis demonstrating why Triangle Brick believes the source is unaffected pursuant to 40 CFR Part 63.10(b)(3). Because five years will have passed by the time this permit renewal is issued, this requirement is being removed from the permit.

Triangle Brick shall submit a semiannual summary report of these monitoring and recordkeeping activities, including a summary of HAP emissions containing:

- greatest quantity in pounds of an individual hazardous air pollutant emitted:
    - for each month during the semiannual period, and
    - for each 12-month period ending on each month during the semiannual period using a 12-month rolling total;
- pounds of all hazardous air pollutants emitted:
    - for each month during the semiannual period, and
    - for each 12-month period ending on each month during the semiannual period using a 12-month rolling total.

Triangle Brick is required to clearly identify all instances of deviations from the requirements of the permit MACT avoidance conditions.

Because the most recent stack testing for controlled HAP emissions was conducted in 2016, and the most recent testing for uncontrolled HAP emissions was conducted in 2003, DAQ believes that additional testing to better characterize current HAP emissions from the Triangle facility is warranted. The permit renewal includes a requirement for Triangle to test one of the two brick kilns for controlled and uncontrolled HAP emissions within 180 days of permit issuance unless another date is determined to be

[1] These emission factors from emissions testing in 2003 (0.027 lb HCl per ton of bricks produced and 0.095 lb HF per ton of bricks produced) are documented in the permit review for Permit No. 08179T10 (B. Gatano, 12/29/2017).
[2] Memorandum from S. Vogel, SSCB to S. Vozzo, FRO, Triangle Brick Co. – Wadesboro September 13, 2016 stack test report, tracking No. 2016-213st, April 6, 2017. Controlled emission factors are determined using the test process rate of 25.17 tons of bricks per hour, HCl emission test rate of 0.152 lb/hr, and the HF emission test rate of 0.121 lb/hr.

acceptable by DAQ. Triangle must use the test results to develop current emission factors for uncontrolled and controlled HAP emissions from the kilns, and then submit a permit application to revise the HAP emission factors in the permit.

This permit renewal does not affect the status of Triangle Brick regarding the applicability of MACT/NESHAP. Continued compliance is expected.

8. New Source Performance Standards (NSPS)

The Triangle Brick facility is subject to the following NSPS:

40 CFR Part 60, Subpart OOO, "Standards of Performance for Nonmetallic Mineral Processing Plants". Because the Triangle Brick facility is considered a fixed or portable nonmetallic mineral processing plant, each crusher, grinding mill, screening operation, bucket elevator, belt conveyor, bagging operation, storage bin, enclosed truck or railcar loading station is subject to the provisions of this NSPS. The NSPS establishes emission standards at different levels depending on the type of processing equipment and the date on which it commenced construction, modification, or reconstruction, and whether they have capture systems. The following table lists the emission sources at the Triangle Brick facility and their respective fugitive emission limits, in accordance with 40 CFR 60.672.

Emission Source	**Fugitive visible emissions limit (percent opacity)**
One primary crushing plant consisting of:	
Two scalp screens (ID Nos. PC-3 and PC-4);	10 percent
Two jaw crushers (ID Nos. PC-5 and PC-6);	15 percent
One conveyor under PC-3 and PC-5 (ID No. PC-7);	10 percent
One conveyor under PC-4 and PC-6 (ID No. PC-8);	10 percent
One cross-over conveyor (ID No. PC-9); and	10 percent
One shuttle conveyor (ID No. PC-10)	Seven percent (from building openings (except for vents as defined in 40 CFR 60.671))
One clay grinding plant consisting of:	
One conveyor belt to scalping screen (ID No. CG-2);	Seven percent (from building openings (except for vents as defined in 40 CFR 60.671))
One scalping screen (ID No. CG-3);	
One return conveyor belt for oversize from screens (ID No. CG-4);	
One conveyor belt to hammer mill (ID No. CG-5);	
One hammer mill (ID No. CG-6);	
One conveyor belt under hammer mill (ID No. CG-7);	
One conveyor belt to finish screens (ID No. CG-8);	
Four finish screens (ID Nos. CG-10 through CG-13);	
One fines conveyor belt under screens (ID No. CG-14);	
One conveyor belt to storage bins (ID No. CG-15);	
One conveyor belt over storage bins (ID No. CG-16);	
Five storage bins (ID Nos. CG-17 through CG-21);	
Five feeders under storage bins (ID Nos. CG-22 through CG-26);	
One conveyor in front of storage bins (ID No. CG-27); and	
One conveyor to pug mill (ID No. CG-28)	
One loam/sawdust preparation area consisting of:	
One conveyor from loam/ sawdust feeder to finish screens (ID No. LS-2);	Seven percent (from building openings (except for vents as defined in 40 CFR 60.671))
One loam screen (ID No. LS-3);	

