

DIVISION OF AIR QUALITY

September 15, 2021

MEMORANDUM

TO: Jeff Cole, Environmental Engineer, FRO
Greg Reeves, Permit Coordinator, FRO

THRU: Tom Anderson, Supervisor, Air Quality Analysis Branch (AQAB)

FROM: Mark Yoder, Meteorologist, AQAB

SUBJECT: Review of Dispersion Modeling Analysis
Highland Paving Company, LLC - Neills Creek Township Plant
Neills Creek Township, Harnett County, NC
Facility ID 4300106

I have reviewed the dispersion modeling analysis received July 19, 2021 for the Highland Paving Company, LLC - Neills Creek Township Plant (Highland Paving) in Neills Creek Township, Harnett County, North Carolina. Highland Paving is planning to construct and operate a 300 tons per hour (tph) portable hot mix asphalt (HMA) plant. This application triggered modeling requirements to evaluate six toxic pollutants whose rates are expected to exceed the levels outlined in 15A NCAC 2Q .0700. The modeling adequately demonstrates compliance, on a source-by-source basis, for all toxics modeled.

Six air toxics, arsenic, benzene, cadmium, formaldehyde, mercury and nickel, were evaluated facility wide in the modeling. AERMOD (19191) was used to model impacts in both simple and elevated terrain. Five years (2014 - 2018) of meteorological surface data from Raleigh and upper air data from Greensboro was used for the modeling analysis. Direction-specific building dimensions, determined using EPA's BPIP-Prime program (04274), were used as input to the model for building wake effect determination. A discrete grid receptor system of 1,049 receptor sites was used out to 5 kilometers from the site. Receptors were also placed at 25-meter intervals along the fence-line. Maximum impacts for each toxic pollutant are presented in the following table:

Table 1 - Potential Emissions Modeled Impacts
Highland Paving Company, LLC - Neills Creek Township, NC

TAP	Averaging Period	Max. Conc. ($\mu\text{g}/\text{m}^3$)	AAL ($\mu\text{g}/\text{m}^3$)	% of AAL
Arsenic	Annual	1.00E-04	0.0021	4.8 %
Benzene	Annual	5.46E-02	0.12	45.5 %
Cadmium	Annual	7.00E-05	5.5E-03	1.3 %
Formaldehyde	1-hour	12.4	150	8.3 %
Mercury	24-hour	3.28E-03	0.6	0.6 %
Nickel	24-hour	7.93E-02	6	1.3 %

Modeled emissions rates and stack parameters are included in the attached tables from the report. The modeling results demonstrate compliance assuming the source parameter and pollutant emission rates used in the analyses are correct.

cc: Tom Anderson
Mark Yoder

Table 1
Summary of Sources and Modeled Pollutant Emission Rates

Highland Paving Company, LLC - Neills Creek Facility
 Neills Creek Township, North Carolina

Stack ID No.	Stack Description	Arsenic Emissions (lbs/hr)	Benzene Emissions (lbs/hr)	Cadmium Emissions (lbs/hr)	Formaldehyde Emissions (lbs/hr)	Mercury Emissions (lbs/hr)	Nickel Emissions (lbs/hr)
EP1	Drum Dryer/Mixer - Baghouse	1.68E-04	1.17E-01	1.23E-04	9.30E-01	7.80E-04	1.89E-02
EP2	Total Silo Filling /Truck Loadout	-	1.82E-03	-	2.63E-02		-
EP3	Asphalt Tank Heater	4.8E-06	2.40E-05	3.5E-06	4.1E-04	3.6E-06	3.6E-06

Table 2
Summary of Stack Parameters in Model

Highland Paving Company, LLC - Neills Creek Facility
Neills Creek Township, North Carolina

Stack No.	Emission Source Description	Stack Height (ft)	Stack Diameter (ft)	Modeled Velocity (ft/sec)	Temperature (°F)
EP1	Drum Dryer/Mixer - Baghouse	22.28	3.73	88.57	240
EP2	Total Silo Filling /Truck Loadout	Modeled as volume source with dimensions of 24' x 24' x 24' with a 12' release height.			
EP3	Asphalt Tank Heater	8.79	1.00	0.00328	600