NORTH CAROLINA DIVISION OF AIR QUALITY

AIR PERMIT REVIEW

Region: Winston-Salem Regional Office
County: Alleghany
NC Facility ID: 0300076
Inspector's Name: Unassigned
Date of Last Inspection: N/A
Compliance Code: N/A

Facility Data	Permit Applicability
Applicant (Facility's Name): Maymead Materials, Inc. - Laurel Springs Plant **Facility Address:** 11995 NC 18, Laurel Springs, NC 28644-9265 **SIC:** 2951 / Paving Mixtures And Blocks **NAICS:** 324121 / Asphalt Paving Mixture and Block Manufacturing **Facility Classification: Before:** N/A **After:** Synthetic Minor **Fee Classification: Before:** N/A **After:** Synthetic Minor	**SIP:** Y **NSPS:** Y (Subpart I) **NESHAP:** N **PSD:** N **PSD Avoidance:** Y (SO2) **NC Toxics:** Y (2Q .0711 and 2D .1100) **112(r):** N **Other:** Used Oil

Contact Data

Facility Contact	Authorized Contact	Technical Contact
B. K. Mount President (423) 727-2000 P O Box 911 Mountain City, TN 37683	B. K. Mount President (423) 727-2000 P O Box 911 Mountain City, TN 37683	B. K. Mount President (423) 727-2000 P O Box 911 Mountain City, TN 37683

Application Data

Application Number: 0300076.05A
Date Received: October 4, 2005 (complete)
Application Type: Greenfield Facility
Application Schedule: State

Existing Permit Data

Existing Permit Number: N/A
Existing Permit Issue Date: N/A
Existing Permit Expiration Date: N/A

Review Engineer: Tonisha Dawson **Review Engineer's Signature:**	**Comments / Recommendations:** **Issue** Draft Permit No. 09551R00 **Permit Issue Date:** TBD **Permit Expiration Date:** TBD

I. Reason for Application

Maymead Materials, Inc. (referred to hereafter as Maymead) submitted an air permit application for the construction and operation of a drum-mix asphalt plant to be located near the intersection of NC 88 and NC 18 in the Cranberry Township of Alleghany County on August 1, 2005. Maymead is a drum-mix asphalt plant with a rated capacity of 150 tons per hour. The company's name is registered with the North Carolina Department of the Secretary of State (see attachment).

II. Applicaton Chronology

August 1, 2005 – The Air Toxics Modeling request forms that were submitted with the application were forwarded to The Division of Air Quality – Air Quality Analysis Branch (AQAB).

The application package included a letter from Amy L. Pardue, County Planner with The Alleghany County Planning and Recreation Department, which stated in summary that the Cranberry Township of Alleghany does not have zoning ordinances, with the exception of a special Roaring Gap Land Use District. Regulation 15A NCAC 2Q .0113 – "Notification in Areas Without Zoning" states:

> *(b) Before a person submits a permit application for a new or expanded facility in an area without zoning, he shall provide public notification as setout in this Rule.*

The Rule requires the facility to publish a legal notice in a newspaper of general circulation in the area where the source is or will be for at least two weeks before submitting the permit application. A sign must be posted on the property where the new or expanded source is or will be located at least 10 days before the permit application is submitted and shall remain posted for at least 30 days after the application is submitted.

The facility placed a legal notification in The Alleghany News on July 21, 2005. A copy of the article was included in the application package. When the application was received on August 1, 2005, Jalal Adouli, Permits Coordinator called Ms. Rebecca Wagner, Bookkeeper for Maymead, Inc. to inquire about the posted sign. Ms. Wagner stated that the company posted the sign on the proposed site about 2-3 weeks prior to submitting the application as required by regulation 2Q .0113.

August 5, 2005 – DAQ-AQAB received the modeling analysis completed by Maymead to demonstrate compliance with the AALs for arsenic, benzene, formaldehyde and nickel. The project was assigned to Mark Yoder, Meteorologist of AQAB.

September 13, 2005 – Alleghany County Board of Commissioners passed an ordinance establishing a moratorium on certain polluting industries under NC zoning laws (see attachment). The ordinance states in part:

> *"NOW, THEREFORE, BE IT ORDAINED that the Board of Commissioners of Alleghany County hereby places this moratorium on the opening or expansion of polluting industries for a period of ninety (90) days following the moratorium's adoption. Examples of polluting industries include, but are not limited to, asphalt plants, chip mills and medical waste facilities…"*

The moratorium is effective from September 13, 2005 to December 12, 2005.

September 26, 2005 - This Office received a memorandum from Mark Yoder that included the results of Maymead's modeling demonstration.

