

GOVERNMENT OF THE DISTRICT OF COLUMBIA
Department of Energy and Environment

CHAPTER 2 TECHNICAL MEMORANDUM

TO: File

FROM: Stephen S. Ours, P.E.
Chief, Permitting Branch

SUBJECT: Virginia Concrete Company LLC dba Vulcan Materials Company, 2 S St. SW, Permit No. 6451-R2 to Operate an Existing Ready Mix Concrete Batch Plant

DATE: May 23, 2024

BACKGROUND INFORMATION

A permit renewal application to operate an existing ready mix concrete batch plant with associated 2.8 MMBTU/hr natural gas fired boiler at 2 S St. SW was received by the Air Quality Division (“AQD”) of the Department of Energy and Environment (“DOEE” or “the Department”) on February 14, 2020. The applicant is Virginia Concrete Company LLC. This company does business as (dba) Vulcan Materials Company. Virginia Concrete Company LLC has not requested that any aspects of the application be held confidential.

In response to this application, the Department has prepared a draft permit (No. 6451-R2) and issued it for public review and comment. This draft permit is the subject of this technical memorandum.

The 2 S Street SW site has been the subject of a number complaints and concerns expressed by the community surrounding the plant in recent years. Additionally, AQD performed a pilot mobile air quality monitoring project in the area, which identified relatively high particulate matter levels on roadways in the vicinity of the plant. With this in mind, during this review, AQD has closely evaluated emission controls, maintenance, monitoring, and testing requirements to better ensure that they are appropriate to be protective of human health and the environment as required by 20 DCMR 201. A number of additional requirements have been added to this draft permit as compared to the prior air quality permit that has governed this facility. Some of these requirements include:

- Addition of a requirement to perform fenceline monitoring for coarse and fine particulate matter for a minimum of one year, following approval of a monitoring plan to be submitted;
- Inclusion of requirements to wash down S Street SW, between Half Street SW to the west and the end of the street where it turns north in front of the facility entrance on a quarterly basis;
- A requirement to use a wet sweeper at least twice per day in and around the facility to

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minimize dust track-out;

- A requirement to operate a truck wash system at the site and ensure that each cement truck is washed after loading is complete, prior to leaving the site;
- Addition of an explicit emission limit for total suspended particulate matter from the baghouse dust collector controlling emissions from the drum;
- Requirements covering the small boiler used for heating process water;
- Incorporation of regulatory requirements that have been updated since the last permit issuance, most notably more stringent requirements for visible emissions;
- Addition of explicit maintenance and monitoring requirements covering dust collectors controlling emissions from the plant's silos and cement weigh batcher;
- Inclusion of a requirement to develop and implement a dust control plan for the facility, subject to DOEE review and approval; and
- Incorporation of engine idling requirement in the permit, including explicitly requiring posting of "no idling" signs in both English and Spanish;

TECHNICAL INFORMATION

Based on the emission calculations provided by the facility, the ready mix concrete batch plant has the potential to emit the following when producing the maximum allowable concrete specified in the draft permit (300,000 cubic yards in any 12-consecutive-month period):

Pollutant	Maximum Annual Emissions (tons/yr)
Total Particulate Matter (PM Total)	5.78
Sulfur Dioxide (SO ₂)	0.01
Nitrogen Oxides (NO _x)	1.2
Volatile Organic Compounds (VOC)	0.07
Carbon Monoxide (CO)	1.01

REGULATORY REVIEW

Both federal and District of Columbia regulations and applicable requirements apply to this project. Applicability or non-applicability of key regulations is discussed below.

20 DCMR 104 – Entry and Inspection

This regulation provides the Department authority to access facilities and records for inspection, but also establishes authority to require that regulated entities perform monitoring, sampling, record keeping, and reporting as needed to track and document compliance with other air quality requirements. Various additional monitoring and record keeping requirements have been included in the draft permit pursuant to this section, such as enhanced dust collector monitoring and fence line monitoring.

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20 DCMR 200 – General Permit Requirements: The ready mix concrete batch plant is stationary and has the potential to emit air pollutants. Therefore, it is subject to the requirement to obtain a Chapter 2 permit pursuant to this regulation.

