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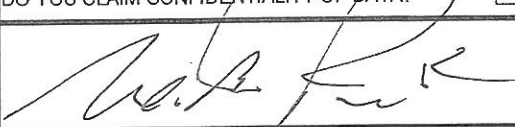
SECTION A

A1

FACILITY (General Information)

REVISED: 6/26/2012

FORSYTH COUNTY - APPLICATION FOR AIR PERMIT TO CONSTRUCT/OPERATE

FACILITY NAME: <u>Maymead, Inc. - Clemmons Plant</u>		MAILING ADDRESS: <u>Maymead, Inc.</u>	
SITE ADDRESS: <u>6010 Gun Club Road</u>		<u>PO Box 911</u>	
CITY: <u>Winston-Salem, NC 27103</u>		STATE: <u>TN</u>	ZIP CODE: <u>37683</u>
FACILITY LATITUDE: <u>36° 2'32.53"N</u>		FACILITY LONGITUDE: <u>80°22'4.10"W</u>	
HORIZONTAL COLLECTION METHOD CODE: <u>020</u>		HORIZONTAL REFERENCE DATUM CODE: <u>003</u>	GEOGRAPHIC REFERENCE POINT CODE: <u>101</u>
ON-SITE CONTACT PERSON: _____		TITLE: _____	
PHONE: _____ FAX: _____		EMAIL: _____	
LEGAL CORPORATE OWNER: _____			
TECHNICAL CONTACT: <u>Sean Mackey</u>		TITLE: <u>Secretary</u>	
ADDRESS: <u>PO Box 911</u>		CITY: <u>Mountain City</u>	
PHONE: <u>423-727-2000</u> FAX: <u>423-727-2025</u>		STATE: <u>TN</u> ZIP CODE: <u>37683</u>	
EMAIL: <u>smackey@maymead.com</u>			
RESPONSIBLE OFFICIAL: <u>W. B. Roark</u>		TITLE: <u>President</u>	
ADDRESS: <u>PO Box 911</u>		CITY: <u>Mountain City</u>	
PHONE: <u>423-727-2000</u> FAX: <u>423-727-2025</u>		STATE: <u>TN</u> ZIP CODE: <u>37683</u>	
EMAIL: <u>wbr@maymead.com</u>			
CURRENT PERMIT NO: <u>NA</u>		EXPIRATION DATE: <u>NA</u>	
TYPE OF OPERATION: <u>Asphalt production, liquid asphalt and aggregate storage, #4 & #2 fuel storage</u>			
PRIMARY 6 DIGIT NAICS CODE: <u>324121</u>		PRIMARY NAICS DESCRIPTION: <u>Asphalt Paving</u>	
PRIMARY SIC CODE: <u>2951</u>		PRIMARY SIC CODE DESCRIPTION: <u>Asphalt Paving Mixtures</u>	
FACILITY CLASSIFICATION: ☐ TITLE V ☒ SYNTHETIC MINOR ☐ EXCLUSIONARY SMALL ☐ SMALL			
TITLE V APPLICABILITY: ☐ CAP EMISSIONS ☐ HAP EMISSIONS ☐ OTHER EMISSIONS ☐ CATEGORY: _____			
APPLICATION IS BEING MADE FOR (CHECK ALL THAT APPLY, NOTE: (TV) INDICATES APPLICABILITY TO TITLE V FACILITIES ONLY):			
☒ NEW FACILITY ☐ MODIFICATION ☒ DISPERSION MODELING ☐ INITIAL TITLE V PERMIT (TV) ☐ SIGNIFICANT MODIFICATION (TV) ☐ MINOR MODIFICATION (TV) ☐ NEW SOURCE REVIEW PSD/NAA ☐ CASE-BY-CASE MACT ☐ TAX CERTIFICATION ☐ ADMINISTRATIVE AMENDMENT ☐ RELOCATION (WITHIN FACILITY) ☐ LIKE-FOR-LIKE REPLACEMENT ☐ RENEWAL ☐ OWNERSHIP CHANGE ☐ OFF PERMIT NOTIFICATION (TV)			
HAVE YOU INCLUDED: ☒ SOURCE REDUCTION & RECYCLING FORM D3-3 ☒ APPLICATION FEE ☒ PLANT LAYOUT			
☒ FLOW CHART(S) ☐ ROOF DIAGRAM ☒ PLOT PLAN ☒ AREA DIAGRAM			
PROPOSED SCHEDULE ^a			
BEGIN CONSTRUCTION: <u>10/15/2026</u> COMPLETE CONSTRUCTION: <u>1/31/2027</u> STARTUP: <u>3/1/2027</u> BEGIN OPERATION: <u>3/1/2027</u>			
DO YOU CLAIM CONFIDENTIALITY OF DATA? ☒ NO ☐ YES (SEE INSTRUCTIONS)			
SIGNATURE OF RESPONSIBLE OFFICIAL		TITLE	DATE
		<u>PRESIDENT</u>	<u>7/15/26</u>
PRINTED NAME			
<u>W.B. ROARK</u>			

CM: _____	Prem: _____
Class: _____	Action: _____
TV: _____	Reply: _____
Fee: _____	Pd: _____

A4

FORSYTH COUNTY - APPLICATION FOR AIR PERMIT TO CONSTRUCT/OPERATE

REVISÉD: 10/24/2000

[illegible]

^a The RAP crusher is mobile and is on-site intermittently on an as-needed basis. The RAP crusher is on-site less than 30 days at a time.

SECTION A

A5

EMISSION SOURCE/CONTROL DEVICE ALTERNATIVE OPERATING SCENARIOS

REVISED: 10/24/2000

FORSYTH COUNTY - APPLICATION FOR AIR PERMIT TO CONSTRUCT/OPERATE

EMISSION SOURCE ID NO: ES-1	ATTACH TO APPROPRIATE FORM B
CONTROL DEVICE ID NO: CD-1	
PRIMARY OPERATING SCENARIO (DESCRIBE): Operation of Drum Mixer/Dryer using No. 4 fuel oil/No. 4 recycled fuel oil	
DESCRIBE ALTERNATIVE OPERATING SCENARIO (AOS) NO. 01 Operation of Drum Mixer/Dryer using natural gas	
DESCRIBE ALTERNATIVE OPERATING SCENARIO (AOS) NO. _____, (specify no.):	
DESCRIBE ALTERNATIVE OPERATING SCENARIO (AOS) NO. _____, (specify no.):	
COMMENTS:	

SECTION B

B1

EMISSION SOURCE (GENERAL)

REVISED: 10/24/2000

FORSYTH COUNTY- APPLICATION FOR AIR PERMIT TO CONSTRUCT/OPERATE

EMISSION SOURCE DESCRIPTION: Drum Mixer/Dryer (natural gas/No. 4 fuel oil/No. 4 recycled fuel oil)		EMISSION SOURCE ID NO: ES-1	
CONTROL DEVICE ID NO(S): CD-1		EMISSION POINT ID NO(S): EP-1	
INDICATE WHETHER THIS SOURCE IS SUBJECT TO ☒ NSPS OR ☐ NESHAP REGULATIONS			
ALTERNATIVE OPERATING SCENARIO (AOS) NO: See Comments			
DESCRIBE PROCESS: Aggregate, which may include reclaimed asphalt pavement (RAP), and heated liquid asphalt cement are continuously fed to the drum mixer to produce hot mix asphalt (HMA). Direct heat is provided by a 75 MMBTU/hr burner that fires No. 4 oil, recycled oil, or natural gas.			
MANUFACTURER: ASTEC		DATE MANUFACTURED: TBD	
MODEL NUMBER: NA		OPERATION DATE: TBD	
OPERATING SCHEDULE	HR/DAY: 8	DAY/WK: 5	WEEK/YR: 40
SEASONAL VARIATION (%)	JAN-MAR: 10	APR-JUN: 35	JUL-SEP: 35 OCT-DEC: 20
MATERIALS ENTERING PROCESS - CONTINUOUS PROCESS		MAX. DESIGN	
TYPE	UNITS	CAPACITY (UNIT/HR)	REQUESTED CAPACITY LIMITATION(UNIT/HR)
Crushed Aggregate	Tons	300	
Liquid Asphalt Cement	Tons	21	
Reclaimed Asphalt Pavement (RAP)	Tons	70	
TOTAL THROUGHPUT CAPACITY		Tons	325^a
MATERIALS ENTERING PROCESS - BATCH OPERATION		MAX. DESIGN	
TYPE	UNITS	CAPACITY (UNIT/BATCH)	REQUESTED CAPACITY LIMITATION (UNIT/BATCH)
MAXIMUM DESIGN - BATCHES / HOUR :		REQUESTED LIMITATION - BATCHES / HOUR :	
FUEL USED: No. 4 oil, recycled oil, or natural gas		TOTAL MAXIMUM FIRING RATE (MILLION BTU/HR): 75	
MAX. CAPACITY HOURLY FUEL USE: 75 MILLION BTU/HR)		REQUESTED CAPACITY ANNUAL FUEL USE: None; see above for Requested Capacity Limitation	
DESCRIBE ANY MONITORING DEVICES, GAUGES, OR TEST PORTS: Air Pressure gauge for the bagfilter, in-line usage meters for fuel oil and natural gas, temperature probes (in-line), and test ports located on bagfilter stack			
INDICATE ALL REQUESTED STATE AND FEDERALLY ENFORCEABLE PERMIT LIMITS (e.g., hours of operation, material input rates, emission rates, etc.) AND DESCRIBE HOW THESE LIMITS ARE MONITORED AND WITH WHAT FREQUENCY. ^a The following limits on throughput capacity are requested: 325 tons/hour; 2500 tons/day; and 300,000 tons/yr. Production will be recorded monthly for each month and for each previous 12-month period.			
COMMENTS: TBD = To Be Determined The Drum Mixer/Dryer may be fired on No. 4 oil or recycled oil (primary operating scenario), or natural gas (secondary operating scenario No. 01); see Form A5 for ES-1. The information reported on this form (Form B1) is not affected by the difference in fuel use. Therefore, both operating scenarios (primary operating scenario and secondary operating scenario No. 01) are combined on this form. Direct process heat is provided from an ASTEC Whisper Jet 75 burner with a maximum heat input rating of 75 MMBtu/hr. Fuel properties. No. 4 oil/recycled oil = <0.5% S, 150,000 Btu/gal; natural gas = 1,020 Btu/ft3			

SECTION B

B1

EMISSION SOURCE (GENERAL)

REVISED: 10/24/2000

FORSYTH COUNTY- APPLICATION FOR AIR PERMIT TO CONSTRUCT/OPERATE

EMISSION SOURCE DESCRIPTION: RAP Crusher/Screeners				EMISSION SOURCE ID NO: ES-4	
CONTROL DEVICE ID NO(S): NA		EMISSION POINT ID NO(S): EP-4			
INDICATE WHETHER THIS SOURCE IS SUBJECT TO ☒ NSPS OR ☐ NESHAP REGULATIONS					
ALTERNATIVE OPERATING SCENARIO (AOS) NO: NA					
DESCRIBE PROCESS: Reclaimed Asphalt Pavement (RAP) millings are fed to a crusher and then screened for size classification					
MANUFACTURER: TBD				DATE MANUFACTURED: TBD	
MODEL NUMBER: NA				OPERATION DATE: TBD	
OPERATING SCHEDULE		HR/DAY: 8	DAY/WK: 5	WEEK/YR: As needed	
SEASONAL VARIATION (%)		JAN-MAR: 10	APR-JUN: 35	JUL-SEP: 35	OCT-DEC: 20
MATERIALS ENTERING PROCESS - CONTINUOUS PROCESS				MAX. DESIGN CAPACITY (UNIT/HR)	
TYPE		UNITS		REQUESTED CAPACITY LIMITATION (UNIT/HR)	
RAP millings		Tons		120	
MATERIALS ENTERING PROCESS - BATCH OPERATION				MAX. DESIGN CAPACITY (UNIT/BATCH)	
TYPE		UNITS		REQUESTED CAPACITY LIMITATION (UNIT/BATCH)	
MAXIMUM DESIGN - BATCHES / HOUR :		REQUESTED LIMITATION - BATCHES / HOUR :		BATCHES/YR :	
FUEL USED: NA		TOTAL MAXIMUM FIRING RATE (MILLION BTU/HR):			
MAX. CAPACITY HOURLY FUEL USE:		REQUESTED CAPACITY ANNUAL FUEL USE:			
DESCRIBE ANY MONITORING DEVICES, GAUGES, OR TEST PORTS: None					
INDICATE ALL REQUESTED STATE AND FEDERALLY ENFORCEABLE PERMIT LIMITS (e.g., hours of operation, material input rates, emission rates, etc.) AND DESCRIBE HOW THESE LIMITS ARE MONITORED AND WITH WHAT FREQUENCY. None					
COMMENTS: TBD = To Be Determined The RAP crusher is mobile and is on-site intermittently on an as-needed basis. The RAP crusher is on-site less than 30 days at a time.					

SECTION B

B9

EMISSION SOURCE (STORAGE SILO/BINS)

REVISED: 10/24/2000

FORSYTH COUNTY - APPLICATION FOR AIR PERMIT TO CONSTRUCT/OPERATE

EMISSION SOURCE DESCRIPTION: Two (2) silos (ES-3) and two (2) truck loadout operations (ES-3A) ^a EMISSION SOURCE ID NO: ES-3 /ES-3A

CONTROL DEVICE ID NO(S): NA

EMISSION POINT ID NO(S): EP-3/EP-3A

INDICATE WHETHER THIS SOURCE IS SUBJECT TO ☐ NSPS OR ☐ NESHAP REGULATIONS.

ALTERNATIVE OPERATING SCENARIO (AOS) NO: NA

OPERATION DATE: TBD

DESCRIPTION OF PROCESS:

Hot mix asphalt silo filling and truck loading

SEASONAL VARIATION (%) JAN-MAR: 10 APR-JUN: 35 JUL-SEP: 35 OCT-DEC: 20

MATERIAL STORED: Hot mix asphalt DENSITY OF MATERIAL (LB/FT³): 110

CAPACITY CUBIC FEET: TONS: 200/silo

DIMENSIONS (FEET) HEIGHT: 67.83 DIAMETER: 12 (OR) LENGTH: WIDTH: HEIGHT:

ANNUAL PRODUCT THROUGHPUT (TONS) ACTUAL: 300,000 MAXIMUM DESIGN CAPACITY: 300,000

☐ PNEUMATICALLY FILLED

☒ MECHANICALLY FILLED

☒ FILLED FROM

☐ BLOWER

☐ SCREW CONVEYOR

MOTOR HP:

☐ RAILCAR

☐ COMPRESSOR

☐ BELT CONVEYOR

75

☐ TRUCK

NO. FILL TUBES:

☐ BUCKET ELEVATOR

☐ STORAGE PILE

MAXIMUM ACFM:

OTHER: Drag Slate Conveyor

OTHER: Drum Mixer

MATERIAL IS UNLOADED TO:

Multi-axle rear dump trucks

BY WHAT METHOD IS MATERIAL UNLOADED FROM SILO?

gravity drop

MAXIMUM DESIGN FILLING RATE OF MATERIAL (TONS/HR): 325

MAXIMUM DESIGN UNLOADING RATE OF MATERIAL (TONS/HR) 325

DESCRIBE EMISSION CONTROLS WHILE LOADING SILO:

None

DESCRIBE EMISSION CONTROLS WHILE UNLOADING SILO:

None

DESCRIBE ANY MONITORING OR WARNING DEVICES:

None

INDICATE ALL REQUESTED STATE AND FEDERALLY ENFORCEABLE PERMIT LIMITS (e.g., hours of operation, material input rates, emission rates, etc.) AND DESCRIBE HOW THESE LIMITS ARE MONITORED AND WITH WHAT FREQUENCY.
See Form B1 for ES-1 for requested limits on facility-wide throughput capacity rates.

COMMENTS: There are two (2) silos and two (2) truck loading stations. Only one silo and one truck loading station can be operated at a time.

SECTION C

C2

CONTROL DEVICE (FABRIC FILTER)

REVISED 7/20/2001

FORSYTH COUNTY - APPLICATION FOR AIR PERMIT TO CONSTRUCT/OPERATE

CONTROL DEVICE ID NO: CD-1		CONTROL EMISSIONS FROM WHICH EMISSION SOURCE ID NO(S): ES-1	
EMISSION POINT ID NO(S): EP-1		POSITION IN SERIES OF CONTROLS NO. 1 OF 1 UNITS	
MANUFACTURER: Astec		MODEL NO: PEBH-63-21	
ALTERNATIVE OPERATING SCENARIO (AOS) NO:			
DESCRIBE CONTROL SYSTEM: Fabric filter dust collector on the air discharge of the rotary dryer			
POLLUTANT(S) COLLECTED:		PM ^a	PM10 ^a
CORRESPONDING EFFICIENCY:		99.88%	99.65%
EFFICIENCY DETERMINATION CODE: (see C2 instruction)		4	4
BEFORE CONTROL EMISSION RATE (LB/HR):		9100	2112.5
AFTER CONTROL EMISSION RATE (LB/HR):		10.725	7.475
PRESSURE DROP (IN. H2O): 2 MIN 8 MAX		WARNING ALARM? ☒ YES ☐ NO	
INLET TEMPERATURE (F): MIN 212 MAX 375		OUTLET TEMPERATURE (F): MIN 212 MAX 375	
INLET AIR FLOW RATE (ACFM): 63,000			
AIR TO CLOTH RATIO: 5.7	FILTER SURFACE AREA (FT2): 11,063	FILTER MAX. OPERATING TEMP.(F) 400	
FILTER MATERIAL: Arimid Woven	DESCRIBE CLEANING PROCEDURES:		
TIME BETWEEN CLEANING: 30 sec	☐ MECHANICAL ☐ REVERSE FLOW ☐ SIMPLE BAG COLLAPSE ☐ SONIC ☒ AIR PULSE ☐ RING BAG COLLAPSE ☐ OTHER:		
CLEANING TIME: 0.1 to 0.5 sec			
DESCRIBE MAINTENANCE PROCEDURES: Visual inspections of the exterior body, visual inspection of the bags, bag replacement as necessary			
DESCRIBE MOISTURE BLINDING, CHEMICAL RESISTIVITY, AND/OR SPECIAL OPERATING CONDITIONS: None			
DESCRIBE ANY MONITORING DEVICES, GAUGES, TEST PORTS, ETC: Temperature and air pressure gauges, test ports located on the exit stack			
SHOW BY DIAGRAM THE RELATIONSHIP OF THE CONTROL DEVICE TO ITS EMISSION SOURCE(S): See Plant Diagram A appended for Form A4.			

^a See **ATTACHMENT A**: Emission Calculations for calculation of uncontrolled and controlled emission rates. The Corresponding Efficiency = (Before Control Emission Rate - After Control Emission Rate)/Before Control Emission Rate * 100. Example calculation: Corresponding Efficiency, PM = (9100 lb/hr - 10.725 lbs/hr) / (9100 lb/hr) * 100 = 99.88%

ES-1 (Dryer) is subject to 40 CFR Part 60, Subpart I - Standards of Performance for Hot Mix Asphalt Facilities, which requires a performance test to demonstrate compliance of the controlled emissions with the applicable Subpart I emission standards.