Emission Source	Fugitive visible emissions limit (percent opacity)
One loam crusher (ID No. LS-4);	
One oversize return conveyor from LS-3 (ID No. LS-5);	
One oversize return chute (ID No. LS-6);	
One fines conveyor belt under LS-3 to bunker belt conveyor (ID No. LS-7);	
One belt conveyor to bunker (ID No. LS-8);	
One storage bunker (ID No. LS-9);	
One sawdust screen (ID No. LS-10);	
One conveyor to storage bins (ID No. LS-11); and	
One oversize conveyor from sawdust screen (ID No. LS-12)	
One secondary clay grinding plant consisting of:	
One conveyor belt to scalping screen (ID No. CG-30);	Seven percent (from building openings (except for vents as defined in 40 CFR 60.671))
One scalping screen (ID No. CG-31);	
One return conveyor belt for oversize from screens (ID No. CG-32);	
One conveyor belt to hammer mill (ID No. CG-33);	
One hammer mill (ID No. CG-34);	
One conveyor belt under hammer mill (ID No. CG-35);	
One conveyor belt to finish screens (ID No. CG-36);	
Four finish screens (ID Nos. CG-37 through CG-40);	
One fines conveyor belt under screens (ID No. CG-41);	
One conveyor belt to storage bins (ID No. CG-42);	
One conveyor belt over storage bins (ID No. CG-43);	
Five storage bins (ID Nos. CG-44, CG-45, CG-46, CG-47 and CG-48)	
Five feeders under storage bins (ID Nos. CG-49, CG-50, CG-51, CG-52 and CG-53);	
One conveyor in front of storage bins (ID No. CG-54); and	
One conveyor to pug mill (ID No. CG-55)	

At all times, including periods of startup, shutdown, and malfunction, Triangle Brick is required to the extent practicable to maintain and operate any affected facility in a manner consistent with good air pollution control practice for minimizing emissions. Triangle Brick is required to observe each affected facility monthly for any visible emissions above normal. Should visible fugitive emissions be observed to be above normal for an affected facility, Triangle Brick shall perform a Method 9 or a Method 22 test, as applicable, that meets all requirements of 40 CFR Part 60, Subpart OOO. If "normal visible emissions" must be reestablished, they shall do so by observing each week for 30 days the emissions from each enclosed affected facility or the building openings. Semiannual reporting is required and shall include reports of any changes in existing facilities, as well as any noncomplying emissions, the cause of the exceedance, and the resulting corrective action taken.

For the primary crushing plant, Triangle Brick is required to maintain a logbook with the following records:

- the observations to establish normal for each affected facility;
- the results of all observations to establish normal;
- the results of the monthly opacity emissions observations for each affected facility;
- the date and time of each observation, and
- if any emissions were observed which exceeded “normal”, the time and any resulting action(s) taken to reduce emissions exceeding an applicable limit, and

- the date, time, and type of all corrective actions performed to prevent such an exceedance from reoccurring and a copy of any Method 9 or Method 22 opacity testing performed for the purpose of demonstrating compliance with the applicable emissions limit(s).

Similar logbook requirements were also included in Permit No. 08179T10 for the clay grinding plant, secondary clay grinding plant, and the loam/sawdust preparation area. These requirements were removed from Permit No. 08179T11 with no explanation provided. The logbook requirements for these sources are being restored in this permit renewal.

This permit renewal does not affect the status of the Triangle Brick facility with respect to NSPS Subpart OOO. Continued compliance is expected.

