APPENDIX C

Off-Road Mobile Sources

- **C-1 Air Toxics from Aircraft**
- **C-2 Air Toxics from Locomotives**
- **C-3 Air Toxics from Commercial Marine Vessels**
- **C-4 Air Toxics from Other Nonroad Mobile Sources**

APPENDIX C-1

Air Toxics from Aircraft

Appendix C-1

Estimation of Air Toxics from Aircraft

As with the nonroad mobile source toxics inventories developed in this effort, hazardous air pollutants (HAPs) from aircraft were estimated by first generating inventories for hydrocarbon (HC) emissions. Once the HC emission inventories were developed, estimates of the percentage of each toxic compound of interest in the total HC emissions from aircraft were applied to the HC emission inventories to generate toxics estimates. Those percentages, or "toxics fractions," were compiled primarily from data that EPA developed for use in the 1996 National Toxics Inventory. As described below, emission estimates were prepared for calendar year 1999 for the communities of Anchorage, Fairbanks, and Juneau. Table C-1-1 below lists the specific airports and airbases analyzed in this study for the three different communities. In addition to these airports, data on helicopter ice field activity in Juneau were also included. Local data on aircraft activity (i.e., landings and takeoffs by aircraft type) were compiled with the help of ADEC staff.

Table C-1-1

Alaska Airports Studied

Code	City	State and Airport Name
ANC	Anchorage	Anchorage International Airport
EDF	Anchorage	Elmendorf Air Force Base
LHD	Anchorage	Lake Hood Seaplane Base
MRI	Anchorage	Merrill Field
EIL	Fairbanks	Eielson Air Force Base
FAI	Fairbanks	Fairbanks International Airport
FBK	Fairbanks/Fort Wainwright	Wainwright Army Air Field
JNU	Juneau	Juneau International Airport

HC Emissions Estimates

In its simplest form, an emission inventory is the product of an emission factor (e.g., grams of HC per mile, lb of HC per 1000 lbs of fuel, etc.) and a measure of equipment activity (e.g., miles driven, gallons of fuel used, etc.). In the case of aircraft emissions, activity is broken down into landing and takeoff (LTO) cycles.

EDMS Model - The Emissions & Dispersion Modeling System (EDMS) is administered by the Federal Aviation Administration (FAA) in cooperation with the United States Air Force (USAF), and is the preferred model by the FAA for estimating emissions from airports. The model is used to determine HC emission levels generated by typical airport/air base sources such as aircrafts and ground support equipment. In order to generate an emissions inventory of an airport/air base, specific aircraft model/airframe names and annual LTOs are used as inputs. When lacking specific data, default values can be used for other variables such as mixing heights and engine assignments. EDMS includes default values for mixing heights, aircraft to engine assignments, aircraft to GSE/ Aerospace Ground Equipment (ASE) assignments, and time in LTO modes. It also includes the latest aircraft engine emission factors from the International Civil Aviation Organization (ICAO) Engine Exhaust Emissions Data Bank, vehicle emission factors from the EPA's MOBILE5a, and EPA-validated dispersion models. From these, estimates of the total annual HC emitted from each location can be obtained. Note, however, that not all engines have been tested for their emission factors. In these cases, mostly when dealing with helicopters, estimates for emissions were generated using a similar aircraft's emission factors.

LTOs for Anchorage, Fairbanks, and Juneau - A detailed discussion of contacts established to obtain information on LTOs is presented in the IPP in Appendix A. Detailed information on commercial airline activity is available for the large domestic carriers at each of the international airports in Anchorage and Fairbanks. Those data include LTOs by airline and airframe (e.g., 737-400, etc.) and are available from the Federal Aviation Administration. Detailed airframe information was also obtained for the major air force bases, namely, Elmendorf and Eielson AFB. On the other hand, data from Juneau International were limited to the number of LTOs on a monthly basis at the airport, with no specifics on aircraft or airframe types. In addition, the data for general aviation from smaller airstrips are less specific and in some cases only include annual LTOs, with no information on airframe type. Similar problems were encountered with LTO data obtained for air taxi and military activities at these smaller venues.

In cases where airframe data are not available for general aviation and air taxi aircraft, weighted average emission rates per LTO were obtained from EPA's *Procedures for Emission Inventory Preparation* (1992) and used to estimate emissions. However, no similar option was available for military aircraft. To address this problem, emission estimates were made using military helicopter emission factors and representative aircraft emission factors. Where no airframe data were available for the military fleet, emission factors for a military helicopter, a Sikorsky SH-3E, were used. It was assumed that the majority of the 23 annual military LTOs from this field were helicopter flights, and the SH-3E's engine (T58-GE-5) was the most common engine used in military turbine helicopters. The same emission factors were used to represent the helicopter fleet from Fort Wainwright, which had airframe data, but no emission factors were available for those engines. Lastly, emissions from the military fleet at Juneau International were estimated using the emission factors for C-130 aircraft. In general, when detailed engine/airframe data

were not available for military aircraft, it was assumed that turbine powered helicopters were the primary source of activity.

HC Results - The resulting HC emission levels found for each community are summarized in Table C-1-2. For each city, the emissions are organized according to aircraft category and engine type (i.e., turbines or pistons).

Table C-1-2

HC Emission Levels in Tons per Year

Aircraft Category*	ANCHORAGE		FAIRBANKS		JUNEAU	
	Turbines	Pistons	Turbines	Pistons	Turbines	Pistons
Commercial Jets/ Air Carriers	422.11	---	17.20	---	5.07	---
Air Taxis	10.30	43.38	4.12	7.78	22.42	42.36
General Aviation	1.99	32.84	0.22	3.60	56.59	6.10
Military Aircraft	100.28	0.01	197.62	0.03	6.68	0.05

* In some cases, data for air taxis and general aviation were reported together. In these cases, the total was categorized as air taxis.

As shown above, the highest levels of HC at about 422 tons per year can be found from commercial jets or air carriers in Anchorage, most of which are from the Anchorage International Airport (ANC). With ANC having the highest 1999 activity levels in the airports studied, its commercial jet HC level is almost 25 times that of Fairbanks and more than 80 times that of Juneau. A closer look at the corresponding airport activities showed that ANC had much higher activity levels for jumbo jets such as A-300s and L-1011s compared to both Fairbanks and Juneau. The majority of commercial jets or air carriers that operated out of Fairbanks International (FAI) and Juneau International (JNU) airports were smaller, medium-range jets such as B-727s and B-737s. A comparison between the emission factors of jumbo jets and medium-range jets shows that HC emissions from jumbo jets are more than 15 times higher than those from medium range jets.

Toxics Fractions

As noted above, the calculation of air toxics is performed by applying a “toxics fraction” to hydrocarbon emissions. For example, if test data suggest that hydrocarbon exhaust from a piston engine aircraft contains 4.2% benzene, then the toxics fraction for benzene for that equipment type is 0.042. If the total exhaust hydrocarbon emissions for that source is determined to be 100 lbs per day, then the benzene inventory is calculated as:

Benzene = 100 lb/day HC * 0.042 lb benzene/lb HC = 4.2 lb/day

Thus, once the aircraft hydrocarbon inventory was generated for each of the study areas, it was a simple matter to apply the appropriate toxics fractions to generate the toxics inventories.

The toxics fractions used for this study were based on those used to prepare the 1996 National Toxics Inventory,[1] which were developed by EPA's Office of Mobile Sources.[2] Because detailed toxics data on aircraft are not available, the compounds for which toxics fractions were developed by EPA are limited to the following:

1,3-Butadiene	POM as 7-PAH
Acetaldehyde	POM as 16-PAH
Acrolein	Propionaldehyde
Benzene	Styrene
Ethyl Benzene	Toluene
Formaldehyde	Xylene
n-Hexane	

Because the fuels and the exhaust emission characteristics of piston engines differ from turbine engines, EPA developed separate toxics fractions for each of these engine types. In addition, separate fractions were developed for commercial, air taxi, and general aviation aircraft. Although EPA generated toxics fractions based on TOG, those estimates were adjusted by Sierra (using EPA-derived TOG/THC ratios) so that the fractions used in this effort were based on THC. In that way, the toxics fractions could be applied directly to the THC output from the EDMS model. A summary of the toxics fractions used in this effort is contained in Table C-1-3. For the case of military aircrafts, commercial turbine and general aviation piston toxics fractions were used.

[1] "Documentation for the 1996 Base Year National Toxics Inventory for Aircraft Sources," Prepared by Eastern Research Group for the U.S. Environmental Protection Agency, September 30, 1999.

[2] "Source Identification and Base Year 1990 Emission Inventory Guidance for Mobile Source HAPs on the OAQPS List of 40 Priority HAPs," Memorandum from Rich Cook (U.S. Environmental Protection Agency) to Anne Pope (U.S. Environmental Protection Agency), June 11, 1997.

Table C-1-3

Toxics Fractions Used for Aircraft Emissions

Compound	Basis	Commercial Turbine	Air Taxis		General Aviation	
			Turbine	Piston	Turbine	Piston
1,3-Butadiene	THC	0.022005	0.017661	0.010433	0.017295	0.010216
Acetaldehyde	THC	0.056815	0.048596	0.006601	0.047589	0.006463
Acrolein	THC	0.027696	0.023173	0.000639	0.022693	0.000625
Benzene	THC	0.023717	0.020136	0.043116	0.019719	0.042217
Ethylbenzene	THC	0.002078	0.001687	0.015650	0.001652	0.015323
Formaldehyde	THC	0.183497	0.159061	0.028638	0.155766	0.028041
n-Hexane	THC	0.000000	0.000000	0.007452	0.000000	0.007297
POM as 16-PAH	THC	0.000128	0.000068	0.000068	0.000029	0.000029
POM as 7-PAH	THC	0.000001	0.000007	0.000007	0.000009	0.000009
Propionaldehyde	THC	0.011614	0.010124	0.000639	0.009914	0.000625
Styrene	THC	0.004817	0.004162	0.003620	0.004076	0.003544
Toluene	THC	0.006357	0.005512	0.110718	0.005398	0.108410
Xylene	THC	0.005868	0.004950	0.062386	0.004847	0.061085

In addition to the compounds listed above, lead (Pb) emissions were estimated in this effort. Those estimates were prepared only for aircraft equipped with piston engines, because tetra-ethyl lead is added to aviation gasoline. Based on the 100LL specification, it was assumed that aviation gasoline used in Alaska contains 2 grams of lead per gallon of fuel. Based on CRC data, aviation gasoline has a density of about 720 kg/m^3, so the mass fraction of lead in aviation gasoline is:

$$Mass_{Avgas} = 1 \text{ gal} * 0.0037854 \text{ m}^3/\text{gal} * 720{,}000 \text{ g/m}^3 = 2{,}725 \text{ g}$$

$$x_{Pb} = 2 \text{ g Pb / gal Avgas} = 2 \text{ g Pb / } 2725 \text{ g Avgas} = 0.00073$$

It was assumed that all of the lead in aviation gasoline is emitted in the exhaust gas stream. Unfortunately, the EDMS model does not report fuel consumption estimates. As a result, it was not possible to apply the mass fraction of lead in gasoline (i.e., 0.00073) to the fuel usage. However, SO_2 emissions are calculated by the model, and those estimates are based on fuel usage. The model assumes that aviation gasoline has a fuel sulfur content of 0.006 wt%, which is a mass fraction of 0.00006 (or 60 ppm). Thus, if the model calculates SO_2 emissions to be 10 kg from a particular set of aircraft, then the fuel usage would have been:

$$Fuel_{10 \text{ kg } SO2} = [10 \text{ kg } SO_2 * (32 \text{ kg S}/64 \text{ kg } SO_2)] / 0.00006 = 83{,}333 \text{ kg}$$

and the lead emissions would then be:

$Pb_{10\ kg\ SO2}$ = 83,333 kg Fuel * 0.00073 kg Pb/ kg Fuel = 60.8 kg

Thus, the Pb/SO_2 ratio is:

Pb/SO_2 = 60.8/10 = 6.08

and lead emissions can be estimated from SO_2 emissions simply by multiplying the SO_2 emissions by 6.08.

Toxics Results

Anchorage - Table C-1-4 shows the HAP levels estimated for the city of Anchorage for calendar year 1999. As indicated, commercial aircraft make up 66% of the toxics inventory in Anchorage at about 145 tons per year. The highest total levels were obtained from formaldehyde at about 100 tons per year, which is 45% of the total inventory, followed by acetaldehyde at nearly 31 tons per year.

Table C-1-4

1999 Toxics Levels in Tons per Year in Anchorage

Hazardous Air Pollutants	Commercial	Air Taxi		Gen. Aviation		Military		HAP
Chemical Name	Turbine	Turbine	Piston	Turbine	Piston	Turbine	Piston	Total
1,3-Butadiene	9.289	0.182	0.453	0.034	0.336	2.207	9.19E-05	12.500
Acetaldehyde	23.982	0.501	0.286	0.095	0.212	5.697	5.82E-05	30.774
Acrolein	11.691	0.239	0.028	0.045	0.021	2.777	5.63E-06	14.800
Benzene	10.011	0.207	1.871	0.039	1.387	2.378	3.80E-04	15.894
Ethyl benzene	0.877	0.017	0.679	0.003	0.503	0.208	1.38E-04	2.289
Formaldehyde	77.456	1.639	1.242	0.310	0.921	18.401	2.52E-04	99.970
Hexane	0.000	0.000	0.323	0.000	0.240	0.000	6.57E-05	0.563
Lead	0.000	0.000	9.880	0.000	5.068	0.000	0.000	14.948
Polycylic Organic Matter	0.054	0.001	0.003	5.70E-05	0.001	0.013	2.58E-07	0.071
Propionaldehyde	4.902	0.104	0.028	0.020	0.021	1.165	5.63E-06	6.239
Styrene	2.033	0.043	0.157	0.008	0.116	0.483	3.19E-05	2.841
Toluene	2.683	0.057	4.803	0.011	3.560	0.637	9.76E-04	11.753
Xylenes (isomers and mixture)	2.477	0.051	2.707	0.010	2.006	0.588	5.50E-04	7.839
TOTAL	145.455	3.041	22.460	0.575	14.391	34.556	2.55E-03	220.481

Fairbanks - The resulting toxics inventory from Fairbanks is shown below in Table C-1-5. Unlike Anchorage, turbine-powered military aircraft emissions make up the majority of the inventory at 68 tons per year (84%). The toxic pollutants emitted from commercial air carrier application make up only 7% of the total inventory as compared to 66% in Anchorage, which reflects the lower commercial activity level in Fairbanks. Likewise, formaldehyde occurs at the highest total levels at about 42 tons per year (49%), followed again by acetaldehyde at about 13 tons per year.

Table C-1-5

1999 Toxics Levels in Tons per Year in Fairbanks

Hazardous Air Pollutants	Commercial	Air Taxi		Gen. Aviation		Military		HAP
Chemical Name	Turbine	Turbine	Piston	Turbine	Piston	Turbine	Piston	Total
1,3-Butadiene	0.378	0.073	0.081	0.004	0.037	4.349	3.27E-04	4.922
Acetaldehyde	0.977	0.200	0.051	0.010	0.023	11.227	2.07E-04	12.490
Acrolein	0.476	0.095	0.005	0.005	0.002	5.473	2.00E-05	6.057
Benzene	0.408	0.083	0.336	0.004	0.152	4.687	1.35E-03	5.671
Ethyl benzene	0.036	0.007	0.122	0.000	0.055	0.411	4.90E-04	0.631
Formaldehyde	3.155	0.655	0.223	0.034	0.101	36.262	8.97E-04	40.431
Hexane	0.000	0.000	0.058	0.000	0.026	0.000	2.33E-04	0.085
Lead	0.000	0.000	0.783	0.000	1.488	0.000	0.013	2.284
Polycylic Organic Matter	0.002	2.79E-04	0.001	6.24E-06	1.03E-04	0.025	9.16E-07	0.028
Propionaldehyde	0.200	0.042	0.005	0.002	0.002	2.295	2.00E-05	2.546
Styrene	0.083	0.017	0.028	0.001	0.013	0.952	1.13E-04	1.094
Toluene	0.109	0.023	0.862	0.001	0.391	1.256	3.47E-03	2.645
Xylenes (isomers and mixture)	0.101	0.020	0.485	0.001	0.220	1.160	1.95E-03	1.989
TOTAL	5.925	1.216	3.039	0.063	2.511	68.096	2.22E-02	80.872

Juneau - The estimated 1999 toxics inventory for Juneau is summarized in Table C-1-6. As an indication of the activity level distribution in Juneau, commercial operations account for only about 4% of the total toxics inventory. In contrast to both Anchorage and Fairbanks, the highest activity level and thus main source of toxic air pollutants are turbine general aviation helicopters. These helicopters that tour the ice fields contribute to about 16 tons per year, or 36% of the total inventory. Of the total toxics inventory, about 35% is formaldehyde, with the highest toxics level at about 16 tons per year, followed by toluene at almost 6 tons per year.

Table C-1-6

1999 Toxics Levels in Tons per Year in Juneau

Hazardous Air Pollutants	Commercial	Air Taxi		Gen. Aviation		Military		HAP
Chemical Name	**Turbine**	**Turbine**	**Piston**	**Turbine**	**Piston**	**Turbine**	**Piston**	**Total**
1,3-Butadiene	0.112	0.396	0.442	0.979	0.062	0.147	5.52E-04	2.138
Acetaldehyde	0.288	1.090	0.280	2.693	0.039	0.379	3.49E-04	4.770
Acrolein	0.141	0.520	0.027	1.284	0.004	0.185	3.38E-05	2.160
Benzene	0.120	0.451	1.826	1.116	0.258	0.158	2.28E-03	3.932
Ethyl benzene	0.011	0.038	0.663	0.094	0.093	0.014	8.27E-04	0.913
Formaldehyde	0.931	3.566	1.213	8.815	0.171	1.225	1.51E-03	15.923
Hexane	0.000	0.000	0.316	0.000	0.045	0.000	3.94E-04	0.361
Lead	0.000	0.000	3.131	0.000	0.941	0.000	0.017	4.089
Polycylic Organic Matter	0.001	0.002	0.003	0.002	1.75E-04	0.001	1.55E-06	0.008
Propionaldehyde	0.059	0.227	0.027	0.561	0.004	0.078	3.38E-05	0.955
Styrene	0.024	0.093	0.153	0.231	0.022	0.032	1.91E-04	0.556
Toluene	0.032	0.124	4.690	0.305	0.661	0.042	5.85E-03	5.861
Xylenes (isomers and mixture)	0.030	0.111	2.643	0.274	0.373	0.039	3.30E-03	3.473
TOTAL	1.748	6.617	15.414	16.353	2.673	2.301	3.24E-02	45.139

Uncertainties and Recommended Improvements

HC Inventory - One key uncertainty is the distribution of LTOs by aircraft type for different aircraft categories at smaller airstrips and at Juneau International. As noted above, no data are currently available for general aviation, air taxis, and military operations from these facilities except for the annual number of LTOs. In addition, the inventory should be improved as more engine emission factor data become available.

Toxics Fractions - Because test data are extremely limited, the toxics fractions are generally subject to large uncertainties for this category of nonroad sources. However, there is very little that can be done within the framework of this study to reduce those uncertainties. One area that could be investigated, however, is the lead fraction. Although the 100LL specification sets a maximum lead content of 2 grams per gallon, there is no guarantee that the maximum is seen in the field. Thus, some effort should be devoted to better characterizing aviation gasoline in Alaska before the toxics inventories are finalized.

APPENDIX C-2

Air Toxics from Locomotives

Appendix C-2

Estimation of Air Toxics from Locomotives

As with the nonroad mobile source toxics inventories developed in this effort, hazardous air pollutants (HAPs) from railroad operations were estimated by first generating inventories for hydrocarbon (HC) emissions. Once the HC emission inventories were developed, estimates of the percentage of each toxic compound of interest in the total HC emissions from aircraft were applied to the HC emission inventories to generate toxics estimates. Those percentages, or "toxics fractions," were compiled primarily from data that EPA developed for use in the 1996 National Toxics Inventory. As described in the Inventory Preparation Plan for Toxic Emissions, railroad emission estimates have been prepared for calendar year 1999 for the communities of Anchorage and Fairbanks. Locomotive fuel consumption in these communities was provided by the Alaska Railroad Corporation (ARRC).

HC Emissions Estimates

In its simplest form, an emission inventory is the product of an emission factor (e.g., grams of HC per mile, lb of HC per 1000 lbs of fuel, etc.) and a measure of equipment activity (e.g., miles driven, gallons of fuel used, etc.). In the case of locomotive emissions, activity is based on gallons of fuel used. Emission factors are in units of lbs of HC per gallons of fuel used. Separate emission factors are available for line-haul and switching (or yard) operation. AP-42 is the source of the emission factors.

Requests for locomotive fuel consumption data were submitted to the ARRC, who responded with estimates of fuel consumed by locomotive type in each community. Estimates of yard operation fuel consumption were based on the number of shifts worked and gallons consumed per shift by locomotive type. Estimates of line-haul fuel consumption were based on estimates of ton miles traveled within the boundaries of the community and gallons of fuel consumed per ton-mile of operation. Fuel use was estimated to be 1,141,000 gallons per year in Anchorage and 962,000 per year in Fairbanks. When these values were combined with the emission factors from AP-42, HC emissions were estimated to be 17.5 tons per year in Anchorage and 16.1 tons per year in Fairbanks.

Toxics Fractions

As noted above, the calculation of air toxics is performed by applying a toxics fraction to hydrocarbon emissions (in the case of organic species) or particulate emissions (in the case of metallic compounds). For example, if test data suggest that hydrocarbon exhaust from a locomotive contains 0.9% benzene, then the toxics fraction for benzene for that equipment type is 0.009. If the total exhaust hydrocarbon emissions for that source is determined to be 100 lbs per day, then the benzene inventory is calculated as:

Benzene = 100 lb/day HC * 0.009 lb benzene/lb HC = 0.9 lb/day

Thus, once the locomotive hydrocarbon and particulate inventories were generated for each of the study areas, it was a simple matter to apply the appropriate toxics fractions to prepare the toxics inventories.

The toxics fractions used for this study were based on those used to prepare the 1996 National Toxics Inventory,[*] which were developed by EPA's Office of Mobile Sources.[**] Because detailed toxics data on locomotives are not available, the compounds for which toxics fractions were developed by EPA are limited to the following:

Acrolein	Xylene
Ethylbenzene	Arsenic
n-Hexane	Chromium
Propionaldehyde	Manganese
Styrene	Nickel
Toluene	

In addition to the compounds listed above, estimates were also prepared for benzene, formaldehyde, and acetaldehyde, which are compounds typically emitted from Diesel engines. Although no toxics fractions specific to locomotives for these compounds are available from the documentation prepared for the National Toxics Inventory, Sierra used data available on large stationary Diesel engines to serve as a surrogate for locomotive engines. These estimates were obtained from EPA's AP-42 emission factor series.[*] A summary of the toxics fractions used to generate the toxics emission inventories for this study is contained in Table C-2-1

[*]"Documentation for the 1996 Base Year National Toxics Inventory for Commercial Marine Vessel and Locomotive Mobile Sources," Prepared by Eastern Research Group for the U.S. Environmental Protection Agency, September 30, 1999.

[**]"Source Identification and Base Year 1990 Emission Inventory Guidance for Mobile Source HAPs on the OAQPS List of 40 Priority HAPs," Memorandum from Rich Cook (U.S. Environmental Protection Agency) to Anne Pope (U.S. Environmental Protection Agency), June 11, 1997.

[*]"Compilation of Air Pollutant Emission Factors. Volume I: Stationary Point and Area Sources," Fifth Edition, U.S. Environmental Protection Agency, January 1995.

Toxics Results

A summary of the 1999 toxic emission levels for locomotives is presented in Tables C-2-2 for Anchorage and Table C-2-3 for Fairbanks.

Table C-2-1
Toxics Fractions Used for Locomotive Mobile Sources

Compound	Basis	Locomotive Diesel-Electrics	Source
Acrolein	VOC	0.00350	1996 NTI
Ethylbenzene	VOC	0.00200	1996 NTI
n-Hexane	VOC	0.00550	1996 NTI
Propionaldehyde	VOC	0.00610	1996 NTI
Styrene	VOC	0.00210	1996 NTI
Toluene	VOC	0.00320	1996 NTI
Xylene	VOC	0.00480	1996 NTI
Arsenic	PM10	3.57E-07	1996 NTI
Chromium	PM10	3.27E-06	1996 NTI
Manganese	PM10	2.04E-06	1996 NTI
Nickel	PM10	6.55E-06	1996 NTI
Benzene	VOC	0.00860	AP-42[a]
Formaldehyde	VOC	0.00088	AP-42[a]
Acetaldehyde	VOC	0.00028	AP-42[a]

[a] Toxics fraction for benzene, formadehyde, and acetaldehyde were compiled from AP-42 estimates for stationary Diesel engines.

Table C-2-2
Summary of 1999 Locomotive Mobile Toxic Emissions Inventory for Anchorage

Compound	Basis	Toxic Emission Total
Acetaldehyde	VOC	5.16E-03
Acrolein	VOC	6.45E-02
Arsenic Compounds (inorganic including arsine)	PM10	2.51E-06
Benzene (including benzene from gasoline)	VOC	1.58E-01
Chromium Chompounds	PM10	2.30E-05
Ethyl benzene	VOC	3.68E-02
Formaldehyde	VOC	1.62E-02
Hexane	VOC	1.01E-01
Manganese Compounds	PM10	1.43E-05
Nickel Compounds	PM10	4.60E-05
Propionaldehyde	VOC	1.12E-01
Styrene	VOC	3.87E-02
Toluene	VOC	5.90E-02
Xylenes (isomers and mixture)	VOC	8.84E-02

Table C-2-3
Summary of 1999 Locomotive Mobile Toxic Emissions Inventory for Fairbanks

Compound	Basis	Toxic Emission Total
Acetaldehyde	VOC	4.74E-03
Acrolein	VOC	5.93E-02
Arsenic Compounds (inorganic including arsine)	PM10	6.05E-06
Benzene (including benzene from gasoline)	VOC	1.46E-01
Chromium Compounds	PM10	5.54E-05
Ethyl benzene	VOC	3.39E-02
Formaldehyde	VOC	1.49E-02
Hexane	VOC	9.32E-02
Manganese Compounds	PM10	3.46E-05
Nickel Compounds	PM10	1.11E-04
Propionaldehyde	VOC	1.03E-01
Styrene	VOC	3.56E-02
Toluene	VOC	5.42E-02
Xylenes (isomers and mixture)	VOC	8.13E-02

Uncertainties and Recommended Improvements

VOC and PM10 Inventory – The emission factors are the principal source of uncertainty in the estimates presented. That is because the values in AP-42 are dated and EPA has been actively pursing new controls for locomotives. As a result, the values employed in recent EPA locomotive rulemakings should be examined to see if more specific and updated estimates are available to characterize equipment that is currently operating in Alaska.

Toxics Fractions - Because test data are extremely limited, the toxics fractions are generally subject to large uncertainties for this category of nonroad sources. However, there is very little that can be done within the framework of this study to reduce those uncertainties.

APPENDIX C-3

Air Toxics from Commercial Marine Vessels

Appendix C-3

Estimation of Air Toxics from Commercial Marine Vessels

Commercial marine vessel (CMV) activity occurs in the port communities of Juneau and Anchorage. CMV traffic is summer-peaking in Juneau due to significant tourism-related cruise ship activity. Juneau also has year-round ferry and barge traffic. The Port of Anchorage does not have significant cruise ship activity, but does have steady year-round cargo and bulk fuel shipping operations. Fairbanks is inland with insignificant CMV traffic on the Chena and Tanana Rivers.

HAP emission factors from commercial marine vessels are not readily available. A study of CMV fuel use was conducted for EPA, which developed curves for distillate fuel use for various ship sizes and operating scenarios. Using the assumption that marine engines have similar emissions characteristics to stationary diesel engines, emissions can be estimated from information about ship size and number of port calls. There are a few ships operating in the study area that burn residual fuel in boilers for steam turbines. Fuel use and emissions for these boilers was assumed to be similar to stationary boilers, so that emissions may be calculated from the size of the ship powerplant along with the number of port calls. A typical ship powerplant size was estimated for cruise ships based on industry estimates and for ferries based on publicly available information. Information on the powerplants for the primary cargo ships using the Port of Anchorage were obtained form the ship operators.

For Juneau, the 1999 cruise ship and ferry schedules are in the public domain, and total emissions were estimated based on typical ship size. Port of Anchorage emission estimates are based on information provided by the two largest cargo ship operators on the total number if port calls for their respective vessels. Tanker and barge traffic are from actual 1995 data from EPA's Commercial Marine Activity for Deep Sea Ports in the U.S. (September 1999).

Commercial Marine Vessels - Port of Anchorage

	Port of Anchorage - CSX Lines	Port of Anchorage - TOTE	Port of Anchorage - Tankers	Port of Anchorage - Barges	
	Activity Data Input: 230,886 gallons	Activity Data Input: 344,268 gallons	Activity Data Input: 284,664 gallons	Activity Data Input: 234,411 gallons	
	Activity Period/Year: 1999 Year	Activity Period/Year: 1999 Year	Activity Period/Year: 1995 Year	Activity Period/Year: 1995 Year	
Section 112 Hazardous Air Pollutants	**Source Category Calculations**	**Source Category Calculations**	**Source Category Calculations**	**Source Category Calculations**	**All Categories**
No. / CAS No. / Chemical Name	**Factor / Emissions**	**Factor / Emissions**	**Factor / Emissions**	**Factor / Emissions**	**Emissions**
35 / 75070 / Acetaldehyde	2.52E-05 lb/MMBtu / 3.99E-04 tpy			2.52E-05 lb/MMBtu / 4.05E-04 tpy	8.03E-04 tpy
39 / 107028 / Acrolein	7.88E-06 lb/MMBtu / 1.25E-04 tpy			7.88E-06 lb/MMBtu / 1.27E-04 tpy	2.51E-04 tpy
45 / N/A / Antimony Compounds		5.25E-03 lb/Mgal / 9.04E-04 tpy	5.25E-03 lb/Mgal / 7.47E-04 tpy		1.65E-03 tpy
46 / N/A / Arsenic Compounds (inorganic including arsine)		1.32E-03 lb/Mgal / 2.27E-04 tpy	1.32E-03 lb/Mgal / 1.88E-04 tpy		4.15E-04 tpy
48 / 71432 / Benzene (including benzene from gasoline)	7.76E-04 lb/MMBtu / 1.23E-02 tpy	2.14E-04 lb/Mgal / 3.68E-05 tpy	2.14E-04 lb/Mgal / 3.05E-05 tpy	7.76E-04 lb/MMBtu / 1.25E-02 tpy	2.48E-02 tpy
52 / N/A / Beryllium Compounds		2.78E-05 lb/Mgal / 4.79E-06 tpy	2.78E-05 lb/Mgal / 3.96E-06 tpy		8.74E-06 tpy
58 / N/A / Cadmium Compouns		3.98E-04 lb/Mgal / 6.85E-05 tpy	3.98E-04 lb/Mgal / 5.66E-05 tpy		1.25E-04 tpy
75 / N/A / Chromium Chompounds		8.45E-04 lb/Mgal / 1.45E-04 tpy	8.45E-04 lb/Mgal / 1.20E-04 tpy		2.66E-04 tpy
76 / N/A / Cobalt Compounds		6.02E-03 lb/Mgal / 1.04E-03 tpy	6.02E-03 lb/Mgal / 8.57E-04 tpy		1.89E-03 tpy
99 / 100414 / Ethyl benzene		6.36E-05 lb/Mgal / 1.09E-05 tpy	6.36E-05 lb/Mgal / 9.05E-06 tpy		2.00E-05 tpy
109 / 5000 / Formaldehyde	7.89E-05 lb/MMBtu / 1.25E-03 tpy	3.30E-02 lb/Mgal / 5.68E-03 tpy	3.30E-02 lb/Mgal / 4.70E-03 tpy	7.89E-05 lb/MMBtu / 1.27E-03 tpy	1.29E-02 tpy
124 / N/A / Lead Compounds		1.51E-03 lb/Mgal / 2.60E-04 tpy	1.51E-03 lb/Mgal / 2.15E-04 tpy		4.75E-04 tpy
127 / N/A / Manganese Compounds		3.00E-03 lb/Mgal / 5.16E-04 tpy	3.00E-03 lb/Mgal / 4.27E-04 tpy		9.43E-04 tpy
128 / N/A / Mercury Compounds		1.13E-04 lb/Mgal / 1.95E-05 tpy	1.13E-04 lb/Mgal / 1.61E-05 tpy		3.55E-05 tpy
132 / 71556 / Methyl chloroform (1,1,1-Trichloroethane)		2.36E-04 lb/Mgal / 4.06E-05 tpy	2.36E-04 lb/Mgal / 3.36E-05 tpy		7.42E-05 tpy
145 / 91203 / Naphthalene	1.30E-04 lb/MMBtu / 2.06E-03 tpy	1.13E-03 lb/Mgal / 1.95E-04 tpy	1.13E-03 lb/Mgal / 1.61E-04 tpy	1.30E-04 lb/MMBtu / 2.09E-03 tpy	4.50E-03 tpy
146 / N/A / Nickel Compounds		8.45E-02 lb/Mgal / 1.45E-02 tpy	8.45E-02 lb/Mgal / 1.20E-02 tpy		2.66E-02 tpy
162 / N/A / Polycylic Organic Matter	2.12E-04 lb/MMBtu / 3.35E-03 tpy	1.30E-03 lb/Mgal / 2.24E-04 tpy	1.30E-03 lb/Mgal / 1.85E-04 tpy	2.12E-04 lb/MMBtu / 3.40E-03 tpy	7.17E-03 tpy
171 / N/A / Selenium Compounds		6.83E-04 lb/Mgal / 1.18E-04 tpy	6.83E-04 lb/Mgal / 9.72E-05 tpy		2.15E-04 tpy
176 / 108883 / Toluene	2.81E-04 lb/MMBtu / 4.44E-03 tpy	6.20E-03 lb/Mgal / 1.07E-03 tpy	6.20E-03 lb/Mgal / 8.82E-04 tpy	2.81E-04 lb/MMBtu / 4.51E-03 tpy	1.09E-02 tpy
185 / 1330207 / Xylenes (isomers and mixture)	1.93E-04 lb/MMBtu / 3.05E-03 tpy	1.09E-04 lb/Mgal / 1.88E-05 tpy	1.09E-04 lb/Mgal / 1.55E-05 tpy	1.93E-04 lb/MMBtu / 3.10E-03 tpy	6.19E-03 tpy
	Total HAP Emissions 0.027 tpy	**Total HAP Emissions 0.025 tpy**	**Total HAP Emissions 0.021 tpy**	**Total HAP Emissions 0.027 tpy**	**TOTAL 0.100 tpy**

Notes/Comments:
1. Reference: AP-42, Table 3.4-3 (diesel engines)
2. Assume diesel fuel heat content of 137,000 Btu/gal
3. Activity data based on information obtained from CSX (see backup info).