D2-1

SECTION D TOXIC POLLUTANT EMISSION EMISSION SOURCE SUMMARY

REVISED: 10/24/2000

FORSYTH COUNTY-APPLICATION FOR AIR PERMIT TO CONSTRUCT AND OPERATE

EMISSION SOURCE DESCRIPTION: Drum Mixer/Dryer (natural gas/No. 4 fuel oil/No. 4 recycled fuel oil)				EMISSION SOURCE ID NUMBER: ES-1	
PRIMARY CONTROL DEVICE: Baghouse				CONTROL ID #: CD-1	
SECONDARY CONTROL DEVICE: NA				CONTROL ID #: NA	
ATTACH DOCUMENTATION EXPLAINING ALL CAPTURE AND CONTROL EFFICIENCIES, ATTACH ALL CALCULATIONS ^a					
TOXIC AIR POLLUTANT (TAP)	PERMITTED MAXIMUM EMISSIONS			EMISSION POINT ID	EMISSION FACTOR TYPE
	CAS #	LB/YEAR	LB/HOUR		
Formaldehyde	50-00-0	8848	1.01	EP-1	3
Prior to modification/netting event		Not applicable; this is a new facility and no netting analysis is included.			
Nickel	7440-02-0	180	0.0205	EP-1	3
Prior to modification/netting event		Not applicable; this is a new facility and no netting analysis is included.			
Arsenic, unlisted compounds	ASC-Other	1.59	0.000182	EP-1	3
Prior to modification/netting event		Not applicable; this is a new facility and no netting analysis is included.			
Benzene	71-43-2	1113	0.127	EP-1	3
Prior to modification/netting event		Not applicable; this is a new facility and no netting analysis is included.			
Prior to modification/netting event					
Prior to modification/netting event					
Prior to modification/netting event					
Prior to modification/netting event					
READ INSTRUCTIONS PRIOR TO COMPLETING MODELING PARAMETERS SECTION					
MODELING PARAMETERS					
EMISSION POINT ID	EXHAUST TEMPERATURE (deg F)	EMISSION POINT DIAMETER (FT)	EMISSION POINT HEIGHT (FT)	EXIT VELOCITY (FT/SEC)	Stack Direction
EP-1	300	4.375	22.12	69.8	RC <u>V</u> H
					RC V H
					RC V H
					RC V H
					RC V H

IF YOU ENTERED PERMITTED MAXIMUM EMISSIONS LESS THAN THE DESIGN CAPACITY, INDICATE THE PERMIT LIMITS YOU ARE REQUESTING AND THE MANNER THAT YOU WILL BE RECORDING, VERIFYING, AND/OR REPORTING THE CONDITIONS:

^a See ATTACHMENT 1: Emission Calculations. Numbers reported correspond to the plant maximum production capacity of 325 tons/hour.

D2-1

SECTION D TOXIC POLLUTANT EMISSION EMISSION SOURCE SUMMARY

REVISED: 10/24/2000

FORSYTH COUNTY-APPLICATION FOR AIR PERMIT TO CONSTRUCT AND OPERATE

EMISSION SOURCE DESCRIPTION: Silo Filling

EMISSION SOURCE ID NUMBER: ES-3

PRIMARY CONTROL DEVICE: NA

CONTROL ID #: NA

SECONDARY CONTROL DEVICE: NA

CONTROL ID #: NA

ATTACH DOCUMENTATION EXPLAINING ALL CAPTURE AND CONTROL EFFICIENCIES, ATTACH ALL CALCULATIONS ^a

TOXIC AIR POLLUTANT (TAP)	PERMITTED MAXIMUM EMISSIONS			EMISSION POINT ID	EMISSION FACTOR TYPE
	CAS #	LB/YEAR	LB/HOUR		
Formaldehyde	50-00-0	23.9	0.00273	EP-3	3
Prior to modification/netting event		Not applicable; this is a new facility and no netting analysis is included.			
Benzene	71-43-2	11.1	0.00127	EP-3	3
Prior to modification/netting event		Not applicable; this is a new facility and no netting analysis is included.			
Prior to modification/netting event					
Prior to modification/netting event					
Prior to modification/netting event					
Prior to modification/netting event					
Prior to modification/netting event					
Prior to modification/netting event					
Prior to modification/netting event					
Prior to modification/netting event					
Prior to modification/netting event					
Prior to modification/netting event					

READ INSTRUCTIONS PRIOR TO COMPLETING MODELING PARAMETERS SECTION

MODELING PARAMETERS					
EMISSION POINT ID	EXHAUST TEMPERATURE (deg F)	EMISSION POINT DIAMETER (FT)	EMISSION POINT HEIGHT (FT)	EXIT VELOCITY (FT/SEC)	Stack Direction
EP-3 ^b	Fugitive	Fugitive	67.83	Fugitive	Fugitive
					RC V H
					RC V H
					RC V H
					RC V H

IF YOU ENTERED PERMITTED MAXIMUM EMISSIONS LESS THAN THE DESIGN CAPACITY, INDICATE THE PERMIT LIMITS YOU ARE REQUESTING AND THE MANNER THAT YOU WILL BE RECORDING, VERIFYING, AND/OR REPORTING THE CONDITIONS:

^a See ATTACHMENT 1: Emission Calculations. TAPs listed above are those that require air dispersion modeling. Numbers reported correspond to the plant maximum production capacity of 325 tons/hour.

See ATTACHMENT 2: Air Dispersion Modeling Information for additional emission point input data.

D2-1

SECTION D TOXIC POLLUTANT EMISSION EMISSION SOURCE SUMMARY

REVISED: 10/24/2000

FORSYTH COUNTY-APPLICATION FOR AIR PERMIT TO CONSTRUCT AND OPERATE

EMISSION SOURCE DESCRIPTION: Silo Loadout

EMISSION SOURCE ID NUMBER: ES-3A

PRIMARY CONTROL DEVICE: NA

CONTROL ID #: NA

SECONDARY CONTROL DEVICE: NA

CONTROL ID #: NA

ATTACH DOCUMENTATION EXPLAINING ALL CAPTURE AND CONTROL EFFICIENCIES, ATTACH ALL CALCULATIONS ^a

TOXIC AIR POLLUTANT (TAP)	PERMITTED MAXIMUM EMISSIONS			EMISSION POINT ID	EMISSION FACTOR TYPE
	CAS #	LB/YEAR	LB/HOUR		
Formaldehyde	50-00-0	9.5	0.00109	EP-3A	3
Prior to modification/netting event		Not applicable; this is a new facility and no netting analysis is included.			
Benzene	71-43-2	6.2	0.000703	EP-3A	3
Prior to modification/netting event		Not applicable; this is a new facility and no netting analysis is included.			
Prior to modification/netting event					
Prior to modification/netting event					
Prior to modification/netting event					
Prior to modification/netting event					
Prior to modification/netting event					
Prior to modification/netting event					
Prior to modification/netting event					
Prior to modification/netting event					
Prior to modification/netting event					
Prior to modification/netting event					

READ INSTRUCTIONS PRIOR TO COMPLETING MODELING PARAMETERS SECTION

MODELING PARAMETERS					
EMISSION POINT ID	EXHAUST TEMPERATURE (deg F)	EMISSION POINT DIAMETER (FT)	EMISSION POINT HEIGHT (FT)	EXIT VELOCITY (FT/SEC)	Stack Direction
EP-3A ^b	Fugitive	Fugitive	14	Fugitive	Fugitive
					RC V H
					RC V H
					RC V H
					RC V H

IF YOU ENTERED PERMITTED MAXIMUM EMISSIONS LESS THAN THE DESIGN CAPACITY, INDICATE THE PERMIT LIMITS YOU ARE REQUESTING AND THE MANNER THAT YOU WILL BE RECORDING, VERIFYING, AND/OR REPORTING THE CONDITIONS:

^a See **ATTACHMENT 1**: Emission Calculations. TAPs listed above are those that require air dispersion modeling. Numbers reported correspond to the plant maximum production capacity of 325 tons/hour.

See **ATTACHMENT 2**: Air Dispersion Modeling Information for additional emission point input data.

SECTION D

TOXIC AIR POLLUTANT NETTING WORKSHEET & FACILITY-WIDE EMISSIONS SUMMARY

D2-2

REVISED: 10/24/2000

FORSYTH COUNTY-APPLICATION FOR AIR PERMIT TO CONSTRUCT AND OPERATE

TOXIC AIR POLLUTANT:		CAS #.		
EMISSION SOURCE ID #S:				
SECTION A - EMISSION OFFSETTING ANALYSIS FOR MODIFIED/NEW SOURCES				
Summarize in this section using the D2-1 forms.	TAP EMISSIONS			
	LB/YEAR	LB/DAY	LB/HOUR	LB/15-MINUTE
MODIFICATION INCREASE	SECTION A is not applicable; this is a new facility and no netting analysis is included.			
- MINUS -	- MINUS -	- MINUS -	- MINUS -	- MINUS -
MODIFICATION DECREASE	SECTION A is not applicable; this is a new facility and no netting analysis is included.			
- EQUALS -	- EQUALS -	- EQUALS -	- EQUALS -	- EQUALS -
NET CHANGE FROM MODIFICATION	SECTION A is not applicable; this is a new facility and no netting analysis is included.			
SECTION B - FACILITY-WIDE EMISSION NETTING ANALYSIS				
CREDITABLE INCREASES	SECTION B is not applicable; this is a new facility and no netting analysis is included.			
- MINUS -	- MINUS -	- MINUS -	- MINUS -	- MINUS -
CREDITABLE DECREASE	SECTION B is not applicable; this is a new facility and no netting analysis is included.			
- EQUALS -	- EQUALS -	- EQUALS -	- EQUALS -	- EQUALS -
NET CREDITABLE CHANGE	SECTION B is not applicable; this is a new facility and no netting analysis is included.			
SECTION C - FACILITY-WIDE EMISSIONS				
TOTAL FACILITY EMISSIONS	See ATTACHMENT A.1 (oil) p.2; and ATTACHMENT A.2 (natural gas), pp. 2 and 4			
Rule 3Q .0711 LEVEL				
IS AN AIR DISPERSION MODELING ANALYSIS REQUIRED? ☒ YES ☐ NO				
COMMENTS: Air dispersion modeling for the following pollutants is required: arsenic, benzene, formaldehyde, and nickel.				

D3-1

REVISÉD: 10/24/2000

EMISSION SOURCE DESCRIPTION: Drum Mixer/Dryer (natural gas/No. 4 fuel oil/No. 4 recycled fuel oil)

☐ YES☐ NO

POLLUTANT	EMISSION FACTOR TYPE	EMISSION RATE IN LBS/HR		EMISSION RATE IN LBS/YR	
		POTENTIAL	ACTUAL	POTENTIAL	ACTUAL

See ATTACHMENT A.1 (oil) and ATTACHMENT A.2 (natural gas): Dryer Emissions, Criteria Pollutants, p.2 and Toxic Air Pollutant (TAP) emission rate calculations page (dryer), p.5.

[illegible]

COMMENTS:

D3-1

REVISÉD: 10/24/2000

EMISSION SOURCE DESCRIPTION: Silo Filling and Loadout

☐ YES☐ NO[illegible]

COMMENTS:

D3-1

REVISÉ: 10/24/2000

EMISSION SOURCE DESCRIPTION: RAP Crusher/Screeners

EMISSION SOURCE ID NO: ES-4

☐ YES☐ NO

ALTERNATIVE OPERATING SCENARIO (AOS) NO:

COMMENTS:

D3-2

REVISÉD: 10/24/2000

FORSTYH COUNTY - APPLICATION FOR AIR PERMIT TO CONSTRUCT/OPEARATE

EMISSION SOURCE DESCRIPTION: Drum Mixer/Dryer (natural gas/No. 4 fuel oil/No. 4 recycled fuel oil)

EMISSION SOURCE ID NO: ES-1

[illegible]

COMMENTS:

D3-2

REVISÉD: 10/24/2000

FORSTYH COUNTY - APPLICATION FOR AIR PERMIT TO CONSTRUCT/OPEARATE

EMISSION SOURCE DESCRIPTION: Asphalt cement heater

EMISSION SOURCE ID NO: ES-2

[illegible]

COMMENTS:

D3-2

REVISÉD: 10/24/2000

FORSTYH COUNTY - APPLICATION FOR AIR PERMIT TO CONSTRUCT/OPEARATE

EMISSION SOURCE DESCRIPTION: Silo Filling

EMISSION SOURCE ID NO: ES-3

[illegible]

COMMENTS:

D3-2

REVISÉD: 10/24/2000

FORSTYH COUNTY - APPLICATION FOR AIR PERMIT TO CONSTRUCT/OPEARATE

EMISSION SOURCE DESCRIPTION: Silo Loadout

EMISSION SOURCE ID NO: ES-3A

[illegible]

COMMENTS:

D3-2

REVISÉ: 10/24/2000

FORSTYH COUNTY - APPLICATION FOR AIR PERMIT TO CONSTRUCT/OPEARATE

EMISSION SOURCE DESCRIPTION: RAP Crusher/Screeners

EMISSION SOURCE ID NO: ES-3A

[illegible]

COMMENTS:

EMISSION SOURCE (REDUCTION AND RECYCLING ACTIVITIES)

FORSYTH COUNTY - APPLICATION FOR AIR PERMIT TO CONSTRUCT/OPERATE

CURRENT FACILITY PERMIT NUMBER (if applicable): This is an application for a new facility

FACILITY-WIDE OR SPECIFIC EMISSION SOURCE? Facility-wide

IF SPECIFIC EMISSION SOURCE, SOURCE I.D. NUMBER and DESCRIPTION:

COMMENTS:

Using manufacturers standard equipment

Date:

* Refer to list of "Source Reduction and Recycling Activity Codes" included in instructions.

D4

FORSYTH COUNTY - APPLICATION FOR AIR PERMIT TO CONSTRUCT/OPERATE

LIST ALL INFORMATION ASSOCIATED WITH EACH EMISSION POINT ^a

EMISSION POINT ID NO.	EMISSION POINT HEIGHT (FT)	EQUIV. DIAM (FT)	TEMP. (F)	VELOCITY (FT/SEC)	FLOW RATE (ACFM)	EMISSION POINT DIRECTION	RAIN CAP? (Y OR N)
EP-1	22.12	4.375	300	69.8	63,000	Vertical	No
EP-3	67.83	Fugitive	Fugitive	Fugitive	Fugitive	Fugitive	No
EP-3A	14	Fugitive	Fugitive	Fugitive	Fugitive	Fugitive	No

^a See ATTACHMENT 2: Air Dispersion Modeling Information for additional emission point input data.

[illegible]

COMMENTS:

D5

REVISÉ: 6/26/2012

FORSYTH COUNTY - APPLICATION FOR AIR PERMIT TO CONSTRUCT/OPERATE

[illegible]

D6

SECTION D

TECHNICAL ANALYSIS TO SUPPORT PERMIT APPLICATION

REVISED: 10/24/2000

FORSYTH COUNTY - APPLICATION FOR AIR PERMIT TO CONSTRUCT/OPERATE

PROVIDE DETAILED TECHNICAL CALCULATIONS TO SUPPORT ALL EMISSION, CONTROL, AND REGULATORY DEMONSTRATIONS MADE IN THIS APPLICATION. INCLUDE A COMPREHENSIVE PROCESS FLOW DIAGRAM AS NECESSARY TO SUPPORT AND CLARIFY CALCULATIONS AND ASSUMPTIONS. ADDRESS THE FOLLOWING SPECIFIC ISSUES ON SEPARATE PAGES:

- A. **SPECIFIC EMISSION SOURCE (EMISSION INFORMATION) (FORM D3-1)** - SHOW CALCULATIONS USED, INCLUDING EMISSION FACTORS, MATERIAL BALANCES, AND/OR OTHER METHODS FROM WHICH THE POLLUTANT EMISSION RATES IN THIS APPLICATION WERE DERIVED. INCLUDE CALCULATIONS OF POTENTIAL BEFORE AND, WHERE APPLICABLE, AFTER CONTROL. CLEARLY STATE ANY ASSUMPTIONS MADE AND PROVIDE ANY REFERENCES AS NEEDED TO SUPPORT MATERIAL BALANCE CALCULATIONS.
- B. **SPECIFIC EMISSION SOURCE (REGULATORY INFORMATION)(FORM D3-2)** - PROVIDE AN ANALYSIS OF ANY REGULATIONS APPLICABLE TO INDIVIDUAL SOURCES AND THE FACILITY AS A WHOLE. INCLUDE A DISCUSSION OUTLINING METHODS (e.g. FOR TESTING AND/OR MONITORING REQUIREMENTS) FOR COMPLYING WITH APPLICABLE REGULATIONS, PARTICULARLY THOSE REGULATIONS LIMITING EMISSIONS BASED ON PROCESS RATES OR OTHER OPERATIONAL PARAMETERS. PROVIDE JUSTIFICATION FOR AVOIDANCE OF ANY FEDERAL REGULATIONS (PREVENTION OF SIGNIFICANT DETERIORATION [PSD], NEW SOURCE PERFORMANCE STANDARDS [NSPS], NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS [NESHAPS], TITLE V), INCLUDING EXEMPTIONS FROM THE FEDERAL REGULATIONS WHICH WOULD OTHERWISE BE APPLICABLE TO THIS FACILITY. SUBMIT ANY ANALYSES REQUIRED TO DOCUMENT COMPLIANCE WITH ANY REGULATIONS. INCLUDE EMISSION RATES CALCULATED IN ITEM "A" ABOVE, DATES OF MANUFACTURE, CONTROL EQUIPMENT, ETC. TO SUPPORT THESE CONCLUSIONS.
- C. **CONTROL DEVICE ANALYSIS (SECTION C)** - PROVIDE A TECHNICAL EVALUATION WITH SUPPORTING REFERENCES FOR ANY CONTROL EFFICIENCIES LISTED ON SECTION C FORMS, OR USED TO REDUCE EMISSION RATES IN CALCULATIONS UNDER ITEM "A" ABOVE. INCLUDE PERTINENT OPERATING PARAMETERS (E.G. OPERATING CONDITIONS, MANUFACTURER RECOMMENDATIONS, AND PARAMETERS AS APPLIED FOR IN THIS APPLICATION) CRITICAL TO ENSURING PROPER PERFORMANCE OF THE CONTROL DEVICE(S). INCLUDE ANY LIMITATIONS OR MALFUNCTION POTENTIAL FOR THE PARTICULAR CONTROL DEVICES AS EMPLOYED AT THIS FACILITY. DETAIL PROCEDURES FOR ASSURING PROPER OPERATION OF THE CONTROL DEVICE INCLUDING MONITORING SYSTEMS AND MAINTENANCE TO BE PERFORMED.
- D. **PROCESS AND OPERATIONAL COMPLIANCE ANALYSIS** - SHOWING HOW COMPLIANCE WILL BE ACHIEVED WHEN USING PROCESS, OPERATIONAL, OR OTHER DATA TO DEMONSTRATE COMPLIANCE. REFER TO COMPLIANCE REQUIREMENTS IN THE REGULATORY ANALYSIS IN ITEM "B" WHERE APPROPRIATE. LIST ANY CONDITIONS OR PARAMETERS THAT CAN BE MONITORED AND REPORTED TO DEMONSTRATE COMPLIANCE WITH THE APPLICABLE REGULATIONS.

COMMENTS:

Emissions are calculated for operation using natural gas and fuel oil using the NCDEQ Asphalt Emissions Calculator workbook (see **ATTACHMENT A**). ES-1 (Dryer) emissions are controlled by CD-1 (a fabric filter baghouse), and are subject to 40 CFR Part 60, Subpart I - Standards of Performance for Hot Mix Asphalt Facilities, which requires a performance test to demonstrate compliance of the controlled emissions with the applicable Subpart I emission standards.

ATTACHMENT A

EMISSION CALCULATIONS



Science & Engineering Consultants

ATTACHMENT A.1
EMISSION CALCULATIONS
NO. 4 FUEL OIL/NO. 4 RECYCLED FUEL OIL



Science & Engineering Consultants

ASPHALT EMISSIONS CALCULATOR REVISION F 07/18/2012 INPUT SCREEN



NOTICE: This spreadsheet is for your use only and should be used with caution. DENR does not guarantee the accuracy of the information contained. This spreadsheet is subject to continual revision and updating. It is your responsibility to be aware of the most current information available. DENR is not responsible for errors or omissions that may be contained herein.

- Instructions: 1. Fill in all BLUE cells.
 2. Ensure all pull down boxes and BLUE cells reflect correct conditions.
 3. Read the README sheet.
 4. Use the mouse pointer to read the tips in the "red cornered" input cells.

(See Tools->Options->Comments if these are not displayed.)

