CITY OF ALBUQUERQUE
ENVIRONMENTAL HEALTH DEPARTMENT
AIR QUALITY PROGRAM

CONSTRUCTION PERMIT MODIFICATION APPLICATION #0747-M1-RV1

Hoffman Enterprises Inc.
Kinney Brick Company

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February 2023

Project 223201.0087

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1.0 Executive Summary

Executive Summary: This application proposes the modification of ATC Permit #747-M1-RV1 for the Kinney Brick Company facility located at 100 Prosperity SE, Albuquerque, NM 87105.

As part of this application, Kinney Brick Company (KBC) is seeking a modification to their existing permit (#747-M1-RV1) associated with the facility. Updates include the construction of one kiln, this kiln had been permitted previously but had not been constructed. It will now be located in a different location at the facility. Haul roads, conveyors, and material handling are also being proposed as additional sources of PM at the facility. Updated emissions for all units are provided with this application to accurately capture total emissions from units at the facility. The preexisting combustion sources include two (2) natural gas-fired kilns rated at 9 MMBtu/hr and one (1) natural gas-fired kiln rated at 34 MMBtu/hr as well as four (4) brick dryers rated at 2 MMBtu/hr and one (1) brick dryer rated at 3 MMBtu/hr. Under ATC#747-M1-RV1 these are incorrectly represented therefore with these updates to the facility there will be two (2) 9.84 MMBtu/hr kilns, one (1) 25.6 MMBtu/hr kiln, and two (2) 4.66 MMBtu/hr brick dryers. In addition to these modifications, hauling is to be included for raw material delivery and product shipping from the facility as well as brick painting operations. The preexisting material handling units 1 through 5 will be modified to match current throughputs and operating hours proposed by KBC. KBC currently has one (1) 4.66 MMBtu/hr dryer in operation that uses a horizontal stack located at ground level, in order to comply with the NAAQS and NMAAQS for criteria pollutants this unit will have a 15 foot vertical stack constructed as well as a blower added to increase dispersion of pollutants from exhaust. KBC will also build a fenceline in accordance with the current property line.

Since this is an application for a permit modification, updated air dispersion modeling has been completed and is included in this submittal which addresses concerns from the department received as part of the first incomplete determination. The included modeling report (Section 4) details AERMOD inputs and modeled concentrations associated with the proposed modifications. The report also demonstrates compliance with all applicable National and New Mexico Ambient Air Quality Standards (NAAQS and NMAAQS).

The uncontrolled and controlled emissions associated with the proposed modifications are included in the department's application forms and are included below.

Table 1. Uncontrolled Emissions

Unit	Description	Uncontrolled Emissions													
		NO_x		CO		SO_2		VOC		PM_{10}		$PM_{2.5}$		HAPs	
		lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
1	Hopper	-	-	-	-	-	-	-	-	0.053	0.055	0.053	0.055	-	-
2	Holding Bin	-	-	-	-	-	-	-	-	0.011	0.011	0.011	0.011	-	-
3	Conveyor #1	-	-	-	-	-	-	-	-	0.024	0.025	0.024	0.025	-	-
	Conveyor #2	-	-	-	-	-	-	-	-	0.053	0.055	0.053	0.055	-	-
	Crusher(Primary Crusher)	-	-	-	-	-	-	-	-	0.024	0.025	0.024	0.025	-	-
	Conveyor #3	-	-	-	-	-	-	-	-	0.19	0.20	0.19	0.20	-	-
	Screen	-	-	-	-	-	-	-	-	0.024	0.025	0.024	0.025	-	-
	Conveyor #4	-	-	-	-	-	-	-	-	0.024	0.025	0.024	0.025	-	-
	Conveyor #5	-	-	-	-	-	-	-	-	0.053	0.055	0.053	0.055	-	-
	Crusher(Secondary Crusher)	-	-	-	-	-	-	-	-	0.024	0.025	0.024	0.025	-	-
	Conveyor #6	-	-	-	-	-	-	-	-	0.024	0.025	0.024	0.025	-	-
4	Conveyor #7	-	-	-	-	-	-	-	-	0.024	0.025	0.024	0.025	-	-
5	Aggregate Handling	-	-	-	-	-	-	-	-	0.069	0.071	0.010	0.011	-	-
6a	Dryer #1	0.46	1.71	0.38	1.44	2.66E-05	9.97E-05	0.025	0.094	0.042	0.062	0.042	0.062	-	-
6b	Dryer #2	0.46	1.71	0.38	1.44	2.66E-05	9.97E-05	0.025	0.094	0.042	0.062	0.042	0.062	-	-
7a	Kiln #1	0.96	1.00	0.81	0.84	4.94E-05	5.14E-05	0.053	0.055	0.38	0.40	0.38	0.40	3.22	3.35
7b	Kiln #2	0.96	1.00	0.81	0.84	4.94E-05	5.14E-05	0.053	0.055	0.38	0.40	0.38	0.40	3.22	3.35
8	Kiln #3	0.38	0.39	0.63	0.66	4.39E-05	4.56E-05	0.041	0.043	0.30	0.31	0.30	0.31	3.95	4.11
9	Raw Material Hauling	-	-	-	-	-	-	-	-	0.27	0.23	0.027	0.023	-	-
10	Product Hauling	-	-	-	-	-	-	-	-	0.084	0.071	0.0084	0.0071	-	-
11	Paint	-	-	-	-	-	-	-	-	0.026	0.010	0.0099	8.00E-04	-	-
12	Dust Collector	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total		**3.22**	**5.82**	**3.02**	**5.22**	**1.96E-04**	**3.48E-04**	**0.20**	**0.34**	**2.12**	**2.15**	**1.73**	**1.82**	**10.40**	**10.81**

Table 2. Controlled Emissions

Unit	Description	Uncontrolled Emissions													
		NO_x		CO		SO_2		VOC		PM_{10}		$PM_{2.5}$		HAPs	
		lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
1	Hopper	-	-	-	-	-	-	-	-	0.053	0.055	0.053	0.055	-	-
2	Holding Bin	-	-	-	-	-	-	-	-	0.011	0.011	0.011	0.011	-	-
3	Conveyor #1	-	-	-	-	-	-	-	-	2.42E-04	2.52E-04	2.42E-04	2.52E-04	-	-
	Conveyor #2	-	-	-	-	-	-	-	-	5.28E-04	5.49E-04	5.28E-04	5.49E-04	-	-
	Crusher(Primary Crusher)	-	-	-	-	-	-	-	-	2.42E-04	2.52E-04	2.42E-04	2.52E-04	-	-
	Conveyor #3	-	-	-	-	-	-	-	-	1.91E-03	1.99E-03	1.91E-03	1.99E-03	-	-
	Screen	-	-	-	-	-	-	-	-	2.42E-04	2.52E-04	2.42E-04	2.52E-04	-	-
	Conveyor #4	-	-	-	-	-	-	-	-	2.42E-04	2.52E-04	2.42E-04	2.52E-04	-	-
	Conveyor #5	-	-	-	-	-	-	-	-	5.28E-04	5.49E-04	5.28E-04	5.49E-04	-	-
	Crusher(Secondary Crusher)	-	-	-	-	-	-	-	-	2.42E-04	2.52E-04	2.42E-04	2.52E-04	-	-
	Conveyor #6	-	-	-	-	-	-	-	-	2.42E-04	2.52E-04	2.42E-04	2.52E-04	-	-
4	Conveyor #7	-	-	-	-	-	-	-	-	0.024	0.025	0.024	0.025	-	-
5	Aggregate Handling	-	-	-	-	-	-	-	-	0.069	0.071	0.010	0.011	-	-
6a	Dryer #1	0.46	1.71	0.38	1.44	2.66E-05	9.97E-05	0.025	0.094	0.042	0.062	0.042	0.062	-	-
6b	Dryer #2	0.46	1.71	0.38	1.44	2.66E-05	9.97E-05	0.025	0.094	0.042	0.062	0.042	0.062	-	-
7a	Kiln #1	0.96	1.00	0.81	0.84	4.94E-05	5.14E-05	0.053	0.055	0.38	0.40	0.38	0.40	3.22	3.35
7b	Kiln #2	0.96	1.00	0.81	0.84	4.94E-05	5.14E-05	0.053	0.055	0.38	0.40	0.38	0.40	3.22	3.35
8	Kiln #3	0.38	0.39	0.63	0.66	4.39E-05	4.56E-05	0.041	0.043	0.30	0.31	0.30	0.31	3.95	4.11
9	Raw Material Hauling	-	-	-	-	-	-	-	-	0.27	0.23	0.027	0.023	-	-
10	Product Hauling	-	-	-	-	-	-	-	-	0.084	0.071	8.40E-03	7.06E-03	-	-
11	Paint	-	-	-	-	-	-	-	-	0.026	0.010	0.010	8.00E-04	-	-
12	Dust Collector	-	-	-	-	-	-	-	-	2.83E-03	2.95E-03	2.83E-03	2.95E-03	-	-
Total		**3.22**	**5.82**	**3.02**	**5.22**	**1.96E-04**	**3.48E-04**	**0.20**	**0.34**	**1.69**	**1.70**	**1.29**	**1.37**	**10.40**	**10.81**

Table 3. Net Change in Emissions

Pollutant	NO_X		CO		SO_2		VOC		PM_{10}		$PM_{2.5}$	
Units	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
Current Permitted Emissions	2.83	7.19	2.37	6.03	0.020	0.050	0.16	0.39	2.73	8.52	-	-
New Source Total	3.22	5.82	3.02	5.22	1.96E-04	3.48E-04	0.20	0.34	1.69	1.70	1.29	1.37
Project % Increases/Decreases	14%	-19%	27%	-13%	-99%	-99%	24%	-12%	-38%	-80%	100%	100%

2. DESCRIPTION OF FACILITY AND EMISSIONS INFORMATION

The following section summarizes the emission factors and methodology used to estimate air pollutant emissions from the Kinney Brick Company facility.

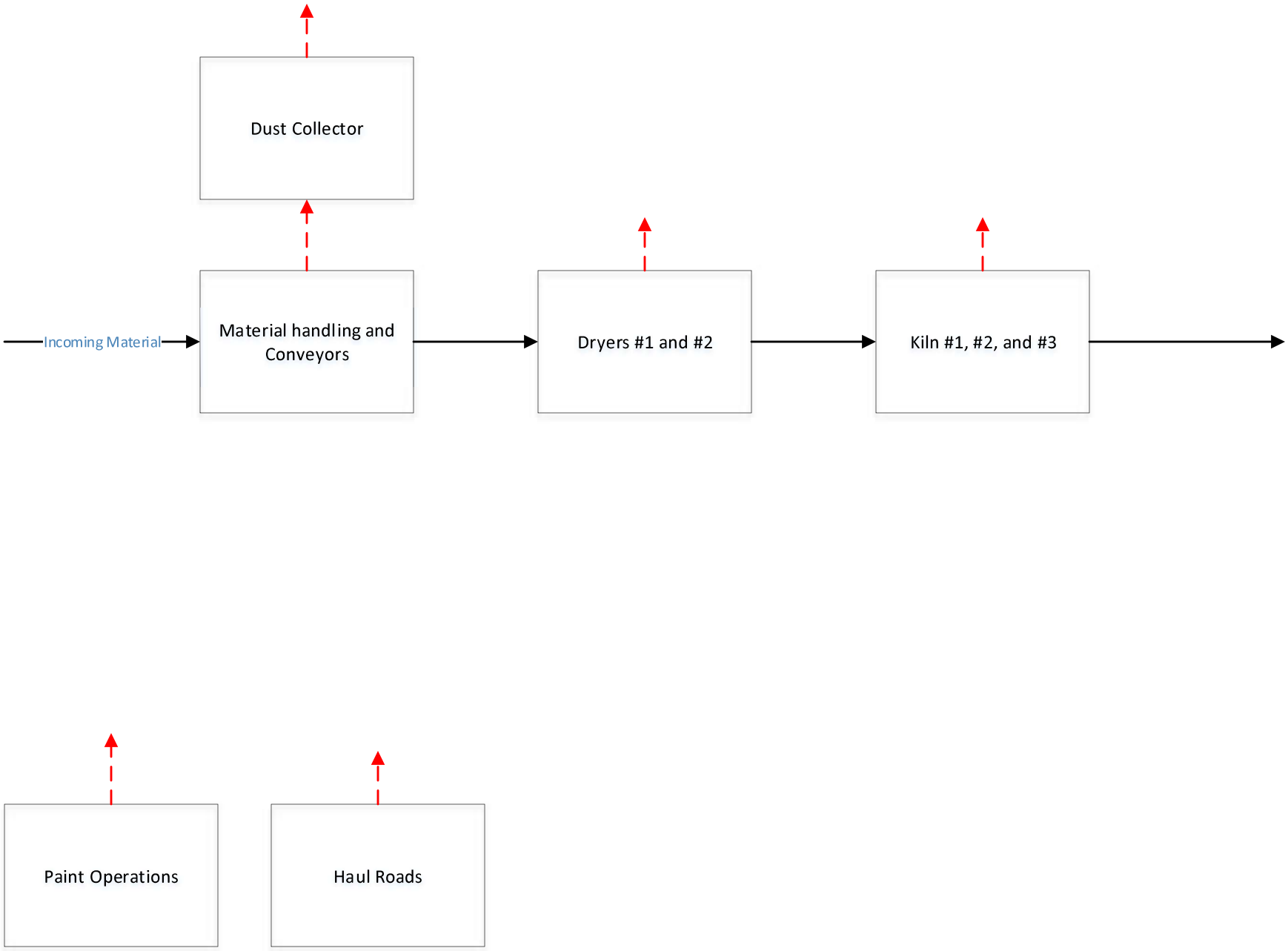
2.1 Description of the Facility

The process description below includes information for production of fired brick at the facility with updates to all emissions sources.

2.1.1 Kinney Brick Company Plant Processing Description

- Raw clay is delivered from a nearby quarry and unloaded at the facility into stock-piles.
- A front-end loader will then dump the raw clay material into a hopper(Unit 1)
- This hopper feeds the crusher/screen building (Unit 3), all crushers, screens, and conveyors within this building are controlled by a baghouse above the building. Here the material is refined to less than 1/8" in diameter.
- The refined clay is then transported via a covered conveyor (Unit 4) to the brick manufacturing building and is dropped into finished clay storage bin (Unit 2). The clay is then conveyed within the building to the pug mill and the clay product is extruded and formed into uncured brick.
- The uncured brick is stacked onto pallets and transported by forklifts into the Dryer building (Units 6a & 6b) to be cured for approximately 72 hours. Once cured the bricks are transported to their respective kiln and fired for 48 hours at 1,600 F (Units 7a, 7b, and 8).
- The kilns are loaded in a batch process so that none of the kilns operate simultaneously. After the brick has been fired and allowed to cool the finished brick is transported to the storage area awaiting transportation off-site for delivery.

2.2 Process Flow Sheets


Dust Collector
Incoming Material
Material handling and Conveyors
Dryers #1 and #2
Kiln #1, #2, and #3
Paint Operations
Haul Roads

2.3 Air Pollutant Emissions and Calculation Methodology

2.3.1 Current Process

2.3.1.1 Hopper, Screening, and Material operations (Units 1, 2, & 4)

PM_{10} and $PM_{2.5}$ uncontrolled emissions for the hopper, screens, and material handling are based on AP-42 11.19.2 Crushed Stone Processing and Pulverized Mineral Processing Table 11.19.2-2. There are no controls for these units and so the uncontrolled emission factors were used for the controlled emission rates. The uncontrolled $PM_{2.5}$ emissions factors were not provided for this unit so it was assumed to be the same as the PM_{10} controlled emission factor. The hourly emission rates (lb/hr) for these units were calculated using the maximum throughput of 22 tons per hour. These calculations have been updated in this permit modification.

2.3.1.2 Crusher operations (Unit 3)

PM_{10} and $PM_{2.5}$ uncontrolled emissions for the crushers are based on AP-42 11.3 Brick and Structural Clay Product Manufacturing Table 11.3-1. The controlled emissions for Unit 3 are based on a 99% control efficiency of the baghouse on the crusher building. The uncontrolled $PM_{2.5}$ emission factor was not provided for this unit so it was assumed to be the same as the PM_{10} controlled emission factor. The hourly emission rates (lb/hr) for these units were calculated using the maximum throughput of 22 tons per hour. These calculations have been updated in this permit modification.

2.3.1.3 Conveyor operations (Unit 3)

PM_{10} and $PM_{2.5}$ uncontrolled emissions for the conveyors are based on AP-42 11.19.2 Crushed Stone Processing and Pulverized Mineral Processing Table 11.19.2-2. The controlled emissions for the conveyors under Unit 3 are based on a 99% control efficiency of the baghouse on the crusher building. The uncontrolled $PM_{2.5}$ emission factors were not provided for this unit so it was assumed to be the same as the PM_{10} controlled emission factor. The hourly emission rates (lb/hr) for these units were calculated using the maximum throughput of 22 tons per hour. These calculations have been updated in this permit modification.

2.3.1.4 Dryers (Units 6a & 6b)

Emissions from the existing dryer (Unit 6a) and the proposed dryer (Unit 6b) are a result of combustion emissions associated with the combustion of natural gas. NO_X, SO_2, VOC, and CO emission rates are based on the Hauck PBG 5000 Specification Sheet. Particulate Matter (PM) emission rates are based on dryer stack tests sourced from the background documentation of AP-42 Chapter 11.3 Brick and Structural Clay Product Manufacturing, which are described below. Statistical analysis was conducted on the results from the representative stack tests and an upper prediction limit (UPL) with a 95% confidence interval was calculated in gr/dscf. This value was then used to determine emission in lb/hr and ton/yr using the F Factor calculated dry exhaust flow.

Reference 21
This test report documents an emission test conducted on January 9-12, 1980, at the Lee Brick and Tile Company brick plant in Sanford, North Carolina. Filterable PM and condensable inorganic PM emissions were measured using three EPA Method 5 test runs on each of three kiln stacks (north, south, and bottom stacks venting emissions from one kiln) and one brick

dryer stack. The filterable PM, condensable inorganic PM, particle size, and CO data are assigned an A rating. The report included adequate detail, the test methodology appeared to be sound, and no problems were reported.

Reference 36

This reference documents and emission testing conducted on the tunnel kiln and brick dryers at Marseilles Brick Venture, Ltd., in Marseilles, Illinois, on May 10 and 11, 1994. The brick dryers are independent tunnels that are each about 200 ft long and are heated with waste heat from the kiln cooling zone and supplemental gas burners. For the dryers, the process rate was estimated using the assumption that each dryer provided half of the brick that was produced. The data from this report are assigned an A rating. The test methodology was sound, adequate detail was provided, and no problems were reported.

Reference 37

This reference documents and emission testing conducted on the tunnel kiln and brick dryers at Marseilles Brick Venture, Ltd., in Marseilles, Illinois, on August 29 and 30, 1994. The brick dryers are independent tunnels that are each about 200 ft long and are heated with waste heat from the kiln cooling zone 4-16 and supplemental gas burners. The raw material used to form the bricks included 17 percent shale and 83 percent fire clay mixture. The kiln and dryers were tested for filterable PM, NO_x, CO, CO2, TOC, SO_2, and SO_3 emissions. Three test runs were conducted for each pollutant and EPA reference test methods were used. For the dryers, the process rate was estimated using the assumption that each dryer provided half of the brick that was produced. The data from this report are assigned an A rating. The test methodology was sound, adequate detail was provided, and no problems were reported.

2.3.1.5 Kilns (Units 7a, 7b, & 8)

Emissions from the existing kilns (Units 7a &8) and the proposed kiln to be constructed (Unit 7b) are a result of combustion emissions associated with the combustion of natural gas. NO_X, SO_2, VOC, and CO emission rates are based on the Fives North American Combustion Inc. and the North American Manufacturing Company Specification Sheets. Units 7a and 7b have four (4) 4442-4 burners and eight (8) 4442-5 burners installed in each kiln. Unit 8 has four (4) 4575-9 burners installed in the kiln. Particulate Matter (PM) emission rates are based on dryer stack tests sourced from the background documentation of AP-42 Chapter 11.3 Brick and Structural Clay Product Manufacturing, which are described below. Statistical analysis was conducted on the results from the representative stack tests and an upper prediction limit (UPL) with a 95% confidence interval was calculated in gr/dscf. This value was then used to determine emission in lb/hr and ton/yr using the F Factor calculated dry exhaust flow.

Reference 12

This test report documents an emission test conducted on March 3, 1992, at Belden Brick Plant 3 in Sugarcreek, Ohio. The test was sponsored by Belden Brick and was conducted for compliance purposes. Uncontrolled emissions of filterable PM, SO_2, NO_x, and CO_2 from the No. 1 kiln were quantified using EPA Methods 5, 6, 7, and 3 (with an Orsat gas analyzer), respectively. Three test runs were conducted at the kiln stack. The fuel fired in the kiln was natural gas. Process data were provided in the report, but the basis of these data (feed or product) was not specified. The process data is assumed to represent fired brick production. A rating of B was assigned to all test data. The report included adequate detail, the methodology appeared to be sound, and no problems were reported.

Reference 25
This reference documents the results of a test program conducted on October 17 and 18, 1995, at Triangle Brick in Merry Oaks, North Carolina. Filterable PM, condensable inorganic and organic PM, PM_{10}, metals, SO_2, NO_x, CO, THC, and CO_2 emissions were measured using EPA Methods 5, 202, 201A, 6C, 7E, 10, 25A, and 3A (Orsat analyzer). The test was conducted to determine emission factors to be used by the Brick Association of North Carolina. During testing, the bricks produced included no facing material or other additives; consequently, the emissions measured were a result of fuel combustion or were released from the raw material. Most of the data from this report are assigned an A rating. The test methodology was sound, no problems were reported, and adequate detail was provided in the report.

Reference 34
This reference is Exhibit E provided by the BIA following the (December 1996 to February 1997) external review of the draft background report and AP-42 Section 11.3. The document is a test report that documents emission testing conducted on two natural gas-fired brick kilns at Boral Bricks, Inc., in Henderson, TX, on February 15, 1996. Emissions of filterable PM, condensable inorganic PM, total fluorides, SO_2, SO_3, NO_x, and CO_2 at the exhaust stack of the dry scrubber that controls emissions from tunnel kiln Nos. 1 and 2. The data from this report are assigned an A rating. The test methodology was sound, adequate detail was provided, and no problems were reported.

Reference 22
This test report documents a compliance test conducted on June 18, 1991, at the Acme Brick Company facility in Sealy, Texas. A natural gas-fired brick kiln and a brick dryer were tested for filterable PM (kiln only), total fluorides, SO_2, and CO emissions using EPA Methods 5, 13, 6, and 3 (with Fyrite gas analyzer), respectively. The filterable PM, total fluorides, and SO data from this report are assigned an A rating. The test methodology was sound, adequate detail about the testing was provided, and no problems were reported.

2.3.1.6 Haul roads (Units 9 & 10)

PM_{10} and $PM_{2.5}$ uncontrolled and controlled emissions for the raw material and product hauling are based on AP-42 13.2.2 Unpaved Roads Table 13.2.2-2. The controlled emissions for Units 9 & 10 are based on an 80% control efficiency with the use of Base Course and watering. The emission rates are based on estimated yearly throughputs for the facility with 1,739 trips per year and 350 trips per year for raw material and product hauling, respectively.

2.3.1.7 Painting operations (Unit 11)

Emissions from painting operations (Unit 11) are a result of the particulate emissions (associated with the use of an airless sprayer). PM emission rates are based on the SDS for Behr 270 paint, Graco 390PC airless sprayer specification sheet, and TCEQ guidance "Painting Basics and Emission Calculations for TCEQ Air Quality Permit Applications", November 2012, for airless spray gun operations. A transfer efficiency of 80% was assumed per TCEQ guidance to determine the hourly emissions of this unit based on the proposed monthly usage of paint for KBC.

2.4 Supporting Information

- AP-42 Tables 1.4-1 and 1.4-2: Emission Factors for Natural Gas Combustion
- AP-42 Table 13.2.2-2: Unpaved Roads
- AP-42 Table 11.3-1: Brick and Structural Clay Product Manufacturing
- AP-42 Table 11.19.2-2: Crushed Stone Processing and Pulverized Mineral Processing
- TCEQ guidance "Painting Basics and Emission Calculations for TCEQ Air Quality Permit Applications", November 2012
- Hauck PBG 5000 Specification Sheet
- Fives North American Combustion Inc. Specification Sheet
- North American Manufacturing Company Specification Sheet
- AP-42 Chapter 11.3 Reference 21
- AP-42 Chapter 11.3 Reference 36
- AP-42 Chapter 11.3 Reference 37
- AP-42 Chapter 11.3 Reference 12
- AP-42 Chapter 11.3 Reference 25
- AP-42 Chapter 11.3 Reference 34
- AP-42 Chapter 11.3 Reference 22

11.19.2 Crushed Stone Processing and Pulverized Mineral Processing

11.19.2.1 Process Description [24, 25]

Crushed Stone Processing

Major rock types processed by the crushed stone industry include limestone, granite, dolomite, traprock, sandstone, quartz, and quartzite. Minor types include calcareous marl, marble, shell, and slate. Major mineral types processed by the pulverized minerals industry, a subset of the crushed stone processing industry, include calcium carbonate, talc, and barite. Industry classifications vary considerably and, in many cases, do not reflect actual geological definitions.

Rock and crushed stone products generally are loosened by drilling and blasting and then are loaded by power shovel or front-end loader into large haul trucks that transport the material to the processing operations. Techniques used for extraction vary with the nature and location of the deposit. Processing operations may include crushing, screening, size classification, material handling and storage operations. All of these processes can be significant sources of PM and PM-10 emissions if uncontrolled.

Quarried stone normally is delivered to the processing plant by truck and is dumped into a bin. A feeder is used as illustrated in Figure 11.19.2-1. The feeder or screens separate large boulders from finer rocks that do not require primary crushing, thus reducing the load to the primary crusher. Jaw, impactor, or gyratory crushers are usually used for initial reduction. The crusher product, normally 7.5 to 30 centimeters (3 to 12 inches) in diameter, and the grizzly throughs (undersize material) are discharged onto a belt conveyor and usually are conveyed to a surge pile for temporary storage or are sold as coarse aggregates.

The stone from the surge pile is conveyed to a vibrating inclined screen called the scalping screen. This unit separates oversized rock from the smaller stone. The undersized material from the scalping screen is considered to be a product stream and is transported to a storage pile and sold as base material. The stone that is too large to pass through the top deck of the scalping screen is processed in the secondary crusher. Cone crushers are commonly used for secondary crushing (although impact crushers are sometimes used), which typically reduces material to about 2.5 to 10 centimeters (1 to 4 inches). The material (throughs) from the second level of the screen bypasses the secondary crusher because it is sufficiently small for the last crushing step. The output from the secondary crusher and the throughs from the secondary screen are transported by conveyor to the tertiary circuit, which includes a sizing screen and a tertiary crusher.

Tertiary crushing is usually performed using cone crushers or other types of impactor crushers. Oversize material from the top deck of the sizing screen is fed to the tertiary crusher. The tertiary crusher output, which is typically about 0.50 to 2.5 centimeters (3/16th to 1 inch), is returned to the sizing screen. Various product streams with different size gradations are separated in the screening operation. The products are conveyed or trucked directly to finished product bins, to open area stock piles, or to other processing systems such as washing, air separators, and screens and classifiers (for the production of manufactured sand).

Some stone crushing plants produce manufactured sand. This is a small-sized rock product with a maximum size of 0.50 centimeters (3/16 th inch). Crushed stone from the tertiary sizing screen is sized in a vibrating inclined screen (fines screen) with relatively small mesh sizes.

Table 11.19.2-2 (English Units). EMISSION FACTORS FOR CRUSHED STONE PROCESSING OPERATIONS (lb/Ton)[a]

Source [b]	Total Particulate Matter [r,s]	EMISSION FACTOR RATING	Total PM-10	EMISSION FACTOR RATING	Total PM-2.5	EMISSION FACTOR RATING
Primary Crushing (SCC 3-05-020-01)	ND		ND[n]		ND[n]	
Primary Crushing (controlled) (SCC 3-05-020-01)	ND		ND[n]		ND[n]	
Secondary Crushing (SCC 3-05-020-02)	ND		ND[n]		ND[n]	
Secondary Crushing (controlled) (SCC 3-05-020-02)	ND		ND[n]		ND[n]	
Tertiary Crushing (SCC 3-050030-03)	0.0054[d]	E	0.0024[o]	C	ND[n]	
Tertiary Crushing (controlled) (SCC 3-05-020-03)	0.0012[d]	E	0.00054[p]	C	0.00010[q]	E
Fines Crushing (SCC 3-05-020-05)	0.0390[e]	E	0.0150[e]	E	ND	
Fines Crushing (controlled) (SCC 3-05-020-05)	0.0030[f]	E	0.0012[f]	E	0.000070[q]	E
Screening (SCC 3-05-020-02, 03)	0.025[c]	E	0.0087[l]	C	ND	
Screening (controlled) (SCC 3-05-020-02, 03)	0.0022[d]	E	0.00074[m]	C	0.000050[q]	E
Fines Screening (SCC 3-05-020-21)	0.30[g]	E	0.072[g]	E	ND	
Fines Screening (controlled) (SCC 3-05-020-21)	0.0036[g]	E	0.0022[g]	E	ND	
Conveyor Transfer Point (SCC 3-05-020-06)	0.0030[h]	E	0.00110[h]	D	ND	
Conveyor Transfer Point (controlled) (SCC 3-05-020-06)	0.00014[i]	E	4.6×10^{-5}[i]	D	1.3×10^{-5}[q]	E
Wet Drilling - Unfragmented Stone (SCC 3-05-020-10)	ND		8.0×10^{-5}[j]	E	ND	
Truck Unloading -Fragmented Stone (SCC 3-05-020-31)	ND		1.6×10^{-5}[j]	E	ND	
Truck Loading - Conveyor, crushed stone (SCC 3-05-020-32)	ND		0.00010[k]	E	ND	

a. Emission factors represent uncontrolled emissions unless noted. Emission factors in lb/Ton of material of throughput. SCC = Source Classification Code. ND = No data.

b. Controlled sources (with wet suppression) are those that are part of the processing plant that employs current wet suppression technology similar to the study group. The moisture content of the study group without wet suppression systems operating (uncontrolled) ranged from 0.21 to 1.3 percent, and the same facilities operating wet suppression systems (controlled) ranged from 0.55 to 2.88 percent. Due to carry over of the small amount of moisture required, it has been shown that each source, with the exception of crushers, does not need to employ direct water sprays. Although the moisture content was the only variable measured, other process features may have as much influence on emissions from a given source. Visual observations from each source under normal operating conditions are probably the best indicator of which emission factor is most appropriate. Plants that employ substandard control measures as indicated by visual observations should use the uncontrolled factor with an appropriate control efficiency that best reflects the effectiveness of the controls employed.

c. References 1, 3, 7, and 8

d. References 3, 7, and 8

e. Reference 4

f. References 4 and 15

g. Reference 4

h. References 5 and 6

i. References 5, 6, and 15

j. Reference 11

k. Reference 12

l. References 1, 3, 7, and 8

m. References 1, 3, 7, 8, and 15

n. No data available, but emission factors for PM-10 for tertiary crushers can be used as an upper limit for primary or secondary crushing

o. References 2, 3, 7, 8

p. References 2, 3, 7, 8, and 15

q. Reference 15

r. PM emission factors are presented based on PM-100 data in the Background Support Document for Section 11.19.2

s. Emission factors for PM-30 and PM-50 are available in Figures 11.19.2-3 through 11.19.2-6.

Note: Truck Unloading - Conveyor, crushed stone (SCC 3-05-020-32) was corrected to Truck Loading - Conveyor, crushed stone (SCC 3-05-020-32). October 1, 2010.

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PAINTING BASICS AND EMISSION CALCULATIONS FOR TCEQ AIR QUALITY PERMIT APPLICATIONS

NOVEMBER 5, 2012

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing

And

Preventing Pollution

Presented by:

Mike Coldiron, P.E.

Texas Commission on Environmental Quality
Austin, Texas

INTRODUCTION

Surface coated products are all around, and coatings are applied to many types of industrial equipment and consumer products to provide decorative and protective finishes as well as functional uses such as adhesives. The application of these finishes, while improving product performance or extending product life, releases significant emissions of solvents and solids into the environment. As such, the EPA, state, and local authorities have promulgated regulations that limit coating solvent content, emission rates, solvent, and solid species limits to reduce the formation of ground level ozone and to protect public health from unhealthy levels of exposure to solids and solvents. In addition to the state and federal industry-wide rules, all facilities in Texas that emit air contaminants into the air of the State of Texas must obtain a preconstruction permit authorization before construction of the facility is begun, as required by Title 30 Texas Administrative Code (30 TAC) §116.110.

There are a number of methods to demonstrate compliance with the emission limits in regulations or to estimate emissions for preconstruction authorizations such as AP-42 emission factors, stack sampling, coating solvent testing, or the use of continuous emission monitors. Emission factors lack accuracy and even applicability to a specific type of process or product type. Stack sampling and continuous monitors are expensive and lack the ability to demonstrate compliance with coating solvent content limits. Monitors also tell the facility about a problem or potential violation only after it has occurred. Coating solvent content testing may be used both before and after the application of the coating, but this can be expensive and inconvenient.

Emission calculations effectively deal with many of these problems and reduce compliance demonstration costs, prevent violations, allow the facility to set appropriate emission limits during permitting, and provide important cost and process information to facility management. However, the accuracy of the calculations is dependent on the quality of the data used in the calculations, and the level of effort required to produce the results is dependent on the how well the data is organized. The purpose of this paper is to provide environmental professionals with

the necessary background to collect usable data, organize the data, and use the data to successfully complete emission calculations for a number of types of emission standards and limits.

REASONS TO CALCULATE EMISSIONS FROM SURFACE COATING SOURCES

Traditionally, calculations were carried out after the fact in response to regulatory requirements and were looked upon as a burden to the facility. However, emission calculations provide both predictive and retrospective evaluations of surface coating facility operations from an environmental and business perspective. Rather than being viewed by management as an expense, emission calculations can provide opportunities for process improvement and reductions in operating costs.

The retrospective use of emission calculations is primarily for demonstration of compliance with regulatory requirements such as the following:

- Federal New Source Performance Standards (NSPS) under Title 40 Code of Federal Regulations, Part 60 (40 CFR 60);
- Federal National Emission Standards for Hazardous Air Pollutants (NESHAPs) under 40 CFR 63;
- State Reasonably Available Control Technology (RACT) requirements;
- State and federal construction permits; and
- State and federal operating permits under 40 CFR 70;

Retrospective uses also include the determination of emissions for historical purposes such as the following:

- Emission Inventories;
- Calculation of Emission Fees; and

- The quantity of emissions released during emissions events (formerly known as 'upsets').

Prospective uses allow the facility to ensure compliance before the fact in areas such as the following:

- Air quality construction permit applications;
- Determination of applicability of State and federal permit programs;
- Evaluation of new processes and products to determine if they will be compliant with State and federal rules before introduction;
- Monitor process performance and reduce production costs through improvements in transfer efficiency and increasing coatings solids content;
- Determination of optimal operating points for volatile organic compound (VOC) and particulate matter (PM) emission controls;
- Production scheduling to maintain compliance with RACT, NSPS, and NESHAP rules that allow for averaging to comply with the standard;

Well-organized and complete emission calculations in both modes will result in greater confidence in facility management of the ability of the facility to meet applicable requirements.

DEFINITIONS

Emission calculations are more easily understood if the exact wording of regulatory definitions and their limitations are understood. What the definitions do not say is as important as what they do say as well as how they are related to each other.

> **Coating –** A material applied onto or impregnated into a substrate for protective, decorative or functional purposes. Such materials include, but are not limited to, paints, varnishes sealants, adhesives, thinners, diluents, inks, maskants, and temporary protective coatings.

The geometry of the part and the application equipment determine the transfer efficiency (TE), which is a measure of the amount of sprayed coating that is applied to the part. TE may be determined through several methods such as estimation from tables or charts, the volume of coating applied to a part, or through the weighing of parts and the paint pots.

Estimation of TE from tables or charts (see References 5 and 6) is the least accurate method and is presented as Table 1.

Table 1. Transfer Efficiency as a Function of Application Equipment and Part Geometry

Application Equipment	Flat Surface	Table Leg	Bird Cage
Air Atomized	50	15	10
Airless	75-80	10	10
HVLP	65	15	10
Electrostatic Disk	95	90-95	90-95
Electrostatic Airless	80	70	70
Electrostatic Air Atomized	75	65	65

A significant improvement in the estimation of TE can be achieved through the use of the volume of coating applied to a part. This can be determined either through the use of wet or dry film thickness, coating volume solids content, the surface area of the part, the number of parts coated, and accurately weighing the application system (paint pots, hoses and gun) before and after the coating is applied.

For very large parts the method described above can be modified through the use of sheets of metal foil applied to the part that are weighed before and after the application of the coating.

The amount of overspray that falls out of the spray booth air stream before entering the overspray filter is determined by the application equipment and to a lesser extent the coating viscosity. Application equipment with a greater proportion of larger droplets in the spray pattern will have a greater portion of the overspray fall out within the booth. Application equipment with higher transfer efficiencies such as high volume low pressure (HVLP) or airless spray have large numbers of larger droplets compared to air atomized spray equipment. Droplets with a diameter of greater than 30 microns do not stay suspended in the air stream for a significant amount of time and will fall to the floor of the booth or impact the walls. Therefore, the fraction of the paint overspray that will be emitted is the fraction of the droplet sizes that are smaller than 30 microns in diameter. Determination of the fraction of the droplets smaller than PM_{10} and $PM_{2.5}$ is also necessary to determine the emission rates in these size ranges. The particle size distribution will depend on the type of application equipment used since each type of equipment has differing droplet size distributions. Particle size distribution data may be available from application equipment vendors and from References 8 through 12. The following table may be used to estimate PM, PM_{10}, and $PM_{2.5}$ emission rates for both enclosed and outdoor coating operations.

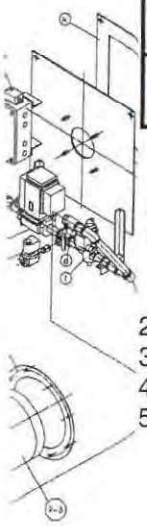
Table 2 Particle Size Distribution as a Function of Application Equipment

Application Equipment Type	Droplet Fraction Greater than PM_{30}	Droplet Fraction Greater than PM_{10}	Droplet Fraction Greater than $PM_{2.5}$
Air Atomized	0.81	0.94	0.99
Airless	0.9856	0.9987	0.9999
HVLP	0.90	0.90	0.90

Overspray filters are used in nearly all spray booths to control PM emissions and the efficiency of the filter system (dry filters or, in some older booths, water wash) is usually available from the

PBG PACKAGED GAS BURNERS

Model No.	Capacity (1000 Btu/hr)		Motor HP	Air Static Pressure ("wc)	Air Flow (SCFH)	Gas Flow (SCFH)	Excess Air (%)	Gas Turndown	Flame Length (Inches)
PBG 300	Max.	440	1/3	5.9	4560	425	10	43:1	14
	Min.	10		0.25	950	10	875		
PBG 500	Max.	670	1/3	5.5	6950	650	10	33:1	17
	Min.	21		0.25	1450	20	645		
PBG 750	Max.	890	3/4	6.4	9210	860	10	48:1	20
	Min.	19		0.25	1820	18	940		
PBG 1000	Max.	1290	3/4	5.5	13340	1245	10	42:1	23
	Min.	31		0.25	2840	30	870		
PBG 2000	Max.	2265	3/4	5.4	23500	2190	10	73:1	45
	Min.	31		0.2	4520	30	1450		
PBG 3000	Max.	2550	3/4	4.8	26400	2465	10	46:1	48
	Min.	55		0.2	5400	53	945		
PBG 5000	Max.	4660	3	6.0	48300	4510	10	46:1	64
	Min.	101		0.1	6200	98	550		



Notes:

1. Capacities based on integral blower with 60Hz motor, natural gas HHV of 1034 Btu/ft^3 and 0.59 S.G., and stoichiometric air/gas ratio of 9.74:1 with burner firing into chamber under no pressure; for applications under positive or negative pressure (i.e., back pressure or vacuum), consult factory for re-rated capacity.
2. Air and gas flows based on 60°F.
3. Air static pressure measured at burner body air pressure tap.
4. For altitudes above sea level, consult factory for re-rated capacity.
5. Flame lengths are based on the straight combustor tube firing into a chamber without forced air flow.

(See Reverse Side for Metric Capacities)

Kiln A + Kiln B

Product Overview | Tempest® 4442 Burner

- **600°F preheated air; up to 800°F with -H model**
- **Available with refractory and metal tiles**
- **Wide air/fuel ratio flexibility**

APPLICATIONS

Ceramic Tunnel and Periodic Kilns
Heat Treat Furnaces
Car Bottom Furnaces
Scrap Preheaters
Galvanizing Tanks
Crucible Furnaces
Air Heating and Drying

In most industrial furnaces, recirculation of products of combustion (poc) can contribute significantly to speed of heating and temperature uniformity. A fan usually provides recirculation in low temperature ovens and dryers. But fans are not practical for higher temperature furnaces and kilns.

Excess air systems can accomplish recirculation, but they are fuel wasteful; e.g., 30% excess air in a 2000°F furnace requires 24% more fuel than stoichiometric firing.

True high velocity gases entrain and recirculate seven or more times their own volume, eliminating need for fans or excess air.

Tempest burners achieve superior uniformity by increasing penetration into the center of multi-piece loads.

TABLE 1. Capacities/Characteristics
16 osi air, stoichiometric ratio

Burner designation	Btu/hr (divide by 100 for scfh air)	flame length (inches)	16 osi, not burning (use to size blower) scfh air
4442-0	71 600	6	1 000
4442-1	131 400	9	1 800
4442-2	230 000	10	2 800
4442-3	325 000	20	3 760
4 **4442-4**	540 000	20	6 200
4442-4-S	890 000	25	11 000
8 **4442-5**	960 000	30	11 600
4442-6	1 500 000	36	19 200
4442-7	2 175 000	42	25 000

IMPORTANT: Correct tile selection and burner installation are extremely important for maximum burner life. Please refer to **Supplement 4442, Tempest Burner Installation**, before making your final burner selection, or consult your nearest Fives North American Combustion, Inc. Sales Office.

4441- -A. Tempest with self-supporting tile for fiber furnace installation. (See Bulletin 4441.)

Aardvark 4442A. All metal for heating, warming, or drying.

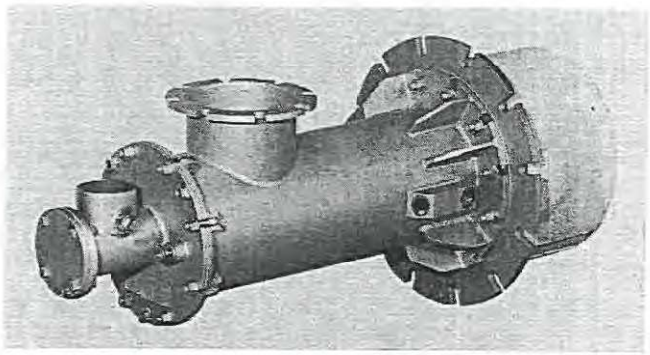
Rand Fire (9) Unit #3

North American
Manufacturing Company

HiRAM® GAS BURNERS
Low NOx
Bulletin 4575

June 1997

Low NOx
High Velocity–High Turndown
Inputs to 25 million Btu/hr



HiRAMs are particularly applicable to aluminum melters, ladle heaters, soaking pits, rotary kilns, heat treat furnaces, and dryers: Any installation where high velocity entrainment, penetration, and recirculation can benefit temperature uniformity and thermal efficiency.

A 4575 HiRAM Burner's true high velocity results from exceptionally high Btu/hr input rates relative to its reduced tile discharge area. Velocities ranging from 500 to 750 feet per second (340 to 510 mph) drive heat into a furnace load, creating tremendous momentum while entraining and recirculating 7-10 cubic feet of furnace gases for every cubic foot of burner product.

HiRAMs are suitable for furnace temperatures up to 2400 F. They can be used with preheated air up to 600 F. The reduced tile discharge opening also protects burner internals from radiant heat and from melting furnace splash. Standard burners include 3000 F dense castable tiles.

Burner tile installation should be made in accord with instructions on Supplement DF-M1 for hard refractory lined furnaces or DF-M2 for fiber lined furnaces.

The Hi-RAM burners can be used with a variety of control systems including pressure-balanced or electronic fuel/air ratio systems. The gas pressure requirement is approximately half that of the combustion air when firing on stoichiometric ratio. HiRAM burners are not designed for fuel rich operation. Prolonged fuel rich operation may damage the burner.

A gas pilot is preferred. Direct spark ignition is satisfactory. Torch lighting is not recommended because of high tile pressures.

4575 burners (except the -8-A and -14 sizes) are available in dual-fuel (gas/light oil) models--see Bulletin 6575.

HiRAMs are an extension upward of North American's line of Tempest® Burners. For capacities less than 3 000 000 Btu/hr, consider 4442 Tempest I or 4446 Tempest IV Burners.

COMBUSTION AIR CAPACITIES
scfh
(for Btu/hr, multiply by 100)

Burner designation	combustion air pressure drop across the burner in osi 0.2	1	4	9	16	Flame length (stoichiometric ratio, 16 osi air)
4575-8-A	4 400	9 400	19 600	31 000	41 500	5'
4575-8-B	5 250	13 300	29 500	43 600	62 000	6'
4575-9	9 200	21 000	44 000	64 000	89 000	9'
4575-10-A	10 600	23 800	47 600	72 500	101,000	9'
4575-10-B	12 500	28 000	57 500	85 000	119 000	10'
4575-12	19 100	42 700	81 500	118 000	164 000	10'
4575-14	34 000	64 000	124 000	188 000	250 000	17'

Burner designation	Maximum excess air rates in %① combustion air pressure, osi 1	9	16	Air capacities not burning, scfh (use to size blowers) 16 osi	Pilot set	Direct spark igniter	approx. net weight pounds
4575-8-A	325	400	350	55 000	4011-12	4055-E	195
4575-8-B	650	500	750	81 000	4011-12	4055-E	195
4575-9	800	900	1200	116 000	4011-12	4055-E	200
4575-10-A	675	800	900	145 000	4011-12	4055-E	280
4575-10-B	1100	1300	1200	177 000	4011-12	4055-E	280
4575-12	1500	1200	1000	199 000	4011-12	4055-E	280
4575-14	1200	1200	1200	303 000	4011-12	4055-E	695

① Do not operate fuel rich.

1.4 Natural Gas Combustion

1.4.1 General[1-2]

Natural gas is one of the major combustion fuels used throughout the country. It is mainly used to generate industrial and utility electric power, produce industrial process steam and heat, and heat residential and commercial space. Natural gas consists of a high percentage of methane (generally above 85 percent) and varying amounts of ethane, propane, butane, and inerts (typically nitrogen, carbon dioxide, and helium). The average gross heating value of natural gas is approximately 1,020 British thermal units per standard cubic foot (Btu/scf), usually varying from 950 to 1,050 Btu/scf.

1.4.2 Firing Practices[3-5]

There are three major types of boilers used for natural gas combustion in commercial, industrial, and utility applications: watertube, firetube, and cast iron. Watertube boilers are designed to pass water through the inside of heat transfer tubes while the outside of the tubes is heated by direct contact with the hot combustion gases and through radiant heat transfer. The watertube design is the most common in utility and large industrial boilers. Watertube boilers are used for a variety of applications, ranging from providing large amounts of process steam, to providing hot water or steam for space heating, to generating high-temperature, high-pressure steam for producing electricity. Furthermore, watertube boilers can be distinguished either as field erected units or packaged units.

Field erected boilers are boilers that are constructed on site and comprise the larger sized watertube boilers. Generally, boilers with heat input levels greater than 100 MMBtu/hr, are field erected. Field erected units usually have multiple burners and, given the customized nature of their construction, also have greater operational flexibility and NO_x control options. Field erected units can also be further categorized as wall-fired or tangential-fired. Wall-fired units are characterized by multiple individual burners located on a single wall or on opposing walls of the furnace while tangential units have several rows of air and fuel nozzles located in each of the four corners of the boiler.

Package units are constructed off-site and shipped to the location where they are needed. While the heat input levels of packaged units may range up to 250 MMBtu/hr, the physical size of these units are constrained by shipping considerations and generally have heat input levels less than 100 MMBtu/hr. Packaged units are always wall-fired units with one or more individual burners. Given the size limitations imposed on packaged boilers, they have limited operational flexibility and cannot feasibly incorporate some NO_x control options.

Firetube boilers are designed such that the hot combustion gases flow through tubes, which heat the water circulating outside of the tubes. These boilers are used primarily for space heating systems, industrial process steam, and portable power boilers. Firetube boilers are almost exclusively packaged units. The two major types of firetube units are Scotch Marine boilers and the older firebox boilers. In cast iron boilers, as in firetube boilers, the hot gases are contained inside the tubes and the water being heated circulates outside the tubes. However, the units are constructed of cast iron rather than steel. Virtually all cast iron boilers are constructed as package boilers. These boilers are used to produce either low-pressure steam or hot water, and are most commonly used in small commercial applications.

Natural gas is also combusted in residential boilers and furnaces. Residential boilers and furnaces generally resemble firetube boilers with flue gas traveling through several channels or tubes with water or air circulated outside the channels or tubes.