September 27, 2005 - Margaret Love, Steve Moser and Keith Mosteller of WSRO visited the proposed site of the asphalt plant. A photograph was taken of the sign that the facility posted to comply with regulation 2Q .0113.

September 28, 2005 – Tonisha Dawson, Review Engineer sent a letter to the facility requesting the following:

1. Specify the number of fuel oil storage tanks that will be installed, the type of fuel oil that will be stored in each tank and the capacity of the tanks in gallons.

2. Specify whether or not liquid asphalt cement will be stored on-site. If so, provide the capacity of the tank in gallons.

3. Specify whether or not recycled fuel oil will be used. If so, state the type of fuel oil and the name and address of the fuel oil vendor.

4. State whether or not the facility wants to use the 180,000 tons per year production limit to comply with toxics, synthetic minor and PSD avoidance limits. If not, provide the different production limits that will be used to comply with each of the regulations.

5. Provide the 911 address for the proposed site.

6. Specify the type of filter material that will be used in the bagfilter (i.e., Nomex).

September 29, 2005 – Mr. Sean Mackey, Project Manager of Maymead emailed the following responses to the letter dated September 28, 2005:

1. There will be two fuel oil storage tanks [Tank #1: 10,000 gal capacity, #4 recycled oil; Tank #2: 3,000 gal capacity, #2 diesel fuel (virgin)].

2. Liquid asphalt will be stored on-site. The tank is 20,000-gallon capacity.

3. Recycled oil will be used at this facility. The suppliers are Necessary Oil Company located at 1300 Georgia Ave. Bristol, TN 37620 and Noble Oil Services located at 5617 Clyde Rhyne Drive Sanford, NC 27330.

4. The 180,000 TPY production rate is acceptable.

5. The 911 address is 11995 NC 18, Laurel Springs, NC 28644-9265.

September 30, October 3 and 4, 2005 – Ms. Dawson sent Mr. Mackey several emails requesting additional information that was discovered to be missing or determined to be unclear as a more thorough review of the application was completed. These questions are summarized below:

1. What is the type of filter material that will be used in the bagfilter?

2. What is the correct heat input capacity of the dryer? The spreadsheet lists 96.8 million Btu per hour and Application Form B1 lists 100 million Btu per hour.

3. The facility stated that they will burn No. 2 fuel oil (virgin) and No. 4 fuel oil recycled in their letter dated September 28, 2005. On the D3 Form the facility stated that they will burn virgin No. 2 fuel oil and recycled No. 2 and No. 4 fuel oil. Will they also have the option to burn virgin No. 4 fuel oil? Verify which virgin and recycled fuel oils will be burned.

4. The facility will be subject to NSPS Subpart I; however, that portion of the spreadsheet was not completed. Furthermore two different stack gas temperatures were listed in the application package. The following information was requested:

   a. The Stack gas flowrate (ACFM);

   b. Stack gas temperature (F); and

   c. Stack percent moisture (%).

5. The wrong sulfur content was used in the Asphalt spreadsheet that was included with the application. The sulfur content should have been 2.1% for No. 4 fuel oil not 0.5%. The facility can still use the 180,000 tons of asphalt per year limit; however, they will also need to limit the sulfur content to comply with the Synthetic Minor limit of 100 tons of sulfur dioxide per year. Can the recycled No. 4 fuel oil comply with the maximum 0.5% sulfur content shown on the spreadsheet?

October 4, 2005 – The facility faxed a written response to the above questions and the answers are as follows:

1. The filter material for the bagfilter is Nomex.

2. The correct heat input capacity of the dryer is 96.8 million Btu per hour (not 100 million Btu per hour) as listed on the spreadsheet.

3. The facility will burn No. 2 fuel oil (virgin) and No. 4 fuel oil recycled. They will not burn virgin No. 4 fuel oil or recycled No. 2 fuel oil.

4. a. The stack gas flowrate is 42,000 (ACFM).

   b. The maximum stack gas temperature is 375ºF.

   c. The percent moisture is 20%.

5. The facility will use the 180,000 tons of asphalt per year production limit and a sulfur content limit of 0.5% to comply with the Synthetic Minor emission limit. A Fuel Oil Analysis Report from Necessary Oil Company (attached) lists the sulfur content of No. 4 fuel oil as 0.411%.