Company Name: Maymead, Inc.
 Facility ID No.: Clemmons
 Permit No.:
 Facility City: Clemmons
 Facility County: Forsyth
 Spreadsheet Prepared by: Sean Mackey

Is this spreadsheet being used for emissions inventory? 2. NO

Plant type: Drum mix
 Fuel type: Waste, No.4 or No.6 fuel oil-fired
 Fuel Sulfur Content: 0.50 % (default value is 0.5 %)
 Controls: Fabric filter controls

Dryer heat input: 75 million Btu per hour
 Plant maximum production capacity: 325 tons per hour

Asphalt Properties
 Asphalt temperature: 325 degrees F (default value of 325 degrees F)
 Volatility loss (V): -0.5 % (default value of -0.5 %)

Silo Filling? YES

RAP crushing on site? YES
 Crushing Capacity? 120 tons per hour No. of crushers: 1
 Hours of operation: 8760 hours per year No. of screens: 1
 No. of conveyors: 1

Asphalt Cement Heater
 AC heater heat input: 1 million Btu per hour (No.2 or diesel fuel oil -fired assumed)
 Fuel Sulfur Content: 0.50 % (default value is 0.5 %)
 Hours of operation: 8760 hours per year (default is 8760 hours per year unless specified otherwise)

Calculated Annual Production Limit: 1,491,649 tons per year
 Requested Annual Production Limit: 300,000 tons per year (if none desired leave default value =8760*tph)
 Requested Daily Production Limit: 2,500 tons per day
 Are you SURE you want a restriction? If you do not want a daily restriction, make sure the cell has the value 24 hours/day *325 tons per hour = 7800 tons per day.

Is this plant NSPS Subpart I affected? YES
 Stack gas flow rate: 63,000 ACFM
 Stack gas temperature: 240 oF
 Stack % moisture: 33 %
 Allowable emission rate under NSPS Subpart I: 10.92 lb/hr
 Control efficiency required: 99.880 %
 Does Method 5 data already exist? NO
 Method 5 determined emission rate: 21.87 lb/hr
 Control efficiency based on test data: 99.560 %

Allowable emission rate under 2 D .0506: 60.00 lb/hr
 Does this plant emit less than this limit?: Yes (based on emission factors)
 Control efficiency required: 99.341 %

**Dryer Emissions
Criteria Pollutants**

Pollutant	Uncontrolled Emission Factor (lb/ton)	Controlled Emission Factor (lb/ton)	uncontrolled emission rate (lb/hr)	controlled emission rate (lb/hr)	Title V, Potential Emissions (tpy) (no controls, 8760 hours per year operation)	PSD, Potential Emissions (tpy) (with controls, 8760 hours per year operation)	Synthetic Minor, Potential Emissions (tpy) (with all operation restrictions)
Condensable PM (or PM ₁₀)	0.0654	0.0194	21.255	6.305			
Filterable PM	28	0.014	9100	4.55			
Filterable PM ₁₀	6.4	0.0039	2080	1.2675			
Total PM	28	0.033	9100	10.725	75.4	47.0	5.0
Total PM ₁₀	6.5	0.023	2112.5	7.475	38.5	32.7	3.5
SO ₂	0.0604	0.0604	19.63	19.63	85.96	85.96	9.06
CO	0.1300	0.130	42.25	42.25	185.1	185.1	19.5
NO _x	0.0550	0.055	17.875	17.875	78.3	78.3	8.3
VOC	0.0320	0.032	10.4	10.4	45.6	45.6	4.8
HAPs, TOTAL		0.010		3.25	14.2	14.2	1.5

Silo Filling plus Load Out Emissions, Criteria Pollutants

Pollutant	Emission Factor, combined (lb/ton)	emission rate (lb/hr)	Title V, Potential Emissions (tpy) (no controls, 8760 hours per year operation)	PSD, Potential Emissions (tpy) (8760 hours per year operation)	Synthetic Minor, Potential Emissions (tpy) (with all operation restrictions)
Total PM	1.11E-03	3.60E-01	1.6	1.6	0.2
CO	2.53E-03	8.22E-01	3.6	3.6	0.4
VOC	1.61E-02	5.23E+00	22.9	22.9	2.4
HAPs, TOTAL	2.74E-04	8.90E-02	0.4	0.4	0.0

Rap Crusher Emissions

Pollutant	Emission Factor, all sources combined (lb/ton)	emission rate (lb/hr)	Title V, Potential Emissions (tpy) (no controls, 8760 hours per year operation)	PSD, Potential Emissions (tpy) (8760 hours per year operation)	Synthetic Minor, Potential Emissions (tpy) (with all operation restrictions)
Total PM	0.0334	4.01E+00	17.6	17.6	1.8
Total PM ₁₀	0.0122	1.46E+00	6.4	6.4	0.7

Asphalt Cement Heater Emissions

Pollutant	Uncontrolled Emission Factor (lb/MMBtu)	emission rate (lb/hr)	Title V, Potential Emissions (tpy) (no controls, 8760 hours per year operation)	PSD, Potential Emissions (tpy) (8760 hours per year operation)	Synthetic Minor, Potential Emissions (tpy) (with all operation restrictions)
Total PM	0.0235714	2.36E-02	0.1	0.1	0.1
Total PM ₁₀	0.0235714	2.36E-02	0.1	0.1	0.1
SO ₂	0.5071429	5.07E-01	2.2	2.2	2.2
CO	0.0357143	3.57E-02	0.2	0.2	0.2
NO _x	0.1428571	1.43E-01	0.6	0.6	0.6
VOC	0.0024286	2.43E-03	0.0	0.0	0.0

Facility-wide Criteria Pollutant Emissions Summary

Pollutant	Controlled Emission Rate, lb/hr	Title V, Potential Emissions (tpy) (no controls, 8760 hours per year operation)	PSD, Potential Emissions (tpy) (8760 hours per year operation)	Synthetic Minor, Potential Emissions (tpy) (with all operation restrictions)
Total PM	1.48E+01	94.7	66.2	7.1
Total PM ₁₀	8.96E+00	46.6	40.8	4.4
SO ₂	2.01E+01	88.2	88.2	11.3
CO	4.31E+01	188.8	188.8	20.0
NO _x	1.80E+01	78.9	78.9	8.9
VOC	1.56E+01	68.5	68.5	7.2
HAPs, TOTAL	3.34E+00	14.6	14.6	1.5

Facility-wide Toxic Air Pollutants Summary

TAP	CAS No.	Action	TAP	CAS No.	Action
Acetaldehyde (TH)	75070	NOTE 1	Mercury, vapor (TH)	7439976	NOTE 2
Acrolein (TH)	107028	NOTE 1	Methyl ethyl ketone (TH)	78933	NOTE 1
Arsenic unlisted cmpds (comp. of ASC) (TH)	ASC-other	NOTE 3	Methylene chloride (TH)	75092	NOTE 1
Benzene (TH)	71432	NOTE 3	Nickel metal (TH)	7440020	NOTE 3
Benzo(a)pyrene (T)	50328	NOTE 1	Perchloroethylene (tetrachloroethylene) (TH)	127184	NOTE 1
Beryllium metal (unreacted) (TH)	7440417	NOTE 1	Phenol (TH)	108952	NOTE 1
Cadmium metal (elemental unreacted) (TH)	7440439	NOTE 2	Soluble Chromate Compounds as Chrome VI (TH)	7738945	NOTE 1
Carbon disulfide (TH)	75150	NOTE 1	Styrene (TH)	100425	NOTE 1
Formaldehyde (TH)	50000	NOTE 3	Tetrachlorodibenzo-p-dioxin, 2,3,7,8- (TH)	1746016	NOTE 1
Hexachlorodibenzo-p-dioxin 1,2,3,6,7,8 (T)	57653857	NOTE 1	Toluene (TH)	108883	NOTE 1
Hexane, n- (TH)	110543	NOTE 1	Trichloroethylene (TH)	79016	NOTE 1
Hydrogen Sulfide (T)	7783064	NOTE 1	Trichlorofluoromethane (CFC 111) (T)	75694	NOTE 1
Manganese unlisted compounds (T)	MNC-other	NOTE 1	Xylene (TH)	1330207	NOTE 1
Methyl chloroform (TH)	71556	NOTE 1			

NOTE 1: Include TAP in TPER stipulation.

NOTE 2: Include TAP in TPER stipulation with operation restrictions.

NOTE 3: Modeling Required. See "Toxic calculations" worksheet.

**ASPHALT EMISSIONS CALCULATOR REVISION F 07/18/2012 - OUTPUT SCREEN**

Instructions: Enter emission source / facility data on the "INPUT" tab/screen. The air emission results and summary of input data are viewed / printed on the "OUTPUT" tab/screen. The different tabs are on the bottom of this screen.

This spreadsheet is for your use only and should be used with caution. DENR does not guarantee the accuracy of the information contained. This spreadsheet is subject to continual revision and updating. It is your responsibility to be aware of the most current information available. DENR is not responsible for errors or omissions that may be contained herein.

SOURCE / FACILITY / USER INPUT SUMMARY (FROM INPUT SCREEN)

COMPANY:	Maymead, Inc.	FACILITY ID NO.:	Clemmons
EMISSION SOURCE DESCRIPTION:	NSPS affected 325 tph Waste, No.4 or No.6 fuel oil-fired, Drum mix asphalt plant (75 mmBtu/hr heat input, w/silofill, with RAP, sulfur=0.5%)	PERMIT NUMBER:	0
		FACILITY CITY:	Clemmons
		FACILITY COUNTY:	Forsyth
Annual Production Limit:	300,000 ton/year	Daily Production Limit:	2,500 ton/day
SPREADSHEET PREPARED BY:	Sean Mackey		

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION

AIR POLLUTANT EMITTED	ACTUAL EMISSIONS (AFTER CONTROLS / LIMITS)		POTENTIAL EMISSIONS			
	lb/hr	tons/yr	(BEFORE CONTROLS / LIMITS)		(AFTER CONTROLS / LIMITS)	
PARTICULATE MATTER (PM)	14.76	7.07		94.66		7.07
PARTICULATE MATTER<10 MICRONS (PM ₁₀)	8.96	4.40		46.64		4.40
PARTICULATE MATTER<2.5 MICRONS (PM _{2.5})						
SULFUR DIOXIDE (SO ₂)	20.13	11.28		88.18		11.28
NITROGEN OXIDES (NO _x)	18.02	8.88		78.92		8.88
CARBON MONOXIDE (CO)	43.11	20.04		188.81		20.04
VOLATILE ORGANIC COMPOUNDS (VOC)	15.63	7.23		68.48		7.23
TOTAL HAP	3.34	1.54		14.63		1.54
LARGEST HAP (formaldehyde)	1.04	0.48		4.54		0.48

Attach INPUT worksheet

TOXIC / HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION

TOXIC / HAZARDOUS AIR POLLUTANT	CAS Number	ACTUAL EMISSIONS		POTENTIAL EMISSIONS				EMISSION FACTOR (lb/ton asphalt produced, with Fabric filter controls)
		(AFTER CONTROLS / LIMITS)		(BEFORE CONTROLS / LIMITS)		(AFTER CONTROLS / LIMITS)		
		lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr	
Acetaldehyde (TH)	75070	4.23E-01	3.90E+02	4.23E-01	3701.10	4.23E-01	3.90E+02	1.3E-03
Acrolein (TH)	107028	8.45E-03	7.80E+00	8.45E-03	74.02	8.45E-03	7.80E+00	2.6E-05
Antimony unlisted compounds (H)	SBC-other	5.85E-05	5.40E-02	5.85E-05	0.51	5.85E-05	5.40E-02	1.8E-07
Arsenic unlisted cmpds (comp. of ASC) (TH)	ASC-other	1.82E-04	1.68E-01	1.82E-04	1.59	1.82E-04	1.68E-01	5.6E-07
Benzene (TH)	71432	1.29E-01	1.19E+02	1.29E-01	1127.59	1.29E-01	1.19E+02	4.0E-04
Benzo(a)pyrene (T)	50328	5.73E-06	5.29E-03	5.73E-06	0.05	5.73E-06	5.29E-03	1.8E-08
Beryllium metal (unreacted) (TH)	7440417	0.00E+00	0.00E+00	0.00E+00	0.00	0.00E+00	0.00E+00	0.0E+00
Cadmium metal (elemental unreacted) (TH)	7440439	1.33E-04	1.23E-01	1.33E-04	1.17	1.33E-04	1.23E-01	4.1E-07
Carbon disulfide (TH)	75150	8.09E-04	7.47E-01	8.09E-04	7.09	8.09E-04	7.47E-01	2.5E-06
Chromium unlisted cmpds (add w/chrom acid to get CRC) (H)	CRC-other	1.64E-03	1.52E+00	1.64E-03	14.38	1.64E-03	1.52E+00	5.1E-06
Chromic acid (VI) (component of solCR6 and CRC) (TH)	7738945	1.46E-04	1.35E-01	1.46E-04	1.28	1.46E-04	1.35E-01	4.5E-07
Cobalt unlisted compounds (H)	COC-other	8.45E-06	7.80E-03	8.45E-06	0.07	8.45E-06	7.80E-03	2.6E-08
Cumene (H)	98828	1.49E-03	1.37E+00	1.49E-03	13.02	1.49E-03	1.37E+00	4.6E-06
Ethyl benzene (H)	100414	8.33E-02	7.69E+01	8.33E-02	729.62	8.33E-02	7.69E+01	2.6E-04
Ethyl chloride (chloroethane) (H)	75003	2.84E-06	2.62E-03	2.84E-06	0.02	2.84E-06	2.62E-03	8.7E-09
Formaldehyde (TH)	50000	1.04E+00	9.56E+02	1.04E+00	9075.52	1.04E+00	9.56E+02	3.2E-03
Hexachlorodibenzo-p-dioxin 1,2,3,6,7,8 (T)	57653857	4.23E-10	3.90E-07	4.23E-10	0.00	4.23E-10	3.90E-07	1.3E-12
Hexane, n- (TH)	110543	3.11E-01	2.87E+02	3.11E-01	2724.15	3.11E-01	2.87E+02	9.6E-04
Hydrogen Chloride (hydrochloric acid) (TH)	7647010	6.83E-02	6.30E+01	6.83E-02	597.87	6.83E-02	6.30E+01	2.1E-04
Hydrogen Sulfide (T)	7783064	1.78E-02	1.64E+01	1.78E-02	155.79	1.78E-02	1.64E+01	5.5E-05
Lead unlisted compounds (H)	PBC-other	4.88E-03	4.50E+00	4.88E-03	42.71	4.88E-03	4.50E+00	1.5E-05
Manganese unlisted compounds (T)	MNC-other	2.50E-03	2.31E+00	2.50E-03	21.92	2.50E-03	2.31E+00	7.7E-06
Mercury, vapor (TH)	7439976	8.45E-04	7.80E-01	8.45E-04	7.40	8.45E-04	7.80E-01	2.6E-06
Methyl bromide (H)	74839	3.24E-04	2.99E-01	3.24E-04	2.84	3.24E-04	2.99E-01	1.0E-06
Methyl chloride (H)	74873	2.03E-04	1.87E-01	2.03E-04	1.78	2.03E-04	1.87E-01	6.2E-07
Methyl chloroform (TH)	71556	1.56E-02	1.44E+01	1.56E-02	136.66	1.56E-02	1.44E+01	4.8E-05
Methyl ethyl ketone (TH)	78933	8.71E-03	8.04E+00	8.71E-03	76.27	8.71E-03	8.04E+00	2.7E-05
Methylene chloride (TH)	75092	1.07E-05	9.87E-03	1.07E-05	0.09	1.07E-05	9.87E-03	3.3E-08
Napthalene (H)	91203	2.14E-01	1.98E+02	2.14E-01	1875.84	2.14E-01	1.98E+02	6.6E-04
Nickel metal (TH)	7440020	2.05E-02	1.89E+01	2.05E-02	179.36	2.05E-02	1.89E+01	6.3E-05
Perchloroethylene (tetrachloroethylene) (TH)	127184	1.04E-04	9.61E-02	1.04E-04	0.91	1.04E-04	9.61E-02	3.2E-07
Phenol (TH)	108952	1.31E-03	1.21E+00	1.31E-03	11.45	1.31E-03	1.21E+00	4.0E-06
Phosphorus Metal, Yellow or White (H)	7723140	9.10E-03	8.40E+00	9.10E-03	79.72	9.10E-03	8.40E+00	2.8E-05
Polycyclic Organic Matter (H)	POM	2.86E-01	2.64E+02	2.86E-01	2505.36	2.86E-01	2.64E+02	8.8E-04
Propionaldehyde (H)	123386	4.23E-02	3.90E+01	4.23E-02	370.11	4.23E-02	3.90E+01	1.3E-04
Quinone (H)	106514	5.20E-02	4.80E+01	5.20E-02	455.52	5.20E-02	4.80E+01	1.6E-04
Selenium compounds (H)	SEC	1.14E-04	1.05E-01	1.14E-04	1.00	1.14E-04	1.05E-01	3.5E-07
Styrene (TH)	100425	3.13E-04	2.89E-01	3.13E-04	2.74	3.13E-04	2.89E-01	9.6E-07
Tetrachlorodibenzo-p-dioxin, 2,3,7,8- (TH)	1746016	6.83E-11	6.30E-08	6.83E-11	0.00	6.83E-11	6.30E-08	2.1E-13

Toluene (TH)	108883	9.48E-01	8.75E+02	9.48E-01	8302.68	9.48E-01	8.75E+02	2.9E-03
Trichloroethylene (TH)	79016	0.00E+00	0.00E+00	0.00E+00	0.00	0.00E+00	0.00E+00	0.0E+00
Trichlorofluoromethane (CFC 111) (T)	75694	1.76E-05	1.62E-02	1.76E-05	0.15	1.76E-05	1.62E-02	5.4E-08
Trimethylpentane, 2,2,4- (H)	540841	1.30E-02	1.20E+01	1.30E-02	114.20	1.30E-02	1.20E+01	4.0E-05
Xylene (TH)	1330207	7.85E-02	7.24E+01	7.85E-02	687.34	7.85E-02	7.24E+01	2.4E-04
Xylene, o- (H)	95476	3.34E-03	3.08E+00	3.34E-03	29.25	3.34E-03	3.08E+00	1.0E-05

TOXIC AIR POLLUTANT EMISSIONS INFORMATION (FOR PERMITTING PURPOSES)

Expected actual emissions after controls and limitations consisting of an annual production limit of 300000 tons and a daily production limit of 2500 tons.							EMISSION FACTOR (lb/ton asphalt produced, with Fabric filter controls)
TOXIC AIR POLLUTANT	CAS Num.	lb/hr	lb/day	lb/yr	Modeling Required?		
Acetaldehyde (TH)	75070	4.23E-01	3.25E+00	3.90E+02	NO. Based on facility-wide potential.		1.30E-03
Acrolein (TH)	107028	8.45E-03	6.50E-02	7.80E+00	NO. Based on facility-wide potential.		2.60E-05
Arsenic unlisted cmpds (comp. of ASC) (TH)	ASC-other	1.82E-04	1.40E-03	1.68E-01	YES. Modeling required		5.60E-07
Benzene (TH)	71432	1.29E-01	9.90E-01	1.19E+02	YES. Modeling required		3.96E-04
Benzo(a)pyrene (T)	50328	5.73E-06	4.41E-05	5.29E-03	NO. Based on facility-wide potential.		1.76E-08
Beryllium metal (unreacted) (TH)	7440417	0.00E+00	0.00E+00	0.00E+00	NO. Based on facility-wide potential.		0.00E+00
Cadmium metal (elemental unreacted) (TH)	7440439	1.33E-04	1.03E-03	1.23E-01	NO. Because of operating restriction		4.10E-07
Carbon disulfide (TH)	75150	8.09E-04	6.23E-03	7.47E-01	NO. Based on facility-wide potential.		2.49E-06
Soluble Chromate compounds as Chrome (VI) (TH)	SOLCR6	1.46E-04	1.13E-03	1.35E-01	NO. Based on facility-wide potential.		4.50E-07
Formaldehyde (TH)	50000	1.04E+00	7.97E+00	9.56E+02	YES. Modeling required		3.19E-03
Hexane, n- (TH)	110543	3.11E-01	2.39E+00	2.87E+02	NO. Based on facility-wide potential.		9.57E-04
Hexachlorodibenzo-p-dioxin 1,2,3,6,7,8 (T)	57653857	4.23E-10	3.25E-09	3.90E-07	NO. Based on facility-wide potential.		1.30E-12
Hydrogen Sulfide (T)	7783064	1.78E-02	1.37E-01	1.64E+01	NO. Based on facility-wide potential.		5.47E-05
Manganese unlisted compounds (T)	MNC-other	2.50E-03	1.93E-02	2.31E+00	NO. Based on facility-wide potential.		7.70E-06
Mercury, vapor (TH)	7439976	8.45E-04	6.50E-03	7.80E-01	NO. Because of operating restriction		2.60E-06
Methylene chloride (TH)	75092	1.07E-05	8.23E-05	9.87E-03	NO. Based on facility-wide potential.		3.29E-08
Methyl chloroform (TH)	71556	1.56E-02	1.20E-01	1.44E+01	NO. Based on facility-wide potential.		4.80E-05
Methyl ethyl ketone (TH)	78933	8.71E-03	6.70E-02	8.04E+00	NO. Based on facility-wide potential.		2.68E-05
Nickel metal (TH)	7440020	2.05E-02	1.58E-01	1.89E+01	YES. Modeling required		6.30E-05
Perchloroethylene (tetrachloroethylene) (TH)	127184	1.04E-04	8.01E-04	9.61E-02	NO. Based on facility-wide potential.		3.20E-07
Phenol (TH)	108952	1.31E-03	1.01E-02	1.21E+00	NO. Based on facility-wide potential.		4.02E-06
Styrene (TH)	100425	3.13E-04	2.40E-03	2.89E-01	NO. Based on facility-wide potential.		9.62E-07
Tetrachlorodibenzo-p-dioxin, 2,3,7,8- (TH)	1746016	6.83E-11	5.25E-10	6.30E-08	NO. Based on facility-wide potential.		2.10E-13
Toluene (TH)	108883	9.48E-01	7.29E+00	8.75E+02	NO. Based on facility-wide potential.		2.92E-03
Trichloroethylene (TH)	79016	0.00E+00	0.00E+00	0.00E+00	NO. Based on facility-wide potential.		0.00E+00
Trichlorofluoromethane (CFC 111) (T)	75694	1.76E-05	1.35E-04	1.62E-02	NO. Based on facility-wide potential.		5.41E-08
Xylene (TH)	1330207	7.85E-02	6.04E-01	7.24E+01	NO. Based on facility-wide potential.		2.41E-04

This sheet presents the emission rate calculations that are necessary for modeling determinations.