Table 1.4-1. EMISSION FACTORS FOR NITROGEN OXIDES (NO_x) AND CARBON MONOXIDE (CO) FROM NATURAL GAS COMBUSTION[a]

Combustor Type (MMBtu/hr Heat Input) [SCC]	NO_x[b]		CO	
	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
Large Wall-Fired Boilers (>100) [1-01-006-01, 1-02-006-01, 1-03-006-01]				
Uncontrolled (Pre-NSPS)[c]	280	A	84	B
Uncontrolled (Post-NSPS)[c]	190	A	84	B
Controlled - Low NO_x burners	140	A	84	B
Controlled - Flue gas recirculation	100	D	84	B
Small Boilers (<100) [1-01-006-02, 1-02-006-02, 1-03-006-02, 1-03-006-03]				
Uncontrolled	100	B	84	B
Controlled - Low NO_x burners	50	D	84	B
Controlled - Low NO_x burners/Flue gas recirculation	32	C	84	B
Tangential-Fired Boilers (All Sizes) [1-01-006-04]				
Uncontrolled	170	A	24	C
Controlled - Flue gas recirculation	76	D	98	D
Residential Furnaces (<0.3) [No SCC]				
Uncontrolled	94	B	40	B

[a] Reference 11. Units are in pounds of pollutant per million standard cubic feet of natural gas fired. To convert from $lb/10^6$ scf to $kg/10^6$ m^3, multiply by 16. Emission factors are based on an average natural gas higher heating value of 1,020 Btu/scf. To convert from $1b/10^6$ scf to lb/MMBtu, divide by 1,020. The emission factors in this table may be converted to other natural gas heating values by multiplying the given emission factor by the ratio of the specified heating value to this average heating value. SCC = Source Classification Code. ND = no data. NA = not applicable.

[b] Expressed as NO_2. For large and small wall fired boilers with SNCR control, apply a 24 percent reduction to the appropriate NO_X emission factor. For tangential-fired boilers with SNCR control, apply a 13 percent reduction to the appropriate NO_X emission factor.

[c] NSPS=New Source Performance Standard as defined in 40 CFR 60 Subparts D and Db. Post-NSPS units are boilers with greater than 250 MMBtu/hr of heat input that commenced construction modification, or reconstruction after August 17, 1971, and units with heat input capacities between 100 and 250 MMBtu/hr that commenced construction modification, or reconstruction after June 19, 1984.

TABLE 1.4-2. EMISSION FACTORS FOR CRITERIA POLLUTANTS AND GREENHOUSE GASES FROM NATURAL GAS COMBUSTION[a]

Pollutant	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
CO_2[b]	120,000	A
Lead	0.0005	D
N_2O (Uncontrolled)	2.2	E
N O (Controlled-low-NO_X burner)	0.64	E
PM (Total)[c]	7.6	D
PM (Condensable)[c]	5.7	D
PM (Filterable)[c]	1.9	B
SO_2[d]	0.6	A
TOC	11	B
Methane	2.3	B
VOC	5.5	C

[a] Reference 11. Units are in pounds of pollutant per million standard cubic feet of natural gas fired. Data are for all natural gas combustion sources. To convert from $lb/10^6$ scf to $kg/10^6$ m^3, multiply by 16. To convert from $lb/10^6$ scf to 1b/MMBtu, divide by 1,020. The emission factors in this table may be converted to other natural gas heating values by multiplying the given emission factor by the ratio of the specified heating value to this average heating value. TOC = Total Organic Compounds. VOC = Volatile Organic Compounds.

[b] Based on approximately 100% conversion of fuel carbon to CO_2. $CO_2[lb/10^6 scf] = (3.67)(CON)(C)(D)$, where CON = fractional conversion of fuel carbon to CO_2, C = carbon content of fuel by weight (0.76), and D = density of fuel, $4.2x10^4$ $lb/10^6$ scf.

[c] All PM (total, condensible, and filterable) is assumed to be less than 1.0 micrometer in diameter. Therefore, the PM emission factors presented here may be used to estimate PM_{10}, $PM_{2.5}$ or PM_1 emissions. Total PM is the sum of the filterable PM and condensible PM. Condensible PM is the particulate matter collected using EPA Method 202 (or equivalent). Filterable PM is the particulate matter collected on, or prior to, the filter of an EPA Method 5 (or equivalent) sampling train.

[d] Based on 100% conversion of fuel sulfur to SO_2. Assumes sulfur content is natural gas of 2,000 grains/10^6 scf. The SO_2 emission factor in this table can be converted to other natural gas sulfur contents by multiplying the SO_2 emission factor by the ratio of the site-specific sulfur content (grains/10^6 scf) to 2,000 grains/10^6 scf.

Table 13.2.2-1. TYPICAL SILT CONTENT VALUES OF SURFACE MATERIAL ON INDUSTRIAL UNPAVED ROADS[a]

Industry	Road Use Or Surface Material	Plant Sites	No. Of Samples	Silt Content (%)	
				Range	Mean
Copper smelting	Plant road	1	3	16 - 19	17
Iron and steel production	Plant road	19	135	0.2 - 19	6.0
Sand and gravel processing	Plant road	1	3	4.1 - 6.0	4.8
	Material storage area	1	1	-	7.1
Stone quarrying and processing	Plant road	2	10	2.4 - 16	10
	Haul road to/from pit	4	20	5.0-15	8.3
Taconite mining and processing	Service road	1	8	2.4 - 7.1	4.3
	Haul road to/from pit	1	12	3.9 - 9.7	5.8
Western surface coal mining	Haul road to/from pit	3	21	2.8 - 18	8.4
	Plant road	2	2	4.9 - 5.3	5.1
	Scraper route	3	10	7.2 - 25	17
	Haul road (freshly graded)	2	5	18 - 29	24
Construction sites	Scraper routes	7	20	0.56-23	8.5
Lumber sawmills	Log yards	2	2	4.8-12	8.4
Municipal solid waste landfills	Disposal routes	4	20	2.2 - 21	6.4

[a]References 1,5-15.

The following empirical expressions may be used to estimate the quantity in pounds (lb) of size-specific particulate emissions from an unpaved road, per vehicle mile traveled (VMT):

For vehicles traveling on unpaved surfaces at industrial sites, emissions are estimated from the following equation:

$$E = k\,(s/12)^a (W/3)^b \quad (1a)$$

and, for vehicles traveling on publicly accessible roads, dominated by light duty vehicles, emissions may be estimated from the following:

$$E = \frac{k\,(s/12)^a (S/30)^d}{(M/0.5)^c} - C \quad (1b)$$

where k, a, b, c and d are empirical constants (Reference 6) given below and

E = size-specific emission factor (lb/VMT)
s = surface material silt content (%)
W = mean vehicle weight (tons)
M = surface material moisture content (%)
S = mean vehicle speed (mph)
C = emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear.

The source characteristics s, W and M are referred to as correction parameters for adjusting the emission estimates to local conditions. The metric conversion from lb/VMT to grams (g) per vehicle kilometer traveled (VKT) is as follows:

1 lb/VMT = 281.9 g/VKT

The constants for Equations 1a and 1b based on the stated aerodynamic particle sizes are shown in Tables 13.2.2-2 and 13.2.2-4. The PM-2.5 particle size multipliers (k-factors) are taken from Reference 27.

Table 13.2.2-2. CONSTANTS FOR EQUATIONS 1a AND 1b

Constant	Industrial Roads (Equation 1a)			Public Roads (Equation 1b)		
	PM-2.5	PM-10	PM-30*	PM-2.5	PM-10	PM-30*
k (lb/VMT)	0.15	1.5	4.9	0.18	1.8	6.0
a	0.9	0.9	0.7	1	1	1
b	0.45	0.45	0.45	-	-	-
c	-	-	-	0.2	0.2	0.3
d	-	-	-	0.5	0.5	0.3
Quality Rating	B	B	B	B	B	B

*Assumed equivalent to total suspended particulate matter (TSP)
"-" = not used in the emission factor equation

Table 13.2.2-2 also contains the quality ratings for the various size-specific versions of Equation 1a and 1b. The equation retains the assigned quality rating, if applied within the ranges of source conditions, shown in Table 13.2.2-3, that were tested in developing the equation:

Table 13.2.2-3. RANGE OF SOURCE CONDITIONS USED IN DEVELOPING EQUATION 1a AND 1b

Emission Factor	Surface Silt Content, %	Mean Vehicle Weight		Mean Vehicle Speed		Mean No. of Wheels	Surface Moisture Content, %
		Mg	ton	km/hr	mph		
Industrial Roads (Equation 1a)	1.8-25.2	1.8-260	2-290	8-69	5-43	4-17[a]	0.03-13
Public Roads (Equation 1b)	1.8-35	1.4-2.7	1.5-3	16-88	10-55	4-4.8	0.03-13

[a] See discussion in text.

As noted earlier, the models presented as Equations 1a and 1b were developed from tests of traffic on unpaved surfaces. Unpaved roads have a hard, generally nonporous surface that usually dries quickly after a rainfall or watering, because of traffic-enhanced natural evaporation. (Factors influencing how fast a road dries are discussed in Section 13.2.2.3, below.) The quality ratings given above pertain to the mid-range of the measured source conditions for the equation. A higher mean vehicle weight and a higher than normal traffic rate may be justified when performing a worst-case analysis of emissions from unpaved roads.

The emission factors for the exhaust, brake wear and tire wear of a 1980's vehicle fleet (*C*) was obtained from EPA's MOBILE6.2 model [23]. The emission factor also varies with aerodynamic size range

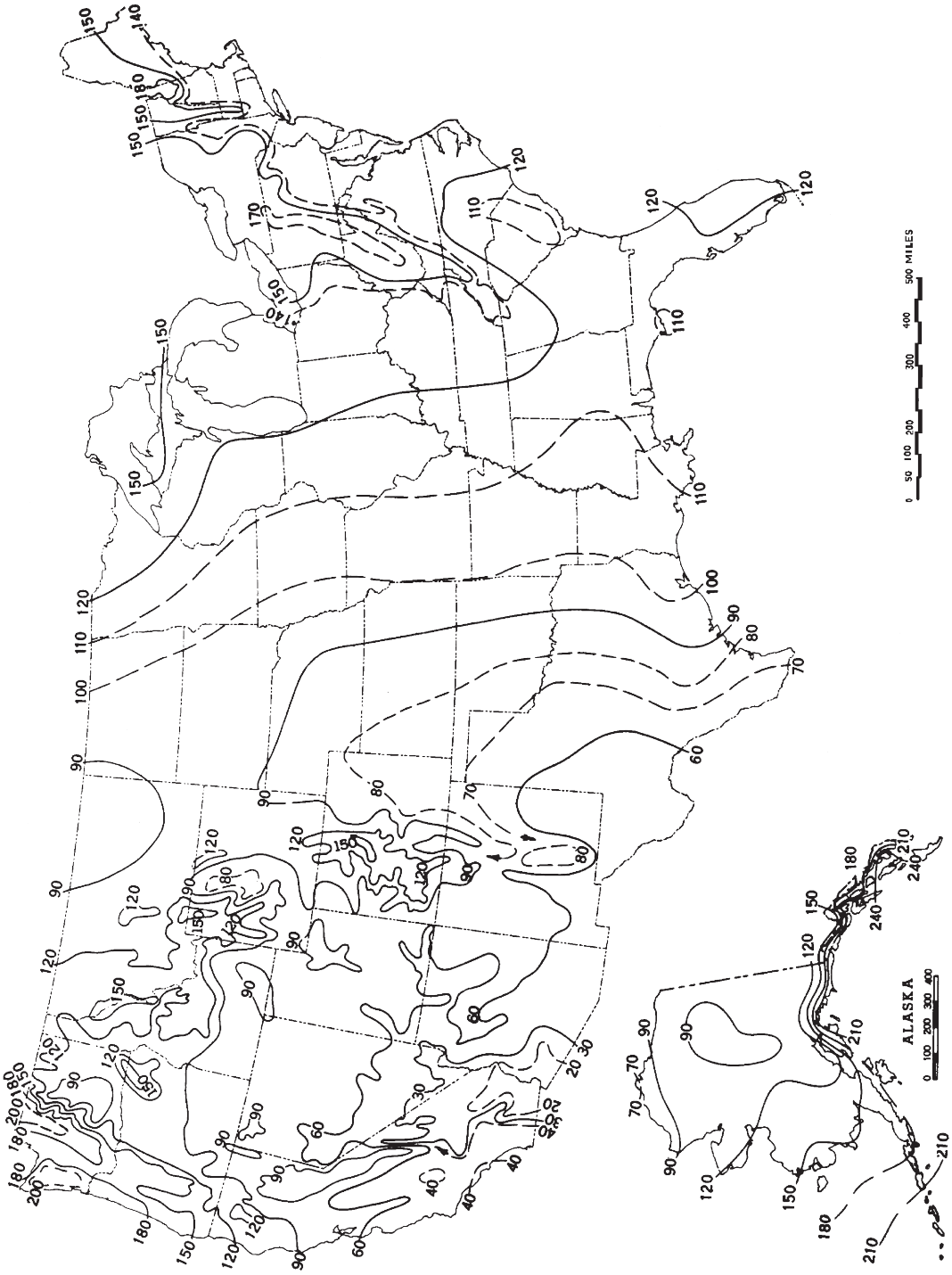


Figure 13.2.2-1. Mean number of days with 0.01 inch or more of precipitation in United States.

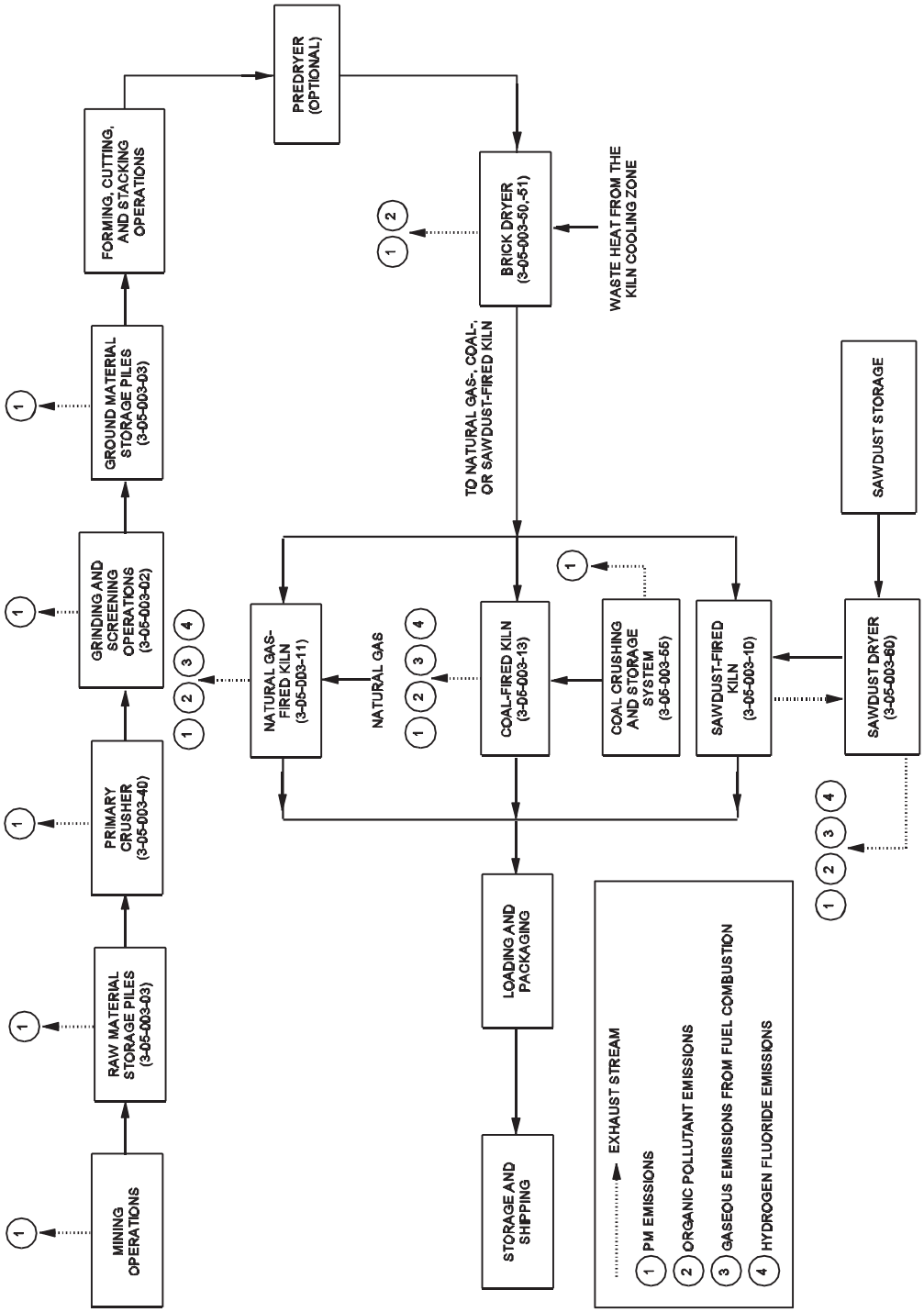


Figure 11.3-1. Typical brick manufacturing process.
(Source Classification Codes in parentheses.)

Table 11.3-1. PARTICULATE MATTER EMISSION FACTORS FOR BRICK MANUFACTURING OPERATIONS[a]

Source	Filterable PM[b]						Condensible PM[c]			
	PM	EMISSION FACTOR RATING	PM-10	EMISSION FACTOR RATING	PM-2.5	EMISSION FACTOR RATING	Inorganic	EMISSION FACTOR RATING	Organic	EMISSION FACTOR RATING
Primary crusher with fabric filter[d] (SCC 3-05-003-40)	ND	NA	0.00059	E	ND	NA	NA	NA	NA	NA
Grinding and screening operations (SCC 3-05-003-02)										
processing wet material[f]	0.025	E	0.0023	E	ND	NA	NA	NA	NA	NA
processing dry material[e]	8.5	E	0.53	E	ND	NA	NA	NA	NA	NA
with fabric filter[g]	0.0062	E	0.0032	E	ND	NA	NA	NA	NA	NA
Extrusion line with fabric filter[h] (SCC 3-05-003-42)	ND	NA	0.0036	E	ND	NA	NA	NA	NA	NA
Brick dryer (SCC 3-05-003-50, -51)	0.077[j]	E	ND	NA	ND	NA	0.11[k]	E	ND	NA
Natural gas-fired kiln (SCC 3-05-003-11)	0.37[m]	C	0.28[n]	E	ND	NA	0.48[p]	D	0.11[q]	D
Coal-fired kiln (SCC 3-05-003-13)										
uncontrolled	1.2[r]	A	0.76[s]	C	0.28[t]	D	0.48[p]	D	0.11[q]	D
with fabric filter	0.043[v]	E	ND	NA	ND	NA	0.48[u]	D	0.11[q]	D
Sawdust-fired kiln (SCC 3-05-003-10)	0.34[w]	D	0.26[x]	D	0.16[x]	D	0.48[p]	D	0.11[q]	D
Sawdust-fired kiln and sawdust dryer[y] (SCC 3-05-003-61)	1.3	E	0.25	E	ND	NA	0.013	E	0.043	E
Natural gas-fired kiln firing structural clay tile[z] (SCC 3-05-003-70)	1.0	E	ND	NA	ND	NA	ND	NA	ND	NA

[a] Emission factor units are lb of pollutant per ton of fired bricks produced unless noted. Factors represent uncontrolled emissions unless noted. SCC = Source Classification Code. ND = no data. NA = not applicable. To convert from lb/ton to kg/Mg, multiply by 0.5. Total PM can be calculated as the sum of filterable PM and condensible inorganic and organic PM. Total PM-10 can be calculated as the sum of filterable PM-10 and condensible inorganic and organic PM. Total PM-2.5 can be calculated as the sum of filterable PM-2.5 and condensible inorganic and organic PM.

[b] Filterable PM is that PM collected on or prior to the filter of an EPA Method 5 (or equivalent) sampling train.

AP42 Section:	11.3
Reference:	21
Title:	Building Brick And Structural Clay Industry, Emission Test Report, Lee Brick And Tile Company, Sanford, NC, EMB Report 80-BRK-1, U. S. Environmental Protection Agency, Research Triangle Park, NC, April 1980.

10348

United States
Environmental Protection
Agency

Office of Air Quality
Planning and Standards
Research Triangle Park NC 27711

EMB Report 80-BRK-1
April 1980

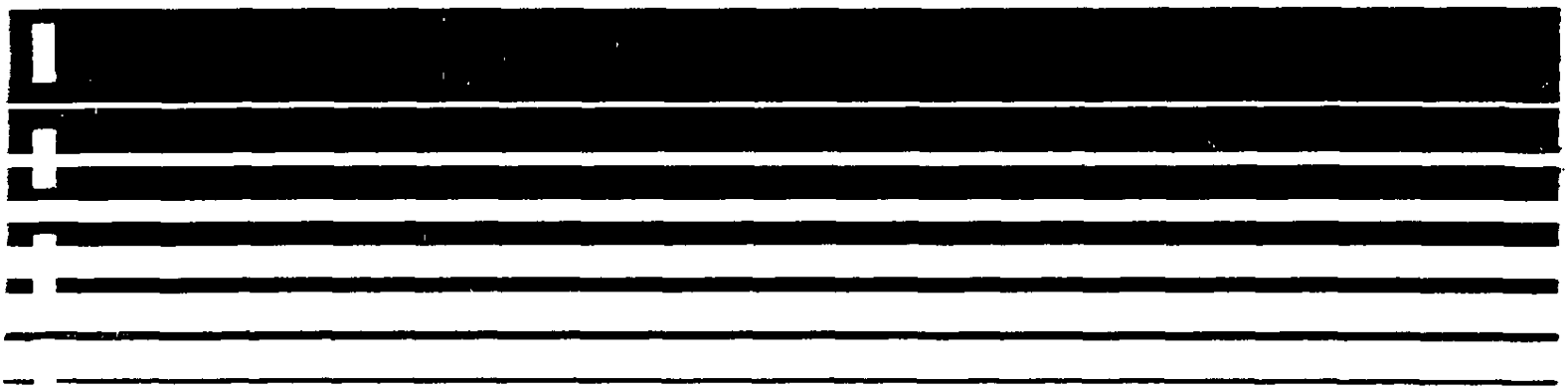
Air

AP-42 Section 11.3
Reference 21

EPA

Building Brick and Structural Clay Industry

Emission Test Report Lee Brick and Tile Company Sanford, North Carolina



BUILDING BRICK AND STRUCTURAL CLAY INDUSTRY

Lee Brick and Tile Company
Sanford, North Carolina

Prepared for the

U.S. Environmental Protection Agency
Emission Measurement Branch
Research Triangle Park, North Carolina 27711

Prepared by

Clayton Environmental Consultants, Inc.
25711 Southfield Road
Southfield, Michigan 48075

EMB REPORT NO. 80-BRK-1

Work Assignment 22

Contract No. 68-02-2817

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1.0 INTRODUCTION

The U.S. Environmental Protection Agency (EPA) retained Clayton Environmental Consultants, Inc. to conduct an emission study at Lee Brick and Tile Company, in Sanford, North Carolina. The purpose of the study was to determine various emission data from the kiln/dryer exhausts (four locations) under two operating conditions. The results of this study will be used in research and development efforts for supporting New Source Performance Standards for the Building Brick and Structural Clay Industry. This study was commissioned as EMB Project No. 80-BRK-1, Contract No. 68-02-2817, Work Assignment No. 22.

Testing was conducted under two kiln firing conditions: low ash coal (Condition 1), and high ash coal (Condition 2). Table 1.1 presents the distribution of the various tests conducted.

Auxiliary data gathered for each source included exhaust gas compositions, moistures, temperatures, and flowrates. Figure 1.1 presents a plan view of the four sampling locations. A list of the project participants is presented in Appendix A.

TABLE 1.1. TESTING PROGRAM PROTOCOL

Test Type[1]	North Kiln		South Kiln		Bottom Kiln		Dryer	
	Cond. 1	Cond. 2	Cond. 1	Cond. 2	Cond. 1	Cond. 2	Cond. 1	Cond. 2
Particulate	3	1	3	1	3	1	3	1
Nitrogen Oxides	1	0	1	0	1	0	1	0
Sulfur Oxides	1	0	1	0	1	0	1	0
Particle Size	1	1	1	1	1	0	1	0
Coal Sample (Sulfur and ash content)	3	1	3	1	3	1	3	1
Opacities	Recorded for the duration of each particulate run.				-	-	-	-

[1]Clay samples were acquired from each brick car which was in the kiln during sulfur oxide sampling.

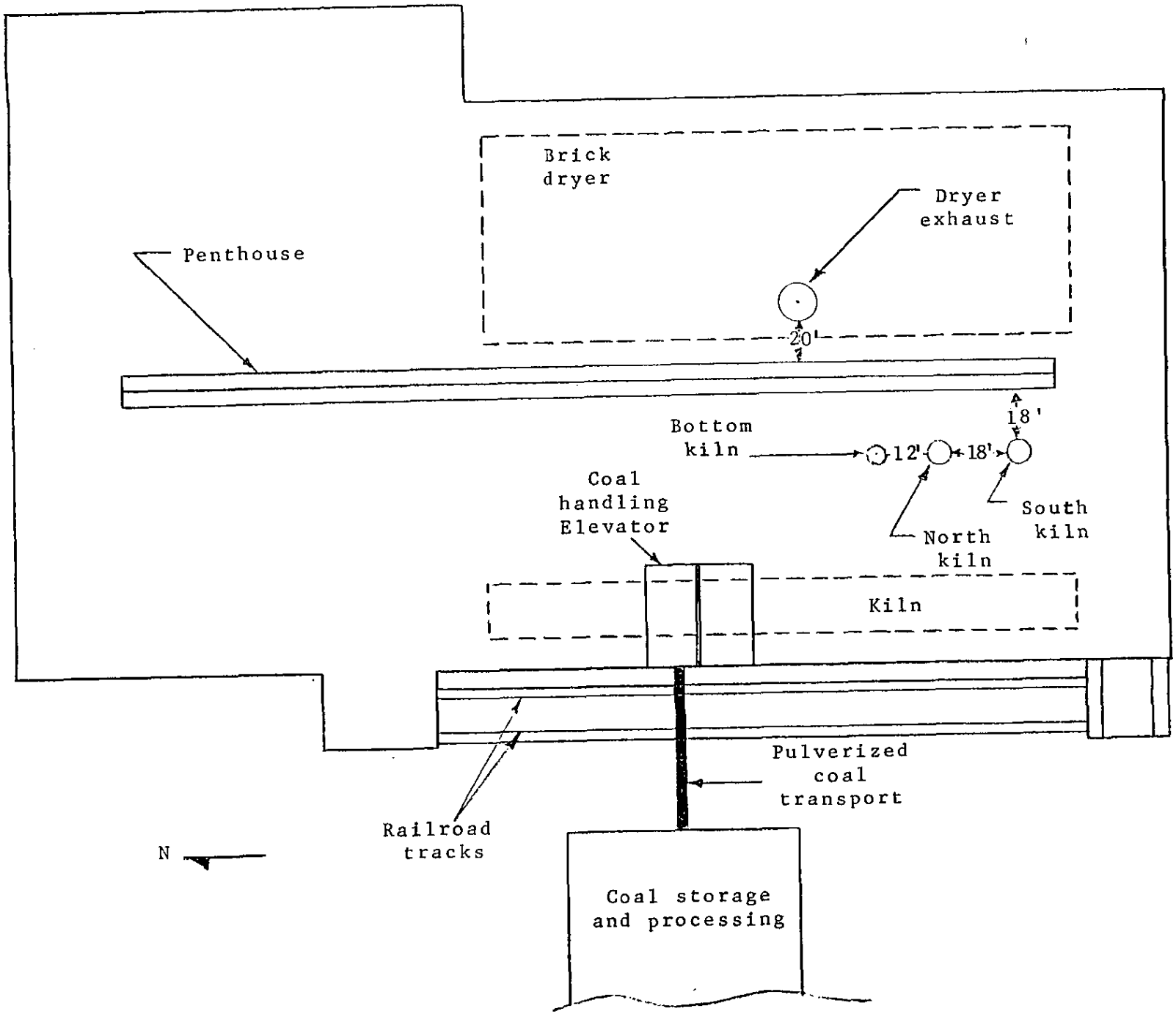

Figure 1.1. Plant roof and source layout (plan view).

2.0 SUMMARY AND DISCUSSION OF RESULTS

For all particulate, sulfur oxide, nitrogen oxide, and gas composition results discussed in this section, Sample Nos. 1, 2, and 3 were collected during Condition 1 (low ash coal) and Sample No. 4 during Condition 2 (high ash coal). Field data sheets are presented in Appendix B.

PARTICULATE EMISSIONS

Table 2.1 presents a summary of the particulate concentrations and emission rates for each of the four sampling locations. All results from Sample Nos. 1, 2, and 3 representing Condition 1 are averaged for each location, and results from Sample No. 4, representing Condition 2, are shown separately. Concentrations are presented in grains per dry standard cubic foot (gr/dscf) and milligrams per dry standard cubic meter (mg/dscm). Emission rates are presented in pounds per hour (lb/hr) and kilograms per hour (kg/hr).

North Kiln

Filterable particulate concentrations for Sample Nos. 1, 2, and 3 ranged from 0.133 to 0.151 gr/dscf (305 to 346 mg/dscm) and averaged 0.143 gr/dscf (328 mg/dscm). Total particulate concentrations ranged from 0.144 to 0.161 gr/dscf (329 to 368 mg/dscm) and averaged 0.155 gr/dscf (355 mg/dscm). The filterable

TABLE 2.1. PARTICULATE CONCENTRATIONS AND EMISSION RATES

Sampling Location	Sample Number[a]	1980 Date	Stack Gas Parameters		Concentration				Emis	
			Flowrate	Temp	Filterable		Total		Filterable	
			dscfm	F	gr/dscf	mg/dscm	gr/dscf	mg/dscm	lb/hr	kg/h
North Kiln	1	1-9	6,840	520	0.133	305	0.144	329	7.81	3.54
	2	1-10	6,800	520	0.146	334	0.161	368	8.51	3.86
	3	1-11	6,860	489	0.151	346	0.161	367	8.89	4.03
	Average		6,830	510	0.143	328	0.155	355	8.40	3.81
	4	1-12	7,280	496	0.190	434	0.190	436	11.8	5.36
South Kiln	1	1-9	10,600	184	0.035	80.1	0.037	85.4	3.19	1.45
	2	1-10	10,500	192	0.036	82.4	0.037	84.7	3.24	1.47
	3	1-11	10,100	197	0.035	80.8	0.037	84.9	3.05	1.38
	Average		10,400	191	0.035	81.1	0.037	85.0	3.16	1.43
	4	1-12	10,500	192	0.053	120	0.057	131	4.74	2.15
Bottom Kiln	1	1-9	4,200	136	0.004	8.96	0.007	15.8	0.141	0.06
	2	1-10	4,230	130	0.004	9.80	0.006	13.1	0.155	0.07
	3	1-11	3,970	144	0.003	7.08	0.005	11.3	0.105	0.04
	Average		4,130	137	0.004	8.61	0.006	13.4	0.134	0.06
	4	1-12	4,230	144	0.006	13.6	0.007	16.5	0.215	0.09
Dryer	1	1-9	45,800	84.1	0.001	2.13	0.004	8.14	0.366	0.16
	2	1-10	47,000	82.1	0.002	3.58	0.003	7.92	0.630	0.28
	3	1-11	45,800	81.9	0.001	2.71	0.003	7.20	0.466	0.21
	Average		46,200	82.7	0.001	2.81	0.003	7.75	0.487	0.22
	4	1-12	45,700	83.9	0.001	2.52	0.004	8.07	0.430	0.19

Sample Nos. 1, 2, and 3 were collected during Condition 1 with Sample No. 4 collected during Condi
sampling locations.

TABLE 2.1. PARTICULATE CONCENTRATIONS AND EMISSION RATES

Sampling Location	Sample Number[a]	1980 Date	Stack Gas Parameters		Concentration				Emission Rate			
					Filterable		Total		Filterable		Total	
			Flowrate dscfm	Temp F	gr/dscf	mg/dscm	gr/dscf	mg/dscm	lb/hr	kg/hr	lb/hr	kg/hr
North Kiln	1	1-9	6,840	520	0.133	305	0.144	329	7.81	3.54	8.43	3.82
	2	1-10	6,800	520	0.146	334	0.161	368	8.51	3.86	9.36	4.25
	3	1-11	6,860	489	0.151	346	0.161	367	8.89	4.03	9.44	4.28
	Average		6,830	510	0.143	328	0.155	355	8.40	3.81	9.08	4.12
	4	1-12	7,280	496	0.190	434	0.190	436	11.8	5.36	11.9	5.39
South Kiln	1	1-9	10,600	184	0.035	80.1	0.037	85.4	3.19	1.45	3.40	1.54
	2	1-10	10,500	192	0.036	82.4	0.037	84.7	3.24	1.47	3.33	1.51
	3	1-11	10,100	197	0.035	80.8	0.037	84.9	3.05	1.38	3.20	1.45
	Average		10,400	191	0.035	81.1	0.037	85.0	3.16	1.43	3.31	1.50
	4	1-12	10,500	192	0.053	120	0.057	131	4.74	2.15	5.16	2.34
Bottom Kiln	1	1-9	4,200	136	0.004	8.96	0.007	15.8	0.141	0.064	0.248	0.113
	2	1-10	4,230	130	0.004	9.80	0.006	13.1	0.155	0.070	0.208	0.094
	3	1-11	3,970	144	0.003	7.08	0.005	11.3	0.105	0.048	0.168	0.076
	Average		4,130	137	0.004	8.61	0.006	13.4	0.134	0.061	0.208	0.094
	4	1-12	4,230	144	0.006	13.6	0.007	16.5	0.215	0.098	0.261	0.118
Dryer	1	1-9	45,800	84.1	0.001	2.13	0.004	8.14	0.366	0.166	1.40	0.633
	2	1-10	47,000	82.1	0.002	3.58	0.003	7.92	0.630	0.286	1.39	0.632
	3	1-11	45,800	81.9	0.001	2.71	0.003	7.20	0.466	0.211	1.23	0.560
	Average		46,200	82.7	0.001	2.81	0.003	7.75	0.487	0.221	1.34	0.608
	4	1-12	45,700	83.9	0.001	2.52	0.004	8.07	0.430	0.195	1.38	0.626

ample Nos. 1, 2, and 3 were collected during Condition 1 with Sample No. 4 collected during Condition 2, for all sampling locations.

AP42 Section:	11.3
Reference:	36
Title:	Source Emissions Testing, Marseilles Brick, Marseilles, Illinois, Fugro Midwest, Inc., St. Ann, MO, October 13, 1994.

FUGRO MIDWEST, INC.

FUGRO ◘ McClelland

SOURCE EMISSIONS TESTING
MARSEILLES BRICK
MARSEILLES, ILLINOIS

MARSEILLES BRICK VENTURE, LTD.

5/20/97

Brian

The August 29, 1994 and August 30, 1994 Emission Tests were performed with the kiln on a 15 car/day production rate

FAX TRANSMISSION

MARSEILLES BRICK
1401 BROADWAY ST.
MARSEILLES, IL 61341
(815)795-6922
FAX: (815)795-6869

To: Brian Shrager
First Midwest Research
Fax #: (919) 677-0065

Date: 5/1/97
Pages: , including this cover sheet.

From: Jock Laird

Subject: Stack Emission Tests

COMMENTS:

Dear Brian

The following is copied from our Stack Test Report on Tests done 5/10/94 & 5/11/94. I do not have that information on the August test where I can get to it as readily. I will get it for you and fax to you some time next week.

Thanks

Jock Laird

[redacted]

MARSEILLES BRICK

VENTURE LIMITED PARTNERSHIP

**********FAX COVER SHEET**********

DATE: 5/25/94

TO: Robt Folle
Fugro McClelland

FROM: Jack Laird

TOTAL # OF PAGES, INCLUDING COVER: 3

MESSAGE: Dear Bob
Following is a Brief description of our Drying & Firing process. The test ware set up for a 80% shale 20% Fireclay Mix. If you have any questions about this information please give me a call.

Regards
Jack

Description of Drying & Firing Procedure

Marseilles Brick has two independent Dryer tunnels approximately 200 ft. in length that hold 14 kiln cars each. Waste heat from the cooling section of the kiln is supplied to each dryer by a fan through a duct/plenum system. The heat to each dryer is boosted to 325°F by two natural gas burners, 442M BTU/hr and 432M BTU/hv respectively, located in the air supply duct. Moist warm air is exhausted to the atmosphere by a fan at the entrance end of each dryer tunnel. Dryer #1 and Dryer #2 are independent of each other except for the common waste heat supply from the kiln.

The tunnel kiln used by Marseilles Brick to fire its brick is a 498 ft. metal jacketed natural gas fired kiln designed by Ceric. The kiln holds a total of 36 kiln cars with 20 in the pre-heat and furnace section and 16 in the cooling section. The pre-heat section is divided into 6 zones with a total of 32 gas fired side burners. The furnace section is divided into 7 zones with 19 natural gas fired top burners in each zone for a total of 133 top fired burners. The cooling section has a rapid cool zone (2 car lengths long) where the brick are cooled from 1930°F to approximately 1300°F by injecting ambient air directly on the brick. The balance of the cooling section is used to cool the brick to approximately 100°F before exiting the kiln.

Waste heat is removed from the cooling section close to the exit to supply heated air to the dryers. The kiln exhaust fan is located near the entrance end of the pre-heat and exhausts the products of combustion to the atmosphere through a 40' high brick chimney.

MATERIAL BEING TESTED

80% Shale, 20% Fireclay
Size: Modular
Weight: Wet - 4.6 lbs., Dry - 4.1 lbs., Fired - 3.8 lbs.
Units per car: 10,080
Production rate 12 cars per day

Date: May 10, Time 12:00 p.m.
Position of cars in kiln
16 cars 80% Shale, 20% Fireclay in pre-heat & furnace section
20 cars 10% Shale, 90% Fireclay 4 in furnace & 16 in cooling

Position of cars in Dryers
Dryer #1
14 cars 80% Shale, 20% Fireclay
Dryer #2
14 cars 80% Shale, 20% Fireclay

Date: May 11, Time 7:00 a.m.
Position of cars in kiln
23 cars 80% Shale, 20% Fireclay in pre-heat, furnace & cooling
13 cars 10% Shale, 90% Fireclay in cooling section

Position of cars in Dryers
Dryer #1
14 cars 80% Shale, 20% Fireclay
Dryer #2
14 cars 80% Shale, 20% Fireclay

Date: May 11, Time 12:00 p.m.
Position of cars in kiln
25 cars 80% Shale, 20% Fireclay in pre-heat, furnace & cooling
11 cars 10% Shale, 90% Fireclay in cooling section

Position of cars in Dryers
Dryer #1
14 cars 80% Shale, 20% Fireclay
Dryer #2
14 cars 80% Shale, 20% Fireclay

Total fuel consumption during Test #1 (Dryer #1 exhaust)

May 10 - 14,200 cubic feet per hour

Total fuel consumption during Test #2 (Dryer #2 exhaust)

May 11 - 13,100 cubic feet per hour

Total fuel consumption during Test #3 (kiln exhaust)

May 11 - 13,100 cubic feet per hour

FUGRO MIDWEST, INC.

SOURCE EMISSIONS TESTING
MARSEILLES BRICK
MARSEILLES, ILLINOIS

MARSEILLES BRICK VENTURE, LTD.

FUGRO MIDWEST, INC.

9921 St. Charles Rock Road
St. Ann (St. Louis), Missouri 63074
Tel: (314) 428-8880
Fax: (314) 428-8719

October 13, 1994
Report 0894-8885-2

Mr. Charles Laird
Marseilles Brick Venture, Ltd.
P.O. Box 306
1401 Broadway
Marseilles, Illinois 61341

Source Emissions Testing
Marseilles Brick
Marseilles, Illinois

Dear Mr. Laird:

Fugro Midwest, Inc. (Fugro) is pleased to provide you with this report on the results of the air emissions tests conducted at the Marseilles Brick facility located in Marseilles, Illinois. Testing was conducted on August 29, 1994 on the outlet of the kiln, and on August 30, 1994 on the outlet of the number one and number two dryer stacks.

This report describes the testing methodologies and summarizes the results of the emissions testing.

Fugro appreciates this opportunity to provide service to Marseilles Brick, and we look forward to working with you on future projects. Please call us if you have any questions concerning this report.

Sincerely,

FUGRO MIDWEST, INC.

Robert F. Folle
Air Quality Scientist

Christopher N. Dawdy
Vice President
Manager, Air Quality Group

RFF:CND:nm

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TABLES

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APPENDICES

1.0 INTRODUCTION

Fugro Midwest, Inc. (Fugro) was contracted by Marseilles Brick Venture, Ltd. to conduct source emissions testing at their facility located in Marseilles, Illinois. Marseilles Brick has two independent dryer tunnels approximately 200 ft. in length that hold 14 kiln cars each. Waste heat from the cooling section of the kiln is supplied to each dryer by a fan through a duct/plenum system. The heat to each dryer is boosted to 325°F by two natural gas burners, 442M BTU/hr. and 432M BTU/hr. respectively, located in the air supply duct. Moist warm air is exhausted to the atmosphere by a fan at the entrance end of each dryer tunnel. Dryer #1 and dryer #2 are independent of each other except for the common waste heat supply from the kiln.

The tunnel kiln used by Marseilles Brick to fire its brick is a 498 ft. metal jacketed natural gas fired kiln designed by Ceric. The kiln holds a total of 36 kiln cars with 20 in the pre-heat and furnace section and 16 in the cooling section. The pre-heat section is divided into 6 zones with a total of 32 gas fired side burners. The furnace section is divided into 7 zones with 19 natural gas fired top burners in each zone for a total of 133 top fired burners. The cooling section has a rapid cool zone (2 car lengths long) where the brick is cooled from 1930°F to approximately 1300°F by injecting ambient air directly on the brick. The balance of the cooling section is used to cool the brick to approximately 100°F before existing the kiln.

Waste heat is removed from the cooling section close to the exit to supply heated air to the dryers. The kiln exhaust fan is located near the entrance end of the pre-heat and exhausts the products of combustion to the atmosphere through a 40 ft high brick chimney.

Source emissions testing was conducted to determine mass emission rates of particulate, sulfur trioxide, sulfur dioxide, carbon monoxide, nitrogen oxide, and volatile organics. Three 1-hour test runs were conducted on each of the two dryer units and the kiln while firing bricks with a 17% shale/83% fireclay composition.

The emissions testing was conducted following the procedures outlined in 40 CFR Part 60, Appendix A, using USEPA Methods 1, 2, 3, 4, 5, and 6 to determine sampling point locations, volumetric flow rates, molecular weight, moisture concentrations, total particulate matter, and sulfur dioxide/sulfur trioxide, respectively. Additionally, USEPA Method 7E was used to determine nitrogen oxide (NO_x) emissions, USEPA Method 10 was used to determine carbon monoxide emissions, and USEPA Method 25A was used to determine total volatile organic emissions.

This report presents the results of the emissions testing. Copies of the field data sheets, laboratory analysis, equipment calibration records, calibration gas certifications, and example calculations are included in the appendices of this report.

2.0 SUMMARY OF TEST RESULTS

Fugro conducted source emissions testing at the Marseilles Brick facility located in Marseilles, Illinois, on August 29 and August 30, 1994 to quantify emission rates from three sources. An air emissions summary is presented in Table 2-1 for total particulate matter, NO_x, CO, and total hydrocarbon (THC) emissions. Table 2-2 presents the SO_2 and SO_3 results. The emissions were determined by averaging the results of three 1-hour test runs conducted on the exhaust of each unit. The testing was conducted during the use of a 17% shale/83% fire clay mixture and the north (#1) and south (#2) dryer, and the kiln stacks were tested.

Complete test results for total particulate matter, SO_2, and SO_3 are presented in Tables 6-1 through 6-9. Example calculations for Test Run No. 1 for total particulate matter are presented in Appendix F.

The continuous emissions monitoring results for total hydrocarbons (THC), NO_x, and carbon monoxide (CO) are presented in Section 6.0, Tables 6-10 through 6-15.

3.0 PURPOSE OF TESTING

Fugro conducted air emissions testing at the facility located in Marseilles, Illinois for the purpose of determining mass emission rates of particulate matter, sulfur trioxide, sulfur dioxide, carbon monoxide, nitrogen oxide and volatile organics. These emissions rates will be used to evaluate the potential emissions associated with the brick manufacturing operation. The testing was conducted as required by 35 Ill. Adm. Code 201.282(a) in association with Permit #89010009.

4.0 ACTIVITIES DURING THE TESTING

Messrs. Robert Folle, Todd Staley, and Dan Cusac of Fugro conducted the emissions testing. Mr. Charles Laird of Marseilles Brick scheduled the testing and coordinated the testing effort. Mr. Mark Martin and John Krolak of the Illinois EPA were present and observed the testing. Resumes of the test crew are presented in Appendix A.

5.0 TEST METHODS AND PROCEDURES

Fugro utilized USEPA Test Methods 1, 2, 3, 4, 5, and 6 as outlined in 40 CFR Part 60, Appendix A, to determine traverse point locations, stack gas velocity, volumetric flow rates, molecular weight, moisture, total particulate matter emissions and sulfur emissions, respectively. Additionally, Methods 7E, 10, and 25A were used to determine nitrogen oxide, carbon monoxide, and total hydrocarbon emissions.

Table 2-1
Emissions Summary
Marseilles Brick Venture Ltd.
Marseilles, Illinois

Source	Run		Parameter			
			Particulate	NO_x	CO	THC
Dryer #1	1	gr/dscf	0.0039	-	-	-
		lb/hr	0.645	0	0.46	0.21
		ppm	-	0	5.5	1.55
	2	gr/dscf	.0010	-	-	-
		lb/hr	0.1641	0	1.20	0
		ppm	-	0	14.6	0
	3	gr/dscf	.0026	-	-	-
		lb/hr	0.4483	0	0.46	0
		ppm	-	0	5.4	0
	Avg.	gr/dscf	.0025	-	-	-
		lb/hr	0.4190	0	0.71	0.52
		ppm	-	0	8.5	0.068
Dryer #2	1	gr/dscf	.0017	-	-	-
		lb/hr	0.2663	0	0.396	0
		ppm	-	0	4.7	0
	2	gr/dscf	.0017	-	-	-
		lb/hr	0.2640	0	0.246	0
		ppm	-	0	3.0	0
	3	gr/dscf	.0012	-	-	-
		lb/hr	0.1890	0	0.430	0
		ppm	-	0	5.0	0
	Avg.	gr/dscf	0.0016	-	-	-
		lb/hr	.2397	0	0.357	0
		ppm	-	0	4.23	0
Kiln	1	gr/dscf	.1427	-	-	-
		lb/hr	21.58	2.02	9.78	0.92
		ppm	-	16.38	130.10	7.8
	2	gr/dscf	0.0759	-	-	-
		lb/hr	11.36	1.92	9.41	0.72
		ppm	-	15.63	125.98	6.1
	3	gr/dscf	.0907	-	-	-
		lb/hr	14.33	0.93	10.64	0.76
		ppm	-	7.250	136.82	6.2
	Avg.	gr/dscf	0.1031	-	-	-
		lb/hr	15.75	1.62	9.94	0.798
		ppm	-	13.1	130.97	6.7

AP42 Section:	11.3
Reference:	36
Title:	Source Emissions Testing, Marseilles Brick, Marseilles, Illinois, Fugro Midwest, Inc., St. Ann, MO, October 13, 1994.

Table 2-1
Emissions Summary
Marseilles Brick Venture Ltd.
Marseilles, Illinois

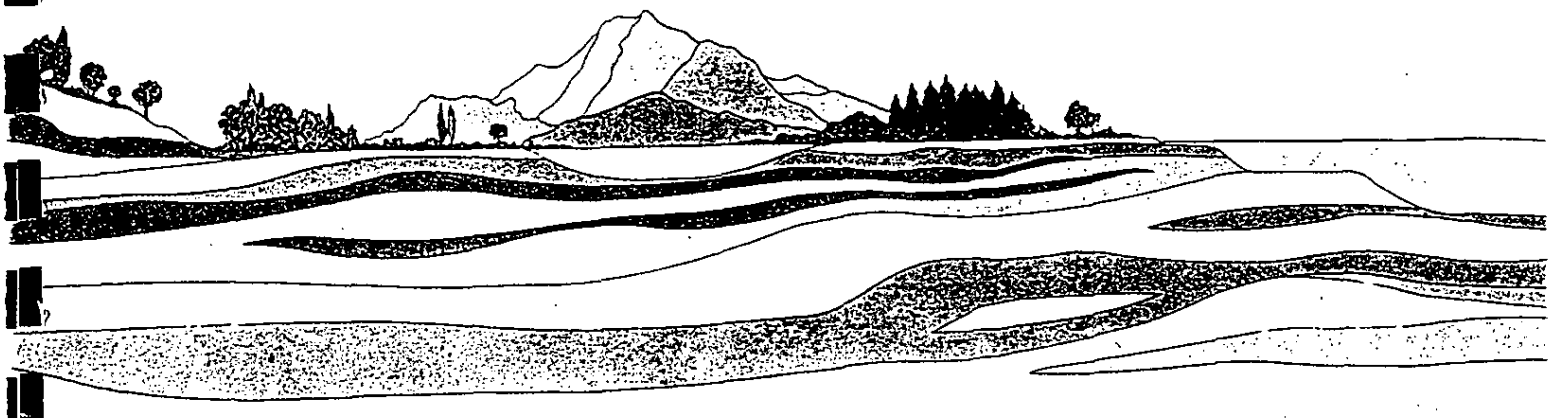
Source	Run		Parameter			
			Particulate	NO_x	CO	THC
Dryer #1	1	gr/dscf	0.0039	-	-	-
		lb/hr	0.645	0	0.46	0.21
		ppm	-	0	5.5	1.55
	2	gr/dscf	.0010	-	-	-
		lb/hr	0.1641	0	1.20	0
		ppm	-	0	14.6	0
	3	gr/dscf	.0026	-	-	-
		lb/hr	0.4483	0	0.46	0
		ppm	-	0	5.4	0
	Avg.	gr/dscf	.0025	-	-	-
		lb/hr	0.4190	0	0.71	0.52
		ppm	-	0	8.5	0.068
Dryer #2	1	gr/dscf	.0017	-	-	-
		lb/hr	0.2663	0	0.396	0
		ppm	-	0	4.7	0
	2	gr/dscf	.0017	-	-	-
		lb/hr	0.2640	0	0.246	0
		ppm	-	0	3.0	0
	3	gr/dscf	.0012	-	-	-
		lb/hr	0.1890	0	0.430	0
		ppm	-	0	5.0	0
	Avg.	gr/dscf	0.0016	-	-	-
		lb/hr	.2397	0	0.357	0
		ppm	-	0	4.23	0
Kiln	1	gr/dscf	.1427	-	-	-
		lb/hr	21.58	2.02	9.78	0.92
		ppm	-	16.38	130.10	7.8
	2	gr/dscf	0.0759	-	-	-
		lb/hr	11.36	1.92	9.41	0.72
		ppm	-	15.63	125.98	6.1
	3	gr/dscf	.0907	-	-	-
		lb/hr	14.33	0.93	10.64	0.76
		ppm	-	7.250	136.82	6.2
	Avg.	gr/dscf	0.1031	-	-	-
		lb/hr	15.75	1.62	9.94	0.798
		ppm	-	13.1	130.97	6.7

AP42 Section:	11.3
Reference:	37
Title:	*Source Emissions Testing, Marseilles Brick, Marseilles, Illinois*, Fugro Midwest, Inc., St. Ann, MO, July 1, 1994.