40 CFR Part 60, Subpart UUU, "Standards of Performance for Calciners and Dryers in Mineral Industries". The natural gas-fired rotary coatings dryer (SD-1) at Triangle Brick is subject to this NSPS. Under Subpart UUU the dryer shall not exceed 0.057 grams per dry standard cubic meter (0.025 grains per dry standard cubic foot) of particulate matter, or greater than 10 percent opacity. Triangle Brick satisfied the initial compliance demonstration requirements for the dryer on January 17, 2007 (test reference number 2007-016ST).

Triangle Brick is required to the extent practicable to maintain and operate the dryer in a manner consistent with good air pollution control practice for minimizing emissions. They must conduct daily observations to identify any visible emissions above normal. According to Subpart UUU, if visible emissions are observed to be above normal, Triangle Brick must conduct Method 9 test to demonstrate compliance with their opacity limit. However, on October 26, 2006, U.S. EPA Region 4 issued Applicability Determination Index (API) No. 0800007 to Triangle Brick Company, approving an alternative performance test method—Method 22 observations made on the exterior of the buildings where the rotary sand dryers are located—to verify compliance with the Subpart UUU opacity limit for their plants in Moncure, NC and Wadesboro, NC. In accordance with the API, the language in this permit renewal has been revised so that Triangle Brick may use Method 22 in lieu of Method 9 to demonstrate compliance with the opacity limit in Subpart UUU.

Triangle Brick must also perform periodic inspections and maintenance as needed and as recommended by the manufacturer for the dryer—which at a minimum shall include a semi-annual internal inspection of the units that comprise the rotary coatings dryer for deterioration, damage, and leaks. All monitoring, inspections, and maintenance shall be recorded in a logbook. Semiannual reporting of all monitoring and recordkeeping activities is required.

This permit renewal does not affect the status of the Triangle Brick facility with respect to NSPS Subpart UUU. Continued compliance is expected.

9. New Source Review (NSR)/Prevention of Significant Deterioration (PSD)

Triangle Brick has accepted avoidance conditions under 15A NCAC 02Q .0317 to avoid the applicability of PSD requirements under 15A NCAC 02D .0530(g) for major sources and major modifications. The limitations limit the discharge of sulfur dioxide from the natural gas/ No. 2 fuel oil-fired/ No. 6 fuel oil-fired brick tunnel kilns **(K-1 and K-2)** to less than 250 tons each per consecutive 12-month period. Kiln K-1 has these additional limitations:

- The amount of No. 6 fuel oil burned shall not exceed 920,000 gallons per year, and the sulfur content of the No. 6 fuel oil shall not exceed 2.1 percent by weight while using No. 6 fuel oil in

the non-preheat section of the kiln and No. 2 fuel oil in the preheat section of the kiln; otherwise, if a combination of fuels is used in kiln K-1, then the sulfur dioxide emissions shall be calculated using the formula below

$$E_{SO2} = (EF_B \times Q_B) + (EF_{No2} \times Q_{No2} \times S_1) + (EF_{No6} \times Q_{No6} \times S_2) + (EF_{NG} \times Q_{NG})$$

Where:

E_{SO2}	=	Total actual emissions of sulfur dioxide, in pounds
EF_B	=	0.3 pounds of SO_2 emitted per ton of brick fired
Q_B	=	tons of brick fired per month
EF_{No2}	=	0.142 pounds of SO_2 emitted per gallon of No. 2 oil fired
Q_{No2}	=	gallons of No. 2 oil fired per month
S_1	=	Sulfur content of the No. 2 fuel oil (if the oil is 0.5% sulfur by weight, $S_1 = 0.5$)
EF_{No6}	=	0.157 pounds of SO_2 emitted per gallon of No. 6 oil fired
Q_{No6}	=	gallons of No. 6 oil fired per month
S_2	=	Sulfur content of the No. 6 fuel oil
E_{NG}	=	0.6 pounds of SO_2 emitted per million standard cubic feet of natural gas fired
Q_{NG}	=	million standard cubic feet of natural gas fired per month

- Kiln K-1 is limited to a production rate of 58,000 pounds per hour.