Methyl ethylolol (H)
Xylene, o- (H)

Asphalt cement heater

heat input 1 MMBtu/hr

sulfur content 0.50 %S

Assumptions:

Fired with distillate oil (No.2 or diesel)

Emission factors taken from AP-42 section 1.3 Fuel Oil Combustion

Heating value 140 MMBtu/ 1000 gallons

Pollutant	factors (lb/1000 gallon)		factors lb/MMBtu
SO2	142 S	where S = % sulfur	0.5071
NOx	20		0.1429
CO	5		0.0357
VOC (NMTOC)	0.34		0.0024
filterable PM	2		0.0143
condensable PM	1.3		0.0093
total PM	3.3		0.0236
total PM10	3.3		0.0236

Emission factors taken from AP-42, Table 11.19.2-2, 8/04, Crushed Stone Processing and Pulverized Mineral Processing

RAP crusher

maximum capacity 120 tph
 hours of operation 8760 hours

	emission factors (dry)		emissions		emissions	
	(lb/ton)	(lb/ton)	(lb/hr)	(lb/hr)	ton/yr	ton/yr
	TSP	PM-10	TSP	PM-10	TSP	PM-10
primary crusher	0.0054	0.0024	0.648	0.288	2.84	1.26
screening	0.025	0.0087	3	1.044	13.14	4.57
conveyor transfer point	0.003	0.0011	0.36	0.132	1.58	0.58
	total		4.01	1.46	17.56	6.41

combined EF 0.0334 0.0122

Emissions summary from Silo Filling and Loadout operations

Pollutant	CAS Nos	Emission Factors		Potential Emissions		Emission factors	
		(t/ton)	(t/ton)	(t/hr)	(t/hr)	(t/ton)	(t/ton)
		Silo Filling SOC-3-05- 002-13	Load out SOC-3-05- 002-14	Silo Filling SOC-3-05- 002-13	Load out SOC-3-05- 002-14	Silo Filling plus Load Out	
Total PM		3.66E-04	3.22E-04	1.90E-01	1.70E-01	1.11E-03	
CO		1.15E-03	1.32E-03	3.83E-01	4.39E-01	2.55E-03	
VOC		1.22E-02	3.91E-03	3.96E+00	1.27E+00	1.61E-02	
PAH HAPs TOTAL		2.85E-05	2.02E-05	3.41E-03	6.57E-03	4.92E-05	
Volatiles organic HAPs TOTAL		1.58E-04	6.24E-05	5.15E-02	2.83E-02	2.21E-04	
HAPs TOTAL		1.87E-04	8.86E-05	5.99E-02	2.92E-02	2.74E-04	
Benzene (t/yr)	50328	0.00E+00	7.84E-09	0.00E+00	2.55E-08	7.84E-09	
Naphthalene (t/yr)	91203	4.62E-08	4.26E-08	1.50E-03	1.39E-03	8.85E-08	
Phenol (t/yr)	108852	0.00E+00	4.02E-08	0.00E+00	1.31E-03	4.02E-08	
Benzene (t/yr)	71432	3.90E-08	2.16E-08	1.27E-03	7.02E-04	6.06E-08	
Methylbenzene (t/yr)	74339	5.97E-07	3.99E-07	1.94E-04	1.20E-04	9.95E-07	
Methyl ethylbenzene (t/yr)	78233	4.75E-08	2.04E-08	1.54E-03	6.62E-04	6.79E-08	
Carbon disulfide (t/yr)	75150	1.95E-08	5.41E-07	6.34E-04	1.76E-04	2.49E-08	
Curcane (t/yr)	98478	0.00E+00	4.57E-08	0.00E+00	1.49E-03	4.57E-08	
Ethylbenzene (t/yr)	100114	4.83E-08	1.16E-08	1.51E-03	3.78E-03	1.53E-08	
Ethyl chloride (chlorobenzene) (t/yr)	75003	0.00E+00	8.73E-08	0.00E+00	2.84E-08	8.73E-08	
Formaldehyde (t/yr)	50000	8.41E-08	3.85E-08	2.73E-02	1.19E-03	8.77E-08	
Heptane, n (t/yr)	118543	1.22E-05	6.24E-05	3.98E-03	2.03E-03	1.84E-05	
Methyl chloride (t/yr)	74873	0.00E+00	6.34E-07	0.00E+00	2.33E-04	6.34E-07	
Methylchlorobenzene (t/yr)	71358	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
Methylbenzene (t/yr)	75092	3.29E-08	0.00E+00	1.07E-08	0.00E+00	3.29E-08	
Perchloroethylene (tetrachloroethylene) (t/yr)	127184	0.00E+00	3.20E-07	0.00E+00	1.04E-04	3.20E-07	
Styrene (t/yr)	100128	6.58E-07	3.04E-07	2.14E-04	8.87E-05	9.62E-07	
Toluene (t/yr)	108883	7.58E-08	6.73E-08	2.48E-03	2.84E-03	1.03E-08	
Tetrachloroethylene (t/yr)	79016	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
Tetrachloroethylene (CFC 111) (t/yr)	75684	0.00E+00	5.41E-08	0.00E+00	1.76E-05	5.41E-08	
Trimeitylbenzene, 2,2,4- (t/yr)	340841	3.78E-08	7.49E-08	1.23E-06	2.43E-06	1.13E-07	
Xylene, m- (t/yr)	132207	2.44E-08	1.71E-08	7.92E-03	5.54E-03	4.14E-08	
Xylene, p- (t/yr)	85478	6.95E-08	3.33E-08	2.26E-03	1.06E-03	1.60E-08	
Hydrogen Sulfide (t/yr)	7782054	1.45E-08	1.45E-08	4.75E-04	4.75E-04	2.92E-08	

Plant maximum production capacity:	325	tons per hour
Requested Annual Production Limit:	300,000	tons per year
Requested Daily Production Limit:	2,500	tons per day

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-0.5 %
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785 of

Table 11-1-14

Predictive Emission Factor Equations for Load-out and silo
Filling Operations

source	pollutant	EF (t/ton)
Load out SOC-3-05- 002-14	Total PM	0.000521827
	Organic PM	0.000010327
	TOC	0.004156948
	CO	0.00134924
Silo Filling SOC-3-05- 002-13	Total PM	0.000565889
	Organic PM	0.000253389
	TOC	0.001172993

Table 11-1-15
Specification Profiles for Load-out, Silo Filling and Asphalt
Storage Emissions - Organic PM based Compounds

		Spec. profile for Load-out and yard emissions		Spec. profile for Silo filling and asphalt storage tank emissions	
		% Compound / Organic PM	% Compound / Organic PM	% Compound / Organic PM	% Compound / Organic PM
Benzene (t/yr)	50328	0.0023	0	0	0
Naphthalene (t/yr)	91203	1.25	1.82	11.4	11.4
PAH HAPs TOTAL		5.93	0	0	0
Phenol (t/yr)	108852	1.18	0	0	0

Table 11-1-16
Specification Profiles for Load-out, Silo Filling and Asphalt
Storage Emissions - Organic Volatile based Compounds

		Spec. profile for Load-out and yard emissions		Spec. profile for Silo filling and asphalt	
		% Compound / TOC	% Compound / TOC	% Compound / TOC	% Compound / TOC
VOC		94	100		
Benzene (t/yr)	71432	0.052	0.032		
Methylbenzene (t/yr)	74339	0.0036	0.0049		
Methyl ethylbenzene (t/yr)	78233	0.0149	0.0139		
Carbon disulfide (t/yr)	75150	0.013	0.016		
Curcane (t/yr)	98478	0.11	0		
Ethylbenzene (t/yr)	100114	0.28	0.338		
Ethyl chloride (chlorobenzene) (t/yr)	75003	0.00021	0		
Formaldehyde (t/yr)	50000	0.038	0.69		
Heptane, n (t/yr)	118543	0.15	0.1		
Methylchlorobenzene (t/yr)	74873	0.015	0		
Methylchlorobenzene (t/yr)	71358	0	0		
Perchloroethylene (tetrachloroethylene) (t/yr)	75012	0	0.00027		
Styrene (t/yr)	100128	0.0077	0		
Toluene (t/yr)	108883	0.0073	0.0054		
Toluene (t/yr)	108883	0.21	0.052		
Tetrachloroethylene (t/yr)	79016	0	0		
Tetrachloroethylene (CFC 111) (t/yr)	75684	0.0013	0		
Trimeitylbenzene, 2,2,4- (t/yr)	340841	0.0018	0.00031		
Xylene, m- (t/yr)	132207	0.41	0.2		
Xylene, p- (t/yr)	85478	0.08	0.057		
Volatiles organic HAPs, TOTAL		1.5	1.3		

loadout emission factors (t/ton)	Silo filling emission factors (t/ton)
7.64155E-09	0
4.26171E-08	4.6207E-08
2.03176E-05	2.8924E-05
4.02205E-08	0

loadout emission factors (t/ton)	Silo filling emission factors (t/ton)
0.00309411	0.01218555
2.16203E-06	3.61974E-06
3.59225E-07	5.97146E-07
2.63798E-06	4.75281E-06
5.40633E-07	1.94987E-06
4.87484E-08	0
1.18491E-05	4.63094E-05
6.73378E-09	0
3.65087E-06	8.4081E-05
6.23432E-06	1.21867E-05
6.23432E-07	0
0	0
0	3.25041E-08
3.20295E-07	0
3.03803E-07	6.16191E-07
6.73375E-05	7.55574E-05
0	0
5.40633E-08	0
7.40511E-06	3.77787E-06
1.70517E-05	2.43734E-05
3.32718E-05	6.84641E-05
6.23432E-05	0.000156427

Hydrogen Sulfide 7782054

loadout emission factors (t/ton)	Silo filling emission factors (t/ton)
0.00000146	0.00000146

*** These emissions factors were taken from the October 12, 2005 letter from Keith Overcash stating the emissions factors resulting from testing
at Mangum Asphalt Services, Knightdale, Wake County, and at S.T. Wooden Asphalt Services, Sanford, Lee County.

[illegible]

Table 11.1-1
PM Emission Factors for Batch Mix HMAPs

dryer, hot screens, mixer SCC 3-05-002-45, -46, -47	filterable PM	filterable PM10	inorganic condensable PM	organic condensable PM	TOTAL condensable PM	total PM	total PM10
uncontrolled	32	4.5	0.013	0.0041	0.0171	32	4.5
fabric filter	0.025	0.0098	0.013	0.0041	0.0171	0.042	0.027
venturi or wet scrubber	0.12	0.12	0.013	0.0041	0.0171	0.14	0.14

Table 11.1-3
PM Emission Factors for Drum Mix HMAPs

dryer, hot screens, mixer SCC 3-05-002-05, -55 to -63	filterable PM	filterable PM10	inorganic condensable PM	organic condensable PM	TOTAL condensable PM	total PM	total PM10
uncontrolled	28	6.4	0.0074	0.058	0.0654	28	6.5
fabric filter	0.014	0.0039	0.0074	0.012	0.0194	0.033	0.023
venturi or wet scrubber	0.026	0.026	0.0074	0.012	0.0194	0.045	0.045

Table 11.1-5 and 6

Emission Factors for CO, CO2, NOx and SO2 from Batch Mix HMAPs

	CO	CO2	NOx	SO2	VOC
Natural gas fired dryer, hot screens and mixer SCC 3-05-002-45	0.4	37	0.025		0.0082
No.2 fuel oil-fired dryer, hot screens and mixer SCC 3-05-002-46	0.4	37	0.12		0.0082
Waste oil-fired dryer, hot screens and mixer SCC 3-05-002-47	0.4	37	0.12		0.036
Coal-fired dryer, hot screens and mixer SCC 3-05-002-98	ND	37	ND		
No.6 fuel oil-fired dryer, hot screens and mixer SCC 3-05-002-47					0.036

Table 11.1-7 and 8

Emission Factors for CO, CO2, NOx and SO2 from Drum Mix HMAPs

	CO	CO2	NOx	SO2	VOC	HCL
Natural gas fired dryer SCC 3-05-002-55, -56, -57	0.13	33	0.026		0.032	ND
No.2 fuel oil-fired dryer SCC 3-05-002-58, -59, -60	0.13	33	0.055		0.032	ND
Waste oil-fired dryer SCC 3-05-002-61, -62, -63	0.13	33	0.055		0.032	0.00021
Coal-fired dryer, SCC 3-05-002-98	ND	33	ND			

2 plant types
1 1. Batch mix
2 2. Drum mix

3 fuel type
1 1. Natural gas-fired
2 2. No.2 fuel oil-fired
3 3. Waste or No.6 fuel oil-fired

2 controls
1 1. uncontrolled
2 2. Fabric filter controls
3 3. Venturi or wet scrubber controls

from Chapter 1.3, AP-42, Fuel Oil Combustion, revised 09/98, Table 1.3.1

over 100 mmBtu/hr under 100 mmBtu/hr

No.6, No.5 157 157
No.2 157 142

Plant maximum production capacity: 325 tons per hour
Dryer heat input: 75 million Btu per hour
Fuel Sulfur Content: 0.5 %

natural gas HV 1020 mmBtu/million scf
emission/NG combustion EF 0.8 lb SO₂/million scf
0.000568 lb SO₂/mmBtu

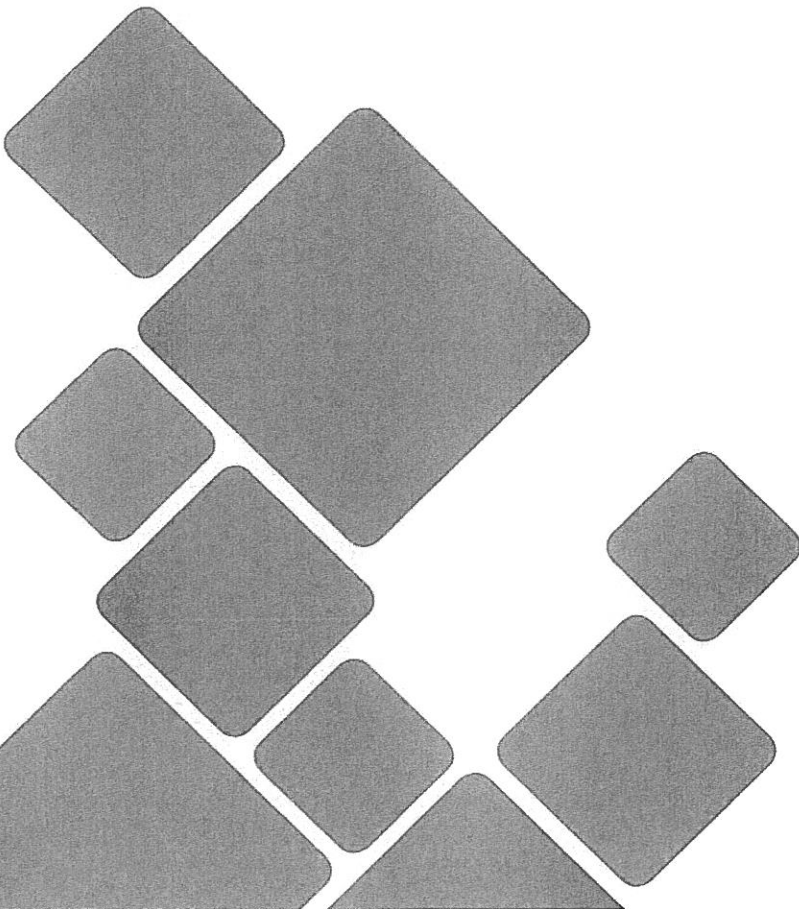
No. 2 HV 140 mmBtu/1000 gallons
No. 6 HV 150 mmBtu/1000 gallons

3 fuel type EF (lb/ton)
1 1. Natural gas-fired 0.0001
2 2. No.2 fuel oil-fired 0.0647
3 3. Waste or No.6 fuel oil-fired 0.0604

Note: 50% of the fuel bound sulfur up to a maximum (as SO₂) of 0.1 lb/ton of product is expected to be retained in product.
0.1 lb SO₂ retained / ton of product

plant types	SO ₂ emission factor (lb/1000 gallons) / %S	SO ₂ emission factor (lb/mmBtu)	SO ₂ emission rate (lb/hr)	SO ₂ emission rate (lb/ton asphalt produced)	50% of fuel bound sulfur (as SO ₂ , lb/ton)	less than 0.1 lb/ton	Corrected SO ₂ emission rate (lb/ton asphalt produced)
1. Batch mix, natural gas-fired, no controls		0.000588235	0.044	0.0001	0.0001	6.78733E-05	0.0001
2. Batch mix, natural gas-fired, fabric filter controls		0.000588235	0.044	0.0001	0.0001	6.78733E-05	0.0001
3. Batch mix, natural gas-fired, venturi or wet scrubber controls		0.000588235	0.044	0.0001	0.0001	6.78733E-05	0.0001
4. Batch mix, No.2 fuel oil-fired, no controls	157	0.560714286	42.054	0.1294	0.0647	0.064697802	0.0647
5. Batch mix, No.2 fuel oil-fired, fabric filter controls	157	0.560714286	42.054	0.1294	0.0647	0.064697802	0.0647
6. Batch mix, No.2 fuel oil-fired, venturi or wet scrubber controls	157	0.560714286	42.054	0.1294	0.0647	0.064697802	0.0647
7. Batch mix, waste or No.6 fuel oil-fired, no controls	157	0.523333333	39.250	0.1208	0.0604	0.060384615	0.0604
8. Batch mix, waste or No.6 fuel oil-fired, fabric filter controls	157	0.523333333	39.250	0.1208	0.0604	0.060384615	0.0604
9. Batch mix, waste or No.6 fuel oil-fired, venturi or wet scrubber controls	157	0.523333333	39.250	0.1208	0.0604	0.060384615	0.0604
10. Drum mix, natural gas-fired, no controls		0.000588235	0.044	0.0001	0.0001	6.78733E-05	0.0001
11. Drum mix, natural gas-fired, fabric filter controls		0.000588235	0.044	0.0001	0.0001	6.78733E-05	0.0001
12. Drum mix, natural gas-fired, venturi or wet scrubber controls		0.000588235	0.044	0.0001	0.0001	6.78733E-05	0.0001
13. Drum mix, No.2 fuel oil-fired, no controls	157	0.560714286	42.054	0.1294	0.0647	0.064697802	0.0647
14. Drum mix, No.2 fuel oil-fired, fabric filter controls	157	0.560714286	42.054	0.1294	0.0647	0.064697802	0.0647
15. Drum mix, No.2 fuel oil-fired, venturi or wet scrubber controls	157	0.560714286	42.054	0.1294	0.0647	0.064697802	0.0647
16. Drum mix, waste or No.6 fuel oil-fired, no controls	157	0.523333333	39.250	0.1208	0.0604	0.060384615	0.0604
17. Drum mix, waste or No.6 fuel oil-fired, fabric filter controls	157	0.523333333	39.250	0.1208	0.0604	0.060384615	0.0604
18. Drum mix, waste or No.6 fuel oil-fired, venturi or wet scrubber controls	157	0.523333333	39.250	0.1208	0.0604	0.060384615	0.0604

ATTACHMENT A.2
EMISSION CALCULATIONS
NATURAL GAS



Science & Engineering Consultants

ASPHALT EMISSIONS CALCULATOR REVISION F 07/18/2012 INPUT SCREEN



NOTICE: This spreadsheet is for your use only and should be used with caution. DENR does not guarantee the accuracy of the information contained. This spreadsheet is subject to continual revision and updating. It is your responsibility to be aware of the most current information available. DENR is not responsible for errors or omissions that may be contained herein.