Notes/Comments:
1. Reference: AP-42, Tables 1.3-8 and 1.3-10 (boilers)
2. Activity data based on information obtained from TOTE (see backup info).

Notes/Comments:
1. Reference: AP-42, Tables 1.3-8 and 1.3-10 (boilers)
2. Activity data based on information shown in backup spreadsheet.

Notes/Comments:
1. Reference: AP-42, Table 3.4-3 (diesel engines)
2. Activity data based on information shown in backup spreadsheet.

Port of Anchorage Shipping Information and Activity Data

Shipping Line/Item	Number of Port Calls	Duration of Activity (hr)	Estimated fuel Use (gal/hr)	TotalFuel Use (gal)	Comments/Assumptions
TOTE - hoteling	131	12	105	165060	2.5 bbl/hr
TOTE - slow cruise	131	2	684	179208	fuel use: assume load is 40% of ship MRC of 30K hp; turbine efficiency 40%
			TOTAL FUEL USE	344268	Bunker C (residual); burned in ship's boilers to power steam turbine
CSX - hoteling	100	18	73	132159	fuel use: 250 g/kW-hr @ 1000 kW hoteling load
CSX - slow cruise	100	2	494	98727	fuel use: 250 g/kW-hr @ 40% of ship MRC of 22540 hp from Sierra Research
			TOTAL FUEL USE	230886	Diesel, burned in engines
All Tankers - hoteling	58	12	105	73080	2.5 bbl/hr
All Tankers - slow cruise	58	2	1824	211584	fuel use: assume load is 40% of ship MRC of 80K hp; turbine efficiency 40%
			TOTAL FUEL USE	284664	Bunker C (residual); burned in ship's boilers to power steam turbine
All Barges - hoteling	97	18	73	128194	fuel use: 250 g/kW-hr @ 1000 kW hoteling load
All Barges - slow cruise	97	2	548	106217	fuel use: 250 g/kW-hr @ 40% of approximate ship MRC of 25K hp from Sierra Research
			TOTAL FUEL USE	234411	Diesel, burned in tug boat engines

TOTE Info obtained

1. TOTE operates three identical container ships on the Tacoma-Anchorage route. Total displacement of each ship is 32,000 long tons
2. TOTE may 131 port calls in 1999 (3 per week from about 4/15 - 10/1; 2 per week otherwise)
3. An average stay at berth in Anchorage is 12 hours
4. The time it takes to cast off and reach the shoal is about 1 hour; same incoming from the shoal to berth
5. The powerplant consists of 30,000 HP (shaft) of steam turbine capacity burning Bunker C
6. While in port TOTE estimates that they use 2 to 3 bbl of fuel per hour

CSX Info obtained

1. From Eric Britten of CSX Lines. CSX is one of the two major cargo shippers at the Port of Anchorage, the other is Totem Ocean Trailer Express or TOTE.
2. CSX has 2 port calls per week for 50 weeks per year resulting in about 100 roundtrips.
They have three vessels on the Anchorage-Tacoma route all of which are identical. They are powered by diesel IC engines rated at 22,540 HP.
3. Eric says that the CSX vessels typically arrive in the middle of the night, unload beginning at 7 am,
and are ready to depart late in the evening (no later than midnight).
Thus, a reasonable estimate of time in port is about 18 hours.

Other notes:
1. The fuel cosumption rate of 250 g/kW-hr is from Analysis of Commercial Marine Vessels
Emissions and Fuel Consumption Data, Figure 4-17 (Sierra Research, 1999)
This value is the average rate of consumption for engines operating between 20-80% load.
2. The hoteling load of 1000 kW is from Table 4-6 of the same document.
This value is an estimate for all commercial marine vessels except passenger vessels, where the expected hoteling load is 5000 kW
3. Tanker and barge traffic estimated from EPA's Commercial Marine Activity for Deep Sea Ports in the U.S. (9/99)
4. Based on Deep Sea Port document Cruise ship activity in Anchorage is less than 2% of total traffic and was not included.

Commercial Marine Vessels - Port of Juneau

	Port of Juneau - All Cruise Ships		Port of Juneau - Marine Highway Ferry		Port of Juneau - All Barges		
Activity Data Input:	2,886,432	**gallons**	549,723	**gallons**	362,492	**gallons**	
Activity Period/Year:	1999	**Year**	2000	**Year**	1999	**Year**	

Section 112 Hazardous Air Pollutants			Source Category Emission Calculations				Source Category Emission Calculations				Source Category Emission Calculations				Total - All
No.	**CAS No.**	**Chemical Name**	**Emission Factor**		**Emissions**		**Emission Factor**		**Emissions**		**Emission Factor**		**Emissions**		**Emissions**
35	75070	Acetaldehyde	2.52E-05	lb/MMBtu	4.98E-03	tpy	2.52E-05	lb/MMBtu	9.49E-04	tpy	2.52E-05	lb/MMBtu	6.26E-04	tpy	6.56E-03 tpy
39	107028	Acrolein	7.88E-06	lb/MMBtu	1.56E-03	tpy	7.88E-06	lb/MMBtu	2.97E-04	tpy	7.88E-06	lb/MMBtu	1.96E-04	tpy	2.05E-03 tpy
48	71432	Benzene (including benzene from gasolin	7.76E-04	lb/MMBtu	1.53E-01	tpy	7.76E-04	lb/MMBtu	2.92E-02	tpy	7.76E-04	lb/MMBtu	1.93E-02	tpy	2.02E-01 tpy
109	5000	Formaldehyde	7.89E-05	lb/MMBtu	1.56E-02	tpy	7.89E-05	lb/MMBtu	2.97E-03	tpy	7.89E-05	lb/MMBtu	1.96E-03	tpy	2.05E-02 tpy
145	91203	Naphthalene	1.30E-04	lb/MMBtu	2.57E-02	tpy	1.30E-04	lb/MMBtu	4.90E-03	tpy	1.30E-04	lb/MMBtu	3.23E-03	tpy	3.38E-02 tpy
162	N/A	Polycylic Organic Matter	2.12E-04	lb/MMBtu	4.19E-02	tpy	2.12E-04	lb/MMBtu	7.98E-03	tpy	2.12E-04	lb/MMBtu	5.26E-03	tpy	5.52E-02 tpy
176	108883	Toluene	2.81E-04	lb/MMBtu	5.56E-02	tpy	2.81E-04	lb/MMBtu	1.06E-02	tpy	2.81E-04	lb/MMBtu	6.98E-03	tpy	7.31E-02 tpy
185	1330207	Xylenes (isomers and mixture)	1.93E-04	lb/MMBtu	3.82E-02	tpy	1.93E-04	lb/MMBtu	7.27E-03	tpy	1.93E-04	lb/MMBtu	4.79E-03	tpy	5.02E-02 tpy
			Total HAP Emissions		**0.337**	**tpy**	**Total HAP Emissions**		**0.064**	**tpy**	**Total HAP Emissions**		**0.042**	**tpy**	**TOTAL** **0.44 tpy**

Notes/Comments:
1. Reference: AP-42, Table 3.4-3 (diesel engines)
2. Assume diesel fuel heat content of 137,000 Btu/ga
3. Activity data based on information shown in backup spreadsheet.

Notes/Comments:
1. Reference: AP-42, Table 3.4-3 (diesel engines)
2. Assume diesel fuel heat content of 137,000 Btu/gal
3. Activity data based on information shown in backup spreadsheet.

Notes/Comments:
1. Reference: AP-42, Table 3.4-3 (diesel engines)
2. Assume diesel fuel heat content of 137,000 Btu/gal
3. Activity data based on information shown in backup spreadsheet.

Port of Juneau Information and Activity Data

Shipping Line/Item	Number of Port Calls	Duration of Activity (hr)	Estimated fuel Use (gal/hr)	TotalFuel Use (gal)	Comments/Assumptions
All Cruise Ships - hoteling	543	10	367	1993392	fuel use: 250 g/kW-hr @ 5000 kW hoteling load
All Cruise Ships - slow cruise	543	2	822	893040	fuel use: 250 g/kW-hr @ 40% of ship MRC of 28,000 kW
			TOTAL FUEL USE	2886432	Diesel, burned in engines
Marine Highway Ferry - hoteling	692	6	73	304846	fuel use: 250 g/kW-hr @ 1000 kW hoteling load
Marine Highway Ferry - slow cruise	692	2	177	244877	fuel use: 250 g/kW-hr @ 40% of ship average MRC of 8079 hp from Sierra Rese
			TOTAL FUEL USE	549723	Diesel, burned in engines
All Barges - hoteling	150	18	73	198238	fuel use: 250 g/kW-hr @ 1000 kW hoteling load
All Barges - slow cruise	150	2	548	164254	fuel use: 250 g/kW-hr @ 40% of approximate ship MRC of 25K hp from Sierra R
			TOTAL FUEL USE	362492	Diesel, burned in tug boat engines

Other notes:
1. The fuel cosumption rate of 250 g/kW-hr is from Analysis of Commercial Marine Vessels
Emissions and Fuel Consumption Data, Figure 4-17 (Sierra Research, 1999)
This value is the average rate of consumption for engines operating between 20-80% load.
2. The cruise ship hoteling load of 5000 kW is from Table 4-6 of the same document, and is an estimate for all passenger ships.
3. The cruise ship kW rating is an estimated average value obtained from Dave Eley.
4. Slow cruise refers to total estimated arrival and departure time within municipality waters.
5. Cruise ship port time is average based on examination of 2000 calander.
6. Average Ferry characteristics derrived from AMHS 1998 Annual Trafic Volume Report and the AMHS Annual Financial Report 1997
7. Barge traffic estimated based on ADEC conversations with Alaska Marine Lines and Glacier Marine Transport

APPENDIX C-4

Air Toxics from Other Nonroad Mobile Sources

Appendix C-4

Estimation of Air Toxics from Nonroad Sources

The nonroad mobile source toxics inventories were developed by first generating inventories for hydrocarbon (HC) and particulate (PM_{10}) emissions using EPA"s draft NONROAD model.* This model calculates emissions from nonroad equipment, and categorizes them by technology type (i.e., gasoline, diesel, LPG, CNG, 2-stroke, and 4-stroke) and horsepower range. For purposes of this inventory, Sierra has combined the emissions from LPG and CNG sources (typically less than 1% of the total inventory) with those from 4-stroke equipment. The resulting HC and PM_{10} estimates were then applied to "toxics fractions," which were, as previously noted, compiled primarily from data that EPA developed for use in the 1996 National Toxics Inventory. The resulting summer and winter emissions estimates were prepared for calendar year 1999 for the communities of Anchorage, Fairbanks, and Juneau, as described below.

EPA's NONROAD Model

The NONROAD model calculates tons of emissions for a given geographical area using the following factors:

- equipment population;
- an equipment-specific emission factor (in grams per horsepower-hour);
- the average horsepower rating of the equipment;
- the estimated annual equipment activity (hours per year);
- the average load factor for the given engine.

In addition, seasonal (month or season) and day of week (i.e., weekend vs. weekday) adjustments are applied depending on whether the end-user requests an inventory estimate expressed on an annual, seasonal, or daily basis. The equipment populations are based on national averages, and then scaled down to represent smaller geographic areas on the basis of human population and proximity to recreational, industrial, and commercial facilities.

HC and PM_{10} Estimates

For purposes of this inventory, the Alaskan summer and winter are defined as April through September, and October through March, respectively. Therefore, Sierra performed modeling runs for each month of 1999, and combined the results according to the above definition to create the summer and winter inventories listed below.

*U.S. EPA NONROAD Model, draft version 2.1, released December 1998.

HC and PM_{10} Results - Table C-4-1 shows the summer and winter HC and PM_{10} inventory for Anchorage, Fairbanks, and Juneau. This table also shows the relative contribution of each of the three major technology types (diesel, 2-stroke gasoline, and 4-stroke gasoline) to the total inventory. Not surprisingly, the majority of the HC emissions are from the relatively inefficient 2-stroke gasoline engines, while the majority of PM_{10} emissions are from diesel engines. Tables C-4-2a through C-4-2f show the 25 highest sources of emissions for each of the three cities for each season. These tables show that generally one or two types of equipment (i.e., snowmobiles in the winter, outboard motors and personal watercraft in the summer) are responsible for the majority of the emissions for that season. However, the emissions from these key sources may be erroneously high due to the lack of accurate equipment population and activity data in the current version of the NONROAD model, as discussed below.

Toxics Fractions

As noted above, the calculation of air toxics is performed by applying a toxics fraction to either hydrocarbon emissions (in the case of organic species) or particulate emissions (in the case of metallic compounds). For example, if test data suggest that hydrocarbon exhaust from a leaf blower contains 2.5% benzene, then the toxics fraction for benzene for that equipment type is 0.025. If the total exhaust hydrocarbon emissions for that source is determined to be 25 lbs per day, then the benzene inventory is calculated as:

Benzene = 25 lb/day HC * 0.025 lb benzene/lb HC = 0.625 lb/day

Thus, once the nonroad equipment hydrocarbon inventory was generated for each of the study areas, it was a simple matter to apply the appropriate toxics fractions to generate the toxics inventories.

The toxics fractions used for this study were based on those used to prepare the 1996 National Toxics Inventory,[*] which were developed by EPA's Office of Mobile Sources.[**] Because detailed toxics data on nonroad equipment and engines are not available, the compounds for which toxics fractions were developed by EPA are limited to the following:

[*]"Documentation for the 1996 Base Year National Toxics Inventory for Nonroad Vehicle and Equipment Mobile Sources," Prepared by Eastern Research Group for the U.S. Environmental Protection Agency, September 30, 1999.

[**]"Source Identification and Base Year 1990 Emission Inventory Guidance for Mobile Source HAPs on the OAQPS List of 40 Priority HAPs," Memorandum from Rich Cook (U.S. Environmental Protection Agency) to Anne Pope (U.S. Environmental Protection Agency), June 11, 1997.

Table C-4-1
Relative Contribution of 2-Stroke, 4-Stroke, and Diesel Equipment
to 1999 Alaska Nonroad PM and VOC Emission Inventories

~~Summer - 1999~~

Anchorage

Technology Types	Total VOC (tons)	Relative VOC Contribution (%)	Total PM10 (tons)	Relative PM10 Contribution (%)
2-Stroke	408.2	66.3%	14.6	22.2%
4-Stroke	354.5	57.5%	2.6	4.0%
Diesel	179.5	29.1%	134.1	203.4%
Totals	942.2	152.9%	151.3	229.6%

Fairbanks

Technology Types	Total VOC (tons)	Relative VOC Contribution (%)	Total PM10 (tons)	Relative PM10 Contribution (%)
2-Stroke	438.9	46.6%	12.2	8.1%
4-Stroke	102.4	10.9%	0.6	0.4%
Diesel	74.8	7.9%	53.1	35.1%
Totals	616.1	65.4%	65.9	100.0%

Juneau

Technology Types	Total VOC (tons)	Relative VOC Contribution (%)	Total PM10 (tons)	Relative PM10 Contribution (%)
2-Stroke	1,595.0	92.4%	83.3	78.7%
4-Stroke	102.1	5.9%	0.9	0.8%
Diesel	31.4	1.8%	21.6	20.4%
Totals	1,727.0	100.1%	105.7	100.0%

~~Winter - 1999~~

Anchorage

Technology Types	Total VOC (tons)	Relative VOC Contribution (%)	Total PM10 (tons)	Relative PM10 Contribution (%)
2-Stroke	244.1	35.2%	9.5	20.5%
4-Stroke	102.3	14.7%	0.9	1.9%
Diesel	95.2	13.7%	72.5	156.4%
Totals	441.5	63.7%	82.9	178.8%

Fairbanks

Technology Types	Total VOC (tons)	Relative VOC Contribution (%)	Total PM10 (tons)	Relative PM10 Contribution (%)
2-Stroke	626.6	141.9%	15.9	19.2%
4-Stroke	24.9	5.6%	0.2	0.3%
Diesel	42.0	9.5%	30.2	36.4%
Totals	693.6	100.0%	46.3	100.0%

Juneau

Technology Types	Total VOC (tons)	Relative VOC Contribution (%)	Total PM10 (tons)	Relative PM10 Contribution (%)
2-Stroke	437.1	94.2%	25.2	68.7%
4-Stroke	12.1	2.6%	0.1	0.3%
Diesel	14.7	3.2%	11.4	31.0%
Totals	463.8	100.0%	36.7	100.0%

Table C-4-2a
MOA NONROAD Winter 1999 Emissions Inventory - 25 Highest Sources

SCC	Equipment	Tech	Population	Activity (hrs/season)	Activity/unit (hrs/season)	PM-Exhaust (tons)	TOTAL VOC (tons)	Total Exh VOC (tons)	Exh VOC (tons)	% of Total VOC
2260004036	Snowblowers (com)	2-St	2,015	274,054	136.0	3.602	100.604	100.604	0.000	22.8%
2260007005	Logging Equipment Chain Saws > 6 HP	2-St	333	50,430	151.5	2.550	41.108	41.108	0.000	9.3%
2260001030	All Terrain Vehicles\Motorcycles	2-St	1,893	32,181	17.0	0.808	34.052	34.052	0.000	7.7%
2265006005	Generator Sets	4-St	3,405	195,786	57.5	0.226	32.214	32.214	0.000	7.3%
2260001020	Snowmobiles	2-St	20,297	10,148	0.5	0.501	21.093	21.093	0.000	4.8%
2260004035	Snowblowers (res)	2-St	6,834	54,673	8.0	0.719	20.074	20.074	0.000	4.5%
2265006030	Pressure Washers	4-St	1,583	91,009	57.5	0.119	15.216	15.216	0.000	3.4%
2270002066	Tractors/Loaders/Backhoes	Dsl	390	147,827	379.5	9.696	13.824	13.824	0.000	3.1%
2265004036	Snowblowers (com)	4-St	2,152	292,661	136.0	0.106	11.423	11.423	0.000	2.6%
2260006010	Pumps	2-St	353	38,997	110.5	0.431	10.903	10.903	0.000	2.5%
2270002072	Skid Steer Loaders	Dsl	487	133,231	273.5	7.074	10.471	10.471	0.000	2.4%
2270002060	Rubber Tire Loaders	Dsl	246	62,667	254.4	6.753	9.861	9.861	0.000	2.2%
2260002054	Concrete/Industrial Saws	2-St	79	15,949	201.4	0.533	8.959	8.959	0.000	2.0%
2270002036	Excavators	Dsl	159	58,114	365.1	5.132	8.706	8.706	0.000	2.0%
2265006010	Pumps	4-St	593	65,506	110.5	0.071	8.680	8.680	0.000	2.0%
2265006025	Welders	4-St	181	36,953	204.0	0.071	6.881	6.881	0.000	1.6%
2270008005	Airport Support Equipment	Dsl	145	53,097	366.0	4.695	6.621	6.621	0.000	1.5%
2270003060	AC\Refrigeration	Dsl	583	352,045	604.1	7.428	6.434	6.434	0.000	1.5%
2270002069	Crawler Tractor/Dozers	Dsl	240	74,980	312.9	4.913	5.416	5.416	0.000	1.2%
2265001030	All Terrain Vehicles\Motorcycles	4-St	5,913	100,526	17.0	0.042	4.703	4.703	0.000	1.1%
2265006015	Air Compressors	4-St	128	30,975	242.0	0.040	4.421	4.421	0.000	1.0%
2270002057	Rough Terrain Forklift	Dsl	132	29,297	221.3	2.407	3.323	3.323	0.000	0.8%
2270006005	Generator Sets	Dsl	326	55,081	169.0	2.524	3.290	3.290	0.000	0.7%
2260002006	Tampers/Rammers	2-St	181	9,688	53.5	0.194	3.168	3.168	0.000	0.7%
2270002051	Off-highway Trucks	Dsl	21	11,721	548.6	2.302	3.062	3.062	0.000	0.7%
						62.94	394.51	394.51	0.00	89.3%

Table C-4-2b
MOA NONROAD Summer 1999 Emissions Inventory - 25 Highest Sources

SCC	Equipment	Tech	Population	Activity (hrs/season)	Activity/unit (hrs/season)	PM-Exhaust (tons)	TOTAL VOC (tons)	Total Exh VOC (tons)	Exh VOC (tons)	% of Total VOC
2260004020	Chain Saws < 6 HP (res)	2-St	4,690	171,042	36	3.45	67.72	67.65	0.07	7.2%
2282005010	Outboard	2-St	9,818	4,172	0	0.35	66.05	6.02	60.03	7.0%
2265004010	Lawn mowers (res)	4-St	27,033	675,814	25	0.36	54.77	53.52	1.25	5.8%
2265004055	Lawn & Garden Tractors (res)	4-St	9,845	443,018	45	0.37	50.51	47.28	3.23	5.4%
2260001030	All Terrain Vehicles\Motorcycles	2-St	1,893	32,181	17	0.81	40.30	34.09	6.20	4.3%
2265004071	Commercial Turf Equipment (com)	4-St	463	315,916	682	0.38	40.15	39.91	0.25	4.3%
2260007005	Logging Equipment Chain Saws > 6 HP	2-St	333	50,430	152	2.48	40.09	39.93	0.16	4.3%
2260004026	Trimmers/Edgers/Brush Cutter (com)	2-St	911	124,820	137	1.64	38.60	38.59	0.01	4.1%
2260004031	Leafblowers/Vacuums (com)	2-St	354	99,837	282	1.76	36.40	36.40	0.00	3.9%
2282010005	Inboard/Sterndrive	4-St	2,053	872	0	0.00	35.03	0.18	34.85	3.7%
2265006005	Generator Sets	4-St	3,405	195,786	58	0.22	34.38	31.83	2.55	3.6%
2260004025	Trimmers/Edgers/Brush Cutter (res)	2-St	11,382	102,438	9	1.08	31.23	31.14	0.09	3.3%
2270002066	Tractors/Loaders/Backhoes	Dsl	390	294,321	756	19.80	28.47	28.47	0.00	3.0%
2282005015	Personal Water Craft	2-St	1,327	1,327	1	0.18	22.37	3.98	18.39	2.4%
2270002072	Skid Steer Loaders	Dsl	487	265,263	545	14.36	21.61	21.61	0.00	2.3%
2270002060	Rubber Tire Loaders	Dsl	246	124,769	507	13.76	20.33	20.33	0.00	2.2%
2260004030	Leafblowers/Vacuums (res)	2-St	5,775	57,750	10	0.70	19.91	19.86	0.05	2.1%
2270002036	Excavators	Dsl	159	115,704	727	10.58	18.13	18.13	0.00	1.9%
2260002054	Concrete/Industrial Saws	2-St	79	31,755	401	0.99	16.74	16.72	0.02	1.8%
2265006030	Pressure Washers	4-St	1,583	91,009	58	0.12	15.75	15.08	0.67	1.7%
2265004011	Lawn mowers (Com)	4-St	759	308,185	406	0.12	15.45	15.41	0.04	1.6%
2265004016	Rotary Tillers < 6 HP (com)	4-St	239	113,010	472	0.18	13.59	13.58	0.01	1.4%
2270002069	Crawler Tractor/Dozers	Dsl	240	149,285	623	9.97	11.05	11.05	0.00	1.2%
2260006010	Pumps	2-St	353	38,997	111	0.42	10.72	10.68	0.04	1.1%
2265004056	Lawn & Garden Tractors (com)	4-St	158	114,146	721	0.11	10.68	10.63	0.05	1.1%
						84.2	760.0	632.1	127.9	80.7%

Table C-4-2c
FNSB NONROAD Winter 1999 Emissions Inventory - 25 Highest Sources

SCC	Equipment	Tech	Population	Activity (hrs/season)	Activity/unit (hrs/season)	PM-Exhaust (tons)	TOTAL VOC (tons)	Total Exh VOC (tons)	Exh VOC (tons)	% of Total VOC
2260001020	Snowmobiles	2-St	10,491	251,787	24.0	13.663	575.583	575.583		83.0%
2282005010	Outboard	2-St	3,019	15,773	5.2	1.304	22.387	22.387		3.2%
2260001030	All Terrain Vehicles\Motorcycles	2-St	757	12,872	17.0	0.323	13.621	13.621		2.0%
2270009010	Other Underground Mining Equipment	Dsl	81	54,104	670.1	6.128	10.211	10.211		1.5%
2260004035	Snowblowers (res)	2-St	2,507	20,054	8.0	0.264	7.363	7.363		1.1%
2265006005	Generator Sets	4-St	723	41,600	57.5	0.048	7.233	7.233		1.0%
2270002066	Tractors/Loaders/Backhoes	Dsl	142	53,779	379.5	3.528	5.029	5.029		0.7%
2270002072	Skid Steer Loaders	Dsl	177	48,469	273.5	2.574	3.809	3.809		0.5%
2270002060	Rubber Tire Loaders	Dsl	90	22,798	254.4	2.457	3.588	3.588		0.5%
2265006030	Pressure Washers	4-St	336	19,337	57.5	0.025	3.438	3.438		0.5%
2260002054	Concrete/Industrial Saws	2-St	29	5,802	201.4	0.194	3.259	3.259		0.5%
2270002036	Excavators	Dsl	58	21,142	365.1	1.867	3.167	3.167		0.5%
2260006010	Pumps	2-St	75	8,286	110.5	0.092	2.317	2.317		0.3%
2270003060	AC\Refrigeration	Dsl	196	118,216	604.1	2.494	2.160	2.160		0.3%
2265001030	All Terrain Vehicles\Motorcycles	4-St	2,365	40,211	17.0	0.017	1.982	1.982		0.3%
2270002069	Crawler Tractor/Dozers	Dsl	87	27,278	312.9	1.787	1.970	1.970		0.3%
2265006010	Pumps	4-St	126	13,919	110.5	0.015	1.961	1.961		0.3%
2282010005	Inboard/Sterndrive	4-St	631	4,512	7.1	0.019	1.603	1.603		0.2%
2265006025	Welders	4-St	38	7,852	204.0	0.015	1.550	1.550		0.2%
2270002057	Rough Terrain Forklift	Dsl	48	10,658	221.3	0.876	1.209	1.209		0.2%
2260002006	Tampers/Rammers	2-St	66	3,525	53.5	0.071	1.152	1.152		0.2%
2270002051	Off-highway Trucks	Dsl	8	4,264	548.6	0.838	1.114	1.114		0.2%
2270002045	Cranes	Dsl	41	13,467	331.0	0.791	1.023	1.023		0.1%
2265006015	Air Compressors	4-St	27	6,581	242.0	0.009	0.994	0.994		0.1%
2270008005	Airport Support Equipment	Dsl	21	7,630	366.0	0.675	0.951	0.951		0.1%
						40.07	678.68	678.68	0.00	97.8%

Table C-4-2d
FNSB NONROAD Summer 1999 Emissions Inventory - 25 Highest Sources

SCC	Equipment	Tech	Population	Activity (hrs/season)	Activity/unit (hrs/season)	PM-Exhaust (tons)	TOTAL VOC (tons)	Total Exh VOC (tons)	Exh VOC (tons)	% of Total VOC
2282005010	Outboard	2-St	3,019	89,276	29.6	7.384	158.186	127.334	30.852	25.7%
2260001020	Snowmobiles	2-St	10,491	-	-	0.000	148.482	0.000	148.482	24.1%
2282005015	Personal Water Craft	2-St	408	21,423	52.5	2.909	73.622	64.172	9.451	12.0%
2282010005	Inboard/Sterndrive	4-St	631	25,535	40.5	0.107	26.098	8.184	17.913	4.2%
2265004010	Lawn mowers (res)	4-St	9,915	247,886	25.0	0.133	20.302	19.535	0.767	3.3%
2265004055	Lawn & Garden Tractors (res)	4-St	3,611	162,498	45.0	0.135	19.240	17.258	1.982	3.1%
2260001030	All Terrain Vehicles\Motorcycles	2-St	757	12,872	17.0	0.324	17.785	13.637	4.148	2.9%
2270009010	Other Underground Mining Equipment	Dsl	81	69,668	862.9	7.894	13.168	13.168	0.000	2.1%
2260004025	Trimmers/Edgers/Brush Cutter (res)	2-St	4,175	37,574	9.0	0.398	11.477	11.423	0.054	1.9%
2270002066	Tractors/Loaders/Backhoes	Dsl	142	107,073	755.5	7.203	10.357	10.357	0.000	1.7%
2260004020	Chain Saws < 6 HP (res)	2-St	1,581	20,556	13.0	0.289	8.135	8.100	0.035	1.3%
2270002072	Skid Steer Loaders	Dsl	177	96,502	544.5	5.226	7.863	7.863	0.000	1.3%
2265006005	Generator Sets	4-St	723	41,600	57.5	0.048	7.663	6.757	0.906	1.2%
2270002060	Rubber Tire Loaders	Dsl	90	45,390	506.6	5.004	7.398	7.398	0.000	1.2%
2260004030	Leafblowers/Vacuums (res)	2-St	2,118	21,183	10.0	0.258	7.314	7.284	0.030	1.2%
2270002036	Excavators	Dsl	58	42,093	726.9	3.849	6.594	6.594	0.000	1.1%
2260002054	Concrete/Industrial Saws	2-St	29	11,552	401.0	0.361	6.094	6.081	0.012	1.0%
2265001030	All Terrain Vehicles\Motorcycles	4-St	2,365	40,211	17.0	0.017	5.436	1.817	3.619	0.9%
2270002069	Crawler Tractor/Dozers	Dsl	87	54,309	623.1	3.626	4.018	4.018	0.000	0.7%
2265006030	Pressure Washers	4-St	336	19,337	57.5	0.026	3.440	3.201	0.239	0.6%
2270003060	AC\Refrigeration	Dsl	196	144,223	736.9	3.033	2.643	2.643	0.000	0.4%
2270002057	Rough Terrain Forklift	Dsl	48	21,220	440.7	1.771	2.475	2.475	0.000	0.4%
2260002006	Tampers/Rammers	2-St	66	7,018	106.5	0.143	2.364	2.338	0.026	0.4%
2260006010	Pumps	2-St	75	8,286	110.5	0.090	2.283	2.270	0.013	0.4%
2270002051	Off-highway Trucks	Dsl	8	8,489	1,092.4	1.698	2.266	2.266	0.000	0.4%
						51.93	574.70	356.17	218.53	93.3%