Triangle Brick must use the equation above to demonstrate that both kiln K-1 and K-2 comply with the emissions limit. Triangle Brick must keep monthly records of the amount of fuel used and the sulfur content, including certification of the fuel, in a logbook (written or in electronic format) for both kilns. For Kiln K-1, Triangle Brick must also record the results of the fuel oil supplier certifications in a logbook on a quarterly basis and include:

- the name of the fuel oil supplier;
- the maximum sulfur content of the No. 6 fuel oil received during the quarter;
- the method used to determine the maximum sulfur content of the No. 6 fuel oil; and
- a certified statement signed by the responsible official that the records of fuel oil supplier certification submitted represent all No. 6 fuel oil fired during the period.

Finally, semi-annual summary reports of monitoring and recordkeeping activities must be submitted for both kilns.

This permit renewal does not affect the status of the Triangle Brick facility with regard to PSD. Continued compliance is expected.

10. Risk Management Plan (RMP) Requirements

40 CFR Part 68 requires stationary sources storing more than threshold quantities of regulated substances to develop a RMP in accordance with Section 112(r) of the Clean Air Act. The RMP lists the potential effects of a chemical accident at the facility, steps the facility is taking to prevent an accident, and emergency response procedures to be followed if an accident should occur.

Triangle Brick is not subject to Section 112(r) of the Clean Air Act requirements because it does not store any of the regulated substances in quantities above the thresholds in the Rule. This permit renewal does not affect the 112(r) status of the facility. Continued compliance is expected.

11. Compliance Assurance Monitoring (CAM)

The CAM rule (15A NCAC 02D .0614) applies to each pollutant specific emissions unit located at a facility required to obtain a Title V, Part 70 or 71 permit that meets all of the following criteria:

- It is subject to an emission limitation or standard, and
- It uses a control device to achieve compliance, and
- It has potential pre-control emissions that equal or exceed the major source threshold (i.e., either 100 tons per year (tpy) for criteria pollutants, 10 tpy of any individual HAP, or 25 tpy of any combination of HAP).

The following emission limitations or standards are exempted from the CAM rule:

- NSPS or NESHAP standards proposed after November 15, 1990;
- Stratospheric ozone protection requirements under Title VI of the Clean Air Act;
- Acid rain program requirements under the Clean Air Act;
- Emission limitations or standards or other requirements that apply solely under an approved emissions trading program;
- An emissions cap that meets requirements of 40 CFR 70.4(b)(12) or 71.6(a)(13);
- Emission limitations or standards for which a permit issued pursuant to 15A NCAC 02Q .0500 specifies a continuous compliance determination method, as defined in 40 CFR 64.1. This exemption shall not apply if the applicable compliance method includes an assumed control device emission reduction factor that could be affected by the actual operation and maintenance of the control device, such as a surface coating line controlled by an incinerator for which continuous compliance is determined by calculating emissions on the basis of coating records and an assumed control device efficiency factor based on an initial performance test. In this example, the CAM rule would apply to the control device and capture system, but not to the remaining elements of the coating line, such as raw material usage.
- Certain municipally owned utility units, as defined in 40 CFR 72.2.

Please note that the emission unit is not exempted from the CAM rule if nonexempt emission limitations or standards (e.g., a state rule or an older NSPS emission limits) apply to the emissions unit.

CAM was determined in a preceding permit review (R. Braswell, Permit No. 08179T11, July 13, 2018) to not be applicable because the only sources at the Triangle Brick facility that have control devices for the purpose of meeting emission limits are the kilns (K-1 and K-2). The kilns have DLAs (CD-K1 and CD-K2) installed that control HCl and HF emissions to meet the MACT avoidance conditions discussed in Section 8 of this review. In doing so, these controls prevent the kilns from being major sources of HAP. Furthermore, emission limits under 15A NCAC 02Q .0317 (Avoidance Conditions) do not trigger CAM because they are exempt per 15A NCAC 02D .0614(b)(1)(E).

This permit renewal does not affect the facility's status with respect to CAM. Continued compliance is expected.

12. Facility-wide Air Toxics Review

The two brick tunnel kilns (K-1 and K-2) at Triangle Brick are subject to emission limits for the toxics

listed in the following table, in accordance with 15A NCAC 02D .1100, "Control of Toxic Air Pollutants".