- Instructions: 1. Fill in all BLUE cells.
 2. Ensure all pull down boxes and BLUE cells reflect correct conditions.
 3. Read the README sheet.
 4. Use the mouse pointer to read the tips in the "red cornered" input cells.

(See Tools->Options->Comments if these are not displayed.)

Company Name: Maymead, Inc.
 Facility ID No.: Clemmons
 Permit No.:
 Facility City: Clemmons
 Facility County: Forsythe
 Spreadsheet Prepared by: Sean Mackey

Is this spreadsheet being used for emissions inventory 2. NO

Plant type: Drum mix
 Fuel type: Natural gas-fired
 Fuel Sulfur Content: 0.50 %
 Controls: Fabric filter controls

Dryer heat input: 75 million Btu per hour
 Plant maximum production capacity: 325 tons per hour

Asphalt Properties
 Asphalt temperature: 325 degrees F (default value of 325 degrees F)
 Volatility loss (V): -0.5 % (default value of -0.5 %)

Silo Filling? YES

RAP crushing on site? YES
 Crushing Capacity? 120 tons per hour No. of crushers: 1
 Hours of operation: 1200 hours per year No. of screens: 1
 No. of conveyors: 1

Asphalt Cement Heater
 AC heater heat input: 1 million Btu per hour (No.2 or diesel fuel oil -fired assumed)
 Fuel Sulfur Content: 0.50 % (default value is 0.5 %)
 Hours of operation: 8760 hours per year (default is 8760 hours per year unless specified otherwise)

Calculated Annual Production Limit: 1,491,649 tons per year
 Requested Annual Production Limit: 300,000 tons per year (if none desired leave default value =8760*tp)
 Requested Daily Production Limit: 2,500 tons per day
 Are you SURE you want a restriction? If you do not want a daily restriction, make sure the cell has the value 24 hours/day *325 tons per hour = 7800 tons per day.

Is this plant NSPS Subpart I affected? YES
 Stack gas flow rate: 63,000 ACFM
 Stack gas temperature: 240 oF
 Slack % moisture: 33 %
 Allowable emission rate under NSPS Subpart I: 10.92 lb/hr
 Control efficiency required: 99.880 %
 Does Method 5 data already exist? NO
 Method 5 determined emission rate: 0.0 lb/hr
 Control efficiency based on test data: 99.560 %

Allowable emission rate under 2 D .0506: 60.00 lb/hr
 Does this plant emit less than this limit?: Yes (based on emission factors)
 Control efficiency required: 99.341 %

Dryer Emissions Criteria Pollutants

Pollutant	Uncontrolled Emission Factor (lb/ton)	Controlled Emission Factor (lb/ton)	uncontrolled emission rate (lb/hr)	controlled emission rate (lb/hr)	Title V, Potential Emissions (tpy) (no controls, 8760 hours per year operation)	PSD, Potential Emissions, (tpy) (with controls, 8760 hours per year operation)	Synthetic Minor, Potential Emissions (tpy) (with all operation restrictions)
Condensable PM (or PM ₁₀)	0.0654	0.0194	21.255	6.305			
Filterable PM	28	0.014	9100	4.55			
Filterable PM ₁₀	6.4	0.0039	2080	1.2675			
Total PM	28	0.033	9100	10.725	75.4	47.0	5.0
Total PM ₁₀	6.5	0.023	2112.5	7.475	38.5	32.7	3.5
SO ₂	0.0001	0.0001	0.02	0.02	0.10	0.10	0.01
CO	0.1300	0.130	42.25	42.25	185.1	185.1	19.5
NO _x	0.0260	0.026	8.45	8.45	37.0	37.0	3.9
VOC	0.0320	0.032	10.4	10.4	45.6	45.6	4.8
HAPs, TOTAL		0.005		1.7225	7.5	7.5	0.8

Silo Filling plus Load Out Emissions, Criteria Pollutants

Pollutant	Emission Factor, combined (lb/ton)	emission rate (lb/hr)	Title V, Potential Emissions (tpy) (no controls, 8760 hours per year operation)	PSD, Potential Emissions, (tpy) (8760 hours per year operation)	Synthetic Minor, Potential Emissions (tpy) (with all operation restrictions)
Total PM	1.11E-03	3.60E-01	1.6	1.6	0.2
CO	2.53E-03	8.22E-01	3.6	3.6	0.4
VOC	1.61E-02	5.23E+00	22.9	22.9	2.4
HAPs, TOTAL	2.74E-04	8.90E-02	0.4	0.4	0.0

Rap Crusher Emissions

Pollutant	Emission Factor, all sources combined (lb/ton)	emission rate (lb/hr)	Title V, Potential Emissions (tpy) (no controls, 8760 hours per year operation)	PSD, Potential Emissions, (tpy) (8760 hours per year operation)	Synthetic Minor, Potential Emissions (tpy) (with all operation restrictions)
Total PM	0.0334	4.01E+00	17.6	17.6	1.8
Total PM ₁₀	0.0122	1.46E+00	6.4	6.4	0.7

Asphalt Cement Heater Emissions

Pollutant	Uncontrolled Emission Factor (lb/MMBtu)	emission rate (lb/hr)	Title V, Potential Emissions (tpy) (no controls, 8760 hours per year operation)	PSD, Potential Emissions, (tpy) (8760 hours per year operation)	Synthetic Minor, Potential Emissions (tpy) (with all operation restrictions)
Total PM	0.0235714	2.36E-02	0.1	0.1	0.1
Total PM ₁₀	0.0235714	2.36E-02	0.1	0.1	0.1
SO ₂	0.5071429	5.07E-01	2.2	2.2	2.2
CO	0.0357143	3.57E-02	0.2	0.2	0.2
NO _x	0.1428571	1.43E-01	0.6	0.6	0.6
VOC	0.0024286	2.43E-03	0.0	0.0	0.0

Facility-wide Criteria Pollutant Emissions Summary

Pollutant	Controlled Emission Rate, lb/hr	Title V, Potential Emissions (tpy) (no controls, 8760 hours per year operation)	PSD, Potential Emissions, (tpy) (8760 hours per year operation)	Synthetic Minor, Potential Emissions (tpy) (with all operation restrictions)
Total PM	1.48E+01	94.7	66.2	7.1
Total PM ₁₀	8.96E+00	46.6	40.8	4.4
SO ₂	5.29E-01	2.3	2.3	2.2
CO	4.31E+01	188.8	188.8	20.0
NO _x	8.59E+00	37.6	37.6	4.5
VOC	1.56E+01	68.5	68.5	7.2
HAPs, TOTAL	1.81E+00	7.9	7.9	0.8

Facility-wide Toxic Air Pollutants Summary

TAP	CAS No.	Action	TAP	CAS No.	Action
Acetaldehyde (TH)	75070	NOTE 1	Mercury, vapor (TH)	7439976	NOTE 1
Acrolein (TH)	107028	NOTE 1	Methyl ethyl ketone (TH)	78933	NOTE 1
Arsenic unlisted cmpds (comp. of ASC) (TH)	ASC-other	NOTE 3	Methylene chloride (TH)	75092	NOTE 1
Benzene (TH)	71432	NOTE 3	Nickel metal (TH)	7440020	NOTE 3
Benzo(a)pyrene (T)	50328	NOTE 1	Perchloroethylene (tetrachloroethylene) (TH)	127184	NOTE 1
Beryllium metal (unreacted) (TH)	7440417	NOTE 1	Phenol (TH)	108952	NOTE 1
Cadmium metal (elemental unreacted) (TH)	7440439	NOTE 2	Soluble Chromate Compounds as Chrome VI (TH)	7738945	NOTE 1
Carbon disulfide (TH)	75150	NOTE 1	Styrene (TH)	100425	NOTE 1
Formaldehyde (TH)	50000	NOTE 3	Tetrachlorodibenzo-p-dioxin, 2,3,7,8- (TH)	1746016	NOTE 1
Hexachlorodibenzo-p-dioxin 1,2,3,6,7,8 (T)	57653857	NOTE 1	Toluene (TH)	108883	NOTE 1
Hexane, n- (TH)	110543	NOTE 1	Trichloroethylene (TH)	79016	NOTE 1
Hydrogen Sulfide (T)	7783064	NOTE 1	Trichlorofluoromethane (CFC 111) (T)	75694	NOTE 1
Manganese unlisted compounds (T)	MNC-other	NOTE 1	Xylene (TH)	1330207	NOTE 1
Methyl chloroform (TH)	71556	NOTE 1			

NOTE 1: Include TAP in TPER stipulation.

NOTE 2: Include TAP in TPER stipulation with operation restrictions.

NOTE 3: Modeling Required. See "Toxic calculations" worksheet.

ASPHALT EMISSIONS CALCULATOR REVISION F 07/18/2012 - OUTPUT SCREEN



Instructions: Enter emission source / facility data on the "INPUT" tab/screen. The air emission results and summary of input data are viewed / printed on the "OUTPUT" tab/screen. The different tabs are on the bottom of this screen.

This spreadsheet is for your use only and should be used with caution. DENR does not guarantee the accuracy of the information contained. This spreadsheet is subject to continual revision and updating. It is your responsibility to be aware of the most current information available. DENR is not responsible for errors or omissions that may be contained herein.

SOURCE / FACILITY / USER INPUT SUMMARY (FROM INPUT SCREEN)

COMPANY:	Maymead, Inc.	FACILITY ID NO.:	Clemmons
EMISSION SOURCE DESCRIPTION:	NSPS affected 325 tph Natural gas-fired, Drum mix asphalt plant (75 mmBtu/hr heat input, w/silofill, with RAP, sulfur=n/a%)	PERMIT NUMBER:	0
		FACILITY CITY:	Clemmons
		FACILITY COUNTY:	Forsythe
Annual Production Limit:	300,000 ton/year	Daily Production Limit:	2,500 ton/day
SPREADSHEET PREPARED BY:	Sean Mackey		

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION

AIR POLLUTANT EMITTED	ACTUAL EMISSIONS (AFTER CONTROLS / LIMITS)		POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS)		POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS)	
	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
PARTICULATE MATTER (PM)	14.76	7.07	94.66	7.07		
PARTICULATE MATTER<10 MICRONS (PM ₁₀)	8.96	4.40	46.64			4.40
PARTICULATE MATTER<2.5 MICRONS (PM _{2.5})						
SULFUR DIOXIDE (SO ₂)	0.53	2.23	2.32			2.23
NITROGEN OXIDES (NO _x)	8.59	4.53	37.64			4.53
CARBON MONOXIDE (CO)	43.11	20.04	188.81			20.04
VOLATILE ORGANIC COMPOUNDS (VOC)	15.63	7.23	68.48			7.23
TOTAL HAP	1.81	0.84	7.93			0.84
LARGEST HAP (formaldehyde)	1.04	0.48	4.54			0.48

Attach INPUT worksheet

TOXIC / HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION

TOXIC / HAZARDOUS AIR POLLUTANT	CAS Number	ACTUAL EMISSIONS (AFTER CONTROLS / LIMITS)		POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS)		POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS)		EMISSION FACTOR (lb/ton asphalt produced, with Fabric filter controls)
		lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr	
Acetaldehyde (TH)	75070	0.00E+00	0.00E+00	0.00E+00	0.00	0.00E+00	0.00E+00	0.0E+00
Acrolein (TH)	107028	0.00E+00	0.00E+00	0.00E+00	0.00	0.00E+00	0.00E+00	0.0E+00
Antimony unlisted compounds (H)	SBC-other	5.85E-05	5.40E-02	5.85E-05	0.51	5.85E-05	5.40E-02	1.8E-07
Arsenic unlisted cmpds (comp. of ASC) (TH)	ASC-other	1.82E-04	1.68E-01	1.82E-04	1.59	1.82E-04	1.68E-01	5.6E-07
Benzene (TH)	71432	1.29E-01	1.19E+02	1.29E-01	1127.59	1.29E-01	1.19E+02	4.0E-04
Benzo(a)pyrene (T)	50328	5.73E-06	5.29E-03	5.73E-06	0.05	5.73E-06	5.29E-03	1.8E-08
Beryllium metal (unreacted) (TH)	7440417	0.00E+00	0.00E+00	0.00E+00	0.00	0.00E+00	0.00E+00	0.0E+00
Cadmium metal (elemental unreacted) (TH)	7440439	1.33E-04	1.23E-01	1.33E-04	1.17	1.33E-04	1.23E-01	4.1E-07
Carbon disulfide (TH)	75150	8.09E-04	7.47E-01	8.09E-04	7.09	8.09E-04	7.47E-01	2.5E-06
Chromium unlisted cmpds (add w/chrom acid to get CRC) (H)	CRC-other	1.64E-03	1.52E+00	1.64E-03	14.38	1.64E-03	1.52E+00	5.1E-06
Chromic acid (VI) (component of soICR6 and CRC) (TH)	7738945	1.46E-04	1.35E-01	1.46E-04	1.28	1.46E-04	1.35E-01	4.5E-07
Cobalt unlisted compounds (H)	COC-other	8.45E-06	7.80E-03	8.45E-06	0.07	8.45E-06	7.80E-03	2.6E-08
Cumene (H)	98828	1.49E-03	1.37E+00	1.49E-03	13.02	1.49E-03	1.37E+00	4.6E-06
Ethyl benzene (H)	100414	8.33E-02	7.69E+01	8.33E-02	729.62	8.33E-02	7.69E+01	2.6E-04
Ethyl chloride (chloroethane) (H)	75003	2.84E-06	2.62E-03	2.84E-06	0.02	2.84E-06	2.62E-03	8.7E-09
Formaldehyde (TH)	50000	1.04E+00	9.56E+02	1.04E+00	9075.52	1.04E+00	9.56E+02	3.2E-03
Hexachlorodibenzo-p-dioxin 1,2,3,6,7,8 (T)	57653857	0.00E+00	0.00E+00	0.00E+00	0.00	0.00E+00	0.00E+00	0.0E+00
Hexane, n- (TH)	110543	3.11E-01	2.87E+02	3.11E-01	2724.15	3.11E-01	2.87E+02	9.6E-04
Hydrogen Chloride (hydrochloric acid) (TH)	7647010	0.00E+00	0.00E+00	0.00E+00	0.00	0.00E+00	0.00E+00	0.0E+00
Hydrogen Sulfide (T)	7783064	1.78E-02	1.64E+01	1.78E-02	155.79	1.78E-02	1.64E+01	5.5E-05
Lead unlisted compounds (H)	PBC-other	2.02E-04	1.86E-01	2.02E-04	1.77	2.02E-04	1.86E-01	6.2E-07
Manganese unlisted compounds (T)	MNC-other	2.50E-03	2.31E+00	2.50E-03	21.92	2.50E-03	2.31E+00	7.7E-06
Mercury, vapor (TH)	7439976	7.80E-05	7.20E-02	7.80E-05	0.68	7.80E-05	7.20E-02	2.4E-07
Methyl bromide (H)	74839	3.24E-04	2.99E-01	3.24E-04	2.84	3.24E-04	2.99E-01	1.0E-06
Methyl chloride (H)	74873	2.03E-04	1.87E-01	2.03E-04	1.78	2.03E-04	1.87E-01	6.2E-07
Methyl chloroform (TH)	71556	1.56E-02	1.44E+01	1.56E-02	136.66	1.56E-02	1.44E+01	4.8E-05
Methyl ethyl ketone (TH)	78933	2.21E-03	2.04E+00	2.21E-03	19.33	2.21E-03	2.04E+00	6.8E-06
Methylene chloride (TH)	75092	1.07E-05	9.87E-03	1.07E-05	0.09	1.07E-05	9.87E-03	3.3E-08
Napthalene (H)	91203	3.21E-02	2.97E+01	3.21E-02	281.52	3.21E-02	2.97E+01	9.9E-05
Nickel metal (TH)	7440020	2.05E-02	1.89E+01	2.05E-02	179.36	2.05E-02	1.89E+01	6.3E-05
Perchloroethylene (tetrachloroethylene) (TH)	127184	1.04E-04	9.61E-02	1.04E-04	0.91	1.04E-04	9.61E-02	3.2E-07
Phenol (TH)	108952	1.31E-03	1.21E+00	1.31E-03	11.45	1.31E-03	1.21E+00	4.0E-06
Phosphorus Metal, Yellow or White (H)	7723140	9.10E-03	8.40E+00	9.10E-03	79.72	9.10E-03	8.40E+00	2.8E-05
Polycyclic Organic Matter (H)	POM	6.18E-02	5.70E+01	6.18E-02	540.93	6.18E-02	5.70E+01	1.9E-04
Propionaldehyde (H)	123386	0.00E+00	0.00E+00	0.00E+00	0.00	0.00E+00	0.00E+00	0.0E+00
Quinone (H)	106514	0.00E+00	0.00E+00	0.00E+00	0.00	0.00E+00	0.00E+00	0.0E+00
Selenium compounds (H)	SEC	1.14E-04	1.05E-01	1.14E-04	1.00	1.14E-04	1.05E-01	3.5E-07
Styrene (TH)	100425	3.13E-04	2.89E-01	3.13E-04	2.74	3.13E-04	2.89E-01	9.6E-07
Tetrachlorodibenzo-p-dioxin, 2,3,7,8- (TH)	1746016	0.00E+00	0.00E+00	0.00E+00	0.00	0.00E+00	0.00E+00	0.0E+00

Toluene (TH)	108883	5.40E-02	4.99E+01	5.40E-02	473.43	5.40E-02	4.99E+01	1.7E-04
Trichloroethylene (TH)	79016	0.00E+00	0.00E+00	0.00E+00	0.00	0.00E+00	0.00E+00	0.0E+00
Trichlorofluoromethane (CFC 111) (T)	75694	1.76E-05	1.62E-02	1.76E-05	0.15	1.76E-05	1.62E-02	5.4E-08
Trimethylpentane, 2,2,4- (H)	540841	1.30E-02	1.20E+01	1.30E-02	114.20	1.30E-02	1.20E+01	4.0E-05
Xylene (TH)	1330207	7.85E-02	7.24E+01	7.85E-02	687.34	7.85E-02	7.24E+01	2.4E-04
Xylene, o- (H)	95476	3.34E-03	3.08E+00	3.34E-03	29.25	3.34E-03	3.08E+00	1.0E-05

TOXIC AIR POLLUTANT EMISSIONS INFORMATION (FOR PERMITTING PURPOSES)

Expected actual emissions after controls and limitations consisting of an annual production limit of 300000 tons and a daily production limit of 2500 tons.