FUGRO MIDWEST, INC.

SOURCE EMISSIONS TESTING
MARSEILLES BRICK
MARSEILLES, ILLINOIS

MARSEILLES BRICK VENTURE, LTD.

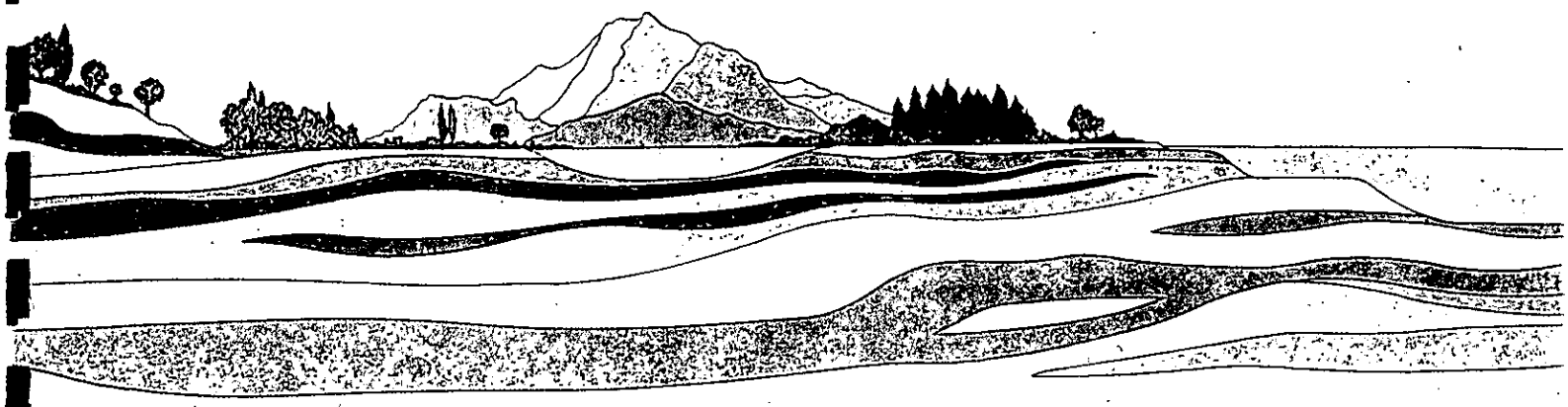


FUGRO MIDWEST, INC.

FUGRO ◻ McClelland

SOURCE EMISSIONS TESTING
MARSEILLES BRICK
MARSEILLES, ILLINOIS

MARSEILLES BRICK VENTURE, LTD.



FUGRO MIDWEST, INC.

9921 St. Charles Rock Road
St. Ann (St. Louis), Missouri 63074
Tel: (314) 428-8880
Fax: (314) 428-8719

July 1, 1994
Report 0894-8885

Mr. Charles Laird
Marseilles Brick Venture, Ltd.
P.O. Box 306
1401 Broadway
Marseilles, Illinois 61341

Source Emissions Testing
Marseilles Brick
Marseilles, Illinois

Dear Mr. Laird:

Fugro Midwest, Inc. (Fugro) is pleased to provide you with this report on the results of the air emissions tests conducted at the Marseilles Brick facility located in Marseilles, Illinois. Testing was conducted on May 10, 1994 at the outlet of the number one dryer, and on May 11, 1994 at the outlet of the number two dryer and kiln.

This report describes the testing methodologies and summarizes the results of the emissions testing.

Fugro appreciates this opportunity to provide service to Marseilles Brick, and we look forward to working with you on future projects. Please call us if you have any questions concerning this report.

Sincerely,

FUGRO MIDWEST, INC.

Anna C. Nabb
Air Quality Scientist

Christopher N. Dawdy
Vice President
Manager, Air Quality Group

ACN:CND:ab

CONTENTS

TABLES

FIGURES

APPENDICES

1.0 INTRODUCTION

Fugro Midwest, Inc. (Fugro) was contracted by Marseilles Brick Venture, Ltd. to conduct source emissions testing at their facility located in Marseilles, Illinois. Marseilles Brick has two independent Dryer tunnels approximately 200 ft. in length that hold 14 kiln cars each. Waste heat from the cooling section of the kiln is supplied to each dryer by a fan through a duct/plenum system. The heat to each dryer is boosted to 325°F by two natural gas burners, 442M BTU/hr. and 432M BTU/hr. respectively, located in the air supply duct. Moist warm air is exhausted to the atmosphere by a fan at the entrance end of each dryer tunnel. Dryer #1 and Dryer #2 are independent of each other except for the common waste heat supply from the kiln.

The tunnel kiln used by Marseilles Brick to fire its brick is a 498 ft. metal jacketed natural gas fired kiln designed by Ceric. The kiln holds a total of 36 kiln cars with 20 in the pre-heat and furnace section and 16 in the cooling section. The pre-heat section is divided into 6 zones with a total of 32 gas fired side burners. The furnace section is divided into 7 zones with 19 natural gas fired top burners in each zone for a total of 133 top fired burners. The cooling section has a rapid cool zone (2 car lengths long) where the brick is cooled from 1930°F to approximately 1300°F by injecting ambient air directly on the brick. The balance of the cooling section is used to cool the brick to approximately 100°F before existing the kiln.

Waste heat is removed from the cooling section close to the exit to supply heated air to the dryers. The kiln exhaust fan is located near the entrance end of the pre-heat and exhausts the products of combustion to the atmosphere through a 40 ft high brick chimney.

Source emissions testing was conducted to determine mass emission rates of particulate, sulfur trioxide, sulfur dioxide, carbon monoxide, nitrogen oxide, and volatile organics. Three 1-hour test runs were conducted on each of the two dryer units and the kiln while firing bricks with an 80% shale/20% fireclay composition.

The emissions testing was conducted following the procedures outlined in 40 CFR Part 60, Appendix A, using USEPA Methods 1, 2, 3, 4, 5, and 6 to determine sampling point locations, volumetric flow rates, molecular weight, moisture concentrations, total particulate matter, and sulfur dioxide/sulfur trioxide, respectively. Additionally, USEPA Method 7E was used to determine nitrogen oxide (NO_x) emissions, USEPA Method 10 was used to determine carbon monoxide emissions, and USEPA Method 25A was used to determine total volatile organic emissions.

This report presents the results of the emissions testing conducted at the Marseilles Brick facility. Copies of the field data sheets, laboratory analysis, equipment calibration records, calibration gas certifications, and example calculations are included in the appendices of this report.

2.0 SUMMARY OF TEST RESULTS

Fugro conducted source emissions testing at the Marseilles Brick facility located in Marseilles, Illinois, on May 10 and May 11, 1994 to quantify emission rates from three processes. An air emissions summary is presented in Table 2-1. The emissions were determined by averaging the results of three 1-hour test runs conducted on the exhaust of each unit. The testing was conducted during the use of 80% shale/20% clay mixture. Appendix A contains related process operations data.

3.0 PURPOSE OF TESTING

Fugro conducted air emissions testing at the facility located in Marseilles, Illinois for the purpose of determining mass emission rates of particulate matter, sulfur trioxide, sulfur dioxide, carbon monoxide, nitrogen oxide and volatile organics. These emissions rates will be used to evaluate the potential emissions associated with the brick manufacturing operation. The testing was conducted as required by 35 Ill. Adm. Code 201.282(a) in association with Permit #89010009.

4.0 ACTIVITIES DURING THE TESTING

Messrs. Robert Folle, Todd Staley, and Dan Cusac of Fugro conducted the emissions testing. Mr. Charles Laird of Marseilles Brick scheduled the testing and coordinated the testing effort. Resumes of the test crew are presented in Appendix B.

5.0 TEST METHODS AND PROCEDURES

Fugro utilized USEPA Test Methods 1, 2, 3, 4, 5, and 6 as outlined in 40 CFR Part 60, Appendix A, to determine traverse point locations, stack gas velocity, volumetric flow rates, molecular weight, moisture, total particulate matter emissions and sulfur emissions, respectively. Additionally, Methods 7E, 10, and 25A when used to determine nitrogen oxide, carbon monoxide, and total hydrocarbon emissions.

Table 2-1
Emissions Summary
Marseilles Brick Venture Ltd.
Marseilles, Illinois

Source	Run		Parameter					
			Particulate	SO_2	SO_3	NO_X	CO	THC
Dryer #1	1	gr/dscf	0.0074	0	0.0005	-	-	-
		lb/hr.	0.9765	0	0.0632	1.29	0.53	0.39
		ppm	-	ND	0.35	11.9	8.0	3.7
	2	gr/dscf	0.0023	0	0.0001	-	-	-
		lb/hr.	0.3741	0	0.0216	0.47	1.52	0.78
		ppm	-	ND	0.10	3.5	18.7	6.1
	3	gr/dscf	0.0041	0	0.0004	-	-	-
		lb/hr	0.6398	0	0.0625	0.26	1.86	0.88
		ppm	-	ND	0.30	2.0	24.0	7.3
	Avg.	gr/dscf	0.0046	0	0.0003	-	-	-
		lb/hr.	0.6635	0	0.0491	0.67	1.30	0.68
		ppm	-	ND	0.25	5.8	16.9	5.7
Dryer #2	1	gr/dscf	0.0057	0	0	-	-	-
		lb/hr.	0.7770	0	0	0.17	1.04	0.33
		ppm	-	ND	ND	1.5	14.9	3
	2	gr/dscf	0.0008	0	0	-	-	-
		lb/hr.	0.1199	0	0	0.29	1.50	0.32
		ppm	-	ND	ND	2.2	19.0	2.6
	3	gr/dscf	0.0008	0	0.0004	-	-	-
		lb/hr.	0.1206	0	0.0529	0.35	1.43	0.55
		ppm	-	ND	0.27	3.0	20.0	4.9
	Avg.	gr/dscf	0.0024	0	0.0001	-	-	-
		lb/hr.	0.3391	0	0.0176	0.27	1.32	0.40
		ppm	-	ND	0.09	2.2	18.0	3.5
Kiln	1	gr/dscf	0.0376	0.3800	0.0249	-	-	-
		lb/hr.	4.2421	42.9170	2.3903	2.36	6.98	0.80
		ppm	-	338.1	18.6	25.9	125.8	9.2
	2	gr/dscf	0.0381	0.3496	0.0197	-	-	-
		lb/hr.	4.6234	42.3965	2.8082	2.67	7.23	0.81
		ppm	-	314.5	14.95	27.6	122.8	8.8
	3	gr/dscf	0.0347	0.3458	0.0163	-	-	-
		lb/hr.	3.8788	38.5965	1.8228	2.50	6.81	0.67
		ppm	-	310.8	12.4	28.0	125.5	7.8
	Avg.	gr/dscf	0.0368	0.3585	0.0203	-	-	-
		lb/hr.	4.2481	41.3033	2.3404	2.51	7.01	0.76
		ppm	-	321.1	15.3	27.2	124.7	8.6

AP42 Section:	11.3
Reference:	12
Title:	Source Emission Test At Belden Brick, Inc., Sugarcreek, OH, No. 1 Kiln, Plant 3, CSA Company, Alliance, OH, March 3, 1992.

AP-42 Section 11.3
Reference 12

CSA COMPANY

(Custom Stack Analysis)

ENGINEERING REPORT

SOURCE EMISSION TEST
AT
BELDEN BRICK, INC.
SUGARCREEK, OHIO
NO.1 KILN, PLANT 3
MARCH 3, 1992

TECHNICAL SERVICES FOR POLLUTION CONTROL

SOURCE TESTING - LAB SERVICE - BOILER CONSULTING

BELDEN BRICK,INC.,SUGARCREEK,OH,NO.1KILN,PLANT 3,MARCH 3,1992

CONTENTS

CSA CO., PO BOX 3750, ALLIANCE, OH 44601 PH (216)525-5119
FAX (216)525-7908

Permit limits
PM 4.20 #/hr
SO_2 6.60
NOx 6.00

SOURCE EMISSION TESTS

AT

BELDEN BRICK INC.

SUGARCREEK, OHIO

NO.1 KILN,PLANT 3

MARCH 3,1992

Brief of Tests

Particulate emission tests were performed on the stack of the brick kiln as per EPA Federal Register methods 1 through 5,6 and 7 as set forth in the Appendix to Part 60, "Standards of Performance for stationary sources", Subchapter C, Chapter 1,Title 40, Volume 42, No.160, July 1,1988 as amended from the original Federal Register, Volume 36, No. 247, December 23, 1971.

The tunnel kiln is a continuos operation where the green product is loaded on cars that travel through the various heat zones and discharge as a finished product at the other end. The kiln is heated with natural gas with the proudcts of combustion and the emissions from the curring process discharging to a stack via induced draft fan.

Results

A) The particulate emission rate was 2.50 pounds per hour.

B) The sulfur dioxide emission rate was ~~2.29~~ 2.71 pounds per hour.

C) The nitrogen oxides emission rate was 2.29 pounds per hour.

D) The process weight rate was 15,660 pounds per hour.

Test Methods

A twelve point traverse was selected for the ~~thirty five~~ 44 inch square brick stack as per method 1. Each point was sampled for five minutes for a total test time of 60 minutes (See figure 1). The CO_2 and O_2 analysis were conducted by an orsat flue gas analyzer from an integrated sample taken at the test ports to provide data for method 3.

Method 5 was used to determine the particulate quantity, moisture determination by method 4 and gas velocity by method 2 using a Research Appliance Corp. "Stacksamplr".

The sulfur dioxide tests were performed by method 6.

The nitrogen oxides were determined by EPA method 7.

Particulate Test Apparatus

A schematic of the apparatus is shown in figure 2.

The dust laden gases were passed through a pyrex lined probe and heated glass cyclone separator bypass followed by a four inch filter holder containing Gelman Type A-E fiberglass filter media. The gases leaving the filter were cooled in a series of three impingers packed in ice. The first and third impinger were the modified Greenburg-Smith type and the second one was a standard Greenburg-Smith. The First and second impingers were filled with 100 ml of distilled water with the third one used as a dry trap. After leaving the dry trap, the gases passed through a "Drierite" column containing about 500 grams of calcium sulfate (CaS04) desicant to remove the remaining water vapor. The dry gas passed through the hose portion of the umbilical cord to a Research Appliance Corp. model 2343 "Stacksamplr" module. In the module the gas was moved through the system by a leakless air pump to a Rockwell 175-S dry test meter. The dry test meter exhausted to a calibrated orifice to measure the flow rate of the gases passing through the sampling apparatus. A type "S" pitot tube was attached to the sheath of the heated probe to measure the velocity head of the flue gases near the tip of the probe nozzle. The orifice pressure taps and the pitot tube were connected to a Dwyer dual 10 inch combination inclined well type manometer. One half of the manometer measured the orifice differential (Δ H) and the other half measured the flue gas velocity head (Δ P).

The temperature of the flue gas was measured by a type "K" thermocouple connected to a PyroMation digital temperature indicator.

The CO_2 and 0_2 were measured with a Burrell "Industro" Model B orsat from an integrated sample taken by withdrawing a constant flow rate of gas from the stack and injecting it into a Tedlar bag. This was done by drawing the gas through an in-stack filter via neoprene tubing to a condenser and condensate collector ahead of a leakless diaphragm vacuum-pressure pump. The pump discharged to the rotometer and the Tedlar bag. The apparatus is equipped with valves to by-pass the rotometer and bag when clearing the sample line as shown in figure 3.

Particulate Test Procedures

The probe, filter and glassware was assembled and leak tested in our lab before transporting to the job site. Three sets of equipment

were used. At the job site a preliminary pitot traverse was performed to select the proper nozzle size. The nozzles were measured with an inside vernier caliper and micrometer calibrated with a one inch micrometer standard.

The first and second impingers were filled with 100 ml of distilled water and the "Drierite" columns were connected just prior to elevating the probe into position.

After leak testing the apparatus at 10 inches of mercury the probe was inserted at the first sample point to start the test.

The isokinetic sampling rates were determined using a portable desk top computer programmed to calculate the proper ΔH setting at the flue gas temperature, pressure, density and the assumed moisture along with the temperature, ΔP and an assumed ΔH of the test module. The sampling rate (ΔH) can be determined in less than 5 seconds using this technique.

The apparatus was leak tested after the test was completed at a vacuum exceeding that encountered during the test.

The moisture content was determined from the amount of condensate collected in the impingers and the difference of the tare and gross weight of the "Drierite" desicant column. The desicant column was weighed on an Ohaus 5 Kg industrial lab balance to the nearest half gram.

The filter media was dried in a desicator at room temperature to dryness before tare and gross weighing on a Stanton CL4D analytical balance.

The probe liner, nozzle, cyclone bypass and front half of the filter holder were washed with acetone and brush after testing and evaporated to dryness at room temperature in 500 ml beakers. The beakers were dried and tare weighed prior to sample evaporation and gross weighed after allowing the samples to desicate to dryness. These weights were accomplished with the Stanton Balance.

The integrated gas sampler was started at the beginning of the method 5 test with about two cubic foot of gas collected in the tedlar bag at the end of the test. The sampling rate was maintained constant during the test by maintaining a constant reading on the rotometer.

The orsat analysis was performed on the gases contained in the

bag shortly after the test was completed.

Sulfur dioxide test apparatus and procedures.

A schematic of the test apparatus is shown in figure 4. The gases were drawn through a heated pyrex probe with a fiberglass wad attached to the sampling end of the probe. The probe was connected to the impinger train where it first passed through a midget bubbler containing 15 ml of 80% isopropyl alcohol. A wad of glass wool was packed in the top of the bubbler to collect any acid mist carryover. The gases then passed through two midget impingers,each containing 15 ml of 3% hydrogen peroxide solution followed by an empty midget impinger to collect the carryover from the preceeding impingers. The midget bubbler and impingers were contained in an ice bath to condense acid and water vapor. After leaving the dry trap the gases passed through a "Drierite" column containing about 500 grams of "Drierite" via rubber hose to remove the remaining water vapor. The dry gas was transmitted to the module through a "polyflow" tubing. In the module the gas was moved through the system by a leakless air pump connected to the rotometer to measure the gas flow rate and a Rockwell type "S" dry test meter to measure the gas volume. The dry test meter was equipped with a thermometer located in the top half of the gas meter to measure the temperature of the meter. The gas from the meter was discharged to the atmosphere.

Class "A" burrettes and pipets were used for the titrations in the lab analysis of the contents of the impingers.

The run was started shortly after the method 5 test was started and ran for twenty minutes. Two runs comprised one test.

The calculations are shown in Appendix I.

NOx Apparatus & Procedure

The NOx sampling apparatus is shown in figure 4. Prior to testing the absorbing solution was made by adding 2-8 ml of concentrated H_2SO_4 to 1 liter of deionized, distilled water. After mixing, 6 ml of 3 per cent H_2O_2 was added. This solution was made just prior to testing and was stored in a dark glass bottle away from sunlight. 25 ml of this solution was used for each test. Four tests were performed during of the three method 5 tests. The raw data and calculations are shown in Appendix II.

Before taking a sample the system was leak checked by evacuating the flask to the maximum vacuum and closing the valve to the pump with the three way stopcock left in the evacuate position and the one way stopcock open. The system was considered leak-free if the vacuum remained the same for a period of one minute. The reading indicated on the manometer was recorded along with the temperature of the flask.

The contents in the flask were shaken for at least five minutes after collecting the sample. The samples were contained in the flask for at least sixteen hours before transferring to plastic bottles. The flasks were rinsed twice with about five ml portions of distilled water that was added to the plastic bottle. The pH of the contents of the plastic bottle was adjusted to about ten with one normal sodium hydroxide. The bottles were marked and sealed for transport. The barometric pressures were obtained from the local airport and corrected for elevation.

NOx Lab Analysis

1) Spectrophotometer Calibration

The spectrophotometer was turned on and allowed to warm up for about one hour prior to calibrating with a didymium calibrating standard along with the procedures of standard practice for the Perkin-Elmer model 44 linear absorbance spectrophotometer.

A KNO_3 standard solution was made by dissolving 2.198 grams of KNO_3 in one liter of distilled deionized water in a 1,000 ml volumetric flask. Ten ml of this solution was dilluted to 100 ml in a 100 ml volumetric flask to use as a working standard where one ml is equal to 100 m-grams NO_2.

The spectrophotometer calibration factor was made by adding 0, 1,2,3 & 4 ml of the standard working solution to a series of five porcelain evaporating dishes along with 25 ml of the absorbing solution and 10 ml of distilled water. The pH of this solution was adjusted to about 10 by adding NaOH (1N) before evaporating to dryness on a steam bath. After drying and cooling 2 ml of phenoldisulfonic acid was added to the residue. One ml of distilled water and four drops of concentrated sulfuric acid was added and titurated throughly with a polyethylene policeman. This solution was stirred while being heated for about 3 minutes on the steam

bath. After cooling, 20 ml of distilled water was added and mixed well. Concentrated NH_4OH was added dropwise with constant stirring until the pH was 10 by pH paper. This solution was added to 100 ml volumetric flasks and dilluted to the mark with distilled water. The contents were mixed throughly before transferring a portion to the 25 x 105 mm round spectrophotometer cuvettes. The absorbance of each of the solutions was measured and recorded at 410 nm wave length using the O ml sample as the blank. The blank sample showed the same absorbance as the distilled water. The absorbance for each standard is shown on the data sheetin Appendix II.

2) Sample Analysis

All samples were returned with none of the liquid lost in transit. The contents of the plastic bottles were transfered to 50 ml volumetric flasks and rinsed twice with 5 mlportions of distilled water, then dilluted to the mark with distilled water and mixed throughly. A 25 ml aliquot was piped into the 250 ml porcelain evaporating dish and evaporated to dryness on the steam bath. Since there were no solids in the solution the remaining procedures were performed the same as the calibration standards.

The volume of the 2 liter sample flask was determined by filling the flask to the one way stopcock bore and emptying it into a graduated cyclinder for measurement. This was done with water at room temperature.

Miscellaneous

All raw data and calculations are shown in Appendix I.

The Intent to test notification is included in Appendix II.

Submitted by

Ernest L.Kolm

Test	1	2	3	Average
Date	3/3/92	3/3/92	3/3/92	
Time	9:57/11:ØØ	11:12/12:15	12:33/13:25	
PARTICULATE QUANTITY				
Grains/f3 Dry STP	Ø.Ø198	Ø.Ø153	Ø.Ø19Ø	Ø.Ø18Ø
Pounds/Hr.	2.8331	2.1Ø6Ø	2.5511	2.4967
GASEOUS EMISSIONS				
SO2 Pounds/Hr	2.79	2.87	2.48	2.71
SO2 Parts/Million	17.Ø	18.Ø	16.Ø	17.Ø
NOx Pounds/Hr	2.47	2.42	1.97	2.29
STACK GAS CONDITIONS				
Temperature -dg. F	4Ø2.Ø	429.Ø	397.Ø	4Ø9.3
Static Pressure-in H2O	Ø.ØØ	Ø.ØØ	Ø.ØØ	Ø.ØØ
CO2 - %	3.2	3.1	3.Ø	3.1
O2 - %	16.4	16.5	16.9	16.6
H2O - %	5.5	5.4	5.7	5.6
Velocity - FPS	36.62	36.4Ø	34.34	35.79
Stack Area - sqr. ft.	13.4Ø	13.4Ø	13.4Ø	13.4Ø
Gas Flow - ACFM	29445	29266	27610	28774
Gas Flow (DSTP) CFH	998281	962687	939679	966882
SAMPLE TRAIN CONDITIONS				
Pitot Delta P in H2O	Ø.251Ø	Ø.24ØØ	Ø.222Ø	
Orifice Delta P in H2O	1.51	1.61	1.44	
Temp. Meter - dg. F	78	95	98	
Gas Volume - CF Dry STP	39.24	39.61	38.66	
Barometer - in Hg	29.1Ø	29.1Ø	29.1Ø	
Probe Tip Dia. - in.	.313	.313	.313	
Isokinetic Var. - %	99.Ø	1Ø3.6	1Ø3.6	

BELDEN BRICK,INC.
SUGARCREEK,OHIO
NO.1 KILN,PLANT 3
COMPILED DATA

Table 1

AP42 Section:	11.3
Reference:	25
Title:	*Stationary Source Sampling Report Reference No. 14448, Triangle Brick, Merry Oaks, North Carolina, Emissions Testing For: Carbon Monoxide, Condensible Particulate, Metals, Methane, Nitrogen Oxides, Particulate, Particulate # 10 Microns, Sulfur Dioxide, Total Hydrocarbons*, Entropy, Inc., Research Triangle Park, NC, October, 1995.

ENTROPY, INC.

Specialists in Air Emissions Technology

P.O. Box 12291 • Research Triangle Park, North Carolina 27709-2291
(919) 781-3550 • (800) 486-3550 • Fax (919) 787-8442

STATIONARY SOURCE SAMPLING REPORT

REFERENCE NO. 14448

TRIANGLE BRICK

MERRY OAKS, NORTH CAROLINA

EMISSIONS TESTING FOR:

CARBON MONOXIDE

CONDENSIBLE PARTICULATE

METALS

METHANE

NITROGEN OXIDES

PARTICULATE

PARTICULATE ≤ 10 MICRONS

SULFUR DIOXIDE

TOTAL HYDROCARBONS

BRICK KILN NO. 2 STACK

PERFORMED FOR: WITHERS & RAVENEL ENVIRONMENTAL ENGINEERING, INC.

OCTOBER, 1995

CONTACT REPORT--MRI Project No. 4603-01

From: Brian Shrager, Environmental Engineering Department

Date of Contact: June 25, 1996

Contacted by: Telephone

Company/Agency: Withers and Ravenel
Cary, NC

Telephone Number: (919) 460-6006

Person(s) Contacted/Title(s)

Bill Colby

CONTACT SUMMARY: Mr. Colby was contacted to determine the production rate for the emission test conducted at Triangle Brick in Merry Oaks, NC for the Brick Institute of America. He no longer works at Withers and Ravenel; he moved to New Hampshire, and his new phone number is (603) 623-3600. The process rate was not readily available, but Mr. Colby provided emission factors for several pollutants measured during the test, and I subsequently calculated a process rate of **10.56 tons of brick produced per hour.** This process rate was constant throughout testing, and was confirmed for three different emission factors provided by Mr. Colby. He did not have any documentation of the production rates, but stated that they were measured by weighing several fired bricks and multiplying by the total number of bricks produced.

REPORT CERTIFICATION

EI Reference Number 14448

The sampling and analysis performed for this report were carried out under my direction and supervision, and I hereby certify that the test report is authentic and accurate.

Signature: Vincent Jude Tomaino Date: 11/16/95

Vincent Jude Tomaino
Project Director
Chemical and Manufacturing Services Division

Table of Contents

List of Tables and Figures

1.0 INTRODUCTION

1.1 Background

Testing was performed at the Triangle Brick facility in Merry Oaks, North Carolina to determine emission factors to be used by the Brick Association of North Carolina. During the testing, the brick kiln fired a brick which is common to many other brick manufacturing facilities and which has no facing material or other additives. The emissions measured originated either from the combustion of natural gas or from the bulk of the brick itself.

The actual feed rate (lb-brick/hr) was continuously monitored throughout the testing program. No facing materials or other additives were supplied to the bricks during this period.

1.2 Outline of Test Program

Table 1-1 is a test log which presents the sampling locations, sampling objectives, sampling methods, test dates, and run numbers for the test program. Several runs utilized volumetric air flow rates and/or flue gas composition data from other runs; refer to **Table 1-1.**

TABLE 1-1
TEST LOG
BRICK KILN NO. 2 STACK
OCTOBER, 1995

Sampling Objective	Test Method	Test Date	Run Numbers	Flue Gas Composition	Volumetric Air Flow Rate
Metals	EPA 29	10/17	S-M29-1	S-M29/M3-1	NA
		10/17	S-M29-2	S-M29/M3-2	
		10/17	S-M29-3	S-M29/M3-3	
SO_2, NO_X, CO, & THC	EPA 6C, 7E, 10, & 25A	10/17	S-CEM-1	NA	S-M29-1
		10/17	S-CEM-2		S-M29-2
		10/17	S-CEM-3		S-M29-3
Particulate	EPA 5	10/18	S-M5-1	S-M5/M3-1	NA
		10/18	S-M5-2	S-M5/M3-2	
		10/18	S-M5-3	S-M5/M3-3	
Particulate $\leq 10\mu$ & Condensible Particulate	EPA 201A & 202	10/18	S-M201A/202-1	S-M5/M3-1	NA
		10/18	S-M201A/202-2	S-M5/M3-2	
		10/18	S-M201A/202-3	S-M5/M3-3	

1.3 Test Participants

Table 1-2 lists the personnel involved in the test program.

TABLE 1-2
TEST PARTICIPANTS
OCTOBER, 1995

460-4004

Withers & Ravenel Environmental Engineering, Inc.	William G. Colby Test Coordinator
Entropy, Inc.	Vincent Jude Tomaino Project Director
	Dennis D. Holzschuh Project Manager
	Joseph P. Daley Sampling Team Leader
	Julie R. Ruff Sampling Team Leader
	Dan Wise Engineering Technician
	Joseph R. Winslow Laboratory Technician

2.0 SUMMARY OF RESULTS

2.1 Presentation

Table 2-1 presents the test results versus the permitted limits. **Table 2-2** presents additional test concentrations. Detailed test results are presented in **Appendix A**; field data are given in **Appendix B**; and analytical data can be found in **Appendix C**.

2.2 Cyclonic Flow Checks

A cyclonic flow check was performed at the sampling location to determine if any cyclonic flow existed. An average yaw angle of < 8° was measured, indicating an acceptable location with respect to EPA Method 1 requirements.

2.3 Metals Results

The reagent blank analytical results for antimony, arsenic, chromium, manganese, and nickel were as follows:

Metal	Blank (µg)
Antimony	1.45
Arsenic	3.49
Chromium	1.73
Manganese	1.27
Nickel	1.06

In accordance with Section 3.1.8.4.3 of the method, the runs' analytical results were adjusted to account for the reagent blank results. The adjusted results were used in the concentration and emission rate calculations.

2.4 Orsat Analyses

Twenty-seven (27) consecutive identical Orsat analyses were conducted, yielding 2.4% CO_2 and 16.6% O_2. These Orsat analyses did not agree with the Fyrite analyses of approximately 5% CO_2. The causes of these differences were explored on-site. Orsat measurements and re-analyses were witnessed by Mr. John Brown of USEPA, and the results confirmed. A leak-check was performed of the Orsat sampling line with no leak found. No explanation of these unusual results have been found. In any case, any possible error in the measurement of O_2 and CO_2 would only have a small effect on the calculated flow rates and emission rates.

TABLE 2-1
TEST RESULTS VERSUS PERMITTED LIMITS
EMISSION RATE, LB/HR
BRICK KILN NO. 2 STACK
OCTOBER, 1995

	Rep 1	Rep 2	Rep 3	Average	Permit Limit
Emission Rate, lb/hr					
Carbon Monoxide	6.19	5.96	6.14	6.09	15.95
Nitrogen Oxides as NO_2	1.31	1.34	1.34	1.33	8.70
Sulfur Dioxide	0.778	0.623	0.587	0.663	7.25
Methane	< 0.0756	< 0.0710	< 0.0706	< 0.0724	- -
Total Hydrocarbons as C	0.585	0.600	0.616	0.600	- -
Total Non-Methane Hydrocarbons as C	0.585	0.600	0.616	0.600	1.35
Filterable Particulate	0.367	0.330	0.414	0.370	5.08
Particulate ≤ 10 Microns	0.561	0.477	0.528	0.522	1.74
Condensible Particulate	1.54	2.07	2.10	1.90	- -
Metals					
Antimony	0.0	3.40 E-05	1.99 E-03	6.75 E-04	- -
Arsenic	8.03 E-05	1.20 E-04	5.25 E-04	2.42 E-04	- -
Beryllium	< 4.39 E-06	< 4.41 E-06	< 4.73 E-06	< 4.51 E-06	0.0
Cadmium	3.48 E-05	7.46 E-05	7.34 E-05	6.09 E-05	4.79 E-04
Chromium	1.82 E-04	2.40 E-04	2.41 E-04	2.21 E-04	1.09 E-01
Cobalt	< 4.39 E-05	< 4.41 E-05	< 4.73 E-05	< 4.51 E-05	1.60 E-03
Lead	1.41 E-04	1.29 E-04	2.48 E-03	9.17 E-04	1.15 E-03
Manganese	1.05 E-03	8.25 E-04	8.09 E-04	8.95 E-04	- -
Mercury	< 1.03 E-04	< 1.04 E-04	< 1.11 E-04	< 1.06 E-04	- -
Nickel	1.57 E-04	2.04 E-04	4.64 E-05	1.36 E-04	- -
Selenium	4.83 E-04	4.48 E-04	4.27 E-04	4.53 E-04	- -

TABLE 2-2
TEST CONCENTRATIONS SUMMARY
BRICK KILN NO. 2 STACK
OCTOBER, 1995

	Rep 1	Rep 2	Rep 3	Average
Concentration, ppmvd				
Carbon Monoxide	92.8	91.8	95.6	93.4
Nitrogen Oxides as NO_2	12.0	12.6	12.7	12.4
Sulfur Dioxide	5.10	4.20	4.00	4.43
Methane	< 1.98	< 1.91	< 1.92	< 1.94
Total Hydrocarbons as C	20.5	21.6	22.4	21.5
Total Non-Methane Hydrocarbons as C	20.5	21.6	22.4	21.5
Concentration, gr/DSCF				
Filterable Particulate	0.00293	0.00246	0.00325	0.00288
Particulate ≤ 10 Microns	0.00447	0.00380	0.00422	0.00416
Condensible Particulate	0.0122	0.0165	0.0168	0.0152
Metals				
Antimony	0.0	2.67 E-07	1.58 E-05	5.36 E-06
Arsenic	6.13 E-07	9.42 E-07	4.16 E-06	1.91 E-06
Beryllium	< 3.35 E-08	< 3.46 E-08	< 3.75 E-08	< 3.52 E-08
Cadmium	2.65 E-07	5.85 E-07	5.82 E-07	4.77 E-07
Chromium	1.39 E-06	1.88 E-06	1.91 E-06	1.73 E-06
Cobalt	< 3.35 E-07	< 3.46 E-07	< 3.75 E-07	< 3.52 E-07
Lead	1.08 E-06	1.01 E-06	1.96 E-05	7.23 E-06
Manganese	8.01 E-06	6.47 E-06	6.42 E-06	6.97 E-06
Mercury	< 7.87 E-07	< 8.13 E-07	< 8.82 E-07	< 8.27 E-07
Nickel	1.20 E-06	1.60 E-06	3.68 E-07	1.06 E-06
Selenium	3.68 E-06	3.51 E-06	3.39 E-06	3.53 E-06

AP42 Section:	11.3
Background Chapter	4
Reference:	34
Title:	*Source Emissions Survey of Boral Bricks, Inc., Absorber Stack (EPN-K), Henderson, Texas, TACB Permit 21012*, METCO Environmental, Addison, TX, June 1995.

EXHIBIT E (34)
Section 4, Ref 34

Emission Factor Develop for Stack Testing of Scrubber Stack at Boral Bricks, Henderson Plant in June, 1995
by METCO

Kiln 1

Schedule: 43 cars/day
2,916 brick/car
Brick Weight: 3.98 lb/fired brick (verified by quality control reports)

$$= \frac{43\ \text{car}}{\text{day}} \left| \frac{2{,}916\ \text{brick}}{\text{car}} \right| \frac{3.98\ \text{lb}}{\text{brick}} \left| \frac{\text{day}}{24\ \text{hr}} \right| \frac{\text{ton}}{2000\ \text{lb}}$$

$$= 10.40\ \text{ton/hr}$$

Kiln 2

Schedule: 43 cars/day
2,916 brick/car
Brick Weight: 3.98 lb/fired brick (verified by quality control reports)

$$= \frac{43\ \text{car}}{\text{day}} \left| \frac{2{,}916\ \text{brick}}{\text{car}} \right| \frac{3.98\ \text{lb}}{\text{brick}} \left| \frac{\text{day}}{24\ \text{hr}} \right| \frac{\text{ton}}{2000\ \text{lb}}$$

$$= 10.40\ \text{ton/hr}$$

Total $= 20.79$ ton/hr

Emission Factor Development:

$$\text{filterable PM} = \frac{[\text{Average Emission Rate (lb PM / hr)}]}{[\text{Kiln Throughput (ton / hr)}]}$$

$$= \frac{9.01\ \text{lb}}{\text{hr}} \left| \frac{\text{hr}}{20.79\ \text{ton}} \right.$$

filterable PM =	0.43 lb/ton

Emission Factor Summary:

Pollutant	Avg. Emission Rate	Avg. Emission Factor
PM	9.01 lb/hr	0.43 lb/ton
SO_2	20.9 lb/hr	1.01 lb/ton
NOx	5.37 lb/hr	0.26 lb/ton
HF	1.17 lb/hr	0.056 lb/ton

Notes:

METCO ENVIRONMENTAL
P.O. Box 598
Addison, TX 75001
(214) 931-7127

SOURCE EMISSIONS SURVEY
OF
BORAL BRICKS, INC.
ABSORBER STACK (EPN-K)
HENDERSON, TEXAS
TACB PERMIT 21012

JUNE 1995

FILE NUMBER 95-134

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SOURCE EMISSIONS SURVEY
BORAL BRICKS, INC.
ABSORBER STACK (EPN-K)
HENDERSON, TEXAS
TACB PERMIT 21012
FILE NUMBER 95-134

INTRODUCTION

METCO Environmental, Dallas, Texas, conducted a source emissions survey of Boral Bricks, Inc., located in Henderson, Texas, on June 28, 29, and 30, 1995. The purpose of these tests was to determine the concentrations of particulate matter, hydrogen fluoride, sulfur dioxide, and oxides of nitrogen being emitted to the atmosphere via the Absorber Stack (EPN-K). The visible emissions were also determined.

The sampling followed the procedures set forth in the Appendix to the Code of Federal Regulations, Title 40, Chapter I, Part 60, Methods 1, 2, 3B, 4, 5, 6, 7E, 9, and 13B; and in the "Sampling Procedures Manual, Texas Air Control Board, Revised July 1985."

The testing was observed by Mr. Greg Orr of the Texas Natural Resource Conservation Commission.

SUMMARY OF RESULTS

Absorber Stack (EPN-K)

Run Number	Particulate Matter Emissions (gr/dscf*)	(lbs/hr)	Hydrogen Fluoride Emissions (ppm)	(lbs/hr)	Sulfur Dioxide Emissions (ppm)	(lbs/hr)	Oxides of Nitrogen Emissions (ppm)	(lbs/hr)
1	0.0214	8.07	8.6	1.18	48.2	21.3	16.0	5.08
2	0.0322	12.01	8.2	1.12	46.5	20.9	17.0	5.51
3	0.0186	6.94	8.8	1.20	45.2	20.4	17.0	5.51
Average	0.0241	9.01	8.5	1.17	46.6	20.9	16.7	5.37
Allowable Emission Rate	----	10.2	----	0.9	----	21.2	----	4.0

* 29.92 "Hg, 68°F (760 mm Hg, 20°C)

METCO ENVIRONMENTAL

METCO ENVIRONMENTAL

SUMMARY OF RESULTS

Absorber Stack (EPN-K)

Visible Emissions

Run Number	Date	Time	Visible Emissions 1-hour Average (% Opacity)	Visible Emissions Maximum 6-minute (% Opacity)
1	06/29/95	1820-1920	0.5	0.6
2	06/30/95	0838-0938	0.5	1.1
3	06/30/95	1120-1220	0.4	0.6
Average			0.5	0.8
Allowable Visible Emissions			----	≤ 5.0

METCO ENVIRONMENTAL

SUMMARY OF RESULTS

Absorber Stack (EPN-K)

Run Number	1	2	3
Date	06/29/95	06/29/95	06/30/95
Time	1240-1449	1718-1922	1018-1219
Stack Flow Rate - ACFM	84,480	83,852	82,471
Stack Flow Rate - DSCFM*	44,078	43,563	43,601
% Water Vapor - % Vol.	7.45	7.71	7.57
% CO_2 - % Vol.	2.1	2.2	2.0
% O_2 - % Vol.	17.3	17.0	17.2
% Excess Air @ Sampling Point	426	385	408
Stack Temperature -°F	472	472	459
Stack Pressure - "Hg	29.66	29.62	29.68
Percent Isokinetic	100.9	101.4	100.7
Volume Dry Gas Sampled - DSCF*	71.675	71.174	70.738
Particulate Matter Emissions Probe & Filter Catch grains/dscf*	0.0130	0.0217	0.0176
grains/cf @ Stack Conditions	0.0067	0.0113	0.0093
lbs/hr	4.90	8.12	6.59
Total Catch grains/dscf*	0.0214	0.0322	0.0186
grains/cf @ Stack Conditions	0.0111	0.0167	0.0098
lbs/hr	8.07	12.01	6.94
Hydrogen Fluoride - mg	14.484	13.813	14.707
Hydrogen Fluoride Emissions - ppm	8.6	8.2	8.8
Hydrogen Fluoride Emissions - lbs/hr	1.18	1.12	1.20

* 29.92 "Hg, 68°F (760 mm Hg, 20°C)

METCO ENVIRONMENTAL

SUMMARY OF RESULTS

Absorber Stack (EPN-K)

Run Number	1	2	3
Date	06/29/95	06/29/95	06/30/95
Time	0953-1110	1512-1632	0825-0941
Stack Flow Rate - ACFM	84,544	87,277	85,329
Stack Flow Rate - DSCFM*	44,301	45,234	45,239
% Water Vapor - % Vol.	7.94	8.12	8.02
% CO_2 - % Vol.	2.2	2.2	2.2
% O_2 - % Vol.	17.0	17.2	17.2
% Excess Air @ Sampling Point	385	414	414
Stack Temperature -°F	463	470	452
Stack Pressure - "Hg	29.66	29.62	29.68
Sulfur Dioxide Emissions - ppm	48.2	46.5	45.2
Sulfur Dioxide Emissions - lbs/hr	21.3	20.9	20.4
Oxides of Nitrogen Emissions - ppm	16.0	17.0	17.0
Oxides of Nitrogen Emissions - lbs/hr	5.08	5.51	5.51

* 29.92 "Hg, 68°F (760 mm Hg, 20°C)

AP42 Section:	11.3
Reference:	22
Title:	Exhaust Emission Sampling, Acme Brick Company, Sealy, TX, Armstrong Environmental Inc., Dallas, TX, June 21, 1991.

AP-42 Section 11.3
Reference 22
Report Sect. 4
Reference 17

Exhaust Emission Sampling
Acme Brick Company
Sealy, TX
June 18, 1991
Armstrong Environmental, Inc.
Project W-1059-91

27-396

Report Prepared For:
Mr. Dick Ethier
Acme Brick Company
P.O. Box 397
Sealy, TX 77474

Report Prepared June 21, 1991 By:
Armstrong Environmental, Inc.
4747 Irving Blvd. Suite 204
Dallas, Texas 75356
(214) 631-0021

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ACME BRICK
Since 1891

July 1, 1991

RECEIVED
JUL 3 1991
REGION 7
TEXAS AIR CONTROL BOARD

R7-396

Randy Hamilton
Texas Air Control Board
Permits Division
6330 Hwy 290 E
Austin, Tx. 78723

Dear Mr. Hamilton:

This is the test that was done by Armstrong Environmental, Inc. in regard to our permit R-9540.

If you have any questions, please call.

Sincerely,

R. Ethier
Regional Engineer

Wally Chrystal
Plant Manager

cc: Jodena Henneke
Region 7

ACME BRICK COMPANY
A Division of Justin Industries, Inc.
P.O. BOX 397 — SEALY, TEXAS 77474 — TEL: 409/885-4124

CONTACT REPORT--MRI Project No. 4602-01

From: Brian Shrager, Environmental Engineering Department

Date of Contact: April 19, 1995

Contacted by: Telephone

Company/Agency: Acme Brick Company

Telephone Number: (817) 382-3573

Person(s) Contacted/Title(s)

Mike Vickers

CONTACT SUMMARY: Mr. Vickers was contacted to obtain production rates for the 6/18/91 emission test conducted at Acme Brick in Sealy, Texas. The report stated that 16 cars per day were being produced, but did not include the number of bricks per car or the weight of a fired brick. Mr. Vickers stated that the fired bricks weighed 4 pounds each, and that each kiln car carried 14,400 bricks. These data will be used to determine the tons per hour of fired brick produced during the test. In addition, Mr. Vickers stated that the kiln scrubber is a packed bed tower that uses 1/8" to 3/8" limestone as the scrubbing media.

TABLE OF CONTENTS

I. INTRODUCTION

A series of tests were performed on the Kiln exhaust stack and the Dryer Room exhaust stack at the Acme Brick facility in Sealy, TX on June 18, 1991.

The purpose of this test series was to determine compliance with the Special Provisions of Permit R-9540.

Testing was conducted following procedures detailed in Title 40: Code of Federal Regulations (40:CFR).

Sampling was performed by Richard Taylor, Jerry Salinas, Larry Whicher, Tom Armstrong and Matt Taylor of Armstrong Environmental, Inc. using four NAPP Model 31 sampling trains.

Sampling was performed over a seven hour period.

Submitted by:
Armstrong Environmental, Inc.

Richard Taylor @S

Richard Taylor
Project Manager

RT/os

II. SUMMARY

A series of tests were performed on the Kiln exhaust and the Dryer Room exhaust at the Acme Brick facility in Sealy, TX on June 18, 1991.

Sampling was performed following procedures detailed in Title 40: Code of Federal Regulations.

Results of this test series are summarized in Tables 1 and 2.

Witnessing the test series was Mike Vance of the Texas Air Control Board.

The emission rates for Sulfur Dioxide, Hydrogen Fluoride, and Particulate Matter in lbs/hr. are as follows:

KILN EXHAUST STACK

RUN #	POLLUTANT	EMISSIONS, lb/hr	ALLOWABLE
1	Particulate	4.107	7.3
	HF	0.0675	0.6
	SO2	12.14	28.4
2	Particulate	4.241	7.3
	HF	0.0762	0.6
	SO2	12.56	28.4
3	Particulate	4.903	7.3
	HF	0.0846	0.6
	SO2	12.47	28.4
Average	Particulate	4.417	7.3
	HF	0.0761	0.6
	SO2	12.37	28.4

DRYER ROOM EXHAUST STACK

RUN #	POLLUTANT	EMISSIONS, lbs/hr	ALLOWABLE
1	SO2	0.4261	0.6
	HF	<0.0107	0.3
2	SO2	0.4445	0.6
	HF	<0.0113	0.3
3	SO2	0.5140	0.6
	HF	<0.0134	0.3
Average	SO2	0.4615	0.6
	HF	<0.0118	0.3

Opacity readings were taken for three hours on the Kiln exhaust during the test repetitions. No visible emissions were detected.

Test results indicate that these two sources are in compliance according to the Special Provisions of Permit number R-9540.

SUMMARY OF EMISSIONS TEST DATA

TABLE: 1
PLANT: Acme Brick
LOCATION: Kiln Exhaust
OPERATOR: R. Taylor, J. Salinas
TEST DATE: June 18, 1991

REPETITION:	1	2	3
STACK GAS			
Temperature, F	281.2	282.5	281.3
Velocity, fps	66.41	65.86	66.43
Volume Flow, acfm	48005	47607	48024
scfm	31391	31225	31527
scfh	1883483	1873479	1891614
Moisture, %	8.142	7.705	7.770
CO2, %	3.0	4.0	3.0
O2, %	18.0	18.0	18.5
SAMPLE			
Start Time, hrs:min	9:55am	11:42am	1:08pm
Finish Time, hrs:min	9:59am	12:45pm	2:10pm
Volume, scf	29.367	29.319	29.614
Isokinetic Ratio %	97.33	97.68	97.72
SULFUR DIOXIDE			
Sample Weight, mg	86.24	89.53	88.98
Concentration, ppm	38.94	40.49	39.81
Emissions, lb/hr	12.14	12.56	12.47
HYDROGEN FLUORIDE			
Sample Weight, mg	0.2472	0.2775	0.2956
Concentration, ppm	0.6934	0.7869	0.8650
Emissions, lbs/hr	0.0675	0.0762	0.0846
Particulate			
Sample Weight, mg	29.04	30.10	34.81
Concentration, gr/scf	0.0153	0.0158	0.0181
Emissions, lbs/hr	4.107	4.241	4.903
OPACITY			
Highest 6 min. Ave.	0	0	0

SUMMARY OF EMISSIONS TEST DATA

TABLE: 2
PLANT: Acme Brick
LOCATION: Dryer Stack
OPERATOR: L. Whicher, T. Armstrong
TEST DATE: June 18, 1991

REPETITION:	1	2	3
STACK GAS			
Temperature, F	105.8	108.5	108.5
Velocity, fps	57.71	56.39	56.95
Volume Flow, acfm	67975	66414	67078
scfm	59860	58696	57914
scfh	3591585	3521744	3474850
Moisture, %	5.292	4.544	6.748
CO2, %	0	0	0
O2, %	21	21	21
SAMPLE			
Start Time, hrs:min	8:50am	9:53am	10:55am
Finish Time, hrs:min	9:20am	10:23am	11:25am
Volume, scf	15.450	14.522	12.389
SULFUR DIOXIDE			
Sample Weight, mg	0.824	0.824	0.824
Concentration, ppm	0.7167	0.7625	0.8938
Emissions, lb/hr	0.4261	0.4445	0.5140
HYDROGEN FLUORIDE			
Sample Weight, mg	<0.0212	<0.0213	<0.0216
Concentration, ppm	<0.0579	<0.0622	<0.0744
Emissions, lbs/hr	<0.0107	<0.0113	<0.0134

2.5 Emission Calculations

Hoffman Enterprises Inc. - Kinney Brick Co.