III. Equipment to be Permitted

ID No.	Source Description	ID No.	Control Device Description
One drum-mix asphalt plant (150 tons per hour maximum rated capacity), consisting of:			
ES-1 ***(NSPS)***	No. 2/recycled No. 4 fuel oil-fired aggregate dryer (96.8 million Btu per hour maximum heat input capacity)	CD-1	bagfilter (7,163 square feet of filter area)
ES-2	hot mix asphalt storage silo	N/A	N/A
ES-3	truck loadout operation	N/A	N/A

IV. Equipment Qualifying for Permit Exemption:

ID No.	Source Description	Permit Exemption
IES-1	Fuel oil storage tank (10,000 gallon capacity)	2Q .0102(c)(1)(D)(i) – fuel oil storage tank
IES-2	Fuel oil storage tank (3,000 gallon capacity)	2Q .0102(c)(1)(D)(i) – fuel oil storage tank
IES-3	Liquid asphalt cement storage tank (20,000 gallon capacity)	2Q .0102(c)(1)(L)(xi) – no applicable requirements
IES-4	No. 2 fuel oil-fired asphalt storage tank heater (1.0 million Btu per hour maximum heat input capacity)	2Q .0102(c)(2)(B)(i)(I) – less than 10 mmBtu/hr

V. Bagfilter Evaluation:

The proposed bagfilter (ID No. CD-1) has a filter surface area of 7,163 square feet and a maximum inlet air flow rate of 42,000 ACFM. In accordance with regulation 2Q .0112 – "Application Requiring a Professional Engineering Seal," a Professional Engineer (P.E.) registered in the state of North Carolina is required to seal technical portions of the air permit application, because the facility is installing a bagfilter with an air flow rate greater than 10,000 ACFM. Mr. Mark R. Sizemore, P.E. stamped Application Form D5 (Technical Analysis to Support Permit Application) with his P.E. Seal for the certification of Application Form C1 (Control Device – Fabric Filter).

The NC Board of Examiners for Engineers and Surveyors website was used to verify that Mr. Sizemore's P.E. license is current (see attachment).

The cleaning method that is used is air pulse and the air-to-cloth (A/C) ratio is 5.86:1. The typical A/C ratio for a bagfilter using the air pulse cleaning method at an asphalt plant is between 4:1 and 6:1.[a]

The type of filter material that will be used is Nomex, and the maximum inlet temperature is 375ºF. The maximum continuous gas temperature that is recommended for Nomex is 400ºF. The maximum short-term gas temperature that is recommended for Nomex is 425ºF. Nomex filter material is rated as very good to excellent for flex and abrasion resistance.[a]

Based on the parameters that were evaluated, the bagfilter is believed to be properly designed for the proposed aggregate dryer. The facility estimated on Application Form C1 that the overall particulate control efficiency of the bagfilter is 99.9 percent. However, it should be noted that the facility used the most current NCDENR Asphalt Emissions Calculator spreadsheet (Revision C – 05/07/2003) to calculate before control and after control emissions from the asphalt plant. This spreadsheet is based on emission factors from AP-42 Chapter 11.1 – "Hot Mix Asphalt Plants" and assumes a total particulate (PM) control efficiency of 99.882% and a PM-10 control efficiency of 99.934% for drum mix asphalt plants that use fabric filters.

VI. Regulatory Review:

A. New Source Performance Standards (NSPS)

1. Subpart I – "Standards of Performance for Hot Mix Asphalt Facilities."

The proposed asphalt plant is subject to Subpart I – "Standards of Performance for Hot Mix Asphalt Facilities." Subpart I applies to any asphalt plant that commences construction or modification after June 11, 1973.

Particulate Standards – Filterable particulate emissions are limited to less than 90 mg/dscm (0.04 gr/dscf), and visible emissions are limited to 20 percent opacity.

The NCDENR spreadsheet is capable of converting the 0.04 gr/dscf emission limit to units of lbs/hr when stack parameters are entered. Using a stack gas flow rate of 42,000 ACFM, a stack gas temperature of 375ºF, and percent moisture of 20%, the NCDENR Asphalt spreadsheet calculated the allowable particulate emission rate to be 7.28 lb/hr. The **uncontrolled** total PM emissions from the aggregate dryer are calculated to be 4200 lbs/hr. A minimum control efficiency of 99.827% is required to demonstrate compliance with the allowable particulate emission rate. As previously discussed, the actual control efficiency is estimated to be 99.882% or greater. Therefore, with proper maintenance of the proposed bagfilter, the facility is expected to comply with the particulate standard of NSPS Subpart I. Performance testing will provide an accurate measurement of the facility's actual particulate emissions. Once the testing has been completed and the results have been submitted, compliance with NSPS Subpart I will be re-evaluated.