It should further be noted that, pursuant to 20 DCMR 200.14, the small 2.8 MMBTU/hr boiler associated with the process is not individually subject to the requirement to obtain a permit under 20 DCMR 200, however, AQD has determined that it is appropriate to include it in the concrete batch plant permit because it is a key part of the overall process, and to ensure that the regulations covering the boiler, which are applicable whether the unit is subject to permitting or not, are not overlooked.

20 DCMR 201 – General Requirements for Permit Issuance

This section gives the District authority to issue permits for operations if the operations and procedures are protective of public health and the environment. Under this regulation, the Department incorporates any specific requirements necessary to achieve those goals. Also, the Department does not consider whether emissions above the potential to emit identified in a given application would be protective, so therefore it typically incorporates emission limits into the permit that are based on the potential to emit reported in the application.

On this basis, the draft permit limits the Permittee to producing 300,000 cubic yards of concrete production per 12-consecutive-month period and 200 cubic yards in any hour based on their application. These requirements are contained in Condition III(a) of the proposed permit.

Additionally, to ensure that the equipment is operated and maintained properly to protect public health and the environment per 20 DCMR 201, an emission limit of 1.3 pounds per hour of total suspended particulate matter emissions from the outlet of the dust collector controlling emissions from the drum has been established in the draft permit. This was based on the levels measured during a prior compliance test (performed January 20, 2020) when it was believed that the equipment was operating properly. There was substantive variation between the three test runs during that test, so the emissions limit was established at a level two standard deviations above the mean of the measured values during the three test runs.

Similarly, this was the basis for inclusion of a 1.3 lb/hr TSP limit from the outlet of the baghouse dust collector that has been included in Condition II(f) of the draft permit. This is also the basis for including other dust control measures, etc. that the facility has agreed are reasonable for controlling emissions from the facility, as cited throughout the permit.

20 DCMR 205 – Permit Requirements for New Source Performance Standards (NSPS):

The requirements of this section adopt, by reference, many of the federal NSPSs codified in 40 CFR 60. None of these adopted standards apply.

AQD specifically reviewed 40 CFR Part 60, Subpart Dc for applicability. This subpart sets forth the standards of performance for small industrial-Commercial-Institutional steam generating units

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(ICI boilers) with maximum design heat input capacity less than 100 MMBtu/hr and greater than or equal to 10 MMBtu/hr. This subpart includes steam generating units for which construction, modification, or reconstruction commenced after June 9, 1989.

The natural gas fired boiler at Virginia Concrete Company LLC has a maximum heat input of 2.8 MMBtu/hr and is therefore not subject to this subpart.

20 DCMR Chapter 3: Operating Permits and Acid Rain Programs

A source that has the potential to emit more than 25 tons per year of oxides of nitrogen (NO_x) or volatile organic compounds (VOCs), 10 tons per year of an individual hazardous air pollutant (HAP) or 25 tons per year of all HAPs combined, or 100 tons per year of other criteria pollutants is considered a major source and is required to obtain a Title V permit. As demonstrated by the “Maximum Annual Emissions” table above, Virginia Concrete Company LLC is not a major source, therefore it is not subject to Chapter 3 and will not need an operating permit in accordance with 20 DCMR 300.1.

20 DCMR Chapter 5, Section 500: Source Monitoring and Testing Requirements

Appropriate monitoring and testing requirements have been included in Condition IV of the permit with associated record keeping and reporting requirements in Condition V of the permit to ensure that compliance with the conditions of the permit can be evaluated.

20 DCMR Chapter 6, Section 600: Fuel Burning Particulate Emission

Pursuant to this section, total suspended particulate (TSP)¹ emissions from the boiler shall not exceed 0.13 pounds per million BTU. This requirement is found in Condition II(f) of the permit.

20 DCMR Chapter 6, Section 603 and Appendix 6-1: Particulate Process Emissions

According to this regulation, the discharge of TSP² into the atmosphere from any process shall not exceed three hundredths (0.03) grains per dry standard cubic foot of the exhaust (permit Condition II(c)). Additionally, because the facility is rated to process more than 60,000 pounds (30 tons) per hour of materials, the facility shall not emit more than 40.00 pounds per hour of total suspended particulate matter per this regulation (permit Condition II(d)). Actual emissions are expected to be well below this level.