Operational Inputs

			Notes
Total Facility Throughput per year	40000	tons/yr	Permitted throughput from ATC#747-M1-RV1
Crusher max throughput	22	tons/hr	
Brick production per year	18000000	brick/yr	
Hours per day of Operation	8	hrs/d	
Days per week of Operation	5	days/wk	
Kiln Hours of Operation	2080	hr/yr	
Dryer Hours of Operation	7488	hr/yr	

Haul Road Raw Material Inputs			**Notes**
Total Facility Throughput per year	40000	tons/yr	
Clay per truckload	23	tons/truck	Data provided by Email from Ralph Hoffman 6/2/2022 refer to Haul road tab
Total number of truckloads per year	1739	trucks/yr	Data provided by Email from Ralph Hoffman 6/2/2022
Haul Road Length roundtrip	0.18	miles/trip	Haul road was measured using Google earth. Length was determined by measuring from facility entrance to material stockpiles.

Haul Road Product Inputs			**Notes**
Bricks per truckload	23	tons/truck	Data provided by Email from Ralph Hoffman 6/2/2022
Total round trips	350	Trips/yr	Data provided by Email from Ralph Hoffman 6/2/2022 refer to Haul road tab
Haul Road Length roundtrip	0.28	miles/trip	Haul road was measured using Google earth. Length was determined by measuring from facility entrance to admin building.

Kilns #1 & 2 Inputs			**Notes**
Amount of Total Brick Processed by Kiln	31%		
Brick Production per Kiln	12400.00	Tons/yr/kiln	
Number of Kilns:	2		
# of 0.54 MMBtu/hr Burners	4		Data provided by Ralph Hoffman 6/2/2022
# of 0.96 MMBtu/hr Burners	8		1 Data provided by Ralph Hoffman 6/2/2022
Heat input:	1	MMBtu/hr	Manufacturer data provided by Ralph Hoffman 6/2/2022
Heat input:	0.96	MMBtu/hr	Manufacturer data provided by Ralph Hoffman 6/2/2022

Round Kiln #3 Inputs			**Notes**
Amount of Total Brick Processed by Kiln	38%		
Brick Production per Kiln	15200.00	Tons/yr/kiln	
Number of burners:	4		Data provided by Ralph Hoffman 6/2/2022
Heat input:	6.40	MMBtu/hr	Manufacturer data provided by Ralph Hoffman 6/2/2022

Dryer Input Information			**Notes**
Unit(s):	Dryers #1 & #2		
Description:	4.66 MMBtu/hr Dryers		
Tons of fired bricks per dryer	20000	ton/yr	Data provided by Ralph Hoffman 6/2/2022
Number of Dryers:	2		Data provided by Ralph Hoffman 6/2/2022
Heat input:	4.66	MMBtu/hr	Manufacturer data provided by Ralph Hoffman 6/2/2022

Hoffman Enterprises Inc. - Kinney Brick Co.

Emission Summary

Uncontrolled Emissions																	
Equipment / Operation	Unit#	Process Rate	Process Description	NOx		CO		VOC		SOx		PM_{10}		$PM_{2.5}$		Total HAPs	
				lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
Hopper	1	22 tph	Bulk loading of Hopper	-	-	-	-	-	-	-	-	0.053	0.055	0.053	0.055	-	-
Holding Bin	2	22 tph	Bulk unloading of Hopper	-	-	-	-	-	-	-	-	0.011	0.011	0.011	0.011	-	-
Conveyor #1	3	22 tph	Conveyor to Conveyor Transfer	-	-	-	-	-	-	-	-	0.024	0.025	0.024	0.025	-	-
Conveyor #2		22 tph	Conveyor to Crusher	-	-	-	-	-	-	-	-	0.053	0.055	0.053	0.055	-	-
Crusher(Primary Crusher)		22 tph	Steadman Crusher	-	-	-	-	-	-	-	-	0.024	0.025	0.024	0.025	-	-
Conveyor #3		22 tph	Conveyor to screen	-	-	-	-	-	-	-	-	0.19	0.20	0.19	0.20	-	-
Screen		22 tph	Screen	-	-	-	-	-	-	-	-	0.024	0.025	0.024	0.025	-	-
Conveyor #4		22 tph	Conveyor to Conveyor Transfer	-	-	-	-	-	-	-	-	0.024	0.025	0.024	0.025	-	-
Conveyor #5		22 tph	Conveyor to Crusher	-	-	-	-	-	-	-	-	0.053	0.055	0.053	0.055	-	-
Crusher(Secondary Crusher)		22 tph	New Crusher	-	-	-	-	-	-	-	-	0.024	0.025	0.024	0.025	-	-
Conveyor #6		22 tph	Conveyor to Conveyor Transfer	-	-	-	-	-	-	-	-	0.024	0.025	0.024	0.025	-	-
Conveyor #7	4	22 tph	Conveyor to Finish clay storage bin	-	-	-	-	-	-	-	-	0.024	0.025	0.024	0.025	-	-
Aggregate Handling	5	22 tph	Aggregate Handling	-	-	-	-	-	-	-	-	0.069	0.071	0.010	0.011	-	-
Dryer #1	6a	4.66 MMBtu/hr	Dryers	0.46	1.71	0.38	1.44	0.025	0.094	2.66E-05	9.97E-05	0.042	0.062	0.04	0.06	-	-
Dryer #2	6b	4.66 MMBtu/hr	Dryers	0.46	1.71	0.38	1.44	0.025	0.094	2.66E-05	9.97E-05	0.042	0.062	0.04	0.06	-	-
Kiln #1	7a	9.84 MMbtu/hr Kilns	Kilns	0.96	1.00	0.81	0.84	0.053	0.055	4.94E-05	5.14E-05	0.38	0.40	0.38	0.40	3.22	3.35
Kiln #2	7b	9.84 MMbtu/hr Kilns		0.96	1.00	0.81	0.84	0.053	0.055	4.94E-05	5.14E-05	0.38	0.40	0.38	0.40	3.22	3.35
Kiln #3	8	7.68 MMbtu/hr Kiln	Kiln	0.38	0.39	0.63	0.66	0.041	0.043	4.39E-05	4.56E-05	0.30	0.31	0.30	0.31	3.95	4.11
Raw Material Hauling	9	1739 Trips/yr	Raw Material hauling into facility	-	-	-	-	-	-	-	-	0.27	0.23	0.027	0.023	-	-
Product Hauling	10	350 Trips/yr	Product material out of facility	-	-	-	-	-	-	-	-	0.084	0.071	0.0084	0.0071	-	-
Paint	11	200 gal/month	Painting of bricks	-	-	-	-	-	-	-	-	0.026	0.010	0.0099	8.00E-04	-	-
Dust Collector	12	Baghouse	99% control of Unit 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Totals				3.22	5.82	3.02	5.22	0.20	0.34	1.96E-04	3.48E-04	2.12	2.15	1.73	1.82	10.40	10.81

Controlled Emissions																	
Equipment / Operation	Unit#	Process Rate	Process Description	NOx		CO		VOC		SOx		PM_{10}		$PM_{2.5}$		Total HAPs	
				lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
Hopper	1	22 tph	Bulk loading of Hopper	-	-	-	-	-	-	-	-	0.053	0.055	0.053	0.055	-	-
Holding Bin	2	22 tph	Bulk unloading of Hopper	-	-	-	-	-	-	-	-	0.011	0.011	0.011	0.011	-	-
Conveyor #1	3	22 tph	Conveyor to Conveyor Transfer	-	-	-	-	-	-	-	-	2.42E-04	2.52E-04	2.42E-04	2.52E-04	-	-
Conveyor #2		22 tph	Conveyor to Crusher	-	-	-	-	-	-	-	-	5.28E-04	5.49E-04	5.28E-04	5.49E-04	-	-
Crusher(Primary Crusher)		22 tph	Steadman Crusher	-	-	-	-	-	-	-	-	2.42E-04	2.52E-04	2.42E-04	2.52E-04	-	-
Conveyor #3		22 tph	Conveyor to screen	-	-	-	-	-	-	-	-	1.91E-03	1.99E-03	1.91E-03	1.99E-03	-	-
Screen		22 tph	Screen	-	-	-	-	-	-	-	-	2.42E-04	2.52E-04	2.42E-04	2.52E-04	-	-
Conveyor #4		22 tph	Conveyor to Conveyor Transfer	-	-	-	-	-	-	-	-	2.42E-04	2.52E-04	2.42E-04	2.52E-04	-	-
Conveyor #5		22 tph	Conveyor to Crusher	-	-	-	-	-	-	-	-	5.28E-04	5.49E-04	5.28E-04	5.49E-04	-	-
Crusher(Secondary Crusher)		22 tph	New Crusher	-	-	-	-	-	-	-	-	2.42E-04	2.52E-04	2.42E-04	2.52E-04	-	-
Conveyor #6		22 tph	Conveyor to Conveyor Transfer	-	-	-	-	-	-	-	-	2.42E-04	2.52E-04	2.42E-04	2.52E-04	-	-
Conveyor #7	4	22 tph	Conveyor to Finish clay storage bin	-	-	-	-	-	-	-	-	0.024	0.025	0.024	0.025	-	-
Aggregate Handling	5	22 tph	Aggregate Handling	-	-	-	-	-	-	-	-	0.069	0.071	0.010	0.011	-	-
Dryer #1	6a	4.66 MMBtu/hr	Dryers	0.46	1.71	0.38	1.44	0.025	0.094	2.66E-05	9.97E-05	0.042	0.062	0.042	0.062	-	-
Dryer #2	6b	4.66 MMBtu/hr	Dryers	0.46	1.71	0.38	1.44	0.025	0.094	2.66E-05	9.97E-05	0.042	0.062	0.042	0.062	-	-
Kiln #1	7a	9.84 MMbtu/hr Kilns	Kilns	0.96	1.00	0.81	0.84	0.053	0.055	4.94E-05	5.14E-05	0.38	0.40	0.38	0.40	3.22	3.35
Kiln #2	7b	9.84 MMbtu/hr Kilns		0.96	1.00	0.81	0.84	0.053	0.055	4.94E-05	5.14E-05	0.38	0.40	0.38	0.40	3.22	3.35
Kiln #3	8	7.68 MMbtu/hr Kiln	Kiln	0.38	0.39	0.63	0.66	0.041	0.043	4.39E-05	4.56E-05	0.30	0.31	0.30	0.31	3.95	4.11
Raw Material Hauling	9	1739 Trips/yr	Raw Material hauling into facility	-	-	-	-	-	-	-	-	0.27	0.23	0.027	0.023	-	-
Product Hauling	10	350 Trips/yr	Product material out of facility	-	-	-	-	-	-	-	-	0.084	0.071	8.40E-03	7.06E-03	-	-
Paint	11	200 gal/month	Painting of bricks	-	-	-	-	-	-	-	-	0.026	0.010	0.010	8.00E-04	-	-
Dust Collector	12	Baghouse	99% control of Unit 3	-	-	-	-	-	-	-	-	4.42E-03	4.60E-03	4.42E-03	4.60E-03		
Totals				3.22	5.82	3.02	5.22	0.20	0.34	1.96E-04	3.48E-04	1.69	1.70	1.29	1.37	10.40	10.81

Hoffman Enterprises Inc. - Kinney Brick Co.

Equipment Emission Calculations

Hours of Operation 2080 hr/yr
Throughput 22 ton/hr

Uncontrolled Emissions

Emission ID	Equipment Type	Annual hours	Number of Units	Capacity [2] (tph)	PM_{10} [3] (lb/ton)	$PM_{2.5}$ [3] (lb/ton)	PM_{10} (lb/hr)	PM_{10} (tpy)	$PM_{2.5}$ (lb/hr)	$PM_{2.5}$ (tpy)	Modeling (lb/hr) PM_{10}	Modeling (lb/hr) $PM_{2.5}$
1	Hopper[5]	2080	1	22	2.40E-03	2.40E-03	0.053	0.05	0.05	0.05	0.05	0.05
3	Conveyor	2080	1	22	5.00E-04	5.00E-04	0.011	0.01	0.01	0.01	0.01	0.01
	Conveyor	2080	1	22	1.10E-03	1.10E-03	0.024	0.03	0.02	0.03	0.02	0.02
	Crusher	2080	1	22	2.40E-03	2.40E-03	0.053	0.05	0.05	0.05	0.05	0.05
	Conveyor	2080	1	22	1.10E-03	1.10E-03	0.024	0.03	0.02	0.03	0.02	0.02
	Screener	2080	1	22	8.70E-03	8.70E-03	0.191	0.20	0.19	0.20	0.19	0.19
	Conveyor	2080	1	22	1.10E-03	1.10E-03	0.024	0.03	0.02	0.03	0.02	0.02
	Conveyor	2080	1	22	1.10E-03	1.10E-03	0.024	0.03	0.02	0.03	0.02	0.02
	Crusher	2080	1	22	2.40E-03	2.40E-03	0.053	0.05	0.05	0.05	0.05	0.05
	Conveyor	2080	1	22	1.10E-03	1.10E-03	0.024	0.03	0.02	0.03	0.02	0.02
	Conveyor	2080	1	22	1.10E-03	1.10E-03	0.024	0.03	0.02	0.03	0.02	0.02
4	Conveyor to Storage Bin	2080	1	22	1.10E-03	1.10E-03	0.024	0.03	0.02	0.03	0.02	0.02
				Conveyor Activities Total			0.180	0.188	0.180	0.188	0.180	0.180
				Screeners Total			0.19	0.20	0.19	0.20	0.19	0.19
				Crushers Total			0.106	0.110	0.106	0.110	0.106	0.106
				Total			0.53	0.55	0.53	0.55	0.53	0.53

Controlled Emissions

Emission ID	Equipment Type	Annual hours	Number of Units	Capacity [2] (tph)	Control Efficiency %	PM_{10} [3] (lb/ton)	$PM_{2.5}$ [3] (lb/ton)	PM_{10} (lb/hr)	PM_{10} (tpy)	$PM_{2.5}$ (lb/hr)	$PM_{2.5}$ (tpy)	Modeling (lb/hr) PM_{10}	Modeling (lb/hr) $PM_{2.5}$
1	Hopper[5]	2080	1	22	50%	2.40E-03	2.40E-03	2.64E-02	2.75E-02	2.64E-02	2.75E-02	2.64E-02	2.64E-02
3	Conveyor	2080	1	22	0%	4.60E-05	1.30E-05	0.001012	1.05E-03	2.86E-04	2.97E-04	1.01E-03	2.86E-04
	Conveyor	2080	1	22	0%	4.60E-05	1.30E-05	1.01E-03	1.05E-03	2.86E-04	2.97E-04	1.01E-03	2.86E-04
	Crusher	2080	1	22	0%	5.40E-04	1.00E-04	1.19E-02	1.24E-02	2.20E-03	2.29E-03	1.19E-02	2.20E-03
	Conveyor	2080	1	22	0%	4.60E-05	1.30E-05	1.01E-03	1.05E-03	2.86E-04	2.97E-04	1.01E-03	2.86E-04
	Screener	2080	1	22	0%	7.40E-04	5.00E-05	1.63E-02	1.69E-02	1.10E-03	1.14E-03	1.63E-02	1.10E-03
	Conveyor	2080	1	22	0%	4.60E-05	1.30E-05	1.01E-03	1.05E-03	2.86E-04	2.97E-04	1.01E-03	2.86E-04
	Conveyor	2080	1	22	0%	4.60E-05	1.30E-05	1.01E-03	1.05E-03	2.86E-04	2.97E-04	1.01E-03	2.86E-04
	Crusher	2080	1	22	0%	5.40E-04	1.00E-04	1.19E-02	1.24E-02	2.20E-03	2.29E-03	1.19E-02	2.20E-03
	Conveyor	2080	1	22	0%	4.60E-05	1.30E-05	1.01E-03	1.05E-03	2.86E-04	2.97E-04	1.01E-03	2.86E-04
	Conveyor	2080	1	22	0%	4.60E-05	1.30E-05	1.01E-03	1.05E-03	2.86E-04	2.97E-04	1.01E-03	2.86E-04
4	Conveyor	2080	1	22	0%	1.10E-03	1.10E-03	2.42E-02	2.52E-02	2.42E-02	2.52E-02	2.42E-02	2.42E-02
				Conveyor Activities Total				3.13E-02	3.25E-02	2.62E-02	2.73E-02	3.13E-02	2.62E-02
				Screeners Total				1.63E-02	1.69E-02	1.10E-03	1.14E-03	1.63E-02	1.10E-03
				Crushers Total				2.38E-02	2.47E-02	4.40E-03	4.58E-03	2.38E-02	4.40E-03
				Total				9.77E-02	1.02E-01	5.81E-02	6.04E-02	9.77E-02	5.81E-02

[1] Emission factors taken from EPA AP-42, Section 11.19.2, Crushed Stone Processing and Pulverized Mineral Processing, Table 11.19.2-2. The most applicable emission factor from this AP-42 section are selected for each emission point. Tertiary crushing conservatively assumed for the primary crusher, due to lack of data for primary crushing. It is assumed that a conveyor transfer point is an appropriate emission factor of the feeders onsite.

[2] Material throughput capacities for various equipment, esp. feeder and conveyors, via email 5/18/2022 Ralph Hoffman
Each equipment type is permitted for max rates. The type of hard rock proccessed and type of control determines the PM factor.

[3] Converyor transfer point emission factors for PM10 and PM2.5 conservatively assumed to be the same in the uncontrolled scenario.

[4] Emission Unit ID #3 units are controlled by a baghouse with a 99% control efficiency. Unit #4 is uncontrolled.

[5] Hopper uncontrolled emissions were based on emission factors from AP-42 11.12-2, emissions for PM10 and PM2.5 have been conservatively estimated to be equivalent due to the lack of data for PM2.5.

Hoffman Enterprises Inc. - Kinney Brick Co.

Kiln A & B

Kiln Input Information			
Unit(s):	Kilns A & B		
Description:	9.84 MMbtu/hr Kilns		
Tons of fired bricks:	12400.00	tons/yr	
Number of Kilns:	2	-	
# of 0.54 MMBtu/hr Burners	4	-	[1] Data provided by Ralph Hoffman 6/2/2022
# of 0.96 MMBtu/hr Burners	8	-	[1] Data provided by Ralph Hoffman 6/2/2022
Heat input:	0.54	MMBtu/hr	Manufacturer data provided by Ralph Hoffman 6/2/2022
Heat input:	0.96	MMBtu/hr	Manufacturer data provided by Ralph Hoffman 6/2/2022
Fuel heat value:	1,000.0	Btu/scf	Estimated heating value
Fuel sulfur content:	2	gr/100scf	Estimated for pipeline quality gas
Kiln Operating hours:	2,080	hours/year	Annual hours that burners are operational.
Fuel Usage per 0.54 MMBtu/hr burner:	0.0005	MMscf/hr	
Yearly fuel Usage per burner:	1.1232	MMscf/yr	
Fuel Usage per 0.96 MMBtu/hr burner:	0.0010	MMscf/hr	
Yearly fuel Usage per 0.96 MMBtu/hr burner:	1.9968	MMscf/yr	
Total fuel usage:	2.2464	MMscf/yr	
	960.00054	scf/hr	

0.54 MMBtu/hr Burners							
	NO_x	CO	VOC	SO_2	PM[1]		
	100.00	84.00	5.50			lb/MMscf	Unit emission rates from AP-42 Table 1.4-1 & 2
	98.04	82.35	5.39			lb/MMscf	Adjusted emission factor: EFF X (Gas Heat Value/1,020 Btu/scf)
					0.027	gr/dscf	See Note 1
					0.38	lb/hr	gr/dscf * dscf/min * 60 min/hr * 1 lb/7000 gr
				0.0029		lb S/Mscf	Field gas assumed to contain 2 gr S/100scf
				1.23E-05		lb SO_2/hr	SO_2 Rate * fuel usage
Total Emissions[2]	0.212	0.178	0.0116	4.94E-05	0.08	lb/hr	lb/MMscf * (Mscf/hr / 1000 Mscf/1 MMscf)
	0.220	0.185	0.0121	5.13E-05	0.09	tpy	lb/hr * 2080 hrs/yr / 2000 lb/ton

0.96 MMBtu/hr Burners							
	NO_x	CO	VOC	SO_2	PM[1]		
	100.00	84.00	5.50			lb/MMscf	Unit emission rates from AP-42 Table 1.4-1 & 2
	98.04	82.35	5.39			lb/MMscf	Adjusted emission factor: EFF X (Gas Heat Value/1,020 Btu/scf)
					0.38	lb/hr	gr/dscf * dscf/min * 60 min/hr * 1 lb/7000 gr
				1.37E-06		lb S/Mscf	Field gas assumed to contain 2 gr S/100scf
				2.63E-09		lb SO_2/hr	SO_2 Rate * fuel usage
Total Emissions[2]	0.75	0.63	0.041	2.11E-08	0.30	lb/hr	lb/MMscf * (Mscf/hr / 1000 Mscf/1 MMscf)
	0.78	0.66	0.043	2.19E-08	0.31	tpy	lb/hr * 2080 hrs/yr / 2000 lb/ton

[1] PM Emissions are based on the upper prediction limit (UPL) of stack testing from similar and comparable units in the background documentation of AP-42 Chapter 11.3, *Brick and Structural Clay Product Manufacturing.*

[2] Annual combustion emissions are based on the burner operating hours of 2,080 hrs/yr.

Total Kiln HAP Emissions									
	HF	HCl	Benzene	Ethylbenzene	Xylenes	Toluene	Total HAPs[2]		
	0.37	0.17	0.00029	0.000021	0.000177	0.00025	-	lb/ton of fired brick	Unit emission rates from AP-42 Table 11.3-1
Total Emissions	2.21	1.01	1.73E-03	1.25E-04	1.06E-03	1.49E-03	3.22	lb/hr	(ton/yr)*2000 lb/ton/(2080 hr/yr)
	2.29	1.05	1.80E-03	1.30E-04	1.10E-03	1.55E-03	3.35	tpy	lb/ton * (tons of bricks / yr)

Parameters	Value	Unit	Note
Input heat rate	9.84	MMBtu/hr	Estimated
Fuel heat value	1,000	Btu/scf	Estimated, nominal
Fuel rate	9.84	Mscf/hr	Input heat rate / fuel heat value
Annual fuel usage	86.20	MMscf/yr	Actual hrs/yr operation

Hoffman Enterprises Inc. - Kinney Brick Co.

Kiln#3 (Round Kiln)

Kiln Input Information			
Unit(s):	Round Kiln		
Description:	7.68 MMbtu/hr Kiln		
Tons of fired bricks:	15200.00	tons/yr	
Number of burners:	4		Data provided by Ralph Hoffman 6/2/2022
Heat input:	1.92	MMBtu/hr	Manufacturer data provided by Ralph Hoffman 6/2/2022; Unit not to exceed 30% load capacity.
Fuel heat value:	1,000.0	Btu/scf	Estimated heating value
Fuel sulfur content:	2	gr/100scf	Estimated for pipeline quality gas
Operating Hours	2,080	hours/year	Annual hours that burners are operational.
Fuel Usage per dryer:	0.0019	MMscf/hr	
Yearly fuel Usage per dryer:	3.99	MMscf/yr	
Total fuel usage:	15.97	MMscf/yr	

	NO_x	CO	VOC	SO_2	PM[1]		
	50.00	84.00	5.50			lb/MMscf	Unit emission rates from AP-42 Table 1.4-1 & 2
	49.02	82.35	5.39			lb/MMscf	Adjusted emission factor: EFF X (Gas Heat Value/1,020 Btu/scf)
					0.027	gr/dscf	See Note 1
					0.30	lb/hr	gr/dscf * dscf/min * 60 min/hr * 1 lb/7000 gr
				0.0029		lb S/Mscf	Field gas assumed to contain 2 gr S/100scf
				1.10E-05		lb SO_2/hr	SO_2 Rate * fuel usage
Total Emissions[2]	0.38	0.63	0.041	4.39E-05	0.30	lb/hr	lb/MMscf * (Mscf/hr / 1000 Mscf/1 MMscf)
	0.39	0.66	0.043	4.56E-05	0.31	tpy	lb/hr * 2080 hrs/yr / 2000 lb/ton

[1] PM Emissions are based on the upper prediction limit (UPL) of stack testing from similar and comparable units in the background documentation of AP-42 Chapter 11.3, *Brick and Structural Clay Product Manufacturing.*

[2] Annual combustion emissions are based on the burner operating hours of 2,080 hrs/yr.

Total Kiln HAP Emissions									
	HF	HCl	Benzene	Ethylbenzene	Xylenes	Toluene	Total HAPs[2]		
	0.37	0.17	0.00029	0.000021	0.000177	0.00025	-	lb/ton of fi	Unit emission rates from AP-42 Table 11.3-1
Total Emissions	2.70	1.24	2.12E-03	1.53E-04	1.29E-03	1.83E-03	3.95	lb/hr	(ton/yr)*2000 lb/ton/(2080 hr/yr)
	2.81	1.29	2.20E-03	1.60E-04	1.35E-03	1.90E-03	4.11	tpy	lb/ton * (tons of bricks / yr)

Parameters	Value	Unit	Note
Input heat rate	7.68	MMBtu/hr	Estimated
Fuel heat value	1,000	Btu/scf	Estimated, nominal
Fuel rate	7.68	Mscf/hr	Input heat rate / fuel heat value
Annual fuel usage	67.28	MMscf/yr	Actual hrs/yr operation

Hoffman Enterprises Inc. - Kinney Brick Co.

PM Emission Factor Development

Report 1 Building Brick and Structural Clay Industry, Emission Test Report, Lee Brick and Tile Company
Sanford, NC, EMB Report 80-BRK-1
US EPA, Research Triangle Park, NC
April 1980
AP-42 Chapter 11.3 Reference 21
page 13/247

Test Run	1	2	3	Average
Date	1/9/1980	1/10/1980	1/11/1980	
Time	-	-	-	
Particulate Quantity				
grains/cubic foot, dry STP	0.004	0.003	0.003	0.003333
Stack Conditions				
Temperature (F)	84.1	82.1	81.9	
Static Pressure (inH2O)	-	-	-	
Gas Flow (dscfm)	45800	47000	45800	

Report 2 Source Emissions Testing
Marseilles Brick, Marseilles, Illinois
Fugro Midwest, Inc. St. Ann, MO
October 13, 1994
AP-42 Chapter 11.3 Reference 36
page 15/139 - Dryer 1

Test Run	1	2	3	Average
Date	8/30/1994	8/30/1994	8/30/1994	
Time	-	-	-	
Particulate Quantity				
Particulate Matter gr/dscf	0.0039	0.001	0.0026	0.0025
Stack Conditions				
Temperature (F)	113.417	103.5	102.25	
Barometric Pressure (in. Hg	30.12	30.12	30.12	
Gas Flow (dscf)	49.1286	50.053	50.061	

Report 3 Source Emissions Testing
Marseilles Brick, Marseilles, Illinois
Fugro Midwest, Inc. St. Ann, MO
October 13, 1994
AP-42 Chapter 11.3 Reference 36
page 15/139 - Dryer 2

Test Run	1	2	3	Average
Date	8/30/1994	8/30/1994	8/30/1994	
Time	-	-	-	
Particulate Quantity				
Particulate Matter gr/dscf	0.0017	0.0017	0.0012	0.001533
Stack Conditions				
Temperature (F)	103.583	102.667	104.5	
Barometric Pressure (in. Hg	30.06	30.06	30.06	
Gas Flow (dscfm)	46.9073	46.919	46.211	

Report 4 Source Emissions Testing
Marseilles Brick, Marseilles, Illinois
Fugro Midwest, Inc. St. Ann, MO
July 1, 1994
AP-42 Chapter 11.3 Reference 37
page 9/133 - Dryer 1

Test Run	1	2	3	Average
Date	5/10/1994	5/10/1994	5/10/1994	
Time	-	-	-	
Particulate Quantity				
Particulate Matter gr/dscf	0.0074	0.0023	0.0041	0.0046
Stack Conditions				
Temperature (F)	92.333	94.292	94.125	
Barometric Pressure (in. Hg	30.26	30.26	30.26	
Gas Flow (dscfm)	39.7361	46.91	46.662	

UPL Calcs					**Input Data as gr/dscf**					
	Report 1	**Report 2**	**Report 3**	**Report 4**	**Report 1**	**Report 2**	**Report 3**	**Report 4**	**UPL**	**gr/dscf**
Sample Size	4	4	4	4	0.0040	0.0039	0.0017	0.0074	0.005	0.0062
Average	0.0033	0.0025	0.0015	0.0046	0.0030	0.0010	0.0017	0.0023	0.006	
Median	0.0030	0.0026	0.0017	0.0041	0.0030	0.0026	0.0012	0.0041	0.002	
Standard Deviation	5.77E-04	0.001	0.000	0.003					0.011	
Minimum	0.00	0.00	0.00	0.00						
Maximum	0.00	0.00	0.00	0.01						
Skewness	1.73	-0.31	-1.73	0.84						
SE Skewness	1.22	1.22	1.22	1.22						
Skewness Test	Normal	Normal	Normal	Normal						
Kurtosis	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!						
SE Kurtosis	2.45	2.45	2.45	2.45						
Kurtosis Test	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!						
90.0% t-statistic for UPL	1.64	1.64	1.64	1.64						
90.0% UPL	**0.00**	**0.01**	**0.00**	**0.01**						
99.0% t-statistic for UPL	4.54	4.54	4.54	4.54						
99.0% UPL	**0.01**	**0.01**	**0.00**	**0.02**						
95.0% t-statistic for UPL	2.35	2.35	2.35	2.35						
95.0% UPL	**0.00**	**0.01**	**0.00**	**0.01**						
99.9% t-statistic for UPL	10.21	10.21	10.21	10.21						
99.9% UPL	**0.01**	**0.02**	**0.00**	**0.03**						
99.7% t-statistic for UPL	6.99	6.99	6.99	6.99						
99.7% UPL	**0.01**	**0.01**	**0.00**	**0.02**						

Hoffman Enterprises Inc. - Kinney Brick Co.

PM Emission Factor Development

Report 1 Emission Testing at a Structural Brick Manufacturing Plant - Final Emission Test Report
Belden Brick, Inc., Sugarcreek, Ohio
Kiln, Plant 3
March 3, 1992
AP-42 Chapter 11.3 Reference 12
page 10/48

Test Run	1	2	3	Average
Date	3/3/1992	3/3/1992	3/3/1992	
Time	9:57-11:00	11:12-12:15	12:33-13:25	
Particulate Quantity				
grains/cubic foot, dry STP	0.0198	0.0153	0.019	0.018033
Stack Conditions				
Temperature (F)	402	429	397	
Static Pressure (inH2O)	0	0	0	
Gas Flow (acfm)	29445	29266	27610	

Report 2 Stationary Source Sampling Report, Reference No. 14448
Triangle Brick, Merry Oaks, North Carolina
Brick Kiln No. 2 Stack
October 1995
AP-42 Chapter 11.3 Reference 25
page 12/260

Test Run	1	2	3	Average
Date	10/17/1995	10/17/1995	10/17/1995	
Time	10:10-11:10	11:50-12:50	13:30-14:30	
Particulate Quantity				
Filterable gr/dscf	0.00293	0.00246	0.00325	
Condensible gr/dscf	0.0122	0.0165	0.0168	
Total PM gr/dscf	0.01513	0.01896	0.02005	0.018047
Stack Conditions				
Temperature (F)	248	248	248	
Static Pressure (inHg)	30.5	30.5	30.5	
Gas Flow (scfm)	15284	14877	14714	

Report 3 Source Emissions Survey of Boral Bricks, Inc.
TACB Permit 21012 METCO
Henderson Texas
June 1995
AP-42 Chapter 11.3 Reference 34
page 8/151

Test Run	1	2	3	Average
Date	6/29/1995	6/29/1995	6/30/1995	
Time	12:40-14:49	17:18-19:22	10:18-12:19	
Particulate Quantity				
Particulate Matter gr/dscf	0.013	0.0217	0.0176	0.017433
Stack Conditions				
Temperature (F)	472	472	459	
Stack Pressure (inHg)	29.66	29.62	29.68	
Gas Flow (dscfm)	44078	43563	43601	

Report 4 Exhaust Emission Sampling
Acme Brick Company
Sealy, TX
June 21, 1991
AP-42 Chapter 11.3 Reference 22
page 9/111

Test Run	1	2	3	Average
Date	6/18/1991	6/18/1991	6/18/1991	
Time	9:55-9:59	11:42-12:45	13:08-14:08	
Particulate Quantity				
Particulate Matter gr/dscf	0.0153	0.0158	0.0181	0.0164
Stack Conditions				
Temperature (F)	281.2	282.5	281.3	
Stack Pressure (inHg)	29.66	29.62	29.68	
Gas Flow (dscfm)	31391	31225	31527	

UPL Calcs

	Report 1	Report 2	Report 3	Report 4
Sample Size	3	3	3	3
Average	0.02	0.02	0.02	0.02
Median	0.02	0.02	0.02	0.02
Standard Deviation	2.40E-03	0.003	0.004	0.001
Minimum	0.02	0.02	0.01	0.02
Maximum	0.02	0.02	0.02	0.02
Skewness	-1.52	-1.39	-0.17	1.52
SE Skewness	1.41	1.41	1.41	1.41
Skewness Test	Normal	Normal	Normal	Normal
Kurtosis	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
SE Kurtosis	2.83	2.83	2.83	2.83
Kurtosis Test	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
90.0% t-statistic for UPL	1.89	1.89	1.89	1.89
90.0% UPL	**0.02**	**0.02**	**0.03**	**0.02**
99.0% t-statistic for UPL	6.96	6.96	6.96	6.96
99.0% UPL	**0.04**	**0.04**	**0.05**	**0.03**
95.0% t-statistic for UPL	2.92	2.92	2.92	2.92
95.0% UPL	**0.03**	**0.03**	**0.03**	**0.02**
99.9% t-statistic for UPL	22.33	22.33	22.33	22.33
99.9% UPL	**0.08**	**0.08**	**0.13**	**0.05**
99.7% t-statistic for UPL	12.85	12.85	12.85	12.85
99.7% UPL	**0.05**	**0.06**	**0.08**	**0.04**

Input Data as gr/dscf

Report 1	Report 2	Report 3	Report 4	UPL	gr/dscf
0.0198	0.0151	0.0130	0.0153	0.026	0.027
0.0153	0.0190	0.0217	0.0158	0.027	
0.0190	0.0201	0.0176	0.0181	0.032	
				0.021	

Hoffman Enterprises Inc. - Kinney Brick Co.

Dryers

Dryer Input Information			
Unit(s):	Dryer #1 & #2		
Description:	4.66 MMBtu/hr Dryer		
Tons of fired bricks per dryer	20000	ton/yr	
Number of Dryers:	2		
Heat input:	4.66	MMBtu/hr	Manufacturer data provided by Ralph Hoffman 6/2/2022
Fuel heat value:	1,000.0	Btu/scf	Estimated heating value
Fuel sulfur content:	2	gr/100scf	Pipeline quality gas
Operating hours:	7,488	hours/year	
Fuel Usage per dryer:	0.0047	MMscf/hr	
Yearly fuel Usage per dryer:	34.8941	MMscf/yr	
Total fuel usage:	69.7882	MMscf/yr	

	NO_x	CO	VOC	SO_2	PM		
	100.00	84.00	5.50			lb/MMscf	Unit emission rates from AP-42 Table 1.4-1 & 2
	98.04	82.35	5.39			lb/MMscf	Adjusted emission factor: EFF X (Gas Heat Value/1,000 Btu/scf)
					0.027	lb/ton of fired bricks	Unit emission rates from AP-42 Table 11.3-1
				0.0029		lb S/Mscf	Field gas assumed to contain 2 gr S/100scf
				2.66E-05		lb SO_2/hr	SO_2 Rate * fuel usage
Total Emissions	0.46	0.38	0.025	2.66E-05	0.203	lb/hr	lb/MMscf * (Mscf/hr / 1000 Mscf/1 MMscf)
	1.71	1.44	0.094	9.97E-05	0.27	tpy	lb/hr * 7488 hrs/yr / 2000 lb/ton

Parameters	Value	Unit	Note
Input heat rate	4.66	MMBtu/hr	Estimated
Fuel heat value	1,000	Btu/scf	Estimated, nominal
Fuel rate	4.66	Mscf/hr	Input heat rate / fuel heat value
Annual fuel usage	40.82	MMscf/yr	Actual hrs/yr operation

Hoffman Enterprises Inc. - Kinney Brick Co.

Material Handling, Emission Calculations

$$E = k \times (0.0032) \times \frac{\left(\frac{U}{5}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}}$$

AP-42 13.2.4, Eqn 1

E= emission factor (lb/ton)
k= particle size multiplier

	0.35	PM_{10}	
	0.053	$PM_{2.5}$	
U=	11.00		NMED Guidance for Aggregate Handling,
M=	2.0	%	Storage Pile, and Haul Road Emissions

Loader Activities

rate	22.0	tph
handling	1	number of times material is handled
effective rate	22	tph

	PM_{10}	$PM_{2.5}$	
E	0.0031	0.00047	lb/ton
Total Emission rate	0.069	0.010	lb/hr; E * Effective Handling Rate
	0.071	0.011	tons/yr

Total Material Handling	PM_{10}	$PM_{2.5}$				
	0.069	0.010	lb/hr			
	0.071	0.011	tpy	2080	hrs/yr	

[1] Emission factors taken from EPA AP-42, Section 13.2.4 Aggregate Handling and Storage Piles

Hoffman Enterprises Inc. - Kinney Brick Co.

Unpaved Haul Road - Raw Material Truck Hauling

Factor Calculation (AP-42 Sec. 13.2.2-4 November, 2006, Equation 1a)

Facility Operating Hours[1] (hr/yr)	Surface material AP-42 mean silt content[2] s (%)	Empty vehicle weight [15] (tons)	Average Load Size [14] (tons)	Mean Vehicle Weight, tons W (tons)	Wet Days Per Year[2] P (days)	PM_{10} k	$PM_{2.5}$ k	PM_{10} a	$PM_{2.5}$ a	PM_{10} b	$PM_{2.5}$ b	Hourly PM_{10}[3] E (lb/VMT)	Annual PM_{10}[4] E (lb/VMT)	Hourly $PM_{2.5}$[3] E (lb/VMT)	Annual $PM_{2.5}$[4] E (lb/VMT)
2080	4.8	16.0	23	27.5	70.0	1.5	0.15	0.9	0.9	0.45	0.45	1.78	1.44	0.18	0.14

										Uncontrolled Emission Rate[10,11]				**Controlled Emission Rate[12,13]**			
Unit	Segment Length[5] (mi)	Trips per Load	Effective Segment Length[6] (mi)	Facility Truck Hauling Capacity[7] (tph)	(tpd)	Max. Number of trips per hour[8] (T/hr)	(T/yr)	VMT/hr[9] (miles)	VMT/yr[9] (miles)	PM_{10} (lb/hr)	(tpy)	$PM_{2.5}$ (lb/hr)	(tpy)	PM_{10} (lb/hr)	(tpy)	$PM_{2.5}$ (lb/hr)	(tpy)
Haul Road	0.18	1	0.18	19	462	0.84	1739	0.15	313.04	0.27	0.23	0.027	0.023	0.054	0.045	0.0054	0.0045

NOTES

1 Raw Material hauling is based on data provided by Ralph Hoffman 6/2/2022 on incoming raw material to facility.

2 NMED Guidance for Aggregate Handling, Storage Pile, and Haul Road Emissions

3 Hourly E = k x (s/12)^a x (W/3)^ b (AP-42 Section 13.2.2-4 Equation 1a, November 2006)

E = Size Specific Emission Factor

s = surface material silt content (%)

k, a, b = constants from AP-42 Table 13.2.2-2

W = Mean Vehicle Weight = Loaded Vehicle Weight + Empty Vehicle Weight /2

4 Annual E = Hourly E*[(365-P)/365]

P = number of days in a year with at least 0.254 mm (0.01 in) of precipitation

5 Segment length is based on the longest path that vehicles would take (path length from Google Earth) during the course of picking up and hauling off one load

6 Effective Segment Length is based on the segment length * the number of trips per load

7 Facility capacity reflects transport by semi-truck only

8 Max. Number of Trips per hour = Facility Capacity / Load Size

9 VMT= Vehicle Miles Travelled. Hourly VMT = Effective segment length * Max number of trips per hour. Annual VMT = Effective segment length * Max number of trips per day * 365 days/year

10 Uncontrolled Emission Rate (lb/hr) = Hourly E * VMT/hr

11 Uncontrolled Emission Rate (tpy) = Annual E * VMT/yr * 1 ton/2000 lb

12 Controlled Emission Rate (lb/hr) = Hourly Uncontrolled Rate * Control Efficiency.

13 Controlled Emission Rate (tpy) = Annual Uncontrolled Rate * Control Efficiency. Base course and watering result in a control efficiency of 80% per NMED guidance: 80%

14 Load size confirmed by Ralph Hoffman 6/2/2022

15 Estimated unloaded truck weight per online resource: https://www.tcsfuel.com/blog/truck-weight-classification/

Hoffman Enterprises Inc. - Kinney Brick Co.

Unpaved Haul Road -Product Truck Hauling

Factor Calculation (AP-42 Sec. 13.2.2-4 November, 2006, Equation 1a)

Facility Operating Hours[1] (hr/yr)	Surface material AP-42 mean silt content[2] s (%)	Empty vehicle weight [15] (tons)	Average Load Size [14] (tons)	Mean Vehicle Weight, tons W (tons)	Wet Days Per Year[2] P (days)	PM_{10} k	$PM_{2.5}$ k	PM_{10} a	$PM_{2.5}$ a	PM_{10} b	$PM_{2.5}$ b	Hourly PM_{10}[3] E (lb/VMT)	Annual PM_{10}[4] E (lb/VMT)	Hourly $PM_{2.5}$[3] E (lb/VMT)	Annual $PM_{2.5}$[4] E (lb/VMT)
2080	4.8	16.0	23	27.5	70.0	1.5	0.15	0.9	0.9	0.45	0.45	1.78	1.44	0.18	0.14

										Uncontrolled Emission Rate[10,11]				Controlled Emission Rate[12,13]			
Unit	Segment Length[5] (mi)	Trips per Load	Effective Segment Length[6] (mi)	Facility Truck Hauling Capacity[7] (tph)	(tpd)	Max. Number of trips per hour[8] (T/hr)	(T/yr)	VMT/hr[9] (miles)	VMT/yr[9] (miles)	PM_{10} (lb/hr)	(tpy)	$PM_{2.5}$ (lb/hr)	(tpy)	PM_{10} (lb/hr)	(tpy)	$PM_{2.5}$ (lb/hr)	(tpy)
Haul Road	0.28	1	0.28	4	93	0.17	350	0.05	98.00	0.08	0.07	0.0084	0.0071	0.0168	0.0141	0.00168	0.00141

NOTES

1 Finished Material hauling is based on data provided by Ralph Hoffman 6/2/2022 for outgoing finished material from facility.

2 NMED Guidance for Aggregate Handling, Storage Pile, and Haul Road Emissions

3 Hourly E = k x (s/12)^a x (W/3)^ b (AP-42 Section 13.2.2-4 Equation 1a, November 2006)

E = Size Specific Emission Factor

s = surface material silt content (%)

k, a, b = constants from AP-42 Table 13.2.2-2

W = Mean Vehicle Weight = Loaded Vehicle Weight + Empty Vehicle Weight /2

4 Annual E = Hourly E*[(365-P)/365]

P = number of days in a year with at least 0.254 mm (0.01 in) of precipitation

5 Segment length is based on the longest path that vehicles would take (path length from Google Earth) during the course of picking up and hauling off one load

6 Effective Segment Length is based on the segment length * the number of trips per load

7 Facility capacity reflects transport by semi-truck only

8 Max. Number of Trips per hour = Facility Capacity / Load Size

9 VMT= Vehicle Miles Travelled. Hourly VMT = Effective segment length * Max number of trips per hour. Annual VMT = Effective segment length * Max number of trips per day * 365 days/year

10 Uncontrolled Emission Rate (lb/hr) = Hourly E * VMT/hr

11 Uncontrolled Emission Rate (tpy) = Annual E * VMT/yr * 1 ton/2000 lb

12 Controlled Emission Rate (lb/hr) = Hourly Uncontrolled Rate * Control Efficiency.

13 Controlled Emission Rate (tpy) = Annual Uncontrolled Rate * Control Efficiency. Base course and watering result in a control efficiency of 80% per NMED guidance: 80%

14 Load size confirmed by Ralph Hoffman 6/2/2022

15 Estimated unloaded truck weight per online resource: https://www.tcsfuel.com/blog/truck-weight-classification/

Hoffman Enterprises Inc. - Kinney Brick Co.

Painting Operation Inputs

Paint No.	Paint Name	Paint Usage (gal/month)[4]	Paint Usage (gal/hr)	Paint Usage (gal/yr)[1]	Transfer Efficiency[3]
270	270	125	9.31	1500	80%
272	272	125	9.31	1500	

[1] A 25% safety factor has been added to the gal/yr flowrate to allow for flexibility in painting operations and an increase in production to meet demand.

[2] 80 Percent (%) Transfer Efficiency obtained from Table 1 in TCEQ guidance "Painting Basics and Emission Calculations for TCEQ Air Quality Permit Applications", November 2012, for airless spray gun operations. Percent (%) Transfer Efficiency = 1 - Percent (%) Overspray.

[3] 200 gallons/month estimated paint throughput from Ralph Hoffman 5/18/2022.

[4] Hourly throughput based on 8 hours a day with two painting events per week.
200 gal/month/(16 hr/week)*(4 week/month)=3.125 gal/hr

Density of Water	8.3283	lb/gal
PM Control Efficiency	0.00%	

Paint No.	Paint Name	Paint Consumption (gal/hr)	Paint Consumption (gal/yr)	Transfer Efficiency	PM Control Efficiency	Relative Density	Density (lb/gal)	Components	Component Percentage	Subcomponents	Subcomponent Classification	Subcomponent Percentage	Percentage of Mixture	Density of Components (lb/gal)	Emissions (lb/hr)	Emissions (ton/yr)
270	270	9.31	1500	80%	0	1.28	10.660224		56%	Kaolin, Calcined	PM_{10}	30.00%	16.8%	1.79	3.33	0.27
										Limestone	PM_{10}	10.00%	5.6%	0.60	1.11	0.09
										Titanium Dioxide	$PM_{2.5}$	10.00%	5.6%	0.60	1.11	0.09
										Wollastonite	PM_{10}	5.00%	2.8%	0.30	0.56	0.04
										Quartz (SiO2)	PM_{10}	1.00%	0.6%	0.06	0.11	0.01

Speciated Emissions

Uncontrolled Emissions	lb/hr	ton/yr
VOC	-	-
HAP	-	-
TAP	-	-
PM_{10}	5.11	0.41
$PM_{2.5}$	1.11	0.090

Paint Particle Depletion
Density 10.66 lb/gal
Density 1.28 g/cm^3

Material	Usage Rates [1] (gal/hr)	Usage Rates [1] (gal/yr)	Max Solids Content [1] (lb/gal)	Transfer Efficiency [2] (%)	Fallout Factor [3] PM_{10}	Fallout Factor [3] $PM_{2.5}$	Hourly Emissions PM_{10} (lb/hr)	Hourly Emissions $PM_{2.5}$ (lb/hr)	Annual Emissions PM_{10} (tpy)	Annual Emissions $PM_{2.5}$ (tpy)
270	9.31	1,500	10.66	80.00	0.99870	0.9999	0.026	9.92E-03	0.010	8.00E-04

1. Information provided by MSDS from Ralph Hoffman .
2. Percent (%) Transfer Efficiency obtained from Table 1 in TCEQ guidance *"Painting Basics and Emission Calculations for TCEQ Air Quality Permit Applications"*, November 2012, for airless spray gun operations. Percent (%) Transfer Efficiency = 1 - Percent (%) Overspray.
3. The fallout factors for PM_{10} and $PM_{2.5}$ are based on airless spray gun application per Table 2 in TCEQ guidance *"Painting Basics and Emission Calculations for TCEQ Air Quality Permit Applications"*, November 2012.
4. Sample calculations for PM10 emissions for : Behr 270

PM10 emissions (lb/hr) = Hourly Usage (gal/hr) * Solids Content (lb/gal) *[1 - Transfer Efficiency] * [1 - Fallout factor]

$$\text{Hourly PM10 Emissions (lb/hr)} = \frac{9.31\ \text{gal}}{\text{hr}} \times \frac{10.66\ \text{lb}}{\text{gal}} \times (1-0.85) \times (1-0.9987) = 0.03\ \text{lb/hr}$$

PM10 emissions (tpy) = Annual Usage (gal/yr) * Solids Content (lb/gal) * [1 - Transfer Efficiency] * [1 - Fallout factor] / 2000 (lb/ton)

$$\text{Annual PM10 Emissions (tpy)} = \frac{1{,}500\ \text{gal}}{} \times 10.66\ \text{lb} \times (1-0.85) \times (1-0.9987) \times \frac{1\ \text{ton}}{2000\ \text{lbs}} = 1.04\text{E-}02\ \text{tpy}$$

Paint No.	Paint Name	Paint Consumption (gal/hr)	Paint Consumption (gal/yr)	Transfer Efficiency	PM Control Efficiency	Relative Density	Density (lb/gal)	Components	Component Percentage	Subcomponents	Subcomponent Classification	Subcomponent Percentage	Percentage of Mixture	Density of Components (lb/gal)	Emissions (lb/hr)	Emissions (ton/yr)
272	272	9.31	1500	80%	0	1.24	10.327092		13%	Wollastonite	PM_{10}	13.00%	1.7%	0.17	0.32	0.03

Speciated Emissions

Uncontrolled Emissions	lb/hr	ton/yr
VOC	-	-
HAP	-	-
TAP	-	-
PM_{10}	0.32	0.026
$PM_{2.5}$	-	-

3. OPERATION PLAN – AIR EMISSIONS DURING SSM

The Kinney Brick Company Plant is owned and operated by Hoffman Enterprises, Inc. As soon as a malfunction occurs, the facility will shut down applicable equipment as soon as possible to ensure no excess emissions or non-permitted emissions are released. The facility will only startup again once it is identified that the malfunction is addressed, and the facility will operate as normal and permitted.

