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NARRATIVE

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SUBJECT: Generic Air Quality Permit for Concrete Batch Plants that are Synthetic Minor Sources
Permit No. 3273-GEN-0011-S-01-0

GENERIC PERMIT FOR SYNTHETIC MINOR SOURCES

General Information

This narrative explains the basis for this Generic Air Quality Permit (Permit No. 3273-GEN-0011-S-01-0). Generic permits are allowed under the authority of Georgia Rule for Air Quality Control 391-3-1-.03(2)(f). This permit is for concrete batch plants that are synthetic minor sources. To apply for a generic permit, the concrete batch plant must meet certain requirements. The plant must be operated at one fixed location. Therefore, if the facility is relocated, the Permittee will be required to submit an application for a new permit. The plant must use a baghouse to control particulate matter emissions. The plant may not operate any fuel burning equipment. Production at the plant will be limited by this permit, to no more than 800,000 cubic yards, per year.

Process Description

Concrete is primarily made up of aggregate of various sizes, sand, cement, water and (usually) a cement supplement. Coal power boiler ash is often used as a cement supplement, so it will be referred to as ash in this narrative. Aggregate and sand are transferred by conveyors to elevated storage bins. The cement and ash are pneumatically conveyed to an elevated silo. Measured amounts of the aggregate, sand, cement, and ash are dumped into a weigh hopper and, after water is added, all of the material is mixed, creating the concrete. Particulate matter emissions from pneumatic conveying of materials are controlled by a baghouse.

Emissions Summary

Production at the plant will be limited to 800,000 cubic yards during any consecutive twelve-month period by Condition 2.1. Using AP-42 emission factors, it has been shown that uncontrolled emission rates of particulate matter total no more than about 0.124 pounds per ton of concrete produced. This figure was calculated using emission factors from Section 11.12 of AP-42, concrete batching, as shown in the following table.

Concrete Component	Typical Mix for One Cubic Yard from AP-42 (pounds)	Percent of Total Weight	Number of Transfer Points	Uncontrolled AP-42 Emission Factor for PM_{10} (pounds per ton of component)	Emission Factor (pounds per ton of concrete)
Aggregate	1865	46.3	4	0.0033	0.0061
Sand	1428	35.5	3	0.00099	0.0011
Cement	491	12.2	1	0.46	0.0561
Cement Supplement	73	1.8	1	1.10	0.0200
Water	167	4.2	---	---	---
Weigh Hopper Loading	1865 + 1428	81.8	1	0.0024	0.0020
Truck Loading	491 + 73	14.0	1	0.278	0.0390
TOTAL					**0.1243**

A typical concrete mixture is given in AP-42. The components are listed in the first column of the table, along with weigh hopper loading and truck loading operations, both of which have emission factors that are based on only part of the total mixture. The second column shows the pounds for each component, making a total weight for one cubic yard of 4024 pounds or 2.012 tons. The weigh hopper loading factor is multiplied by the weight of the aggregate and sand, while the truck loading emission factor is multiplied by the amount of cement and cement supplement. The third column shows the weight percentage of each component, obtained by dividing the component weight by the total weight of 4024 pounds. The fourth and fifth columns show the number of transfer points for each emission source and the AP-42 uncontrolled emission factor for each emission source, respectively. Multiplying the emission factor for each source by the number of transfer points for this source and by the weight percentage gives the emission factor in pounds per ton of concrete, which is shown in the last column of the table. The total uncontrolled emission factor for the entire facility is a summation of these values and is shown to be 0.124 pounds per ton of concrete produced or slightly less than 0.250 pounds per cubic yard. Actual emissions can vary slightly depending on the particular concrete mixture being produced. To assure that the uncontrolled emissions of particulate matter are less than 100 tons per year, the annual production capacity must be less than 800,000 cubic yards [(800,000 cubic yards)(2 tons per cubic yard)(0.1243 pounds per ton of concrete)/(2000 pounds per ton) = 99.4 tons per year]. Dividing the 800,000 cubic yard production limit by 8760, the number of hours in a year, an hourly production rate of 91.3 cubic yards is calculated. Therefore, if the maximum hourly production rate of a plant is greater than 90 cubic yards, it is not a true minor source. In order to be a synthetic minor source, a concrete plant whose maximum hourly production rate exceeds 90 cubic yards must be limited by permit condition to less than 800,000 cubic yards per year.