Performance Testing Requirements – 40 CFR 60.8 requires the facility to conduct performance testing and furnish a written report of the results within 60 days after achieving the maximum production rate at which the facility will be operated, but no later than 180 days after initial startup. The facility must notify the Administrator at least 30 days prior to the performance test to afford the Administrator the opportunity to have an observer present. The facility is required to conduct performance test Method 5 to determine the particulate matter concentration.

Test Method 9 must be used to determine the opacity of the filterable particulate. The Method 9 observation does not include the condensing blue haze emissions from asphalt plants.

[a] BAGHOUSES: Compliance Assistance Program – California Environmental Protection Agency, June 1994

Additional Notification Requirements – Any facility subject to the provisions of 40 CFR Part 60 – "Standards of Performance for New Stationary Sources" must also comply with the requirements of Subpart A – "General Provisions." Subpart A requires that the facility submit written notification of the date construction commenced no later than 30 days after such date. A notification of the anticipated date of initial startup must be submitted not more than 60 days nor less than 30 days prior to such date. They must also submit notification of the actual date of initial start-up within 15 days after such date.

2. Subpart Kb – "Standards of Performance for Volatile Organic Liquid Storage"

Based on the current NSPS Subpart Kb regulations, which were amended on October 15, 2003, the following tanks are exempt from the provisions of this Subpart:

- tanks with capacities less than 19,813 gallons;
- tanks with capacities between 19,813 and 39,890 gallons with vapor pressure less than 15 kPa; and
- tanks with capacities equal to or greater than 39,890 gallons with vapor pressure less than 3.5 kPa.

The two proposed fuel oil storage tanks (IES-1 and IES-2) are 10,000 gallons and 3,000 gallons in capacity, respectively. Since the capacities are less than 19,813 gallons, the fuel oil storage tanks are not subject to Subpart Kb.

The proposed asphalt cement storage tank (IES-3) has a capacity of 20,000 gallons. The maximum true vapor pressure of the asphalt cement is listed on Application Form B3 as 0.014 psia, which is equivalent to 0.0965 kPa. Since the tank capacity is between 19,813 and 39,890 gallons and the vapor pressure of the asphalt cement is less than 15 kPa, Subpart Kb does not apply.

B. Prevention of Significant Deterioration (PSD)

This facility has the potential to emit 868.44 tons of sulfur dioxide per year when operating at the maximum capacity of 150 tons per hour (1,314,000 tons per year) and a sulfur content of 2.1%. Since the potential emission rate is greater than 250 tons per year, the facility has two options: (1) be considered "major" and comply with the requirements of PSD regulations or (2) take a PSD avoidance limit and be considered "minor." As previously discussed, the facility requested that the 180,000 tons of asphalt per year production limit that is being used for Toxics compliance also be used for Synthetic Minor and PSD avoidance. The facility will also further restrict the sulfur content to less than 0.5% to comply with Synthetic Minor limits. With these restrictions, sulfur dioxide emissions will be only 23.62 tons per year. Since the record keeping and reporting requirements under the Synthetic Minor condition will provide enough information to demonstrate compliance with both the Synthetic Minor and PSD emission limits, additional record keeping and reporting requirements will not be listed under the PSD condition.

Alleghany County has a triggered PSD baseline date of May 30, 1980 for SO2 emissions. The proposed asphalt plant will increase SO2 emissions in Alleghany County by 36.17 lbs/hr. Since the increase is greater than 1 lb/hr, increment tracking is triggered. A copy of the first page of the cover letter will be sent to Connie Horne of DAQ-RCO to notify her of this emission increase for increment tracking purposes.

C. Non-Attainment Status:

On April 15, 2004, EPA designated areas throughout the country that exceeded the health-based standards for 8-hour ozone as "nonattainment." Alleghany County is not one of the counties that was designated as nonattainment.

On December 17, 2004, EPA took final action to designate attainment and nonattainment areas under the more protective national air quality standards for fine particles (less than 2.5 micrometers in diameter). Alleghany County is **not** one of the counties designated as nonattainment.

D. National Emission Standards for Hazardous Air Pollutants (NESHAP)

This facility is not subject to NESHAP regulations, because none of the subparts apply to hot mix asphalt plants.

E. Toxics

Emission sources Nos. ES-1, ES-2 and ES-3 are subject to both 2Q .0711 and 2D .1100. The exempt fuel oil storage tanks (IES-1 and IES-2) and the exempt asphalt cement storage tank (IES-3) are exempt from toxics regulations in accordance with regulation 2Q .0702(a)(19) – "Exemptions." This regulation states in part that storage tanks used only to store fuel oils or petroleum products with a true vapor pressure less than 1.5 psia are exempt from toxics regulations. Asphalt cement is a petroleum product with a true vapor press of only 0.014 psia.