4. AIR DISPERSION MODELING ANALYSIS

AIR DISPERSION MODELING PROTOCOL

ATC Modification Application

Hoffman Enterprises Inc. – Kinney Brick Co.

ATC Permit No. 0747-M1-RV1

Prepared By:

Kinney Brick Co.
100 Prosperity Ave. SE
Albuquerque, NM 87105

TRINITY CONSULTANTS
9400 Holly Ave NE
Building 3, Suite B
Albuquerque, NM 87122

February 2023

Project 223201.0087

Trinity Consultants

TABLE OF CONTENTS

1. FACILITY INFORMATION

Hoffman Enterprises Inc. (Hoffman) will be submitting an application to modify the current Authority-to-Construct (ATC) permit for the Kinney Brick Company (Kinney Brick) to the City of Albuquerque (CABQ) Environmental Health Department (EHD), Air Quality Program (AQP). This document includes all required components requested for Modeling Protocols pursuant to Attachment B of the CABQ EHD's Air Dispersion Modeling Guidelines (published October 2019).

1.1 Facility Description and Requested Modification

The Kinney Brick Company is located at 100 Prosperity Ave SE, Albuquerque, New Mexico 87105 and operates under ATC #0747-M1-RV1. The facility is currently permitted to operate the following equipment:

- **EU1:** (1) Hopper – Bulk loading of hopper
- **EU2:** (1) Holding Bin – Bulk unloading of hopper
- **EU3:** Crusher Building
  - Four (4) Conveyors
  - Two (2) Crushers
  - One (1) Screen
- **EU4:** (1) Conveyor #7 – Conveyor to finish clay storage bin
- **EU5:** Aggregate Handling
- **EU6:** 2 MMBTU/hr Brick Dryers
  - Includes the following EUs: 6a, 6b, 6c, 6d
- **EU7a and 7b:** 9 MMBTU/hr Kilns
- **EU8:** 3 MMBTU/hr Brick Dryer
- **EU9:** 34 MMBTU/hr Kiln

The proposed modification includes the following:

- Kiln#1 has been permitted previously however it is being relocated within the facility, this kiln is incorrectly permitted as 9 MMBtu/hr under ATC#747-M1-RV1 with this update the new unit heat duty will be 9.84 MMBtu/hr.
- Kiln#2 is incorrectly permitted at 9 MMBtu/hr under ATC#747-M1-RV1 with this update the new unit heat duty will be 9.84 MMBtu/hr.
- Kiln#3 is incorrectly permitted as 34 MMBtu/hr under ATC#747-M1-RV1 with this update the new unit heat duty will be 7.68 MMBtu/hr, with a maximum 30% operating load capacity.
- Previously under ATC#747-M1-RV1 the dryers were permitted as four (4) units rated at 2 MMBtu/hr with this update there will be two (2) dryers (Units DRYER#1 & DRYER#2) rated at 4.66 MMBtu/hr.
- To maintain compliance with the NAAQS and NMAAQS Kinney Brick Company is going to build a fenceline based on the facilities property line. Also, the stacks for the dryers, Kiln#1, and Kiln#2 will be raised to 30 feet each. Kiln #3 will maintain it's 29-foot stack height.
- In addition to these modifications, hauling is to be included for raw material delivery and product shipping from the facility as well as brick painting operations. The preexisting material handling units 1 through 5 will be modified to match current throughputs and operating hours proposed by KBC.

1.2 Facility Maps

The maps requested in Attachment B of CABQ EHD Modeling Guidelines[1] are reported in Figures 1 to 4 of this section.

[1] City of Albuquerque Environmental Health Department Air Quality Program Permitting Division, *Air Dispersion Modeling Guidelines for Air Quality Permitting*, Revised October 10, 2019. Attachment B.

Figure 1 displays an aerial image of the facility from Google Earth®. The figure includes the fence line, the location of emission units, and the layout of buildings and structures at the site. A fence will be constructed at Kinney Brick in accordance with the facility's property line, which fully restrict public access. Please see the response to Question 2 in the Section 1, Modeling Protocol Questions and Reponses, of this modeling protocol for information regarding the existing rail spur at the facility.

Figure 1. An aerial image of the Kinney Brick Co. and labels specifying affected modeled source locations, facility fence line, and buildings.

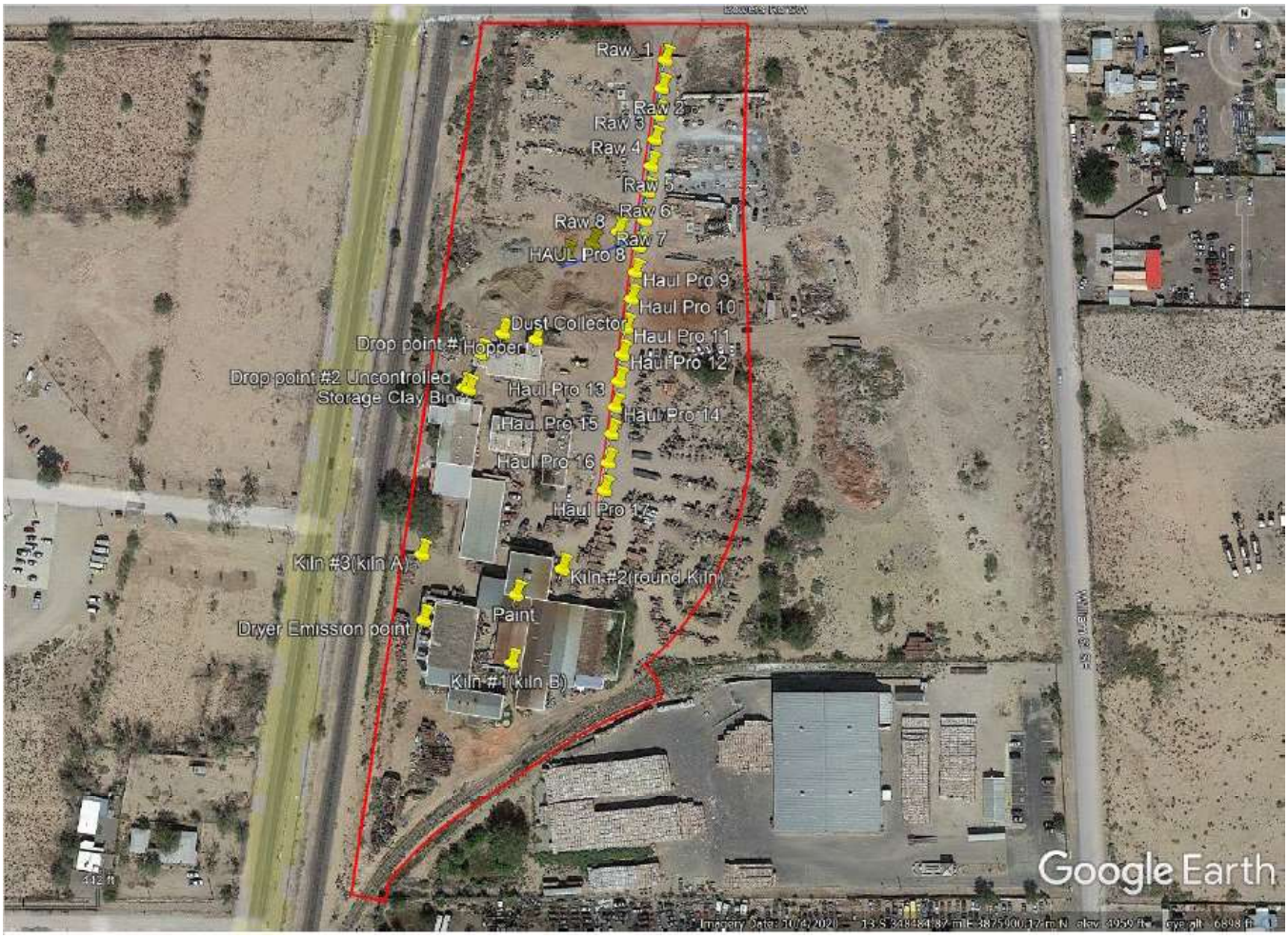


Figure 2 displays a map obtained from the CABQ's Advanced Map Viewer. All available layers are displayed in this figure. Background imagery is displayed for 2018.

The facility is located in an unincorporated area that shows land use that is predominately commercial, industrial, or transportation related.

Figure 2. An aerial image obtained from the City of Albuquerque's Advanced Map Viewer.

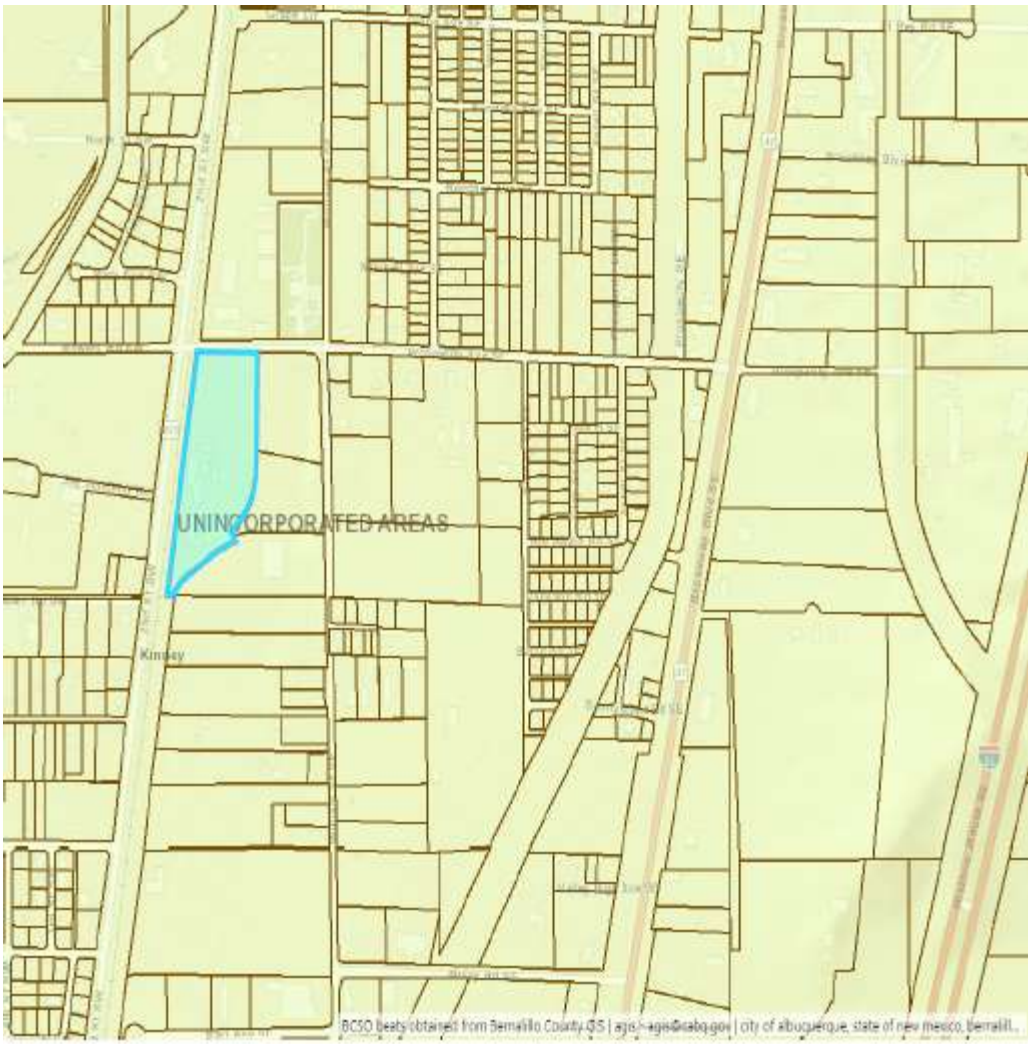


Figure 3 displays an aerial image obtained from Google Maps®. The imagery in this figure is dated 2022.

Figure 3. An aerial image of the facility and surroundings obtained from Google Maps®.

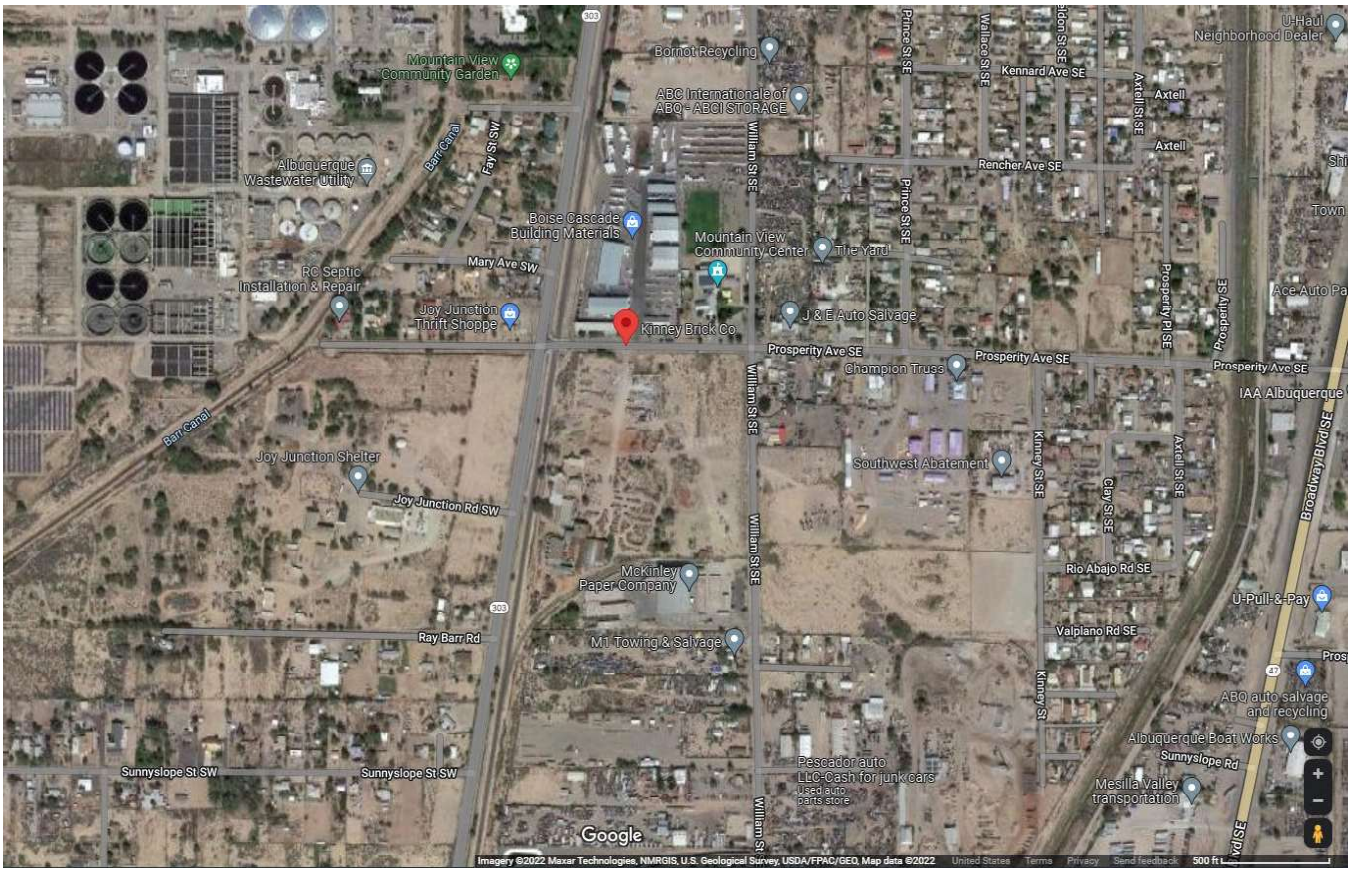
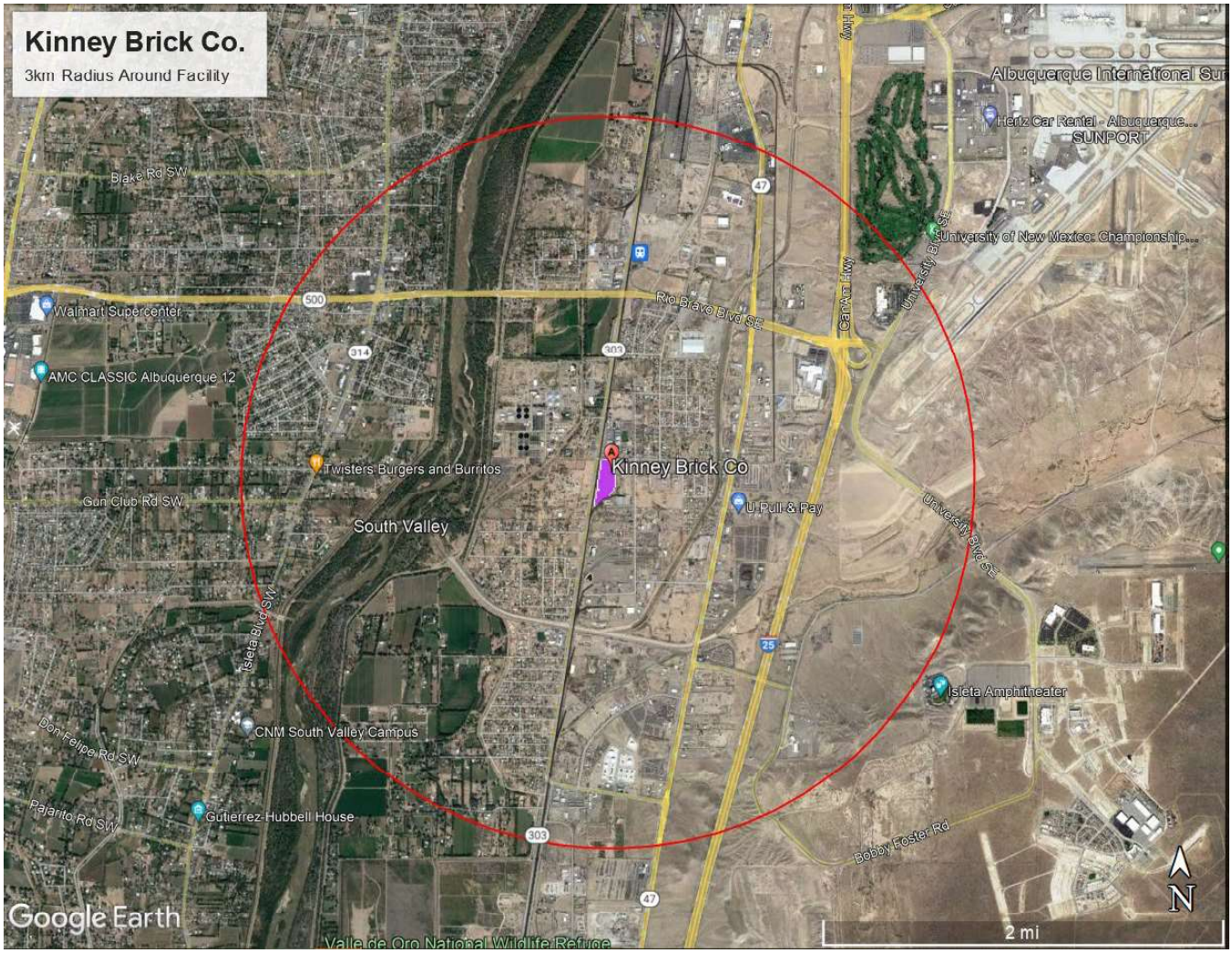


Figure 4 displays an aerial image obtained from Google Earth® with the facility circumscribed by a 3km radius. The imagery in this figure is dated October 2020.

Figure 4. An aerial image of the facility circumscribed by a 3km radius.



1.3 Operating Hours

Kinney Brick Co. is authorized to operate 8 hours per day, 5 days per week, 12 months per year, not to exceed 2,080 hours of operation per 12-month rolling period. Kinney Brick Co. will propose to update the allowable operating hours as indicated in Table 1. As such, all hours will be modeled with respective operating equipment.

The anticipated operating times for brick manufacturing are 8 hours per day, 5 days per week, and 52 weeks per year, as currently permitted. The brick dryer units will operate 24 hour per day, 6 days a week, and 52 weeks per year. The kilns will operate based on a batch schedule. The burner for these units will run for 48 hours each and will not operate simultaneously, followed by a 48-hour cooling period during which only PM is emitted, as shown in Table 1 below. Other particulate matter sources, including the grinding

plant, haul roads, and aggregate handling, will only operate from 9 AM to 5 PM, 5 days per week in accordance with the brick manufacturing schedule.

Table 1. Proposed Operating Days and Hours

Unit ID	Description	Hours of Operation	Total Hours per Year
DUST	Dust Collector to control PM emissions from clay crusher building	Operation will occur during daylight hours of 0900 to 1700.	2080 hours per year
DRYERS	Brick Dryers #1 & #2	Operation will occur 24 hours a day, 6 days of the week.	2080 hours per year
KILN_1	Kiln #1	Operation for Kiln #1 will be 24 hours a day, Monday, and Tuesday.	2496 hours per year
KILN_2	Kiln #2	Operation for Kiln #2 will be 24 hours a day, Wednesday, and Thursday.	2496 hours per year
KILN_3	Kiln #3	Operation for Kiln #3 will be 24 hours a day, Friday and Saturday.	2496 hours per year
HLRAW	Raw haul road emissions	Operation will occur during daylight hours of 0900 to 1700. Monday through Friday.	2080 hours per year
HLPRO	Product haul road emissions	Operation will occur during daylight hours of 0900 to 1700. Monday through Friday.	2080 hours per year
PAINT	Brick spray painting	Operation will occur during daylight hours of 0900 to 1700. Monday through Friday.	2080 hours per year
HOP	Material feeder hopper for crusher building	Operation will occur during daylight hours of 0900 to 1700. Monday through Friday.	2080 hours per year
CON7	Drop point of refined clay for brick manufacturing	Operation will occur during daylight hours of 0900 to 1700. Monday through Friday.	2080 hours per year
AGG1	Aggregate handling	Operation will occur during daylight hours of 0900 to 1700. Monday through Friday.	2080 hours per year
HOP2	Material drop into hopper	Operation will occur during daylight hours of 0900 to 1700. Monday through Friday.	2080 hours per year

2. EMISSIONS AND STANDARDS MODELED

2.1 Facility Emissions

The current permitted and requested emissions for modeled pollutants from emission units at the facility are reported in Table 2. Please note that the requested emissions may change slightly during development of the permit application.

Table 2. Permitted emissions, requested emissions, and the net change in emissions associated with emission units for this permitting action.

Pollutant	NO_X		CO		SO_2		VOC		PM_{10}		$PM_{2.5}$	
Units	**lb/hr**	**tpy**	**lb/hr**	**tpy**	**lb/hr**	**tpy**	**lb/hr**	**tpy**	**lb/hr**	**tpy**	**lb/hr**	**tpy**
Current Permitted Emissions	2.83	7.19	2.37	6.03	0.020	0.050	0.16	0.39	2.73	8.52	-	-
New Source Total	3.22	5.82	3.02	5.22	1.96E-04	3.48E-04	0.20	0.34	1.69	1.70	1.29	1.37
Project % Increases/Decreases	14%	-19%	27%	-13%	-99%	-99%	24%	-12%	-38%	-80%	*	*

*$PM_{2.5}$ emissions are not currently permitted for the facility but are existing; therefore, the net change in emissions cannot be displayed.

2.2 Standards Modeled

The pollutants and standards to be modeled are shown in Table 3. Note that some standards are surrogates that demonstrate compliance for other averaging periods (e.g., SO_2 1-hr NAAQS is a surrogate that demonstrates compliance for SO_2 3-hr, 24-hr and annual) per the NMED Air Dispersion Modeling Guidance.[2]

Table 3. Proposed pollutants and averaging periods to be modeled.

Pollutant	Standard	Not Emitted	Surrogate Modeled	Modeled
CO	8-hr			☑
	1-hr			☑
H_2S	1-hr	☑		
Pb	Quarterly	☑		
NO_2	Annual			☑
	24-hr		☑	
	1-hr			☑
$PM_{2.5}$	Annual			☑
	24-hr			☑
PM_{10}	24-hr		☑	
SO_2	Annual		☑	
	24-hr		☑	
	3-hr		☑	
	1-hr			☑
TAP	N/A	☑		

[2] New Mexico Environment Department Air Quality Bureau, *New Mexico Air Quality Bureau Air Dispersion Modeling Guidelines*. Revised July, 2022, Table 6B.

2.3 Impacts and Results

2.3.1 Significant Impact Level (SIL) Analysis

Kinney Brick Co. will conduct a screening analysis to determine if the High 1st High modeled impacts of each standard exceed the significance thresholds listed in Table 6A of the NMED Air Dispersion Modeling Guidelines.[3] The significance levels for the modeled pollutants are provided in Table 4. The maximum potential hourly emission rate from the unit will be used to demonstrate compliance. All pollutants and standards shown in Table 4 will be modeled to assess significance.

Table 4. Significant impact levels for the pollutants to be modeled.

Pollutant	Standard	Significance Level ($\mu g/m^3$)
CO	8-hr 1-hr	500 2,000
NO_2	Annual 24-hr 1-hr	1.0 5.0 7.52
$PM_{2.5}$	Annual 24-hr	0.2 1.2
PM_{10}	Annual 24-hr	1.0 5.0
SO_2	Annual 24-hr 3-hr 1-hr	1.0 5.0 25.0 7.8

2.3.2 Cumulative Impact Analysis (CIA)

If the significance analysis predicts that modeled concentrations will exceed a SIL, a cumulative impact analysis (CIA) will be conducted. Kinney Brick Co. proposes to use the prescribed design value of each modeled standard, as described below:

- 1-hr average NO_2 modeling: The five-year average of the high 8th high of the annual distribution of the daily maximum 1-hour concentrations plus the background concentration and surrounding sources will be compared to the standard.
- 1-hr average SO_2 modeling: The five-year average of the high 4th high of the annual distribution of the daily maximum 1-hour concentrations plus the background concentration and surrounding sources will be compared to the standard.
- 24-hr average $PM_{2.5}$ modeling: The five-year average of the 24-hr high 8th high will be used plus the background concentration and surrounding sources.
- 1-hr and 8-hr average CO modeling: The five-year high 1st high 1-hour and 8-hour concentrations plus the background concentration and surrounding sources will be compared to the standard.
- Maximum or average annual impact: The average of the three highest annual impacts from the five year met data set will be compared against the standard.

[3] Ibid, Table 6A.

Modeling will only be performed for receptors where the SIL is exceeded based on the Significant Impacts modeling results.

The proposed total NO_2 and SO_2 emission rates of modeled units are 5.82 tpy and 0.00035 tpy, respectively. As the modeled emission rates for these pollutants do not exceed 40 tpy, secondary particulate formation will not be evaluated as part of this modeling.[4]

[4] Ibid, Section 2.6.6.2.

3. MODELING SET-UP

3.1 Source Modification Summary

As described in Section 1.1, this modification will authorize the following updates:

- Updates of emissions for all existing and proposed units to match current operating hours, heat duties, and throughput of material.
- Construction of a 30-foot stack for Dryer units. Please note that this is subject to change according to modeling results. If stack parameters are changed, this will be noted in the modeling report.
- Construction of Kiln #2 with a 30-foot stack. Please note that this is subject to change according to modeling results. If stack parameters are changed, this will be noted in the modeling report.
- Construction of Kiln #3 with a 29-foot stack. Please note that this is subject to change according to modeling results. If stack parameters are changed, this will be noted in the modeling report.
- Haul roads for raw material and product are proposed based on the current operating hours and throughputs.
- Addition of paint operations at the facility.

3.2 Sources and Emission Rates Modeled

The sources at this facility proposed to be modeled are summarized below in Table 5. All other sources at the site either do not emit pollutants for which a NAAQS or NMAAQS has been established or will be exempt from modeling.

Table 5 reports the hourly emissions rates that will be modeled for each unit. Please note that the requested emissions may change slightly during development of the permit application.

Table 5. Modeled emission rates.

Unit No.	Description	NO_2	CO	SO_2	PM_{10}	$PM_{2.5}$
BUILDING	Dust Collector	-	-	-	0.0044	0.0044
6	Dryers #1 & #2	0.91	0.77	5.33E-05	0.084	0.0842
7a	Kiln #1	0.96	0.81	4.94E-05	0.38	0.3804
7b	Kiln #2	0.96	0.81	4.94E-05	0.38	0.3804
9	Kiln #3	0.38	0.63	4.39E-05	0.297	0.2969
HLRAW1	Raw Material Hauling	-	-	-	5.96E-03	5.36E-04
HLRAW2		-	-	-	5.96E-03	5.36E-04
HLRAW3		-	-	-	5.96E-03	5.36E-04
HLRAW4		-	-	-	5.96E-03	5.36E-04
HLRAW5		-	-	-	5.96E-03	5.36E-04
HLRAW6		-	-	-	5.96E-03	5.36E-04
HLRAW7		-	-	-	5.96E-03	5.36E-04
HLRAW8		-	-	-	5.96E-03	5.36E-04
HLRAW9		-	-	-	5.96E-03	5.36E-04
HLRAW10		-	-	-	5.96E-03	5.36E-04
HLPRO1	Product Hauling	-	-	-	1.05E-03	9.88E-05
HLPRO2		-	-	-	1.05E-03	9.88E-05
HLPRO3		-	-	-	1.05E-03	9.88E-05
HLPRO4		-	-	-	1.05E-03	9.88E-05
HLPRO5		-	-	-	1.05E-03	9.88E-05
HLPRO6		-	-	-	1.05E-03	9.88E-05
HLPRO7		-	-	-	1.05E-03	9.88E-05
HLPRO8		-	-	-	1.05E-03	9.88E-05
HLPRO9		-	-	-	1.05E-03	9.88E-05
HLPRO10		-	-	-	1.05E-03	9.88E-05
HLPRO11		-	-	-	1.05E-03	9.88E-05
HLPRO12		-	-	-	1.05E-03	9.88E-05
HLPRO13		-	-	-	1.05E-03	9.88E-05
HLPRO14		-	-	-	1.05E-03	9.88E-05
HLPRO15		-	-	-	1.05E-03	9.88E-05
HLPRO16		-	-	-	1.05E-03	9.88E-05
HLPRO17		-	-	-	1.05E-03	9.88E-05
PAINT	Paint	-	-	-	0.026	0.010
HOP	Hopper feed to crusher	-	-	-	0.00101	0.00029
CON7	Elevated conveyor transfer to holding bin	-	-	-	0.024	0.024
AGG1	Aggregate Handling	-	-	-	0.069	0.010

HOP2	Material Drop into Hopper	-	-	-	0.026	0.026

3.3 Source Types and Stack Parameters

Point sources to be modeled are detailed in Table 6 and volume sources to be modeled are detailed in Table 7. The temperature and exhaust velocity will be updated for this project. The kilns and dryer stack heights will be increased from existing stack heights to the stack heights listed in Table 6. Please note that this is subject to change according to modeling results. If stack parameters are changed, this will be noted in the modeling report.

Stack velocities for the Kilns are derived per the NMED Air Dispersion Modeling Guidance.[5], Table 40, based on the NO_2 emission rate for each unit.

Dimensions of the PAINT volume source are as follows: 5 ft. height, 5 ft. width, and 5 ft. length.

Table 6. Point source stack parameters.

Unit	Description	Height (ft)	Diameter (ft)	Velocity (ft/s)	Temperature (°F)	Stack Orientation
DUST	Dust Collector	16	3.28	22.97	75	Vertical
DRYERS	Dryers #1 & #2	30	4.00	16.40	250	Vertical
KILN_1	Kiln #1	30	5.64	16.40	1000	Vertical
KILN_2	Kiln #2	30	5.64	16.40	1000	Vertical
KILN_3	Kiln #3	29	4.50	36.68	600	Vertical

[5] New Mexico Environment Department Air Quality Bureau, *New Mexico Air Quality Bureau Air Dispersion Modeling Guidelines*. Revised July, 2022, Table 6B.

Table 7. Volume source stack parameters.

Unit	Description	X Coordinate	Y Coordinate	Elevation	Release Height	Init Lat Dim	Init Vert Dim
HLRAW2		348613.00	3875928.81	1509.87	11.14	18.60	10.36
HLRAW3		348611.00	3875916.62	1509.87	11.14	18.60	10.36
HLRAW4		348609.00	3875904.42	1509.87	11.14	18.60	10.36
HLRAW5		348607.00	3875892.23	1509.87	11.14	18.60	10.36
HLRAW6		348605.00	3875880.04	1509.87	11.14	18.60	10.36
HLRAW7		348603.00	3875867.85	1509.87	11.14	18.60	10.36
HLRAW8		348591.71	3875862.56	1509.88	11.14	18.60	10.36
HLRAW9		348579.24	3875857.73	1509.87	11.14	18.60	10.36
HLRAW10		348567.36	3875852.29	1510.05	11.14	18.60	10.36
HLPRO2		348613.00	3875928.81	1509.87	11.14	18.60	10.36
HLPRO3		348611.00	3875916.62	1509.87	11.14	18.60	10.36
HLPRO4		348609.00	3875904.42	1509.87	11.14	18.60	10.36
HLPRO5		348607.00	3875892.23	1509.87	11.14	18.60	10.36
HLPRO6		348605.00	3875880.04	1509.87	11.14	18.60	10.36
HLPRO7		348603.00	3875867.85	1509.87	11.14	18.60	10.36
HLPRO8		348600.00	3875855.66	1509.87	11.14	18.60	10.36
HLPRO9		348598.00	3875843.46	1509.87	11.14	18.60	10.36
HLPRO10		348596.00	3875831.00	1509.87	11.14	18.60	10.36
HLPRO11		348593.48	3875818.81	1509.88	11.14	18.60	10.36
HLPRO12		348591.00	3875806.62	1509.89	11.14	18.60	10.36
HLPRO13		348589.00	3875794.42	1509.91	11.14	18.60	10.36
HLPRO14		348587.00	3875782.23	1510.08	11.14	18.60	10.36
HLPRO15		348585.00	3875770.04	1510.28	11.14	18.60	10.36
HLPRO16		348583.00	3875757.85	1510.66	11.14	18.60	10.36
HLPRO17		348581.00	3875745.66	1511.19	11.14	18.60	10.36
PAINT	Paint	348540.00	3875699.00	1512.3	2.50	1.16	2.33
HOP	Hopper feed to crusher	348552.00	3875814.00	1510.71	16.40	3.81	7.64
CON7	Elevated conveyor transfer to holding bin	348520.99	3875792.43	1514.87	13.12	1.54	3.05
AGG1	Aggregate Handling	348567.36	3875852.29	1510.05	6.56	1.54	3.05
HOP2	Material Drop into Hopper	348552.00	3875814.00	1510.71	6.56	1.54	3.05

3.4 Buildings and Downwash

There are several buildings and structures located at the Kinney Brick Company. Building Profile Input Program for PRIME (BPIPPRM) will be run in all models to address building downwash associated with the structures at this facility.

Kinney Brick proposes to only include onsite buildings in the downwash analysis, as nearby offsite structures are not anticipated to encompass the emission units stacks within the Good Engineering Practice (GEP) 5L area of influence.[6]

The GEP 5L area of influence for each structure is determined by measuring a distance of five times 'L' from each edge of the structure, where 'L' is the lesser of the building height or projected building width. Only those stacks within the area of influence are affected by building wake effects.

[6] EPA-454/R-93-038. User's Guide to the Building Profile Input Program. Februrary 8, 1995. https://gaftp.epa.gov/Air/aqmg/SCRAM/models/related/bpip/bpipd.pdf

Figure 6 shows the structures proposed to be included in the air dispersion modeling to be analyzed for downwash effects at the Kinney Brick Company. The dimensions of these structures are provided in Table 8.

Figure 6. Structures proposed to be included in the model.

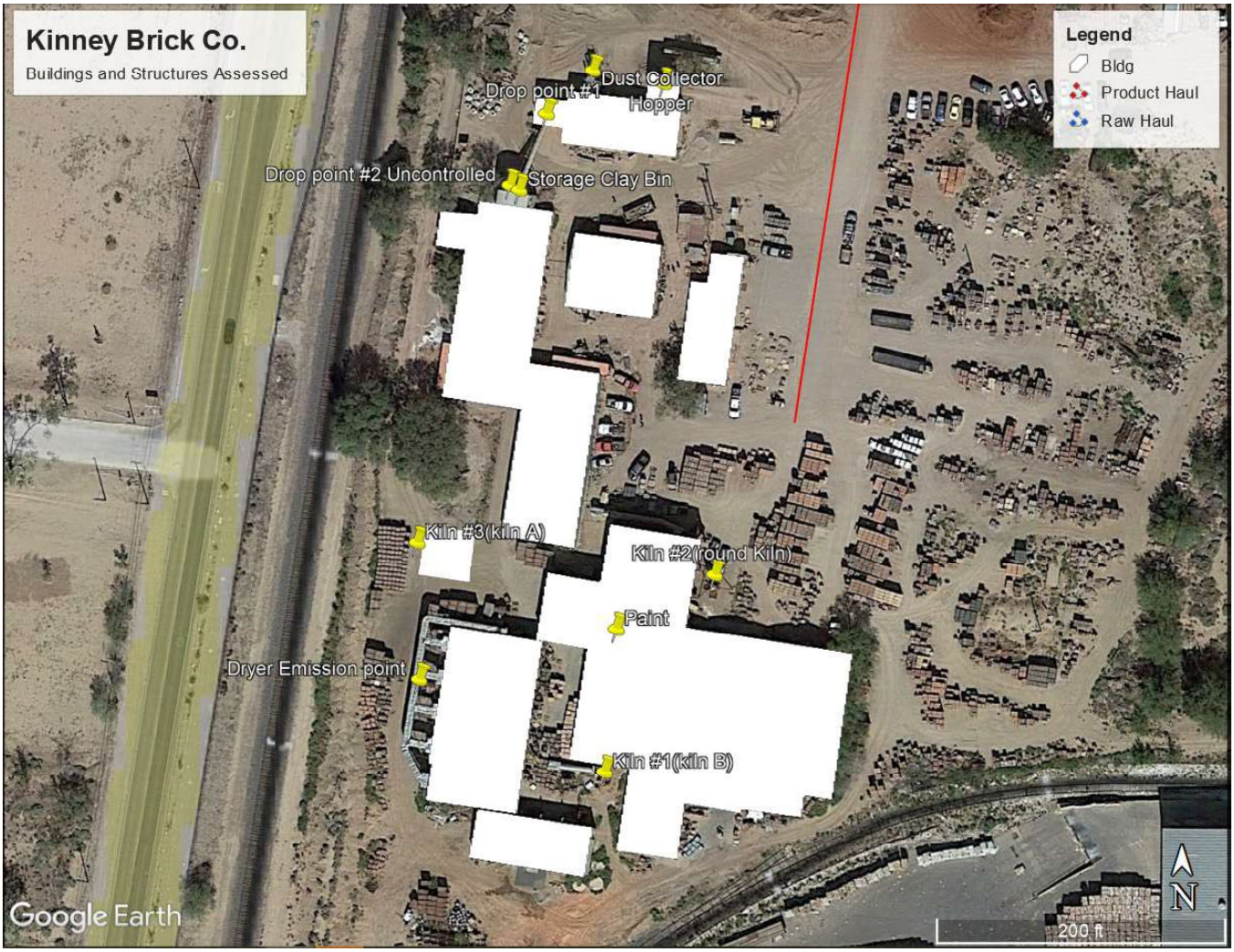


Table 8. Building identifications and heights.

ID	X (m)	Y (m)	Elevation (m)	Height (ft)
ADMIN	348554.8	3875755	1511.54	15
MAINT	348533.6	3875786	1511.24	20
PRODBLDG	348512.9	3875790	1511.2	20
STOR_#1	348517.8	3875723	1511.99	18
R_KILN	348536.5	3875706	1512.23	25
STOR_#2	348540.2	3875656	1512.65	15
SOUTH	348509	3875655	1512.38	20
DRYER	348500	3875667	1512.31	20
CRUSHER	348526.1	3875814	1510.81	30
PAINT	348548.9	3875703	1512.31	25
NEW2	348537.5	3875712	1512.16	23
KILN	348501	3875724	1511.82	25

3.5 Model and Options Used

The most recent executable of AERMOD (v22112) will be used to perform air dispersion modeling. All regulatory default options will be used for air dispersion modeling at this facility. Based on satellite imagery and the CABQ Advanced Map Viewer, the land use in a 3 km radius around the facility is less than 50% industrial, commercial, or compact residential, as defined in the CABQ EHD modeling guidance;[7] therefore, rural dispersion coefficients will be used.

The Tier 2, Ambient Ratio Method 2 (ARM2) will be used to model the ambient impact of NO_2. The national default minimum ambient ratio of 0.5 and maximum ambient ratio of 0.9 will be used.[8] Tier III methods (OLM or PVMRM) may be used if required. If Tier III methods are used, Kinney Brick CO. will apply the in-stack ratios provided by the CABQ EHD and summarized in Table 8. The South Valley 2014 to 2018 ozone data set would be used, if needed.

Table 9. Department-approved in-stack ratios.

Sources	In-stack ratio accepted by the AQP
Diesel-fired RICE engines	0.15
Natural gas-fired boilers	0.20
Other sources at facility seeking permit	0.50
Other sources 1-3 km from fence of facility	0.20
Other sources < 1 km from fence of facility	0.30

3.6 Meteorological Data

Meteorological data from the Albuquerque Airport from 2014 to 2018 provided by the CABQ EHD will be used for this air dispersion modeling. This meteorological data is assumed to be adequately representative of conditions at Kinney Brick Co., based on the CABQ EHD modeling guidelines.[9]

[7] City of Albuquerque Environmental Health Department Air Quality Program Permitting Division, *Air Dispersion Modeling Guidelines for Air Quality Permitting,* Revised October 10, 2019, Attachment A.

[8] New Mexico Environment Department Air Quality Bureau, *New Mexico Air Quality Bureau Air Dispersion Modeling Guidelines*. Revised October 26, 2020, Section 2.6.4.3.

[9] City of Albuquerque Environmental Health Department Air Quality Program Permitting Division, *Air Dispersion Modeling Guidelines for Air Quality Permitting,* Revised October 10, 2019, Page 7.

AIR DISPERSION MODELING REPORT

Construction Permit
Modification Application
Authority to Construct 0747-M1-RV1
Hoffman Enterprises Inc.
Kinney Brick Company

Ralph Hoffman – General Manager
Hoffman Enterprises Inc. Dba Kinney Brick Company
100 Prosperity SE
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(505) 877-4550

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February 2023

Project 223201.0087

Trinity Consultants

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LIST OF TABLES

1. APPLICANT AND CONSULTANT INFORMATION

This modeling report is being submitted as part of a permit modification application submitted pursuant to 20.2.11.41.29 NMAC for the Kinney Brick Company facility, which is owned and operated by Hoffman Enterprises. This report and accompanying modeling files are being submitted to the City of Albuquerque (CABQ) Environmental Health Department (EHD), Air Quality Program (AQP) to satisfy the requirements of 20.11.41.13.E NMAC. This report includes all required components requested in the "Completeness Requirements" section of the CABQ's Air Dispersion Modeling Guidelines (published October 2019).

a) Name of Facility and Company

Facility Name: Kinney Brick Company
Company: Hoffman Enterprises dba Kinney Brick Company

b) Permit Numbers

The facility operates under **ATC #0747-M1-RV1**

c) Contact Information for Modeling Questions

Contact Name: Adam Erenstein
Phone Number: (505) 266-6611
E-Mail Address: aerenstein@trinityconsultants.com

2. FACILITY AND OPERATIONS DESCRIPTION

a) Narrative Summary of Modification

The included modeling report details AERMOD inputs and modeled concentrations associated with the proposed updates. Details of the permit modification are included below.

The proposed modification includes the following updates to the existing permit:

- Kiln#1 has been permitted previously however it is being relocated within the facility, this kiln is incorrectly permitted as 9 MMBtu/hr under ATC#747-M1-RV1 with this update the new unit heat duty will be 9.84 MMBtu/hr.
- Kiln#2 is incorrectly permitted at 9 MMBtu/hr under ATC#747-M1-RV1 with this update the new unit heat duty will be 9.84 MMBtu/hr.
- Kiln#3 is incorrectly permitted as 34 MMBtu/hr under ATC#747-M1-RV1 with this update the new unit heat duty will be 7.68 MMBtu/hr, with a maximum 30% operating load capacity.
- Previously under ATC#747-M1-RV1 the dryers were permitted as four (4) units rated at 2 MMBtu/hr with this update there will be two (2) dryers (Units DRYER#1 & DRYER#2) rated at 4.66 MMBtu/hr.
- To maintain compliance with the NAAQS and NMAAQS Kinney Brick Company is going to build a fenceline based on the facilities property line. Also, the stacks for the dryers, Kiln#1, and Kiln#2 will be raised to 30 feet each. Kiln #3 will maintain it's 29-foot stack height.
- In addition to these modifications, hauling is to be included for raw material delivery and product shipping from the facility as well as brick painting operations. The preexisting material handling units 1 through 5 will be modified to match current throughputs and operating hours proposed by KBC.

b) Physical Description

The Kinney Brick Company is currently located at 100 Prosperity SE, Albuquerque, NM 87105.
The coordinates on the permit are: 348,578 m E, 3,875,793 m N

c) Duration of Time to be Located on Site

The facility will be at this location for greater than one (1) year.

d) Facility Maps

The attached figures display an aerial image of the facility with labels of all source emission points at the facility: point sources, area sources, and volume sources. Figures are also included which show the entire layout of buildings at the facility, an aerial image obtained from the City of Albuquerque's Advanced Map Viewer, and plot plans of the facility.

Figure 1 displays an aerial image of the facility from Google Earth®, with imagery dated October 2020. The figure includes the fence line, the location of all modeled sources, and the layout of buildings and structures at the site.

Figure 1. Aerial Image of the Facility and Surroundings Obtained from Google Maps®.

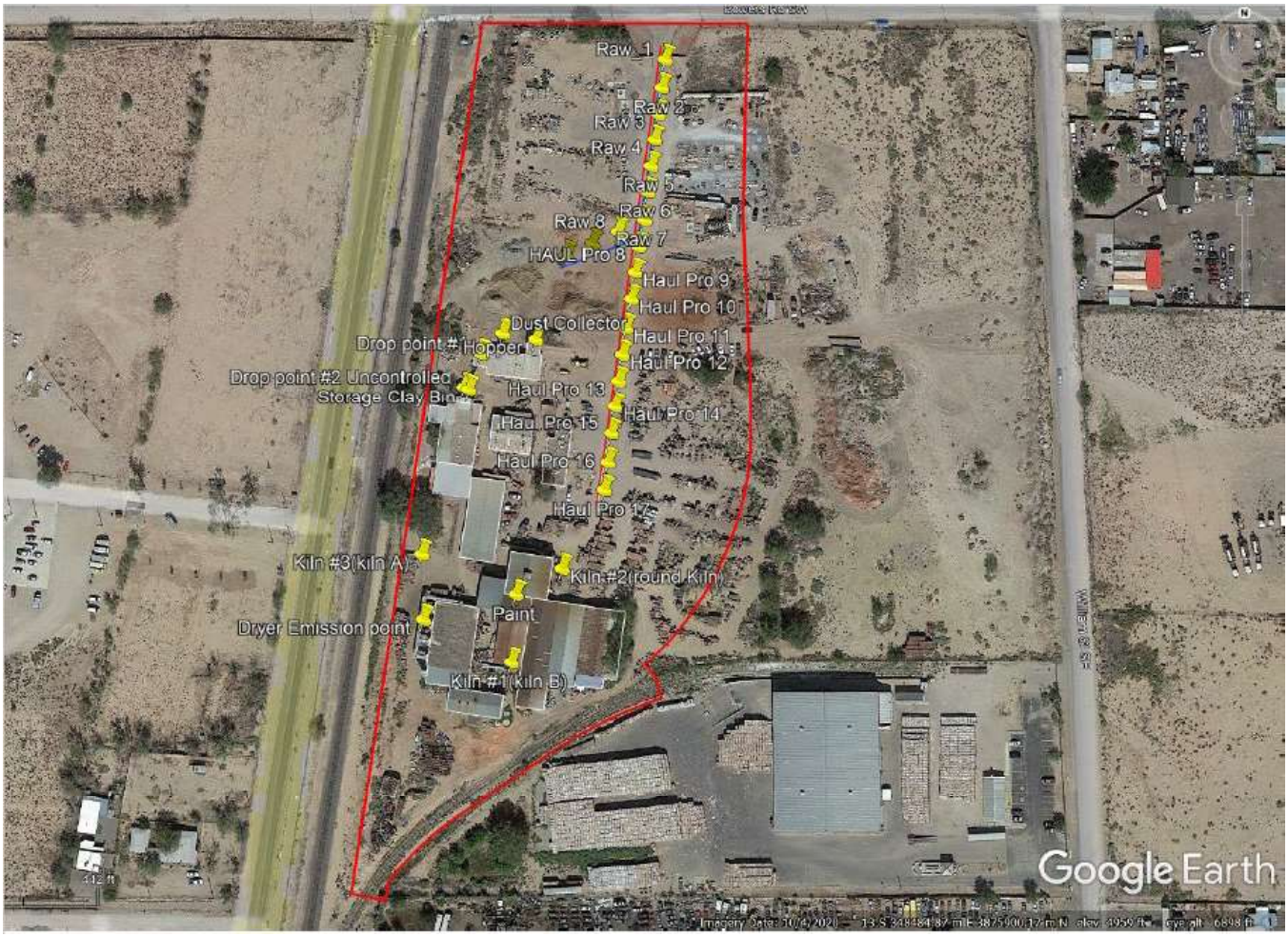


Figure 2 displays a map obtained from the CABQ's Advanced Map Viewer. All available layers are displayed in this figure. Background imagery is displayed for 2018.