Table C-4-2e
Juneau NONROAD Winter 1999 Emissions Inventory - 25 Highest Sources

SCC	Equipment	Tech	Population	Activity (hrs/season)	Activity/unit (hrs/season)	PM-Exhaust (tons)	TOTAL VOC (tons)	Total Exh VOC (tons)	Exh VOC (tons)	% of Total VOC
2260007005	Logging Equipment Chain Saws > 6 HP	2-St	2,172	329,033	151.5	16.636	268.304	268.210	0.094	57.9%
2282005010	Outboard	2-St	18,141	94,789	5.2	7.838	144.887	134.535	10.352	31.2%
2260001030	All Terrain Vehicles\Motorcycles	2-St	505	8,582	17.0	0.216	9.235	9.080	0.154	2.0%
2270007015	Forest Egp - Feller/Bunch/Skidder	Dsl	72	46,066	638.0	4.122	5.233	5.233	0.000	1.1%
2260001020	Snowmobiles	2-St	141	2,118	15.0	0.115	4.953	4.842	0.112	1.1%
2260004036	Snowblowers (com)	2-St	93	12,688	136.0	0.167	4.663	4.662	0.001	1.0%
2265006005	Generator Sets	4-St	292	16,793	57.5	0.019	2.778	2.757	0.020	0.6%
2260004035	Snowblowers (res)	2-St	803	6,422	8.0	0.085	2.372	2.360	0.011	0.5%
2270002066	Tractors/Loaders/Backhoes	Dsl	39	14,967	379.5	0.982	1.400	1.400	0.000	0.3%
2265001030	All Terrain Vehicles\Motorcycles	4-St	1,577	26,807	17.0	0.011	1.386	1.252	0.135	0.3%
2265006030	Pressure Washers	4-St	136	7,806	57.5	0.010	1.308	1.302	0.005	0.3%
2265007015	Shredders > 6 HP	4-St	306	7,742	25.3	0.008	1.195	1.181	0.014	0.3%
2270002072	Skid Steer Loaders	Dsl	49	13,489	273.5	0.716	1.060	1.060	0.000	0.2%
2270002060	Rubber Tire Loaders	Dsl	25	6,345	254.4	0.684	0.998	0.998	0.000	0.2%
2265003020	Forklifts	4-St	13	10,095	749.5	0.021	0.962	0.961	0.001	0.2%
2260006010	Pumps	2-St	30	3,345	110.5	0.037	0.935	0.935	0.000	0.2%
2260002054	Concrete/Industrial Saws	2-St	8	1,615	201.4	0.054	0.907	0.907	0.000	0.2%
2270002036	Excavators	Dsl	16	5,884	365.1	0.520	0.881	0.881	0.000	0.2%
2270003060	AC\Refrigeration	Dsl	70	42,073	604.1	0.888	0.769	0.769	0.000	0.2%
2265006010	Pumps	4-St	51	5,618	110.5	0.006	0.745	0.743	0.003	0.2%
2265006025	Welders	4-St	16	3,169	204.0	0.006	0.591	0.589	0.002	0.1%
2270002069	Crawler Tractor/Dozers	Dsl	24	7,591	312.9	0.497	0.548	0.548	0.000	0.1%
2265004036	Snowblowers (com)	4-St	100	13,549	136.0	0.005	0.535	0.532	0.003	0.1%
2270008005	Airport Support Equipment	Dsl	9	3,196	366.0	0.283	0.398	0.398	0.000	0.1%
2265006015	Air Compressors	4-St	11	2,657	242.0	0.003	0.379	0.378	0.001	0.1%
						33.93	457.42	446.51	10.91	98.6%

Table C-4-2f
Juneau NONROAD Summer 1999 Emissions Inventory - 25 Highest Sources

SCC	Equipment	Tech	Population	Activity (hrs/season)	Activity/unit (hrs/season)	PM-Exhaust (tons)	TOTAL VOC (tons)	Total Exh VOC (tons)	Exh VOC (tons)	% of Total VOC
2282005010	Outboard	2-St	18,141	536,506	29.6	44.372	810.180	765.215	44.964	46.9%
2282005015	Personal Water Craft	2-St	2,452	161,097	65.7	21.849	495.712	481.939	13.774	28.7%
2260007005	Logging Equipment Chain Saws > 6 HP	2-St	2,172	329,033	151.5	16.160	260.949	260.539	0.410	15.1%
2282010005	Inboard/Sterndrive	4-St	3,793	153,454	40.5	0.640	75.690	49.583	26.107	4.4%
2260001030	All Terrain Vehicles\Motorcycles	2-St	505	11,819	23.4	0.297	13.192	12.521	0.671	0.8%
2282020005	Inboard	Dsl	401	68,193	170.0	4.168	8.122	8.122	0.000	0.5%
2270007015	Forest Egp - Feller/Bunch/Skidder	Dsl	72	46,066	638.0	4.287	5.729	5.729	0.000	0.3%
2265004010	Lawn mowers (res)	4-St	3,176	57,217	18.0	0.031	4.617	4.557	0.060	0.3%
2265004055	Lawn & Garden Tractors (res)	4-St	1,156	37,507	32.4	0.031	4.180	4.026	0.154	0.2%
2270002066	Tractors/Loaders/Backhoes	Dsl	39	29,798	755.5	2.005	2.882	2.882	0.000	0.2%
2265006005	Generator Sets	4-St	292	16,793	57.5	0.019	2.818	2.730	0.089	0.2%
2260004025	Trimmers/Edgers/Brush Cutter (res)	2-St	1,337	8,673	6.5	0.092	2.641	2.637	0.004	0.2%
2260004020	Chain Saws < 6 HP (res)	2-St	524	5,954	11.4	0.108	2.355	2.352	0.003	0.1%
2265001030	All Terrain Vehicles\Motorcycles	4-St	1,577	36,920	23.4	0.015	2.250	1.665	0.585	0.1%
2270002072	Skid Steer Loaders	Dsl	49	26,856	544.5	1.454	2.188	2.188	0.000	0.1%
2270002060	Rubber Tire Loaders	Dsl	25	12,632	506.6	1.393	2.059	2.059	0.000	0.1%
2270002036	Excavators	Dsl	16	11,714	726.9	1.071	1.835	1.835	0.000	0.1%
2260002054	Concrete/Industrial Saws	2-St	8	3,215	401.0	0.101	1.693	1.692	0.001	0.1%
2260004030	Leafblowers/Vacuums (res)	2-St	678	4,889	7.2	0.060	1.684	1.681	0.002	0.1%
2265004071	Commercial Turf Equipment (com)	4-St	21	10,541	491.5	0.013	1.344	1.339	0.005	0.1%
2265006030	Pressure Washers	4-St	136	7,806	57.5	0.011	1.317	1.293	0.023	0.1%
2260004026	Trimmers/Edgers/Brush Cutter (com)	2-St	42	4,165	98.7	0.055	1.288	1.288	0.000	0.1%
2260001020	Snowmobiles	2-St	368	-	-	0.000	1.265	0.000	1.265	0.1%
2265007015	Shredders > 6 HP	4-St	306	7,742	25.3	0.008	1.219	1.159	0.060	0.1%
2260004031	Leafblowers/Vacuums (com)	2-St	16	3,331	203.2	0.059	1.215	1.214	0.000	0.1%
						98.30	1708.42	1620.24	88.18	98.8%

1,3-Butadiene	n-Hexane
Acetaldehyde	Nickel compounds
Acrolein	POM as 7-PAH
Benzene	POM as 16-PAH
Chromium compounds	Propionaldehyde
Ethyl Benzene	Styrene
Formaldehyde	Toluene
Manganese compounds	Xylene
Mercury compounds	

Because exhaust emission characteristics from 2-stroke gasoline engines, 4-stroke gasoline engines, and Diesel engines are fundamentally different, EPA developed separate toxics fractions for each of these engine types. In addition, separate toxics fractions were developed for evaporative emissions from gasoline equipment. Finally, different toxics fractions were generated for non-oxygenated versus oxygenated gasoline. (Gasoline containing ethanol as the oxygenate was assumed to be used in the Anchorage winter inventory runs.) As noted above, the toxics fractions for the organic compounds are based on hydrocarbon emissions (in this case, VOC), while the fractions for metal compounds are based on PM_{10} emissions.

A summary of the toxics fractions used in this effort is contained in Table C-4-3 for non-oxygenated gasoline and in Table C-4-4 for oxygenated gasoline.

Toxics Results

Table C-4-5 shows the total and seasonal toxics inventories for each of the three geographical areas. Toluene and xylene form the majority of the toxics inventory in each of the three cities during both summer and winter months. However, these and other HC-based toxics estimates may be exaggerated by disproportionately high HC emissions from several equipment categories, as discussed in detail below. Details of the toxic emission contribution from each nonroad equipment category are shown in Tables C-4-6a through C-4-6f.

Uncertainties and Recommended Improvements

NONROAD Results - EPA has utilized a top-down approach in the development of this model; national estimates for equipment population and activity have been projected for smaller regional areas based primarily on human population. The addition of area-specific data would significantly improve the accuracy of the emissions estimates produced by the NONROAD model. For example, the terrain in Juneau limits snowmobile activity in the Borough even during the winter months, which means that EPAs estimates for both population and activity in Juneau are grossly exaggerated. Likewise, EPA has not considered the wintertime ban on snowmobile activity within the Anchorage Borough, which means the activity estimates included in the model are inaccurate for this region as well.

Another area of concern is the high evaporative emissions shown for Alaskan communities from marine equipment during the winter months. The model currently calculates estimates for diurnal emissions only, which means that all of these projected evaporative emissions are attributable to the effect of ambient temperature fluctuations. In regions where the average wintertime temperature is near zero degrees Fahrenheit, it is difficult to imagine how fuel evaporation could be a significant contributing factor to the HC emission inventory.

Evaporative Emission Corrections - In all three regions, we have corrected the evaporative emissions estimates in the model output by setting them to zero for those months during which the average daily temperature is 40 degrees Fahrenheit or below. This is consistent with the basic logic used in EPA's MOBILE5 emissions model.

Toxics Fractions - The toxics fractions developed by EPA for the National Toxics Inventory were based on U.S. average gasoline. To the extent that local data are available on fuel specifications, the toxics fractions could be updated to be more specific to each of the study areas. It is hoped that fuel specification data will be obtained for the development of the on-road toxics inventory. If those data become available, the nonroad toxics fractions will be updated to reflect local fuels prior to finalizing the nonroad toxics inventories.

To more accurately reflect the annual equipment usage and seasonal activity in Alaska, a detailed discussion of the modifications to NONROAD input values implemented is presented in the next section.

Table C-4-3

Toxics Fractions Used for Nonroad Engines and Equipment
Non-Oxygenated Gasoline

Compound	Basis	Exhaust 2-Stroke	Exhaust 4-Stroke	Exhaust Diesel	Evap 2-Stroke	Evap 4-Stroke
1,3-Butadiene	VOC	0.00215	0.00095	0.00186	0.00000	0.00000
Acetaldehyde	VOC	0.00166	0.00410	0.07430	0.00000	0.00000
Formaldehyde	VOC	0.00254	0.01170	0.15000	0.00000	0.00000
Acrolein	VOC	0.00030	0.00070	0.01150	0.00000	0.00000
Benzene	VOC	0.02520	0.05250	0.02030	0.02200	0.02200
Ethylbenzene	VOC	0.02400	0.01980	0.00310	0.00770	0.00770
n-Hexane	VOC	0.01420	0.00992	0.00159	0.02340	0.02340
Propionaldehyde	VOC	0.00025	0.00188	0.00985	0.00000	0.00000
Styrene	VOC	0.00130	0.00076	0.00059	0.00000	0.00000
Toluene	VOC	0.09780	0.07180	0.01500	0.04130	0.04130
Xylene	VOC	0.10700	0.06780	0.01060	0.02230	0.02230
POM as 7-PAH	VOC	0.00001	0.00001	0.00000	0.00000	0.00000
POM as 16-PAH	VOC	0.00002	0.00002	0.00000	0.00000	0.00000
Chromium	PM10	0.00006	0.00006	0.00007	0.00000	0.00000
Manganese	PM10	0.00012	0.00012	0.00007	0.00000	0.00000
Mercury	PM10	0.00001	0.00001	0.00002	0.00000	0.00000
Nickel	PM10	0.00007	0.00007	0.00003	0.00000	0.00000

Table C-4-4

Toxics Fractions Used for Nonroad Engines and Equipment
Oxygenated Gasoline (Ethanol)

Compound	Basis	Exhaust 2-Stroke	Exhaust 4-Stroke	Exhaust Diesel	Evap 2-Stroke	Evap 4-Stroke
1,3-Butadiene	VOC	0.00215	0.00095	0.00186	0.00000	0.00000
Acetaldehyde	VOC	0.00333	0.00820	0.07430	0.00000	0.00000
Formaldehyde	VOC	0.00345	0.01590	0.15000	0.00000	0.00000
Acrolein	VOC	0.00030	0.00069	0.01150	0.00000	0.00000
Benzene	VOC	0.02260	0.04720	0.02030	0.01250	0.01250
Ethylbenzene	VOC	0.02180	0.01800	0.00310	0.00447	0.00447
n-Hexane	VOC	0.01400	0.00982	0.00159	0.00959	0.00959
Propionaldehyde	VOC	0.00024	0.00186	0.00985	0.00000	0.00000
Styrene	VOC	0.00118	0.00069	0.00059	0.00000	0.00000
Toluene	VOC	0.08900	0.06540	0.01500	0.01940	0.01940
Xylene	VOC	0.09780	0.06170	0.01060	0.01180	0.01180
POM as 7-PAH	VOC	0.00001	0.00001	0.00000	0.00000	0.00000
POM as 16-PAH	VOC	0.00002	0.00002	0.00000	0.00000	0.00000
Chromium	PM10	0.00006	0.00006	0.00007	0.00000	0.00000
Manganese	PM10	0.00012	0.00012	0.00007	0.00000	0.00000
Mercury	PM10	0.00001	0.00001	0.00002	0.00000	0.00000
Nickel	PM10	0.00007	0.00007	0.00003	0.00000	0.00000

Table C-4-5

Summary of 1999 Nonroad VOC, PM10, and Toxic Emissions Inventory for Anchorage, Fairbanks, and Juneau Boroughs

Pollutant	MOA Winter 1999	MOA Summer 1999	**MOA 1999 Total**	FNSB Winter 1999	FNSB Summer 1999	**FNSB 1999 Total**	Juneau Winter 1999	Juneau Summer 1999	**Juneau 1999 Total**
Exhaust PM (tons)	82.9	151.3	**234.2**	46.3	65.9	**112.3**	36.7	105.7	**142.4**
TOTAL VOC (tons/)	441.5	942.2	**1,383.8**	693.6	616.1	**1,309.7**	463.8	1,728.5	**2,192.2**
Total Exhaust VOC (tons)	441.5	806.4	**1,247.9**	693.6	393.2	**1,086.8**	452.6	1,640.0	**2,092.6**
Exh VOC	430.1	784.5	**1,214.6**	690.4	387.2	**1,077.6**	450.9	1,637.3	**2,088.1**
Crankcase VOC	11.5	21.8	**33.3**	3.2	6.0	**9.2**	1.7	2.7	**4.5**
Total Evap VOC (tons)	-	135.8	**135.8**	-	222.9	**222.9**	11.2	88.5	**99.7**
Chemical Name									
1,3-Butadiene	0.8	1.3	**2.1**	1.4	0.7	**2.2**	1.0	3.4	**4.4**
Acetaldehyde	8.7	15.1	**23.8**	4.3	6.3	**10.5**	1.8	5.2	**7.0**
Acrolein	1.2	2.4	**3.6**	0.7	1.0	**1.7**	0.3	0.9	**1.2**
Benzene (including benzene from gasoline)	12.3	30.7	**43.0**	18.0	16.5	**34.4**	11.9	45.2	**57.1**
Chromium Chompounds	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Ethyl benzene	7.5	15.4	**22.8**	15.7	9.3	**24.9**	10.6	39.1	**49.7**
Formaldehyde	16.7	31.3	**48.0**	8.2	12.7	**20.9**	3.4	9.5	**12.9**
Hexane	4.6	11.1	**15.6**	9.2	9.5	**18.8**	6.5	24.6	**31.1**
Manganese Compounds	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Mercury Compounds	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Nickel Compounds	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Polycylic Organic Matter	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Propionaldehyde	1.2	2.4	**3.6**	0.6	0.9	**1.6**	0.3	0.8	**1.1**
Styrene	0.4	0.8	**1.2**	0.9	0.4	**1.3**	0.6	2.1	**2.6**
Toluene	29.8	61.7	**91.5**	63.7	39.6	**103.3**	43.2	159.5	**202.7**
Xylenes (isomers and mixture)	31.2	60.1	**91.3**	69.2	37.0	**106.1**	46.8	171.5	**218.3**

Modifications to EPA's NONROAD Model Default Equipment Population and Activity Factors

Because EPA has used a top-down approach in developing populations and estimated annual activity factors for the equipment in the NONROAD model (i.e., distributed national equipment populations to individual states and counties based primarily on human population), it is expected that locally-generated data will improve the accuracy of the resulting NONROAD emissions estimates. In developing the Alaska Toxics Inventory, we were able to generate more accurate estimates for population and activity in the Fairbanks, Anchorage, and Juneau areas for only a handful of equipment categories. With the exception of these select modifications, (which are described in detail in the following pages), the NONROAD model defaults were used for all modeling associated with the development of this Inventory.

Personal Watercraft (PWC)

Equipment Population - ADEC staff contacted the U.S. Coast Guard and obtained registration data for PWC in all three communities. According to ADEC, boating registration enforcement is fairly rigorous in Juneau, but less so in Fairbanks because the recreational boating areas are scattered over a larger area in the interior of the state. PWC use on public land in Anchorage is limited in both Anchorage and Juneau because there are few places that are amenable to PWC use in either area; in Anchorage, the few local lakes have significant floatplane activity, which takes precedence, and in Juneau, the geography is the most significant limitation. Therefore, ADEC staff felt it was appropriate to assume that 50% of the PWC in Anchorage and Juneau are registered with the Coast Guard, but that fewer than 50% are likely to be registered in Fairbanks. In the absence of any additional data, it was decided that the NONROAD estimates for the PWC population in Anchorage and Fairbanks would be used. For Juneau, it was decided that registration data provided by the Coast Guard, with the 50% registration assumption discussed above, would provide a more accurate total.

	Anchorage	Fairbanks	Juneau
PWC Registered w/ Coast Guard	449 28	63	
NONROAD PWC Estimate:	1,327	408	2,452
Modified PWC Population:	1,327	408	126

Activity Estimates - Given that there are very few areas within the Anchorage Borough to use PWC, the Anchorage PWC activity has been reduced to 0.5 hours/season/unit to account for extremely limited use and equipment repair. Activity data in Fairbanks and Juneau has also been modified to reflect the limited amount of activity which actually takes place within the boundaries of the boroughs.

The NONROAD model assumes 77.3 hours of operation per year for all three communities. In addition, the ambient temperatures only allow PWC use during the warmest months of the year in each region. Seasonal PWC use has therefore been adjusted as follows:

77.3 hours/year	/	182.5 days/year	*	7 days/week	=	3 hours/week
(NONROAD default)		(6 months AK summer)				

For Juneau, it was assumed that this 3 hours per week of PWC activity was reduced by 1/3 to reflect both the more limited access to bodies of water suited to the activity in that area, and the expected rainfall during this period.

	Anchorage	Fairbanks	Juneau
Seasonal Use (months):	May – Aug.	May - Aug.	May - Aug.
(weeks):	17.5	17.5	17.5
Activity Assumptions:	1 hr/yr	3 hrs/wk	2 hrs/wk
Modified Annual Activity:	1 hr/yr	52.5 hrs/yr	35.0 hrs/yr

Boats (Outboards, Inboards, Sterndrives)

Equipment Population - In the absence of a more accurate boat population source, we have retained the NONROAD model's estimated boating populations.

Activity Estimates - In the absence of a more accurate local sources of boating activity in Juneau and Fairbanks, we have retained the NONROAD model's default boating activity factors. However, given that there are few if any areas within the Anchorage Borough appropriate for boating activity (most area lakes are only used for float plane landings and take-offs), we have reduced the activity there to 0.5 hours/year/unit to account for equipment repairs. The specific changes for Anchorage boating activity factors are as follows:

	Outboards (2-stk)	Inboard/Sterndrive (4-stk)	Inboard (Dsl)
NONROAD Defaults	34.8 hrs/yr	47.6 hrs/yr	47.6 hrs/yr
Modified MOA Activity:	0.5 hrs/yr	0.5 hrs/yr	0.5 hrs/yr

ATVs

Lacking more accurate data, we will retain the NONROAD assumptions for ATV activity and populations. ADEC staff believe the population numbers are too high, but have no local data to use as a replacement.

The only modification to this source will be to spread the activity evenly over the entire 12 months of the year, rather than concentrating more activity during the summer months. This modification is based on conversations with members of the South East Alaska OffRoad Riders Association, who assert that ATV use in Alaskan communities is constant during all seasons of the year.

Snowmobiles

Equipment Population - ADEC staff obtained snowmobile registration from the Alaska DMV. For all three areas, ADEC believes that assuming 50% of all snowmobiles operating are registered gives a more accurate population estimate than the defaults in the NONROAD model. Therefore, this logic was applied to the DMV registrations totals for all three geographic areas, as shown below. In all three cases, this revised population estimate is believed to be more representative than the NONROAD model defaults, which appeared too low for Anchorage and Fairbanks, and too high in Juneau. (According to ADEC staff, there are few areas to ride a snowmobile in Juneau due to the terrain and climate, and it is not possible to easily transport the equipment to neighboring areas outside the Borough as is routinely done in Anchorage).

	Anchorage	Fairbanks	Juneau
NONROAD Population Estimate:	1,382	553	368
DMV Registration:	10,228	5,285	71
Modified Population	20,456	10,570	142

Anchorage Activity Estimates - Snowmobile use in Anchorage is banned on public land within the Borough and there are is very little private land which can be used for snowmobiling. The few areas within the Borough where snowmobiles can be operated (e.g., Chugach State Park) are closed due to avalanche danger or inclement weather for the majority of the winter. Therefore, we feel it is appropriate to reduce snowmobile activity to 0.5 hours/year to allow for engine maintenance.

NONROAD Default Activity factor: 30 hours/year
Modified MOA Activity Factor: 0.5 hours/year

Fairbanks Activity Estimates - Although snowmobile use in Fairbanks is widespread, ADEC staff feel that 20% of all snowmobile activity actually takes place outside the Borough, in the surrounding rural areas. Therefore, although the NONROAD assumption of 30 hours/yr of snowmobile activity seems appropriate, we have reduced this number by 20% to reflect the portion of activity which takes place within the geographical boundary of the Borough.

NONROAD Default Activity factor: 30 hours/year
Modified FNSB Activity Factor: 30 hours/year * 80% = 24 hours/year

Juneau Activity Estimates - In the draft report, we assumed that the basic NONROAD assumption of 30 hours of snowmobile use per year was evenly distributed over the Alaskan winter season, October through March. This assumption yields the following weekly activity estimate:

Modified Weekly
Activity Factor: 30 hours/season /? 26 weeks/season = 1.15 hours/week

However, since the winter temperatures in Juneau are much warmer than in either Fairbanks or Anchorage, ADEC staff feels that limiting seasonal snowmobile activity to three months (January - March) is appropriate. Therefore, the modified annual activity factor becomes:

NONROAD Default Activity factor: 30 hours/year
Modified CBJ Annual Activity Factor: 1.15 hrs/wk * 13 wks/year = 15 hours/year

Lawn and Garden

Equipment Population - Lacking more accurate data, we will retain the NONROAD assumptions for lawn and garden activity and populations. ADEC staff believe the population numbers are too high, but have no local data to use as a replacement.

Activity Estimates - ADEC does feel it is appropriate to make seasonal activity adjustments to each of the three geographic areas. First, we assume that all lawn and garden activity takes place during the Alaska summer season, April through September. Using residential lawn mowers as an example, this gives the following estimated weekly activity factor:

25 hours/yr? (NONROAD default for res. lawnmowers)	/	26 weeks/yr	=	1.0 hours/week

However, due to regional weather patterns, ADEC staff feel it is appropriate to adjust the number of annual weeks of lawn and garden activity as follows:

	Anchorage	Fairbanks	Juneau
Annual L&G Usage:	May 15 - Sept. 15	May 15 - Sept. 15	May 1 - Aug. 31

This equates to approximately 17.5 weeks/yr of lawn and garden activity for each geographic area, rather than 26 weeks/yr. Distributing the 1.0 hours/week of residential lawnmower activity over this time period reduces the annual activity from 25 hours/week to 17.5 hours/week B a decrease of 30%. This categorical decrease in the annual activity for all lawn and garden equipment seems appropriate, given that the NONROAD model default assumption is that 30% of all lawn and garden activity takes place during what we have defined as the Alaska winter. So, in essence, we will simply eliminate the 30% of lawn and garden activity which the NONROAD model had assumed took place during the October through March time period.

Table C-4-6a
MOA NONROAD Emissions - Winter 1999

SCC		2260004036	2260007005	2260001030	2265006005	2260001020	2260004035	2265006030	2270002066	2265004036	2260006010	2270002072	2270002060
Equipment Name	Winter TOTAL (tons)	Snowblowers (com)	Logging Equipment Chain Saws > 6 HP	All Terrain Vehicles\Motorcycles	Generator Sets	Snowmobiles	Snowblowers (res)	Pressure Washers	Tractors/Loaders/Backhoes	Snowblowers (com)	Pumps	Skid Steer Loaders	Rubber Tire Loaders
Tech Type		2-St	2-St	2-St	4-St	2-St	2-St	4-St	Dsl	4-St	2-St	Dsl	Dsl
Equipment Population		2,015.1	332.9	1,893.0	3,405.0	20,296.9	6,834.2	1,582.8	389.6	2,151.9	352.9	487.2	246.3
Activity (hrs/season)		274,054.0	50,429.8	32,181.1	195,786.3	10,148.4	54,673.3	91,009.2	147,826.6	292,661.0	38,996.9	133,231.4	62,666.5
Activity (hrs/season/unit)		136.00	151.50	17.00	57.50	0.50	8.00	57.50	379.47	136.00	110.50	273.49	254.43
Exhaust PM (tons)	82.88	3.60E+00	2.55E+00	8.08E-01	2.26E-01	5.01E-01	7.19E-01	1.19E-01	9.70E+00	1.06E-01	4.31E-01	7.07E+00	6.75E+00
TOTAL VOC (tons)	441.55	1.01E+02	4.11E+01	3.41E+01	3.22E+01	2.11E+01	2.01E+01	1.52E+01	1.38E+01	1.14E+01	1.09E+01	1.05E+01	9.86E+00
Total Exhaust VOC (tons)	441.55	1.01E+02	4.11E+01	3.41E+01	3.22E+01	2.11E+01	2.01E+01	1.52E+01	1.38E+01	1.14E+01	1.09E+01	1.05E+01	9.86E+00
Exh VOC	430.06	1.01E+02	4.11E+01	3.41E+01	2.78E+01	2.11E+01	2.01E+01	1.45E+01	1.36E+01	1.14E+01	1.09E+01	1.03E+01	9.67E+00
Crankcase VOC	11.49	0.00E+00	0.00E+00	0.00E+00	4.39E+00	0.00E+00	0.00E+00	7.39E-01	2.71E-01	0.00E+00	0.00E+00	2.05E-01	1.93E-01
Total Evap VOC (tons)	0.00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Chemical Name													
1,3-Butadiene	0.799	2.16E-01	8.84E-02	7.32E-02	3.07E-02	4.54E-02	4.32E-02	1.45E-02	2.57E-02	1.09E-02	2.34E-02	1.95E-02	1.83E-02
Acetaldehyde	8.722	3.35E-01	1.37E-01	1.13E-01	2.64E-01	7.02E-02	6.68E-02	1.25E-01	1.03E+00	9.37E-02	3.63E-02	7.78E-01	7.33E-01
Acrolein	1.238	2.99E-02	1.22E-02	1.01E-02	2.23E-02	6.26E-03	5.96E-03	1.05E-02	1.59E-01	7.92E-03	3.24E-03	1.20E-01	1.13E-01
Benzene (including benzene from gasoline)	12.276	2.27E+00	9.29E-01	7.70E-01	1.52E+00	4.77E-01	4.54E-01	7.18E-01	2.81E-01	5.39E-01	2.46E-01	2.13E-01	2.00E-01
Chromium Chompounds	0.006	2.16E-04	1.53E-04	4.85E-05	1.35E-05	3.00E-05	4.31E-05	7.15E-06	6.79E-04	6.37E-06	2.59E-05	4.95E-04	4.73E-04
Ethyl benzene	7.458	2.19E+00	8.96E-01	7.42E-01	5.80E-01	4.60E-01	4.38E-01	2.74E-01	4.29E-02	2.06E-01	2.38E-01	3.25E-02	3.06E-02
Formaldehyde	16.743	3.47E-01	1.42E-01	1.17E-01	5.12E-01	7.28E-02	6.93E-02	2.42E-01	2.07E+00	1.82E-01	3.76E-02	1.57E+00	1.48E+00
Hexane	4.573	1.41E+00	5.76E-01	4.77E-01	3.16E-01	2.95E-01	2.81E-01	1.49E-01	2.20E-02	1.12E-01	1.53E-01	1.66E-02	1.57E-02
Manganese Compounds	0.006	4.32E-04	3.06E-04	9.70E-05	2.71E-05	6.01E-05	8.62E-05	1.43E-05	6.79E-04	1.27E-05	5.18E-05	4.95E-04	4.73E-04
Mercury Compounds	0.002	3.60E-05	2.55E-05	8.08E-06	2.26E-06	5.01E-06	7.19E-06	1.19E-06	1.94E-04	1.06E-06	4.31E-06	1.41E-04	1.35E-04
Nickel Compounds	0.003	2.52E-04	1.78E-04	5.66E-05	1.58E-05	3.50E-05	5.03E-05	8.34E-06	2.91E-04	7.43E-06	3.02E-05	2.12E-04	2.03E-04
Polycylic Organic Matter	0.006	1.67E-03	6.82E-04	5.65E-04	4.86E-04	3.50E-04	3.33E-04	2.30E-04	2.47E-05	1.72E-04	1.81E-04	1.87E-05	1.77E-05
Propionaldehyde	1.187	2.45E-02	1.00E-02	8.31E-03	5.99E-02	5.15E-03	4.90E-03	2.83E-02	1.36E-01	2.12E-02	2.66E-03	1.03E-01	9.71E-02
Styrene	0.415	1.19E-01	4.85E-02	4.02E-02	2.22E-02	2.49E-02	2.37E-02	1.05E-02	8.21E-03	7.88E-03	1.29E-02	6.22E-03	5.86E-03
Toluene	29.842	8.95E+00	3.66E+00	3.03E+00	2.11E+00	1.88E+00	1.79E+00	9.95E-01	2.07E-01	7.47E-01	9.70E-01	1.57E-01	1.48E-01
Xylenes (isomers and mixture)	31.193	9.84E+00	4.02E+00	3.33E+00	1.99E+00	2.06E+00	1.96E+00	9.39E-01	1.47E-01	7.05E-01	1.07E+00	1.11E-01	1.05E-01

Table C-4-6a
MOA NONROAD Emissions - Winter 1999

SCC		2260002054	2270002036	2265006010	2265006025	2270008005	2270003060	2270002069	2265001030	2265006015	2270002057	2270006005	2260002006
Equipment Name	Winter TOTAL (tons)	Concrete/Industrial Saws	Excavators	Pumps	Welders	Airport Support Equipment	AC\Refrigeration	Crawler Tractor/Dozers	All Terrain Vehicles\Motorcycles	Air Compressors	Rough Terrain Forklift	Generator Sets	Tampers/Rammers
Tech Type		2-St	Dsl	4-St	4-St	Dsl	Dsl	Dsl	4-St	4-St	Dsl	Dsl	2-St
Equipment Population		79.2	159.2	592.8	181.1	145.1	582.8	239.6	5,913.3	128.0	132.4	325.9	181.1
Activity (hrs/season)		15,949.3	58,113.9	65,506.4	36,953.3	53,097.1	352,045.2	74,980.0	100,526.4	30,975.1	29,296.7	55,080.9	9,688.5
Activity (hrs/season/unit)		201.42	365.10	110.50	204.00	366.00	604.05	312.94	17.00	242.00	221.33	169.00	53.49
Exhaust PM (tons)	82.88	5.33E-01	5.13E+00	7.08E-02	7.10E-02	4.70E+00	7.43E+00	4.91E+00	4.19E-02	4.04E-02	2.41E+00	2.52E+00	1.94E-01
TOTAL VOC (tons)	441.55	8.96E+00	8.71E+00	8.68E+00	6.88E+00	6.62E+00	6.43E+00	5.42E+00	4.70E+00	4.42E+00	3.32E+00	3.29E+00	3.17E+00
Total Exhaust VOC (tons)	441.55	8.96E+00	8.71E+00	8.68E+00	6.88E+00	6.62E+00	6.43E+00	5.42E+00	4.70E+00	4.42E+00	3.32E+00	3.29E+00	3.17E+00
Exh VOC	430.06	8.96E+00	8.54E+00	8.35E+00	6.48E+00	6.49E+00	6.31E+00	5.31E+00	3.77E+00	4.09E+00	3.26E+00	3.23E+00	3.17E+00
Crankcase VOC	11.49	0.00E+00	1.71E-01	3.34E-01	4.04E-01	1.30E-01	1.26E-01	1.06E-01	9.33E-01	3.36E-01	6.51E-02	6.45E-02	0.00E+00
Total Evap VOC (tons)	0.00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Chemical Name													
1,3-Butadiene	0.799	1.93E-02	1.62E-02	8.26E-03	6.55E-03	1.23E-02	1.20E-02	1.01E-02	4.48E-03	4.21E-03	6.18E-03	6.12E-03	6.81E-03
Acetaldehyde	8.722	2.98E-02	6.47E-01	7.12E-02	5.64E-02	4.92E-01	4.78E-01	4.02E-01	3.86E-02	3.63E-02	2.47E-01	2.44E-01	1.05E-02
Acrolein	1.238	2.66E-03	1.00E-01	6.02E-03	4.77E-03	7.61E-02	7.40E-02	6.23E-02	3.26E-03	3.06E-03	3.82E-02	3.78E-02	9.41E-04
Benzene (including benzene from gasoline)	12.276	2.02E-01	1.77E-01	4.10E-01	3.25E-01	1.34E-01	1.31E-01	1.10E-01	2.22E-01	2.09E-01	6.74E-02	6.68E-02	7.16E-02
Chromium Chompounds	0.006	3.20E-05	3.59E-04	4.25E-06	4.26E-06	3.29E-04	5.20E-04	3.44E-04	2.51E-06	2.42E-06	1.69E-04	1.77E-04	1.17E-05
Ethyl benzene	7.458	1.95E-01	2.70E-02	1.56E-01	1.24E-01	2.05E-02	1.99E-02	1.68E-02	8.47E-02	7.96E-02	1.03E-02	1.02E-02	6.91E-02
Formaldehyde	16.743	3.09E-02	1.31E+00	1.38E-01	1.09E-01	9.93E-01	9.65E-01	8.12E-01	7.48E-02	7.03E-02	4.98E-01	4.93E-01	1.09E-02
Hexane	4.573	1.25E-01	1.38E-02	8.52E-02	6.76E-02	1.05E-02	1.02E-02	8.61E-03	4.62E-02	4.34E-02	5.28E-03	5.23E-03	4.44E-02
Manganese Compounds	0.006	6.40E-05	3.59E-04	8.49E-06	8.52E-06	3.29E-04	5.20E-04	3.44E-04	5.03E-06	4.84E-06	1.69E-04	1.77E-04	2.33E-05
Mercury Compounds	0.002	5.33E-06	1.03E-04	7.08E-07	7.10E-07	9.39E-05	1.49E-04	9.83E-05	4.19E-07	4.04E-07	4.81E-05	5.05E-05	1.94E-06
Nickel Compounds	0.003	3.73E-05	1.54E-04	4.95E-06	4.97E-06	1.41E-04	2.23E-04	1.47E-04	2.93E-06	2.83E-06	7.22E-05	7.57E-05	1.36E-05
Polycylic Organic Matter	0.006	1.49E-04	1.56E-05	1.31E-04	1.04E-04	1.19E-05	1.15E-05	9.69E-06	7.10E-05	6.68E-05	5.95E-06	5.89E-06	5.26E-05
Propionaldehyde	1.187	2.19E-03	8.58E-02	1.61E-02	1.28E-02	6.52E-02	6.34E-02	5.33E-02	8.75E-03	8.22E-03	3.27E-02	3.24E-02	7.73E-04
Styrene	0.415	1.06E-02	5.17E-03	5.99E-03	4.75E-03	3.93E-03	3.82E-03	3.22E-03	3.25E-03	3.05E-03	1.97E-03	1.95E-03	3.74E-03
Toluene	29.842	7.97E-01	1.31E-01	5.68E-01	4.50E-01	9.93E-02	9.65E-02	8.12E-02	3.08E-01	2.89E-01	4.98E-02	4.93E-02	2.82E-01
Xylenes (isomers and mixture)	31.193	8.76E-01	9.23E-02	5.36E-01	4.25E-01	7.02E-02	6.82E-02	5.74E-02	2.90E-01	2.73E-01	3.52E-02	3.49E-02	3.10E-01