Regulatory Applicability

Georgia Rule 391-3-1-.02(2)(e)
Georgia Rule (e) – "Particulate Emission from Manufacturing Processes," states that the emission rate of particulate matter (PM) from an emission unit, which is not covered by a more stringent rule in the Georgia Rules for Air Quality Control, may not emit pollutants in excess of an equation specified in the rule. The input to the equation is the hourly dry input weight rate of raw materials. The PM emissions

from concrete plants are very small, even when uncontrolled. Therefore, it is expected that the facility will be well in compliance with Rule (e).

Georgia Rule 391-3-1-.02(2)(b)
Georgia Rule (b) – "Visible Emissions," states that the facility may not allow stack emissions from any air contaminant source the opacity of which is equal to or greater than forty (40) percent. This would apply to the emissions from any baghouse.

Georgia Rule 391-3-1-.02(2)(n)
Georgia Rule (n) – "Fugitive Emissions," requires the facility to minimize fugitive dust from the facility. This applies to any emission source that is not exhausted out of a stack. The rules require the use of water or chemicals for controlling dust on construction operations, grading of roads, and the clearing of land; covering at all times, when in motion, open bodied trucks transporting material likely to give rise to airborne dust; application of suitable material to dirt roads, materials, stockpiles, and other similar surfaces.

Permit Conditions

Conditions 1.1 through 1.3 are standard Air Protection Branch conditions.

Condition 1.4 specifies that, this being a synthetic minor source with regard to Title V, records are required to be kept for at least five years after the record is made.

Condition 2.1 limits concrete production to 800,000 cubic yards, per any 12-month consecutive period, to assure that the facility is synthetic minor with regard to Title V.

The use of baghouses to control particulate matter emissions reduces overall facility emissions to less than ten percent of the uncontrolled levels. The baghouses, in addition to limiting particulate matter emissions, will keep visible emissions from pneumatic conveying and concrete loading in compliance with visible emission limits. This 40% opacity limit is in Condition 2.2.

Fugitive emissions from the facility are limited, per Rule(n), to 20 percent. Condition 3.1 requires compliance with Rule(n) and requires reasonable precautions be taken to prevent fugitive emissions.

Condition 4.1 requires routine maintenance of all air pollution control equipment.

Condition 4.2 requires that periodic inspections of the control devices be done no less often than once per year and that the results be kept for the period required of all permit records.

Condition 4.3 requires that spare bags be kept on hand to replace them if any bags in a baghouse fail.

Condition 5.1 requires that the facility check the visible emissions (VE) from each process baghouse on a daily basis and check the VE from each cement or ash silo each time it is being filled. Any determination of visible emissions will need to be noted and the problem corrected within a day.

Condition 6.1 is the standard Air Protection Branch testing condition. It is not anticipated that a test will be required for this type of facility. However, if a test were requested by the Division, the procedures specified in this condition must be followed.

Condition 7.1 requires that monthly records of production be kept, to show that all 12-consecutive month totals of concrete production do not exceed 800,000 yards.

Condition 7.2 requires that, if production ever does exceed 800,000 cubic yards in a 12-consecutive month period, it must be reported. This is considered highly unlikely for all put the very largest plants being used for very large projects.

Condition 8.1 is a standard Air Protection Branch condition, which allows the Division to amend the permit if it is believed that additional measures are needed to adequately protect the public.

Condition 8.2 is included to assure that the Permittee keeps all the written materials on hand to show that the facility is properly permitted.

Note that there is not a condition included in this permit requiring the payment of permit fees. It has been determined that permit fees are not required to be paid by owners or operators of any concrete batch plant permitted under a Generic Permit.

Public Input

Upon receipt of a generic application, a public advisory must be issued regarding the application, as required by the state's public advisory policy. It allows 30 days for citizens to submit comments. If there are any comments, these comments and the Division's response must be incorporated into an addendum, which would be attached to this document. A permit would not be issued until the public advisory period has ended and all public comments have been addressed. If a hearing were held, any comments and the Division's responses would also be found in the addendum.

Source Status

A facility covered by this general permit will be a synthetic minor source. The applicant will have submitted a permit application, which will be kept on file. Each will be assigned to a district office for inspection purposes. Issuance of Permit No. 3273-GEN-0011-S-01-0, which can be used by concrete plants that are synthetic minor sources, is recommended.