Toxic Air Pollutant	Emission Limit
Arsenic and inorganic arsenic compounds	14.8 pounds per year (annual)
Benzene	1470 pounds per year (annual)
Benzo(a)pyrene (POM)	17.5 pounds per year (annual)
Beryllium	2.09 pounds per year (annual)
Bioavailable chromate pigments, as Chromium VI equivalent	2.25 pounds per year (annual)
Cadmium	11.2 pounds per year (annual)
Chlorine	1.81 pounds per day (24-hour)
Hydrogen Chloride	9.16 pounds per hour
Hydrogen Fluoride	144 pounds per day (24-hour) 6.0 pounds per hour
Mercury aryl and inorganic compounds	0.020 pounds per day (24-hour)
Nickel metal	0.475 pounds per day (24-hour)

These emission limits were established as a facility-wide worst-case single stack modeling demonstration[3]. To ensure compliance with these limits, Triangle Brick is subject to the following restrictions:

- Kiln K-1 is limited to 58,000 pounds of clay brick and additives per hour. These limits were based on the on-site emission test results of 0.26 pounds HCl per ton of clay bricks and additives and 0.15 pounds of HF per ton of clay bricks and additives for brick tunnel kiln (ID No. K-1).
- Kiln K-2 shall be limited to 58,000 pounds of clay brick and additives per hour. These limits were based on the emission standards for HCl (0.056 pounds of HCl per ton of fired product) and HF (0.057 pounds of HF per ton of fired product).
- Triangle Brick must maintain records of production rates, throughputs, material usages, and/or other process operational information for a minimum of three years from the date of recording.
- DAQ reserves the right to require in the future that the Triangle Brick perform periodic sampling and analysis of clay and shales used at the facility for determination of hydrogen fluoride concentration.
- Triangle Brick shall notify FRO within 30 days of initial start-up of the use of:
    - any clay used at the facility for determination of hydrogen fluoride concentration.
    - any clay or shales received from a new source (supplier) and provide the analytical results of hydrogen fluoride concentration within 30 days of such date.

The permit lists several NC toxic air pollutants (TAPs) and their respective toxic permit emission rates (TPERs) as established in 15A NCAC 02Q .0711, "Emission Rates Requiring a Permit".

Pollutant (CAS Number)	TPERs Limitations			
	Carcinogens (lb/yr)	Chronic Toxicants (lb/day)	Acute Systemic Toxicants (lb/hr)	Acute Irritants (lb/hr)
carbon disulfide (75-15-0)		3.9		
p-dichlorobenzene (106-46-7)				16.8
fluorides		0.34	0.064	

[3] Memorandum from T. Anderson, AQAB to J. Twisdale, RCO and Permit Coordinator, FRO. "Review of Dispersion Modeling Analysis – Triangle Brick Co, Wadesboro, NC, Anson County", July 28, 2004.

Pollutant (CAS Number)	TPERs Limitations			
	Carcinogens (lb/yr)	Chronic Toxicants (lb/day)	Acute Systemic Toxicants (lb/hr)	Acute Irritants (lb/hr)
formaldehyde (50-00-0)				0.04
manganese and compounds		0.63		
1,1,1 trichloroethane (methyl chloroform) (71-55-6)		250		64
methyl ethyl ketone (78-93-3)		78		22.4
methyl isobutyl ketone (108-10-1)		52		7.6
perchloroethylene (127-18-4)	13,000			
phenol (108-95-2)			0.24	
styrene (100-42-5)			2.7	
toluene (108-88-3)		98		14.4
xylene (1330-20-7)		57		16.4

Triangle Brick has made a demonstration that its plant-wide actual emissions do not exceed the TPERs. The permit requires that Triangle Brick:

- operate and maintain the facility so that emissions of any listed TAPs from the facility, including fugitive emissions, will not exceed the TPERs;
- obtain a permit to emit TAPs and for demonstrating compliance with the requirements of 15A NCAC 02D .1100 prior to exceeding any of these listed TPERs; and
- maintain records that demonstrate compliance with each TPER.

This permit renewal does not affect the status of this facility with regard to NC air toxics. Continued compliance is expected and will be determined during subsequent inspections.

13. Facility Emissions Review

Because no changes were made to any sources or processes at the Triangle Brick facility, no change in potential emissions is expected from this permit renewal.