Table C-4-6a
MOA NONROAD Emissions - Winter 1999

SCC		2270002051	2265003020	2270002045	2270006025	2270006015	2265004035	2270002075	2270002048	2268006020	2265008005	2260006005
Equipment Name	Winter TOTAL (tons)	Off-highway Trucks	Forklifts	Cranes	Welders	Air Compressors	Snowblowers (res)	Off-Highway Tractors	Graders	Gas Compressors	Airport Support Equipment	Generator Sets
Tech Type		Dsl	4-St	Dsl	Dsl	Dsl	4-St	Dsl	Dsl	4-St	4-St	2-St
Equipment Population		21.4	41.6	111.8	154.8	115.3	7,300.8	35.6	99.3	0.5	19.9	103.0
Activity (hrs/season)		11,720.7	31,208.5	37,018.6	49,781.1	46,992.1	58,406.2	10,177.9	31,929.9	1,617.6	8,599.0	5,921.2
Activity (hrs/season/unit)		548.65	749.55	330.99	321.50	407.50	8.00	285.86	321.63	3,000.00	432.39	57.50
Exhaust PM (tons)	82.88	2.30E+00	6.36E-02	2.17E+00	1.91E+00	1.89E+00	2.12E-02	1.57E+00	1.82E+00	1.33E-02	1.94E-02	6.45E-02
TOTAL VOC (tons)	441.55	3.06E+00	2.97E+00	2.81E+00	2.62E+00	2.35E+00	2.28E+00	2.15E+00	2.09E+00	1.81E+00	1.70E+00	1.57E+00
Total Exhaust VOC (tons)	441.55	3.06E+00	2.97E+00	2.81E+00	2.62E+00	2.35E+00	2.28E+00	2.15E+00	2.09E+00	1.81E+00	1.70E+00	1.57E+00
Exh VOC	430.06	3.00E+00	2.24E+00	2.76E+00	2.56E+00	2.30E+00	2.28E+00	2.10E+00	2.05E+00	1.36E+00	1.41E+00	1.57E+00
Crankcase VOC	11.49	6.00E-02	7.29E-01	5.52E-02	5.13E-02	4.60E-02	0.00E+00	4.21E-02	4.10E-02	4.50E-01	2.92E-01	0.00E+00
Total Evap VOC (tons)	0.00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Chemical Name												
1,3-Butadiene	0.799	5.70E-03	2.83E-03	5.23E-03	4.86E-03	4.36E-03	2.17E-03	3.99E-03	3.89E-03	1.73E-03	1.62E-03	3.38E-03
Acetaldehyde	8.722	2.28E-01	2.44E-02	2.09E-01	1.94E-01	1.74E-01	1.87E-02	1.59E-01	1.56E-01	1.49E-02	1.39E-02	5.23E-03
Acrolein	1.238	3.52E-02	2.06E-03	3.23E-02	3.01E-02	2.70E-02	1.58E-03	2.47E-02	2.41E-02	1.26E-03	1.18E-03	4.67E-04
Benzene (including benzene from gasoline)	12.276	6.22E-02	1.40E-01	5.71E-02	5.31E-02	4.76E-02	1.08E-01	4.36E-02	4.25E-02	8.56E-02	8.01E-02	3.55E-02
Chromium Chompounds	0.006	1.61E-04	3.82E-06	1.52E-04	1.34E-04	1.33E-04	1.27E-06	1.10E-04	1.27E-04	7.98E-07	1.16E-06	3.87E-06
Ethyl benzene	7.458	9.49E-03	5.35E-02	8.72E-03	8.11E-03	7.27E-03	4.10E-02	6.65E-03	6.49E-03	3.26E-02	3.05E-02	3.43E-02
Formaldehyde	16.743	4.59E-01	4.73E-02	4.22E-01	3.92E-01	3.52E-01	3.63E-02	3.22E-01	3.14E-01	2.88E-02	2.70E-02	5.42E-03
Hexane	4.573	4.87E-03	2.92E-02	4.47E-03	4.16E-03	3.73E-03	2.24E-02	3.41E-03	3.33E-03	1.78E-02	1.67E-02	2.20E-02
Manganese Compounds	0.006	1.61E-04	7.63E-06	1.52E-04	1.34E-04	1.33E-04	2.54E-06	1.10E-04	1.27E-04	1.60E-06	2.33E-06	7.74E-06
Mercury Compounds	0.002	4.60E-05	6.36E-07	4.35E-05	3.82E-05	3.79E-05	2.12E-07	3.15E-05	3.63E-05	1.33E-07	1.94E-07	6.45E-07
Nickel Compounds	0.003	6.91E-05	4.45E-06	6.52E-05	5.73E-05	5.68E-05	1.48E-06	4.72E-05	5.45E-05	9.31E-07	1.36E-06	4.52E-06
Polycylic Organic Matter	0.006	5.48E-06	4.49E-05	5.04E-06	4.68E-06	4.20E-06	3.44E-05	3.84E-06	3.75E-06	2.74E-05	2.56E-05	2.61E-05
Propionaldehyde	1.187	3.02E-02	5.53E-03	2.77E-02	2.58E-02	2.31E-02	4.24E-03	2.11E-02	2.06E-02	3.37E-03	3.16E-03	3.84E-04
Styrene	0.415	1.82E-03	2.05E-03	1.67E-03	1.55E-03	1.39E-03	1.57E-03	1.27E-03	1.24E-03	1.25E-03	1.17E-03	1.85E-03
Toluene	29.842	4.59E-02	1.94E-01	4.22E-02	3.92E-02	3.52E-02	1.49E-01	3.22E-02	3.14E-02	1.19E-01	1.11E-01	1.40E-01
Xylenes (isomers and mixture)	31.193	3.25E-02	1.83E-01	2.98E-02	2.77E-02	2.49E-02	1.41E-01	2.27E-02	2.22E-02	1.12E-01	1.05E-01	1.54E-01

Table C-4-6a
MOA NONROAD Emissions - Winter 1999

SCC		2270002015	2270002018	2270006010	2265001060	2265002039	2265002042	2282005010	2270002030	2260001060	2265002021	2265002030	2270007015
Equipment Name	Winter TOTAL (tons)	Rollers	Scrapers	Pumps	Specialty Vehicle Carts	Concrete/Industrial Saws	Cement & Mortar Mixers	Outboard	Trenchers	Specialty Vehicle Carts	Paving Equipment	Trenchers	Forest Eqp - Feller/Bunch/Skidder
Tech Type		Dsl	Dsl	Dsl	4-St	4-St	4-St	2-St	Dsl	2-St	4-St	4-St	Dsl
Equipment Population		130.7	36.4	148.3	240.0	45.1	283.0	9,817.8	93.0	611.0	123.5	38.2	11.1
Activity (hrs/season)		33,207.9	11,136.3	29,891.2	4,858.1	9,198.5	7,949.0	737.1	18,436.6	12,365.4	7,223.4	5,136.5	7,060.4
Activity (hrs/season/unit)		254.10	305.58	201.50	20.24	203.95	28.08	0.08	198.26	20.24	58.51	134.40	638.00
Exhaust PM (tons)	82.88	1.49E+00	1.19E+00	1.14E+00	9.39E-03	1.31E-02	9.77E-03	6.10E-02	9.42E-01	1.04E-02	7.51E-03	7.57E-03	6.32E-01
TOTAL VOC (tons)	441.55	1.46E+00	1.41E+00	1.40E+00	1.32E+00	1.23E+00	1.11E+00	1.06E+00	1.06E+00	1.03E+00	9.42E-01	8.05E-01	8.02E-01
Total Exhaust VOC (tons)	441.55	1.46E+00	1.41E+00	1.40E+00	1.32E+00	1.23E+00	1.11E+00	1.06E+00	1.06E+00	1.03E+00	9.42E-01	8.05E-01	8.02E-01
Exh VOC	430.06	1.44E+00	1.38E+00	1.37E+00	1.05E+00	1.19E+00	9.66E-01	1.06E+00	1.04E+00	1.03E+00	8.70E-01	7.54E-01	7.86E-01
Crankcase VOC	11.49	2.87E-02	2.76E-02	2.75E-02	2.68E-01	4.17E-02	1.44E-01	0.00E+00	2.08E-02	0.00E+00	7.23E-02	5.07E-02	1.57E-02
Total Evap VOC (tons)	0.00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Chemical Name													
1,3-Butadiene	0.799	2.72E-03	2.62E-03	2.61E-03	1.25E-03	1.17E-03	1.06E-03	2.28E-03	1.97E-03	2.22E-03	8.97E-04	7.66E-04	1.49E-03
Acetaldehyde	8.722	1.09E-01	1.05E-01	1.04E-01	1.08E-02	1.01E-02	9.11E-03	3.54E-03	7.89E-02	3.44E-03	7.72E-03	6.60E-03	5.96E-02
Acrolein	1.238	1.68E-02	1.62E-02	1.61E-02	9.12E-04	8.52E-04	7.70E-04	3.16E-04	1.22E-02	3.07E-04	6.53E-04	5.58E-04	9.22E-03
Benzene (including benzene from gasoline)	12.276	2.97E-02	2.86E-02	2.84E-02	6.21E-02	5.80E-02	5.24E-02	2.40E-02	2.15E-02	2.34E-02	4.45E-02	3.80E-02	1.63E-02
Chromium Chompounds	0.006	1.04E-04	8.31E-05	7.98E-05	5.64E-07	7.87E-07	5.86E-07	3.66E-06	6.59E-05	6.24E-07	4.50E-07	4.54E-07	4.42E-05
Ethyl benzene	7.458	4.54E-03	4.37E-03	4.34E-03	2.37E-02	2.21E-02	2.00E-02	2.32E-02	3.29E-03	2.25E-02	1.70E-02	1.45E-02	2.49E-03
Formaldehyde	16.743	2.20E-01	2.11E-01	2.10E-01	2.09E-02	1.96E-02	1.77E-02	3.67E-03	1.59E-01	3.57E-03	1.50E-02	1.28E-02	1.20E-01
Hexane	4.573	2.33E-03	2.24E-03	2.23E-03	1.29E-02	1.21E-02	1.09E-02	1.49E-02	1.69E-03	1.45E-02	9.25E-03	7.90E-03	1.28E-03
Manganese Compounds	0.006	1.04E-04	8.31E-05	7.98E-05	1.13E-06	1.57E-06	1.17E-06	7.32E-06	6.59E-05	1.25E-06	9.01E-07	9.09E-07	4.42E-05
Mercury Compounds	0.002	2.98E-05	2.37E-05	2.28E-05	9.39E-08	1.31E-07	9.77E-08	6.10E-07	1.88E-05	1.04E-07	7.51E-08	7.57E-08	1.26E-05
Nickel Compounds	0.003	4.47E-05	3.56E-05	3.42E-05	6.57E-07	9.18E-07	6.84E-07	4.27E-06	2.83E-05	7.28E-07	5.26E-07	5.30E-07	1.90E-05
Polycylic Organic Matter	0.006	2.62E-06	2.52E-06	2.51E-06	1.99E-05	1.86E-05	1.68E-05	1.76E-05	1.90E-06	1.72E-05	1.42E-05	1.22E-05	1.44E-06
Propionaldehyde	1.187	1.44E-02	1.39E-02	1.38E-02	2.45E-03	2.29E-03	2.07E-03	2.59E-04	1.05E-02	2.52E-04	1.75E-03	1.50E-03	7.90E-03
Styrene	0.415	8.70E-04	8.37E-04	8.32E-04	9.08E-04	8.49E-04	7.66E-04	1.25E-03	6.30E-04	1.22E-03	6.50E-04	5.55E-04	4.76E-04
Toluene	29.842	2.20E-02	2.11E-02	2.10E-02	8.60E-02	8.04E-02	7.26E-02	9.46E-02	1.59E-02	9.20E-02	6.16E-02	5.26E-02	1.20E-02
Xylenes (isomers and mixture)	31.193	1.55E-02	1.49E-02	1.49E-02	8.12E-02	7.59E-02	6.85E-02	1.04E-01	1.12E-02	1.01E-01	5.81E-02	4.97E-02	8.50E-03

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MOA NONROAD Emissions - Winter 1999

SCC		2270005015	2265002009	2270001060	2270002033	2270002003	2270002021	2270003020	2265002033	2265002072	2265002066	2265002015	2285002015
Equipment Name	Winter TOTAL (tons)	Agricultural Tractors	Plate Compactors	Specialty Vehicle Carts	Bore/Drill Rigs	Pavers	Paving Equipment	Forklifts	Bore/Drill Rigs	Skid Steer Loaders	Tractors/Loaders/Backhoes	Rollers	Railway Maintenance
Tech Type		Dsl	4-St	Dsl	Dsl	Dsl	Dsl	Dsl	4-St	4-St	4-St	4-St	Dsl
Equipment Population		74.3	117.8	21.2	27.2	37.3	46.9	11.6	121.5	16.3	9.3	12.2	8.2
Activity (hrs/season)		9,850.2	6,535.9	2,874.8	4,242.0	10,233.1	9,756.2	8,851.6	4,345.0	1,693.8	2,716.7	2,533.1	3,856.2
Activity (hrs/season/unit)		132.66	55.50	135.45	155.80	274.49	207.96	765.77	35.77	103.64	290.87	207.62	471.50
Exhaust PM (tons)	82.88	4.24E-01	5.06E-03	4.06E-01	4.97E-01	4.86E-01	4.85E-01	3.80E-01	3.55E-03	4.04E-03	3.86E-03	3.83E-03	2.29E-01
TOTAL VOC (tons)	441.55	7.47E-01	6.50E-01	6.28E-01	6.09E-01	5.19E-01	4.73E-01	4.37E-01	4.26E-01	4.13E-01	3.64E-01	3.61E-01	3.47E-01
Total Exhaust VOC (tons)	441.55	7.47E-01	6.50E-01	6.28E-01	6.09E-01	5.19E-01	4.73E-01	4.37E-01	4.26E-01	4.13E-01	3.64E-01	3.61E-01	3.47E-01
Exh VOC	430.06	7.33E-01	6.26E-01	6.15E-01	5.97E-01	5.09E-01	4.64E-01	4.28E-01	3.97E-01	3.37E-01	3.63E-01	3.34E-01	3.40E-01
Crankcase VOC	11.49	1.47E-02	2.40E-02	1.23E-02	1.19E-02	1.02E-02	9.28E-03	8.57E-03	2.94E-02	7.69E-02	8.07E-04	2.72E-02	6.80E-03
Total Evap VOC (tons)	0.00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Chemical Name													
1,3-Butadiene	0.799	1.39E-03	6.19E-04	1.17E-03	1.13E-03	9.66E-04	8.80E-04	8.13E-04	4.06E-04	3.94E-04	3.46E-04	3.43E-04	6.45E-04
Acetaldehyde	8.722	5.55E-02	5.33E-03	4.66E-02	4.53E-02	3.86E-02	3.52E-02	3.25E-02	3.49E-03	3.39E-03	2.98E-03	2.96E-03	2.58E-02
Acrolein	1.238	8.59E-03	4.51E-04	7.22E-03	7.01E-03	5.97E-03	5.44E-03	5.03E-03	2.95E-04	2.87E-04	2.52E-04	2.50E-04	3.99E-03
Benzene (including benzene from gasoline)	12.276	1.52E-02	3.07E-02	1.27E-02	1.24E-02	1.05E-02	9.61E-03	8.87E-03	2.01E-02	1.95E-02	1.72E-02	1.70E-02	7.04E-03
Chromium Chompounds	0.006	2.96E-05	3.04E-07	2.84E-05	3.48E-05	3.40E-05	3.40E-05	2.66E-05	2.13E-07	2.42E-07	2.32E-07	2.30E-07	1.60E-05
Ethyl benzene	7.458	2.32E-03	1.17E-02	1.95E-03	1.89E-03	1.61E-03	1.47E-03	1.35E-03	7.67E-03	7.44E-03	6.55E-03	6.49E-03	1.07E-03
Formaldehyde	16.743	1.12E-01	1.03E-02	9.42E-02	9.14E-02	7.79E-02	7.10E-02	6.56E-02	6.77E-03	6.57E-03	5.78E-03	5.74E-03	5.20E-02
Hexane	4.573	1.19E-03	6.38E-03	9.98E-04	9.69E-04	8.25E-04	7.53E-04	6.95E-04	4.18E-03	4.06E-03	3.57E-03	3.54E-03	5.51E-04
Manganese Compounds	0.006	2.96E-05	6.07E-07	2.84E-05	3.48E-05	3.40E-05	3.40E-05	2.66E-05	4.26E-07	4.84E-07	4.64E-07	4.60E-07	1.60E-05
Mercury Compounds	0.002	8.47E-06	5.06E-08	8.13E-06	9.93E-06	9.72E-06	9.71E-06	7.59E-06	3.55E-08	4.04E-08	3.86E-08	3.83E-08	4.58E-06
Nickel Compounds	0.003	1.27E-05	3.54E-07	1.22E-05	1.49E-05	1.46E-05	1.46E-05	1.14E-05	2.49E-07	2.82E-07	2.70E-07	2.68E-07	6.87E-06
Polycylic Organic Matter	0.006	1.34E-06	9.82E-06	1.12E-06	1.09E-06	9.29E-07	8.47E-07	7.82E-07	6.43E-06	6.24E-06	5.49E-06	5.45E-06	6.20E-07
Propionaldehyde	1.187	7.36E-03	1.21E-03	6.18E-03	6.00E-03	5.11E-03	4.66E-03	4.30E-03	7.92E-04	7.69E-04	6.77E-04	6.71E-04	3.41E-03
Styrene	0.415	4.44E-04	4.49E-04	3.73E-04	3.62E-04	3.08E-04	2.81E-04	2.60E-04	2.94E-04	2.85E-04	2.51E-04	2.49E-04	2.06E-04
Toluene	29.842	1.12E-02	4.25E-02	9.42E-03	9.14E-03	7.79E-03	7.10E-03	6.56E-03	2.79E-02	2.70E-02	2.38E-02	2.36E-02	5.20E-03
Xylenes (isomers and mixture)	31.193	7.92E-03	4.01E-02	6.65E-03	6.46E-03	5.50E-03	5.02E-03	4.63E-03	2.63E-02	2.55E-02	2.24E-02	2.23E-02	3.67E-03

Table C-4-6a
MOA NONROAD Emissions - Winter 1999

SCC		2270002054	2270002027	2265002024	2270004036	2265003040	2265002060	2260002021	2265002003	2270002081	2260002009	2270002024	2270003030
Equipment Name	Winter TOTAL (tons)	Crushing/Proc. Equipment	Signal Boards/Light Plants	Surfacing Equipment	Snowblowers (com)	Other General Industrial Eqp	Rubber Tire Loaders	Paving Equipment	Pavers	Other Construction Equipment	Plate Compactors	Surfacing Equipment	Sweepers/Scrubbers
Tech Type		Dsl	Dsl	4-St	Dsl	4-St	4-St	2-St	4-St	Dsl	2-St	Dsl	Dsl
Equipment Population		11.7	78.7	22.3	4.1	8.3	3.3	16.2	11.0	15.5	17.1	7.1	3.5
Activity (hrs/season)		3,744.9	14,085.9	3,644.0	1,626.7	2,669.2	562.3	950.4	1,439.3	3,140.1	946.6	1,335.6	1,946.7
Activity (hrs/season/unit)		319.29	178.87	163.16	400.00	321.17	171.18	58.51	131.06	202.61	55.50	187.56	549.55
Exhaust PM (tons)	82.88	2.44E-01	3.13E-01	3.02E-03	2.35E-01	2.30E-03	3.01E-03	1.02E-02	2.26E-03	1.99E-01	8.55E-03	2.07E-01	1.27E-01
TOTAL VOC (tons)	441.55	3.42E-01	3.32E-01	3.27E-01	3.21E-01	2.97E-01	2.82E-01	2.46E-01	2.22E-01	2.07E-01	2.06E-01	2.04E-01	1.97E-01
Total Exhaust VOC (tons)	441.55	3.42E-01	3.32E-01	3.27E-01	3.21E-01	2.97E-01	2.82E-01	2.46E-01	2.22E-01	2.07E-01	2.06E-01	2.04E-01	1.97E-01
Exh VOC	430.06	3.36E-01	3.26E-01	3.26E-01	3.14E-01	2.97E-01	2.16E-01	2.46E-01	2.04E-01	2.03E-01	2.06E-01	2.00E-01	1.93E-01
Crankcase VOC	11.49	6.71E-03	6.52E-03	1.50E-03	6.29E-03	1.40E-04	6.62E-02	0.00E+00	1.79E-02	4.07E-03	0.00E+00	3.99E-03	3.86E-03
Total Evap VOC (tons)	0.00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Chemical Name													
1,3-Butadiene	0.799	6.37E-04	6.18E-04	3.11E-04	5.97E-04	2.83E-04	2.69E-04	5.28E-04	2.11E-04	3.86E-04	4.44E-04	3.79E-04	3.66E-04
Acetaldehyde	8.722	2.54E-02	2.47E-02	2.68E-03	2.38E-02	2.43E-03	2.31E-03	8.18E-04	1.82E-03	1.54E-02	6.87E-04	1.51E-02	1.46E-02
Acrolein	1.238	3.94E-03	3.82E-03	2.27E-04	3.69E-03	2.06E-04	1.96E-04	7.29E-05	1.54E-04	2.38E-03	6.13E-05	2.34E-03	2.27E-03
Benzene (including benzene from gasoline)	12.276	6.95E-03	6.75E-03	1.54E-02	6.51E-03	1.40E-02	1.33E-02	5.55E-03	1.05E-02	4.21E-03	4.66E-03	4.13E-03	4.00E-03
Chromium Chompounds	0.006	1.71E-05	2.19E-05	1.81E-07	1.65E-05	1.38E-07	1.80E-07	6.10E-07	1.36E-07	1.39E-05	5.13E-07	1.45E-05	8.89E-06
Ethyl benzene	7.458	1.06E-03	1.03E-03	5.89E-03	9.94E-04	5.34E-03	5.08E-03	5.35E-03	3.99E-03	6.43E-04	4.50E-03	6.31E-04	6.11E-04
Formaldehyde	16.743	5.13E-02	4.99E-02	5.20E-03	4.81E-02	4.72E-03	4.49E-03	8.47E-04	3.53E-03	3.11E-02	7.12E-04	3.05E-02	2.95E-02
Hexane	4.573	5.44E-04	5.29E-04	3.21E-03	5.10E-04	2.91E-03	2.77E-03	3.44E-03	2.18E-03	3.30E-04	2.89E-03	3.24E-04	3.13E-04
Manganese Compounds	0.006	1.71E-05	2.19E-05	3.62E-07	1.65E-05	2.77E-07	3.61E-07	1.22E-06	2.72E-07	1.39E-05	1.03E-06	1.45E-05	8.89E-06
Mercury Compounds	0.002	4.88E-06	6.26E-06	3.02E-08	4.70E-06	2.30E-08	3.01E-08	1.02E-07	2.26E-08	3.98E-06	8.55E-08	4.14E-06	2.54E-06
Nickel Compounds	0.003	7.32E-06	9.39E-06	2.11E-07	7.06E-06	1.61E-07	2.10E-07	7.12E-07	1.58E-07	5.98E-06	5.98E-07	6.22E-06	3.81E-06
Polycylic Organic Matter	0.006	6.13E-07	5.95E-07	4.94E-06	5.74E-07	4.48E-06	4.26E-06	4.08E-06	3.35E-06	3.71E-07	3.43E-06	3.64E-07	3.53E-07
Propionaldehyde	1.187	3.37E-03	3.27E-03	6.09E-04	3.16E-03	5.52E-04	5.25E-04	5.99E-05	4.12E-04	2.04E-03	5.03E-05	2.01E-03	1.94E-03
Styrene	0.415	2.03E-04	1.97E-04	2.26E-04	1.91E-04	2.05E-04	1.95E-04	2.90E-04	1.53E-04	1.23E-04	2.43E-04	1.21E-04	1.17E-04
Toluene	29.842	5.13E-03	4.99E-03	2.14E-02	4.81E-03	1.94E-02	1.85E-02	2.19E-02	1.45E-02	3.11E-03	1.84E-02	3.05E-03	2.95E-03
Xylenes (isomers and mixture)	31.193	3.63E-03	3.52E-03	2.02E-02	3.40E-03	1.83E-02	1.74E-02	2.40E-02	1.37E-02	2.20E-03	2.02E-02	2.16E-03	2.09E-03

Table C-4-6a
MOA NONROAD Emissions - Winter 1999

SCC		2265007015	2265003010	2270002063	2265002078	2265003030	2265002081	2270003070	2270003040	2265002057	2265002054	2285004015	2270005020
Equipment Name	Winter TOTAL (tons)	Shredders > 6 HP	Aerial Lifts	Rubber Tire Tractor/Dozers	Dumpers/Tenders	Sweepers/Scrubbers	Other Construction Equipment	Terminal Tractors	Other General Industrial Eqp	Rough Terrain Forklift	Crushing/Proc. Equipment	Railway Maintenance	Combines
Tech Type		4-St	4-St	Dsl	4-St	4-St	4-St	Dsl	Dsl	4-St	4-St	4-St	Dsl
Equipment Population		46.9	5.2	5.0	33.3	2.5	1.6	3.2	7.6	1.6	7.7	11.3	11.2
Activity (hrs/season)		1,186.6	840.2	1,510.8	1,413.9	573.6	203.7	1,794.6	3,023.1	226.8	621.7	1,042.9	470.2
Activity (hrs/season/unit)		25.29	162.61	300.57	42.46	232.43	124.04	566.22	395.50	138.08	80.58	92.00	41.89
Exhaust PM (tons)	82.88	1.25E-03	1.83E-03	1.41E-01	1.10E-03	1.35E-03	1.32E-03	1.06E-01	9.43E-02	1.01E-03	8.03E-04	7.10E-04	5.19E-02
TOTAL VOC (tons)	441.55	1.81E-01	1.80E-01	1.75E-01	1.40E-01	1.31E-01	1.23E-01	1.11E-01	1.10E-01	9.46E-02	8.60E-02	8.38E-02	4.99E-02
Total Exhaust VOC (tons)	441.55	1.81E-01	1.80E-01	1.75E-01	1.40E-01	1.31E-01	1.23E-01	1.11E-01	1.10E-01	9.46E-02	8.60E-02	8.38E-02	4.99E-02
Exh VOC	430.06	1.49E-01	1.43E-01	1.72E-01	1.18E-01	1.12E-01	9.45E-02	1.09E-01	1.08E-01	7.24E-02	8.57E-02	7.83E-02	4.89E-02
Crankcase VOC	11.49	3.23E-02	3.68E-02	3.44E-03	2.18E-02	1.96E-02	2.90E-02	2.17E-03	2.15E-03	2.22E-02	3.44E-04	5.55E-03	9.79E-04
Total Evap VOC (tons)	0.00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Chemical Name													
1,3-Butadiene	0.799	1.73E-04	1.71E-04	3.26E-04	1.33E-04	1.25E-04	1.18E-04	2.06E-04	2.04E-04	9.00E-05	8.19E-05	7.98E-05	9.28E-05
Acetaldehyde	8.722	1.49E-03	1.48E-03	1.30E-02	1.15E-03	1.08E-03	1.01E-03	8.23E-03	8.15E-03	7.75E-04	7.06E-04	6.87E-04	3.71E-03
Acrolein	1.238	1.26E-04	1.25E-04	2.02E-03	9.71E-05	9.10E-05	8.56E-05	1.27E-03	1.26E-03	6.55E-05	5.96E-05	5.81E-05	5.74E-04
Benzene (including benzene from gasoline)	12.276	8.56E-03	8.50E-03	3.56E-03	6.61E-03	6.20E-03	5.83E-03	2.25E-03	2.23E-03	4.46E-03	4.06E-03	3.96E-03	1.01E-03
Chromium Chompounds	0.006	7.50E-08	1.10E-07	9.88E-06	6.58E-08	8.10E-08	7.89E-08	7.40E-06	6.60E-06	6.04E-08	4.82E-08	4.26E-08	3.63E-06
Ethyl benzene	7.458	3.26E-03	3.24E-03	5.44E-04	2.52E-03	2.36E-03	2.22E-03	3.43E-04	3.40E-04	1.70E-03	1.55E-03	1.51E-03	1.55E-04
Formaldehyde	16.743	2.88E-03	2.86E-03	2.63E-02	2.23E-03	2.09E-03	1.96E-03	1.66E-02	1.65E-02	1.50E-03	1.37E-03	1.33E-03	7.49E-03
Hexane	4.573	1.78E-03	1.77E-03	2.79E-04	1.38E-03	1.29E-03	1.21E-03	1.76E-04	1.74E-04	9.29E-04	8.45E-04	8.23E-04	7.93E-05
Manganese Compounds	0.006	1.50E-07	2.19E-07	9.88E-06	1.32E-07	1.62E-07	1.58E-07	7.40E-06	6.60E-06	1.21E-07	9.63E-08	8.52E-08	3.63E-06
Mercury Compounds	0.002	1.25E-08	1.83E-08	2.82E-06	1.10E-08	1.35E-08	1.32E-08	2.12E-06	1.89E-06	1.01E-08	8.03E-09	7.10E-09	1.04E-06
Nickel Compounds	0.003	8.75E-08	1.28E-07	4.23E-06	7.67E-08	9.45E-08	9.21E-08	3.17E-06	2.83E-06	7.05E-08	5.62E-08	4.97E-08	1.56E-06
Polycylic Organic Matter	0.006	2.74E-06	2.72E-06	3.14E-07	2.12E-06	1.98E-06	1.86E-06	1.98E-07	1.96E-07	1.43E-06	1.30E-06	1.27E-06	8.93E-08
Propionaldehyde	1.187	3.37E-04	3.35E-04	1.73E-03	2.61E-04	2.44E-04	2.30E-04	1.09E-03	1.08E-03	1.76E-04	1.60E-04	1.56E-04	4.92E-04
Styrene	0.415	1.25E-04	1.24E-04	1.04E-04	9.67E-05	9.06E-05	8.52E-05	6.58E-05	6.51E-05	6.52E-05	5.94E-05	5.78E-05	2.96E-05
Toluene	29.842	1.19E-02	1.18E-02	2.63E-03	9.16E-03	8.59E-03	8.07E-03	1.66E-03	1.65E-03	6.18E-03	5.63E-03	5.48E-03	7.49E-04
Xylenes (isomers and mixture)	31.193	1.12E-02	1.11E-02	1.86E-03	8.65E-03	8.10E-03	7.62E-03	1.17E-03	1.16E-03	5.83E-03	5.31E-03	5.17E-03	5.29E-04