The exempt asphalt storage tank heater (IES-4) is exempt from toxics in accordance with regulation 2Q .0702(a)(18), which states in summary that toxics regulations do no apply to combustion sources.

2Q .0711 – "Emission Rates Requiring A Permit"

Pollutant	Projected Actual Emissions	2Q .0711 Limit – "TPER"
Acetaldehyde	0.195 lb/hr	6.8 lb/hr
Acrolein	0.0039 lb/hr	0.02 lb/hr
Benzo(a)pyrene (Component of POMTV & POM7)	0.00318 lb/yr	2.2 lb/yr
Cadmium Metal (elemental unreacted, Component of CDC)	0.0738 lb/yr	0.37 lb/yr
Carbon disulfide	0.00897 lb/day	3.9 lb/day
CFC-111 (Trichlorofluoromethane)	0.00000811 lb/hr	140 lb/hr
Chromium (VI) Soluble Chromate Compounds (Component of CRC)	0.00162 lb/day	0.013 lb/day
Hexachlorodibenzo-p-dioxin 1,2,3,6,7,8 (Component of CLDC)	0.000000234 lb/yr	0.0051 lb/yr
Hexane, n-	3.44 lb/day	23 lb/day
Manganese & compounds	0.0277 lb/day	0.63 lb/day
Mercury	0.00936 lb/day	0.013 lb/day
Methyl chloroform	0.0173 lb/day; 0.0072 lb/hr	250 lb/day; 64 lb/hr
Methyl ethyl ketone	0.0964 lb/day; 0.004 lb/hr	78 lb/day; 22.4 lb/hr
Methylene chloride	0.00592 lb/yr; 0.00000494 lb/hr	1600 lb/yr; 0.39 lb/hr
Perchloroethylene (tetrachloroethylene)	0.0576 lb/yr	13000 lb/yr
Phenol	0.0006 lb/hr	0.24 lb/hr
Styrene	0.00014 lb/hr	2.7 lb/hr
Tetrachlorodibenzo-p-dioxin, 2,3,7,8- (Component of CLDC & POMTV)	0.0000000378 lb/yr	0.0002 lb/yr
Toluene	10.5 lb/day; 0.437 lb/hr	98 lb/day; 14.4 lb/hr
Xylene	0.869 lb/day; 0.0362 lb/hr	57 lb/day; 16.4 lb/hr

Projected actual hourly and annual emissions were calculated using the most current DAQ Asphalt Spreadsheet and are based on the actual production rates of 150 tons of asphalt per hour and 180,000 tons of asphalt per year and the use of a bagfilter for control of particulate emissions. Projected actual daily emissions were calculated by scaling the hourly emission rate up by 24 hours per day.

2D .1100 – "Control of Toxic Air Pollutants"

Affected Source(s)	Toxic Air Pollutant	Modeled Emission Rate
one aggregate dryer (ES-1)	Arsenic & Compounds (total mass of elemental AS, arsine and all inorganic compounds)	0.1 lbs/yr
	Benzene	70.2 lbs/yr
	Formaldehyde	0.465 lbs/hr
	Nickel & Compounds, sum total mass, inc elemental	0.227 lbs/day
hot mix asphalt storage silo (ES-2)	Benzene	0.702 lbs/yr
	Formaldehyde	0.013 lbs/hr
truck load out operation (ES-3)	Benzene	0.389 lbs/yr
	Formaldehyde	0.00055 lbs/hr

As previously discussed, the facility submitted a request for dispersion modeling to the Division of Air Quality (DAQ) – Air Quality Analysis Branch (AQAB). On September 26, 2005, this Office received a memo from Mark Yoder, Meteorologist of AQAB, which stated in summary that the modeling adequately demonstrated compliance with the respective standards. The SCREEN3 model was used to assess simple, intermediate, and complex terrain impacts from the facility. Receptors were placed beginning at the property boundary and extending out 5,000 meters. The highest concentrations from each source were added together to obtain a maximum "worst-case" concentration. The maximum concentration for any pollutant was 97% (benzene) of the AAL.