The facility is located in an unincorporated area that shows land use that is predominately commercial, industrial, or transportation related.

Figure 2. Aerial Image Obtained from the City of Albuquerque's Advanced Map Viewer

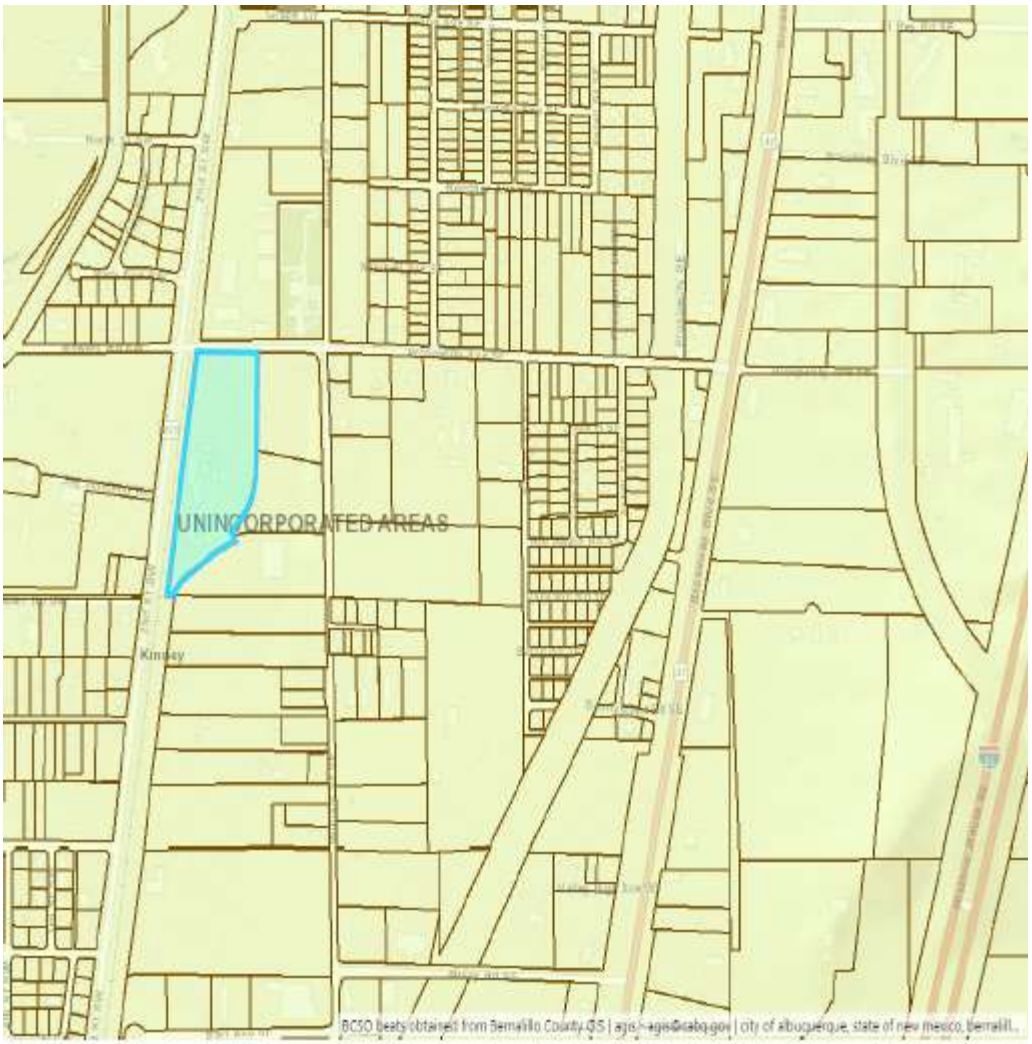


Figure 3 displays an aerial image obtained from Google Maps®. The imagery in this figure is dated 2021.

Figure 3. Aerial Image of the Facility and Surroundings Obtained from Google Maps®.

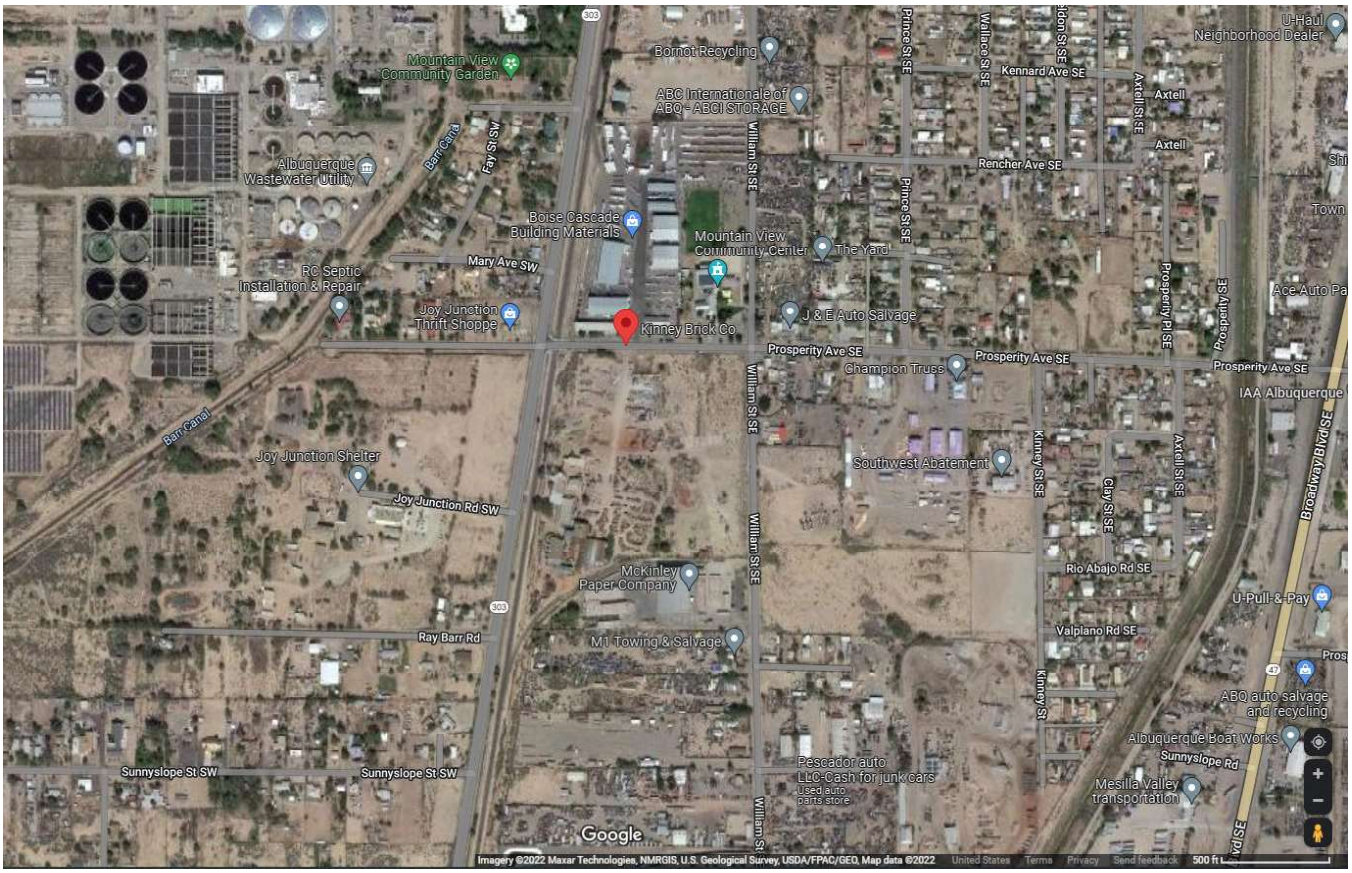
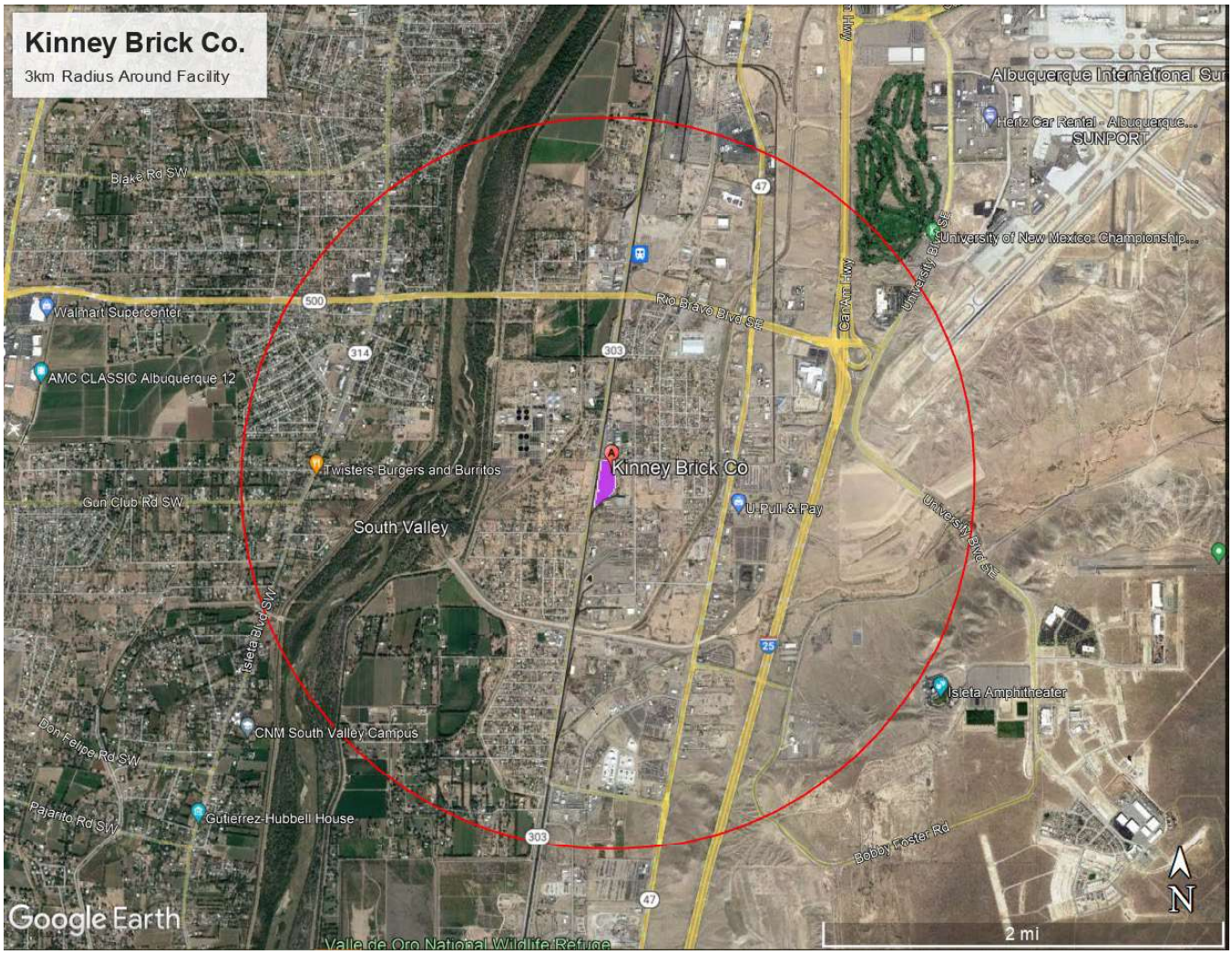


Figure 4 displays an aerial image obtained from Google Earth® with the facility circumscribed by a 3km radius. The imagery in this figure is dated October 2020.

Figure 4. Aerial Image of the Facility Circumscribed by 3 km Radius



3. MODELING REQUIREMENTS DESCRIPTION

a) List of Pollutants Requiring Modeling

This modeling is for a permit modification that will authorize the addition of one kiln that was previously permitted and one dryer as well as updated combustion emissions for the existing kilns, dryer, and aggregate handling for the facility based on current operational information. As such, averaging periods will be evaluated for CO, NO_2, PM_{10}, $PM_{2.5}$, and SO_2. This facility will not be a source of Pb; no modeling is required for this pollutant.

Table 1. Pollutant Standards for Which Modeling Waivers Have Been Granted or That are Modeled to Demonstrate Compliance with the NAAQS/NMAAQS

Pollutant	Standard	Waiver Granted	Modeled
CO	8-hr		☑
	1-hr		☑
NO_2	Annual		☑
	24-hr*		☑
	1-hr		☑
PM_{10}	24-hr		☑
$PM_{2.5}$	Annual		☑
	24-hr		☑
SO_2	Annual		☑
	24-hr*		☑
	3-hr*		☑
	1-hr		☑
H_2S	1-hr	N/A	
Pb	Quarterly	N/A	

*Note: Demonstration of compliance with a certain standard can be a surrogate that demonstrates compliance with other standards/averaging periods (e.g. 1-hr NO_2 for 24-hr NO_2; 1-hr SO_2 for 3-hr and 24-hr SO_2). The high first high value is always compared to the significant impact level for each averaging period.

b) Additional Modeling Required

No additional NSPS, NESHAP or PSD modeling is required as part of this modification application. The Kinney Brick Company is located in an area that is classified by the EPA as in attainment with the NAAQS for all regulated pollutants.

4. MODELING INPUTS

a) General Modeling Approach

i. Models Used and Justification

The most recent executable of AERMOD (v22112) was used to perform all air dispersion modeling. All models were run in regulatory default mode and Building Profile Input Program (BPIP) Prime was run to address building downwash associated with the structures located at this facility as well as the surrounding area. Based on satellite imagery and the CABQ Advanced Map Viewer, the land use in a 3 km radius around the facility is less than 50% industrial, commercial, or compact residential, as defined in the CABQ EHD modeling guidance;[1] therefore, rural dispersion coefficients were used.

The Tier 2, Ambient Ratio Method 2 (ARM2) was used to model the ambient impact of NO_2. The national default minimum ambient ratio of 0.5 and maximum ambient ratio of 0.9 were used.[2]

ii. Operational Flexibility

Kinney Brick is proposing an alternate operating schedule due to the nature of the manufacturing of bricks which is batched. The schedule of operations for the facility is included in the table below. All units are modeled for the greatest number of hours of operation to provide the most conservative estimate of emissions for the facility to demonstrate compliance with the NAAQS and NMAAQS.

Table 2. Facility Operating Hours

Unit ID	Description	Hours of Operation	Total Hours per Year
DUST	Dust Collector to control PM emissions from clay crusher building	Operation will occur during daylight hours of 0900 to 1700.	2080 hours per year
DRYERS	Brick Dryers #1 & #2	Operation will occur 24 hours a day, 6 days of the week.	2080 hours per year
KILN_1	Kiln #1	Operation for Kiln #1 will be 24 hours a day, Monday, and Tuesday.	2496 hours per year
KILN_2	Kiln #2	Operation for Kiln #2 will be 24 hours a day, Wednesday, and Thursday.	2496 hours per year
KILN_3	Kiln #3	Operation for Kiln #3 will be 24 hours a day, Friday and Saturday.	2496 hours per year
HLRAW	Raw haul road emissions	Operation will occur during daylight hours of 0900 to 1700. Monday through Friday.	2080 hours per year
HLPRO	Product haul road emissions	Operation will occur during daylight hours of 0900 to 1700. Monday through Friday.	2080 hours per year

[1] City of Albuquerque Environmental Health Department Air Quality Program Permitting Division, *Air Dispersion Modeling Guidelines for Air Quality Permitting,* Revised October 10, 2019, Attachment A.

[2] New Mexico Environment Department Air Quality Bureau, *New Mexico Air Quality Bureau Air Dispersion Modeling Guidelines*. Revised October 26, 2020, Section 2.6.4.3.

PAINT	Brick spray painting	Operation will occur during daylight hours of 0900 to 1700. Monday through Friday.	2080 hours per year
HOP	Material feeder hopper for crusher building	Operation will occur during daylight hours of 0900 to 1700. Monday through Friday.	2080 hours per year
CON7	Drop point of refined clay for brick manufacturing	Operation will occur during daylight hours of 0900 to 1700. Monday through Friday.	2080 hours per year
AGG1	Aggregate handling	Operation will occur during daylight hours of 0900 to 1700. Monday through Friday.	2080 hours per year
HOP2	Material drop into hopper	Operation will occur during daylight hours of 0900 to 1700. Monday through Friday.	2080 hours per year

iii. Source Groups

All units were modeled simultaneously per their estimated times of operation that are proposed above. The FAC source group includes all Kinney Brick Company sources while the NAAQS source group in the CIA models includes the addition of the surrounding sources. Additional details are provided in Section vii.

iv. Hourly Emission Factors

Table 2 reports the hourly emission rates that were modeled for the facility. Emissions were not averaged over non-operational hours.

Table 3. Modeled Emission Rates

Unit	Description	NO_2 lb/hr	CO lb/hr	SO_2 lb/hr	PM_{10} lb/hr	$PM_{2.5}$ lb/hr
DUST	Dust Collector	-	-	-	0.0044	0.0044
DRYERS	Dryers #1 & #2	0.91	0.77	5.33E-05	0.084	0.0842
KILN_1	Kiln #1	0.96	0.81	4.94E-05	0.38	0.3804
KILN_2	Kiln #2	0.96	0.81	4.94E-05	0.38	0.3804
KILN_3	Kiln #3	0.38	0.63	4.39E-05	0.297	0.2969
HLRAW2	Raw Material Hauling	-	-	-	5.96E-03	5.36E-04
HLRAW3		-	-	-	5.96E-03	5.36E-04
HLRAW4		-	-	-	5.96E-03	5.36E-04
HLRAW5		-	-	-	5.96E-03	5.36E-04
HLRAW6		-	-	-	5.96E-03	5.36E-04
HLRAW7		-	-	-	5.96E-03	5.36E-04
HLRAW8		-	-	-	5.96E-03	5.36E-04
HLRAW9		-	-	-	5.96E-03	5.36E-04
HLRAW10		-	-	-	5.96E-03	5.36E-04
HLPRO2	Product Hauling	-	-	-	1.05E-03	9.88E-05
HLPRO3		-	-	-	1.05E-03	9.88E-05
HLPRO4		-	-	-	1.05E-03	9.88E-05
HLPRO5		-	-	-	1.05E-03	9.88E-05
HLPRO6		-	-	-	1.05E-03	9.88E-05
HLPRO7		-	-	-	1.05E-03	9.88E-05
HLPRO8		-	-	-	1.05E-03	9.88E-05
HLPRO9		-	-	-	1.05E-03	9.88E-05
HLPRO10		-	-	-	1.05E-03	9.88E-05
HLPRO11		-	-	-	1.05E-03	9.88E-05
HLPRO12		-	-	-	1.05E-03	9.88E-05
HLPRO13		-	-	-	1.05E-03	9.88E-05
HLPRO14		-	-	-	1.05E-03	9.88E-05
HLPRO15		-	-	-	1.05E-03	9.88E-05
HLPRO16		-	-	-	1.05E-03	9.88E-05
HLPRO17		-	-	-	1.05E-03	9.88E-05
PAINT	Paint	-	-	-	0.026	0.010
HOP	Hopper feed to crusher	-	-	-	0.00101	0.00029
CON7	Elevated conveyor transfer to holding bin	-	-	-	0.024	0.024
AGG1	Aggregate Handling	-	-	-	0.069	0.010
HOP2	Material Drop into Hopper	-	-	-	0.026	0.026

v. Gravitational Settling/Plume Depletion

Wet and dry depletion were not used to model ambient impacts of PM_{10} and $PM_{2.5}$.

vi. Reduction of NO_X to NO_2

The Tier 2, Ambient Ratio Method 2 (ARM2) was used to model ambient impacts of NO_2. The national default minimum ambient ratio of 0.5 and maximum ambient ratio of 0.9 were used.

vii. Background Concentrations

The below background concentrations have been added to the calculated facility and neighboring source impacts for each pollutant and averaging period. These background concentrations were provided by the AQP via email on 11/8/2022 and have been preserved as provided.

Table 4. Background Concentrations

Pollutant	Standard	Value (µg/m³)	Location
NO_2	1-hr	84.6	Del Norte
NO_2	Annual	19	Del Norte
PM_{10}	24-hr	42	South Valley
$PM_{2.5}$	24-hr	23	South Valley
$PM_{2.5}$	Annual	8.4	South Valley

Temporally varying 1-hr NO_2 background concentrations were used, which were provided by the EHD on 3/2/2021. The data was taken from the Del Norte monitor – which is the only EPA-approved monitor with checked data for a long enough period to calculate background values. This background file was added to AERMOD and used in lieu of the static background value of 84.6 µg/m³ from the Del Norte Monitor. The table is included below.

Table 5. Temporally Varying 1-hr NO_2 Background Data ($\mu g/m^3$)

Hour	Winter	Spring	Summer	Fall
1	72.1	47.6	29.3	65.6
2	67.8	48.3	27.7	59.7
3	67.7	46	26.4	57.9
4	68.4	48.9	26.6	58.9
5	69.1	51.7	32.7	58
6	69.7	63.9	39.3	57.8
7	72.8	70.7	46.4	63.5
8	77.6	71.8	48.5	64.5
9	80	61.1	34.2	65.9
10	71.4	48	27.3	55
11	62	28.6	24.3	47.3
12	48.1	18.9	19.9	35.4
13	36.9	17.6	17	28.2
14	35.1	15.7	15.9	25.3
15	33.6	14.8	17.4	24.2
16	37.2	15.3	19.4	28
17	48.4	17.1	20.4	38
18	73	19.4	19.3	69.6
19	79.3	38.5	21.7	79.1
20	78.1	53.2	30.9	77.1
21	77.3	48	34.1	73.4
22	76.5	56.3	30.8	70.4
23	75	58.8	34.9	69.7
24	72.4	57.9	33.6	70.9

viii. Demonstration of Compliance in Nearby Facilities

Discrete receptors were included in all surrounding sources and facilities. In order to maintain compliance with the NAAQS and NMAAQS Kinney Brick has proposed a fenceline to create a defined boundary for the facility. This fenceline is to be built in accordance with the facilities property boundary.

b) Meteorological and Ozone Data

i. Discussion of Meteorological and Ozone Data

The most recent meteorological data from the Albuquerque Airport from 2014 to 2018 provided by the CABQ was used for the air dispersion modeling. The airport is located nearby and this meteorological data is assumed to be adequately representative of conditions at the Kinney Brick Company facility.

No Ozone data was used or required for the modeling completed as part of this modification application.

ii. Actual Data

No further justification is required as the data was provided by the CABQ.

c) Receptor and Terrain Discussion

i. Spacing of Receptor Grids

- Fence line spacing: 50 meters.
- Fine grid spacing: 100 meters out to 1 kilometer from the facility's fence line.
- Medium grid spacing: 500 meters out to 1.5 kilometers from the facility's fence line.
- Coarse grid spacing: 1000 meters out to 5 kilometers from the facility's fence line.

ii. Terrain Discussion

Based on the most recent guidance from the EHD, USGS National Elevation Dataset (NED) files were used in lieu of Digital Elevation Model (DEM) data. 1 arc-second NED files were downloaded from the USGS National Map website in GeoTIFF format. These files were then imported into AERMAP to determine elevations for sources, receptors, and buildings:

There is no complex terrain requiring modifications to air dispersion modeling inputs.

iii. Reduction in Receptor Grid Size

The full receptor grid was utilized for all SIL models. Each modeled pollutant's high first high were recorded and compared to the SIL. The receptors not exceeding significance thresholds per Table 6-A of the NMED Air Dispersion Modeling Guidelines were removed for all CIA modeling.

d) Emission Sources

i. Description of Sources at Facility

1. Choice of Source Type

Table 6. Point Source Stack Parameters

Unit	Description	Height (ft)	Diameter (ft)	Velocity (ft/s)	Temperature (°F)	Stack Orientation
DUST	Dust Collector	16	3.28	22.97	75	Vertical
DRYERS	Dryers #1 & #2	30	4.00	16.40	250	Vertical
KILN_1	Kiln #1	30	5.64	16.40	1000	Vertical
KILN_2	Kiln #2	30	5.64	16.40	1000	Vertical
KILN_3	Kiln #3	29	4.50	36.68	600	Vertical

Table 7. Volume Source Parameters

Unit	Description	X Coordinate	Y Coordinate	Elevation (ft)	Release Height (ft)	Init Lat Dim (ft)	Init Vert Dim (ft)
HLRAW2	Raw Material Hauling	348613.00	3875928.81	1509.87	11.14	18.60	10.36
HLRAW3		348611.00	3875916.62	1509.87	11.14	18.60	10.36
HLRAW4		348609.00	3875904.42	1509.87	11.14	18.60	10.36
HLRAW5		348607.00	3875892.23	1509.87	11.14	18.60	10.36
HLRAW6		348605.00	3875880.04	1509.87	11.14	18.60	10.36
HLRAW7		348603.00	3875867.85	1509.87	11.14	18.60	10.36
HLRAW8		348591.71	3875862.56	1509.88	11.14	18.60	10.36
HLRAW9		348579.24	3875857.73	1509.87	11.14	18.60	10.36
HLRAW10		348567.36	3875852.29	1510.05	11.14	18.60	10.36
HLPRO2	Product Hauling	348613.00	3875928.81	1509.87	11.14	18.60	10.36
HLPRO3		348611.00	3875916.62	1509.87	11.14	18.60	10.36
HLPRO4		348609.00	3875904.42	1509.87	11.14	18.60	10.36
HLPRO5		348607.00	3875892.23	1509.87	11.14	18.60	10.36
HLPRO6		348605.00	3875880.04	1509.87	11.14	18.60	10.36
HLPRO7		348603.00	3875867.85	1509.87	11.14	18.60	10.36
HLPRO8		348600.00	3875855.66	1509.87	11.14	18.60	10.36
HLPRO9		348598.00	3875843.46	1509.87	11.14	18.60	10.36
HLPRO10		348596.00	3875831.00	1509.87	11.14	18.60	10.36
HLPRO11		348593.48	3875818.81	1509.88	11.14	18.60	10.36
HLPRO12		348591.00	3875806.62	1509.89	11.14	18.60	10.36
HLPRO13		348589.00	3875794.42	1509.91	11.14	18.60	10.36
HLPRO14		348587.00	3875782.23	1510.08	11.14	18.60	10.36
HLPRO15		348585.00	3875770.04	1510.28	11.14	18.60	10.36
HLPRO16		348583.00	3875757.85	1510.66	11.14	18.60	10.36
HLPRO17		348581.00	3875745.66	1511.19	11.14	18.60	10.36
PAINT	Paint	348540.00	3875699.00	1512.3	2.50	1.16	2.33
HOP	Hopper feed to crusher	348552.00	3875814.00	1510.71	16.40	3.81	7.64
CON7	Elevated conveyor transfer to holding bin	348520.99	3875792.43	1514.87	13.12	1.54	3.05
AGG1	Aggregate Handling	348567.36	3875852.29	1510.05	6.56	1.54	3.05
HOP2	Material Drop into Hopper	348552.00	3875814.00	1510.71	6.56	1.54	3.05

* Units HLRAW1 and HLPRO1 were omitted as these two volume sources are located at the entrance of the facility and per NMED modeling guidelines for haul roads the first 50 meters of haul road may be removed.

2. *Table of Proposed Changes*

Table 8. Modeled Emission Rates for Modified or New Point Sources (lb/hr)

Unit	Description	NO_2 Lb/hr	CO Lb/hr	SO_2 Lb/hr	PM_{10} Lb/hr	$PM_{2.5}$ Lb/hr
DUST	Dust Collector	-	-	-	0.0044	0.0044
DRYERS	Dryers #1 & #2	0.91	0.77	5.33E-05	0.084	0.0842
KILN_1	Kiln #1	0.96	0.81	4.94E-05	0.38	0.3804
KILN_2	Kiln #2	0.96	0.81	4.94E-05	0.38	0.3804
KILN_3	Kiln #3	0.38	0.63	4.39E-05	0.297	0.2969
HLRAW2	Raw Material Hauling	-	-	-	5.96E-03	5.36E-04
HLRAW3		-	-	-	5.96E-03	5.36E-04
HLRAW4		-	-	-	5.96E-03	5.36E-04
HLRAW5		-	-	-	5.96E-03	5.36E-04
HLRAW6		-	-	-	5.96E-03	5.36E-04
HLRAW7		-	-	-	5.96E-03	5.36E-04
HLRAW8		-	-	-	5.96E-03	5.36E-04
HLRAW9		-	-	-	5.96E-03	5.36E-04
HLRAW10		-	-	-	5.96E-03	5.36E-04
HLPRO2	Product Hauling	-	-	-	1.05E-03	9.88E-05
HLPRO3		-	-	-	1.05E-03	9.88E-05
HLPRO4		-	-	-	1.05E-03	9.88E-05
HLPRO5		-	-	-	1.05E-03	9.88E-05
HLPRO6		-	-	-	1.05E-03	9.88E-05
HLPRO7		-	-	-	1.05E-03	9.88E-05
HLPRO8		-	-	-	1.05E-03	9.88E-05
HLPRO9		-	-	-	1.05E-03	9.88E-05
HLPRO10		-	-	-	1.05E-03	9.88E-05
HLPRO11		-	-	-	1.05E-03	9.88E-05
HLPRO12		-	-	-	1.05E-03	9.88E-05
HLPRO13		-	-	-	1.05E-03	9.88E-05
HLPRO14		-	-	-	1.05E-03	9.88E-05
HLPRO15		-	-	-	1.05E-03	9.88E-05
HLPRO16		-	-	-	1.05E-03	9.88E-05
HLPRO17		-	-	-	1.05E-03	9.88E-05
PAINT	Paint	-	-	-	0.026	0.010
HOP	Hopper feed to crusher	-	-	-	0.00101	0.00029
CON7	Elevated conveyor transfer to holding bin	-	-	-	0.024	0.024

AGG1	Aggregate Handling	-	-	-	0.069	0.010
HOP2	Material Drop into Hopper	-	-	-	0.026	0.026

3. Treatment of Operating Hours

All hours of operation were modeled as part of this permit modification. Maximum hourly emission rates were used to model all standards. All surrounding sources provided by the EHD were modeled with the operating hours provided for each corresponding source. Unit RBGS from the RBGS 0694-M3 facility was conservatively modeled as operating continuously utilizing diesel emission rates.

4. Particle Size Characteristics

No particle size distribution characteristics were included in the PM modeling.

5. Discrepancies Between Modeled Parameters and those in the Applications

Modeled parameters and those represented in the application are identical.

6. Flare Calculations

There are no flares at this facility.

7. Cross-Reference of Model Input Numbers/Names

All unit names in the model are identical to unit names reported in this application.

e) Building Downwash

i. Dimensions of Buildings

Table 9. Building Dimensions and Locations

ID	X	Y	Elevation	Height	Vertices	
	(m)	(m)	(m)	(ft)	X	Y
					(m)	(m)
Admin	348554.759	3875754.65	1511.54	15	348554.759	3875754.65
					348564.7768	3875753.233
					348569.1832	3875780.278
					348562.4445	3875781.129
					348561.5097	3875774.882
					348557.9833	3875775.33
					348554.759	3875754.65

ID	X	Y	Elevation	Height	Vertices	
	(m)	(m)	(m)	(ft)	X	Y
					(m)	(m)
MAINT	348533.6034	3875785.982	1511.24	20	348533.6034	3875785.982
					348531.1783	3875770.674
					348549.4359	3875767.705
					348551.7281	3875783.157
					348533.6034	3875785.982

ID	X	Y	Elevation	Height	Vertices	
	(m)	(m)	(m)	(ft)	X	Y
					(m)	(m)
PRODBLDG	348512.9174	3875790.057	1511.2	20	348512.9174	3875790.057
					348505.0924	3875791.313
					348503.8933	3875784.037
					348510.0831	3875782.956
					348505.24	3875750.82
					348522.29	3875747.92
					348528.7935	3875790.625
					348513.4403	3875793
					348512.9174	3875790.057

ID	X	Y	Elevation	Height	Vertices	
	(m)	(m)	(m)	(ft)	X	Y
					(m)	(m)
STOR_#1	348517.8	3875722.5	1511.99	18	348517.8	3875722.5
					348533.0	3875719.7
					348539.1	3875756.1
					348524.1	3875758.5
					348517.8	3875722.5

ID	X	Y	Elevation	Height	Vertices	
	(m)	(m)	(m)	(ft)	X	Y
					(m)	(m)
R_KILN	348536.5454	3875705.702	1512.23	25	348536.5454	3875705.702
					348555.4459	3875702.225
					348559.0236	3875720.82
					348540.0575	3875724.352
					348536.5454	3875705.702

ID	X	Y	Elevation	Height	Vertices	
	(m)	(m)	(m)	(ft)	X	Y
					(m)	(m)
STOR_#2	348540.1687	3875655.539	1512.65	15	348540.1687	3875655.539
					348552.8262	3875653.518
					348554.6177	3875665.559
					348566.603	3875663.253
					348566.74	3875664.066
					348579.2086	3875662.2
					348579.8874	3875666.731
					348585.8128	3875665.727
					348590.6006	3875696.079
					348548.7707	3875703.431
					348540.1687	3875655.539

ID	X	Y	Elevation	Height	Vertices	
	(m)	(m)	(m)	(ft)	X	Y
					(m)	(m)
SOUTH	348509.0194	3875654.56	1512.38	20	348509.0194	3875654.56
					348533.0844	3875650.186
					348534.9942	3875660.621
					348510.9781	3875664.757
					348509.0194	3875654.56

ID	X	Y	Elevation	Height	Vertices	
	(m)	(m)	(m)	(ft)	X	Y
					(m)	(m)
DRYER	348500.0413	3875666.896	1512.31	20	348500.0413	3875666.896
					348518.9729	3875663.973
					348525.0766	3875699.782
					348505.8652	3875703.26
					348500.6613	3875674.645
					348501.4135	3875674.447
					348500.0413	3875666.896

ID	X	Y	Elevation	Height	Vertices	
	(m)	(m)	(m)	(ft)	X	Y
					(m)	(m)
CRUSHER	348526.1074	3875814.467	1510.81	30	348526.1074	3875814.467
					348532.4151	3875813.728
					348532.7526	3875815.735
					348549.0906	3875813.528
					348550.087	3875819.314
					348556.3808	3875818.472
					348555.558	3875812.857
					348556.3676	3875812.585
					348554.9593	3875801.829
					348531.1304	3875805.005
					348531.3767	3875808.466
					348525.2192	3875809.294
					348526.1074	3875814.467

ID	X	Y	Elevation	Height	Vertices	
	(m)	(m)	(m)	(ft)	X	Y
					(m)	(m)
PAINT	348548.9	3875703.3	1512.31	25	348548.9	3875703.3
					348536.4	3875705.7
					348530.8	3875674.7
					348543.4	3875672.2

ID	X	Y	Elevation	Height	Vertices	
	(m)	(m)	(m)	(ft)	X	Y
					(m)	(m)
NEW2	348537.5	3875712.2	1512.16	23	348537.5	3875712.2
					348526.2	3875714.2
					348523.7	3875700.2
					348535.0	3875698.0

ID	X	Y	Elevation	Height	Vertices	
	(m)	(m)	(m)	(ft)	X	Y
					(m)	(m)
KILN	348500.98	3875724.15	1511.82	25	348500.98	3875724.15
					348499.17	3875713.97
					348509.64	3875712.24
					348511.09	3875722.65

ii. Discussion of Included Buildings

All buildings were included in the air dispersion modeling as shown in Section 2(d). All buildings at the Kinney Brick facility were included as well as the required buildings from surrounding areas that were requested to be included by the EHD.

5. MODELING FILES DESCRIPTION

a) List of Files

Table 10. Modeling Files and Description

Name	Description
KB_CO_SIL_v1.0_2023 0205	CO Significance Analysis
KB_NO2_SIL_v1.0_2023 0205	NO_2 Significance Analysis
KB_NO2_CIA 1HR_v1.0_2023 0205	NO_2 Cumulative Impact Analysis for 1-hr Standard
KB_NO2_CIA Ann_v1.0_2023 0205	NO_2 Cumulative Impact Analysis for Annual Standard
KB_PM2.5_SIL_v1.0_2023 0205	$PM_{2.5}$ Significance Analysis
KB_PM2.5 CIA 24HR_v1.0_2023 0205	$PM_{2.5}$ Cumulative Impact Analysis for 24-hr Standard
KB_PM2.5 CIA Ann_v1.0_2023 0205	$PM_{2.5}$ Cumulative Impact Analysis for Annual Standard
KB_PM10_SIL_v1.0_2023 0205	PM_{10} Significance Analysis
KB_PM10 CIA 24HR_v1.0_2023 0205	PM_{10} Cumulative Impact Analysis for 24-hr Standard
KB_SO2_SIL_v1.0_2023 0205	SO_2 Significance Analysis

b) Description of Scenarios

All files labeled "SIL" represent the Significance Impact Level (SIL) analysis or Significance Analysis. Modeled concentrations were above the SIL for NO_2, $PM_{2.5}$ and PM_{10} while modeled concentrations were below the SIL for CO and SO_2. As such, cumulative modeling was completed. Files labeled "CIA" represent the Cumulative Impact Analysis. Both background concentrations and surrounding sources were added into the cumulative modeling for NO_2 as required by the AQP.

6. MODELING RESULTS

a) Summary of Modeling Results

Table 11. Model Results; Maximum Concentrations; SIL Comparison

Pollutant	Averaging Period	Significance Level	Modeled	Percent of Significance	Location of Maximum Concentration		Elevation (m)
		µg/m³	µg/m³		X	Y	
CO	8-hr	500	25.37	5.1%	348497.60	3875762.20	1511.42
CO	1-hr	2000	41.84	2.1%	348480.30	3875663.80	1512.16
NO_2	Annual	1	2.21	Significant	348534.20	3875621.30	1512.77
NO_2	24-hr	5	21.82	Significant	348497.60	3875762.20	1511.42
NO_2	1-hr	7.52	44.82	Significant	348480.30	3875663.80	1512.16
$PM_{2.5}$	Annual	0.2	0.79	Significant	348501.80	3875786.90	1511.20
$PM_{2.5}$	24-hr	1.2	7.81	Significant	348484.70	3875688.40	1512.05
PM_{10}	Annual	1	0.86	85.6%	348501.80	3875786.90	1511.20
PM_{10}	24-hr	5	7.86	Significant	348484.70	3875688.40	1512.05
SO_2	Annual	1	1.50E-04	0.015%	348534.20	3875621.30	1512.77
SO_2	24-hr	5	1.31E-03	0.026%	348497.60	3875762.20	1511.42
SO_2	3-hr	25	1.97E-03	0.008%	348480.30	3875663.80	1512.16
SO_2	1-hr	7.8	2.90E-03	0.037%	348480.30	3875663.80	1512.16

b) Table of Cumulative Concentrations

Table 12. Cumulative vs. Ambient Air Quality Standards

Pollutant	Averaging Period	Standard, µg/m³		Modeled, µg/m3		Background	Calculated	Percent of the Standard	
		NAAQS	NMAAQS	Facility	Facility & Neighbors*	µg/m³	µg/m³	NAAQS	NMAAQS
NO_2	Annual	99.66	94.0	0.19	4.79	19	23.79	24%	25%
	1-hr	188.03	-	28.77	157.67885	-	157.68	84%	-
$PM_{2.5}$	Annual	12	-	0.48	0.61	9.10	9.58	80%	-
	24-hr	35	-	6.82	7.03	23.00	30.03	86%	-
PM_{10}	Annual	-	-	-	-	-	-	-	-
	24-hr	150	-	7.04	7.92	45.00	52.92	35%	-

* Facility & Neighbors Concentrations includes the temporally varying background data for 1-HR NO2. All other standards only include facility and surrounding sources and background is added in separately.

7. SUMMARY AND CONCLUSIONS

a) Modeling Statement

The submitted air dispersion modeling and report demonstrate compliance with the National and New Mexico Ambient Air Quality Standards. All requirements have been satisfied. There are no exceedances which would prohibit approval of the permit modification.

7. SUMMARY AND CONCLUSIONS

a) Modeling Statement

The submitted air dispersion modeling and report demonstrate compliance with the National and New Mexico Ambient Air Quality Standards. All requirements have been satisfied. There are no exceedances which would prohibit approval of the permit modification.

APPENDIX A. APPLICATION FORMS

Application for Air Pollutant Sources in Bernalillo County Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC) – Long Form

Permit Application Checklist

Permit Application Review Fee Checklist

City of Albuquerque – Environmental Health Department
Air Quality Program
Please mail this application to **P.O. Box 1293, Albuquerque, NM 87103**
or hand deliver between 8:00 am – 5:00 pm Monday – Friday to:
3rd Floor, Suite 3023 – One Civic Plaza NW, Albuquerque, NM 87102
(505) 768-1972 aqd@cabq.gov

Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)

Submittal Date: February 17, 2023

Owner/Corporate Information ☒ **Check here and leave this section blank if information is exactly the same as Facility Information below.**

Company Name: **Hoffman Enterprises, Inc. Dba Kinney Brick Company**			
Mailing Address: **100 Prosperity SE**	City: **Albuquerque**	State: **NM**	Zip: **87105**
Company Phone: **(505) 877-4550**	Company Contact: **Ralph Hoffman**		
Company Contact Title: **General Manager**	Phone: **(505) 877-4550**	E-mail: **ralphh@kinneybrick.com**	

Stationary Source (Facility) Information: **Provide a plot plan (legal description/drawing of the facility property) with overlay sketch of facility processes, location of emission points, pollutant type, and distances to property boundaries.**

Facility Name: **Kinney Brick Company**			
Facility Physical Address: **100 Prosperity SE**	City: **Albuquerque**	State: **NM**	Zip: **87105**
Facility Mailing Address (if different): **N/A**	City: **Albuquerque**	State: **NM**	Zip: **87105**
Facility Contact: **Ralph Hoffman**	Title: **General Manager**		
Phone: **(505) 877-4550**	E-mail: **ralphh@kinneybrick.com**		
Authorized Representative Name[1]: **Ralph Hoffman**	Authorized Representative Title: **General Manager**		

Billing Information ☒ **Check here if same contact and mailing address as corporate** ☐ **Check here if same as facility**

Billing Company Name:			
Mailing Address:	City:	State:	Zip:
Billing Contact:	Title:		
Phone:	E-mail:		

Preparer/Consultant(s) Information ☐ **Check here and leave section blank if no Consultant used or Preparer is same as Facility Contact.**

Name: **Adam Erenstein**	Title: **Manager of Consulting Services**		
Mailing Address: **9400 Holly Ave. NE, Bldg 3, Suite B**	City: **Albuquerque**	State: **NM**	Zip: **87122**
Phone: **(505) 266-6611**	Email: **aerenstein@trinityconsultants.com**		

1. See 20.11.41.13(E)(13) NMAC.

Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)

General Operation Information (if any question does not pertain to your facility, type N/A on the line or in the box)

Permitting action being requested (please refer to the definitions in 20.11.40 NMAC or 20.11.41 NMAC):			
☐ New Permit	☒ Permit Modification Current Permit #: **0747-M1-RV1**	☐ Technical Permit Revision Current Permit #:	☐ Administrative Permit Revision Current Permit #:
☐ New Registration Certificate	☐ Modification Current Reg. #:	☐ Technical Revision Current Reg. #:	☐ Administrative Revision Current Reg. #:

UTM coordinates of facility (Zone 13, NAD 83): **348,578 m E 3,875,793 m N**	
Facility type (*i.e.*, a description of your facility operations): **Manufacturer of face brick and brick pavers from clay.**	
Standard Industrial Classification (SIC Code #): **3251**	North American Industry Classification System (NAICS Code #): **327120**
Is this facility currently operating in Bernalillo County? **Yes**	If **YES**, list date of original construction: If **NO**, list date of planned startup:
Is the facility permanent? **Yes**	If **NO**, list dates for requested temporary operation: From **N/A** Through **N/A**
Is the facility a portable stationary source? **No**	If **YES**, is the facility address listed above the main permitted location for this source?
Is the application for a physical or operational change, expansion, or reconstruction (*e.g.*, altering process, or adding, or replacing process or control equipment, etc.) to an existing facility? **Yes**	
Provide a description of the requested changes: **In this permit modification KBC is seeking a modification to their existing permit (#747-M1-RV1) associated with the facility. Updates include the construction of one kiln, this kiln had been permitted previously but had not been constructed. It will now be located in a different location at the facility. Haul roads, conveyors, and material handling are also being proposed as additional sources of PM at the facility. Updated emissions for all units are provided with this application to accurately capture total emissions from units at the facility. The preexisting combustion sources include two (2) natural gas-fired kilns rated at 9 MMBtu/hr and one (1) natural gas-fired kiln rated at 34 MMBtu/hr as well as four (4) brick dryers rated at 2 MMBtu/hr and one (1) brick dryer rated at 3 MMBtu/hr. Under ATC#747-M1-RV1 these are incorrectly represented therefore with these updates to the facility there will be two (2) 9.84 MMBtu/hr kilns, one (1) 7.68 MMBtu/hr kiln, and two (2) 4.66 MMBtu/hr brick dryers. In addition to these modifications, hauling is to be included for raw material delivery and product shipping from the facility as well as brick painting operations. The preexisting material handling units 1 through 5 will be modified to match current throughputs and operating hours proposed by KBC. KBC currently has one (1) 4.66 MMBtu/hr dryer in operation that uses a horizontal stack located at ground level, in order to pass modeling for criteria pollutants this unit will have a 15 foot vertical stack constructed as well as a blower added to increase dispersion of pollutants from exhaust.**	
What is the facility's operation? ☐ Continuous ☐ Intermittent ☒ Batch	

Estimated percent of production/operation:	Jan-Mar: **25**	Apr-Jun: **25**	Jul-Sep: **25**	Oct-Dec: **25**
Requested operating times of facility:	**24** hours/day	**6** days/week	**4** weeks/month	**12** months/year

Will there be special or seasonal operating times other than shown above? This includes monthly- or seasonally-varying hours. **No**
If **YES**, please explain: **N/A**
List raw materials processed: **Clay**
List saleable item(s) produced: **Fired face brick and brick pavers**

USE INSTRUCTIONS: For the forms on the following pages, please do not alter or delete the existing footnotes or page breaks. If additional footnotes are needed then add them to the end of the existing footnote list for a given table. Only update the rows and cells within tables as necessary for your project. Unused rows can be deleted from tables. If multiple scenarios will be

represented then the Uncontrolled and Controlled Emission Tables, and other tables as needed, can be duplicated and adjusted to indicate the different scenarios.

Regulated Emission Sources Table

(*E.g.*, Generator-Crusher-Screen-Conveyor-Boiler-Mixer-Spray Guns-Saws-Sander-Oven-Dryer-Furnace-Incinerator-Haul Road-Storage Pile, etc.) Match the Units listed on this Table to the same numbered line if also listed on Emissions Tables & Stack Table.