Table C-4-6a
MOA NONROAD Emissions - Winter 1999

SCC		2270006030	2265002045	2265005040	2270003010	2282010005	2270002039	2265003060	2270002009	2270005060	2265002027	2260003030	2265005035
Equipment Name	Winter TOTAL (tons)	Pressure Washers	Cranes	Tillers > 6 HP	Aerial Lifts	Inboard/Sterndrive	Concrete/Industrial Saws	AC\Refrigeration	Plate Compactors	Irrigation Sets	Signal Boards/Light Plants	Sweepers/Scrubbers	Sprayers
Tech Type		Dsl	4-St	4-St	Dsl	4-St	Dsl	4-St	Dsl	Dsl	4-St	2-St	4-St
Equipment Population		22.2	1.2	23.4	3.5	2,053.0	3.4	0.8	12.6	1.3	1.6	0.3	4.3
Activity (hrs/season)		1,609.3	170.3	281.5	612.7	154.1	649.8	215.6	2,033.5	270.9	172.7	80.5	95.2
Activity (hrs/season/unit)		72.50	138.75	12.01	172.97	0.08	193.92	272.52	161.82	209.18	106.32	232.43	22.34
Exhaust PM (tons)	82.88	4.62E-02	4.52E-04	1.76E-04	2.64E-02	4.09E-04	2.92E-02	2.82E-04	4.00E-02	1.55E-02	1.72E-04	7.86E-04	1.50E-04
TOTAL VOC (tons)	441.55	4.49E-02	4.25E-02	3.53E-02	3.25E-02	3.23E-02	3.03E-02	2.82E-02	2.77E-02	2.22E-02	2.06E-02	1.90E-02	1.67E-02
Total Exhaust VOC (tons)	441.55	4.49E-02	4.25E-02	3.53E-02	3.25E-02	3.23E-02	3.03E-02	2.82E-02	2.77E-02	2.22E-02	2.06E-02	1.90E-02	1.67E-02
Exh VOC	430.06	4.40E-02	3.38E-02	2.75E-02	3.18E-02	3.23E-02	2.97E-02	2.74E-02	2.72E-02	2.18E-02	2.06E-02	1.90E-02	1.46E-02
Crankcase VOC	11.49	8.79E-04	8.73E-03	7.78E-03	6.36E-04	0.00E+00	5.95E-04	7.97E-04	5.44E-04	4.36E-04	7.99E-06	0.00E+00	2.04E-03
Total Evap VOC (tons)	0.00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Chemical Name													
1,3-Butadiene	0.799	8.34E-05	4.05E-05	3.36E-05	6.04E-05	3.07E-05	5.64E-05	2.68E-05	5.16E-05	4.14E-05	1.96E-05	4.08E-05	1.59E-05
Acetaldehyde	8.722	3.33E-03	3.49E-04	2.90E-04	2.41E-03	2.64E-04	2.25E-03	2.31E-04	2.06E-03	1.65E-03	1.69E-04	6.31E-05	1.37E-04
Acrolein	1.238	5.16E-04	2.95E-05	2.45E-05	3.73E-04	2.23E-05	3.49E-04	1.95E-05	3.19E-04	2.56E-04	1.43E-05	5.63E-06	1.15E-05
Benzene (including benzene from gasoline)	12.276	9.11E-04	2.01E-03	1.67E-03	6.59E-04	1.52E-03	6.16E-04	1.33E-03	5.63E-04	4.51E-04	9.73E-04	4.28E-04	7.87E-04
Chromium Chompounds	0.006	3.23E-06	2.71E-08	1.06E-08	1.85E-06	2.45E-08	2.04E-06	1.69E-08	2.80E-06	1.09E-06	1.03E-08	4.71E-08	9.01E-09
Ethyl benzene	7.458	1.39E-04	7.65E-04	6.36E-04	1.01E-04	5.81E-04	9.40E-05	5.07E-04	8.60E-05	6.89E-05	3.71E-04	4.13E-04	3.00E-04
Formaldehyde	16.743	6.73E-03	6.76E-04	5.61E-04	4.87E-03	5.13E-04	4.55E-03	4.48E-04	4.16E-03	3.34E-03	3.28E-04	6.54E-05	2.65E-04
Hexane	4.573	7.13E-05	4.17E-04	3.47E-04	5.16E-05	3.17E-04	4.82E-05	2.77E-04	4.41E-05	3.54E-05	2.02E-04	2.65E-04	1.64E-04
Manganese Compounds	0.006	3.23E-06	5.42E-08	2.12E-08	1.85E-06	4.91E-08	2.04E-06	3.38E-08	2.80E-06	1.09E-06	2.06E-08	9.43E-08	1.80E-08
Mercury Compounds	0.002	9.24E-07	4.52E-09	1.76E-09	5.29E-07	4.09E-09	5.83E-07	2.82E-09	8.01E-07	3.11E-07	1.72E-09	7.86E-09	1.50E-09
Nickel Compounds	0.003	1.39E-06	3.16E-08	1.24E-08	7.93E-07	2.86E-08	8.75E-07	1.97E-08	1.20E-06	4.66E-07	1.20E-08	5.50E-08	1.05E-08
Polycylic Organic Matter	0.006	8.03E-08	6.42E-07	5.33E-07	5.81E-08	4.87E-07	5.43E-08	4.26E-07	4.97E-08	3.98E-08	3.11E-07	3.15E-07	2.52E-07
Propionaldehyde	1.187	4.42E-04	7.91E-05	6.57E-05	3.20E-04	6.00E-05	2.99E-04	5.24E-05	2.73E-04	2.19E-04	3.83E-05	4.63E-06	3.10E-05
Styrene	0.415	2.66E-05	2.93E-05	2.44E-05	1.93E-05	2.23E-05	1.80E-05	1.94E-05	1.65E-05	1.32E-05	1.42E-05	2.24E-05	1.15E-05
Toluene	29.842	6.73E-04	2.78E-03	2.31E-03	4.87E-04	2.11E-03	4.55E-04	1.84E-03	4.16E-04	3.34E-04	1.35E-03	1.69E-03	1.09E-03
Xylenes (isomers and mixture)	31.193	4.75E-04	2.62E-03	2.18E-03	3.44E-04	1.99E-03	3.21E-04	1.74E-03	2.94E-04	2.36E-04	1.27E-03	1.85E-03	1.03E-03

Table C-4-6a
MOA NONROAD Emissions - Winter 1999

SCC		2265001020	2260005050	2270005055	2270003050	2270002042	2265005045	2270005035	2265003050	2270002078	2270005045	2265005025	2282020005
Equipment Name	Winter TOTAL (tons)	Snowmobiles	Sprayers	Other Agricultural Equipment	Other Material Handling Eqp	Cement & Mortar Mixers	Swathers	Sprayers	Other Material Handling Eqp	Dumpers/Tenders	Swathers	Balers	Inboard
Tech Type		4-St	2-St	Dsl	Dsl	Dsl	4-St	Dsl	4-St	Dsl	Dsl	4-St	Dsl
Equipment Population		167.0	1.7	0.9	0.4	7.1	0.4	1.3	0.2	0.8	2.6	0.4	217.1
Activity (hrs/season)		83.5	38.1	91.9	70.7	654.7	11.7	32.6	30.1	158.5	79.6	8.1	16.3
Activity (hrs/season/unit)		0.50	22.34	106.41	189.64	91.94	26.53	25.14	173.87	189.23	30.72	18.99	0.08
Exhaust PM (tons)	82.88	1.01E-04	4.15E-04	5.78E-03	6.63E-03	1.13E-02	5.24E-05	2.78E-03	4.53E-05	3.80E-03	4.19E-03	2.00E-05	9.80E-04
TOTAL VOC (tons)	441.55	1.17E-02	1.09E-02	9.41E-03	8.97E-03	7.87E-03	7.20E-03	5.49E-03	5.01E-03	4.42E-03	3.54E-03	2.74E-03	1.90E-03
Total Exhaust VOC (tons)	441.55	1.17E-02	1.09E-02	9.41E-03	8.97E-03	7.87E-03	7.20E-03	5.49E-03	5.01E-03	4.42E-03	3.54E-03	2.74E-03	1.90E-03
Exh VOC	430.06	9.07E-03	1.09E-02	9.23E-03	8.79E-03	7.72E-03	5.53E-03	5.38E-03	4.63E-03	4.34E-03	3.47E-03	2.11E-03	1.90E-03
Crankcase VOC	11.49	2.68E-03	0.00E+00	1.85E-04	1.76E-04	1.54E-04	1.67E-03	1.08E-04	3.82E-04	8.67E-05	6.93E-05	6.37E-04	0.00E+00
Total Evap VOC (tons)	0.00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Chemical Name													
1,3-Butadiene	0.799	1.12E-05	2.35E-05	1.75E-05	1.67E-05	1.46E-05	6.85E-06	1.02E-05	4.77E-06	8.23E-06	6.58E-06	2.61E-06	3.54E-06
Acetaldehyde	8.722	9.63E-05	3.64E-05	6.99E-04	6.66E-04	5.85E-04	5.90E-05	4.08E-04	4.11E-05	3.29E-04	2.63E-04	2.25E-05	1.41E-04
Acrolein	1.238	8.14E-06	3.24E-06	1.08E-04	1.03E-04	9.05E-05	4.99E-06	6.31E-05	3.47E-06	5.09E-05	4.07E-05	1.90E-06	2.19E-05
Benzene (including benzene from gasoline)	12.276	5.54E-04	2.47E-04	1.91E-04	1.82E-04	1.60E-04	3.40E-04	1.11E-04	2.36E-04	8.98E-05	7.18E-05	1.30E-04	3.86E-05
Chromium Chompounds	0.006	6.04E-09	2.49E-08	4.04E-07	4.64E-07	7.88E-07	3.14E-09	1.95E-07	2.72E-09	2.66E-07	2.93E-07	1.20E-09	6.86E-08
Ethyl benzene	7.458	2.11E-04	2.38E-04	2.92E-05	2.78E-05	2.44E-05	1.30E-04	1.70E-05	9.01E-05	1.37E-05	1.10E-05	4.94E-05	5.90E-06
Formaldehyde	16.743	1.87E-04	3.77E-05	1.41E-03	1.34E-03	1.18E-03	1.14E-04	8.23E-04	7.96E-05	6.63E-04	5.30E-04	4.36E-05	2.86E-04
Hexane	4.573	1.15E-04	1.53E-04	1.50E-05	1.43E-05	1.25E-05	7.07E-05	8.73E-06	4.92E-05	7.03E-06	5.62E-06	2.69E-05	3.03E-06
Manganese Compounds	0.006	1.21E-08	4.98E-08	4.04E-07	4.64E-07	7.88E-07	6.29E-09	1.95E-07	5.43E-09	2.66E-07	2.93E-07	2.40E-09	6.86E-08
Mercury Compounds	0.002	1.01E-09	4.15E-09	1.16E-07	1.33E-07	2.25E-07	5.24E-10	5.57E-08	4.53E-10	7.60E-08	8.38E-08	2.00E-10	1.96E-08
Nickel Compounds	0.003	7.05E-09	2.90E-08	1.73E-07	1.99E-07	3.38E-07	3.67E-09	8.35E-08	3.17E-09	1.14E-07	1.26E-07	1.40E-09	2.94E-08
Polycylic Organic Matter	0.006	1.77E-07	1.81E-07	1.68E-08	1.60E-08	1.41E-08	1.09E-07	9.83E-09	7.56E-08	7.92E-09	6.33E-09	4.14E-08	3.41E-09
Propionaldehyde	1.187	2.18E-05	2.66E-06	9.27E-05	8.83E-05	7.76E-05	1.34E-05	5.41E-05	9.31E-06	4.36E-05	3.48E-05	5.10E-06	1.88E-05
Styrene	0.415	8.10E-06	1.29E-05	5.59E-06	5.33E-06	4.68E-06	4.97E-06	3.26E-06	3.46E-06	2.63E-06	2.10E-06	1.89E-06	1.13E-06
Toluene	29.842	7.68E-04	9.72E-04	1.41E-04	1.34E-04	1.18E-04	4.71E-04	8.23E-05	3.27E-04	6.63E-05	5.30E-05	1.79E-04	2.86E-05
Xylenes (isomers and mixture)	31.193	7.24E-04	1.07E-03	9.98E-05	9.50E-05	8.35E-05	4.44E-04	5.82E-05	3.09E-04	4.69E-05	3.75E-05	1.69E-04	2.02E-05

Table C-4-6a
MOA NONROAD Emissions - Winter 1999

SCC		2265002006	2265005055	2282020010
Equipment Name	Winter TOTAL (tons)	Tampers/Rammers	Other Agricultural Equipment	Outboard
Tech Type		4-St	4-St	Dsl
Equipment Population		0.4	0.4	2.9
Activity (hrs/season)		21.7	14.8	0.2
Activity (hrs/season/unit)		53.49	34.63	0.08
Exhaust PM (tons)	82.88	1.41E-05	1.15E-05	3.98E-06
TOTAL VOC (tons)	441.55	1.70E-03	1.48E-03	3.91E-06
Total Exhaust VOC (tons)	441.55	1.70E-03	1.48E-03	3.91E-06
Exh VOC	430.06	1.50E-03	1.26E-03	3.91E-06
Crankcase VOC	11.49	2.02E-04	2.19E-04	0.00E+00
Total Evap VOC (tons)	0.00	0.00E+00	0.00E+00	0.00E+00
Chemical Name				
1,3-Butadiene	0.799	1.62E-06	1.41E-06	7.28E-09
Acetaldehyde	8.722	1.39E-05	1.22E-05	2.91E-07
Acrolein	1.238	1.18E-06	1.03E-06	4.50E-08
Benzene (including benzene from gasoline)	12.276	8.02E-05	7.00E-05	7.95E-08
Chromium Chompounds	0.006	8.43E-10	6.88E-10	2.78E-10
Ethyl benzene	7.458	3.06E-05	2.67E-05	1.21E-08
Formaldehyde	16.743	2.70E-05	2.36E-05	5.87E-07
Hexane	4.573	1.67E-05	1.46E-05	6.22E-09
Manganese Compounds	0.006	1.69E-09	1.38E-09	2.78E-10
Mercury Compounds	0.002	1.41E-10	1.15E-10	7.95E-11
Nickel Compounds	0.003	9.84E-10	8.03E-10	1.19E-10
Polycylic Organic Matter	0.006	2.57E-08	2.24E-08	7.01E-12
Propionaldehyde	1.187	3.16E-06	2.76E-06	3.86E-08
Styrene	0.415	1.17E-06	1.02E-06	2.33E-09
Toluene	29.842	1.11E-04	9.70E-05	5.87E-08
Xylenes (isomers and mixture)	31.193	1.05E-04	9.15E-05	4.15E-08

Table C-4-6b
MOA NONROAD Emissions - Summer 1999

SCC		2260004020	2282005010	2265004010	2265004055	2260001030	2265004071	2260007005	2260004026	2260004031	2282010005	2265006005	2260004025
Equipment Name	Summer TOTAL (tons)	Chain Saws < 6 HP (res)	Outboard	Lawn mowers (res)	Lawn & Garden Tractors (res)	All Terrain Vehicles\Motorcycles	Commercial Turf Equipment (com)	Logging Equipment Chain Saws > 6 HP	Trimmers/Edgers/Brush Cutter (com)	Leafblowers/ Vacuums (com)	Inboard/Sterndrive	Generator Sets	Trimmers/Edgers/Brush Cutter (res)
Tech Type		2-St	2-St	4-St	4-St	2-St	4-St	2-St	2-St	2-St	4-St	4-St	2-St
Equipment Population		4,690.4	9,817.8	27,032.6	9,844.9	1,893.0	463.2	332.9	911.1	354.0	2,053.0	3,405.0	11,382.0
Activity (hrs/season)		171,041.6	4,171.8	675,813.8	443,018.3	32,181.1	315,915.8	50,429.8	124,820.3	99,837.1	872.4	195,786.2	102,437.9
Activity (hrs/season/unit)		36.47	0.42	25.00	45.00	17.00	682.00	151.50	137.00	282.00	0.42	57.50	9.00
Exhaust PM (tons)	151.3	3.45E+00	3.45E-01	3.62E-01	3.69E-01	8.09E-01	3.83E-01	2.48E+00	1.64E+00	1.76E+00	2.31E-03	2.24E-01	1.08E+00
TOTAL VOC (tons)	942.2	6.77E+01	6.60E+01	5.48E+01	5.05E+01	4.03E+01	4.02E+01	4.01E+01	3.86E+01	3.64E+01	3.50E+01	3.44E+01	3.12E+01
Total Exhaust VOC (tons)	806.4	6.77E+01	6.02E+00	5.35E+01	4.73E+01	3.41E+01	3.99E+01	3.99E+01	3.86E+01	3.64E+01	1.79E-01	3.18E+01	3.11E+01
Exh VOC	784.5	6.77E+01	6.02E+00	5.14E+01	4.54E+01	3.41E+01	3.86E+01	3.99E+01	3.86E+01	3.64E+01	1.79E-01	2.70E+01	3.11E+01
Crankcase VOC	21.8	0.00E+00	0.00E+00	2.13E+00	1.88E+00	0.00E+00	1.26E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.81E+00	0.00E+00
Total Evap VOC (tons)	135.8	6.57E-02	6.00E+01	1.25E+00	3.23E+00	6.20E+00	2.46E-01	1.55E-01	8.75E-03	4.36E-03	3.49E+01	2.55E+00	8.84E-02
Chemical Name													
1,3-Butadiene	1.317	1.5E-01	1.3E-02	5.1E-02	4.5E-02	7.3E-02	3.8E-02	8.6E-02	8.3E-02	7.8E-02	1.7E-04	3.0E-02	6.7E-02
Acetaldehyde	15.123	1.1E-01	1.0E-02	2.2E-01	1.9E-01	5.7E-02	1.6E-01	6.6E-02	6.4E-02	6.0E-02	7.3E-04	1.3E-01	5.2E-02
Acrolein	2.374	2.0E-02	1.8E-03	3.7E-02	3.3E-02	1.0E-02	2.8E-02	1.2E-02	1.2E-02	1.1E-02	1.2E-04	2.2E-02	9.3E-03
Benzene (including benzene from gasoline)	30.731	1.7E+00	1.5E+00	2.8E+00	2.6E+00	1.0E+00	2.1E+00	1.0E+00	9.7E-01	9.2E-01	7.8E-01	1.7E+00	7.9E-01
Chromium Chompounds	0.010	2.1E-04	2.1E-05	2.2E-05	2.2E-05	4.9E-05	2.3E-05	1.5E-04	9.9E-05	1.1E-04	1.4E-07	1.3E-05	6.5E-05
Ethyl benzene	15.370	1.6E+00	6.1E-01	1.1E+00	9.6E-01	8.7E-01	7.9E-01	9.6E-01	9.3E-01	8.7E-01	2.7E-01	6.5E-01	7.5E-01
Formaldehyde	31.309	1.7E-01	1.5E-02	6.3E-01	5.5E-01	8.7E-02	4.7E-01	1.0E-01	9.8E-02	9.2E-02	2.1E-03	3.7E-01	7.9E-02
Hexane	11.064	9.6E-01	1.5E+00	5.6E-01	5.4E-01	6.3E-01	4.0E-01	5.7E-01	5.5E-01	5.2E-01	8.2E-01	3.8E-01	4.4E-01
Manganese Compounds	0.011	4.1E-04	4.1E-05	4.3E-05	4.4E-05	9.7E-05	4.6E-05	3.0E-04	2.0E-04	2.1E-04	2.8E-07	2.7E-05	1.3E-04
Mercury Compounds	0.003	3.4E-05	3.5E-06	3.6E-06	3.7E-06	8.1E-06	3.8E-06	2.5E-05	1.6E-05	1.8E-05	2.3E-08	2.2E-06	1.1E-05
Nickel Compounds	0.005	2.4E-04	2.4E-05	2.5E-05	2.6E-05	5.7E-05	2.7E-05	1.7E-04	1.1E-04	1.2E-04	1.6E-07	1.6E-05	7.6E-05
Polycylic Organic Matter	0.010	1.1E-03	1.0E-04	8.1E-04	7.1E-04	5.7E-04	6.0E-04	6.6E-04	6.4E-04	6.0E-04	2.7E-06	4.8E-04	5.2E-04
Propionaldehyde	2.420	1.7E-02	1.5E-03	1.0E-01	8.9E-02	8.4E-03	7.5E-02	9.9E-03	9.5E-03	9.0E-03	3.4E-04	6.0E-02	7.7E-03
Styrene	0.757	8.8E-02	7.8E-03	4.1E-02	3.6E-02	4.4E-02	3.0E-02	5.2E-02	5.0E-02	4.7E-02	1.4E-04	2.4E-02	4.0E-02
Toluene	61.702	6.6E+00	3.1E+00	3.9E+00	3.5E+00	3.6E+00	2.9E+00	3.9E+00	3.8E+00	3.6E+00	1.5E+00	2.4E+00	3.0E+00
Xylenes (isomers and mixture)	60.084	7.2E+00	2.0E+00	3.7E+00	3.3E+00	3.8E+00	2.7E+00	4.3E+00	4.1E+00	3.9E+00	7.9E-01	2.2E+00	3.3E+00

Table C-4-6b
MOA NONROAD Emissions - Summer 1999

SCC		2270002066	2282005015	2270002072	2270002060	2260004030	2270002036	2260002054	2265006030	2265004011	2265004016	2270002069	2260006010
Equipment Name	Summer TOTAL (tons)	Tractors/Loaders/Backhoes	Personal Water Craft	Skid Steer Loaders	Rubber Tire Loaders	Leafblowers/ Vacuums (res)	Excavators	Concrete/Industrial Saws	Pressure Washers	Lawn mowers (Com)	Rotary Tillers < 6 HP (com)	Crawler Tractor/Dozers	Pumps
Tech Type		Dsl	2-St	Dsl	Dsl	2-St	Dsl	2-St	4-St	4-St	4-St	Dsl	2-St
Equipment Population		389.6	1,327.2	487.2	246.3	5,775.0	159.2	79.2	1,582.8	759.1	239.4	239.6	352.9
Activity (hrs/season)		294,321.4	1,327.2	265,262.6	124,768.5	57,750.0	115,704.2	31,755.0	91,009.2	308,185.5	113,010.0	149,284.6	38,996.9
Activity (hrs/season/unit)		755.53	1.00	544.51	506.57	10.00	726.90	401.02	57.50	406.00	472.00	623.06	110.50
Exhaust PM (tons)	151.3	1.98E+01	1.81E-01	1.44E+01	1.38E+01	7.05E-01	1.06E+01	9.93E-01	1.23E-01	1.20E-01	1.79E-01	9.97E+00	4.23E-01
TOTAL VOC (tons)	942.2	2.85E+01	2.24E+01	2.16E+01	2.03E+01	1.99E+01	1.81E+01	1.67E+01	1.58E+01	1.54E+01	1.36E+01	1.10E+01	1.07E+01
Total Exhaust VOC (tons)	806.4	2.85E+01	3.98E+00	2.16E+01	2.03E+01	1.99E+01	1.81E+01	1.67E+01	1.51E+01	1.54E+01	1.36E+01	1.10E+01	1.07E+01
Exh VOC	784.5	2.79E+01	3.98E+00	2.12E+01	1.99E+01	1.99E+01	1.78E+01	1.67E+01	1.42E+01	1.54E+01	1.32E+01	1.08E+01	1.07E+01
Crankcase VOC	21.8	5.58E-01	0.00E+00	4.24E-01	3.99E-01	0.00E+00	3.55E-01	0.00E+00	9.29E-01	4.36E-02	3.37E-01	2.17E-01	0.00E+00
Total Evap VOC (tons)	135.8	0.00E+00	1.84E+01	0.00E+00	0.00E+00	4.96E-02	0.00E+00	2.01E-02	6.74E-01	3.51E-02	1.28E-02	0.00E+00	3.64E-02
Chemical Name													
1,3-Butadiene	1.317	5.3E-02	8.6E-03	4.0E-02	3.8E-02	4.3E-02	3.4E-02	3.6E-02	1.4E-02	1.5E-02	1.3E-02	2.1E-02	2.3E-02
Acetaldehyde	15.123	2.1E+00	6.6E-03	1.6E+00	1.5E+00	3.3E-02	1.3E+00	2.8E-02	6.2E-02	6.3E-02	5.6E-02	8.2E-01	1.8E-02
Acrolein	2.374	3.3E-01	1.2E-03	2.5E-01	2.3E-01	6.0E-03	2.1E-01	5.0E-03	1.1E-02	1.1E-02	9.5E-03	1.3E-01	3.2E-03
Benzene (including benzene from gasoline)	30.731	5.8E-01	5.0E-01	4.4E-01	4.1E-01	5.0E-01	3.7E-01	4.2E-01	8.1E-01	8.1E-01	7.1E-01	2.2E-01	2.7E-01
Chromium Chompounds	0.010	1.4E-03	1.1E-05	1.0E-03	9.6E-04	4.2E-05	7.4E-04	6.0E-05	7.4E-06	7.2E-06	1.1E-05	7.0E-04	2.5E-05
Ethyl benzene	15.370	8.8E-02	2.4E-01	6.7E-02	6.3E-02	4.8E-01	5.6E-02	4.0E-01	3.0E-01	3.1E-01	2.7E-01	3.4E-02	2.6E-01
Formaldehyde	31.309	4.3E+00	1.0E-02	3.2E+00	3.1E+00	5.0E-02	2.7E+00	4.2E-02	1.8E-01	1.8E-01	1.6E-01	1.7E+00	2.7E-02
Hexane	11.064	4.5E-02	4.9E-01	3.4E-02	3.2E-02	2.8E-01	2.9E-02	2.4E-01	1.7E-01	1.5E-01	1.4E-01	1.8E-02	1.5E-01
Manganese Compounds	0.011	1.4E-03	2.2E-05	1.0E-03	9.6E-04	8.5E-05	7.4E-04	1.2E-04	1.5E-05	1.4E-05	2.2E-05	7.0E-04	5.1E-05
Mercury Compounds	0.003	4.0E-04	1.8E-06	2.9E-04	2.8E-04	7.0E-06	2.1E-04	9.9E-06	1.2E-06	1.2E-06	1.8E-06	2.0E-04	4.2E-06
Nickel Compounds	0.005	5.9E-04	1.3E-05	4.3E-04	4.1E-04	4.9E-05	3.2E-04	7.0E-05	8.6E-06	8.4E-06	1.3E-05	3.0E-04	3.0E-05
Polycylic Organic Matter	0.010	5.1E-05	6.6E-05	3.9E-05	3.6E-05	3.3E-04	3.2E-05	2.8E-04	2.3E-04	2.3E-04	2.1E-04	2.0E-05	1.8E-04
Propionaldehyde	2.420	2.8E-01	9.8E-04	2.1E-01	2.0E-01	4.9E-03	1.8E-01	4.1E-03	2.8E-02	2.9E-02	2.6E-02	1.1E-01	2.6E-03
Styrene	0.757	1.7E-02	5.2E-03	1.3E-02	1.2E-02	2.6E-02	1.1E-02	2.2E-02	1.1E-02	1.2E-02	1.0E-02	6.6E-03	1.4E-02
Toluene	61.702	4.3E-01	1.1E+00	3.2E-01	3.1E-01	1.9E+00	2.7E-01	1.6E+00	1.1E+00	1.1E+00	9.8E-01	1.7E-01	1.0E+00
Xylenes (isomers and mixture)	60.084	3.0E-01	8.4E-01	2.3E-01	2.2E-01	2.1E+00	1.9E-01	1.8E+00	1.0E+00	1.0E+00	9.2E-01	1.2E-01	1.1E+00

Table C-4-6b
MOA NONROAD Emissions - Summer 1999

SCC		2265004056	2265001030	2265006010	2270003060	2265004031	2270008005	2265006025	2270002057	2260002006	2270004071	2270002051
Equipment Name	Summer TOTAL (tons)	Lawn & Garden Tractors (com)	All Terrain Vehicles\Motorcycles	Pumps	AC\Refrigeration	Leafblowers/ Vacuums (com)	Airport Support Equipment	Welders	Rough Terrain Forklift	Tampers/Rammers	Commercial Turf Equipment (com)	Off-highway Trucks
Tech Type		4-St	4-St	4-St	Dsl	4-St	Dsl	4-St	Dsl	2-St	Dsl	Dsl
Equipment Population		158.3	5,913.3	592.8	582.8	172.4	145.1	181.1	132.4	181.1	208.4	21.4
Activity (hrs/season)		114,145.5	100,526.4	65,506.3	429,495.1	48,623.8	53,097.1	36,953.3	58,329.5	19,289.7	222,592.2	23,335.8
Activity (hrs/season/unit)		721.00	17.00	110.50	736.95	282.00	366.00	204.00	440.67	106.51	1068.00	1092.35
Exhaust PM (tons)	151.3	1.09E-01	4.21E-02	7.24E-02	9.03E+00	6.92E-02	4.80E+00	7.09E-02	4.87E+00	3.93E-01	5.20E+00	4.67E+00
TOTAL VOC (tons)	942.2	1.07E+01	9.96E+00	8.91E+00	7.87E+00	7.17E+00	6.84E+00	6.82E+00	6.80E+00	6.47E+00	6.38E+00	6.23E+00
Total Exhaust VOC (tons)	806.4	1.06E+01	4.55E+00	8.58E+00	7.87E+00	7.16E+00	6.84E+00	6.59E+00	6.80E+00	6.43E+00	6.38E+00	6.23E+00
Exh VOC	784.5	1.05E+01	3.61E+00	8.22E+00	7.72E+00	6.71E+00	6.71E+00	6.17E+00	6.67E+00	6.43E+00	6.25E+00	6.11E+00
Crankcase VOC	21.8	1.14E-01	9.37E-01	3.56E-01	1.54E-01	4.47E-01	1.34E-01	4.17E-01	1.33E-01	0.00E+00	1.25E-01	1.22E-01
Total Evap VOC (tons)	135.8	5.21E-02	5.41E+00	3.26E-01	0.00E+00	1.54E-02	0.00E+00	2.32E-01	0.00E+00	4.28E-02	0.00E+00	0.00E+00
Chemical Name												
1,3-Butadiene	1.317	1.0E-02	4.3E-03	8.2E-03	1.5E-02	6.8E-03	1.3E-02	6.3E-03	1.3E-02	1.4E-02	1.2E-02	1.2E-02
Acetaldehyde	15.123	4.4E-02	1.9E-02	3.5E-02	5.8E-01	2.9E-02	5.1E-01	2.7E-02	5.1E-01	1.1E-02	4.7E-01	4.6E-01
Acrolein	2.374	7.4E-03	3.2E-03	6.0E-03	9.1E-02	5.0E-03	7.9E-02	4.6E-03	7.8E-02	1.9E-03	7.3E-02	7.2E-02
Benzene (including benzene from gasoline)	30.731	5.6E-01	3.6E-01	4.6E-01	1.6E-01	3.8E-01	1.4E-01	3.5E-01	1.4E-01	1.6E-01	1.3E-01	1.3E-01
Chromium Chompounds	0.010	6.5E-06	2.5E-06	4.3E-06	6.3E-04	4.1E-06	3.4E-04	4.3E-06	3.4E-04	2.4E-05	3.6E-04	3.3E-04
Ethyl benzene	15.370	2.1E-01	1.3E-01	1.7E-01	2.4E-02	1.4E-01	2.1E-02	1.3E-01	2.1E-02	1.5E-01	2.0E-02	1.9E-02
Formaldehyde	31.309	1.2E-01	5.3E-02	1.0E-01	1.2E+00	8.4E-02	1.0E+00	7.7E-02	1.0E+00	1.6E-02	9.6E-01	9.3E-01
Hexane	11.064	1.1E-01	1.7E-01	9.3E-02	1.3E-02	7.1E-02	1.1E-02	7.1E-02	1.1E-02	9.2E-02	1.0E-02	9.9E-03
Manganese Compounds	0.011	1.3E-05	5.0E-06	8.7E-06	6.3E-04	8.3E-06	3.4E-04	8.5E-06	3.4E-04	4.7E-05	3.6E-04	3.3E-04
Mercury Compounds	0.003	1.1E-06	4.2E-07	7.2E-07	1.8E-04	6.9E-07	9.6E-05	7.1E-07	9.7E-05	3.9E-06	1.0E-04	9.3E-05
Nickel Compounds	0.005	7.6E-06	2.9E-06	5.1E-06	2.7E-04	4.8E-06	1.4E-04	5.0E-06	1.5E-04	2.7E-05	1.6E-04	1.4E-04
Polycylic Organic Matter	0.010	1.6E-04	6.9E-05	1.3E-04	1.4E-05	1.1E-04	1.2E-05	9.9E-05	1.2E-05	1.1E-04	1.1E-05	1.1E-05
Propionaldehyde	2.420	2.0E-02	8.5E-03	1.6E-02	7.8E-02	1.3E-02	6.7E-02	1.2E-02	6.7E-02	1.6E-03	6.3E-02	6.1E-02
Styrene	0.757	8.1E-03	3.4E-03	6.5E-03	4.7E-03	5.4E-03	4.1E-03	5.0E-03	4.0E-03	8.4E-03	3.8E-03	3.7E-03
Toluene	61.702	7.7E-01	5.5E-01	6.3E-01	1.2E-01	5.1E-01	1.0E-01	4.8E-01	1.0E-01	6.3E-01	9.6E-02	9.3E-02
Xylenes (isomers and mixture)	60.084	7.2E-01	4.3E-01	5.9E-01	8.3E-02	4.9E-01	7.3E-02	4.5E-01	7.2E-02	6.9E-01	6.8E-02	6.6E-02