In order to ensure compliance with the modeled emission rates, the facility will be limited to 150 tons of asphalt per hour and 180,000 tons of asphalt per year. Monthly record keeping and quarterly reporting requirements will be included in the permit to track asphalt production. Other parameters that will be used to ensure compliance are shown in the following table:

Affected Source(s)	Minimum Stack/Release Height (meters)	Minimum Distance to Property Line (meters)
one aggregate dryer (ES-1)	9.2 (stack height)	26
hot mix asphalt storage silo (ES-2)	10.9 (volume source release height)	50
gravity-drop truck load out operation (ES-3)	1.52 (volume source release height)	50

On September 27, 2005, Margaret Love, Steve Moser and Keith Mosteller visited the site of the proposed plant. Using the map provided with the permit application, the proposed site was located adjacent to the abandoned Laurel Springs School on Highway 18 south of Sparta. The site has been used in the past as a Christmas tree lot. It is fairly large and level. There was no evidence of construction or pre-construction on-site.

Distances to nearby buildings were measured. There is a bed and breakfast on Highway 18 approximately 0.6 miles south of the site. There is also a bed and breakfast and adjacent winery approximately 0.8 miles north of the site. This measurement is highway mileage including one 90° turn so the actual distance would be much less. The proposed site is also 2.4 miles from the nearest access point on the Blue Ridge Parkway. Mapping software was also used to estimate the distance from the site to the Parkway. Using this software, it is approximately 1.25 miles from the Parkway to the site.

Used Fuel Oil Requirements

Permit Writer associates the condition for used fuel oil with regulation 2D .1100. The facility has requested that they be allowed to burn used No. 4 fuel oil. Ms. Dawson verified that the facility will not burn used No. 2 fuel oil. Their suppliers are Necessary Oil Company located at 1300 Georgia Ave., Bristol, TN 37620 and Noble Oil Services located at 5617 Clyde Rhyne Drive, Sanford, NC 27330. Both of these vendors are listed on the ***North Carolina Approved List Of Recycled Oil Suppliers***, which was last revised on June 1, 2005. Necessary Oil Company was approved for No. 4 fuel oil in December of 1994, and Noble Oil Services was approved for No. 4 fuel oil in June of 1999. The facility has only requested to burn recycled No. 4 fuel oil.

The facility will be required to keep records of the actual amount of recycled fuel oil(s) delivered to, and combusted at the facility on an annual basis, as well as the results of any analytical testing of the recycled fuel oil(s) as it is sampled and tested by the vendor. Within 30 days after each calendar year, the facility must submit a summary of the results of the analytical testing for the previous 12 months and the total gallons of recycled fuel oil(s) from each approved vendor combusted at the facility for the previous 12 months.

F. 2D .0202 – "Registration of Air Pollution Sources"

In accordance with this regulation, the facility will be required to submit an emissions inventory and request for permit renewal at least 90 days prior to the expiration of their Air Permit.

G. 2D .0503 – "Particulates from Fuel Burning Indirect Heat Exchangers"

The exempt asphalt storage tank heater is subject to this regulation. The total heat input capacity of the heater is 1.0 million Btu per hour. The allowable particulate emission rate for heat input values up to and including 10 million Btu per hour is **0.60 lbs/million Btu**. The total particulate emission factor is the sum of the filterable particulate emission factor in AP-42 Table 1.3-1 and the condensable emission factor in AP-42 Table 1.3-2. Based on these emission factors the actual particulate emission rate is calculated as follows:

AP-42 Emission Factor for Filterable Particulate	=2.0 lbs/1000 gallons
AP-42 Emission Factor for Condensable Particulate	=1.3 lbs/1000 gallons
Fuel Heat Value (No. 2 fuel oil)	=140 million Btu/1000 gallons

[(2.0 lbs/1000 gallons) + (1.3 lbs/1000 gallons)] / 140 million Btu/1000 gallons = **0.02 lbs/million Btu**

The actual particulate emissions from the combustion of No. 2 fuel oil are less than the allowable emission rate; therefore, compliance is demonstrated. Since this regulation only applies to the exempt heater, it will not be included in the Permit.

H. 2D .0506 – "Particulates from Hot Mix Asphalt Plants"

The aggregate dryer (ES-1) is subject to this regulation. The allowable particulate emission rate is calculated using the following equation:

$$E = 4.9445 * P^{0.4376}$$

where E is the allowable particulate emission rate (lbs/hr) and P is the process rate (tons/hr). The proposed asphalt plant has a maximum process rate of 150 tons per hour; therefore, the allowable particulate emission rate is calculated to be **44.298 lbs/hr**. Based on the most current NCDENR Asphalt Emissions Calculator spreadsheet (Revision C – 05/07/2003), the maximum hourly particulate emissions before controls were calculated to be 4,200 pounds per hour from the dryer. The maximum hourly particulate emissions after controls were calculated to be **4.95 pounds per hour**. Based on the spreadsheet calculations, the facility is able to demonstrate compliance with the use of controls.