EMISSION FACTOR
(lb/ton asphalt produced,
with Fabric filter controls)

TOXIC AIR POLLUTANT	CAS Num.	lb/hr	lb/day	lb/yr	Modeling Required?	
Acetaldehyde (TH)	75070	0.00E+00	0.00E+00	0.00E+00	NO. Based on facility-wide potential.	0.00E+00
Acrolein (TH)	107028	0.00E+00	0.00E+00	0.00E+00	NO. Based on facility-wide potential.	0.00E+00
Arsenic unlisted cmpds (comp. of ASC) (TH)	ASC-other	1.82E-04	1.40E-03	1.68E-01	YES. Modeling required	5.60E-07
Benzene (TH)	71432	1.29E-01	9.90E-01	1.19E+02	YES. Modeling required	3.96E-04
Benzo(a)pyrene (T)	50328	5.73E-06	4.41E-05	5.29E-03	NO. Based on facility-wide potential.	1.76E-08
Beryllium metal (unreacted) (TH)	7440417	0.00E+00	0.00E+00	0.00E+00	NO. Based on facility-wide potential.	0.00E+00
Cadmium metal (elemental unreacted) (TH)	7440439	1.33E-04	1.03E-03	1.23E-01	NO. Because of operating restriction	4.10E-07
Carbon disulfide (TH)	75150	8.09E-04	6.23E-03	7.47E-01	NO. Based on facility-wide potential.	2.49E-06
Soluble Chromate compounds as Chrome (VI) (TH)	SOLCR6	1.46E-04	1.13E-03	1.35E-01	NO. Based on facility-wide potential.	4.50E-07
Formaldehyde (TH)	50000	1.04E+00	7.97E+00	9.56E+02	YES. Modeling required	3.19E-03
Hexane, n- (TH)	110543	3.11E-01	2.39E+00	2.87E+02	NO. Based on facility-wide potential.	9.57E-04
Hexachlorodibenzo-p-dioxin 1,2,3,6,7,8 (T)	57653857	0.00E+00	0.00E+00	0.00E+00	NO. Based on facility-wide potential.	0.00E+00
Hydrogen Sulfide (T)	7783064	1.78E-02	1.37E-01	1.64E+01	NO. Based on facility-wide potential.	5.47E-05
Manganese unlisted compounds (T)	MNC-other	2.50E-03	1.93E-02	2.31E+00	NO. Based on facility-wide potential.	7.70E-06
Mercury, vapor (TH)	7439976	7.80E-05	6.00E-04	7.20E-02	NO. Based on facility-wide potential.	2.40E-07
Methylene chloride (TH)	75092	1.07E-05	8.23E-05	9.87E-03	NO. Based on facility-wide potential.	3.29E-08
Methyl chloroform (TH)	71556	1.56E-02	1.20E-01	1.44E+01	NO. Based on facility-wide potential.	4.80E-05
Methyl ethyl ketone (TH)	78933	2.21E-03	1.70E-02	2.04E+00	NO. Based on facility-wide potential.	6.79E-06
Nickel metal (TH)	7440020	2.05E-02	1.58E-01	1.89E+01	YES. Modeling required	6.30E-05
Perchloroethylene (tetrachloroethylene) (TH)	127184	1.04E-04	8.01E-04	9.61E-02	NO. Based on facility-wide potential.	3.20E-07
Phenol (TH)	108952	1.31E-03	1.01E-02	1.21E+00	NO. Based on facility-wide potential.	4.02E-06
Styrene (TH)	100425	3.13E-04	2.40E-03	2.89E-01	NO. Based on facility-wide potential.	9.62E-07
Tetrachlorodibenzo-p-dioxin, 2,3,7,8- (TH)	1746016	0.00E+00	0.00E+00	0.00E+00	NO. Based on facility-wide potential.	0.00E+00
Toluene (TH)	108883	5.40E-02	4.16E-01	4.99E+01	NO. Based on facility-wide potential.	1.66E-04
Trichloroethylene (TH)	79016	0.00E+00	0.00E+00	0.00E+00	NO. Based on facility-wide potential.	0.00E+00
Trichlorofluoromethane (CFC 111) (T)	75694	1.76E-05	1.35E-04	1.62E-02	NO. Based on facility-wide potential.	5.41E-08
Xylene (TH)	1330207	7.85E-02	6.04E-01	7.24E+01	NO. Based on facility-wide potential.	2.41E-04

Toxic Air Pollutant (TAP) emission rate calculations page

This sheet presents the emission rate calculations that are necessary for modeling determinations.

[illegible]

Asphalt cement heater
 heat input 1 MMBtu/hr
 sulfur content 0.50 %S
 Assumptions:

Fired with distillate oil (No.2 or diesel)
 Emission factors taken from AP-42 section 1.3 Fuel Oil Combustion
 Heating value 140 MMBtu/ 1000 gallons

Pollutant	factors (lb/1000 gallon)		factors lb/MMBtu
SO2	142 S	where S = % sulfur	0.5071
NOx	20		0.1429
CO	5		0.0357
VOC (NMTOC)	0.34		0.0024
filterable PM	2		0.0143
condensable PM	1.3		0.0093
total PM	3.3		0.0236
total PM10	3.3		0.0236

Emission factors taken from AP-42, Table 11.19.2-2, 8/04, Crushed Stone Processing and Pulverized Mineral Processing

RAP crusher

maximum capacity 120 tph
 hours of operation 1200 hours

	emission factors (dry)		emissions		emissions	
	(lb/ton)	(lb/ton)	(lb/hr)	(lb/hr)	ton/yr	ton/yr
	TSP	PM-10	TSP	PM-10	TSP	PM-10
primary crusher	0.0054	0.0024	0.648	0.288	0.39	0.17
screening	0.025	0.0087	3	1.044	1.80	0.63
conveyor transfer point	0.003	0.0011	0.36	0.132	0.22	0.08
	total		4.01	1.46	2.40	0.88

combined EF 0.0334 0.0122

Emissions summary from Silo Filling and Loadout operations

Pollutant	CAS Nos.	Emission Factors		Potential Emissions		Emission factors
		(lb/ton)	(lb/ton)	(lb/hr)	(lb/hr)	(lb/ton)
		Silo Filling SCC-3-05-002-13	Load out SCC-3-05-002-14	Silo Filling SCC-3-05-002-13	Load out SCC-3-05-002-14	Silo Filling plus Load Out
Total PM		5.86E-04	5.22E-04	1.90E-01	1.70E-01	1.11E-03
CO		1.18E-03	1.35E-03	3.83E-01	4.39E-01	2.53E-03
VOC		1.22E-02	3.91E-03	3.96E+00	1.27E+00	1.61E-02
PAH HAPs TOTAL		2.89E-05	2.02E-05	9.41E-03	6.57E-03	4.92E-05
Volatile organic HAPs, TOTAL		1.58E-04	6.24E-05	5.15E-02	2.03E-02	2.21E-04
HAPs, TOTAL		1.87E-04	8.66E-05	6.09E-02	2.82E-02	2.74E-04
Benzo(a)pyrene (T)	50328	0.00E+00	7.84E-09	0.00E+00	2.55E-06	7.84E-09
Napthalene (H)	91203	4.62E-06	4.26E-06	1.50E-03	1.39E-03	8.88E-06
Phenol (TH)	108952	0.00E+00	4.02E-06	0.00E+00	1.31E-03	4.02E-06
Benzene (TH)	71432	3.90E-06	2.16E-06	1.27E-03	7.03E-04	6.06E-06
Methyl bromide (H)	74839	5.97E-07	3.99E-07	1.94E-04	1.30E-04	9.96E-07
Methyl ethyl ketone (TH)	78933	4.75E-06	2.04E-06	1.54E-03	6.62E-04	6.79E-06
Carbon disulfide (TH)	75150	1.95E-06	5.41E-07	6.34E-04	1.76E-04	2.49E-06
Cumene (H)	98828	0.00E+00	4.57E-06	0.00E+00	1.49E-03	4.57E-06
Ethyl benzene (H)	100414	4.63E-06	1.16E-05	1.51E-03	3.78E-03	1.63E-05
Ethyl chloride (chloroethane) (H)	75003	0.00E+00	8.73E-09	0.00E+00	2.84E-06	8.73E-09
Formaldehyde (TH)	50000	8.41E-05	3.66E-06	2.73E-02	1.19E-03	8.77E-05
Hexane, n- (TH)	110543	1.22E-05	6.24E-06	3.96E-03	2.03E-03	1.84E-05
Methyl chloride (H)	74873	0.00E+00	6.24E-07	0.00E+00	2.03E-04	6.24E-07
Methyl chloroform (TH)	71556	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Methylene chloride (TH)	75092	3.29E-08	0.00E+00	1.07E-05	0.00E+00	3.29E-08
Perchloroethylene (tetrachloroethylene) (TH)	127184	0.00E+00	3.20E-07	0.00E+00	1.04E-04	3.20E-07
Styrene (TH)	100425	6.58E-07	3.04E-07	2.14E-04	9.87E-05	9.62E-07
Toluene (TH)	108883	7.56E-06	8.73E-06	2.46E-03	2.84E-03	1.63E-05
Trichloroethylene (TH)	79018	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Trichlorofluoromethane (CFC 111) (T)	75694	0.00E+00	5.41E-08	0.00E+00	1.76E-05	5.41E-08
Trimethylpentane, 2,2,4- (H)	540841	3.78E-08	7.49E-08	1.23E-05	2.43E-05	1.13E-07
Xylene (TH)	1330207	2.44E-05	1.71E-05	7.92E-03	5.54E-03	4.14E-05
Xylene, o- (H)	95476	6.95E-06	3.33E-06	2.26E-03	1.08E-03	1.03E-05
Hydrogen Sulfide (T)	7783064	1.46E-06	1.46E-06	4.75E-04	4.75E-04	2.92E-06

Plant maximum production capacity:	325	tons per hour
Requested Annual Production Limit:	300,000	tons per year
Requested Daily Production Limit:	2,500	tons per day

V
t
-0.5 %
325 oF
785 oR

Table 11.1-14

Predictive Emission Factor Equations for Load-out and silo Filling Operations

source	pollutant	EF (lb/ton)
Load out SCC-3-05-002-14	Total PM	0.000521937
	Organic PM	0.000340937
	TOC	0.004158948
	CO	0.00134924
Silo Filling SCC-3-05-002-13	Total PM	0.000585889
	Organic PM	0.000253889
	TOC	0.012186685
	CO	0.001179981

Table 11.1-15

Speciation Profiles for Load-out, Silo Filling and Asphalt Storage Emissions - Organic PM based Compounds

		Spec. profile for Load-out and yard emissions % Compound / Organic PM	Spec. profile for Silo filling and asphalt storage tank emissions % Compound / Organic PM
Benzo(a)pyrene (T)	50328	0.0023	0
Napthalene (H)	91203	1.25	1.82
PAH HAPs TOTAL		5.93	11.4
Phenol (TH)	108952	1.18	0

loadout emission factors (lb/ton)	Silo filling emission factors (lb/ton)
7.84155E-09	0
4.26171E-06	4.62078E-06
2.02176E-05	2.89434E-05
4.02306E-06	0

Table 11.1-16

Speciation Profiles for Load-out, Silo Filling and Asphalt Storage Emissions - Organic Volatile based Compounds

		Spec. profile for Load-out and yard emissions % Compound / TOC	Spec. profile for Silo filling and asphalt % Compound / TOC
VOC	94	100	
Benzene (TH)	71432	0.052	0.032
Methyl bromide (H)	74839	0.0096	0.0049
Methyl ethyl ketone (TH)	78933	0.049	0.039
Carbon disulfide (TH)	75150	0.013	0.016
Cumene (H)	98828	0.11	0
Ethyl benzene (H)	100414	0.28	0.038
Ethyl chloride (chloroethane) (H)	75003	0.00021	
Formaldehyde (TH)	50000	0.088	0.69
Hexane, n- (TH)	110543	0.15	0.1
Methyl chloride (H)	74873	0.015	
Methyl chloroform (TH)	71556	0	0
Methylene chloride (TH)	75092	0	0.00027
Perchloroethylene (tetrachloroethylene) (TH)	127184	0.0077	0
Styrene (TH)	100425	0.0073	0.0054
Toluene (TH)	108883	0.21	0.062
Trichloroethylene (TH)	79016	0	0
Trichlorofluoromethane (CFC 111) (T)	75694	0.0013	0
Trimethylpentane, 2,2,4- (H)	540841	0.0018	0.00031
Xylene (TH)	1330207	0.41	0.2
Xylene, o- (H)	95476	0.08	0.057
Volatile organic HAPs, TOTAL		1.5	1.3

loadout emission factors (lb/ton)	Silo filling emission factors (lb/ton)
0.003909411	0.012186685
2.16265E-06	3.89974E-06
3.99259E-07	5.97148E-07
2.03788E-06	4.75281E-06
5.40663E-07	1.94987E-06
4.57484E-06	0
1.16451E-05	4.63094E-06
8.73379E-09	0
3.65987E-06	8.40881E-05
6.23842E-06	1.21867E-05
6.23842E-07	0
0	0
0	3.29041E-08
3.20239E-07	0
3.03603E-07	6.58081E-07
8.73379E-06	7.55574E-06
0	0
5.40663E-08	0
7.48611E-08	3.77787E-08
1.70517E-05	2.43734E-05
3.32716E-06	6.94641E-06
6.23842E-05	0.000158427

Hydrogen Sulfide 7783064

loadout emission factors (lb/ton)	Silo filling emission factors (lb/ton)
0.00000146	0.00000146

*** These emissions factors were taken from the October 12, 2005 letter from Keith Overcash stating the emissions factors resulting from testing at Mangum Asphalt Services, Knightdale, Wake County, and at S.T. Wooten Asphalt Services, Sanford, Lee County.

[illegible][illegible]

Table 11.1-1
PM Emission Factors for Batch Mix HMAPs

dryer, hot screens, mixer SCC 3-05-002-45, -46, -47	filterable PM	filterable PM10	inorganic condensable PM	organic condensable PM	TOTAL condensable PM	total PM	total PM10
uncontrolled	32	4.5	0.013	0.0041	0.0171	32	4.5
fabric filter	0.025	0.0098	0.013	0.0041	0.0171	0.042	0.027
venturi or wet scrubber	0.12	0.12	0.013	0.0041	0.0171	0.14	0.14

Table 11.1-3
PM Emission Factors for Drum Mix HMAPs

dryer, hot screens, mixer SCC 3-05-002-05, -55 to -63	filterable PM	filterable PM10	inorganic condensable PM	organic condensable PM	TOTAL condensable PM	total PM	total PM10
uncontrolled	28	6.4	0.0074	0.058	0.0654	28	6.5
fabric filter	0.014	0.0039	0.0074	0.012	0.0194	0.033	0.023
venturi or wet scrubber	0.026	0.026	0.0074	0.012	0.0194	0.045	0.045

2 plant types
1 1. Batch mix
2 2. Drum mix

1 fuel type
1 1. Natural gas-fired
2 2. No.2 fuel oil-fired
3 3. Waste or No.6 fuel oil-fired

2 controls
1 1. uncontrolled
2 2. Fabric filter controls
3 3. Venturi or wet scrubber controls

Table 11.1-5 and 6

Emission Factors for CO, CO2, NOx and SO2 from Batch Mix HMAPs

	CO	CO2	NOx	SO2	VOC
Natural gas fired dryer, hot screens and mixer SCC 3-05-002-45	0.4	37	0.025		0.0082
No.2 fuel oil-fired dryer, hot screens and mixer SCC 3-05-002-46	0.4	37	0.12		0.0082
Waste oil-fired dryer, hot screens and mixer SCC 3-05-002-47	0.4	37	0.12		0.036
Coal-fired dryer, hot screens and mixer SCC 3-05-002-98	ND	37	ND		
No.6 fuel oil-fired dryer, hot screens and mixer SCC 3-05-002-47					0.036

Table 11.1-7 and 8

Emission Factors for CO, CO2, NOx and SO2 from Drum Mix HMAPs

	CO	CO2	NOx	SO2	VOC	HCL
Natural gas fired dryer SCC 3-05-002-55, -56, -57	0.13	33	0.026		0.032	ND
No.2 fuel oil-fired dryer SCC 3-05-002-58, -59, -60	0.13	33	0.055		0.032	ND
Waste oil-fired dryer SCC 3-05-002-61, -62, -63	0.13	33	0.055		0.032	0.00021
Coal-fired dryer, SCC 3-05-002-98	ND	33	ND			

from Chapter 1.3, AP-42, Fuel Oil Combustion, revised 09/98, Table 1.3.1

No.6, No.5	157	157
No.2	157	142

Plant maximum production capacity: 325 tons per hour
 Dyer heat input: 75 million Btu per hour
 Fuel Sulfur Content: 0.5 %

No. 2 HV	140 mmBtu/1000 gallons
No. 6 HV	150 mmBtu/1000 gallons

natural gas HV	1020 mmBtu/million scf
emissionNG combustion EF	0.8 lb SO ₂ /million scf
	0.000568 lb SO ₂ /mmBtu

1	fuel type	EF (lb/ton)
1	1. Natural gas-fired	0.0001
2	2. No.2 fuel oil-fired	0.0647
3	3. Waste or No.6 fuel oil-fired	0.0604

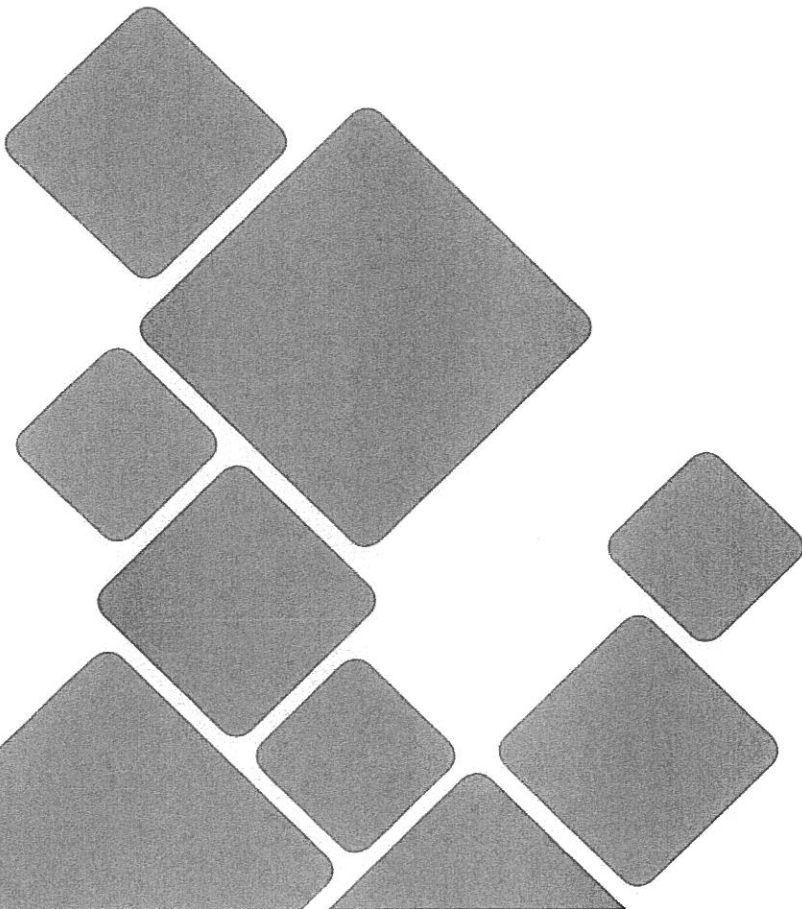
Note: 50% of the fuel bound sulfur up to a maximum (as SO₂) of 0.1 lb/ton of product is expected to be retained in product.