Unit Number and Description[1]		Manufacturer	Model #	Serial #	Manufacture Date	Installation Date	Modification Date[2]	Process Rate or Capacity (Hp, kW, Btu, ft^3, lbs, tons, yd^3, etc.)[3]	Fuel Type
Unit 1	Hopper	**Unknown**	**Unknown**	**Unknown**	**Unknown**	**2001**	**N/A**	**300 ft^3**	**N/A**
Unit 2	Holding Bin	**Unknown**	**Unknown**	**Unknown**	**Unknown**	**2001**	**N/A**	**300 ft^3**	**N/A**
Unit 3	Conveyor #1	**Unknown**	**Unknown**	**Unknown**	**Unknown**	**2001**	**N/A**	**22 tons/hr**	**N/A**
	Conveyor #2	**Unknown**	**Unknown**	**Unknown**	**Unknown**	**2001**	**N/A**	**22 tons/hr**	**N/A**
	Crusher(Primary Crusher)	**Steadman**	**GS3030**	**TBD**	**TBD**	**10/1997**	**N/A**	**22 tons/hr**	**N/A**
	Conveyor #3	**Unknown**	**Unknown**	**Unknown**	**Unknown**	**2001**	**N/A**	**22 tons/hr**	**N/A**
	Screen	**Leaghy**	**Model E Screen**	**Unknown**	**Unknown**	**2001**	**N/A**	**22 tons/hr**	**N/A**
	Conveyor #4	**Unknown**	**Unknown**	**Unknown**	**Unknown**	**2001**	**N/A**	**22 tons/hr**	**N/A**
	Conveyor #5	**Unknown**	**Unknown**	**Unknown**	**Unknown**	**2001**	**N/A**	**22 tons/hr**	**N/A**
	Crusher(Secondary Crusher)	**Longhorn**	**45 VSI**	**Unknown**	**Unknown**	**6/2000**	**N/A**	**22 tons/hr**	**N/A**
	Conveyor #6	**Unknown**	**Unknown**	**Unknown**	**Unknown**	**2001**	**N/A**	**22 tons/hr**	**N/A**
Unit 4	Conveyor #7	**Unknown**	**Unknown**	**Unknown**	**Unknown**	**2001**	**N/A**	**22 tons/hr**	**N/A**
Unit 5	Aggregate Handling	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**22 tons/hr**	**N/A**
Unit 6a	Dryer #1	**Hauck**	**PBG 5000**	**Unknown**	**Unknown**	**2000**	**Unknown**	**4.66 MMBtu/hr**	**Natural Gas**
Unit 6b	Dryer #2	**Hauck**	**PBG 5000**	**TBD**	**TBD**	**TBD**	**TBD**	**4.66 MMBtu/hr**	**Natural Gas**
Unit 7a	Kiln #1	**Fives North American Combustion, Inc.**	**4442-4 & 4442-5**	**Unknown**	**Unknown**	**2001**	**Unknown**	**9.84 MMBtu/hr**	**Natural Gas**
Unit 7b	Kiln #2	**Fives North American Combustion, Inc.**	**4442-4 & 4442-5**	**TBD**	**TBD**	**TBD**	**TBD**	**9.84 MMBtu/hr**	**Natural Gas**
Unit 8	Kiln #3	**North American Manufacturing Company**	**4575-9**	**Unknown**	**Unknown**	**2001**	**Unknown**	**7.68 MMBtu/hr**	**Natural Gas**
Unit 9	Raw Material Hauling	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**1739 Trips/yr**	**N/A**
Unit 10	Product Hauling	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**350 Trips/yr**	**N/A**

Unit Number and Description[1]		Manufacturer	Model #	Serial #	Manufacture Date	Installation Date	Modification Date[2]	Process Rate or Capacity (Hp, kW, Btu, ft^3, lbs, tons, yd^3, etc.)[3]	Fuel Type
Unit 11	Paint	**Graco**	**390PC Airless Sprayer**	**TBD**	**TBD**	**TBD**	**TBD**	**200 gal/month**	**N/A**
Unit 12	Dust Collector	**GMD**	**36-10-6RA**	**TBD**	**TBD**	**8/2001**	**TBD**	**99% Control of Unit 3**	**N/A**

NOTE: To add extra rows in Word, click anywhere in the last row. A plus (+) sign should appear on the bottom right corner of the row. Click the plus (+) sign to add a row. Repeat as needed.

1. Unit numbers must correspond to unit numbers in the previous permit unless a complete cross reference table of all units in both permits is provided.
2. To determine whether a unit has been modified, evaluate if changes have been made to the unit that impact emissions or that trigger modification as defined in 20.11.41.7(U) NMAC. If not, put N/A.
3. Basis for Equipment Process Rate or Capacity (*e.g.*, Manufacturer's Data, Field Observation/Test, etc.) _____
   Submit information for each unit as an attachment.

Emissions Control Equipment Table

Control Equipment Units listed on this Table should either match up to the same Unit number as listed on the Regulated Emission Sources, Controlled Emissions and Stack Parameters Tables (if the control equipment is integrated with the emission unit) or should have a distinct Control Equipment Unit Number and that number should then also be listed on the Stack Parameters Table.

Control Equipment Unit Number and Description		Controlling Emissions for Unit Number(s)	Manufacturer	Model # | Serial #	Date Installed	Controlled Pollutant(s)	% Control Efficiency[1]	Method Used to Estimate Efficiency	Rated Process Rate or Capacity or Flow
Unit 12	Baghouse	3	GMD	36-10-6RA	8/2001	PM_{10} & $PM_{2.5}$	99%	Manufacturer's Data	3,850 ACFM

NOTE: To add extra rows in Word, click anywhere in the last row. A plus (+) sign should appear on the bottom right corner of the row. Click the plus (+) sign to add a row. Repeat as needed.

1. Basis for Control Equipment % Efficiency (*e.g.*, Manufacturer's Data, Field Observation/Test, AP-42, etc.). _____
   Submit information for each unit as an attachment.

Exempted Sources and Exempted Activities Table

See 20.11.41 NMAC for exemptions.

Unit Number and Description	Manufacturer	Model #	Serial #	Manufacture Date	Installation Date	Modification Date[1]	Process Rate or Capacity (Hp, kW, Btu, ft^3, lbs, tons, yd^3, etc.)[2]	Fuel Type
N/A – No Exempt Equipment.								
							/	

NOTE: To add extra rows in Word, click anywhere in the last row. A plus (+) sign should appear on the bottom right corner of the row. Click the plus (+) sign to add a row. Repeat as needed.

1. To determine whether a unit has been modified, evaluate if changes have been made to the unit that impact emissions or that trigger modification as defined in 20.11.41.7(U) NMAC. Also, consider if any changes that were made alter the status from exempt to non-exempt. If not, put N/A.
2. Basis for Equipment Process Rate or Capacity (*e.g.*, Manufacturer's Data, Field Observation/Test, etc.) _____
   Submit information for each unit as an attachment.

Uncontrolled Emissions Table

(Process potential under physical/operational limitations during a 24 hr/day and 365 day/year = 8760 hrs)

Regulated Emission Units listed on this Table should match up to the same numbered line and Unit as listed on the Regulated Emissions and Controlled Tables. List total HAP values per Emission Unit if overall HAP total for the facility is ≥ 1 ton/yr.

Unit Number*		Nitrogen Oxides (NO_X)		Carbon Monoxide (CO)		Nonmethane Hydrocarbons/Volatile Organic Compounds (NMHC/VOCs)		Sulfur Dioxide (SO_2)		Particulate Matter ≤ 10 Microns (PM_{10})		Particulate Matter ≤ 2.5 Microns ($PM_{2.5}$)		Hazardous Air Pollutants (HAPs)		Method(s) used for Determination of Emissions (AP-42, Material Balance, Field Tests, etc.)
		lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	
Hopper	1	-	-	-	-	-	-	-	-	0.053	0.055	0.053	0.055	-	-	**AP-42**
Holding Bin	2	-	-	-	-	-	-	-	-	0.011	0.011	0.011	0.011	-	-	**AP-42**
Conveyor #1	3	-	-	-	-	-	-	-	-	0.024	0.025	0.024	0.025	-	-	**AP-42**
Conveyor #2		-	-	-	-	-	-	-	-	0.053	0.055	0.053	0.055	-	-	**AP-42**
Crusher(Primary Crusher)		-	-	-	-	-	-	-	-	0.024	0.025	0.024	0.025	-	-	**AP-42**
Conveyor #3		-	-	-	-	-	-	-	-	0.19	0.20	0.19	0.20	-	-	**AP-42**
Screen		-	-	-	-	-	-	-	-	0.024	0.025	0.024	0.025	-	-	**AP-42**
Conveyor #4		-	-	-	-	-	-	-	-	0.024	0.025	0.024	0.025	-	-	**AP-42**
Conveyor #5		-	-	-	-	-	-	-	-	0.053	0.055	0.053	0.055	-	-	**AP-42**
Crusher(Secondary Crusher)		-	-	-	-	-	-	-	-	0.024	0.025	0.024	0.025	-	-	**AP-42**
Conveyor #6		-	-	-	-	-	-	-	-	0.024	0.025	0.024	0.025	-	-	**AP-42**
Conveyor #7	4	-	-	-	-	-	-	-	-	0.024	0.025	0.024	0.025	-	-	**AP-42**
Aggregate Handling	5	-	-	-	-	-	-	-	-	0.069	0.071	0.010	0.011	-	-	**AP-42**

Unit Number*		Nitrogen Oxides (NO_X)		Carbon Monoxide (CO)		Nonmethane Hydrocarbons/Volatile Organic Compounds (NMHC/VOCs)		Sulfur Dioxide (SO_2)		Particulate Matter ≤ 10 Microns (PM_{10})		Particulate Matter ≤ 2.5 Microns ($PM_{2.5}$)		Hazardous Air Pollutants (HAPs)		Method(s) used for Determination of Emissions (AP-42, Material Balance, Field Tests, etc.)
		lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	
Dryer #1	6a	0.46	1.71	0.38	1.44	0.025	0.094	2.66E-05	9.97E-05	0.042	0.062	0.042	0.062	-	-	**Manufacturer Specifications & AP-42 Stack Tests**
Dryer #2	6b	0.46	1.71	0.38	1.44	0.025	0.094	2.66E-05	9.97E-05	0.042	0.062	0.042	0.062	-	-	**Manufacturer Specifications & AP-42 Stack Tests**
Kiln #1	7a	0.96	1.00	0.81	0.84	0.053	0.055	4.94E-05	5.14E-05	0.38	0.40	0.38	0.40	3.22	3.35	**Manufacturer Specifications & AP-42 Stack Tests**
Kiln #2	7b	0.96	1.00	0.81	0.84	0.053	0.055	4.94E-05	5.14E-05	0.38	0.40	0.38	0.40	3.22	3.35	**Manufacturer Specifications & AP-42 Stack Tests**
Kiln #3	8	0.38	0.39	0.63	0.66	0.041	0.043	4.39E-05	4.56E-05	0.30	0.31	0.30	0.31	3.95	4.11	**Manufacturer Specifications & AP-42 Stack Tests**
Raw Material Hauling	9	-	-	-	-	-	-	-	-	0.27	0.23	0.027	0.023	-	-	**AP-42**
Product Hauling	10	-	-	-	-	-	-	-	-	0.084	0.071	0.0084	0.0071	-	-	**AP-42**
Paint	11	-	-	-	-	-	-	-	-	0.026	0.010	0.0099	8.00E-04	-	-	**Manufacturer Specifications & AP-42**
Dust Collector	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**N/A**
Totals of Uncontrolled Emissions		**3.22**	**5.82**	**3.02**	**5.22**	**0.20**	**0.34**	**1.96E-04**	**3.48E-04**	**2.12**	**2.15**	**1.73**	**1.82**	**10.40**	**10.81**	

NOTE: To add extra rows in Word, click anywhere in the second-to-last row. A plus (+) sign should appear on the bottom right corner of the row. Click the plus (+) sign to add a row. Repeat as needed.

*A permit is required and this application along with the additional checklist information requested on the Permit Application checklist must be provided if:

(1) any one of these process units or combination of units, has an uncontrolled emission rate greater than or equal to (≥) 10 lbs/hr or 25 tons/yr for any of the above pollutants, excluding HAPs, based on 8,760 hours of operation; or

(2) any one of these process units or combination of units, has an uncontrolled emission rate ≥ 2 tons/yr for any single HAP or ≥ 5 tons/yr for any combination of HAPs based on 8,760 hours of operation; or
(3) any one of these process units or combination of units, has an uncontrolled emission rate ≥ 5 tons/yr for lead (Pb) or any combination of lead and its compounds based on 8,760 hours of operation; or
(4) any one of the process units or combination of units is subject to an Air Board or federal emission limit or standard.

* If all of these process units, individually and in combination, have an uncontrolled emission rate less than (<) 10 lbs/hr or 25 tons/yr for all of the above pollutants (based on 8,760 hours of operation), but > 1 ton/yr for any of the above pollutants, then a source registration is required. A Registration is required, at minimum, for any amount of HAP emissions. Please complete the remainder of this form.

Controlled Emissions Table

(Based on current operations with emission controls OR requested operations with emission controls)

Regulated Emission Units listed on this Table should match up to the same numbered line and Unit as listed on the Regulated Emissions and Uncontrolled Tables. List total HAP values per Emission Unit if overall HAP total for the facility is ≥ 1 ton/yr.

Unit Number		Nitrogen Oxides (NO_X)		Carbon Monoxide (CO)		Nonmethane Hydrocarbons/Volatile Organic Compounds (NMHC/VOCs)		Sulfur Dioxide (SO_2)		Particulate Matter ≤ 10 Microns (PM_{10})		Particulate Matter ≤ 2.5 Microns ($PM_{2.5}$)		Hazardous Air Pollutants (HAPs)		Control Method	% Efficiency[1]
		lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr		
Hopper	1	-	-	-	-	-	-	-	-	0.053	0.055	0.053	0.055	-	-	**N/A**	**N/A**
Holding Bin	2	-	-	-	-	-	-	-	-	0.011	0.011	0.011	0.011	-	-	**N/A**	**N/A**
Conveyor #1	3	-	-	-	-	-	-	-	-	2.42E-04	2.52E-04	2.42E-04	2.52E-04	-	-	**Unit 12**	**99%**
Conveyor #2		-	-	-	-	-	-	-	-	5.28E-04	5.49E-04	5.28E-04	5.49E-04	-	-	**Unit 12**	**99%**
Crusher(Primary Crusher)		-	-	-	-	-	-	-	-	2.42E-04	2.52E-04	2.42E-04	2.52E-04	-	-	**Unit 12**	**99%**
Conveyor #3		-	-	-	-	-	-	-	-	1.91E-03	1.99E-03	1.91E-03	1.99E-03	-	-	**Unit 12**	**99%**
Screen		-	-	-	-	-	-	-	-	2.42E-04	2.52E-04	2.42E-04	2.52E-04	-	-	**Unit 12**	**99%**
Conveyor #4		-	-	-	-	-	-	-	-	2.42E-04	2.52E-04	2.42E-04	2.52E-04	-	-	**Unit 12**	**99%**
Conveyor #5		-	-	-	-	-	-	-	-	5.28E-04	5.49E-04	5.28E-04	5.49E-04	-	-	**Unit 12**	**99%**
Crusher(Secondary Crusher)		-	-	-	-	-	-	-	-	2.42E-04	2.52E-04	2.42E-04	2.52E-04	-	-	**Unit 12**	**99%**
Conveyor #6		-	-	-	-	-	-	-	-	2.42E-04	2.52E-04	2.42E-04	2.52E-04	-	-	**Unit 12**	**99%**
Conveyor #7	4	-	-	-	-	-	-	-	-	0.024	0.025	0.024	0.025	-	-	**N/A**	**N/A**
Aggregate Handling	5	-	-	-	-	-	-	-	-	0.069	0.071	0.010	0.011	-	-	**N/A**	**N/A**
Dryer #1	6a	0.46	1.71	0.38	1.44	0.025	0.094	2.66E-05	9.97E-05	0.042	0.062	0.042	0.062	-	-	**N/A**	**N/A**

Unit Number		Nitrogen Oxides (NO_X)		Carbon Monoxide (CO)		Nonmethane Hydrocarbons/Volatile Organic Compounds (NMHC/VOCs)		Sulfur Dioxide (SO_2)		Particulate Matter ≤ 10 Microns (PM_{10})		Particulate Matter ≤ 2.5 Microns ($PM_{2.5}$)		Hazardous Air Pollutants (HAPs)		Control Method	% Efficiency[1]
		lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr		
Dryer #2	6b	0.46	1.71	0.38	1.44	0.025	0.094	2.66E-05	9.97E-05	0.042	0.062	0.042	0.062	-	-	**N/A**	**N/A**
Kiln #1	7a	0.96	1.00	0.81	0.84	0.053	0.055	4.94E-05	5.14E-05	0.38	0.40	0.38	0.40	3.22	3.35	**N/A**	**N/A**
Kiln #2	7b	0.96	1.00	0.81	0.84	0.053	0.055	4.94E-05	5.14E-05	0.38	0.40	0.38	0.40	3.22	3.35	**N/A**	**N/A**
Kiln #3	8	2.51	2.61	2.11	2.19	0.14	0.14	1.46E-04	1.52E-04	0.30	0.31	0.30	0.31	4.0	4.1	**N/A**	**N/A**
Raw Material Hauling	9	-	-	-	-	-	-	-	-	0.27	0.23	0.027	0.023	-	-	**Base course and watering**	**80%**
Product Hauling	10	-	-	-	-	-	-	-	-	0.084	0.071	0.0084	0.0071	-	-	**Base course and watering**	**80%**
Paint	11	-	-	-	-	-	-	-	-	0.026	0.010	0.010	8.00E-04	-	-	**N/A**	**N/A**
Dust Collector	12	-	-	-	-	-	-	-	-	4.42E-03	4.60E-03	4.42E-03	4.60E-03	-	-	**N/A**	**N/A**
Totals of Controlled Emissions		**3.22**	**5.82**	**3.02**	**5.22**	**0.20**	**0.34**	**1.96E-04**	**3.48E-04**	**1.69**	**1.70**	**1.29**	**1.37**	**10.40**	**10.81**		

NOTE: To add extra rows in Word, click anywhere in the second-to-last row. A plus (+) sign should appear on the bottom right corner of the row. Click the plus (+) sign to add a row. Repeat as needed.

1. Basis for Control Method % Efficiency (*e.g.*, Manufacturer's Data, Field Observation/Test, AP-42, etc.). **Baghouse control of equipment under Unit 3 is based on manufacturer's data,** Submit information for each unit as an attachment.

Hazardous Air Pollutants (HAPs) Emissions Table

Report the Potential Emission Rate for each HAP from each source on the Regulated Emission Sources Table that emits a given HAP. Report individual HAPs with ≥ 1 ton/yr total emissions for the facility on this table. Otherwise, report total HAP emissions for each source that emits HAPs and report individual HAPs in the accompanying application package in association with emission calculations. If this application is for a Registration solely due to HAP emissions, report the largest HAP emissions on this table and the rest, if any, in the accompanying application package.

Unit Number		Total HAPs		HF		HCl											
		lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
Hopper	1	-	-	-	-	-	-										
Holding Bin	2	-	-	-	-	-	-										
Conveyor #1	3	-	-	-	-	-	-										
Conveyor #2		-	-	-	-	-	-										
Crusher(Primary Crusher)		-	-	-	-	-	-										
Conveyor #3		-	-	-	-	-	-										
Screen		-	-	-	-	-	-										
Conveyor #4		-	-	-	-	-	-										
Conveyor #5		-	-	-	-	-	-										
Crusher(Secondary Crusher)		-	-	-	-	-	-										
Conveyor #6		-	-	-	-	-	-										
Conveyor #7	4	-	-	-	-	-	-										
Aggregate Handling	5	-	-	-	-	-	-										
Dryer #1	6a	-	-	-	-	-	-										
Dryer #2	6b	-	-	-	-	-	-										
Kiln #1	7a	3.22	3.35	2.21	2.29	1.01	1.05										

Unit Number		Total HAPs		HF		HCl											
		lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
Kiln #2	7b	3.22	3.35	2.21	2.29	1.01	1.05										
Kiln #3	8	3.95	4.11	2.70	2.71	1.24	1.29										
Raw Material Hauling	9	-	-	-	-	-	-										
Product Hauling	10	-	-	-	-	-	-										
Paint	11	-	-	-	-	-	-										
Dust Collector	12	-	-	-	-	-	-										
Totals of HAPs for all units:		**10.40**	**10.81**	**7.12**	**7.40**	**3.27**	**3.40**										

NOTE: To add extra rows in Word, click anywhere in the second-to-last row. A plus (+) sign should appear on the bottom right corner of the row. Click the plus (+) sign to add a row. Repeat as needed.

Use Instructions: Copy and paste the HAPs table here if need to list more individual HAPs.

Purchased Hazardous Air Pollutant Table*

Product Categories (Coatings, Solvents, Thinners, etc.)	Hazardous Air Pollutant (HAP), or Volatile Hazardous Air Pollutant (VHAP) Primary To The Representative As Purchased Product	Chemical Abstract Service (CAS) Number of HAP or VHAP from Representative As Purchased Product	HAP or VHAP Concentration of Representative As Purchased Product (pounds/gallon, or %)	Concentration Determination (CPDS, SDS, etc.)[1]	Total Product Purchases For Category	(-)	Quantity of Product Recovered & Disposed For Category	(=)	Total Product Usage For Category
N/A – No HAPs are purchased at this facility.									
.					lb/yr gal/yr	(-)	lb/yr gal/yr	(=)	lb/yr gal/yr
TOTALS					lb/yr gal/yr	(-)	lb/yr gal/yr	(=)	lb/yr gal/yr

NOTE: To add extra rows in Word, click anywhere in the second-to-last row. A plus (+) sign should appear on the bottom right corner of the row. Click the plus (+) sign to add a row. Repeat as needed.

NOTE: Product purchases, recovery/disposal and usage should be converted to the units listed in this table. If units cannot be converted please contact the Air Quality Program prior to making changes to this table.

1. Submit, as an attachment, information on one (1) product from each Category listed above which best represents the average of all the products purchased in that Category. CPDS = Certified Product Data Sheet; SDS = Safety Data Sheet

*** A Registration is required, at minimum, for any amount of HAP or VHAP emission.**
Emissions from purchased HAP usage should be accounted for on previous tables as appropriate.
A permit may be required for these emissions if the source meets the requirements of 20.11.41 NMAC.

Material and Fuel Storage Table

(*E.g.*, Tanks, barrels, silos, stockpiles, etc.)

Storage Equipment		Product Stored	Capacity (bbls, tons, gals, acres, etc.)	Above or Below Ground	Construction (Welded, riveted) & Color	Installation Date	Loading Rate[1]	Offloading Rate[1]	True Vapor Pressure	Control Method	Seal Type	% Eff.[2]
Ex. 1.	Tank	Diesel Fuel	5,000 gal.	Below	Welded/Brown	3/1993	3,000 gal/hr	500 gal/hr	N/A	N/A	N/A	N/A
Ex. 2.	Barrels	Solvent	55 gal. drum	Above	Welded/Green	N/A	N/A	N/A	N/A	N/A	N/A	N/A

NOTE: To add extra rows in Word, click anywhere in the last row. A plus (+) sign should appear on the bottom right corner of the row. Click the plus (+) sign to add a row. Repeat as needed.

1. Basis for Loading/Offloading Rate (*e.g.*, Manufacturer's Data, Field Observation/Test, etc.). _____
   Submit information for each unit as an attachment.
2. Basis for Control Method % Efficiency (*e.g.*, Manufacturer's Data, Field Observation/Test, AP-42, etc.). _____
   Submit information for each unit as an attachment.

Stack Parameters Table

If any equipment from the Regulated Emission Sources Table is also listed in this Stack Table, use the same numbered line for the emission unit on both tables to show the association between the Process Equipment and its stack.

Unit Number and Description		Pollutant (CO, NOx, PM_{10}, etc.)	UTM Easting (m)	UTM Northing (m)	Stack Height (ft)	Stack Exit Temp. (°F)	Stack Velocity (fps)	Stack Flow Rate (acfm)	Stack Inside Diameter (ft)	Stack Type
Ex. 1.	Generator	CO, NOx, PM_{10}, $PM_{2.5}$, SO_2	349430.28	3884014.64	18	900 °F	150 fps	4524 acfm	0.8	Rain Cap
Ex. 2.	Spray Gun	PM_{10}, xylene, toluene	348540.1	3882928.5	9.2	Ambient	50 fps	589 acfm	0.5	Vertical
6a	Dryer #1	CO, NOx, PM10, PM2.5, SO2	348498.00	3875689.00	30	250	16.40	1340	4.00	**Vertical**
6b	Dryer #2	CO, NOx, PM10, PM2.5, SO2	348498.00	3875689.00	30	250	16.40	1340	4.00	**Vertical**
7a	Kiln #1	CO, NOx, PM10, PM2.5, SO2	348536.99	3875669.43	30	1000	16.40	6152	5.64	**Vertical**
7b	Kiln #2	CO, NOx, PM10, PM2.5, SO2	348497.99	3875718.43	30	1000	16.40	6152	5.64	**Vertical**
8	Kiln #3	CO, NOx, PM10, PM2.5, SO2	348560.99	3875710.43	29	600	36.68	35000	4.50	**Vertical**
12	Dust Collector	PM10, PM2.5	348536.99	3875817.43	16	Ambient	22.97	TBD	3.28	**Vertical**

NOTE: To add extra rows in Word, click anywhere in the last row. A plus (+) sign should appear on the bottom right corner of the row. Click the plus (+) sign to add a row. Repeat as needed.

Certification

NOTICE REGARDING SCOPE OF A PERMIT: The Environmental Health Department's issuance of an air quality permit only authorizes the use of the specified equipment pursuant to the air quality control laws, regulations and conditions. Permits relate to air quality control only and are issued for the sole purpose of regulating the emission of air contaminants from said equipment. Air quality permits are not a general authorization for the location, construction and/or operation of a facility, nor does a permit authorize any particular land use or other form of land entitlement. It is the applicant's/permittee's responsibility to obtain all other necessary permits from the appropriate agencies, such as the City of Albuquerque Planning Department or Bernalillo County Department of Planning and Development Services, including but not limited to site plan approvals, building permits, fire department approvals and the like, as may be required by law for the location, construction and/or operation of a facility. For more information, please visit the City of Albuquerque Planning Department website at https://www.cabq.gov/planning and the Bernalillo County Department of Planning and Development Services website at https://www.bernco.gov/planning.

NOTICE REGARDING ACCURACY OF INFORMATION AND DATA SUBMITTED: Any misrepresentation of a material fact in this application and its attachments is cause for denial of a permit or revocation of part or all of the resulting registration or permit, and revocation of a permit for cause may limit the permitee's ability to obtain any subsequent air quality permit for ten (10) years. Any person who knowingly makes any false statement, representation, or certification in any application, record, report, plan or other document filed or required to be maintained under the Air Quality Control Act, NMSA 1978 §§ 74-2-1 to 74-2-17, is guilty of a misdemeanor and shall, upon conviction, be punished by a fine of not more than ten thousand dollars ($10,000) per day per violation or by imprisonment for not more than twelve months, or by both.

I, the undersigned, hereby certify that I have knowledge of the information and data represented and submitted in this application and that the same is true and accurate, including the information and date in any and all attachments, including without limitation associated forms, materials, drawings, specifications, and other data. I also certify that the information represented gives a true and complete portrayal of the existing, modified existing, or planned new stationary source with respect to air pollution sources and control equipment. I understand that there may be significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations. I also understand that the person who has applied for or has been issued an air quality permit by the Department is an obligatory party to a permit appeal filed pursuant to 20.11.81 NMAC. Further, I certify that I am qualified and authorized to file this application, to certify the truth and accuracy of the information herein, and bind the source. Moreover, I covenant and agree to comply with any requests by the Department for additional information necessary for the Department to evaluate or make a final decision regarding the application.

Signed this 17th day of February, 2023

Print Name

General Mgr
Print Title

Signature

Role: ☒ Owner ☐ Operator

☐ Other Authorized Representative

City of Albuquerque
Environmental Health Department
Air Quality Program

Construction Permit (20.11.41 NMAC)
Application Checklist

This checklist must be returned with the application

Any person seeking a new air quality permit, a permit modification, or an emergency permit under 20.11.41 NMAC (Construction Permits) shall do so by filing a written application with the Albuquerque-Bernalillo County Joint Air Quality Program, which administers and enforces local air quality laws for the City of Albuquerque ("City") and Bernalillo County ("County"), on behalf of the City Environmental Health Department ("Department").

The Department will rule an application administratively incomplete if it is missing or has incorrect information. The Department may require additional information that is necessary to make a thorough review of an application, including but not limited to technical clarifications, emission calculations, emission factor usage, additional application review fees if any are required by 20.11.2 NMAC, and new or additional air dispersion modeling.

If the Department has ruled an application administratively incomplete three (3) times, the Department will deny the permit application. Any fees submitted for processing an application that has been denied will not be refunded. If the Department denies an application, a person may submit a new application and the fee required for a new application. The applicant has the burden of demonstrating that a permit should be issued.

The following are the minimum elements that shall be included in the permit application before the Department can determine whether an application is administratively complete and ready for technical review. It is not necessary to include an element if the Department has issued a written waiver regarding the element and the waiver accompanies the application. However, the Department shall not waive any federal requirements.

At all times before the Department has made a final decision regarding the application, an applicant has a duty to promptly supplement and correct information the applicant has submitted in an application to the Department. The applicant's duty to supplement and correct the application includes but is not limited to relevant information acquired after the applicant has submitted the application and additional information the applicant otherwise determines is relevant to the application and the Department's review and decision. While the Department is processing an application, regardless of whether the Department has determined the application is administratively complete, if the Department determines that additional information is necessary to evaluate or make a final decision regarding the application, the Department may request additional information and the applicant shall provide the requested additional information.

NOTICE REGARDING PERMIT APPEALS: A person who has applied for or has been issued an air quality permit by the Department shall be an obligatory party to a permit appeal filed pursuant to 20.11.81 NMAC.

NOTICE REGARDING SCOPE OF A PERMIT: The Department's issuance of an air quality permit only authorizes the use of the specified equipment pursuant to the air quality control laws, regulations and conditions. Permits relate to air quality control only and are issued for the sole purpose of regulating the emission of air contaminants from said equipment. Air quality permits are not a general authorization for the location, construction and/or operation of a facility, nor does a permit authorize any particular land use or other form of land entitlement. It is the applicant's/permittee's responsibility to obtain all other necessary permits from the appropriate agencies, such as the City Planning Department or County Department of Planning and Development Services, including but not limited to site plan approvals, building permits, fire department approvals and the like, as may be required by law for the location, construction and/or operation of a facility. For more information, please visit the City Planning Department website at https://www.cabq.gov/planning and the County Department of Planning and Development Services website at https://www.bernco.gov/planning.

The Applicant shall:

20.11.41.13(A) NMAC – Pre-Application Requirements:

Item	Completed	NA[1]	Waived[2]
(1) Request a pre-application meeting with the Department using the pre-application meeting request form.	☒	☐	☐
(2) Attend the pre-application meeting. Date of Pre-application meeting: 4/28/2022	☒	☐	☐

1. *Not Applicable*
2. *It is not necessary to include an element if the Department has issued a written waiver regarding the element and the waiver accompanies the application. However, the Department shall not waive any federal requirements.*

20.11.41.13(B) NMAC – Applicant's Public Notice Requirements:

Item	Included in Application	NA[1]	Waived[2]
(1) Provide public notice in accordance with the regulation, including by certified mail or electronic copy to the designated representative(s) of the recognized neighborhood associations and recognized coalitions that are within one-half mile of the exterior boundaries of the property on which the source is or is proposed to be located.	☒	☐	☐
• Contact list of representative(s) of neighborhood associations and recognized coalitions cannot be more than three months old from the application submittal date.	☒	☐	☐
• Provide notice using the Notice of Intent to Construct form.	☒	☐	☐
(2) In accordance with the regulation, post and maintain in a visible location a weather proof sign provided by the Department.	☒	☐	☐

1. *Not Applicable; For emergency permits, the public notice requirements in 20.11.41.24 NMAC shall apply instead.*
2. *It is not necessary to include an element if the Department has issued a written waiver regarding the element and the waiver accompanies the application. However, the Department shall not waive any federal requirements.*

The Permit Application shall include:

20.11.41.13(E) NMAC – Application Contents

Item	Included In Application	NA[1]	Waived[2]
(1) A complete permit application on the most recent form provided by the Department.	☒	☐	☐
(2) The application form includes:			
a. The owner's name, street and post office address, and contact information;	☒	☐	☐
b. The facility/ operator's name, street address and mailing address, if different from the owner;	☒	☐	☐
c. The consultant's name, and contact information, if applicable;	☒	☐	☐
d. All information requested on the application form is included (*i.e.*, the form is complete).	☒	☐	☐
(3) Date application is submitted.	☒	☐	☐
(4) Sufficient attachments for the following:			
a. Ambient impact analysis using an atmospheric dispersion model approved by the U.S. Environmental Protection Agency, and the Department to demonstrate compliance with the applicable ambient air quality standards. *See* 20.11.01 NMAC. If you are modifying an existing source, the modeling must include the	☐	☐	☒

Item	Included In Application	NA[1]	Waived[2]
emissions of the entire source to demonstrate the impact the new or modified source(s) will have on existing plant emissions.			
b. The air dispersion model has been executed pursuant to a protocol that was approved in advance by the Department.	☐	☐	☒
c. Air dispersion modeling approved protocol date:	☐	☐	☒
d. Basis or source for each emission rate (including manufacturer's specification sheet, AP-42 section sheets, test data, or corresponding supporting documentation for any other source used).	☒	☐	☐
e. All calculations used to estimate potential emission rates and controlled/proposed emissions.	☒	☐	☐
f. Basis for the estimated control efficiencies and sufficient engineering data for verification of the control equipment operation, including if necessary, design, drawing, test report and factors which affect the normal operation.	☒	☐	☐
g. Fuel data for each existing and/or proposed piece of fuel burning equipment.	☒	☐	☐
h. Anticipated maximum production capacity of the entire facility and the requested production capacity after construction and/or modification.	☒	☐	☐
i. Stack and exhaust gas parameters for all existing and proposed emission stacks.	☒	☐	☐
(5) An operational and maintenance strategy detailing:	☒	☐	☐
a. steps the applicant will take if a malfunction occurs that may cause emission of a regulated air contaminant to exceed a limit that is included in the permit;	☒	☐	☐
b. the nature of emission during routine startup or shutdown of the source and the source's air pollution control equipment; and	☒	☐	☐
c. the steps the application will take to minimize emissions during routine startup or shutdown.	☒	☐	☐
(6) A map, such as a 7.5'-topographic quadrangle map published by the U.S. Geological Survey or a map of equivalent or greater scale, detail, and precision, including a City or County zone atlas map that shows the proposed location of each process equipment unit involved in the proposed construction, modification, or operation of the source, as applicable.	☒	☐	☐
(7) An aerial photograph showing the proposed location of each process equipment unit involved in the proposed construction, modification, relocation or technical revision of the source except for federal agencies or departments involved in national defense or national security as confirmed and agreed by the Department in writing.	☒	☐	☐
(8) A complete description of all sources of regulated air contaminants and a process flow diagram depicting the process equipment unit or units at the facility, both existing and proposed, that are proposed to be involved in routine operations and from which regulated air contaminant emissions are expected to be emitted.	☒	☐	☐
(9) A full description of air pollution control equipment, including all calculations and the basis for all control efficiencies presented, manufacturer's specifications sheets, and site layout and assembly drawings; UTM (universal transverse mercator) coordinates shall be used to identify the location of each emission unit.	☒	☐	☐
(10) A description of the equipment or methods proposed by the applicant to be used for emission measurement.	☒	☐	☐
(11) The maximum and normal operating time schedules of the source after completion of construction or modification, as applicable.	☒	☐	☐
(12) Any other relevant information as the Department may reasonably require, including without limitation:	☒	☐	☐
a. Applicants shall provide documentary proof that the proposed air quality permitted use of the facility's subject property is allowed by the zoning designation of the City or County zoning laws, as applicable. Sufficient documentation includes: (i) a zoning certification from the City Planning Department or County Department of Planning and Development Services, as applicable, if the property is subject to City or County zoning jurisdiction; or (ii) a zoning verification from both planning	☐	☒	☐

Item	Included In Application	NA[1]	Waived[2]
departments if the property is not subject to City or County zoning jurisdiction.[3] A zone atlas map shall not be sufficient.			
(13) The signature of the applicant, operator, owner or an authorized representative, certifying to the accuracy of all information as represented in the application and attachments, if any.	☒	☐	☐
(14) A check or money order for the appropriate application fee or fees required by 20.11.2 NMAC (Fees).	☒	☐	☐

1. *Not Applicable*
2. *It is not necessary to include an element if the Department has issued a written waiver regarding the element and the waiver accompanies the application. However, the Department shall not waive any federal requirements.*
3. *For emergency permit applications, applicants are not required to submit documentation for the subject property's zoning designation.*

City of Albuquerque

Environmental Health Department
Air Quality Program

Permit Application Review Fee Instructions

All source registration, authority-to-construct, and operating permit applications for stationary or portable sources shall be charged an application review fee according to the fee schedule in 20.11.2 NMAC. These filing fees are required for both new construction, reconstruction, and permit modifications applications. Qualified small businesses as defined in 20.11.2 NMAC may be eligible to pay one-half of the application review fees and 100% of all applicable federal program review fees.

Please fill out the permit application review fee checklist and submit with a check or money order payable to the "City of Albuquerque Fund 242" and either:

1. be delivered in person to the Albuquerque Environmental Health Department, 3rd floor, Suite 3023 or Suite 3027, Albuquerque-Bernalillo County Government Center, south building, One Civic Plaza NW, Albuquerque, NM or,

2. mailed to Attn: Air Quality Program, Albuquerque Environmental Health Department, P.O. Box 1293, Albuquerque, NM 87103.

The department will provide a receipt of payment to the applicant. The person delivering or filing a submittal shall attach a copy of the receipt of payment to the submittal as proof of payment Application review fees shall not be refunded without the written approval of the manager. If a refund is requested, a reasonable professional service fee to cover the costs of staff time involved in processing such requests shall be assessed. Please refer to 20.11.2 NMAC (effective January 10, 2011) for more detail concerning the "Fees" regulation as this checklist does not relieve the applicant from any applicable requirement of the regulation.

City of Albuquerque

Environmental Health Department
Air Quality Program

Permit Application Review Fee Checklist Effective January 1, 2023 – December 31, 2023

Please completely fill out the information in each section. Incompleteness of this checklist may result in the Albuquerque Environmental Health Department not accepting the application review fees. If you should have any questions concerning this checklist, please call 768-1972.

I. COMPANY INFORMATION:

Company Name	Hoffman Enterprises, Inc. DBA Kinney Brick Company	
Company Address	100 Prosperity SE	
Facility Name	Kinney Brick Company	
Facility Address	100 Prosperity SE	
Contact Person	Ralph Hoffman	
Contact Person Phone Number	505-877-4550	
Are these application review fees for an existing permitted source located within the City of Albuquerque or Bernalillo County?	**Yes**	**No**
If yes, what is the permit number associated with this modification?	**Permit #0747-M1-RV1**	
Is this application review fee for a Qualified Small Business as defined in 20.11.2 NMAC? (See Definition of Qualified Small Business on Page 4)	**Yes**	**No**

II. STATIONARY SOURCE APPLICATION REVIEW FEES:

If the application is for a new stationary source facility, please check all that apply. If this application is for a modification to an existing permit please see Section III.

Check All That Apply	Stationary Sources	Review Fee	Program Element
	Air Quality Notifications		
	AQN New Application	$641.00	2801
	AQN Technical Amendment	$352.00	2802
	AQN Transfer of a Prior Authorization	$352.00	2803
X	*Not Applicable*	*See Sections Below*	
	Stationary Source Review Fees (Not Based on Proposed Allowable Emission Rate)		
	Source Registration required by 20.11.40 NMAC	$ 657.00	2401
	A Stationary Source that requires a permit pursuant to 20.11.41 NMAC or other board regulations and are not subject to the below proposed allowable emission rates	$1,314.00	2301
X	*Not Applicable*	*See Sections Below*	
	Stationary Source Review Fees (Based on the Proposed Allowable Emission Rate for the single highest fee pollutant)		
	Proposed Allowable Emission Rate Equal to or greater than 1 tpy and less than 5 tpy	$986.00	2302
	Proposed Allowable Emission Rate Equal to or greater than 5 tpy and less than 25 tpy	$1,971.00	2303
	Proposed Allowable Emission Rate Equal to or greater than 25 tpy and less than 50 tpy	$3,942.00	2304
	Proposed Allowable Emission Rate Equal to or greater than 50 tpy and less than 75 tpy	$5,913.00	2305
	Proposed Allowable Emission Rate Equal to or greater than 75 tpy and less than 100 tpy	$7,884.00	2306
	Proposed Allowable Emission Rate Equal to or greater than 100 tpy	$9,855.00	2307
X	*Not Applicable*	*See Section Above*	

Federal Program Review Fees (In addition to the Stationary Source Application Review Fees above)			
	40 CFR 60 - "New Source Performance Standards" (NSPS)	$1,314.00	2308
	40 CFR 61 - "Emission Standards for Hazardous Air Pollutants (NESHAPs)	$1,314.00	2309
	40 CFR 63 - (NESHAPs) Promulgated Standards	$1,314.00	2310
	40 CFR 63 - (NESHAPs) Case-by-Case MACT Review	$13,140.00	2311
	20.11.61 NMAC, Prevention of Significant Deterioration (PSD) Permit	$6,570.00	2312
	20.11.60 NMAC, Non-Attainment Area Permit	$6,570.00	2313
X	*Not Applicable*	*Not Applicable*	

III. MODIFICATION TO EXISTING PERMIT APPLICATION REVIEW FEES:

If the permit application is for a modification to an existing permit, please check all that apply. If this application is for a new stationary source facility, please see Section II.

Check All That Apply	Modifications	Review Fee	Program Element
Modification Application Review Fees (Not Based on Proposed Allowable Emission Rate)			
	Proposed modification to an existing stationary source that requires a permit pursuant to 20.11.41 NMAC or other board regulations and are not subject to the below proposed allowable emission rates	$1,314	2321
X	*Not Applicable*	*See Sections Below*	
Modification Application Review Fees (Based on the Proposed Allowable Emission Rate for the single highest fee pollutant)			
	Proposed Allowable Emission Rate Equal to or greater than 1 tpy and less than 5 tpy	$986.00	2322
X	Proposed Allowable Emission Rate Equal to or greater than 5 tpy and less than 25 tpy	$1,971.00	2323
	Proposed Allowable Emission Rate Equal to or greater than 25 tpy and less than 50 tpy	$3,942.00	2324
	Proposed Allowable Emission Rate Equal to or greater than 50 tpy and less than 75 tpy	$5,913.00	2325
	Proposed Allowable Emission Rate Equal to or greater than 75 tpy and less than 100 tpy	$7,884.00	2326
	Proposed Allowable Emission Rate Equal to or greater than 100 tpy	$9,855.00	2327
	Not Applicable	*See Section Above*	
Major Modifications Review Fees (In addition to the Modification Application Review Fees above)			
	20.11.60 NMAC, Permitting in Non-Attainment Areas	$6,570	2333
	20.11.61 NMAC, Prevention of Significant Deterioration	$6,570	2334
X	*Not Applicable*	*Not Applicable*	
Federal Program Review Fees (This section applies only if a Federal Program Review is triggered by the proposed modification) (These fees are in addition to the Modification and Major Modification Application Review Fees above)			
	40 CFR 60 - "New Source Performance Standards" (NSPS)	$1,314.00	2328
	40 CFR 61 - "Emission Standards for Hazardous Air Pollutants (NESHAPs)	$1,314.00	2329
	40 CFR 63 - (NESHAPs) Promulgated Standards	$1,314.00	2330
	40 CFR 63 - (NESHAPs) Case-by-Case MACT Review	$13,140.00	2331
	20.11.61 NMAC, Prevention of Significant Deterioration (PSD) Permit	$6,570.00	2332
	20.11.60 NMAC, Non-Attainment Area Permit	$6,570.00	2333
X	*Not Applicable*	*Not Applicable*	

IV. ADMINISTRATIVE AND TECHNICAL REVISION APPLICATION REVIEW FEES:

If the permit application is for an administrative or technical revision of an existing permit issued pursuant to 20.11.41 NMAC, please check one that applies.

Check One	Revision Type	Review Fee	Program Element
	Administrative Revisions	$ 250.00	2340
	Technical Revisions	$ 500.00	2341
X	*Not Applicable*	*See Sections II, III or V*	

V. PORTABLE STATIONARY SOURCE RELOCATION FEES:

If the permit application is for a portable stationary source relocation of an existing permit, please check one that applies.

Check One	Portable Stationary Source Relocation Type	Review Fee	Program Element
	No New Air Dispersion Modeling Required	$ 500.00	2501
	New Air Dispersion Modeling Required	$ 750.00	2502
X	*Not Applicable*	*See Sections II, III or V*	

VI. Please submit a check or money order in the amount shown for the total application review fee.

Section Totals	Review Fee Amount
Section II Total	$
Section III Total	$ 1,971
Section IV Total	$
Section V Total	$
Total Application Review Fee	**$ 1,971**

I, the undersigned, a responsible official of the applicant company, certify that to the best of my knowledge, the information stated on this checklist, give a true and complete representation of the permit application review fees which are being submitted. I also understand that an incorrect submittal of permit application reviews may cause an incompleteness determination of the submitted permit application and that the balance of the appropriate permit application review fees shall be paid in full prior to further processing of the application.

Signed this 17th day of February 2023

Print Name

Print Title

Signature

Definition of Qualified Small Business as defined in 20.11.2 NMAC:
"Qualified small business" means a business that meets all of the following requirements:

(1) a business that has 100 or fewer employees;
(2) a small business concern as defined by the federal Small Business Act;
(3) a source that emits less than 50 tons per year of any individual regulated air pollutant, or less than 75 tons per year of all regulated air pollutants combined; and
(4) a source that is not a major source or major stationary source.

Note: Beginning January 1, 2011, and every January 1 thereafter, an increase based on the consumer price index shall be added to the application review fees. The application review fees established in Subsection A through D of 20.11.2.18 NMAC shall be adjusted by an amount equal to the increase in the consumer price index for the immediately-preceding year. Application review fee adjustments equal to or greater than fifty cents ($0.50) shall be rounded up to the next highest whole dollar. Application review fee adjustments totaling less than fifty cents ($0.50) shall be rounded down to the next lowest whole dollar. The department shall post the application review fees on the city of Albuquerque environmental health department air quality program website.

APPENDIX B. PRE-PERMIT APPLICATION MEETING

Pre-Permit Application Meeting Request Form

Pre-Permit Application Meeting Checklist

Pre-Permit Application Meeting Agenda

Pre-Permit Application Meeting Request Form

Air Quality Program- Environmental Health Department

Please complete appropriate boxes and email to aqd@cabq.gov or mail to:

Environmental Health Department
Air Quality Program
P.O. Box 1293
Room 3047
Albuquerque, NM 87103

Name:	**Ralph Hoffman**
Company/Organization:	Hoffman Enterprises dba Kinney Brick Company
Point of Contact: **(phone number and email):** **Preferred form of contact (circle one):** Phone E-mail	Phone: (505) 877-4550 Email: ralphh@kinneybrick.com
Preferred meeting date/times:	April 28, 2022
Description of Project:	As part of this application, Kinney Brick Company is seeking a modification to their existing permit (#747-M1-RV1) associated with the facility. Updates include the construction of one kiln, this kiln had been permitted previously but had not been constructed. It will now be located in a different location at the facility. Haul roads, conveyors, and material handling are also being proposed as additional sources of PM at the facility. Updated emissions for all units are provided with this application to accurately capture total emissions from units at the facility.

City of Albuquerque

Environmental Health Department
Air Quality Program

Pre-Permit Application Meeting Checklist

Any person seeking a permit under 20.11.41 NMAC, Authority-to-Construct Permits, shall do so by filing a written application with the Department. Prior to submitting an application, the applicant shall contact the department in writing and request a pre-application meeting for information regarding the contents of the application and the application process. This checklist is provided to aid the applicant and **a copy must be submitted with the application.**

Applications that are ruled incomplete because of missing information will delay any determination or the issuance of the permit. The Department reserves the right to request additional relevant information prior to ruling the application complete in accordance with 20.11.41 NMAC.

Name: __Hoffman Enterprises dba Kinney Brick Company _____
Contact: _Ralph Hoffman (505) 877-4550_____
Company/Business: Hoffman Enterprises dba Kinney Brick Company _____

☑ Fill out and submit a Pre-Permit Application Meeting Request form
⇒ Available online at http://www.cabq.gov/airquality

☑ Emission Factors and Control Efficiencies
Notes:

☑ Air Dispersion modeling guidelines and protocol
Notes:

☑ Department Policies
Notes:

☑ Air quality permit fees
Notes:

Ver. 11/13

☑ Public notice requirements

- ☑ Replacement Part 41 Implementation
  - ☑ *20.11.41.*13 B. Applicant's public notice requirements
    - ☑ Providing public notice to neighborhood association/coalitions
      - Neighborhood association:_____
      - Coalition: _____

      Notes:

    - ☑Posting and maintaining a weather-proof sign

      Notes:

☑ Regulatory timelines

- 30 days to rule application complete
- 90 days to issue completed permit
- Additional time allotted if there is significant public interest and/or a significant air quality issue
  - Public Information Hearing
  - Complex permitting action

Notes:

City of Albuquerque- Environmental Health Department
Air Quality Program- Permitting Section
Phone: (505) 768-1972 Email: aqd@cabq.gov

City of Albuquerque
Environmental Health Department
Air Quality Program

Construction Permit (20.11.41 NMAC)
Pre-Permit Application Meeting Agenda

Phone: (505) 768-1972 Email: aqd@cabq.gov

Any person seeking a new permit, a permit modification, or an emergency permit under 20.11.41 NMAC (Construction Permits) shall do so by filing a written application with the Albuquerque-Bernalillo County Joint Air Quality Program, which administers and enforces local air quality laws for the City of Albuquerque ("City") and Bernalillo County ("County"), on behalf of the City Environmental Health Department ("Department").

Prior to submitting an application, per 20.11.41.13(A) NMAC, the applicant (or their consultant) shall contact the Department in writing and submit a Pre-Permit Application Meeting Request Form to request a pre-application meeting. The Pre-Permit Application Meeting Request Form is available at https://www.cabq.gov/airquality/air-quality-permits/air-quality-application-forms. The purpose of the pre-application meeting is for the Department to provide the applicant with information regarding the contents of the application and the application process

This template is provided to aid the Department in ensuring that in the pre-permit application meeting all information regarding the contents of the application and the application process are communicated to the applicant. This is because applications that are ruled incomplete because of missing information will delay any determination or the issuance of the permit. The Department reserves the right to request additional relevant information prior to ruling the application complete in accordance with 20.11.41 NMAC.