In order to get a more accurate measurement of particulate emissions, a performance test requirement will be added to the permit. Method 5 should be used to measure filterable particulate, and Method 202 should be used to measure condensable particulate. Testing must be completed according to the same timeline specified under the NSPS Subpart I performance test requirements (within 60 days after achieving the maximum production rate at which the source will be operated, but not later than 180 days after the initial startup).

This regulation also requires the facility to control fugitive non-process dust emissions in accordance with 2D .0540. Compliance with 2D .0540 is discussed below. Visible emissions from stacks or vents at the asphalt plant shall be less than 20 percent opacity when averaged over a six-minute period.

I. 2D .0516 – "Sulfur Dioxide Emissions from Combustion Sources"

The aggregate dryer (96.8 million Btu per hour maximum heat input) and the exempt asphalt storage tank heater (1.0 million Btu per hour maximum heat input) are subject to this regulation, which limits sulfur dioxide emissions to **2.3 pounds per million Btu** input each.

Based on the NCDENR Asphalt Emissions Calculator spreadsheet (Revision C – 05/07/2003), the actual sulfur dioxide emissions from the aggregate dryer are estimated to be 36.2 pounds per hour with a sulfur content of 0.5%. This emission rate is divided by the heat input capacity of 96.8 million Btu per hour to yield an emission rate of **0.37 pounds per million Btu**.

The actual sulfur dioxide emissions from the asphalt storage tank heater are estimated using the emission factors from AP-42 Table 1.4-1 – "Criteria Pollutant Emission Factors for Fuel Oil Combustion." This table lists the sulfur dioxide emission factor for No. 2 fuel oil (distillate oil) as 157*S lbs/1000 gallons, where S is the sulfur content (percent by weight). Based on this emission factor the actual sulfur dioxide emissions are calculated as follows:

AP-42 Emission Factor: =157*(0.5) = 78.5 lbs/1000 gallons
Fuel Heat Value (No. 2 fuel oil): =140 million Btu/1000 gallons

[(78.5 lbs/1000 gallons) / 140,000 million Btu/1000gal] = **0.56 lbs/million Btu**

The actual sulfur dioxide emission rates are less than the allowable emission rate; therefore, the facility is able to demonstrate compliance with regulation 2D .0516.

J. 2D .0521 – "Control of Visible Emissions"

The exempt asphalt storage tank heater is subject to this regulation, which limits visible emissions to an opacity of 20%. The aggregate dryer (ES-1), storage silo (ES-2) and truck loadout operation (ES-3) are subject to the opacity standards under NSPS Subpart I and 2D .0506, which are also 20% opacity. Since this regulation only applies to the exempt asphalt storage tank heater, it will not be listed in the Air Permit. Compliance will be determined during the initial plant inspection.

K. 2D .0524 – "New Source Performance Standards"

The facility is subject to NSPS Subpart I. See discussion under Section VI.A of this review.

L. 2D .0535 – "Excess Emissions Reporting and Malfunctions"

The facility is required to report any malfunction that results in excess emissions that last for more than four hours. A specific condition, which includes this notification requirement, will be included in the Air Permit.

M. 2D .0540 – "Particulates from Fugitive Non-Process Dust Emission Sources"

As previously discussed, regulation 2D .0506 requires all asphalt plants to control fugitive non-process dust emissions in accordance with regulation 2D .0540. The facility should not cause or allow non-process dust emissions to cause or contribute to substantive complaints. Compliance with this regulation will be determined during the initial compliance inspection.

N. 2D .0605 – "General Recordkeeping and Reporting"

The testing requirements for NSPS Subpart I and 2D .0506 will be combined and added to the permit as an ADHOC condition. The condition will be linked to regulation 2D .0605 in Permit Writer.

O. 2D .0611 – "Monitoring Emissions From Other Sources"

In accordance with this regulation, the facility is required to perform an annual internal inspection of the bagfilter system (ID No. CD-1). In addition, the facility shall perform periodic inspections and maintenance (I&M) as recommended by the equipment manufacturer. All I&M activities must be recorded in a logbook that will be kept onsite and made available to DAQ personnel upon request. Compliance with this regulation will be determined during the initial compliance inspection.

P. 2D .1806 – "Control and Prohibition of Odorous Emissions"

The facility must implement management practices or install and operate odor control equipment sufficient to prevent odorous emissions from the facility from causing or contributing to objectionable odors beyond the facility's boundary. Compliance will be determined during the initial plant inspection.