To meet the particulate matter emissions standard, the facility intends to use a baghouse dust collector with a rated 99.9% control efficiency for particulate matter to control emissions from the drum. The manufacturer provided guidance that normal operating differential pressure would be between 3 and 8 inches of water across the bags. However, after an inspection by EPA identified that the baghouse was frequently operating below that range, and subsequent opacity and emissions testing that occurred on January 22, 2020 demonstrated compliance at lower differential pressures the applicant proposed a differential pressure range of 0.80 – 8.0 inches of

¹ 20 DCMR Sections 600 and 603 use the term “particulate matter”, however, these regulations were written at a time when that term generally referred to what we now refer to as “total suspended particulate matter” or “TSP”. As a result, and for clarity, the permit uses these latter, more specific terms.

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water. Virginia Concrete Company LLC has indicated via an email from Amanda Shepherd, dated April 30, 2024, that their current gauge can read to a precision of 0.2 inch of water, compared to the old gauge's precision reading to 0.5 inches of water. To monitor the status of the bags in the baghouse, this 0.8 to 8.0 inches of water range has been established to trigger other inspection and repair activities when the pressure deviates from that range. Additionally, any operation below the differential pressure observed when new bags have been installed is not permitted as it is an indication of bag failure.

Similarly, to minimize emissions from other sources within the plant (the cement weigh batcher and loading of the three silos), conditions for monitoring the four CP-Series fabric filter dust collectors (one C&W CP-35 unit installed on the cement weigh batcher and three C&W CP-305 units installed on the cement/Newcem silos) have been established in Conditions III(e) and (f). A similar process for monitoring differential pressures across the fabric filter dust collectors has been included in Condition III(e), but as an alternative, the Permittee is being given the opportunity to prepare an alternative dust collector monitoring plan for any or all of these four dust collectors, since this monitoring is being established with the issuance of this permit and an alternative technology (other than differential pressure monitoring) may be selected.

Additionally, per the manufacturers' recommendations the facility must keep key replacement parts (listed on the manufacturer's specification of the baghouse) for the baghouse and the four fabric filter dust collectors on site. The Permittee is also required to maintain a set of replacement bags and filter cartridges for the dust collection equipment. These requirements are contained in Condition III(g).

In addition to differential pressure monitoring, to ensure the equipment is maintained, visible emissions monitoring and testing, maintenance in accordance with manufacturers' recommendations, and records of maintenance are required in the permit.

20 DCMR Chapter 6, Section 605: Control of Fugitive Dust

The fugitive dust requirements in 20 DCMR 605 are applicable to this ready mix concrete batch plant. Reasonable precautions shall be taken to minimize the emission of any fugitive dust into the outdoor atmosphere. These requirements to are found in Conditions II(a) and (b) and Condition III(h) of this permit. This regulation is also the basis for requiring quarterly street washdowns per Condition III(m), covers for the sand conveyor and sand aggregate pile per Conditions III(n) and III(o), respectively, fabric covers on the facility fencing to reduce migration of dust offsite by wind per Condition III(p), twice-daily use of a wet sweeper truck per Condition III(q), and washdowns of cement trucks per Condition III(r).

Per Condition III(s), the Permittee will be required to develop a dust control plan for the facility that is designed to ensure compliance with this regulation.

The facility is required to monitor the site for compliance with these requirements, as set forth throughout Condition IV, and in particular, Conditions IV(e), (f), (h), and (k). Condition V

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establishes record keeping requirements to document compliance with the emission standards and their related monitoring requirements.

Chapter 6, Section 606: Visible Emissions

The recently updated (August 11, 2023) visible emissions limitations of 20 DCMR 606.1 and the limited exceptions in 20 DCMR 606.2 are applicable to this ready mix concrete batch plant. Condition II(g) incorporates the requirement that visible emissions shall not be emitted from the equipment covered by this permit except that discharges shall be permitted for two (2) minutes during any startup, cleaning, adjustment of combustion or operational controls, or regeneration of emissions control equipment; provided, that such discharges shall not exceed 20% opacity (unaveraged) from the 2.8 MMBTU/hr boiler, and 27% from all other stationary sources at the plant.

