Nonroad Mobile Emissions (MOVES) – DeSoto County

Introduction and Scope

This inventory includes nonroad mobile sources found in the Maintenance Area. The nonroad mobile source category includes a diverse collection of equipment such as lawnmowers, chain saws, tractors, all-terrain vehicles, forklifts, and construction equipment. The nonroad portion of the MOVES4 model was used to estimate emissions for the entire DeSoto County for most of the nonroad sources. Some nonroad sources are not calculated by the nonroad portion of the MOVES4 model, such as Locomotives, Airplanes, and Commercial Marine emissions. These emissions are accounted for separately in the nonroad source inventory (Appendix A-5) and are not included in this nonroad inventory.

Input Assumptions for MOVES4

The options files used to provide necessary inputs to the MOVES4 model were tailored to reflect DeSoto County specific data. The MDEQ used default data built into the MOVES4 model for nonroad mobile sources since MDEQ does not have DeSoto County specific nonroad vehicle information. Local meteorological data was obtained from the National Oceanic and Atmospheric Administration (NOAA) at the Memphis International Airport. This data represents a three-year average of hourly temperatures and humidity. The specific selections made during the running of the nonroad portion of the MOVES4 model are outlined in the following section.

The model was set up to estimate the nonroad emissions from all types of equipment for DeSoto County for a typical ozone season weekday for the years of 2017 and 2036. The model results provided the daily NOx and VOC estimates for the entire county for each of the requested years.

MOVES4 Run Specifications  
The following information outlines the run options selected to generate the entire county nonroad  
mobile source emissions using MOVES4. Each year was run separately.

2017:

1. Scale: Default - Nonroad
2. Time Spans: Weekday, July 2017
3. Geographic Bounds: DeSoto County, MS (28033)
   1. Region: County
   2. State: Mississippi
   3. County: DeSoto
4. Vehicle/Equipment
   1. All available fuel/sector combinations were selected.
5. Road Type
   1. Nonroad
6. Pollutant/Processes
   1. Total Gaseous Hydrocarbons
   2. Non-Methane Hydrocarbons
   3. Volatile Organic Compounds
   4. Oxides of Nitrogen (NOx)
7. Output:
   1. Mass: Grams
   2. Energy: Joules
   3. Distance: Miles

2036:

1. Scale: Default - Nonroad
2. Time Spans: Weekday, July 2036
3. Geographic Bounds: DeSoto County, MS (28033)
   1. Region: County
   2. State: Mississippi
   3. County: DeSoto
4. Vehicle/Equipment
   1. All available fuel/sector combinations were selected.
5. Road Type
   1. Nonroad
6. Pollutant/Processes
   1. Total Gaseous Hydrocarbons
   2. Non-Methane Hydrocarbons
   3. Volatile Organic Compounds
   4. Oxides of Nitrogen (NOx)
7. Output:
   1. Mass: Grams
   2. Energy: Joules
   3. Distance: Miles

MOVES4 Emissions from Nonroad Mobile Sources

For reporting purposes, the Maintenance Area NOx and VOC emissions are summarized by equipment type in Table 1 and Table 2 below.

**Table 1: MOVES4 Nonroad Mobile NOx Emissions by Equipment Type in the Maintenance Area (tons per summer day)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sector** | **Sector ID** | **2017** | **2036** |
| Recreational | 1 | 0.0033 | 0.0034 |
| Construction | 2 | 0.9762 | 0.2252 |
| Industrial | 3 | 0.0946 | 0.1034 |
| Lawn/Garden | 4 | 0.1309 | 0.1016 |
| Agriculture | 5 | 0.2670 | 0.0641 |
| Commercial | 6 | 0.0481 | 0.0306 |
| Logging | 7 | 0.0003 | 3.93E-05 |
| Airport Support | 8 | 2.93E-06 | 6.91E-06 |
| Oil Field | 10 | 5.49E-20 | 3.41E-20 |
| Pleasure Craft | 11 | 0.0338 | 0.0288 |
| Railroad | 12 | 0.0057 | 0.0014 |
| **NOx Totals** | | **1.5598** | **0.5585** |

**Table 2: MOVES4 Nonroad Mobile VOC Emissions by Equipment Type in the Maintenance Area (tons per summer day)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sector** | **Sector ID** | **2017** | **2036** |
| Recreational | 1 | 0.0120 | 0.0126 |
| Construction | 2 | 0.1673 | 0.0779 |
| Industrial | 3 | 0.0161 | 0.0174 |
| Lawn/Garden | 4 | 0.5932 | 0.5958 |
| Agriculture | 5 | 0.0279 | 0.0062 |
| Commercial | 6 | 0.0535 | 0.0586 |
| Logging | 7 | 0.0002 | 0.0002 |
| Airport Support | 8 | 2.43E-06 | 1.24E-06 |
| Oil Field | 10 | 3.19E-20 | 3.76E-20 |
| Pleasure Craft | 11 | 0.1887 | 0.0564 |
| Railroad | 12 | 0.0012 | 0.0005 |
| **VOC Totals** | | **1.0601** | **0.8255** |