Pre-application Meeting for Hoffman Enterprises, Inc. dba Kinney Brick Co.
Meeting Agenda

Thursday, April 28, 2022
1:00 PM – 1:45 PM MT

Invitees: Ralph Hoffman, Carina Munoz-Dyer, Jeff Stonesifer, Kyle Tumpane, Paul Puckett, Elizabeth Pomo

I. Discuss Project: Discuss the relocation of an existing permitted kiln in Permit #0747-M1-RV1. Discontinue use of Unit 7a (Shuttle Kiln) and build a new kiln (Kiln A). The Shuttle Kiln has reached its useful life and the new kiln will have increased efficiencies. The new kiln has the same emission data; the only difference is a slight change of location.
   a. Facility Location
   b. Facility Description
   c. Main Processes
   d. Equipment
   e. Proposed Schedule

II. Discuss the requirement for a zoning certification or verifications for new permits and permit modifications
   a. For projects on property subject to City or County zoning laws (***i.e.***, **not** located on federal land, **not** located on State of New Mexico land, **not** located on Tribal land.
      i. City Planning Form: https://www.cabq.gov/planning/code-enforcement-zoning
      ii. County Planning Form: https://www.bernco.gov/planning/planning-and-land-use/applications-forms/
   b. If the project's property is not subject to City or County zoning jurisdiction, a zoning verification from both planning departments is required.
      i. City Planning Form: https://www.cabq.gov/planning/code-enforcement-zoning
      ii. County Planning Form: https://www.bernco.gov/planning/planning-and-land-use/applications-forms/
   c. The zoning certification or verifications **must** be obtained from the appropriate Planning Department, either City of Albuquerque or Bernalillo County. For more information, please visit the City's Planning Department website at https://www.cabq.gov/planning or Bernalillo County's Planning Department website at the https://www.bernco.gov/planning/.

III. If permit modification or revision, review current permit:
   a. Review Process Equipment Table and Emissions Table and discuss changes
   b. Request information about the replacement or new equipment (for example, if it is an engine, we need to know if it is new, what year, fuel type, etc…) to give them an idea of the changes that will be needed
   c. Discuss possible changes in permit conditions

IV. Air Dispersion modeling process, procedures and options:
   a. When modeling is required and possibility of waivers
   b. Protocol process, purpose, and time frame
   c. Preliminary review, purpose, and time frame
   d. Full review and time frame

e. Peer reviews
f. Assumptions in the modeling become permit conditions
g. NED data should be used instead of DEM data for assigning elevations to receptors, sources, buildings, etc.

V. Applicant's public notice requirements
   a. During the same month application package will be submitted, ask Department for memo of neighborhood associations/coalitions within ½ mile of facility
   b. Fill out and send Notice of Intent to Construct form to neighborhood associations/coalitions listed in memo: https://www.cabq.gov/airquality/air-quality-permits/air-quality-application-forms
   c. Post and maintain a weather-proof sign. Signs are available in the downtown Program office. The Public Notice Sign Guidelines Checklist can be found here: https://www.cabq.gov/airquality/air-quality-permits/air-quality-application-forms

VI. Regulatory timelines
   a. 30 days to rule application complete
   b. 90 days after ruled complete for permitting decision
   c. 30-day public comment period
   d. Public interest in application:
      i. 30-day review of technical analysis
      ii. 90-day extension for permitting decision
   e. Request for Public Information Hearing - 90-day extension for permitting decision
   f. Complex technical issues in application - 90-day extension for permitting decision
   g. If application ruled incomplete it stops timeline

VII. Department Policies
   a. Applications will be ruled incomplete if any parts from Permit Application Checklist are missing
   b. Review fees paid in full are part of the application package
   c. Discuss payment format (by check, credit card or online)
   d. Use the most recent Permit Application Checklist, found under Part 41 Implementation on this page: https://www.cabq.gov/airquality/air-quality-permits/air-quality-application-forms
   e. After three tries, permit application denied and application must start over including repayment of fees

VIII. Additional Questions?

APPENDIX C. PUBLIC NOTICE REQUIREMENTS

Notice of Intent to Construct

Email Documentation of NOI Sent to Neighborhood Associations and Coalitions

Public Notice Sign Guidelines

Pictures of Posted Public Notice Sign

NOTICE FROM THE APPLICANT

Notice of Intent to Apply for Air Quality Construction Permit

You are receiving this notice because the New Mexico Air Quality Control Act (20.11.41.13B NMAC) requires any owner/operator proposing to construct or modify a facility subject to air quality regulations to provide public notice by certified mail or electronic mail to designated representatives of recognized neighborhood associations and coalitions within 0.5-mile of the property on which the source is or is proposed to be located.

This notice indicates that the owner/operator intends to apply for an Air Quality Construction Permit from the Albuquerque – Bernalillo County Joint Air Quality Program. Currently, no application for this proposed project has been submitted to the Air Quality Program. Applicants are required to include a copy of this form and documentation of mailed notices with their Air Quality Construction Permit Application.

Proposed Project Information

Applicant's name and address:
Nombre y domicilio del solicitante: Hoffman Enterprises dba Kinney Brick Company 100 Prosperity SE, Albuqueque, NM 87105

Owner / operator's name and address:
Nombre y domicilio del propietario u operador: Ralph Hoffman 100 Prosperity SE, Albuqueque, NM 87105

Contact for comments and inquires:
Datos actuales para comentarios y preguntas:

Name *(Nombre)*: Ralph Hoffman
Address *(Domicilio)*: 100 Prosperity SE, Albuqueque, NM 87105
Phone Number *(Número Telefónico)*: (505) 877-4550
E-mail Address *(Correo Electrónico)*: ralphh@kinneybrick.com

Actual or estimated date the application will be submitted to the department:
Fecha actual o estimada en que se entregará la solicitud al departamento: XX 2023

Description of the source:
Descripción de la fuente: Manufacturer of face brick and brick pavers from Clay

Exact location of the source or proposed source:
Ubicación exacta de la fuente o fuente propuesta: 348,578 m E, 3,875,793 m N

Nature of business:
Tipo de negocio: Fired Brick Manufacturing

Process or change for which the permit is requested:
Proceso o cambio para el cuál de solicita el permiso: In this permit modification KBC is seeking a modification to their existing permit (#747-M1-RV1) associated with the facility. Updates include the construction of one kiln, this kiln had been permitted previously but had not been constructed. It will now be located in a different location at the facility. Haul roads, conveyors, and material handling are also being proposed as additional sources of PM at the facility. Updated emissions for all units are provided with this application to accurately capture total emissions from units at the facility. The preexisting combustion sources include two (2) natural gas-fired kilns rated at 9 MMBtu/hr and one (1) natural gas-fired kiln rated at 34 MMBtu/hr as well as four (4) brick dryers rated at 2 MMBtu/hr and one (1) brick dryer rated at 3 MMBtu/hr. Under

ATC#747-M1-RV1 these are incorrectly represented therefore with these updates to the facility there will be two (2) 9.84 MMBtu/hr kilns, one (1) 7.68 MMBtu/hr kiln, and two (2) 4.66 MMBtu/hr brick dryers. In addition to these modifications, hauling is to be included for raw material delivery and product shipping from the facility as well as brick painting operations. The preexisting material handling units 1 through 5 will be modified to match current throughputs and operating hours proposed by KBC. KBC currently has one (1) 4.66 MMBtu/hr dryer in operation that uses a horizontal stack located at ground level, in order to pass modeling for criteria pollutants this unit will have a 15 foot vertical stack constructed as well as a blower added to increase dispersion of pollutants from exhaust.

Maximum operating schedule:
Horario máximo de operaciones: 7,488 hours per year

Normal operating schedule:
Horario normal de operaciones: 7,488 hours per year

Preliminary estimate of the maximum quantities of each regulated air contaminant the source will emit:
Estimación preliminar de las cantidades máximas de cada contaminante de aire regulado que la fuente va a emitir:

Air Contaminant *Contaminante de aire*	Proposed Construction Permit *Permiso de Construcción Propuesto*		Net Changes (for permit modification or technical revision) *Cambio Neto de Emisiones (para modificación de permiso o revisión técnica)*	
	pounds per hour *libras por hora*	tons per year *toneladas por año*	pounds per hour *libras por hora*	tons per year *toneladas por año*
CO	3.02	5.22	+0.65	-0.81
NOx	3.22	5.82	+0.39	-1.37
VOC	0.20	0.34	+0.038	-0.048
SO2	1.96E-04	3.48E-04	-0.020	-0.050
PM10	1.69	1.70	-1.04	-6.82
PM2.5	1.29	1.37	N/A	N/A
HAP	10.40	10.81	N/A	N/A

Questions or comments regarding this Notice of Intent should be directed to the Applicant. Contact information is provided with the Proposed Project Information on the first page of this notice. To check the status of an Air Quality Construction Permit application, call 311 and provide the Applicant's information, or visit www.cabq.gov/airquality/air-quality-permits.

The Air Quality Program will issue a Public Notice announcing a 30-day public comment period on the permit application for the proposed project when the application is deemed complete. The Air Quality Program does not process or issue notices on applications that are deemed incomplete. More information about the air quality permitting process is attached to this notice.

Air Quality Construction Permitting Overview

This is the typical process to obtain an Air Quality Construction Permit for Synthetic Minor and Minor sources of air pollution from the Albuquerque – Bernalillo County Joint Air Quality Program.

Step 1: Pre-application Meeting: The Applicant and their consultant must request a meeting with the Air Quality Program to discuss the proposed action. If air dispersion modeling is required, Air Quality Program staff discuss the modeling protocol with the Applicant to ensure that all proposed emissions are considered.

> Notice of Intent from the Applicant: Before submitting their application, the Applicant is required to notify all nearby neighborhood associations and interested parties that they intend to apply for an air quality permit or modify an existing permit. The Applicant is also required to post a notice sign at the facility location.

Step 2: Administrative Completeness Review and Preliminary Technical Review: The Air Quality Program has 30 days from the day the permit is received to review the permit application to be sure that it is administratively complete. This means that all application forms must be signed and filled out properly, and that all relevant technical information needed to evaluate any proposed impacts is included. If the application is not complete, the permit reviewer will return the application and request more information from the Applicant. Applicants have three opportunities to submit an administratively complete application with all relevant technical information.

> Public Notice from the Department: When the application is deemed complete, the Department will issue a Public Notice announcing a 30-day public comment period on the permit application. This notice is distributed to the same nearby neighborhood associations and interested parties that the Applicant sent notices to, and published on the Air Quality Program's website.
>
> During this 30-day comment period, individuals have the opportunity to submit written comments expressing their concerns or support for the proposed project, and/or to request a Public Information Hearing. If approved by the Environmental Health Department Director, Public Information Hearings are held after the technical analysis is complete and the permit has been drafted.

Step 3: Technical Analysis and Draft Permit: Air Quality Program staff review all elements of the proposed operation related to air quality, and review outputs from advanced air dispersion modeling software that considers existing emission levels in the area surrounding the proposed project, emission levels from the proposed project, and meteorological data. The total calculated level of emissions is compared to state and federal air quality standards and informs the decision on whether to approve or deny the Applicant's permit.

Draft Permit: The permit will establish emission limits, standards, monitoring, recordkeeping, and reporting requirements. The draft permit undergoes an internal peer review process to determine if the emissions were properly evaluated, permit limits are appropriate and enforceable, and the permit is clear, concise, and consistent.

> Public Notice from the Department: When the technical analysis is complete and the permit has been drafted, the Department will issue a second Public Notice announcing a 30-day public comment period on the technical analysis and draft permit. This second Public Notice, along with the technical analysis documentation and draft permit, will be published on the Air Quality Program's website, and the public notice for availability of the technical analysis and draft permit will only be directly sent to those who requested further information during the first comment period.

During this second 30-day comment period, residents have another opportunity to submit written comments expressing their concerns or support for the proposed project, and/or to request a Public Information Hearing.

Possible Public Information Hearing: The Environmental Health Department Director may decide to hold a Public Information Hearing for a permit application if there is significant public interest and a significant air quality issue. If a Public Information Hearing is held, it will occur after the technical analysis is complete and the permit has been drafted.

Step 4: Public Comment Evaluation and Response: The Air Quality Program evaluates all public comments received during the two 30-day public comment periods and Public Information Hearing, if held, and updates the technical analysis and draft permit as appropriate. The Air Quality Program prepares a response document to address the public comments received, and when a final decision is made on the permit application, the comment response document is published on the Air Quality Program's website and distributed to the individuals who participated in the permit process. If no comments are received, a response document is not prepared.

Step 5: Final Decision on the Application: After public comments are addressed and the final technical review is completed, the Environmental Health Department makes a final decision on the application. If the permit application meets all applicable requirements set forth by the New Mexico Air Quality Control Act and the federal Clean Air Act, the permit is approved. If the permit application does not meet all applicable requirements, it is denied.

Notifications of the final decision on the permit application and the availability of the comment response document is published on the Air Quality Program's website and distributed to the individuals who participated in the permit process.

The Department must approve a permit application if the proposed action will meet all applicable requirements and if it demonstrates that it will not result in an exceedance of ambient air quality standards. Permit writers are very careful to ensure that estimated emissions have been appropriately identified or quantified and that the emission data used are acceptable.

The Department must deny a permit application if it is deemed incomplete three times, if the proposed action will not meet applicable requirements, if estimated emissions have not been appropriately identified or quantified, or if the emission data are not acceptable for technical reasons.

For more information about air quality permitting, visit www.cabq.gov/airquality/air-quality-permits

SUBJECT: Public Notice of Proposed Air Quality Construction Permit Application

Dear Neighborhood Association/Coalition Representative(s),

Why did I receive this public notice?
You are receiving this notice in accordance with New Mexico Administrative Code (NMAC) 20.11.41.13.B(1) which requires any applicant seeking an Air Quality Construction Permit pursuant to 20.11.41 NMAC to provide public notice by certified mail or electronic mail to the designated representative(s) of the recognized neighborhood associations and recognized coalitions that are within one-half mile of the exterior boundaries of the property on which the source is or is proposed to be located.

What is the Air Quality Permit application review process?
The City of Albuquerque, Environmental Health Department, Air Quality Program (Program) is responsible for the review and issuance of Air Quality Permits for any stationary source of air contaminants within Bernalillo County. Once the application is received, the Program reviews each application and rules it either complete or incomplete. Complete applications will then go through a 30-day public comment period. Within 90 days after the Program has ruled the application complete, the Program shall issue the permit, issue the permit subject to conditions, or deny the requested permit or permit modification. The Program shall hold a Public Information Hearing pursuant to 20.11.41.15 NMAC if the Director determines there is significant public interest and a significant air quality issue is involved.

What do I need to know about this proposed application?

Applicant Name	Hoffman Enterprises dba Kinney Brick Company
Site or Facility Name	Kinney Brick Company
Site or Facility Address	100 Prosperity SE, Albuquerque, NM 87105
New or Existing Source	Existing Source
Anticipated Date of Application Submittal	February 6, 2023
Summary of Proposed Source to Be Permitted	In this permit modification KBC is seeking a modification to their existing permit (#747-M1-RV1) associated with the facility. Updates include the construction of one kiln, this kiln had been permitted previously but had not been constructed. It will now be located in a different location at the facility. Haul roads, conveyors, and material handling are also being proposed as additional sources of PM at the facility. Updated emissions for all units are provided with this application to accurately capture total emissions from units at the facility. The preexisting combustion sources include two (2) natural gas-fired kilns rated at 9 MMBtu/hr and one (1) natural gas-fired kiln rated at 34 MMBtu/hr as well as four (4) brick dryers rated at 2 MMBtu/hr and one (1) brick dryer rated at 3 MMBtu/hr. Under ATC#747-M1-RV1 these are incorrectly represented therefore with these updates to the facility there will be two (2) 9.84 MMBtu/hr kilns, one (1) 7.68 MMBtu/hr kiln, and two (2) 4.66 MMBtu/hr brick dryers. In addition to these modifications, hauling is to be included for raw material delivery and product shipping from the facility as well as brick painting operations. The preexisting material handling units 1 through 5 will be modified to match current throughputs and operating hours proposed by KBC. KBC currently has one (1) 4.66 MMBtu/hr dryer in operation that uses a horizontal stack located at ground level, in order to pass modeling for criteria pollutants this unit will have a 15 foot vertical stack constructed as well as a blower added to increase dispersion of pollutants from exhaust.

What emission limits and operating schedule are being requested?
See attached Notice of Intent to Construct form for this information.

How do I get additional information regarding this proposed application?

For inquiries regarding the proposed source, contact:

- Ralph Hoffman
- ralphh@kinneybrick.com
- (505) 877-4550

For inquiries regarding the air quality permitting process, contact:

- City of Albuquerque Environmental Health Department Air Quality Program
- aqd@cabq.gov
- (505) 768-1972

Timothy M. Keller,
Mayor

Public Participation

List of Neighborhood Associations and Neighborhood Coalitions
MEMORANDUM

To: Adam Erenstein
From: Angela Lopez, Environmental Health-Air Quality Permitting Supervisor
Subject: Determination of Neighborhood Associations and Coalitions within 0.5 mile of 100 Prosperity SE in Bernalillo County, NM
Date: January 18, 2023

DETERMINATION:

On January 18, 2023, I used the City of Albuquerque Zoning Advanced Map Viewer (http://coagisweb.cabq.gov/) to verify which City of Albuquerque Neighborhood Associations (NA), Homeowner Associations (HOA) and Neighborhood Coalitions (NC) are located within 0.5 mile of 100 Prosperity SE in Bernalillo County, NM.

I then used the City of Albuquerque Office (COA) of Neighborhood Coordination's Monthly Master NA List dated January 2023 and the Bernalillo County (BC) Monthly Neighborhood Association January 2023 Excel file to determine the contact information for each NA and NC located within 0.5 mile of 100 Prosperity SE in Bernalillo County, NM.

The table below contains the contact information, which will be used in the City of Albuquerque Environmental Health Department's public notice. Duplicates have been deleted.

COA/BC Association or Coalition	Name	Email or Mailing Address*
Mountain View Commercial Property	Richard Luna Ralph H. Hoffman	richard@championtruss.com ralphh@kinneybrick.com
Mountain View Community Action	Marla Painter Alan Marks	marladesk@gmail.com jamar@unm.edu
South Valley Alliance	Sara Newton Juarez Zoe Economou	snjart@yahoo.com zoecon@unm.edu
South Valley Coalition	Peter Eschman Patricio Dominguez Robert Trujillo	eschman@unm.edu dpatriciod@gmail.com rttrujil22@gmail.com

If email address is not listed, provide public notice via certified mail and include a copy of each mail receipt with the application submittal.

Jaimy Karacaoglu

From: Jaimy Karacaoglu
Sent: Friday, February 10, 2023 11:59 AM
To: richard@championtruss.com; Ralph Hoffman; marladesk@gmail.com; 'jamar@unm.edu'; snjart@yahoo.com; zoecon@unm.edu; eschman@unm.edu; dpatriciod@gmail.com; rttrujil22@gmail.com
Cc: Adam Erenstein; Ralph Hoffman; EHD, AQD; Lopez, Angela
Subject: Public Notice of Proposed Air Quality Construction Permit Application - Kinney Brick Company
Attachments: Kinney Brick_NOI_v1.0_2023 0210.pdf

Dear Neighborhood Association/Coalition Representative(s),

Why did I receive this public notice?
You are receiving this notice in accordance with New Mexico Administrative Code (NMAC) 20.11.41.13.B(1) which requires any applicant seeking an Air Quality Construction Permit pursuant to 20.11.41 NMAC to provide public notice by certified mail or electronic mail to the designated representative(s) of the recognized neighborhood associations and recognized coalitions that are within one-half mile of the exterior boundaries of the property on which the source is or is proposed to be located.

What is the Air Quality Permit application review process?
The City of Albuquerque, Environmental Health Department, Air Quality Program (Program) is responsible for the review and issuance of Air Quality Permits for any stationary source of air contaminants within Bernalillo County. Once the application is received, the Program reviews each application and rules it either complete or incomplete. Complete applications will then go through a 30-day public comment period. Within 90 days after the Program has ruled the application complete, the Program shall issue the permit, issue the permit subject to conditions, or deny the requested permit or permit modification. The Program shall hold a Public Information Hearing pursuant to 20.11.41.15 NMAC if the Director determines there is significant public interest and a significant air quality issue is involved.

What do I need to know about this proposed application?

Applicant Name	Hoffman Enterprises dba Kinney Brick Company
Site or Facility Name	Kinney Brick Company
Site or Facility Address	100 Prosperity SE, Albuquerque, NM 87105
New or Existing Source	Existing Source
Anticipated Date of Application Submittal	February, 2023
Summary of Proposed Source to Be Permitted	In this permit modification KBC is seeking a modification to their existing permit (#747-M1-RV1) associated with the facility. Updates include the construction of one kiln, this kiln had been permitted previously but had not been constructed. It will now be located in a different location at the facility. Haul roads, conveyors, and material handling are also being proposed as additional sources of PM at the facility. Updated emissions for all units are provided with this application to accurately capture total emissions from units at the facility. The preexisting combustion sources include two (2) natural gas-fired kilns rated at 9 MMBtu/hr and one (1) natural gas-fired kiln rated at 34 MMBtu/hr as well as four (4) brick dryers rated at 2 MMBtu/hr and one (1) brick dryer rated at 3 MMBtu/hr. Under ATC#747-M1-RV1 these are incorrectly represented therefore with these updates to the facility there will be two (2) 9.84 MMBtu/hr kilns, one (1) 7.68 MMBtu/hr kiln, and two (2) 4.66 MMBtu/hr brick dryers. In addition to these modifications, hauling is to be included for raw material delivery and product shipping from the facility as well as brick painting operations. The preexisting material handling units 1 through 5 will be modified to match current throughputs and operating hours proposed by KBC. KBC currently has one (1) 4.66 MMBtu/hr dryer in operation that uses a horizontal stack located at ground level, in order to pass modeling for criteria pollutants this unit will have a 15 foot vertical stack

	constructed as well as a blower added to increase dispersion of pollutants from exhaust.

What emission limits and operating schedule are being requested?
See attached Notice of Intent to Construct form for this information.

How do I get additional information regarding this proposed application?
For inquiries regarding the proposed source, contact:

- Ralph Hoffman
- ralphh@kinneybrick.com
- (505) 877-4550

For inquiries regarding the air quality permitting process, contact:

- City of Albuquerque Environmental Health Department Air Quality Program
- aqd@cabq.gov
- (505) 768-1972

Kind regards,

Jaimy Karacaoglu
Consultant

P 505.266.6611
9400 Holly Avenue NE, Building 3, Suite B, Albuquerque, NM 87122
Email: jaimy.karacaoglu@trinityconsultants.com

Jaimy Karacaoglu

From: Jaimy Karacaoglu
Sent: Friday, February 10, 2023 1:10 PM
To: ngarcia49@yahoo.com
Cc: Ralph Hoffman; Adam Erenstein; Lopez, Angela; EHD, AQD
Subject: FW: Public Notice of Proposed Air Quality Construction Permit Application - Kinney Brick Company
Attachments: Kinney Brick_NOI_v1.0_2023 0210.pdf

Dear Neighborhood Association/Coalition Representative(s),

Why did I receive this public notice?
You are receiving this notice in accordance with New Mexico Administrative Code (NMAC) 20.11.41.13.B(1) which requires any applicant seeking an Air Quality Construction Permit pursuant to 20.11.41 NMAC to provide public notice by certified mail or electronic mail to the designated representative(s) of the recognized neighborhood associations and recognized coalitions that are within one-half mile of the exterior boundaries of the property on which the source is or is proposed to be located.

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What do I need to know about this proposed application?

Applicant Name	Hoffman Enterprises dba Kinney Brick Company
Site or Facility Name	Kinney Brick Company
Site or Facility Address	100 Prosperity SE, Albuquerque, NM 87105
New or Existing Source	Existing Source
Anticipated Date of Application Submittal	February, 2023
Summary of Proposed Source to Be Permitted	In this permit modification KBC is seeking a modification to their existing permit (#747-M1-RV1) associated with the facility. Updates include the construction of one kiln, this kiln had been permitted previously but had not been constructed. It will now be located in a different location at the facility. Haul roads, conveyors, and material handling are also being proposed as additional sources of PM at the facility. Updated emissions for all units are provided with this application to accurately capture total emissions from units at the facility. The preexisting combustion sources include two (2) natural gas-fired kilns rated at 9 MMBtu/hr and one (1) natural gas-fired kiln rated at 34 MMBtu/hr as well as four (4) brick dryers rated at 2 MMBtu/hr and one (1) brick dryer rated at 3 MMBtu/hr. Under ATC#747-M1-RV1 these are incorrectly represented therefore with these updates to the facility there will be two (2) 9.84 MMBtu/hr kilns, one (1) 7.68 MMBtu/hr kiln, and two (2) 4.66 MMBtu/hr brick dryers. In addition to these modifications, hauling is to be included for raw material delivery and product shipping from the facility as well as brick painting operations. The preexisting material handling units 1 through 5 will be modified to match current throughputs and operating hours proposed by KBC. KBC currently has one (1) 4.66 MMBtu/hr dryer in operation that uses a horizontal stack located at ground level, in order to pass modeling for criteria pollutants this unit will have a 15 foot vertical stack constructed as well as a blower added to increase dispersion of pollutants from exhaust.

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- Ralph Hoffman
- ralphh@kinneybrick.com
- (505) 877-4550

For inquiries regarding the air quality permitting process, contact:

- City of Albuquerque Environmental Health Department Air Quality Program
- aqd@cabq.gov
- (505) 768-1972

Kind regards,

Jaimy Karacaoglu
Consultant

P 505.266.6611
9400 Holly Avenue NE, Building 3, Suite B, Albuquerque, NM 87122
Email: jaimy.karacaoglu@trinityconsultants.com

City of Albuquerque

Environmental Health Department
Air Quality Program

Public Notice Sign Guidelines

Any person seeking a permit under 20.11.41 NMAC, Authority-to-Construct Permits, shall do so by filing a written application with the Department. *Prior to submitting an application, the applicant shall post and maintain a weather-proof sign provided by the department. The applicant shall keep the sign posted until the department takes final action on the permit application; if an applicant can establish to the department's satisfaction that the applicant is prohibited by law from posting, at either location required, the department may waive the posting requirement and may impose different notification requirements.* **A copy of this form must be submitted with your application.**

Applications that are ruled incomplete because of missing information will delay any determination or the issuance of the permit. The Department reserves the right to request additional relevant information prior to ruling the application complete in accordance with 20.11.41 NMAC.

Name: Hoffman Enterprises dba Kinney Brick Company_____
Contact: _Ralph Hoffman (505) 877-7550_____
Company/Business: __Kinney Brick Company_____

☐ ☑ The sign must be posted at the more visible of either the proposed or existing facility entrance (or, if approved in advance and in writing by the department, at another location on the property that is accessible to the public)

- ☐ ☑ The sign shall be installed and maintained in a condition such that members of the public can easily view, access, and read the sign at all times.
- ☐ ☑ The lower edge of the sign board should be mounted a minimum of 2' above the existing ground surface to facilitate ease of viewing

☐ ☑ Attach a picture of the completed, properly posted sign to this document

☐ ☐ **Check here if the department has waived the sign posting requirement.**
Alternative public notice details:

Ver. 11/13

Proposed Air Quality Construction Permit

Permiso de Construcción de Calidad del Aire Propuesto

1. **Applicant's Name:**
   Nombre del solicitante: Hoffman Enterprises dba Kinney Brick Company
   Owner or Operator's Name:
   Nombre del Propietario u Operador: Ralph Hoffman
2. **Actual or Estimated Date the Application will be Submitted to the Department:**
   Fecha Actual o Estimada en que se Entragará la Solicitud al Departamento: February 3, 2023
3. **Exact Location of the Source or Proposed Source:**
   Ubicación Excata de la Fuente o Fuente Propuesta: 100 Prosperity Ave SE, Albuquerque, NM 87105
4. **Description of the Source:**
   Descripción de la Fuente: Manufacturer of face brick and brick pavers from clay
   Nature of Business:
   Tipo de Negocio: Fired Brick Manufacturing
   Process or change for which a permit is requested:
   Proceso o cambio para el cuál se solicita el permiso: Add new kiln, add haul roads, update equipment and emission representation for existing units

Preliminary estimate of the maximum quantities of each regulated air contaminant the source will emit:
Estimación preliminar de las cantidades máximas de cada contaminante de aire regulado que la fuente va a emitir:

Air Contaminant *Contaminante de Aire*	Proposed Construction Permit *Permiso de Construcción Propuesto*		Net Change Emissions (for permit modification or technical revision) *Cambio Neto de Emisiones (para modificación de permiso o revisión técnica)*	
	Pounds per hour *libras por hora*	Tons per year *toneladas por año*	Pounds per hour *libras por hora*	Tons per year *toneladas por año*
NO_x	3.22	5.82	+0.39	−1.37
CO	3.02	5.22	+0.65	−0.81
VOC	0.20	0.34	+0.038	−0.048
SO_2	1.96E-04	3.48E-04	−0.020	−0.050
PM_{10}	1.69	1.70	−1.04	−6.82
$PM_{2.5}$	1.29	1.37	N/A	N/A
HAP	10.40	10.81	N/A	N/A

5. **Maximum Operating Schedule:**
   Horario Máximo de Operaciones: 7,488 hours per year
   Normal Operation Schedule:
   Horario Normal de Operaciones: 7,488 hours per year
6. **Current Contact Information for Comments and Inquiries**
   Datos actuales para Comentarios y Preguntas
   Name *(Nombre):* Ralph Hoffman
   Address *(Domicilio):* 100 Prosperity Ave SE, Albuquerque, NM 87105
   Phone Number *(Número Telefónico):* (505) 877-4550
   Email Address *(Correo Electrónico):* ralphh@kinneybrick.com

Call 311 for additional information concerning this project, the Air Quality Program, or to file a complaint.
Llame al 311 para obtener información adicional sobre este proyecto, del Programa de Calidad del Aire, o para presenter una queja.
Gọi 311 để biết thêm thông tin hoặc để khiếu nại về dự án này, Chương Trình Chất Lượng Không Khí

City of Albuquerque, Environmental Health Department, Air Quality Program – Stationary Source Permitting
Ciudad de Albuquerque, Departamento de Salud Ambiental, Programa de Calidad del Aire - Permisos para Fuentes Inmóviles
(505) 768-1972, aqd@cabq.gov

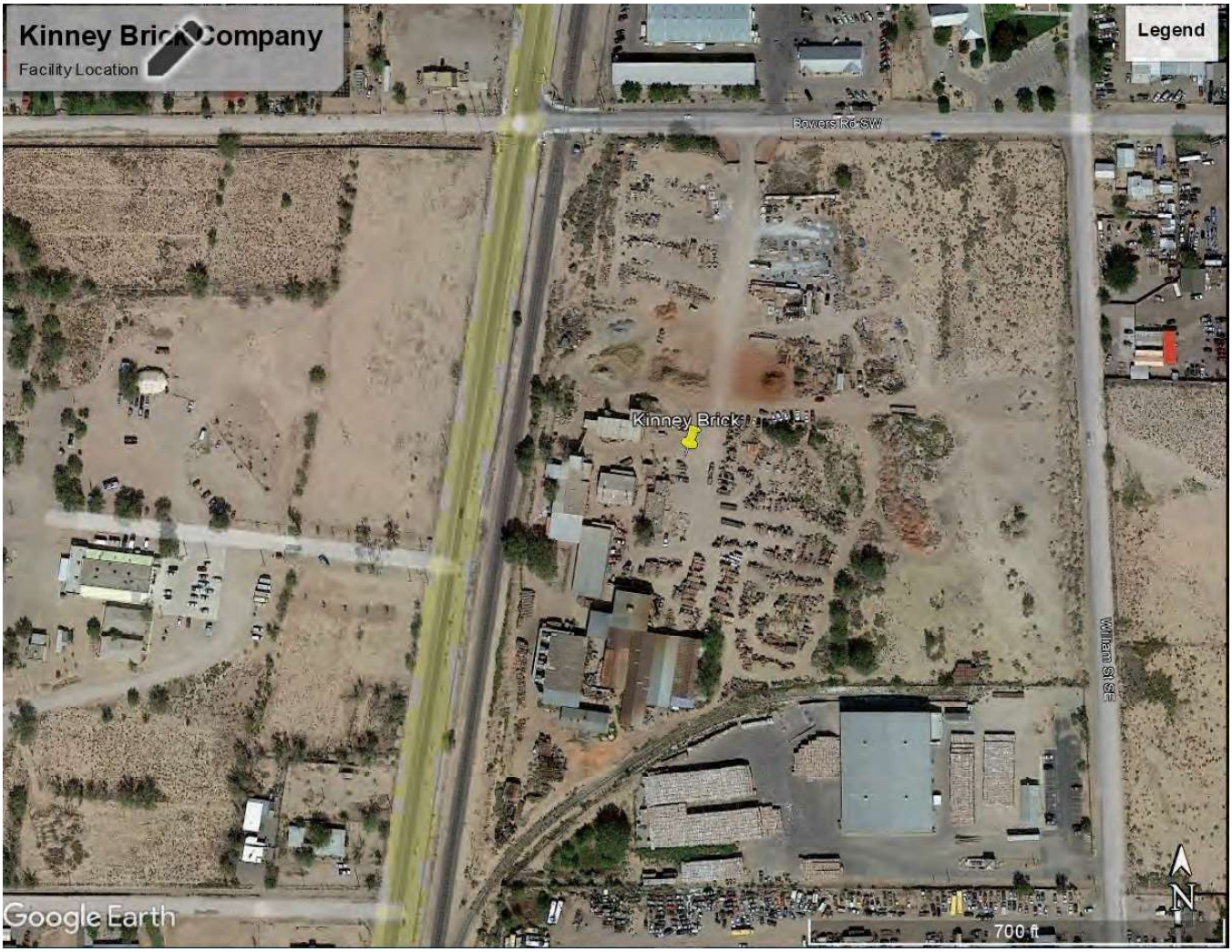
THIS SIGN SHALL REMAIN POSTED UNTIL THE DEPARTMENT TAKES FINAL ACTION ON THE PERMIT APPLICATION
ESTE AVISO DEBERÁ DE MANTENERSE PUESTO HASTA QUE EL DEPARTAMENTO TOME UNA DECISIÓN SOBRE LA SOLICITUD DE PERMISO

APPENDIX D. FACILITY LOCATION AND AERIAL PHOTOGRAPH

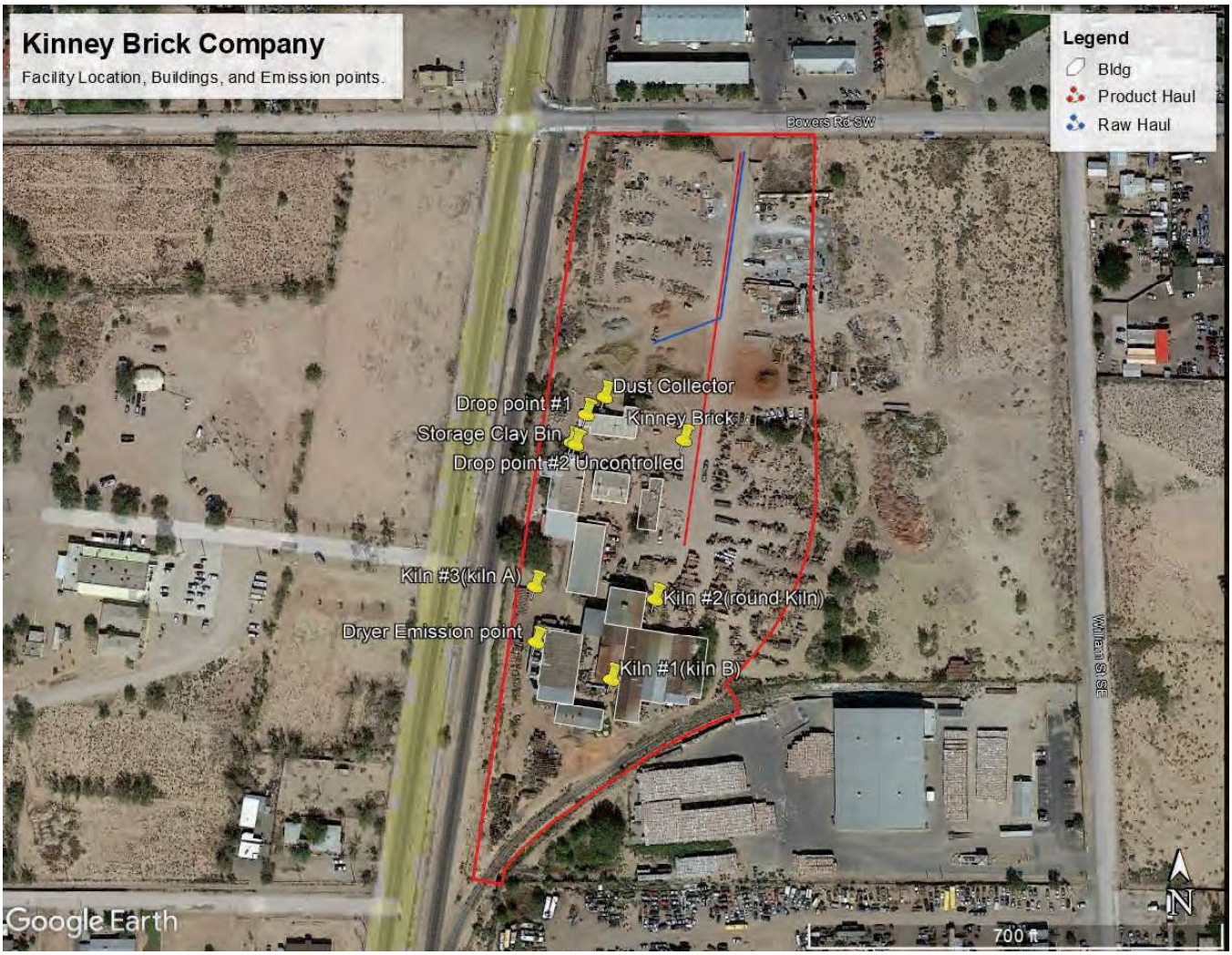
Appendix Figure D-1: Facility Location

Appendix Figure D-2: Aerial Photograph of Process Locations

Appendix Figure D-1. Facility Location



Appendix Figure D-2. Aerial Photograph of Process Locations



APPENDIX E. ZONING CERTIFICATIONS

City of Albuquerque
Environmental Health Department
Air Quality Program

Construction Permit (20.11.41 NMAC)
Zoning Requirement Cover Letter

This Cover Letter Must Be Returned With The Application Along With All Required Attachments

The Albuquerque-Bernalillo County Joint Air Quality Program, which administers and enforces local air quality laws for the City of Albuquerque ("City") and Bernalillo County ("County"), on behalf of the City Environmental Health Department ("Department").

Any person seeking a new air quality permit or a permit modification under 20.11.41 NMAC (Construction Permits) shall provide documentary proof that the proposed air quality permitted use of the facility's subject property is allowed by the zoning designation of the City or County zoning laws, as applicable. Sufficient documentation may include (i) a zoning certification from the City Planning Department or County Department of Planning and Development Services, as applicable, if the applicant is subject to City or County zoning jurisdiction; or (ii) a zoning verification from both planning departments if the applicant is not subject to City or County zoning jurisdiction. A zone atlas map shall not be sufficient. At this time, applicants are not required to submit documentation for the subject property's zoning designation when applying for an emergency permit, a new portable stationary source, a relocation of a portable stationary source, or a technical or administrative revision to an existing permit.

The Department will rule an application administratively incomplete if it is missing or has incorrect information. If the Department has ruled an application administratively incomplete three (3) times, the Department will deny the permit application. Any fees submitted for processing an application that has been denied will not be refunded. If the Department denies an application, a person may submit a new application and the fee required for a new application. The applicant has the burden of demonstrating that a permit should be issued.

The Department may require additional information that is necessary to make a thorough review of an application. At all times before the Department has made a final decision regarding the application, an applicant has a duty to promptly supplement and correct information the applicant has submitted in an application to the Department. The applicant's duty to supplement and correct the application includes, but is not limited to, relevant information acquired after the applicant has submitted the application and additional information the applicant otherwise determines is relevant to the application and the Department's review and decision. While the Department is processing an application, regardless of whether the Department has determined the application is administratively complete, if the Department determines that additional information is necessary to evaluate or make a final decision regarding the application, the Department may request additional information and the applicant shall provide the requested additional information.

NOTICE REGARDING SCOPE OF A PERMIT: The Department's issuance of an air quality permit only authorizes the use of the specified equipment pursuant to the air quality control laws, regulations and conditions. Permits relate to air quality control only and are issued for the sole purpose of regulating the emission of air contaminants from said equipment. Air quality permits are not a general authorization for the location, construction and/or operation of a facility, nor does a permit authorize any particular land use or other form of land entitlement. It is the applicant's/permittee's responsibility to obtain all other necessary permits from the appropriate agencies, such as the City Planning Department or County Department of Planning and Development Services, including but not limited to site plan approvals, building permits, fire department approvals and the like, as may be required by law for the location, construction and/or operation of a facility. For more information, please visit the City Planning Department website at https://www.cabq.gov/planning and the County Department of Planning and Development Services website at https://www.bernco.gov/planning.

Corporate and Facility Information: This information shall match the information in the permit application.

Air Quality Permit Applicant Company Name: **Hoffman Enterprises, Inc. Dba Kinney Brick Company**			
Facility Name: **Kinney Brick Company**			
Facility Physical Address: **100 Prosperity SE**	City: **Albuquerque**	State: **NM**	Zip: **87105**
Facility Legal Description: **Manufacturer of face brick and brick pavers from clay.**			

General Operation Information: This information shall match the information in the permit application.

Permitting action being requested (please refer to the definitions in 20.11.41 NMAC):
☐ New Permit ☒ Permit Modification, Current Permit #: **747-M1-RV1**

Attachment Information: The location information provided to the City Planning Department or County Department of Planning and Development Services, as applicable, and reflected in the zoning certification or verifications, as applicable, shall be the same as the Facility location information provided to the Department in the air quality construction permit application.

☐ Zoning Certification Provided by: **City Planning** *This is a use-specific certification.* **City Planning Form**: https://www.cabq.gov/planning/code-enforcement-zoning **County Planning Form**: https://www.bernco.gov/planning/planning-and-land-use/applications-forms/	☒ City Zoning Verification ☐ County Zoning Verification **City Planning Form**: https://www.cabq.gov/planning/code-enforcement-zoning **County Planning Form**: https://www.bernco.gov/planning/planning-and-land-use/applications-forms/

BERNALILLO COUNTY

Planning & Development Services
111 Union Square SE, Suite 100
Albuquerque, NM 87102
(505) 314-0350 Fax: (505) 314-0480
www.bernco.gov

ZONING SECTION

REQUEST FOR STATEMENT OF ZONAL CERTIFICATION/ VERIFICATION (ZNP)

PROPERTY OWNER'S NAME Hoffman Properties LTD CO			PHONE (505) 877- 4550
OWNER'S ADDRESS PO Box 1804	CITY Albuquerque	STATE NM	ZIP 87103-1804

APPLICANT'S NAME Kinney Brick Co			PHONE (505) 877- 4550
APPLICANT'S ADDRESS 100 Prosperity Ave SE	CITY Albuquerque	STATE NM	ZIP 87105-0818

SITE ADDRESS 100 Prosperity Ave SE, Albuquerque, NM 87105-0818		
DIRECTIONS From the intersection of I-25 and I-40, head south on I-25 and exit west onto Rio Bravo. Continue and make a left on 2nd St. The facility will be on your left at the intersection of Prosperity & 2nd.		
LEGAL DESCRIPTION LT A-1-A PLAT OF LTS A1A, A3A & A4A LANDS OF NEW MEXICO BRICK CO INC CONT 11.6217 AC M/L		
ZONE MAP Heavy Manufacturing	CURRENT ZONE(S) M-2	PROPERTY SIZE IN ACREAGE 11.6198
UPC # 101305245647410222		
EXISTING BUILDING & USE Brick Manufacturing		

STATEMENT INFORMATION: (check one)	GENERAL VERIFICATION ☐ No charge	USE-SPECIFIC CERTIFICATION ☒ (please explain) $45.00
STATEMENT SHOULD BE ADDRESSED TO:		

NAME Ralph Hoffman			
MAILING ADDRESS 100 Prosperity Ave SE	CITY Albuquerque	STATE NM	ZIP 87105

ALL CERTIFICATION/ VERIFICATION STATEMENTS WILL BE SENT BY MAIL UNLESS OTHERWISE NOTED:

___ Fax a copy to_____

___ Contact when completed; applicant will pick up certification statement

X E-Mail to ralphh@kinneybrick.com ; aerenstein@trinityconsultants.com

_____
Applicant's signature

09/16/2022
Date

County of Bernalillo
State of New Mexico
Planning & Development Services Department
415 Silver Ave. SW, 2nd Floor
Albuquerque, New Mexico 87102
Office: (505) 314-0350 Fax: (505) 314-0480
www.bernco.gov

September 29, 2022

HOFFMAN PROPERTIES LTD CO
PO BOX 1804
ALBUQUERQUE NM 87103-1804

Re: 100 PROSPERITY AVE SE – the "property" – ZNP2022-0068

To Whom It May Concern:

This letter shall certify that according to the official map on file with this office as of this date, the referenced property, legally described as LT A-1-A PLAT OF LTS A1A, A3A & A4A LANDS OF NEW MEXICO BRICK CO INC CONT 11.6217 AC M/L, Albuquerque, Bernalillo County, New Mexico, is zoned M-2 Heavy Manufacturing Zone. For your convenience, I have included a copy of the corresponding Zone Atlas page showing the referenced property.

The M-2 zone allows for brick manufacturing as a permissive use. A check of our records confirms the site does not have any zoning violations as of the writing of this statement.

This certification statement only references the applicability of the Zoning Ordinance as it applies to the aforementioned property in the specified zone. This letter is not a business license, and cannot be construed as approval for construction.

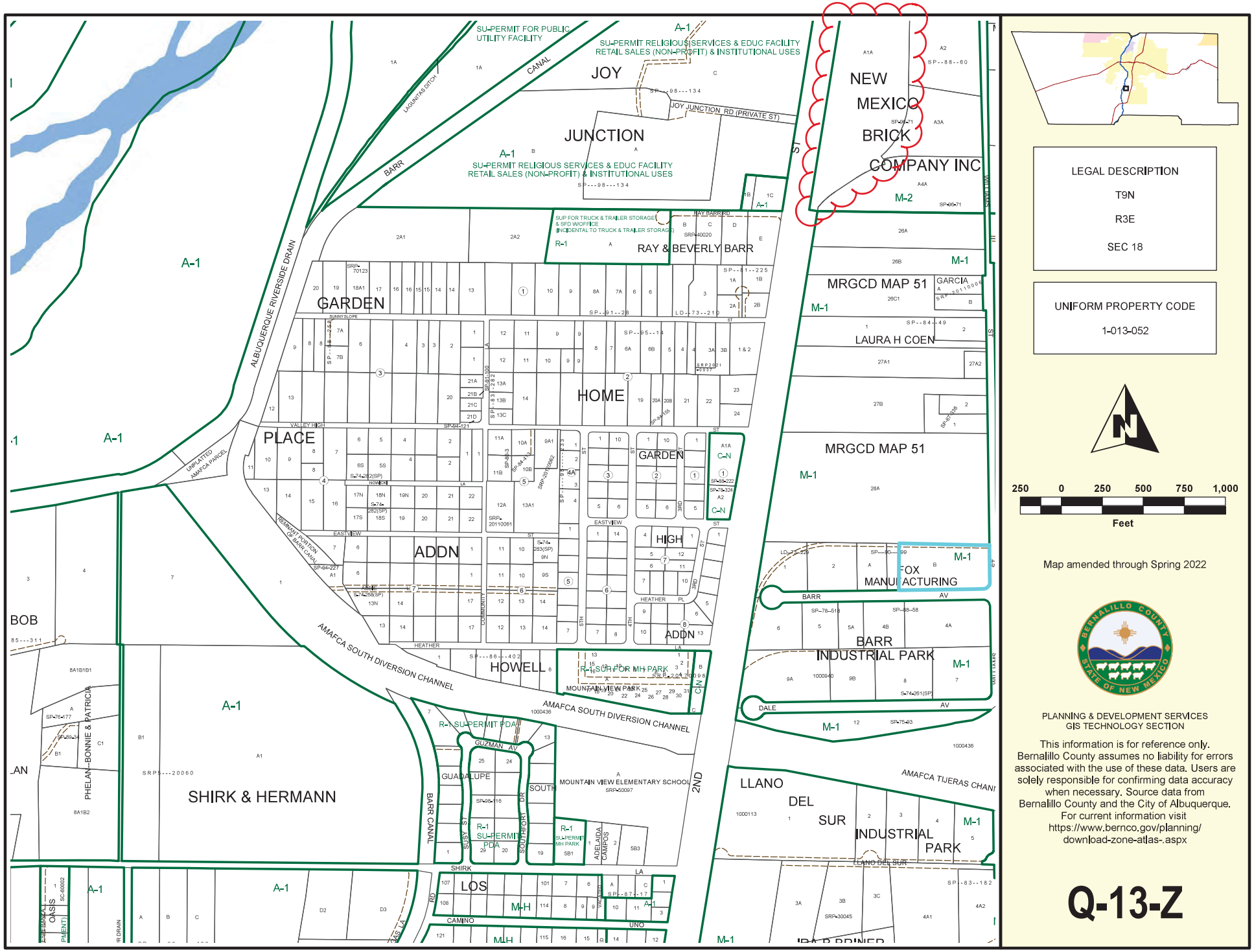
Do not hesitate to contact me if you have questions concerning this matter at 314-0388 or at nhamm@bernco.gov.

Sincerely,

Nicholas Hamm
Zoning Administrator

Enclosures: Zone Atlas Page Q-13-Z

Cc: ralphh@kinneybrick.com; aerenstein@trinityconsultants.com



LEGAL DESCRIPTION

T9N

R3E

SEC 18

UNIFORM PROPERTY CODE

1-013-052

250 0 250 500 750 1,000

Feet

Map amended through Spring 2022

PLANNING & DEVELOPMENT SERVICES
GIS TECHNOLOGY SECTION

This information is for reference only. Bernalillo County assumes no liability for errors associated with the use of these data. Users are solely responsible for confirming data accuracy when necessary. Source data from Bernalillo County and the City of Albuquerque. For current information visit https://www.bernco.gov/planning/download-zone-atlas-.aspx

Q-13-Z