0.1 lb SO₂ retained / ton of product

plant types	SOCs	SO emission factor (lb/1000 gallons) %	SO emission factor (lb/mmBtu)	SO emission rate (lb/hr)	SO emission rate (lb/ton asphalt produced)	50% of fuel bound sulfur (as SO ₂ , lb/ton)	less than 0.1 lb/ton?	Corrected SO emission rate (lb/ton asphalt produced)
1. Batch mix, natural gas-fired, no controls			0.000588235	0.044	0.0001	0.0001	6.78733E-05	0.0001
2. Batch mix, natural gas-fired, fabric filter controls			0.000588235	0.044	0.0001	0.0001	6.78733E-05	0.0001
3. Batch mix, natural gas-fired, venturi or wet scrubber controls	3-05-002-45		0.000588235	0.044	0.0001	0.0001	6.78733E-05	0.0001
4. Batch mix, No.2 fuel oil-fired, no controls		157	0.560714286	42.054	0.1294	0.0647	0.064697802	0.0647
5. Batch mix, No.2 fuel oil-fired, fabric filter controls	3-05-002-46	157	0.560714286	42.054	0.1294	0.0647	0.064697802	0.0647
6. Batch mix, No.2 fuel oil-fired, venturi or wet scrubber controls		157	0.560714286	42.054	0.1294	0.0647	0.064697802	0.0647
7. Batch mix, waste or No.6 fuel oil-fired, no controls		157	0.523333333	39.250	0.1208	0.0604	0.060384815	0.0604
8. Batch mix, waste or No.6 fuel oil-fired, fabric filter controls	3-05-002-47	157	0.523333333	39.250	0.1208	0.0604	0.060384815	0.0604
9. Batch mix, waste or No.6 fuel oil-fired, venturi or wet scrubber controls		157	0.523333333	39.250	0.1208	0.0604	0.060384815	0.0604
10. Drum mix, natural gas-fired, no controls			0.000588235	0.044	0.0001	0.0001	6.78733E-05	0.0001
11. Drum mix, natural gas-fired, fabric filter controls	3-05-002-55, -56, -57		0.000588235	0.044	0.0001	0.0001	6.78733E-05	0.0001
12. Drum mix, natural gas-fired, venturi or wet scrubber controls			0.000588235	0.044	0.0001	0.0001	6.78733E-05	0.0001
13. Drum mix, No.2 fuel oil-fired, no controls		157	0.560714286	42.054	0.1294	0.0647	0.064697802	0.0647
14. Drum mix, No.2 fuel oil-fired, fabric filter controls	3-05-002-58, -59, -60	157	0.560714286	42.054	0.1294	0.0647	0.064697802	0.0647
15. Drum mix, No.2 fuel oil-fired, venturi or wet scrubber controls		157	0.560714286	42.054	0.1294	0.0647	0.064697802	0.0647
16. Drum mix, waste or No.6 fuel oil-fired, no controls		157	0.523333333	39.250	0.1208	0.0604	0.060384815	0.0604
17. Drum mix, waste or No.6 fuel oil-fired, fabric filter controls	3-05-002-61, -62, -63	157	0.523333333	39.250	0.1208	0.0604	0.060384815	0.0604
18. Drum mix, waste or No.6 fuel oil-fired, venturi or wet scrubber controls		157	0.523333333	39.250	0.1208	0.0604	0.060384815	0.0604

ATTACHMENT A.3

LIQUID ASPHALT CEMENT STORAGE TANK



Science & Engineering Consultants

Routine Losses Report for TANKS 5.3

Storage Tank Emissions Calculation Application

Version 5.3

(last updated June 16, 2026)

**U.S. Environmental Protection Agency
Office of Clean Air Programs
Natural Resources Division
Emissions Data and Assessment Branch
Research Triangle Park, NC 27711**

Report Contents

Accumulated Annual Routine Losses for All Tanks	3
Accumulated Monthly Routine Losses for All Tanks	4

For each tank and all tanks combined:

- Standing Losses
- Rim Seal Losses
- Deck Seam Losses
- Deck Fitting Losses
- Working Losses
- Total Routine Losses

For each tank:

- Tank Characteristics and Meteorological Location by Tank
- Tank Contents by Tank
- Tank Calculations by Tank
 - Fixed Roof Tanks
- Routine Losses by Tank

Accumulated Annual Routine Losses for All Tanks*all losses in pounds per year (lb/yr)*

Tank ID	Standing Losses	Working Losses	Total Losses
T01	0	10,919.0375	10,919.0375
Total	0	10,919.0375	10,919.0375

This report was created using the EPA TANKS 5.3 program [tanks.app.cloud.gov]. This program does not include liquid characteristics for asphalt. Custom liquid data requires input of two Antoine coefficients (A and B) because the EPA TANKS program uses a two-point Antoine coefficient equation to calculate vapor pressure. Antoine coefficients A and B for asphalt are not available.

AP-42, Section 11.8 Hot Mix Asphalt Plants uses a three-point Antoine coefficient equation to calculate vapor pressure, and reports coefficients A, B, and C. These coefficients are not usable in the EPA TANKS program. To estimate emissions from the asphalt cement storage tank, the EPA TANKS program was used to calculate VOC emissions from a No. 6 fuel oil storage tank.

VOC emissions are proportional to vapor pressure. Therefore, the VOC emissions from the asphalt storage tank can be estimated from:

VOC Emissions (lbs/yr) - Asphalt Cement Storage Tank =
VOC Emissions, No. 6 Fuel Oil (lbs/yr) * P_{vap}, Asphalt (325 F)/P_{vap}, No. 6 Fuel Oil (325 F).

P_{vap} No. 6 fuel oil (325 F) = 0.5469 psia (see p. 7).

P_{vap} liquid asphalt cement (325 F) = 0.0183 psia (see attached calculation of asphalt vapor pressure)

VOC Emissions (lbs/yr) - Asphalt Cement Storage Tank =
10,919 lbs/yr * 0.0183 psia / 0.5469 psia = 365 lbs/yr (0.1825 tons/yr)

Standing Losses

Working Losses

Total Losses

[illegible]

Tank Characteristics and Meteorological Location by Tank

Identification

Tank ID	T01
Tank Type	Vertical Fixed Roof Tank
Tank Description	Asphalt
City	Winston-Salem
State	North Carolina
Company	Maymead

Tank Characteristics

Tank Shape	Cylinder
Shell Diameter (ft)	12.600
Maximum Liquid Height (ft)	7.500
Average Liquid Height (ft)	5
Tank Bottom Type	flat
Liquid Heel Type at Tank Minimum (ft)	none
Vapor Space Pressure at Normal Operating Conditions (psig)	0
Is Tank Insulated?	Fully Insulated
Is Tank Heated?	Heated
Typical Max Liquid Bulk Temperature in Heating Cycle (degrees R)	784.670
Typical Avg Liquid Bulk Temperature in Heating Cycle (degrees R)	784.670
Typical Min Liquid Bulk Temperature in Heating Cycle (degrees R)	784.670
Number of Heating Cycles per Year	365

Shell Characteristics

Shell Color/Shade	Aluminum - Mill finish, unpainted
Shell Condition	Good

Roof Characteristics

Roof Color/Shade	Aluminum - Mill finish, unpainted
Roof Condition	Good
Roof Type	Dome
Dome Radius (ft)	6.300

Breather Vent Settings

Vacuum Setting (psig)	0
Pressure Setting (psig)	0

Control Device Settings

Is Tank Equipped with a Control Device?	No Control Device
---	-------------------

Meteorological Location

Name	Greensboro, NC
Atmospheric Pressure (psia)	14.230

Meteorological Data by Month

Month	Avg Daily Min Ambient Temp. (deg R)	Avg Daily Max Ambient Temp. (deg R)	Avg Wind Speed (mph)	Avg Daily Total Insolation Factor (Btu/ft2/day)
Jan	30.900	48.400	8.100	758
Feb	32.700	51.700	8.100	1023
Mar	39.700	60	8.700	1354
Apr	48.100	69.700	8.700	1701
May	56.700	76.500	7.600	1875
Jun	65.600	83.700	6.700	1956
Jul	69.300	86.800	6.300	1912
Aug	68.200	85.600	5.800	1717

Sep	61.100	79	6.300	1418
Oct	49.300	69.600	6.300	1146
Nov	39.800	59.800	6.700	851
Dec	32.500	50.100	6.900	692

Tank Contents by Tank

Tank Contents Input Summary

Tank ID	T01
Input Type	Annual
Chemical Category of Liquid	Petroleum Liquids
Sum of Increases in Liquid Level Method	AP-42 Calculation
Working Loss Turnover Factor Method	AP-42 Calculation

Annual Contents

Chemical Name	Throughput (gal/yr)
No. 6 Fuel Oil	42931155

Use the hourly liquid asphalt cement throughput rate of 21 tons/hr and 8,760 hours/yr (continuous operation) to calculate emissions. Using 8,760 hours/yr allows comparison to Sec. 3Q-0102(h)(5): any source whose potential uncontrolled emissions of particulate matter (PM10), sulfur dioxide, nitrogen oxides, volatile organic compounds, and carbon monoxide shall each be no more than five tons per year is exempt from permit requirements.

Asphalt density = 8.57 lb/gal (AP-42, Appendix A, p. A-6).

Throughput (gal/yr) = 21 tons/hr * 8,760 hrs/yr * 2,000 lbs/ton / (8.57 lbs/gal) = 42,931,155 gal/yr

Tank Calculations by Tank -- Fixed Roof

Tank ID: T01

Annual Calculations**Chemical: No. 6 Fuel Oil**

Annual Vapor Space Volume (cu ft)	897.766649
Annual Avg. Vented Vapor Saturation Factor	0.827325
Vapor Space Outage (ft)	7.200000
Avg. Liquid Height (ft)	5
Roof Outage (ft)	4.200000
Dome Radius (ft)	6.300000
Shell Radius (ft)	6.300000
Effective Diameter (ft)	12.600000
Annual Stock Vapor Density (lb/cu ft)	0.008444
Annual Avg. Vapor Molecular Weight (lb/lb-mole)	130
Annual Avg. Vapor Pressure at Avg. Liquid Surface Temp. (psia)	0.546947
Annual Avg. Liquid Surface Temp. (*R)	784.670000
Annual Avg. Ambient Temp. (*R)	518.620000
Annual Avg. Liquid Bulk Temp. (*R)	784.670000
Tank Paint Solar Absorptance (Shell)	0.100000
Tank Paint Solar Absorptance (Roof)	0.100000
Annual Avg. Vapor Space Expansion Factor	0
Annual Vapor Temp. Range (*R)	0
Annual Vapor Pressure Range (psia)	0
Breather Vent Pressure Setting Range (psia)	0
Annual Avg. Vapor Pressure at Min Liquid Surface Temp. (psia)	0.546947
Annual Avg. Vapor Pressure at Max Liquid Surface Temp. (psia)	0.546947
Annual Avg. Min. Liquid Surface Temp. (*R)	784.670000
Annual Avg. Max. Liquid Surface Temp. (*R)	784.670000
Annual Avg. Ambient Temp. Range (*R)	18.916667
Annual Throughput (gal)	42931155
Annual Turnovers	511.354650
Annual Sum of Increases in Liquid Level (ft/yr)	46,021.918500
Working Loss Turnover Factor	0.225334
Working Loss Product Factor	1
Vent Setting Correction Factor	1

Tank ID: T01

Monthly Calculations

Chemical: No. 6 Fuel Oil

Calculation	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Vented Vapor Saturation Factor	0.8273	0.8273	0.8273	0.8273	0.8273	0.8273	0.8273	0.8273	0.8273	0.8273	0.8273	0.8273
Stock Vapor Density (lb/cu ft)	0.0084	0.0084	0.0084	0.0084	0.0084	0.0084	0.0084	0.0084	0.0084	0.0084	0.0084	0.0084
Vapor Molecular Weight (lb/lb-mole)	130	130	130	130	130	130	130	130	130	130	130	130
Vapor Pressure at Avg. Liquid Surface Temp. (psia)	0.5469	0.5469	0.5469	0.5469	0.5469	0.5469	0.5469	0.5469	0.5469	0.5469	0.5469	0.5469
Avg. Liquid Surface Temp. (°R)	784.6700	784.6700	784.6700	784.6700	784.6700	784.6700	784.6700	784.6700	784.6700	784.6700	784.6700	784.6700
Avg. Ambient Temp. (°R)	499.3200	501.8700	509.5200	518.5700	526.2700	534.3200	537.7200	536.5700	529.7200	519.1200	509.4700	500.9700
Vapor Space Expansion Factor	0	0	0	0	0	0	0	0	0	0	0	0
Vapor Temp. Range (°R)	0	0	0	0	0	0	0	0	0	0	0	0
Vapor Pressure Range (psia)	0	0	0	0	0	0	0	0	0	0	0	0
Vapor Pressure at Min Liquid Surface Temp. (psia)	0.5469	0.5469	0.5469	0.5469	0.5469	0.5469	0.5469	0.5469	0.5469	0.5469	0.5469	0.5469
Vapor Pressure at Max Liquid Surface Temp. (psia)	0.5469	0.5469	0.5469	0.5469	0.5469	0.5469	0.5469	0.5469	0.5469	0.5469	0.5469	0.5469
Min. Liquid Surface Temp. (°R)	784.6700	784.6700	784.6700	784.6700	784.6700	784.6700	784.6700	784.6700	784.6700	784.6700	784.6700	784.6700
Max. Liquid Surface Temp. (°R)	784.6700	784.6700	784.6700	784.6700	784.6700	784.6700	784.6700	784.6700	784.6700	784.6700	784.6700	784.6700
Ambient Temp. Range (°R)	17.5000	19	20.3000	21.6000	19.8000	18.1000	17.5000	17.4000	17.9000	20.3000	20	17.6000
Throughput (gal/mc)	3,577,596.2500	3,577,596.2500	3,577,596.2500	3,577,596.2500	3,577,596.2500	3,577,596.2500	3,577,596.2500	3,577,596.2500	3,577,596.2500	3,577,596.2500	3,577,596.2500	3,577,596.2500
Sum of Increases in Liquid Level (ft/mc)	3,835.1599	3,835.1599	3,835.1599	3,835.1599	3,835.1599	3,835.1599	3,835.1599	3,835.1599	3,835.1599	3,835.1599	3,835.1599	3,835.1599
Working Loss Product Factor	1	1	1	1	1	1	1	1	1	1	1	1

Supplemental Non-Monthly Data

Vapor Space Volume (cu ft)	897.7666
Effective Diameter (ft)	12.6000
Vapor Space Outage (ft)	7.2000
Liquid Bulk Temp. (°R)	784.6700
Tank Paint Solar Absorptance (Shell)	0.1000
Tank Paint Solar Absorptance (Roof)	0.1000
Breather Vent Pressure Setting Range (psia)	0
Turnovers	511.3546
Working Loss Turnover Factor	0.2253
Vent Setting Correction Factor	1

Routine Losses by Tank

Tank ID: T01

Annual Routine Losses (lb/yr)

Chemical	Standing Losses	Working Losses	Total Losses
No. 6 Fuel Oil	0	10,919.0375	10,919.0375

Monthly Routine Losses (lb/month)

[illegible]

Asphalt Properties

Storage Temperature

$$T = 325^{\circ}\text{F}$$

$$435.928^{\circ}\text{K}$$

$$(325^{\circ}\text{F} - 32) \times 5/9 + 273.15 = 435.928^{\circ}\text{K}$$

See AP-42, Section 11.1.2.5

Antoine coefficients

$$A = 75,350.06$$

$$B = 9.00346$$

$$\log_{10} P = -0.05223 * A/T + B$$

T in $^{\circ}\text{K}$

P in mmHg

$$\log_{10} P = -0.02449$$

$$P = 0.945 \text{ mmHg}$$

$$0.0183 \text{ psia}$$

$$\text{at } T (^{\circ}\text{F}) = 325$$

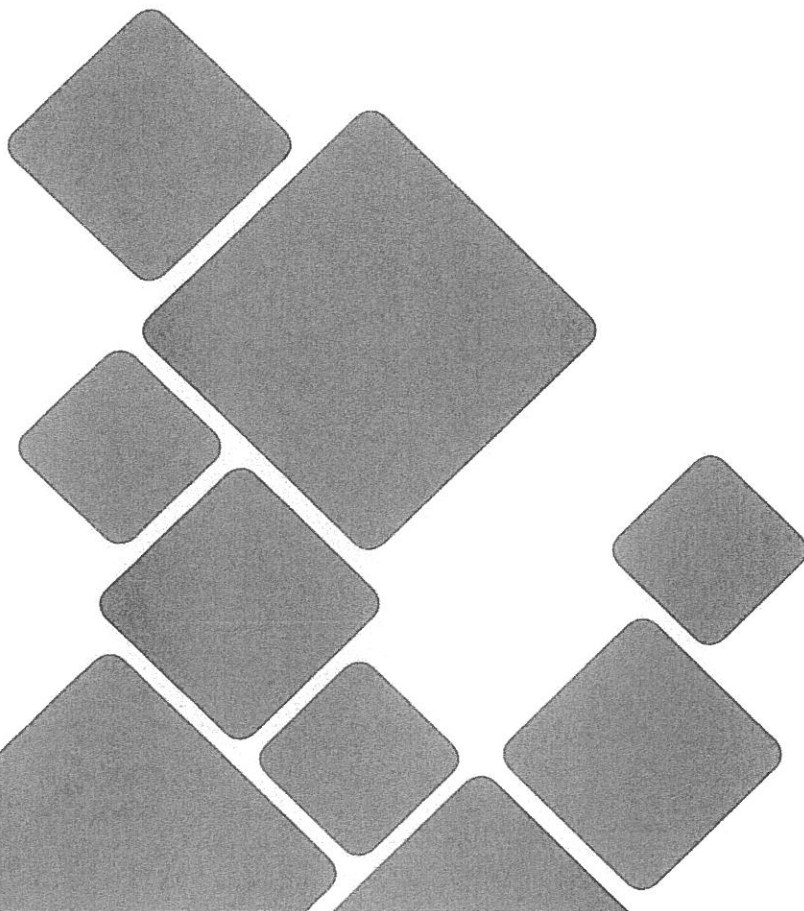
Example Calculation

$$\log_{10} P = -0.05223 * 75,350.06 / 435.928 \text{ K} + 9.00346 = -0.02449$$

$$P (\text{mmHg}) = 10^{-0.02449} = 0.945 \text{ mmHg}$$

ATTACHMENT A.4

AGGREGATE HANDLING



Science & Engineering Consultants

Aggregate Handling

Use AP-42, Section 13.2.4, Equation 1 (see below)

INPUTS

$k =$ 0.74 PM
 0.35 PM₁₀
 0.053 PM_{2.5}
 $U =$ 7.3 miles/hr ^a
 $M =$ 3.5 % ^b

Emission Factors	
$E_{PM} =$	1.77E-03 lb/ton
$E_{PM_{10}} =$	8.37E-04 lb/ton
$E_{PM_{2.5}} =$	1.27E-04 lb/ton

Use the hourly aggregate throughput rate and 8,760 hours/yr (continuous operation) to calculate emissions. Using 8,760 hours/yr allows comparison to Sec. 3Q-0102(h)(5): any source whose potential uncontrolled emissions of particulate matter (PM₁₀), sulfur dioxide, nitrogen oxides, volatile organic compounds, and carbon monoxide shall each be no more than five tons per year is exempt from permit requirements.