Monitoring for compliance is required pursuant to Condition IV(c). Records the required testing and results must be maintained per Condition V(b)(14).

20 DCMR Chapter 8, Section 805: Reasonably Available Control Technology for Major Stationary Sources of the Oxides of Nitrogen (NOx RACT)

NOx RACT is not applicable to this facility pursuant to 20 DCMR 805.1(a) or (b) because it is not, and has not historically been, a major source of NOx.

20 DCMR Chapter 9, Section 903: Odorous or Other Nuisance Air Pollutants

“An emission into the atmosphere of odorous or other air pollutants from any source in any quantity and of any characteristic, and duration which is, or is likely to be injurious to the public health or welfare, or which interferes with the reasonable enjoyment of life or property is prohibited [20 DCMR 903.1]” is applicable to all sources. This requirement is contained in Condition II(h) of the proposed permit. In addition, the new (August 4, 2023) affirmative defense provisions of 20 DCMR 903.13(b) are also included in that condition.

Monitoring for compliance is required pursuant to Condition IV(d). Records of identified odors, and the actions taken to correct them, must be kept pursuant to Condition V(b)(15).

40 CFR 60, Subpart Dc – Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units

This regulation is not applicable because the boiler is below the size applicability threshold of 10 MMBTU/hr heat input.

40 CFR 63, Subpart JJJJJ – National Emission Standards for Hazardous Air Pollutants (NESHAP) for Industrial, Commercial, and Institutional Boilers Area Sources:

This facility does not emit or have the potential to emit 10 tons per year or more of a single hazardous air pollutant (HAP) or 25 tons per year or more of any combination of HAPs. Consequently, the facility is considered an area source of HAP emissions.

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The Virginia Concrete Company facility maintains a 2.8 MMBtu/hr boiler that heats water during colder times of the year. Pursuant to 40 CFR 63.11195(e), the boiler meets the definition of a gas-fired boiler and operates solely on natural gas. Therefore, the boiler is not subject to Subpart JJJJJ. An appropriate permit condition has been placed in the permit to ensure the boiler only burns natural gas (see Condition III(k)).

COMMENT PERIOD AND PUBLIC HEARING

Based on AQD's evaluation of the application and review of applicable regulations, the operation of the existing ready mix concrete batch as proposed in the application, and the draft operating permit as written, are consistent with all applicable federal and District air pollution control laws and regulations.

Public comments for the permit action will be solicited from May 24, 2024 through June 26, 2024. **No comments submitted after June 26, 2024 will be accepted.**

During the public comment period, any interested person may submit written comments on the draft permit.

All written comments should be addressed to the following individual and office:

Stephen S. Ours, P.E.
Chief, Permitting Branch
Department of Energy and Environment
Air Quality Division
1200 First Street NE, 5th Floor
Washington DC 20002
stephen.ours@dc.gov

In addition, AQD has scheduled a public hearing to take further comment on this draft permit. Information on this hearing and how to participate is as follows:

Public Hearing:

HEARING DATE: Wednesday, June 26, 2024

TIME: 5:30 PM

IN-PERSON LOCATION: Southwest Library, 900 Wesley Place SW, Washington DC 20024

In-person attendees are encouraged to arrive 10 minutes early to allow time to be directed to the meeting room.

VIRTUAL ACCESS INFORMATION:

Hosted by DOEE Meetings

<https://dcnet.webex.com/dcnet/j.php?MTID=mf2c745f4f367e4ec34a328dad668859d>

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Wednesday, June 26, 2024 5:30 AM | (UTC-04:00) Eastern Time (US & Canada)

Meeting number: 2300 373 2582

Password: 5KcypjRB9J2

Join by video system

Dial 23003732582@dcnet.webex.com

You can also dial 173.243.2.68 and enter your meeting number.

Join by phone

+1-202-860-2110 United States Toll (Washington D.C.)

1-650-479-3208 Call-in toll number (US/Canada)

Access code: 230 037 32582

All persons attending the hearing, either in person or virtually, who wish to be heard may testify at the hearing. All presentations shall be limited to five minutes. Persons testifying are urged to submit paper or electronic copies of any written statements.

All relevant comments received during the comment period and the public hearing will be considered before taking final action on the permit application.

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