Q. 2Q .0304 – "Applications"

This regulation requires that along with filing a complete application, the facility must also submit a zoning consistency determination indicating that all zoning or subdivision ordinances are met by the facility. As previously discussed in Section II. of this review, Alleghany County Board of Commissioners passed an ordinance establishing a moratorium on certain polluting industries under NC zoning laws on September 13, 2005. As a result, a specific condition will be added to the Air Permit that will require the facility to comply with all lawfully adopted local ordinances, including those cited in the zoning determination, that apply to the facility at the time of construction or operation of the facility. The local zoning authority will have the responsibility of enforcing all lawfully adopted local zoning or subdivision ordinances.

R. 2Q .0309 – "Termination, Modification and Revocation of Permits"

In accordance with this regulation, specific conditions have been added to the permit for permit reopening. The permit reopening condition states in part that the Director may modify and reissue the permit with additional emission controls and/or additional operational restrictions necessary to demonstrate compliance with any applicable regulation after becoming aware of any credible air emissions data not previously considered by the DAQ during the application review process.

S. 2Q .0315 – "Synthetic Minor Facilities"

Particulate Emissions

The NCDENR Asphalt spreadsheet calculates the Title V Potential PM-10 emission rate to be 20.9 tons per year. Since a control device is required to comply with the particulate standard in NSPS Subpart I, the PM-10 emissions from the dryer are calculated after controls. The facility-wide potential PM-10 emissions are less than 100 tons per year; therefore, it is not necessary for the facility to be Synthetic Minor for PM-10.

Sulfur Dioxide Emissions

This facility requested to be classified as Synthetic Minor due to potential SO_2 emissions greater than 100 tons per year. Based on the most current NCDENR Asphalt Spreadsheet, the facility has the potential to emit 868.44 tons of SO_2 per year when the maximum sulfur content is 2.1% and the facility operates at its maximum production rate of 150 tons per hour for 8,760 hours per year.

In order to demonstrate compliance with the 100 ton per year emission limit for sulfur dioxide, the facility has proposed to limit annual asphalt production to 180,000 tons, and the sulfur content of the No. 2 and recycled No. 4 fuel oil is limited to 0.5% by weight. Using these limitations, the potential SO_2 emissions are reduced to only 23.620 tons per year.

The facility must keep monthly records of the amount of asphalt produced. Fuel certifications must be kept on site and made available to DAQ personnel.

The monthly totals of asphalt produced and the facility-wide sulfur dioxide emissions must be reported each quarter for the previous 14 months. The production rate and sulfur dioxide emissions must be calculated for each of the three 12-month periods over the previous 14 months. Copies of fuel certifications must also be reported for the previous 14 months.

It should be noted that although the actual sulfur dioxide emissions are expected to be well below 75% of the 100 tons per year emission limit, the facility will be required to report quarterly as opposed to annually. Based on current permitting guidance for asphalt plants, when a permit contains a PSD Avoidance, Synthetic Minor and Toxics (2D .1100) condition, the facility must default to the quarterly reporting frequency under the Toxics condition.

T. 2Q .0317 – "Avoidance Conditions"

As previously discussed, the Air Permit will include a PSD Avoidance condition, which will limit SO2 emissions to 250 tons per year facility-wide. See discussion under Section VI.B of this review for more details.

VII. Facility-Wide Emissions Summary:

Pollutant	Projected Actual Emissions (tpy)	Potential Emissions with NSPS limit (tpy)	Potential Emissions after controls and limits (tpy)
TSP	3.17	45.48	3.17
PM-10	2.27	20.87	2.27
CO	12.08	87.23	12.08
NOx	5.58	36.76	5.58
SO2	23.62	868.44	23.62
VOC	4.34	31.61	4.34
Total HAPs	1.02	7.47	1.02

The above emission rates were calculated using the attached NCDENR Asphalt Emissions Calculator spreadsheet (Revision C – 05/07/2003). Since there are no actual emissions for this facility, projected actual emissions are assumed to be equal to potential emissions after controls and limits. These rates are based on 180,000 tons of asphalt per year and a maximum sulfur content of 0.5%.

VIII. Compliance Status:

On September 27, 2005, DAQ staff verified that there was no construction or pre-construction equipment on-site. Once the facility is constructed, a compliance inspection will be completed.

IX. Application Fee/Zoning Consistency:

The appropriate application fee of $400.00 was submitted with the application. The facility also submitted the required zoning consistency determination. For more detailed information related to zoning, see discussion under Sections II and VI.Q of this review.

X. Recommendation:

It is recommended that Permit No. 09551R00 be issued to Maymead Materials, Inc.