Aggregate rate: 304 tons/hr

Pollutant	Hourly Emissions (lbs/hr)	Potential to Emit (tons/yr)
PM	0.538	2.36
PM ₁₀	0.254	1.11
PM _{2.5}	0.039	0.17

^a Average monthly wind speed in Winston-Salem from <https://www.weather-us.com/en/north-carolina-usa/winston-salem-climate>, accessed 7/9/26

^b See AP-42, 11.1 Hot Mix Asphalt Plants, Section 11.1.1.1

The following equation from AP-42, Section 13.2.4 is used to calculate emission factors (lbs/ton):

$$E = k(0.0032) \frac{\left(\frac{U}{5}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}} \quad (\text{pound [lb/ton]})$$

where:

E = emission factor
 k = particle size multiplier (dimensionless)
 U = mean wind speed, meters per second (m/s) (miles per hour [mph])
 M = material moisture content (%)

Aggregate Handling

EXAMPLE CALCULATIONS

Emission Factors

$$E_{PM10} (\text{lbs/ton}) = 0.35 * 0.0032 * [7.3 \text{ miles/hr} / 5]^{1.3} / [3.5\% / 2]^{1.4} = 0.35 * 0.0032 * 1.636 / 2.189 = 8.37\text{E-}04 \text{ lbs/ton}$$

$$\text{Hourly Emissions (lbs/hr)} = \text{Emission Factor (lbs/ton)} * \text{Aggregate rate (tons/hr)}$$

$$\text{PM10 Hourly Emissions (lbs/hr)} = 8.37\text{E-}04 \text{ lbs/ton} * 304 \text{ tons/hr} = 0.254 \text{ lb/hr}$$

$$\text{Potential to Emit (tons/yr)} = \text{Hourly Emissions (lb/hr)} * 8760 \text{ hrs/yr} / (2000 \text{ lbs/ton})$$

$$\text{PM10 Potential to Emit (tons/yr)} = 0.254 \text{ (lb/hr)} * 8760 \text{ hrs/yr} / (2000 \text{ lbs/ton}) = 1.11 \text{ tons/yr}$$

ATTACHMENT B

MODELING INFORMATION



Science & Engineering Consultants

Summary of Modeling Results (ug/m³)
Maymead, Inc., Clemmons, North Carolina

Year	Formaldehyde	Nickel metal	Ar-Unlisted Compounds	Benzene
2014	9.8139	0.04479	0.00002	0.05193
2015	10.4407	0.09371	0.00003	0.06018
2016	8.69809	0.03671	0.00002	0.05663
2017	7.86074	0.05214	0.00002	0.05735
2018	9.17329	0.08739	0.00002	0.05415
MAX	10.44070	0.09371	0.00003	0.06018
Averaging Period	Hourly	Daily	Annual	Annual
AAL (mg/m ³) ^a	0.15	6.0E-03	2.1E-06	1.2E-04
AAL (ug/m ³)	150	6	0.0021	0.12
% of AAL	7.0%	1.6%	1.4%	50.2%
In Compliance?	YES	YES	YES	YES

^a 15A NCAC 02D .1104.



PROJECT MEMORANDUM

Date: July 15, 2026

File: 00.6209.00

To: NCDEQ

Cc:

From: Heather Ponce

Chris Bagley, P.E., Senior Peer Review

Subject: Maymead – Clemmons Plant Modeling Protocol

SUMMARY

Air dispersion modeling of North Carolina Toxic Air Pollutant (TAP) emissions from the proposed Maymead – Clemmons asphalt facility has been conducted. The results of the modeling analysis demonstrate that emissions of toxic air pollutants (TAPs) will achieve the air quality standards in 15A NCAC 02D .1104.

MODELING CONSIDERATIONS

The air dispersion modeling analysis was completed using the most recent version of the AERMOD model, version 22112, using BEEST version 12.09 as the operating interface. Building downwash was considered and the land-use within 3 kilometers of the facility was determined to be rural for air dispersion modeling purposes. A good engineering practice (GEP) stack height analysis was not completed, as the model calculates cavity effects as necessary.

The proposed facility is located in Forsyth County, North Carolina; therefore, the meteorological data pertaining to Winston-Salem/Greensboro for years 2014 through 2018 downloaded from the North Carolina Department of Environmental Quality (NCDEQ) website was used for modeling. Per instructions on NCDES' website, the USGS National Elevation Dataset (NED) files pertaining to Forsyth County were used.

Equipment and property line locations are expressed in Universal Transverse Mercator (UTM) Zone 17 (NAD83) coordinates.

Equipment at the facility includes a drum mixer/dryer system, two hot mix asphalt silos, and two truck loadout operations. The drum mixer/dryer source was modeled as a point source. The silos and the truck loadout operations were modeled as volume sources as is typical for fugitive emissions.

EMISSIONS CALCULATIONS

Emission calculations are included as ATTACHMENT A. The drum mixer/dryer TAPs emissions were calculated using AP-42 Table 11.1-10 emission factors. The silo and loadout operations TAP emissions were calculated using AP-42 Table 11.16 emission factors. Emissions were calculated with the following facility production limits:

- Hourly: 325 tons/hr
- Daily: 2,500 tons/day
- Annually: 300,000 tons/yr

RECEPTORS

The receptor grid was set up as a "Special Grid" in BEEST. A Fenceline grid was created at 25 m spacing. Then the grid receptors were created as a Rectangle Grid with grid spacing of 50 m for a distance of 2000 m and then a grid spacing of 100 m for up to 3,000 m. Analysis of modeling results shows that the maximum modeled concentration occurs within this receptor grid.

MODELING RESULTS FOR 15A NCAC .02D .1104

Per the NC Regulation 15A NCAC 2D.1104, the modeled design value for toxics is based on the 1st high value over five years of meteorological data. The AERMOD model was run using five separate meteorological data files for each year for the following air toxics with the associated averaging periods:

- Formaldehyde – 1 hr
- Nickel – 24 hour
- Arsenic Compounds – Annual
- Benzene – Annual

A summary of modeling results is included in this attachment (ATTACHMENT B).

A.1 North Carolina Modeling Protocol Checklist

The North Carolina Modeling Protocol Checklist may be used in lieu of developing the traditional written modeling plan for North Carolina toxics and criteria pollutant modeling. The protocol checklist is designed to provide the same level of information as requested in a modeling protocol as discussed in Chapter 2 of the *Guideline for Evaluating the Air Quality Impacts of Toxic Pollutants in North Carolina*. The modeling protocol checklist is submitted with the modeling analysis.

Although most of the information requested in the modeling protocol checklist is self explanatory, additional comments are provided, where applicable, and are discussed in greater detail in the toxics modeling guidelines referenced above. References to sections, tables, figures, appendices, etc., in the protocol checklist are found in the toxics modeling guidelines.

INSTRUCTIONS: The modeling report supporting the compliance demonstration should include most of the information listed below. As appropriate, answer the following questions or indicate by check mark the information provided or action taken is reflected in your report.

FACILITY INFORMATION	
Name: Maymead, Inc. - Clemmons Plant Facility ID: Address: 6010 Gun Club Road Winston-Salem, NC 27103	Consultant (if applicable): SynTerra Corporation
Contact Name: Sean Mackey	Contact Name: Heather Ponce
Phone Number: (423) 727-2000 Email: smackey@maymead.com	Phone Number: (813) 598-4049 Email: hponce@synterracorp.com

GENERAL

Description of New Source or Source / Process Modification: provide a short description of the new or modified source(s) and a brief discussion of how this change affects facility production or process operation.	x
Source / Pollutant Identification: provide a table of the affected pollutants, by source, which identifies the source type (point, area, or volume), maximum pollutant emission rates over the applicable averaging period(s), and, for point sources, indicate if the stack is capped or non-vertical (C/N).	x
Pollutant Emission Rate Calculations: indicate how the pollutant emission rates were derived (e.g., AP-42, mass balance, etc.) and where applicable, provide the calculations.	x
Site / Facility Diagram: provide a diagram or drawing showing the location of all existing and proposed emission sources, buildings or structures, public right-of-ways, and the facility property (toxics) / fence line (criteria pollutants) boundaries. The diagram should also include a scale, true north indicator, and the UTM or latitude/longitude of at least one point.	x
Certified Plat or Signed Survey: a certified plat (map) from the County Register of Deeds or a signed survey must be submitted to validate property boundaries modeled.	
Topographic Map: A topographic map covering approximately 5km around the facility must be submitted. The facility boundaries should be annotated on the map as accurately as possible.	x
Cavity Impact Analysis: No cavity analysis is required if using AERMOD. <i>See Section 4.2</i>	x

Background Concentrations (criteria pollutant analyses only): Background concentrations must be determined for each pollutant for each averaging period evaluated. The averaged background value used (e.g., high, high-second-high, high-third-high, etc.) is based on the pollutant and averaging period evaluated. The background concentrations are added to the modeled concentrations, which are then compared to the applicable air quality standard to determine compliance.	Not Applicable
Offsite Source Inventories (criteria pollutant analyses only): Offsite source inventories must be developed and modeled for all pollutants for which onsite sources emissions are modeled in excess of the specific pollutant significant impact levels (SILs) as defined in the PSD New Source Review Workshop Manual. The DAQ AQAB must approve the inventories. An initial working inventory can be requested from the AQAB.	Not Applicable

SCREEN LEVEL MODELING

Not Applicable - screen level modeling not conducted

Model: The latest version of the AERSCREEN model must be used. The use of other screening models should be approved by NCDAQ prior to submitting the modeling report.	
Source / Source emission parameters: Provide a table listing the sources modeled and the applicable source emission parameters. See NC Form 3 – Appendix A.	
Merged Sources: Identify merged sources and show all appropriate calculations. See Section 3.3	
GEP Analysis: See Section 3.2 and NC Form 1 – Appendix A	
Terrain: Indicate the terrain modeled: simple (Section 4.4), and complex (Section 4.5 and NC Form 4 – Appendix A). If complex terrain is within 5 kilometers of the facility, complex terrain must be evaluated. Simple terrain must include terrain elevations if any terrain is greater than the stack base of any source modeled. Simple: _____ Complex: _____	
Meteorology: Refer to Section 4.1 for AERSCREEN inputs.	
Receptors: AERSCREEN – use shortest distance to property boundary for each source modeled and use sufficient range to find maximum (See Section 4.1 (i) and (j)). Terrain above stack base must be evaluated.	
Modeling Results: For each affected pollutant, modeling results should be summarized, converted to the applicable averaging period (See Table 3), and presented in tabular format indicating compliance status with the applicable AAL, SIL, or NAAQS. See NC Form S5 – Appendix A.	
Modeling Files: Either electronic or hard copies of AERSCREEN output must be submitted.	

REFINED LEVEL MODELING

Model: The latest version of AERMOD should be used, and may be found at http://www.epa.gov/scram001/dispersion_prefrec.htm . The use of other refined models must be approved by NCDAQ prior to submitting the modeling report.	x
Source / Source emission parameters: Provide a table listing the sources modeled and the applicable source emission parameters. See NC Form 3 - Appendix A.	x
GEP Analysis: Use BPIP-Prime with AERMOD.	x
Cavity Impact Analysis: No separate cavity analysis is required when using AERMOD as long as receptors are placed in cavity susceptible areas. See Section 4.2 and 5.2.	x
Terrain: Use digital elevation data from the USGS NED database (http://seamless.usgs.gov/index.php). Use of other sources of terrain elevations or the non-regulatory Flat Terrain option will require prior approval from DAQ AQAB.	x
Coordinate System: Specify the coordinate system used (e.g., NAD27, NAD83, etc.) to identify the source, building, and receptor locations. Note: Be sure to specify in the AERMAP input file the correct base datum (NADA) to be used for identifying source input data locations. Clearly note in both the protocol checklist and the modeling report which datum was used.	x
Receptors: The receptor grid should be of sufficient size and resolution to identify the maximum pollutant impact. See Section 5.3.	x

Meteorology: Indicate the AQAB, pre-processed, 5-year data set used in the modeling demonstration: (See Section 5.5 and Appendix B) AERMOD <u>22112</u> If processing your own raw meteorology, then pre-approval from AQAB is required. Additional documentation files (e.g. AERMET stage processing files) will also be necessary. For NC toxics, the modeling demonstration requires only the last year of the standard 5 year data set (e.g., 2005) provided the maximum impacts are less than 50% of the applicable AAL(s).	X
Modeling Results: For each affected pollutant and averaging period, modeling results should be summarized and presented in tabular format indicating compliance status with the applicable AAL, SIL or NAAQS. See NC Form R5 - Appendix A.	X
Modeling Files: Submit input and output files for AERMOD. Also include BPIP-Prime files, AERMAP files, DEM files, and any AERMET input and output files, including raw meteorological data.	Available on request

AERMOD Inputs

Edit Sources

X

File

Source ID

EP1

Source 1 of 4

⏮

⏪

⏩

⏭

New

Source Type

Point Source

Area Source

Volume Source

Open Pit Source

AreaCirc Source

AreaPoly Source

Line Source

BuoyLine Source

Polygon Vertices

Edit

Bounds

Select

Point Source Type

Description: Baghouse Stack

Release Type

☒ Default
 ☐ Raincap
 ☐ Horizontal

Flat Option

☒ Default
 ☐ Model as Flat

Pollutant	Pollutant	Emission Rate
UserID	Name	(lb/hr)
FORMALDE	FORMALD	1.01
NICKEL	NICKEL	0.020500000000
ARSENICU	ARSENIC	1.82E-04
BENZENE	BENZENE	0.127000000000

English Units		Metric Units	
X-coordinate or Easting (XS):	1827572.18 (ft)	557044.	(m)
Y-coordinate or Northing (YS):	13086535.43 (ft)	3988776.	(m)
Source base elevation (ZS):	717.3885 (ft)	218.66	(m)
Stack Height (HS):	22.1201 (ft)	6.7422	(m)
Stack temperature (TS):	300. (°F)	422.038889	(K)
Exit diameter (DS):	4.375 (ft)	1.3335	(m)
Exit velocity (VS):	69.8463 (fps)	21.289148	(m/s)
Exit flow rate (FS):	62999.9999 (acfm)	29.73269	(acm/s)

Flare Tool

Rotate

Calc Base Elev

Cancel

OK

AERMOD Inputs

Edit Sources
X

File

Source ID

EP3

Source 3 of 4

New

Source Type

Point Source

Area Source

Volume Source

Open Pit Source

AreaCirc Source

AreaPoly Source

Line Source

BuoyLine Source

Polygon Vertices

Edit

Bounds

Select

Volume Source Type

Description: HMA Silo

Pollutant	Pollutant	Emission Rate
UserID	Name	(lb/hr)
FORMALDE	FORMALD	0.027299999999
NICKEL	NICKEL	
ARSENICU	ARSENIC	
BENZENE	BENZENE	0.00127

Flat Option

☒ Default
☐ Model as Flat

English Units

X-coordinate or Easting (XS): 1827447.51 (ft)

Y-coordinate or Northing (YS): 13086476.38 (ft)

Source base elevation (ZS): 717.5197 (ft)

Release Height (RELHGT): 67.8333 (ft)

Initial horizontal dim. (SYINIT): 6.99 (ft)

Initial vertical dim. (SZINIT): 11.15 (ft)

Metric Units

557006. (m)

3988758. (m)

218.7 (m)

20.6756 (m)

2.13 (m)

3.4 (m)

Flare Tool
Rotate
Calc Base Elev
Cancel
OK

AERMOD Inputs

Edit Sources

×

File

Source ID

EP3A

Source 4 of 4

⏮

⏪

⏩

⏭

New

Source Type

Point Source

Area Source

Volume Source

Open Pit Source

AreaCirc Source

AreaPoly Source

Line Source

BuoyLine Source

Polygon Vertices

Edit

Bounds

Select

Volume Source Type

Description: HMA Load Out

Pollutant	Pollutant	Emission Rate
UserID	Name	(lb/hr)
FORMALDE	FORMALD	0.001190000000
NICKEL	NICKEL	
ARSENICU	ARSENIC	
BENZENE	BENZENE	7.03E-04

Flat Option

☒ Default
 ☐ Model as Flat

English Units

X-coordinate or Easting (XS): 1827447.51 (ft)
Y-coordinate or Northing (YS): 13086476.38 (ft)
Source base elevation (ZS): 717.5197 (ft)
Release Height (RELHGT): 14. (ft)
Initial horizontal dim. (SYINIT): 6.99 (ft)
Initial vertical dim. (SZINIT): 11.15 (ft)

Metric Units

557006. (m)
3988758. (m)
218.7 (m)
4.2672 (m)
2.13 (m)
3.4 (m)

Flare Tool

Rotate

Calc Base Elev

Cancel

OK



Modeled Emission Points: EP-1, EP-3, and EP-3A

Maymead, Inc.
Asphalt Plant Inventories
as of 1/1/2026

1/1/2026

Quantities:

Plt Code	Plant	2020-0003 Diesel	u/m	2020-0007 Black Oil	u/m	2020-0002 Additive	u/m	2020-0001 AC	u/m	2020-0005 Agg./Misc	u/m	2020-0006 RAP	u/m	SHOPS On-Rd Diesel	u/m
AS	Astec	2,914	Gal.	5,001	Gal.	-	Gal.	117.63	Tons		Tons		Tons		Tons
BB	Brown	2,999	Gal.		Gal.	-	Gal.	179.91	Tons		Tons		Tons		Tons
HK	Hickory	5,500	Gal.		Gal.	-	Gal.	168.26	Tons		Tons		Tons		Tons
PI	Pineola	2,914	Gal.		Gal.	-	Gal.	55.91	Tons		Tons		Tons		Tons
ST	Statesville	5,011	Gal.		Gal.	-	Gal.	152.05	Tons		Tons		Tons	5,000	Gal.
MD	Marion/McDowell	2,666	Gal.		Gal.	-	Gal.	288.67	Tons		Tons		Tons		Tons
MG	Morganton	1,821	Gal.	7,070	Gal.	-	Gal.	54.17	Tons		Tons		Tons		Tons
JE	Jefferson	3,211	Gal.		Gal.	-	Gal.	108.74	Tons		Tons		Tons		Tons
MS	Midstate	2,611	Gal.	5,512	Gal.	-	Gal.	66.77	Tons		Tons		Tons	5,811	Gal.
DE	Denver	3,000	Gal.	5,541	Gal.	-	Gal.	103.27	Tons		Tons		Tons		Tons
DG	Deep Gap	5,146	Gal.		Gal.	-	Gal.	164.62	Tons		Tons		Tons		Tons
BV	Burnsville		Gal.		Gal.	-	Gal.		Tons		Tons		Tons		Tons
SHP	Drexel Shop		Gal.		Gal.	-	Gal.		Tons		Tons		Tons	5,200	Gal.
SHP	Mt. City Shop		Gal.		Gal.	-	Gal.		Tons		Tons		Tons	4,899	Gal.
115	115 Plant	3,462	Gal.		Gal.		Gal.	106.00	Tons		Tons		Tons		Tons
EK	Elkin Plant	4,680	Gal.		Gal.		Gal.	87.12	Tons		Tons		Tons		Tons
TC	Twin City Plant	1,919	Gal.		Gal.		Gal.	-	Tons		Tons		Tons		Tons
MA	Mount Airy Plant	8,973	Gal.		Gal.		Gal.	20.00	Tons		Tons		Tons		Tons
Totals		56,827	Gal.	23,124	Gal.	-	Gal.	1,673.12	Tons	-	Tons	-	Tons	29,950	Gal.

Valuations:

SHOPS	Product	Quantity	u/m	Unit Cost	Value
	On-road Diesel	29,950.00	Gal.	2.1400	\$ 64,093.00
	Diesel at Plants	56,827	Gal.	2.5600	\$ 145,477.12
	Black Oil at Plants	23,124	Gal.	1.4000	\$ 32,373.60
	Additive at Plants	-	Gal.	2.0000	\$ -
	AC at Asphalt Plants	1,673.12	Tons	514.15	\$ 860,234.65
	Aggregate/Misc.	-	Tons	15.00	\$ -
	RAP at Asphalt Plts	-	Tons		n/a
					\$ 1,102,178.37

NOTE: For information Purposes

aka: stone at asphalt plants

RAP value never carried on balance sheets

Enter Info