Table C-4-6b
MOA NONROAD Emissions - Summer 1999

SCC		2270002045	2265004015	2260004016	2270002075	2270002048	2265004075	2265006015	2265003020	2265004040	2270006005	2265001060	2265004076
Equipment Name	Summer TOTAL (tons)	Cranes	Rotary Tillers < 6 HP (res)	Rotary Tillers < 6 HP (com)	Off-Highway Tractors	Graders	Other Lawn & Garden Eqp. (res)	Air Compressors	Forklifts	Rear Engine Riding Mowers (res)	Generator Sets	Specialty Vehicle Carts	Other Lawn & Garden Eqp. (com)
Tech Type		Dsl	4-St	2-St	Dsl	Dsl	4-St	4-St	4-St	4-St	Dsl	4-St	4-St
Equipment Population		111.8	2,376.9	39.1	35.6	99.3	485.0	128.0	41.6	1,440.3	325.9	240.0	348.9
Activity (hrs/season)		73,703.7	40,406.9	18,450.6	20,264.1	63,572.1	29,586.5	30,975.1	38,074.3	51,852.3	55,080.9	10,743.9	21,281.7
Activity (hrs/season/unit)		659.01	17.00	472.00	569.14	640.37	61.00	242.00	914.45	36.00	169.00	44.76	61.00
Exhaust PM (tons)	151.3	4.35E+00	1.41E-02	1.65E-01	3.23E+00	3.68E+00	5.45E-02	3.87E-02	7.73E-02	2.71E-02	2.53E+00	2.10E-02	3.92E-02
TOTAL VOC (tons)	942.2	5.53E+00	4.70E+00	4.68E+00	4.44E+00	4.27E+00	4.22E+00	4.16E+00	3.62E+00	3.50E+00	3.30E+00	3.18E+00	3.03E+00
Total Exhaust VOC (tons)	806.4	5.53E+00	4.57E+00	4.68E+00	4.44E+00	4.27E+00	4.19E+00	4.02E+00	3.60E+00	3.32E+00	3.30E+00	2.86E+00	3.01E+00
Exh VOC	784.5	5.43E+00	4.37E+00	4.68E+00	4.35E+00	4.19E+00	4.05E+00	3.68E+00	2.71E+00	3.19E+00	3.23E+00	2.26E+00	2.91E+00
Crankcase VOC	21.8	1.09E-01	2.05E-01	0.00E+00	8.70E-02	8.37E-02	1.39E-01	3.39E-01	8.87E-01	1.30E-01	6.46E-02	6.03E-01	9.96E-02
Total Evap VOC (tons)	135.8	0.00E+00	1.27E-01	1.14E-03	0.00E+00	0.00E+00	2.95E-02	1.39E-01	1.89E-02	1.74E-01	0.00E+00	3.20E-01	2.13E-02
Chemical Name													
1,3-Butadiene	1.317	1.0E-02	4.4E-03	1.0E-02	8.3E-03	7.9E-03	4.0E-03	3.8E-03	3.4E-03	3.2E-03	6.1E-03	2.7E-03	2.9E-03
Acetaldehyde	15.123	4.1E-01	1.9E-02	7.8E-03	3.3E-01	3.2E-01	1.7E-02	1.6E-02	1.5E-02	1.4E-02	2.4E-01	1.2E-02	1.2E-02
Acrolein	2.374	6.4E-02	3.2E-03	1.4E-03	5.1E-02	4.9E-02	2.9E-03	2.8E-03	2.5E-03	2.3E-03	3.8E-02	2.0E-03	2.1E-03
Benzene (including benzene from gasoline)	30.731	1.1E-01	2.4E-01	1.2E-01	9.0E-02	8.7E-02	2.2E-01	2.1E-01	1.9E-01	1.8E-01	6.7E-02	1.6E-01	1.6E-01
Chromium Chompounds	0.010	3.0E-04	8.4E-07	9.9E-06	2.3E-04	2.6E-04	3.3E-06	2.3E-06	4.6E-06	1.6E-06	1.8E-04	1.3E-06	2.4E-06
Ethyl benzene	15.370	1.7E-02	9.2E-02	1.1E-01	1.4E-02	1.3E-02	8.3E-02	8.1E-02	7.1E-02	6.7E-02	1.0E-02	5.9E-02	6.0E-02
Formaldehyde	31.309	8.3E-01	5.4E-02	1.2E-02	6.7E-01	6.4E-01	4.9E-02	4.7E-02	4.2E-02	3.9E-02	4.9E-01	3.3E-02	3.5E-02
Hexane	11.064	8.8E-03	4.8E-02	6.6E-02	7.1E-03	6.8E-03	4.2E-02	4.3E-02	3.6E-02	3.7E-02	5.2E-03	3.6E-02	3.0E-02
Manganese Compounds	0.011	3.0E-04	1.7E-06	2.0E-05	2.3E-04	2.6E-04	6.5E-06	4.6E-06	9.3E-06	3.2E-06	1.8E-04	2.5E-06	4.7E-06
Mercury Compounds	0.003	8.7E-05	1.4E-07	1.6E-06	6.5E-05	7.4E-05	5.5E-07	3.9E-07	7.7E-07	2.7E-07	5.1E-05	2.1E-07	3.9E-07
Nickel Compounds	0.005	1.3E-04	9.9E-07	1.2E-05	9.7E-05	1.1E-04	3.8E-06	2.7E-06	5.4E-06	1.9E-06	7.6E-05	1.5E-06	2.7E-06
Polycylic Organic Matter	0.010	9.9E-06	6.9E-05	7.8E-05	7.9E-06	7.6E-06	6.3E-05	6.1E-05	5.4E-05	5.0E-05	5.9E-06	4.3E-05	4.5E-05
Propionaldehyde	2.420	5.5E-02	8.6E-03	1.2E-03	4.4E-02	4.2E-02	7.9E-03	7.6E-03	6.8E-03	6.2E-03	3.2E-02	5.4E-03	5.7E-03
Styrene	0.757	3.3E-03	3.5E-03	6.1E-03	2.6E-03	2.5E-03	3.2E-03	3.0E-03	2.7E-03	2.5E-03	2.0E-03	2.2E-03	2.3E-03
Toluene	61.702	8.3E-02	3.3E-01	4.6E-01	6.7E-02	6.4E-02	3.0E-01	2.9E-01	2.6E-01	2.5E-01	4.9E-02	2.2E-01	2.2E-01
Xylenes (isomers and mixture)	60.084	5.9E-02	3.1E-01	5.0E-01	4.7E-02	4.5E-02	2.8E-01	2.8E-01	2.4E-01	2.3E-01	3.5E-02	2.0E-01	2.0E-01

Table C-4-6b
MOA NONROAD Emissions - Summer 1999

SCC		2270002015	2270002018	2260001060	2270006025	2265002042	2270006015	2265002039	2270002030	2270005015	2265002021	2265004066	2260004015
Equipment Name	Summer TOTAL (tons)	Rollers	Scrapers	Specialty Vehicle Carts	Welders	Cement & Mortar Mixers	Air Compressors	Concrete/Industrial Saws	Trenchers	Agricultural Tractors	Paving Equipment	Chippers/Stump Grinders (com)	Rotary Tillers < 6 HP (res)
Tech Type		Dsl	Dsl	2-St	Dsl	4-St	Dsl	4-St	Dsl	Dsl	4-St	4-St	2-St
Equipment Population		130.7	36.4	611.0	154.8	283.0	115.3	45.1	93.0	74.3	123.5	13.7	382.3
Activity (hrs/season)		66,116.7	22,172.2	27,346.5	49,781.1	15,826.4	46,992.1	18,314.1	36,707.2	25,420.0	14,381.8	6,676.9	6,498.7
Activity (hrs/season/unit)		505.90	608.42	44.76	321.50	55.92	407.50	406.05	394.74	342.34	116.49	488.00	17.00
Exhaust PM (tons)	151.3	3.00E+00	2.43E+00	2.32E-02	1.91E+00	2.08E-02	1.90E+00	2.45E-02	1.92E+00	1.11E+00	1.53E-02	1.98E-02	5.75E-02
TOTAL VOC (tons)	942.2	2.98E+00	2.89E+00	2.66E+00	2.65E+00	2.36E+00	2.33E+00	2.25E+00	2.20E+00	1.97E+00	1.93E+00	1.84E+00	1.72E+00
Total Exhaust VOC (tons)	806.4	2.98E+00	2.89E+00	2.34E+00	2.65E+00	2.24E+00	2.33E+00	2.22E+00	2.20E+00	1.97E+00	1.86E+00	1.81E+00	1.71E+00
Exh VOC	784.5	2.92E+00	2.83E+00	2.34E+00	2.60E+00	1.93E+00	2.29E+00	2.13E+00	2.16E+00	1.93E+00	1.70E+00	1.59E+00	1.71E+00
Crankcase VOC	21.8	5.84E-02	5.66E-02	0.00E+00	5.21E-02	3.15E-01	4.57E-02	8.40E-02	4.31E-02	3.86E-02	1.63E-01	2.22E-01	0.00E+00
Total Evap VOC (tons)	135.8	0.00E+00	0.00E+00	3.12E-01	0.00E+00	1.20E-01	0.00E+00	3.42E-02	0.00E+00	0.00E+00	6.75E-02	3.01E-02	1.12E-02
Chemical Name													
1,3-Butadiene	1.317	5.5E-03	5.4E-03	5.0E-03	4.9E-03	2.1E-03	4.3E-03	2.1E-03	4.1E-03	3.7E-03	1.8E-03	1.7E-03	3.7E-03
Acetaldehyde	15.123	2.2E-01	2.1E-01	3.9E-03	2.0E-01	9.2E-03	1.7E-01	9.1E-03	1.6E-01	1.5E-01	7.6E-03	7.4E-03	2.8E-03
Acrolein	2.374	3.4E-02	3.3E-02	7.0E-04	3.1E-02	1.6E-03	2.7E-02	1.6E-03	2.5E-02	2.3E-02	1.3E-03	1.3E-03	5.1E-04
Benzene (including benzene from gasoline)	30.731	6.0E-02	5.9E-02	6.6E-02	5.4E-02	1.2E-01	4.7E-02	1.2E-01	4.5E-02	4.0E-02	9.9E-02	9.6E-02	4.3E-02
Chromium Chompounds	0.010	2.1E-04	1.7E-04	1.4E-06	1.3E-04	1.2E-06	1.3E-04	1.5E-06	1.3E-04	7.8E-05	9.2E-07	1.2E-06	3.4E-06
Ethyl benzene	15.370	9.2E-03	8.9E-03	5.9E-02	8.2E-03	4.5E-02	7.2E-03	4.4E-02	6.8E-03	6.1E-03	3.7E-02	3.6E-02	4.1E-02
Formaldehyde	31.309	4.5E-01	4.3E-01	6.0E-03	4.0E-01	2.6E-02	3.5E-01	2.6E-02	3.3E-01	3.0E-01	2.2E-02	2.1E-02	4.3E-03
Hexane	11.064	4.7E-03	4.6E-03	4.1E-02	4.2E-03	2.5E-02	3.7E-03	2.3E-02	3.5E-03	3.1E-03	2.0E-02	1.9E-02	2.5E-02
Manganese Compounds	0.011	2.1E-04	1.7E-04	2.8E-06	1.3E-04	2.5E-06	1.3E-04	2.9E-06	1.3E-04	7.8E-05	1.8E-06	2.4E-06	6.9E-06
Mercury Compounds	0.003	6.0E-05	4.9E-05	2.3E-07	3.8E-05	2.1E-07	3.8E-05	2.4E-07	3.8E-05	2.2E-05	1.5E-07	2.0E-07	5.7E-07
Nickel Compounds	0.005	9.0E-05	7.3E-05	1.6E-06	5.7E-05	1.5E-06	5.7E-05	1.7E-06	5.8E-05	3.3E-05	1.1E-06	1.4E-06	4.0E-06
Polycylic Organic Matter	0.010	5.3E-06	5.2E-06	3.9E-05	4.8E-06	3.4E-05	4.2E-06	3.3E-05	3.9E-06	3.5E-06	2.8E-05	2.7E-05	2.8E-05
Propionaldehyde	2.420	2.9E-02	2.8E-02	5.8E-04	2.6E-02	4.2E-03	2.3E-02	4.2E-03	2.2E-02	1.9E-02	3.5E-03	3.4E-03	4.2E-04
Styrene	0.757	1.8E-03	1.7E-03	3.0E-03	1.6E-03	1.7E-03	1.4E-03	1.7E-03	1.3E-03	1.2E-03	1.4E-03	1.4E-03	2.2E-03
Toluene	61.702	4.5E-02	4.3E-02	2.4E-01	4.0E-02	1.7E-01	3.5E-02	1.6E-01	3.3E-02	3.0E-02	1.4E-01	1.3E-01	1.7E-01
Xylenes (isomers and mixture)	60.084	3.2E-02	3.1E-02	2.6E-01	2.8E-02	1.5E-01	2.5E-02	1.5E-01	2.3E-02	2.1E-02	1.3E-01	1.2E-01	1.8E-01

Table C-4-6b
MOA NONROAD Emissions - Summer 1999

SCC		2265008005	2265004051	2260006005	2265002030	2270001060	2270006010	2265002009	2270004066	2270002033	2265004046	2270002003	2270002021
Equipment Name	Summer TOTAL (tons)	Airport Support Equipment	Shredders < 6 HP (com)	Generator Sets	Trenchers	Specialty Vehicle Carts	Pumps	Plate Compactors	Chippers/Stump Grinders (com)	Bore/Drill Rigs	Front Mowers (com)	Pavers	Paving Equipment
Tech Type		4-St	4-St	2-St	4-St	Dsl	Dsl	4-St	Dsl	Dsl	4-St	Dsl	Dsl
Equipment Population		19.9	146.6	103.0	38.2	21.2	148.3	117.8	25.4	27.2	80.1	37.3	46.9
Activity (hrs/season)		9,335.7	7,329.4	5,921.2	10,226.8	6,357.8	29,891.2	13,013.0	11,818.9	8,445.8	6,891.6	20,374.0	19,424.6
Activity (hrs/season/unit)		469.43	50.00	57.50	267.60	299.55	201.50	110.50	465.00	310.20	86.00	546.51	414.04
Exhaust PM (tons)	151.3	2.00E-02	2.25E-02	6.45E-02	1.46E-02	9.15E-01	1.14E+00	1.07E-02	9.65E-01	9.99E-01	9.41E-03	9.86E-01	9.81E-01
TOTAL VOC (tons)	942.2	1.67E+00	1.65E+00	1.59E+00	1.52E+00	1.41E+00	1.40E+00	1.35E+00	1.27E+00	1.21E+00	1.11E+00	1.07E+00	9.59E-01
Total Exhaust VOC (tons)	806.4	1.63E+00	1.64E+00	1.58E+00	1.48E+00	1.41E+00	1.40E+00	1.31E+00	1.27E+00	1.21E+00	1.10E+00	1.07E+00	9.59E-01
Exh VOC	784.5	1.32E+00	1.60E+00	1.58E+00	1.38E+00	1.38E+00	1.37E+00	1.25E+00	1.25E+00	1.19E+00	1.05E+00	1.05E+00	9.40E-01
Crankcase VOC	21.8	3.04E-01	4.37E-02	0.00E+00	1.04E-01	2.77E-02	2.75E-02	5.97E-02	2.49E-02	2.37E-02	5.06E-02	2.09E-02	1.88E-02
Total Evap VOC (tons)	135.8	4.58E-02	7.01E-03	1.06E-02	3.73E-02	0.00E+00	0.00E+00	3.75E-02	0.00E+00	0.00E+00	1.22E-02	0.00E+00	0.00E+00
Chemical Name													
1,3-Butadiene	1.317	1.5E-03	1.6E-03	3.4E-03	1.4E-03	2.6E-03	2.6E-03	1.2E-03	2.4E-03	2.3E-03	1.0E-03	2.0E-03	1.8E-03
Acetaldehyde	15.123	6.7E-03	6.7E-03	2.6E-03	6.1E-03	1.0E-01	1.0E-01	5.4E-03	9.4E-02	9.0E-02	4.5E-03	7.9E-02	7.1E-02
Acrolein	2.374	1.1E-03	1.1E-03	4.7E-04	1.0E-03	1.6E-02	1.6E-02	9.2E-04	1.5E-02	1.4E-02	7.7E-04	1.2E-02	1.1E-02
Benzene (including benzene from gasoline)	30.731	8.6E-02	8.6E-02	4.0E-02	7.9E-02	2.9E-02	2.8E-02	7.0E-02	2.6E-02	2.5E-02	5.8E-02	2.2E-02	1.9E-02
Chromium Chompounds	0.010	1.2E-06	1.3E-06	3.9E-06	8.7E-07	6.4E-05	8.0E-05	6.4E-07	6.8E-05	7.0E-05	5.6E-07	6.9E-05	6.9E-05
Ethyl benzene	15.370	3.3E-02	3.3E-02	3.8E-02	3.0E-02	4.4E-03	4.3E-03	2.6E-02	3.9E-03	3.8E-03	2.2E-02	3.3E-03	3.0E-03
Formaldehyde	31.309	1.9E-02	1.9E-02	4.0E-03	1.7E-02	2.1E-01	2.1E-01	1.5E-02	1.9E-01	1.8E-01	1.3E-02	1.6E-01	1.4E-01
Hexane	11.064	1.7E-02	1.6E-02	2.3E-02	1.6E-02	2.2E-03	2.2E-03	1.4E-02	2.0E-03	1.9E-03	1.1E-02	1.7E-03	1.5E-03
Manganese Compounds	0.011	2.4E-06	2.7E-06	7.7E-06	1.7E-06	6.4E-05	8.0E-05	1.3E-06	6.8E-05	7.0E-05	1.1E-06	6.9E-05	6.9E-05
Mercury Compounds	0.003	2.0E-07	2.2E-07	6.5E-07	1.5E-07	1.8E-05	2.3E-05	1.1E-07	1.9E-05	2.0E-05	9.4E-08	2.0E-05	2.0E-05
Nickel Compounds	0.005	1.4E-06	1.6E-06	4.5E-06	1.0E-06	2.7E-05	3.4E-05	7.5E-07	2.9E-05	3.0E-05	6.6E-07	3.0E-05	2.9E-05
Polycylic Organic Matter	0.010	2.5E-05	2.5E-05	2.6E-05	2.2E-05	2.5E-06	2.5E-06	2.0E-05	2.3E-06	2.2E-06	1.7E-05	1.9E-06	1.7E-06
Propionaldehyde	2.420	3.1E-03	3.1E-03	3.9E-04	2.8E-03	1.4E-02	1.4E-02	2.5E-03	1.3E-02	1.2E-02	2.1E-03	1.1E-02	9.4E-03
Styrene	0.757	1.2E-03	1.2E-03	2.1E-03	1.1E-03	8.4E-04	8.3E-04	9.9E-04	7.5E-04	7.2E-04	8.3E-04	6.3E-04	5.7E-04
Toluene	61.702	1.2E-01	1.2E-01	1.5E-01	1.1E-01	2.1E-02	2.1E-02	9.5E-02	1.9E-02	1.8E-02	8.0E-02	1.6E-02	1.4E-02
Xylenes (isomers and mixture)	60.084	1.1E-01	1.1E-01	1.7E-01	1.0E-01	1.5E-02	1.5E-02	9.0E-02	1.3E-02	1.3E-02	7.5E-02	1.1E-02	1.0E-02

Table C-4-6b
MOA NONROAD Emissions - Summer 1999

SCC		2265002033	2270007015	2265002072	2265004041	2265002066	2265002015	2270002054	2270002027	2270004056	2265002024	2265002060	2270003020
Equipment Name	Summer TOTAL (tons)	Bore/Drill Rigs	Forest Eqp - Feller/Bunch/ Skidder	Skid Steer Loaders	Rear Engine Riding Mowers (com)	Tractors/Loaders/Backhoes	Rollers	Crushing/Proc. Equipment	Signal Boards/Light Plants	Lawn & Garden Tractors (com)	Surfacing Equipment	Rubber Tire Loaders	Forklifts
Tech Type		4-St	Dsl	4-St	4-St	4-St	4-St	Dsl	Dsl	Dsl	4-St	4-St	Dsl
Equipment Population		121.5	11.1	16.3	22.5	9.3	12.2	11.7	78.7	44.7	22.3	3.3	11.6
Activity (hrs/season)		8,650.8	7,060.4	3,372.4	12,789.4	5,409.0	5,043.4	7,456.0	28,044.9	24,335.3	7,255.3	1,119.5	10,798.9
Activity (hrs/season/unit)		71.23	638.00	206.36	569.00	579.13	413.38	635.71	356.13	544.00	324.84	340.82	934.23
Exhaust PM (tons)	151.3	7.46E-03	6.57E-01	8.09E-03	7.49E-03	7.62E-03	7.47E-03	4.88E-01	6.23E-01	5.31E-01	5.80E-03	6.02E-03	4.73E-01
TOTAL VOC (tons)	942.2	8.94E-01	8.78E-01	8.64E-01	7.23E-01	7.05E-01	6.97E-01	6.75E-01	6.64E-01	6.19E-01	6.14E-01	5.72E-01	5.56E-01
Total Exhaust VOC (tons)	806.4	8.55E-01	8.78E-01	8.17E-01	7.20E-01	6.95E-01	6.82E-01	6.75E-01	6.64E-01	6.19E-01	6.02E-01	5.52E-01	5.56E-01
Exh VOC	784.5	7.93E-01	8.61E-01	6.58E-01	7.12E-01	6.91E-01	6.26E-01	6.62E-01	6.51E-01	6.07E-01	5.98E-01	4.20E-01	5.45E-01
Crankcase VOC	21.8	6.27E-02	1.72E-02	1.60E-01	7.55E-03	4.10E-03	5.54E-02	1.32E-02	1.30E-02	1.21E-02	4.64E-03	1.33E-01	1.09E-02
Total Evap VOC (tons)	135.8	3.83E-02	0.00E+00	4.66E-02	2.72E-03	9.93E-03	1.48E-02	0.00E+00	0.00E+00	0.00E+00	1.18E-02	1.95E-02	0.00E+00
Chemical Name													
1,3-Butadiene	1.317	8.1E-04	1.6E-03	7.8E-04	6.9E-04	6.6E-04	6.5E-04	1.3E-03	1.2E-03	1.2E-03	5.7E-04	5.3E-04	1.0E-03
Acetaldehyde	15.123	3.5E-03	6.5E-02	3.4E-03	3.0E-03	2.9E-03	2.8E-03	5.0E-02	4.9E-02	4.6E-02	2.5E-03	2.3E-03	4.1E-02
Acrolein	2.374	6.0E-04	1.0E-02	5.7E-04	5.0E-04	4.9E-04	4.8E-04	7.8E-03	7.6E-03	7.1E-03	4.2E-04	3.9E-04	6.4E-03
Benzene (including benzene from gasoline)	30.731	4.6E-02	1.8E-02	4.4E-02	3.8E-02	3.7E-02	3.6E-02	1.4E-02	1.3E-02	1.3E-02	3.2E-02	2.9E-02	1.1E-02
Chromium Chompounds	0.010	4.5E-07	4.6E-05	4.9E-07	4.5E-07	4.6E-07	4.5E-07	3.4E-05	4.4E-05	3.7E-05	3.5E-07	3.6E-07	3.3E-05
Ethyl benzene	15.370	1.7E-02	2.7E-03	1.7E-02	1.4E-02	1.4E-02	1.4E-02	2.1E-03	2.1E-03	1.9E-03	1.2E-02	1.1E-02	1.7E-03
Formaldehyde	31.309	1.0E-02	1.3E-01	9.6E-03	8.4E-03	8.1E-03	8.0E-03	1.0E-01	1.0E-01	9.3E-02	7.0E-03	6.5E-03	8.3E-02
Hexane	11.064	9.4E-03	1.4E-03	9.2E-03	7.2E-03	7.1E-03	7.1E-03	1.1E-03	1.1E-03	9.8E-04	6.2E-03	5.9E-03	8.8E-04
Manganese Compounds	0.011	9.0E-07	4.6E-05	9.7E-07	9.0E-07	9.1E-07	9.0E-07	3.4E-05	4.4E-05	3.7E-05	7.0E-07	7.2E-07	3.3E-05
Mercury Compounds	0.003	7.5E-08	1.3E-05	8.1E-08	7.5E-08	7.6E-08	7.5E-08	9.8E-06	1.2E-05	1.1E-05	5.8E-08	6.0E-08	9.5E-06
Nickel Compounds	0.005	5.2E-07	2.0E-05	5.7E-07	5.2E-07	5.3E-07	5.2E-07	1.5E-05	1.9E-05	1.6E-05	4.1E-07	4.2E-07	1.4E-05
Polycylic Organic Matter	0.010	1.3E-05	1.6E-06	1.2E-05	1.1E-05	1.0E-05	1.0E-05	1.2E-06	1.2E-06	1.1E-06	9.1E-06	8.3E-06	1.0E-06
Propionaldehyde	2.420	1.6E-03	8.6E-03	1.5E-03	1.4E-03	1.3E-03	1.3E-03	6.7E-03	6.5E-03	6.1E-03	1.1E-03	1.0E-03	5.5E-03
Styrene	0.757	6.5E-04	5.2E-04	6.2E-04	5.5E-04	5.3E-04	5.2E-04	4.0E-04	3.9E-04	3.7E-04	4.6E-04	4.2E-04	3.3E-04
Toluene	61.702	6.3E-02	1.3E-02	6.1E-02	5.2E-02	5.0E-02	5.0E-02	1.0E-02	1.0E-02	9.3E-03	4.4E-02	4.0E-02	8.3E-03
Xylenes (isomers and mixture)	60.084	5.9E-02	9.3E-03	5.6E-02	4.9E-02	4.7E-02	4.7E-02	7.2E-03	7.0E-03	6.6E-03	4.1E-02	3.8E-02	5.9E-03

Table C-4-6b
MOA NONROAD Emissions - Summer 1999

SCC		2265004030	2260002021	2268006020	2265002003	2270002081	2260002009	2270002024	2270002063	2285002015	2265002078	2265003040	2265004025
Equipment Name	Summer TOTAL (tons)	Leafblowers/ Vacuums (res)	Paving Equipment	Gas Compressors	Pavers	Other Construction Equipment	Plate Compactors	Surfacing Equipment	Rubber Tire Tractor/Dozers	Railway Maintenance	Dumpers/Tenders	Other General Industrial Eqp	Trimmers/Edgers/Brush Cutter (res)
Tech Type		4-St	2-St	4-St	4-St	Dsl	2-St	Dsl	Dsl	Dsl	4-St	4-St	4-St
Equipment Population		300.3	16.2	0.5	11.0	15.5	17.1	7.1	5.0	8.2	33.3	8.3	186.1
Activity (hrs/season)		3,002.8	1,892.2	1,617.6	2,865.7	6,252.0	1,884.6	2,659.2	3,008.0	3,856.2	2,815.1	3,256.4	1,674.8
Activity (hrs/season/unit)		10.00	116.49	3000.00	260.94	403.39	110.50	373.44	598.43	471.50	84.54	391.83	9.00
Exhaust PM (tons)	151.3	1.95E-03	2.04E-02	1.16E-02	4.46E-03	4.03E-01	1.70E-02	4.18E-01	2.87E-01	2.34E-01	2.24E-03	2.39E-03	9.97E-04
TOTAL VOC (tons)	942.2	5.11E-01	4.94E-01	4.85E-01	4.37E-01	4.20E-01	4.12E-01	4.10E-01	3.58E-01	3.56E-01	2.95E-01	2.92E-01	2.58E-01
Total Exhaust VOC (tons)	806.4	5.05E-01	4.93E-01	4.85E-01	4.24E-01	4.20E-01	4.10E-01	4.10E-01	3.58E-01	3.56E-01	2.78E-01	2.89E-01	2.55E-01
Exh VOC	784.5	4.87E-01	4.93E-01	3.65E-01	3.87E-01	4.12E-01	4.10E-01	4.02E-01	3.51E-01	3.49E-01	2.32E-01	2.89E-01	2.46E-01
Crankcase VOC	21.8	1.84E-02	0.00E+00	1.20E-01	3.70E-02	8.24E-03	0.00E+00	8.04E-03	7.01E-03	6.99E-03	4.60E-02	3.26E-04	9.26E-03
Total Evap VOC (tons)	135.8	5.84E-03	1.86E-03	0.00E+00	1.27E-02	0.00E+00	1.77E-03	0.00E+00	0.00E+00	0.00E+00	1.77E-02	3.04E-03	3.49E-03
Chemical Name													
1,3-Butadiene	1.317	4.8E-04	1.1E-03	4.6E-04	4.0E-04	7.8E-04	8.8E-04	7.6E-04	6.7E-04	6.6E-04	2.6E-04	2.8E-04	2.4E-04
Acetaldehyde	15.123	2.1E-03	8.2E-04	2.0E-03	1.7E-03	3.1E-02	6.8E-04	3.0E-02	2.7E-02	2.6E-02	1.1E-03	1.2E-03	1.0E-03
Acrolein	2.374	3.5E-04	1.5E-04	3.4E-04	3.0E-04	4.8E-03	1.2E-04	4.7E-03	4.1E-03	4.1E-03	1.9E-04	2.0E-04	1.8E-04
Benzene (including benzene from gasoline)	30.731	2.7E-02	1.2E-02	2.5E-02	2.3E-02	8.5E-03	1.0E-02	8.3E-03	7.3E-03	7.2E-03	1.5E-02	1.5E-02	1.3E-02
Chromium Chompounds	0.010	1.2E-07	1.2E-06	7.0E-07	2.7E-07	2.8E-05	1.0E-06	2.9E-05	2.0E-05	1.6E-05	1.3E-07	1.4E-07	6.0E-08
Ethyl benzene	15.370	1.0E-02	1.2E-02	9.6E-03	8.5E-03	1.3E-03	9.8E-03	1.3E-03	1.1E-03	1.1E-03	5.6E-03	5.7E-03	5.1E-03
Formaldehyde	31.309	5.9E-03	1.3E-03	5.7E-03	5.0E-03	6.3E-02	1.0E-03	6.2E-02	5.4E-02	5.3E-02	3.2E-03	3.4E-03	3.0E-03
Hexane	11.064	5.2E-03	7.0E-03	4.8E-03	4.5E-03	6.7E-04	5.9E-03	6.5E-04	5.7E-04	5.7E-04	3.2E-03	2.9E-03	2.6E-03
Manganese Compounds	0.011	2.3E-07	2.4E-06	1.4E-06	5.4E-07	2.8E-05	2.0E-06	2.9E-05	2.0E-05	1.6E-05	2.7E-07	2.9E-07	1.2E-07
Mercury Compounds	0.003	2.0E-08	2.0E-07	1.2E-07	4.5E-08	8.1E-06	1.7E-07	8.4E-06	5.7E-06	4.7E-06	2.2E-08	2.4E-08	1.0E-08
Nickel Compounds	0.005	1.4E-07	1.4E-06	8.1E-07	3.1E-07	1.2E-05	1.2E-06	1.3E-05	8.6E-06	7.0E-06	1.6E-07	1.7E-07	7.0E-08
Polycylic Organic Matter	0.010	7.6E-06	8.2E-06	7.3E-06	6.4E-06	7.5E-07	6.8E-06	7.3E-07	6.4E-07	6.4E-07	4.2E-06	4.4E-06	3.8E-06
Propionaldehyde	2.420	9.5E-04	1.2E-04	9.1E-04	8.0E-04	4.1E-03	1.0E-04	4.0E-03	3.5E-03	3.5E-03	5.2E-04	5.4E-04	4.8E-04
Styrene	0.757	3.8E-04	6.4E-04	3.7E-04	3.2E-04	2.5E-04	5.3E-04	2.4E-04	2.1E-04	2.1E-04	2.1E-04	2.2E-04	1.9E-04
Toluene	61.702	3.7E-02	4.8E-02	3.5E-02	3.1E-02	6.3E-03	4.0E-02	6.2E-03	5.4E-03	5.3E-03	2.1E-02	2.1E-02	1.8E-02
Xylenes (isomers and mixture)	60.084	3.4E-02	5.3E-02	3.3E-02	2.9E-02	4.5E-03	4.4E-02	4.3E-03	3.8E-03	3.8E-03	1.9E-02	2.0E-02	1.7E-02