The table in the header page of this review summarizes actual annual emissions after application of required emission controls reported by Triangle Brick for the years 2017 through 2021 in their annual emissions inventories.

14. Compliance History and Status

The following chronology dates from when the Triangle Brick permit was last renewed on July 13, 2018.

August 22, 2019	Mitchell Revels, Fayetteville Regional Office (FRO), conducts facility compliance inspection. Facility appeared to be operating in compliance with all permit requirements.
June 17, 2020	Evangelyn Lowery-Jacobs, FRO, conducts remote facility compliance inspection by phone due to COVID-19 virus restrictions. Facility appeared to be operating in compliance with all permit requirements.
September 10, 2020	Evangelyn Lowery-Jacobs, FRO, conducts facility compliance inspection. Facility appeared to be operating in compliance with all permit requirements.

June 15, 2021	Evangelyn Lowery-Jacobs, FRO, conducts facility compliance inspection. Facility appeared to be operating in compliance with all permit requirements.
June 7, 2022	Evangelyn Lowery-Jacobs, FRO, conducts facility compliance inspection. Facility appeared to be operating in compliance with all permit requirements.
February 15, 2023	Joshua Loehman and Heather Carter, FRO, conduct facility inspection. Facility appears to be in violation of the following: (1) 02D .0524, NSPS Subpart UUU; (2) 02D .0524, NSPS Subpart OOO; (3) 02Q .0317, Avoidance Condition for 02D. 1111, MACT (40 CFR 63 Subpart JJJJJ); and (4) General Condition P, Compliance Certification Requirement.
May 16, 2023	FRO issues Notice of Violation (NOV)/Notice of Recommendation for Enforcement (NRE) to Triangle Brick for the violations noted in the February 15, 2023 inspection report.
June 15, 2023	Letter from Triangle Brick to FRO in response to the NOV/NRE issued, describing actions taken to ensure future compliance.

In summary, since the last permit renewal, Triangle Brick appears to have operated the facility in compliance with the requirements of their Title V air permit until recently, and has responded as requested to address the monitoring and recordkeeping and reporting violations. Continued compliance will be accessed during upcoming inspections and monitoring of required reports.

15. Public Notice/EPA and Affected State(s) Review

A notice of the DRAFT Title V Permit shall be made pursuant to 15A NCAC 02Q .0521. The notice will provide for a 30-day comment period, with an opportunity for a public hearing. Consistent with 15A NCAC 02Q .0525, the EPA will have a 45-day review period. Copies of the public notice shall be sent to persons on the Title V mailing list and EPA. Pursuant to 15A NCAC 02Q .0522, a copy of each permit application, each proposed permit and each final permit shall be provided to EPA. Also, pursuant to 02Q .0522, a notice of the DRAFT Title V Permit shall be provided to each affected State at or before the time notice is provided to the public under 02Q .0521 above.

South Carolina is an affected state within 50 miles of the facility. The Mecklenburg County Department of Environmental Protection is an affected local program.

Notice of the DRAFT Title V Permit to Affected States ran from XXXX, 2023, to XXXX, 2023. ***Insert discussion of any comments received from Affected States or Local Programs.***

Public Notice of the DRAFT Title V Permit ran from XXXX, 2023, to XXXX, 2023. ***Insert discussion of any public comments received.***

EPA's 45-day review period ran concurrent with the 30-day Public Notice, from XXXX, 2023, to XXXX, 2023. ***Insert discussion of any comments received from EPA and U.S. EPA Region 4 regarding the DRAFT Title V Permit.***

16. Other Regulatory Considerations

None of the following items were required for inclusion in Permit Application No. 0400043.22A:

- Professional Engineer's seal
- Zoning consistency determination
- Permit fee

17. Recommendations

DAQ has reviewed the permit application for Triangle Brick Company - Wadesboro Brick Manufacturing Plant located in Wadesboro, Anson County to determine compliance with all procedures and requirements. DAQ has determined that this facility is complying or will achieve compliance, as specified in the permit, with all requirements that are applicable to the affected sources. DAQ recommends the issuance of Air Permit No. 08179T12 after the completion of public participation and the EPA review periods.