Table C-4-6b
MOA NONROAD Emissions - Summer 1999

SCC		2265002081	2270003030	2265004026	2265003010	2265007015	2265002057	2265002054	2265003030	2270003070	2270003040	2270005020	2265005040
Equipment Name	Summer TOTAL (tons)	Other Construction Equipment	Sweepers/Scrubbers	Trimmers/Edgers/Brush Cutter (com)	Aerial Lifts	Shredders > 6 HP	Rough Terrain Forklift	Crushing/Proc. Equipment	Sweepers/Scrubbers	Terminal Tractors	Other General Industrial Eqp	Combines	Tillers > 6 HP
Tech Type		4-St	Dsl	4-St	4-St	4-St	4-St	4-St	4-St	Dsl	Dsl	Dsl	4-St
Equipment Population		1.6	3.5	16.3	5.2	46.9	1.6	7.7	2.5	3.2	7.6	11.2	23.4
Activity (hrs/season)		405.6	2,374.9	2,236.4	1,025.0	1,186.6	451.5	1,237.8	699.7	2,189.4	3,688.2	1,213.4	726.6
Activity (hrs/season/unit)		246.96	670.45	137.00	198.39	25.29	274.92	160.42	283.57	690.78	482.50	108.11	30.99
Exhaust PM (tons)	151.3	2.62E-03	1.60E-01	1.85E-03	2.24E-03	1.26E-03	2.01E-03	1.56E-03	1.62E-03	1.32E-01	1.17E-01	1.35E-01	4.55E-04
TOTAL VOC (tons)	942.2	2.55E-01	2.54E-01	2.51E-01	2.32E-01	2.00E-01	1.94E-01	1.65E-01	1.57E-01	1.40E-01	1.37E-01	1.29E-01	9.93E-02
Total Exhaust VOC (tons)	806.4	2.41E-01	2.54E-01	2.51E-01	2.15E-01	1.78E-01	1.85E-01	1.61E-01	1.52E-01	1.40E-01	1.37E-01	1.29E-01	8.93E-02
Exh VOC	784.5	1.83E-01	2.49E-01	2.49E-01	1.70E-01	1.44E-01	1.40E-01	1.60E-01	1.28E-01	1.37E-01	1.35E-01	1.27E-01	6.90E-02
Crankcase VOC	21.8	5.78E-02	4.98E-03	1.45E-03	4.57E-02	3.37E-02	4.43E-02	1.24E-03	2.42E-02	2.74E-03	2.69E-03	2.54E-03	2.03E-02
Total Evap VOC (tons)	135.8	1.38E-02	0.00E+00	3.85E-04	1.69E-02	2.28E-02	9.13E-03	3.77E-03	5.07E-03	0.00E+00	0.00E+00	0.00E+00	9.99E-03
Chemical Name													
1,3-Butadiene	1.317	2.3E-04	4.7E-04	2.4E-04	2.0E-04	1.7E-04	1.8E-04	1.5E-04	1.4E-04	2.6E-04	2.6E-04	2.4E-04	8.5E-05
Acetaldehyde	15.123	9.9E-04	1.9E-02	1.0E-03	8.8E-04	7.3E-04	7.6E-04	6.6E-04	6.2E-04	1.0E-02	1.0E-02	9.6E-03	3.7E-04
Acrolein	2.374	1.7E-04	2.9E-03	1.8E-04	1.5E-04	1.2E-04	1.3E-04	1.1E-04	1.1E-04	1.6E-03	1.6E-03	1.5E-03	6.3E-05
Benzene (including benzene from gasoline)	30.731	1.3E-02	5.2E-03	1.3E-02	1.2E-02	9.8E-03	9.9E-03	8.5E-03	8.1E-03	2.8E-03	2.8E-03	2.6E-03	4.9E-03
Chromium Chompounds	0.010	1.6E-07	1.1E-05	1.1E-07	1.3E-07	7.5E-08	1.2E-07	9.4E-08	9.7E-08	9.3E-06	8.2E-06	9.4E-06	2.7E-08
Ethyl benzene	15.370	4.9E-03	7.9E-04	5.0E-03	4.4E-03	3.7E-03	3.7E-03	3.2E-03	3.0E-03	4.3E-04	4.3E-04	4.0E-04	1.8E-03
Formaldehyde	31.309	2.8E-03	3.8E-02	2.9E-03	2.5E-03	2.1E-03	2.2E-03	1.9E-03	1.8E-03	2.1E-02	2.1E-02	1.9E-02	1.0E-03
Hexane	11.064	2.7E-03	4.0E-04	2.5E-03	2.5E-03	2.3E-03	2.0E-03	1.7E-03	1.6E-03	2.2E-04	2.2E-04	2.1E-04	1.1E-03
Manganese Compounds	0.011	3.1E-07	1.1E-05	2.2E-07	2.7E-07	1.5E-07	2.4E-07	1.9E-07	1.9E-07	9.3E-06	8.2E-06	9.4E-06	5.5E-08
Mercury Compounds	0.003	2.6E-08	3.2E-06	1.9E-08	2.2E-08	1.3E-08	2.0E-08	1.6E-08	1.6E-08	2.6E-06	2.3E-06	2.7E-06	4.6E-09
Nickel Compounds	0.005	1.8E-07	4.8E-06	1.3E-07	1.6E-07	8.8E-08	1.4E-07	1.1E-07	1.1E-07	4.0E-06	3.5E-06	4.0E-06	3.2E-08
Polycylic Organic Matter	0.010	3.6E-06	4.5E-07	3.8E-06	3.3E-06	2.7E-06	2.8E-06	2.4E-06	2.3E-06	2.5E-07	2.5E-07	2.3E-07	1.3E-06
Propionaldehyde	2.420	4.5E-04	2.5E-03	4.7E-04	4.0E-04	3.3E-04	3.5E-04	3.0E-04	2.9E-04	1.4E-03	1.4E-03	1.3E-03	1.7E-04
Styrene	0.757	1.8E-04	1.5E-04	1.9E-04	1.6E-04	1.3E-04	1.4E-04	1.2E-04	1.2E-04	8.3E-05	8.2E-05	7.7E-05	6.8E-05
Toluene	61.702	1.8E-02	3.8E-03	1.8E-02	1.6E-02	1.4E-02	1.4E-02	1.2E-02	1.1E-02	2.1E-03	2.1E-03	1.9E-03	6.8E-03
Xylenes (isomers and mixture)	60.084	1.7E-02	2.7E-03	1.7E-02	1.5E-02	1.3E-02	1.3E-02	1.1E-02	1.0E-02	1.5E-03	1.5E-03	1.4E-03	6.3E-03

Table C-4-6b
MOA NONROAD Emissions - Summer 1999

SCC		2265002045	2285004015	2270002039	2270005060	2270002009	2265005035
Equipment Name	Summer TOTAL (tons)	Cranes	Railway Maintenance	Concrete/Industrial Saws	Irrigation Sets	Plate Compactors	Sprayers
Tech Type		4-St	4-St	Dsl	Dsl	Dsl	4-St
Equipment Population		1.2	11.3	3.4	1.3	12.6	4.3
Activity (hrs/season)		339.0	1,042.9	1,293.8	699.1	4,048.6	245.8
Activity (hrs/season/unit)		276.25	92.00	386.08	539.82	322.18	57.66
Exhaust PM (tons)	151.3	9.03E-04	7.15E-04	5.89E-02	4.01E-02	7.97E-02	4.07E-04
TOTAL VOC (tons)	942.2	8.81E-02	8.61E-02	6.22E-02	5.69E-02	5.53E-02	4.50E-02
Total Exhaust VOC (tons)	806.4	8.30E-02	8.20E-02	6.22E-02	5.69E-02	5.53E-02	4.31E-02
Exh VOC	784.5	6.55E-02	7.55E-02	6.09E-02	5.58E-02	5.42E-02	3.75E-02
Crankcase VOC	21.8	1.75E-02	6.43E-03	1.22E-03	1.12E-03	1.08E-03	5.64E-03
Total Evap VOC (tons)	135.8	5.10E-03	4.16E-03	0.00E+00	0.00E+00	0.00E+00	1.89E-03
Chemical Name							
1,3-Butadiene	1.317	7.9E-05	7.8E-05	1.2E-04	1.1E-04	1.0E-04	4.1E-05
Acetaldehyde	15.123	3.4E-04	3.4E-04	4.6E-03	4.2E-03	4.1E-03	1.8E-04
Acrolein	2.374	5.8E-05	5.7E-05	7.1E-04	6.5E-04	6.4E-04	3.0E-05
Benzene (including benzene from gasoline)	30.731	4.5E-03	4.4E-03	1.3E-03	1.2E-03	1.1E-03	2.3E-03
Chromium Chompounds	0.010	5.4E-08	4.3E-08	4.1E-06	2.8E-06	5.6E-06	2.4E-08
Ethyl benzene	15.370	1.7E-03	1.7E-03	1.9E-04	1.8E-04	1.7E-04	8.7E-04
Formaldehyde	31.309	9.7E-04	9.6E-04	9.3E-03	8.5E-03	8.3E-03	5.0E-04
Hexane	11.064	9.4E-04	9.1E-04	9.9E-05	9.0E-05	8.8E-05	4.7E-04
Manganese Compounds	0.011	1.1E-07	8.6E-08	4.1E-06	2.8E-06	5.6E-06	4.9E-08
Mercury Compounds	0.003	9.0E-09	7.1E-09	1.2E-06	8.0E-07	1.6E-06	4.1E-09
Nickel Compounds	0.005	6.3E-08	5.0E-08	1.8E-06	1.2E-06	2.4E-06	2.8E-08
Polycylic Organic Matter	0.010	1.3E-06	1.2E-06	1.1E-07	1.0E-07	9.9E-08	6.5E-07
Propionaldehyde	2.420	1.6E-04	1.5E-04	6.1E-04	5.6E-04	5.4E-04	8.1E-05
Styrene	0.757	6.3E-05	6.2E-05	3.7E-05	3.4E-05	3.3E-05	3.3E-05
Toluene	61.702	6.2E-03	6.1E-03	9.3E-04	8.5E-04	8.3E-04	3.2E-03
Xylenes (isomers and mixture)	60.084	5.7E-03	5.6E-03	6.6E-04	6.0E-04	5.9E-04	3.0E-03

Table C-4-6c
FNSB NONROAD Emissions - Winter 1999

SCC		2260001020	2282005010	2260001030	2270009010	2260004035	2265006005	2270002066	2270002072	2270002060	2265006030	2260002054	2270002036
Equipment Name	Winter TOTAL (tons)	Snowmobiles	Outboard	All Terrain Vehicles\Motorcycles	Other Underground Mining Equipment	Snowblowers (res)	Generator Sets	Tractors/Loaders/Backhoes	Skid Steer Loaders	Rubber Tire Loaders	Pressure Washers	Concrete/Industrial Saws	Excavators
Tech Type		2-St	2-St	2-St	Dsl	2-St	4-St	Dsl	Dsl	Dsl	4-St	2-St	Dsl
Equipment Population		10,491.1	3,018.7	757.2	80.7	2,506.7	723.5	141.7	177.2	89.6	336.3	28.8	57.9
Activity (hrs/season)		251,787.4	15,773.1	12,872.4	54,103.6	20,054.0	41,599.8	53,778.9	48,469.2	22,797.9	19,337.2	5,802.3	21,141.7
Activity (hrs/season/unit)		24.00	5.23	17.00	670.11	8.00	57.50	379.47	273.49	254.43	57.50	201.42	365.10
Exhaust PM (tons)	46.35	1.37E+01	1.30E+00	3.23E-01	6.13E+00	2.64E-01	4.79E-02	3.53E+00	2.57E+00	2.46E+00	2.53E-02	1.94E-01	1.87E+00
TOTAL VOC (tons)	693.60	5.76E+02	2.24E+01	1.36E+01	1.02E+01	7.36E+00	7.23E+00	5.03E+00	3.81E+00	3.59E+00	3.44E+00	3.26E+00	3.17E+00
Total Exhaust VOC (tons)	693.60	5.76E+02	2.24E+01	1.36E+01	1.02E+01	7.36E+00	7.23E+00	5.03E+00	3.81E+00	3.59E+00	3.44E+00	3.26E+00	3.17E+00
Exh VOC	690.38	5.76E+02	2.24E+01	1.36E+01	1.00E+01	7.36E+00	6.30E+00	4.93E+00	3.73E+00	3.52E+00	3.28E+00	3.26E+00	3.11E+00
Crankcase VOC	3.22	0.00E+00	0.00E+00	0.00E+00	2.00E-01	0.00E+00	9.33E-01	9.86E-02	7.47E-02	7.03E-02	1.57E-01	0.00E+00	6.21E-02
Total Evap VOC (tons)	0.00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Chemical Name													
1,3-Butadiene	1.449	1.24E+00	4.81E-02	2.93E-02	1.90E-02	1.58E-02	6.89E-03	9.35E-03	7.09E-03	6.67E-03	3.27E-03	7.01E-03	5.89E-03
Acetaldehyde	4.266	9.55E-01	3.72E-02	2.26E-02	7.59E-01	1.22E-02	2.97E-02	3.74E-01	2.83E-01	2.67E-01	1.41E-02	5.41E-03	2.35E-01
Acrolein	0.689	1.73E-01	6.72E-03	4.09E-03	1.17E-01	2.21E-03	5.06E-03	5.78E-02	4.38E-02	4.13E-02	2.41E-03	9.78E-04	3.64E-02
Benzene (including benzene from gasoline)	17.954	1.45E+01	5.64E-01	3.43E-01	2.07E-01	1.86E-01	3.80E-01	1.02E-01	7.73E-02	7.28E-02	1.81E-01	8.21E-02	6.43E-02
Chromium Chompounds	0.003	8.20E-04	7.83E-05	1.94E-05	4.29E-04	1.58E-05	2.87E-06	2.47E-04	1.80E-04	1.72E-04	1.52E-06	1.16E-05	1.31E-04
Ethyl benzene	15.663	1.38E+01	5.37E-01	3.27E-01	3.17E-02	1.77E-01	1.43E-01	1.56E-02	1.18E-02	1.11E-02	6.81E-02	7.82E-02	9.82E-03
Formaldehyde	8.190	1.46E+00	5.69E-02	3.46E-02	1.53E+00	1.87E-02	8.46E-02	7.54E-01	5.71E-01	5.38E-01	4.02E-02	8.28E-03	4.75E-01
Hexane	9.212	8.17E+00	3.18E-01	1.93E-01	1.62E-02	1.05E-01	7.17E-02	8.00E-03	6.06E-03	5.70E-03	3.41E-02	4.63E-02	5.04E-03
Manganese Compounds	0.004	1.64E-03	1.57E-04	3.88E-05	4.29E-04	3.16E-05	5.75E-06	2.47E-04	1.80E-04	1.72E-04	3.04E-06	2.33E-05	1.31E-04
Mercury Compounds	0.001	1.37E-04	1.30E-05	3.23E-06	1.23E-04	2.64E-06	4.79E-07	7.06E-05	5.15E-05	4.91E-05	2.53E-07	1.94E-06	3.73E-05
Nickel Compounds	0.002	9.56E-04	9.13E-05	2.26E-05	1.84E-04	1.85E-05	3.35E-06	1.06E-04	7.72E-05	7.37E-05	1.77E-06	1.36E-05	5.60E-05
Polycylic Organic Matter	0.011	9.55E-03	3.72E-04	2.26E-04	1.83E-05	1.22E-04	1.09E-04	9.00E-06	6.82E-06	6.42E-06	5.19E-05	5.41E-05	5.67E-06
Propionaldehyde	0.616	1.42E-01	5.53E-03	3.36E-03	1.01E-01	1.82E-03	1.36E-02	4.95E-02	3.75E-02	3.53E-02	6.46E-03	8.05E-04	3.12E-02
Styrene	0.858	7.48E-01	2.91E-02	1.77E-02	6.07E-03	9.57E-03	5.48E-03	2.99E-03	2.26E-03	2.13E-03	2.61E-03	4.24E-03	1.88E-03
Toluene	63.704	5.63E+01	2.19E+00	1.33E+00	1.53E-01	7.20E-01	5.19E-01	7.54E-02	5.71E-02	5.38E-02	2.47E-01	3.19E-01	4.75E-02
Xylenes (isomers and mixture)	69.184	6.16E+01	2.40E+00	1.46E+00	1.08E-01	7.88E-01	4.90E-01	5.33E-02	4.04E-02	3.80E-02	2.33E-01	3.49E-01	3.36E-02

Table C-4-6c
FNSB NONROAD Emissions - Winter 1999

SCC		2260006010	2270003060	2265001030	2270002069	2265006010	2282010005	2265006025	2270002057	2260002006	2270002051	2270002045	2265006015
Equipment Name	Winter TOTAL (tons)	Pumps	AC\Refrigeration	All Terrain Vehicles\Motorcycles	Crawler Tractor/Dozers	Pumps	Inboard/Stern drive	Welders	Rough Terrain Forklift	Tampers/Rammers	Off-highway Trucks	Cranes	Air Compressors
Tech Type		2-St	Dsl	4-St	Dsl	4-St	4-St	4-St	Dsl	2-St	Dsl	Dsl	4-St
Equipment Population		75.0	195.7	2,365.3	87.2	126.0	631.2	38.5	48.2	65.9	7.8	40.7	27.2
Activity (hrs/season)		8,285.9	118,216.0	40,210.6	27,277.5	13,918.5	4,511.5	7,851.7	10,658.1	3,524.6	4,263.9	13,467.3	6,581.4
Activity (hrs/season/unit)		110.50	604.05	17.00	312.94	110.50	7.15	204.00	221.33	53.49	548.65	330.99	242.00
Exhaust PM (tons)	46.35	9.17E-02	2.49E+00	1.68E-02	1.79E+00	1.50E-02	1.88E-02	1.51E-02	8.76E-01	7.07E-02	8.38E-01	7.91E-01	8.58E-03
TOTAL VOC (tons)	693.60	2.32E+00	2.16E+00	1.98E+00	1.97E+00	1.96E+00	1.60E+00	1.55E+00	1.21E+00	1.15E+00	1.11E+00	1.02E+00	9.94E-01
Total Exhaust VOC (tons)	693.60	2.32E+00	2.16E+00	1.98E+00	1.97E+00	1.96E+00	1.60E+00	1.55E+00	1.21E+00	1.15E+00	1.11E+00	1.02E+00	9.94E-01
Exh VOC	690.38	2.32E+00	2.12E+00	1.61E+00	1.93E+00	1.89E+00	1.60E+00	1.46E+00	1.19E+00	1.15E+00	1.09E+00	1.00E+00	9.23E-01
Crankcase VOC	3.22	0.00E+00	4.24E-02	3.73E-01	3.86E-02	7.10E-02	0.00E+00	8.58E-02	2.37E-02	0.00E+00	2.18E-02	2.01E-02	7.13E-02
Total Evap VOC (tons)	0.00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Chemical Name													
1,3-Butadiene	1.449	4.98E-03	4.02E-03	1.89E-03	3.66E-03	1.87E-03	1.53E-03	1.48E-03	2.25E-03	2.48E-03	2.07E-03	1.90E-03	9.47E-04
Acetaldehyde	4.266	3.85E-03	1.61E-01	8.13E-03	1.46E-01	8.04E-03	6.57E-03	6.36E-03	8.98E-02	1.91E-03	8.28E-02	7.60E-02	4.08E-03
Acrolein	0.689	6.95E-04	2.48E-02	1.39E-03	2.27E-02	1.37E-03	1.12E-03	1.09E-03	1.39E-02	3.46E-04	1.28E-02	1.18E-02	6.96E-04
Benzene (including benzene from gasoline)	17.954	5.84E-02	4.39E-02	1.04E-01	4.00E-02	1.03E-01	8.42E-02	8.14E-02	2.45E-02	2.90E-02	2.26E-02	2.08E-02	5.22E-02
Chromium Chompounds	0.003	5.50E-06	1.75E-04	1.01E-06	1.25E-04	9.02E-07	1.13E-06	9.05E-07	6.13E-05	4.24E-06	5.86E-05	5.54E-05	5.15E-07
Ethyl benzene	15.663	5.56E-02	6.70E-03	3.92E-02	6.11E-03	3.88E-02	3.17E-02	3.07E-02	3.75E-03	2.77E-02	3.45E-03	3.17E-03	1.97E-02
Formaldehyde	8.190	5.88E-03	3.24E-01	2.32E-02	2.96E-01	2.29E-02	1.88E-02	1.81E-02	1.81E-01	2.93E-03	1.67E-01	1.54E-01	1.16E-02
Hexane	9.212	3.29E-02	3.44E-03	1.97E-02	3.13E-03	1.94E-02	1.59E-02	1.54E-02	1.92E-03	1.64E-02	1.77E-03	1.63E-03	9.86E-03
Manganese Compounds	0.004	1.10E-05	1.75E-04	2.01E-06	1.25E-04	1.80E-06	2.26E-06	1.81E-06	6.13E-05	8.48E-06	5.86E-05	5.54E-05	1.03E-06
Mercury Compounds	0.001	9.17E-07	4.99E-05	1.68E-07	3.57E-05	1.50E-07	1.88E-07	1.51E-07	1.75E-05	7.07E-07	1.68E-05	1.58E-05	8.58E-08
Nickel Compounds	0.002	6.42E-06	7.48E-05	1.17E-06	5.36E-05	1.05E-06	1.32E-06	1.06E-06	2.63E-05	4.95E-06	2.51E-05	2.37E-05	6.00E-07
Polycylic Organic Matter	0.011	3.85E-05	3.87E-06	2.99E-05	3.53E-06	2.96E-05	2.42E-05	2.34E-05	2.16E-06	1.91E-05	1.99E-06	1.83E-06	1.50E-05
Propionaldehyde	0.616	5.72E-04	2.13E-02	3.73E-03	1.94E-02	3.69E-03	3.01E-03	2.91E-03	1.19E-02	2.85E-04	1.10E-02	1.01E-02	1.87E-03
Styrene	0.858	3.01E-03	1.28E-03	1.50E-03	1.17E-03	1.49E-03	1.22E-03	1.18E-03	7.18E-04	1.50E-03	6.62E-04	6.08E-04	7.54E-04
Toluene	63.704	2.27E-01	3.24E-02	1.42E-01	2.96E-02	1.41E-01	1.15E-01	1.11E-01	1.81E-02	1.13E-01	1.67E-02	1.54E-02	7.14E-02
Xylenes (isomers and mixture)	69.184	2.48E-01	2.29E-02	1.34E-01	2.09E-02	1.33E-01	1.09E-01	1.05E-01	1.28E-02	1.23E-01	1.18E-02	1.08E-02	6.74E-02

Table C-4-6c
FNSB NONROAD Emissions - Winter 1999

SCC		2270008005	2265004035	2270005015	2270002075	2270002048	2270006005	2265003020	2265001060	2270006025	2270002015	2270002018
Equipment Name	Winter TOTAL (tons)	Airport Support Equipment	Snowblowers (res)	Agricultural Tractors	Off-Highway Tractors	Graders	Generator Sets	Forklifts	Specialty Vehicle Carts	Welders	Rollers	Scrapers
Tech Type		Dsl	4-St	Dsl	Dsl	Dsl	Dsl	4-St	4-St	Dsl	Dsl	Dsl
Equipment Population		20.8	2,677.9	79.7	13.0	36.1	69.3	9.5	96.0	32.9	47.5	13.3
Activity (hrs/season)		7,630.4	21,423.2	10,578.1	3,702.7	11,616.0	11,703.3	7,142.3	1,943.2	10,577.3	12,081.0	4,051.3
Activity (hrs/season/unit)		366.00	8.00	132.66	285.86	321.63	169.00	749.55	20.24	321.50	254.10	305.58
Exhaust PM (tons)	46.35	6.75E-01	7.77E-03	4.55E-01	5.72E-01	6.60E-01	5.36E-01	1.46E-02	3.76E-03	4.06E-01	5.42E-01	4.32E-01
TOTAL VOC (tons)	693.60	9.51E-01	8.92E-01	8.02E-01	7.81E-01	7.61E-01	6.99E-01	6.86E-01	5.56E-01	5.56E-01	5.33E-01	5.12E-01
Total Exhaust VOC (tons)	693.60	9.51E-01	8.92E-01	8.02E-01	7.81E-01	7.61E-01	6.99E-01	6.86E-01	5.56E-01	5.56E-01	5.33E-01	5.12E-01
Exh VOC	690.38	9.33E-01	8.92E-01	7.87E-01	7.65E-01	7.46E-01	6.85E-01	5.19E-01	4.49E-01	5.45E-01	5.22E-01	5.02E-01
Crankcase VOC	3.22	1.87E-02	0.00E+00	1.57E-02	1.53E-02	1.49E-02	1.37E-02	1.67E-01	1.07E-01	1.09E-02	1.04E-02	1.00E-02
Total Evap VOC (tons)	0.00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Chemical Name												
1,3-Butadiene	1.449	1.77E-03	8.49E-04	1.49E-03	1.45E-03	1.42E-03	1.30E-03	6.53E-04	5.30E-04	1.03E-03	9.91E-04	9.53E-04
Acetaldehyde	4.266	7.07E-02	3.66E-03	5.96E-02	5.80E-02	5.66E-02	5.19E-02	2.81E-03	2.28E-03	4.13E-02	3.96E-02	3.81E-02
Acrolein	0.689	1.09E-02	6.25E-04	9.23E-03	8.98E-03	8.76E-03	8.04E-03	4.80E-04	3.89E-04	6.39E-03	6.13E-03	5.89E-03
Benzene (including benzene from gasoline)	17.954	1.93E-02	4.68E-02	1.63E-02	1.58E-02	1.55E-02	1.42E-02	3.60E-02	2.92E-02	1.13E-02	1.08E-02	1.04E-02
Chromium Chompounds	0.003	4.72E-05	4.66E-07	3.18E-05	4.00E-05	4.62E-05	3.75E-05	8.73E-07	2.25E-07	2.84E-05	3.79E-05	3.02E-05
Ethyl benzene	15.663	2.95E-03	1.77E-02	2.49E-03	2.42E-03	2.36E-03	2.17E-03	1.36E-02	1.10E-02	1.72E-03	1.65E-03	1.59E-03
Formaldehyde	8.190	1.43E-01	1.04E-02	1.20E-01	1.17E-01	1.14E-01	1.05E-01	8.02E-03	6.51E-03	8.34E-02	7.99E-02	7.69E-02
Hexane	9.212	1.51E-03	8.85E-03	1.28E-03	1.24E-03	1.21E-03	1.11E-03	6.80E-03	5.52E-03	8.84E-04	8.47E-04	8.15E-04
Manganese Compounds	0.004	4.72E-05	9.32E-07	3.18E-05	4.00E-05	4.62E-05	3.75E-05	1.75E-06	4.51E-07	2.84E-05	3.79E-05	3.02E-05
Mercury Compounds	0.001	1.35E-05	7.77E-08	9.10E-06	1.14E-05	1.32E-05	1.07E-05	1.46E-07	3.76E-08	8.11E-06	1.08E-05	8.64E-06
Nickel Compounds	0.002	2.02E-05	5.44E-07	1.36E-05	1.72E-05	1.98E-05	1.61E-05	1.02E-06	2.63E-07	1.22E-05	1.62E-05	1.30E-05
Polycylic Organic Matter	0.011	1.70E-06	1.35E-05	1.44E-06	1.40E-06	1.36E-06	1.25E-06	1.04E-05	8.40E-06	9.95E-07	9.54E-07	9.17E-07
Propionaldehyde	0.616	9.37E-03	1.68E-03	7.90E-03	7.69E-03	7.50E-03	6.89E-03	1.29E-03	1.05E-03	5.47E-03	5.25E-03	5.05E-03
Styrene	0.858	5.65E-04	6.76E-04	4.77E-04	4.64E-04	4.52E-04	4.15E-04	5.20E-04	4.22E-04	3.30E-04	3.16E-04	3.04E-04
Toluene	63.704	1.43E-02	6.41E-02	1.20E-02	1.17E-02	1.14E-02	1.05E-02	4.92E-02	3.99E-02	8.34E-03	7.99E-03	7.69E-03
Xylenes (isomers and mixture)	69.184	1.01E-02	6.05E-02	8.51E-03	8.27E-03	8.07E-03	7.41E-03	4.65E-02	3.77E-02	5.89E-03	5.65E-03	5.43E-03

Table C-4-6c
FNSB NONROAD Emissions - Winter 1999

SCC		2270006015	2265002039	2265001020	2265002042	2260001060	2270002030	2265002021	2260006005	2265002030	2270006010	2265008005	2265002009
Equipment Name	Winter TOTAL (tons)	Air Compressors	Concrete/Industrial Saws	Snowmobiles	Cement & Mortar Mixers	Specialty Vehicle Carts	Trenchers	Paving Equipment	Generator Sets	Trenchers	Pumps	Airport Support Equipment	Plate Compactors
Tech Type		Dsl	4-St	4-St	4-St	2-St	Dsl	4-St	2-St	4-St	Dsl	4-St	4-St
Equipment Population		24.5	16.4	86.2	103.0	244.4	33.8	44.9	21.9	13.9	31.5	3.2	42.8
Activity (hrs/season)		9,984.7	3,346.4	2,069.5	2,891.8	4,946.2	6,707.2	2,627.9	1,258.1	1,868.7	6,351.1	1,520.9	2,377.8
Activity (hrs/season/unit)		407.50	203.95	24.00	28.08	20.24	198.26	58.51	57.50	134.40	201.50	469.64	55.50
Exhaust PM (tons)	46.35	4.03E-01	4.77E-03	3.61E-03	3.56E-03	4.16E-03	3.43E-01	2.73E-03	1.37E-02	2.75E-03	2.42E-01	3.18E-03	1.84E-03
TOTAL VOC (tons)	693.60	4.98E-01	4.78E-01	4.42E-01	4.29E-01	4.13E-01	3.86E-01	3.65E-01	3.34E-01	3.12E-01	2.98E-01	2.71E-01	2.53E-01
Total Exhaust VOC (tons)	693.60	4.98E-01	4.78E-01	4.42E-01	4.29E-01	4.13E-01	3.86E-01	3.65E-01	3.34E-01	3.12E-01	2.98E-01	2.71E-01	2.53E-01
Exh VOC	690.38	4.89E-01	4.63E-01	3.46E-01	3.77E-01	4.13E-01	3.79E-01	3.39E-01	3.34E-01	2.93E-01	2.92E-01	2.25E-01	2.44E-01
Crankcase VOC	3.22	9.77E-03	1.52E-02	9.59E-02	5.25E-02	0.00E+00	7.57E-03	2.63E-02	0.00E+00	1.84E-02	5.84E-03	4.60E-02	8.72E-03
Total Evap VOC (tons)	0.00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Chemical Name													
1,3-Butadiene	1.449	9.27E-04	4.55E-04	4.21E-04	4.09E-04	8.89E-04	7.18E-04	3.48E-04	7.18E-04	2.97E-04	5.54E-04	2.58E-04	2.41E-04
Acetaldehyde	4.266	3.70E-02	1.96E-03	1.81E-03	1.76E-03	6.86E-04	2.87E-02	1.50E-03	5.54E-04	1.28E-03	2.21E-02	1.11E-03	1.04E-03
Acrolein	0.689	5.73E-03	3.34E-04	3.10E-04	3.01E-04	1.24E-04	4.44E-03	2.56E-04	1.00E-04	2.18E-04	3.42E-03	1.90E-04	1.77E-04
Benzene (including benzene from gasoline)	17.954	1.01E-02	2.51E-02	2.32E-02	2.25E-02	1.04E-02	7.84E-03	1.92E-02	8.42E-03	1.64E-02	6.04E-03	1.42E-02	1.33E-02
Chromium Chompounds	0.003	2.82E-05	2.86E-07	2.17E-07	2.13E-07	2.50E-07	2.40E-05	1.64E-07	8.23E-07	1.65E-07	1.70E-05	1.91E-07	1.10E-07
Ethyl benzene	15.663	1.54E-03	9.46E-03	8.76E-03	8.50E-03	9.92E-03	1.20E-03	7.24E-03	8.02E-03	6.17E-03	9.23E-04	5.36E-03	5.01E-03
Formaldehyde	8.190	7.47E-02	5.59E-03	5.17E-03	5.02E-03	1.05E-03	5.79E-02	4.28E-03	8.48E-04	3.65E-03	4.47E-02	3.17E-03	2.96E-03
Hexane	9.212	7.92E-04	4.74E-03	4.39E-03	4.26E-03	5.87E-03	6.14E-04	3.62E-03	4.74E-03	3.09E-03	4.73E-04	2.69E-03	2.51E-03
Manganese Compounds	0.004	2.82E-05	5.72E-07	4.33E-07	4.27E-07	4.99E-07	2.40E-05	3.28E-07	1.65E-06	3.31E-07	1.70E-05	3.82E-07	2.21E-07
Mercury Compounds	0.001	8.05E-06	4.77E-08	3.61E-08	3.56E-08	4.16E-08	6.85E-06	2.73E-08	1.37E-07	2.75E-08	4.85E-06	3.18E-08	1.84E-08
Nickel Compounds	0.002	1.21E-05	3.34E-07	2.53E-07	2.49E-07	2.91E-07	1.03E-05	1.91E-07	9.60E-07	1.93E-07	7.27E-06	2.23E-07	1.29E-07
Polycylic Organic Matter	0.011	8.92E-07	7.21E-06	6.68E-06	6.48E-06	6.86E-06	6.91E-07	5.52E-06	5.54E-06	4.71E-06	5.33E-07	4.09E-06	3.82E-06
Propionaldehyde	0.616	4.91E-03	8.98E-04	8.32E-04	8.07E-04	1.02E-04	3.80E-03	6.87E-04	8.25E-05	5.86E-04	2.93E-03	5.09E-04	4.75E-04
Styrene	0.858	2.96E-04	3.62E-04	3.35E-04	3.26E-04	5.37E-04	2.29E-04	2.77E-04	4.34E-04	2.36E-04	1.77E-04	2.05E-04	1.92E-04
Toluene	63.704	7.47E-03	3.43E-02	3.18E-02	3.08E-02	4.04E-02	5.79E-03	2.62E-02	3.27E-02	2.24E-02	4.47E-03	1.94E-02	1.82E-02
Xylenes (isomers and mixture)	69.184	5.28E-03	3.24E-02	3.00E-02	2.91E-02	4.42E-02	4.09E-03	2.48E-02	3.57E-02	2.11E-02	3.16E-03	1.84E-02	1.71E-02

Table C-4-6c
FNSB NONROAD Emissions - Winter 1999

SCC		2270001060	2282020005	2270002033	2270002003	2270002021	2265002033	2265002072	2265002066	2265002015	2265002024	2270002054	2270002027
Equipment Name	Winter TOTAL (tons)	Specialty Vehicle Carts	Inboard	Bore/Drill Rigs	Pavers	Paving Equipment	Bore/Drill Rigs	Skid Steer Loaders	Tractors/Loaders/Backhoes	Rollers	Surfacing Equipment	Crushing/Proc. Equipment	Signal Boards/Light Plants
Tech Type		Dsl	Dsl	Dsl	Dsl	Dsl	4-St	4-St	4-St	4-St	4-St	Dsl	Dsl
Equipment Population		8.5	66.8	9.9	13.6	17.1	44.2	5.9	3.4	4.4	8.1	4.3	28.6
Activity (hrs/season)		1,149.9	2,004.8	1,543.2	3,722.8	3,549.3	1,580.7	616.2	988.3	921.5	1,325.7	1,362.4	5,124.4
Activity (hrs/season/unit)		135.45	30.03	155.80	274.49	207.96	35.77	103.64	290.87	207.62	163.16	319.29	178.87
Exhaust PM (tons)	46.35	1.63E-01	1.23E-01	1.81E-01	1.77E-01	1.77E-01	1.29E-03	1.47E-03	1.41E-03	1.39E-03	1.10E-03	8.87E-02	1.14E-01
TOTAL VOC (tons)	693.60	2.51E-01	2.39E-01	2.22E-01	1.89E-01	1.72E-01	1.65E-01	1.58E-01	1.42E-01	1.40E-01	1.28E-01	1.25E-01	1.21E-01
Total Exhaust VOC (tons)	693.60	2.51E-01	2.39E-01	2.22E-01	1.89E-01	1.72E-01	1.65E-01	1.58E-01	1.42E-01	1.40E-01	1.28E-01	1.25E-01	1.21E-01
Exh VOC	690.38	2.46E-01	2.39E-01	2.17E-01	1.85E-01	1.69E-01	1.54E-01	1.30E-01	1.42E-01	1.30E-01	1.27E-01	1.22E-01	1.19E-01
Crankcase VOC	3.22	4.92E-03	0.00E+00	4.35E-03	3.70E-03	3.38E-03	1.07E-02	2.80E-02	2.94E-04	9.90E-03	5.47E-04	2.44E-03	2.37E-03
Total Evap VOC (tons)	0.00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Chemical Name													
1,3-Butadiene	1.449	4.67E-04	4.44E-04	4.12E-04	3.51E-04	3.20E-04	1.57E-04	1.51E-04	1.35E-04	1.33E-04	1.21E-04	2.32E-04	2.25E-04
Acetaldehyde	4.266	1.87E-02	1.77E-02	1.65E-02	1.40E-02	1.28E-02	6.77E-04	6.49E-04	5.81E-04	5.72E-04	5.23E-04	9.25E-03	8.99E-03
Acrolein	0.689	2.89E-03	2.75E-03	2.55E-03	2.17E-03	1.98E-03	1.16E-04	1.11E-04	9.93E-05	9.77E-05	8.93E-05	1.43E-03	1.39E-03
Benzene (including benzene from gasoline)	17.954	5.10E-03	4.85E-03	4.50E-03	3.83E-03	3.50E-03	8.67E-03	8.31E-03	7.45E-03	7.32E-03	6.70E-03	2.53E-03	2.46E-03
Chromium Chompounds	0.003	1.14E-05	8.58E-06	1.26E-05	1.24E-05	1.24E-05	7.76E-08	8.81E-08	8.43E-08	8.37E-08	6.59E-08	6.21E-06	7.97E-06
Ethyl benzene	15.663	7.78E-04	7.40E-04	6.87E-04	5.85E-04	5.34E-04	3.27E-03	3.13E-03	2.81E-03	2.76E-03	2.53E-03	3.86E-04	3.75E-04
Formaldehyde	8.190	3.77E-02	3.58E-02	3.32E-02	2.83E-02	2.58E-02	1.93E-03	1.85E-03	1.66E-03	1.63E-03	1.49E-03	1.87E-02	1.81E-02
Hexane	9.212	3.99E-04	3.80E-04	3.52E-04	3.00E-04	2.74E-04	1.64E-03	1.57E-03	1.41E-03	1.38E-03	1.27E-03	1.98E-04	1.92E-04
Manganese Compounds	0.004	1.14E-05	8.58E-06	1.26E-05	1.24E-05	1.24E-05	1.55E-07	1.76E-07	1.69E-07	1.67E-07	1.32E-07	6.21E-06	7.97E-06
Mercury Compounds	0.001	3.25E-06	2.45E-06	3.61E-06	3.54E-06	3.53E-06	1.29E-08	1.47E-08	1.41E-08	1.39E-08	1.10E-08	1.77E-06	2.28E-06
Nickel Compounds	0.002	4.88E-06	3.68E-06	5.42E-06	5.30E-06	5.30E-06	9.05E-08	1.03E-07	9.84E-08	9.76E-08	7.69E-08	2.66E-06	3.42E-06
Polycylic Organic Matter	0.011	4.49E-07	4.27E-07	3.97E-07	3.38E-07	3.08E-07	2.49E-06	2.39E-06	2.14E-06	2.11E-06	1.93E-06	2.23E-07	2.16E-07
Propionaldehyde	0.616	2.47E-03	2.35E-03	2.18E-03	1.86E-03	1.70E-03	3.10E-04	2.98E-04	2.67E-04	2.62E-04	2.40E-04	1.23E-03	1.19E-03
Styrene	0.858	1.49E-04	1.42E-04	1.32E-04	1.12E-04	1.02E-04	1.25E-04	1.20E-04	1.08E-04	1.06E-04	9.67E-05	7.40E-05	7.18E-05
Toluene	63.704	3.77E-03	3.58E-03	3.32E-03	2.83E-03	2.58E-03	1.19E-02	1.14E-02	1.02E-02	1.00E-02	9.16E-03	1.87E-03	1.81E-03
Xylenes (isomers and mixture)	69.184	2.66E-03	2.53E-03	2.35E-03	2.00E-03	1.83E-03	1.12E-02	1.07E-02	9.62E-03	9.46E-03	8.65E-03	1.32E-03	1.28E-03

Table C-4-6c
FNSB NONROAD Emissions - Winter 1999

SCC		2268006020	2285002015	2265002060	2270003020	2260002021	2265002003	2270002081	2260002009	2270002024	2265003040	2270002063	2265002078
Equipment Name	Winter TOTAL (tons)	Gas Compressors	Railway Maintenance	Rubber Tire Loaders	Forklifts	Paving Equipment	Pavers	Other Construction Equipment	Plate Compactors	Surfacing Equipment	Other General Industrial Eqp	Rubber Tire Tractor/Dozers	Dumpers/Tenders
Tech Type		4-St	Dsl	4-St	Dsl	2-St	4-St	Dsl	2-St	Dsl	4-St	Dsl	4-St
Equipment Population		0.1	2.7	1.2	2.6	5.9	4.0	5.6	6.2	2.6	1.9	1.8	12.1
Activity (hrs/season)		343.7	1,294.9	204.6	2,025.8	345.7	523.6	1,142.4	344.4	485.9	610.9	549.6	514.4
Activity (hrs/season/unit)		3000.00	471.50	171.18	765.77	58.51	131.06	202.61	55.50	187.56	321.17	300.57	42.46
Exhaust PM (tons)	46.35	2.83E-03	7.69E-02	1.09E-03	8.69E-02	3.70E-03	8.23E-04	7.25E-02	3.11E-03	7.54E-02	5.27E-04	5.14E-02	3.99E-04
TOTAL VOC (tons)	693.60	1.18E-01	1.16E-01	1.07E-01	1.00E-01	8.93E-02	8.57E-02	7.54E-02	7.51E-02	7.41E-02	7.25E-02	6.38E-02	5.41E-02
Total Exhaust VOC (tons)	693.60	1.18E-01	1.16E-01	1.07E-01	1.00E-01	8.93E-02	8.57E-02	7.54E-02	7.51E-02	7.41E-02	7.25E-02	6.38E-02	5.41E-02
Exh VOC	690.38	8.86E-02	1.14E-01	8.31E-02	9.81E-02	8.93E-02	7.92E-02	7.40E-02	7.51E-02	7.26E-02	7.25E-02	6.26E-02	4.61E-02
Crankcase VOC	3.22	2.92E-02	2.28E-03	2.41E-02	1.96E-03	0.00E+00	6.49E-03	1.48E-03	0.00E+00	1.45E-03	3.21E-05	1.25E-03	7.94E-03
Total Evap VOC (tons)	0.00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Chemical Name													
1,3-Butadiene	1.449	1.12E-04	2.16E-04	1.02E-04	1.86E-04	1.92E-04	8.16E-05	1.40E-04	1.61E-04	1.38E-04	6.90E-05	1.19E-04	5.15E-05
Acetaldehyde	4.266	4.83E-04	8.65E-03	4.39E-04	7.43E-03	1.48E-04	3.52E-04	5.60E-03	1.25E-04	5.50E-03	2.97E-04	4.74E-03	2.22E-04
Acrolein	0.689	8.25E-05	1.34E-03	7.50E-05	1.15E-03	2.68E-05	6.00E-05	8.68E-04	2.25E-05	8.52E-04	5.08E-05	7.34E-04	3.79E-05
Benzene (including benzene from gasoline)	17.954	6.19E-03	2.36E-03	5.63E-03	2.03E-03	2.25E-03	4.50E-03	1.53E-03	1.89E-03	1.50E-03	3.81E-03	1.30E-03	2.84E-03
Chromium Chompounds	0.003	1.70E-07	5.38E-06	6.56E-08	6.08E-06	2.22E-07	4.94E-08	5.07E-06	1.87E-07	5.28E-06	3.16E-08	3.59E-06	2.39E-08
Ethyl benzene	15.663	2.33E-03	3.61E-04	2.12E-03	3.10E-04	2.14E-03	1.70E-03	2.34E-04	1.80E-03	2.30E-04	1.44E-03	1.98E-04	1.07E-03
Formaldehyde	8.190	1.38E-03	1.75E-02	1.25E-03	1.50E-02	2.27E-04	1.00E-03	1.13E-02	1.91E-04	1.11E-02	8.49E-04	9.57E-03	6.33E-04
Hexane	9.212	1.17E-03	1.85E-04	1.06E-03	1.59E-04	1.27E-03	8.51E-04	1.20E-04	1.07E-03	1.18E-04	7.19E-04	1.01E-04	5.36E-04
Manganese Compounds	0.004	3.39E-07	5.38E-06	1.31E-07	6.08E-06	4.44E-07	9.88E-08	5.07E-06	3.73E-07	5.28E-06	6.33E-08	3.59E-06	4.78E-08
Mercury Compounds	0.001	2.83E-08	1.54E-06	1.09E-08	1.74E-06	3.70E-08	8.23E-09	1.45E-06	3.11E-08	1.51E-06	5.27E-09	1.03E-06	3.99E-09
Nickel Compounds	0.002	1.98E-07	2.31E-06	7.66E-08	2.61E-06	2.59E-07	5.76E-08	2.17E-06	2.18E-07	2.26E-06	3.69E-08	1.54E-06	2.79E-08
Polycylic Organic Matter	0.011	1.78E-06	2.08E-07	1.62E-06	1.79E-07	1.48E-06	1.29E-06	1.35E-07	1.25E-06	1.33E-07	1.10E-06	1.14E-07	8.17E-07
Propionaldehyde	0.616	2.22E-04	1.15E-03	2.01E-04	9.85E-04	2.21E-05	1.61E-04	7.43E-04	1.85E-05	7.29E-04	1.36E-04	6.29E-04	1.02E-04
Styrene	0.858	8.93E-05	6.91E-05	8.12E-05	5.94E-05	1.16E-04	6.50E-05	4.48E-05	9.76E-05	4.40E-05	5.50E-05	3.79E-05	4.10E-05
Toluene	63.704	8.46E-03	1.75E-03	7.70E-03	1.50E-03	8.74E-03	6.16E-03	1.13E-03	7.34E-03	1.11E-03	5.21E-03	9.57E-04	3.88E-03
Xylenes (isomers and mixture)	69.184	7.99E-03	1.23E-03	7.27E-03	1.06E-03	9.56E-03	5.81E-03	8.00E-04	8.03E-03	7.85E-04	4.92E-03	6.77E-04	3.67E-03

Table C-4-6c
FNSB NONROAD Emissions - Winter 1999

SCC		2270005020	2265002081	2270003030	2265003010	2265005040	2265002057	2265002054	2265003030	2285004015	2270003070	2270003040	2270005060
Equipment Name	Winter TOTAL (tons)	Combines	Other Construction Equipment	Sweepers/Scrubbers	Aerial Lifts	Tillers > 6 HP	Rough Terrain Forklift	Crushing/Proc. Equipment	Sweepers/Scrubbers	Railway Maintenance	Terminal Tractors	Other General Industrial Eqp	Irrigation Sets
Tech Type		Dsl	4-St	Dsl	4-St	4-St	4-St	4-St	4-St	4-St	Dsl	Dsl	Dsl
Equipment Population		12.1	0.6	0.8	1.2	25.2	0.6	2.8	0.6	3.8	0.7	1.7	1.4
Activity (hrs/season)		505.0	74.1	445.5	192.3	302.3	82.5	226.2	131.3	350.2	410.7	691.9	290.9
Activity (hrs/season/unit)		41.89	124.04	549.55	162.61	12.01	138.08	80.58	232.43	92.00	566.22	395.50	209.18
Exhaust PM (tons)	46.35	5.58E-02	4.78E-04	2.91E-02	4.18E-04	1.89E-04	3.66E-04	2.92E-04	3.09E-04	2.38E-04	2.42E-02	2.16E-02	1.67E-02
TOTAL VOC (tons)	693.60	5.36E-02	4.69E-02	4.51E-02	4.31E-02	4.01E-02	3.59E-02	3.35E-02	3.16E-02	2.99E-02	2.54E-02	2.51E-02	2.39E-02
Total Exhaust VOC (tons)	693.60	5.36E-02	4.69E-02	4.51E-02	4.31E-02	4.01E-02	3.59E-02	3.35E-02	3.16E-02	2.99E-02	2.54E-02	2.51E-02	2.39E-02
Exh VOC	690.38	5.25E-02	3.64E-02	4.42E-02	3.47E-02	3.18E-02	2.78E-02	3.34E-02	2.71E-02	2.80E-02	2.49E-02	2.46E-02	2.34E-02
Crankcase VOC	3.22	1.05E-03	1.05E-02	8.84E-04	8.43E-03	8.36E-03	8.07E-03	1.25E-04	4.49E-03	1.86E-03	4.97E-04	4.92E-04	4.68E-04
Total Evap VOC (tons)	0.00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Chemical Name													
1,3-Butadiene	1.449	9.97E-05	4.46E-05	8.38E-05	4.10E-05	3.82E-05	3.42E-05	3.19E-05	3.01E-05	2.85E-05	4.72E-05	4.67E-05	4.44E-05
Acetaldehyde	4.266	3.98E-03	1.92E-04	3.35E-03	1.77E-04	1.64E-04	1.47E-04	1.38E-04	1.30E-04	1.23E-04	1.88E-03	1.86E-03	1.77E-03
Acrolein	0.689	6.16E-04	3.28E-05	5.18E-04	3.02E-05	2.81E-05	2.51E-05	2.35E-05	2.21E-05	2.09E-05	2.92E-04	2.89E-04	2.75E-04
Benzene (including benzene from gasoline)	17.954	1.09E-03	2.46E-03	9.15E-04	2.26E-03	2.11E-03	1.89E-03	1.76E-03	1.66E-03	1.57E-03	5.15E-04	5.10E-04	4.85E-04
Chromium Chompounds	0.003	3.90E-06	2.87E-08	2.04E-06	2.51E-08	1.14E-08	2.20E-08	1.75E-08	1.85E-08	1.43E-08	1.69E-06	1.51E-06	1.17E-06
Ethyl benzene	15.663	1.66E-04	9.29E-04	1.40E-04	8.54E-04	7.94E-04	7.11E-04	6.64E-04	6.25E-04	5.92E-04	7.86E-05	7.78E-05	7.40E-05
Formaldehyde	8.190	8.04E-03	5.49E-04	6.76E-03	5.04E-04	4.69E-04	4.20E-04	3.92E-04	3.70E-04	3.50E-04	3.80E-03	3.76E-03	3.58E-03
Hexane	9.212	8.52E-05	4.65E-04	7.17E-05	4.28E-04	3.98E-04	3.56E-04	3.33E-04	3.13E-04	2.97E-04	4.03E-05	3.99E-05	3.80E-05
Manganese Compounds	0.004	3.90E-06	5.74E-08	2.04E-06	5.01E-08	2.27E-08	4.40E-08	3.50E-08	3.71E-08	2.86E-08	1.69E-06	1.51E-06	1.17E-06
Mercury Compounds	0.001	1.12E-06	4.78E-09	5.81E-07	4.18E-09	1.89E-09	3.66E-09	2.92E-09	3.09E-09	2.38E-09	4.84E-07	4.32E-07	3.33E-07
Nickel Compounds	0.002	1.67E-06	3.35E-08	8.72E-07	2.93E-08	1.33E-08	2.57E-08	2.04E-08	2.16E-08	1.67E-08	7.26E-07	6.48E-07	5.00E-07
Polycylic Organic Matter	0.011	9.59E-08	7.08E-07	8.07E-08	6.51E-07	6.06E-07	5.42E-07	5.07E-07	4.77E-07	4.52E-07	4.54E-08	4.49E-08	4.27E-08
Propionaldehyde	0.616	5.28E-04	8.82E-05	4.44E-04	8.11E-05	7.54E-05	6.75E-05	6.31E-05	5.94E-05	5.62E-05	2.50E-04	2.47E-04	2.35E-04
Styrene	0.858	3.18E-05	3.55E-05	2.68E-05	3.27E-05	3.04E-05	2.72E-05	2.54E-05	2.39E-05	2.27E-05	1.51E-05	1.49E-05	1.42E-05
Toluene	63.704	8.04E-04	3.37E-03	6.76E-04	3.10E-03	2.88E-03	2.58E-03	2.41E-03	2.27E-03	2.15E-03	3.80E-04	3.76E-04	3.58E-04
Xylenes (isomers and mixture)	69.184	5.68E-04	3.18E-03	4.78E-04	2.92E-03	2.72E-03	2.44E-03	2.27E-03	2.14E-03	2.03E-03	2.69E-04	2.66E-04	2.53E-04

Table C-4-6c
FNSB NONROAD Emissions - Winter 1999

SCC		2265005035	2265002045	2260005050	2270002039	2270005055	2270002009	2265003060	2270006030	2265005045	2265002027	2270003010	2270005035
Equipment Name	Winter TOTAL (tons)	Sprayers	Cranes	Sprayers	Concrete/Industrial Saws	Other Agricultural Equipment	Plate Compactors	AC\Refrigeration	Pressure Washers	Swathers	Signal Boards/Light Plants	Aerial Lifts	Sprayers
Tech Type		4-St	4-St	2-St	Dsl	Dsl	Dsl	4-St	Dsl	4-St	4-St	Dsl	Dsl
Equipment Population		4.6	0.4	1.8	1.2	0.9	4.6	0.3	4.7	0.5	0.6	0.8	1.4
Activity (hrs/season)		102.3	61.9	40.9	236.4	98.7	739.8	72.4	341.9	12.6	62.8	140.2	35.0
Activity (hrs/season/unit)		22.34	138.75	22.34	193.92	106.41	161.82	272.52	72.50	26.53	106.32	172.97	25.14
Exhaust PM (tons)	46.35	1.61E-04	1.64E-04	4.45E-04	1.06E-02	6.20E-03	1.46E-02	9.46E-05	9.81E-03	5.63E-05	6.25E-05	6.05E-03	2.99E-03
TOTAL VOC (tons)	693.60	1.91E-02	1.62E-02	1.17E-02	1.10E-02	1.01E-02	1.01E-02	1.01E-02	9.53E-03	8.17E-03	8.03E-03	7.43E-03	5.90E-03
Total Exhaust VOC (tons)	693.60	1.91E-02	1.62E-02	1.17E-02	1.10E-02	1.01E-02	1.01E-02	1.01E-02	9.53E-03	8.17E-03	8.03E-03	7.43E-03	5.90E-03
Exh VOC	690.38	1.69E-02	1.30E-02	1.17E-02	1.08E-02	9.91E-03	9.90E-03	9.82E-03	9.34E-03	6.38E-03	8.03E-03	7.28E-03	5.78E-03
Crankcase VOC	3.22	2.19E-03	3.17E-03	0.00E+00	2.16E-04	1.98E-04	1.98E-04	2.68E-04	1.87E-04	1.80E-03	2.91E-06	1.46E-04	1.16E-04
Total Evap VOC (tons)	0.00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Chemical Name													
1,3-Butadiene	1.449	1.81E-05	1.54E-05	2.52E-05	2.05E-05	1.88E-05	1.88E-05	9.61E-06	1.77E-05	7.78E-06	7.65E-06	1.38E-05	1.10E-05
Acetaldehyde	4.266	7.82E-05	6.64E-05	1.95E-05	8.20E-04	7.51E-04	7.50E-04	4.14E-05	7.08E-04	3.35E-05	3.29E-05	5.52E-04	4.38E-04
Acrolein	0.689	1.33E-05	1.13E-05	3.52E-06	1.27E-04	1.16E-04	1.16E-04	7.06E-06	1.10E-04	5.72E-06	5.62E-06	8.54E-05	6.78E-05
Benzene (including benzene from gasoline)	17.954	1.00E-03	8.51E-04	2.96E-04	2.24E-04	2.05E-04	2.05E-04	5.30E-04	1.93E-04	4.29E-04	4.22E-04	1.51E-04	1.20E-04
Chromium Chompounds	0.003	9.68E-09	9.87E-09	2.67E-08	7.42E-07	4.34E-07	1.02E-06	5.67E-09	6.87E-07	3.38E-09	3.75E-09	4.24E-07	2.09E-07
Ethyl benzene	15.663	3.77E-04	3.21E-04	2.81E-04	3.42E-05	3.13E-05	3.13E-05	2.00E-04	2.95E-05	1.62E-04	1.59E-04	2.30E-05	1.83E-05
Formaldehyde	8.190	2.23E-04	1.90E-04	2.98E-05	1.65E-03	1.52E-03	1.51E-03	1.18E-04	1.43E-03	9.56E-05	9.40E-05	1.11E-03	8.84E-04
Hexane	9.212	1.89E-04	1.61E-04	1.67E-04	1.75E-05	1.61E-05	1.61E-05	1.00E-04	1.52E-05	8.11E-05	7.97E-05	1.18E-05	9.37E-06
Manganese Compounds	0.004	1.94E-08	1.97E-08	5.34E-08	7.42E-07	4.34E-07	1.02E-06	1.13E-08	6.87E-07	6.75E-09	7.50E-09	4.24E-07	2.09E-07
Mercury Compounds	0.001	1.61E-09	1.64E-09	4.45E-09	2.12E-07	1.24E-07	2.91E-07	9.46E-10	1.96E-07	5.63E-10	6.25E-10	1.21E-07	5.98E-08
Nickel Compounds	0.002	1.13E-08	1.15E-08	3.12E-08	3.18E-07	1.86E-07	4.37E-07	6.62E-09	2.94E-07	3.94E-09	4.37E-09	1.82E-07	8.97E-08
Polycylic Organic Matter	0.011	2.88E-07	2.45E-07	1.95E-07	1.97E-08	1.81E-08	1.81E-08	1.52E-07	1.71E-08	1.23E-07	1.21E-07	1.33E-08	1.06E-08
Propionaldehyde	0.616	3.58E-05	3.05E-05	2.90E-06	1.09E-04	9.96E-05	9.94E-05	1.90E-05	9.39E-05	1.54E-05	1.51E-05	7.32E-05	5.81E-05
Styrene	0.858	1.44E-05	1.23E-05	1.52E-05	6.55E-06	6.00E-06	6.00E-06	7.65E-06	5.66E-06	6.19E-06	6.09E-06	4.41E-06	3.50E-06
Toluene	63.704	1.37E-03	1.16E-03	1.15E-03	1.65E-04	1.52E-04	1.51E-04	7.25E-04	1.43E-04	5.87E-04	5.77E-04	1.11E-04	8.84E-05
Xylenes (isomers and mixture)	69.184	1.29E-03	1.10E-03	1.25E-03	1.17E-04	1.07E-04	1.07E-04	6.84E-04	1.01E-04	5.54E-04	5.45E-04	7.87E-05	6.25E-05

Table C-4-6c
FNSB NONROAD Emissions - Winter 1999

SCC		2260003030	2270005045	2265005025	2270002042	2270003050	2265005055	2270002078	2265003050	2265002006	2282020010
Equipment Name	Winter TOTAL (tons)	Sweepers/Scrubbers	Swathers	Balers	Cement & Mortar Mixers	Other Material Handling Eqp	Other Agricultural Equipment	Dumpers/Tenders	Other Material Handling Eqp	Tampers/Rammers	Outboard
Tech Type		2-St	Dsl	4-St	Dsl	Dsl	4-St	Dsl	4-St	4-St	Dsl
Equipment Population		0.1	2.8	0.5	2.6	0.1	0.5	0.3	0.0	0.1	0.9
Activity (hrs/season)		18.4	85.5	8.7	238.2	16.2	15.9	57.7	6.9	7.9	20.3
Activity (hrs/season/unit)		232.43	30.72	18.99	91.94	189.64	34.63	189.23	173.87	53.49	22.52
Exhaust PM (tons)	46.35	1.80E-04	4.50E-03	2.14E-05	4.09E-03	1.52E-03	1.23E-05	1.38E-03	1.04E-05	5.11E-06	3.70E-04
TOTAL VOC (tons)	693.60	4.34E-03	3.80E-03	3.11E-03	2.86E-03	2.05E-03	1.69E-03	1.61E-03	1.22E-03	6.58E-04	3.70E-04
Total Exhaust VOC (tons)	693.60	4.34E-03	3.80E-03	3.11E-03	2.86E-03	2.05E-03	1.69E-03	1.61E-03	1.22E-03	6.58E-04	3.70E-04
Exh VOC	690.38	4.34E-03	3.72E-03	2.43E-03	2.81E-03	2.01E-03	1.46E-03	1.58E-03	1.13E-03	5.84E-04	3.70E-04
Crankcase VOC	3.22	0.00E+00	7.44E-05	6.84E-04	5.62E-05	4.02E-05	2.35E-04	3.15E-05	8.73E-05	7.35E-05	0.00E+00
Total Evap VOC (tons)	0.00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Chemical Name											
1,3-Butadiene	1.449	9.33E-06	7.06E-06	2.96E-06	5.33E-06	3.82E-06	1.61E-06	2.99E-06	1.16E-06	6.26E-07	6.87E-07
Acetaldehyde	4.266	7.20E-06	2.82E-04	1.28E-05	2.13E-04	1.52E-04	6.94E-06	1.20E-04	4.99E-06	2.70E-06	2.75E-05
Acrolein	0.689	1.30E-06	4.37E-05	2.18E-06	3.29E-05	2.36E-05	1.19E-06	1.85E-05	8.53E-07	4.60E-07	4.25E-06
Benzene (including benzene from gasoline)	17.954	1.09E-04	7.71E-05	1.63E-04	5.81E-05	4.17E-05	8.89E-05	3.27E-05	6.40E-05	3.45E-05	7.50E-06
Chromium Chompounds	0.003	1.08E-08	3.15E-07	1.29E-09	2.87E-07	1.06E-07	7.39E-10	9.68E-08	6.22E-10	3.07E-10	2.59E-08
Ethyl benzene	15.663	1.04E-04	1.18E-05	6.17E-05	8.88E-06	6.36E-06	3.35E-05	4.99E-06	2.41E-05	1.30E-05	1.15E-06
Formaldehyde	8.190	1.10E-05	5.70E-04	3.64E-05	4.30E-04	3.08E-04	1.98E-05	2.41E-04	1.43E-05	7.70E-06	5.54E-05
Hexane	9.212	6.16E-05	6.04E-06	3.09E-05	4.55E-06	3.26E-06	1.68E-05	2.56E-06	1.21E-05	6.52E-06	5.88E-07
Manganese Compounds	0.004	2.16E-08	3.15E-07	2.57E-09	2.87E-07	1.06E-07	1.48E-09	9.68E-08	1.24E-09	6.14E-10	2.59E-08
Mercury Compounds	0.001	1.80E-09	9.00E-08	2.14E-10	8.19E-08	3.04E-08	1.23E-10	2.77E-08	1.04E-10	5.11E-11	7.41E-09
Nickel Compounds	0.002	1.26E-08	1.35E-07	1.50E-09	1.23E-07	4.55E-08	8.62E-10	4.15E-08	7.25E-10	3.58E-10	1.11E-08
Polycylic Organic Matter	0.011	7.20E-08	6.80E-09	4.70E-08	5.13E-09	3.67E-09	2.56E-08	2.88E-09	1.84E-08	9.93E-09	6.61E-10
Propionaldehyde	0.616	1.07E-06	3.74E-05	5.85E-06	2.82E-05	2.02E-05	3.18E-06	1.58E-05	2.29E-06	1.24E-06	3.64E-06
Styrene	0.858	5.64E-06	2.26E-06	2.36E-06	1.70E-06	1.22E-06	1.28E-06	9.56E-07	9.23E-07	4.99E-07	2.19E-07
Toluene	63.704	4.24E-04	5.70E-05	2.24E-04	4.30E-05	3.08E-05	1.22E-04	2.41E-05	8.75E-05	4.72E-05	5.54E-06
Xylenes (isomers and mixture)	69.184	4.64E-04	4.02E-05	2.11E-04	3.04E-05	2.17E-05	1.15E-04	1.71E-05	8.26E-05	4.46E-05	3.92E-06

Table C-4-6d
FNSB NONROAD Emissions - Summer 1999

SCC			2282005010	2260001020	2282005015	2282010005	2265004010	2265004055	2260001030	2270009010	2260004025	2270002066	2260004020
Equipment Name		Summer TOTAL (tons)	Outboard	Snowmobiles	Personal Water Craft	Inboard/Stern drive	Lawn mowers (res)	Lawn & Garden Tractors (res)	All Terrain Vehicles\Motorcycles	Other Underground Mining Equipment	Trimmers/Edgers/Brush Cutter (res)	Tractors/Loaders/Backhoes	Chain Saws < 6 HP (res)
Tech Type			2-St	2-St	2-St	4-St	4-St	4-St	2-St	Dsl	2-St	Dsl	2-St
Equipment Population			3,018.65	10,491.14	408.06	631.23	9,915.44	3,611.06	757.20	80.74	4,174.87	141.72	1,581.21
Activity (hrs/season)			89,276.0	-	21,423.3	25,535.2	247,886.0	162,497.5	12,872.4	69,667.7	37,573.8	107,073.3	20,555.8
Activity (hrs/season/unit)			29.57	-	52.50	40.45	25.00	45.00	17.00	862.89	9.00	755.53	13.00
Exhaust PM (tons)		65.92	7.38E+00	0.00E+00	2.91E+00	1.07E-01	1.33E-01	1.35E-01	3.24E-01	7.89E+00	3.98E-01	7.20E+00	2.89E-01
TOTAL VOC (tons)		616.06	1.58E+02	1.48E+02	7.36E+01	2.61E+01	2.03E+01	1.92E+01	1.78E+01	1.32E+01	1.15E+01	1.04E+01	8.14E+00
Total Exhaust VOC (tons)		393.20	1.27E+02	0.00E+00	6.42E+01	8.18E+00	1.95E+01	1.73E+01	1.36E+01	1.32E+01	1.14E+01	1.04E+01	8.10E+00
Exh VOC		387.22	1.27E+02	0.00E+00	6.42E+01	8.18E+00	1.88E+01	1.66E+01	1.36E+01	1.29E+01	1.14E+01	1.02E+01	8.10E+00
Crankcase VOC		5.98	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.80E-01	6.88E-01	0.00E+00	2.58E-01	0.00E+00	2.03E-01	0.00E+00
Total Evap VOC (tons)		222.86	3.09E+01	1.48E+02	9.45E+00	1.79E+01	7.67E-01	1.98E+00	4.15E+00	0.00E+00	5.42E-02	0.00E+00	3.51E-02
Chemical Name	**CAS No.**												
1,3-Butadiene	79345	0.74	0.274	0.00E+00	1.38E-01	7.79E-03	1.86E-02	1.64E-02	2.93E-02	2.45E-02	2.46E-02	1.93E-02	1.74E-02
Acetaldehyde	79005	6.26	0.211	0.00E+00	1.07E-01	3.36E-02	8.01E-02	7.08E-02	2.26E-02	9.78E-01	1.90E-02	7.70E-01	1.34E-02
Acrolein	57147	0.98	0.038	0.00E+00	1.93E-02	5.73E-03	1.37E-02	1.21E-02	4.09E-03	1.51E-01	3.43E-03	1.19E-01	2.43E-03
Benzene (including benzene from gasoline)	120821	16.45	3.888	3.27E+00	1.83E+00	8.24E-01	1.04E+00	9.50E-01	4.35E-01	2.67E-01	2.89E-01	2.10E-01	2.05E-01
Chromium Chompounds	96128	0.00	0.000	0.00E+00	1.75E-04	6.39E-06	7.97E-06	8.13E-06	1.94E-05	5.53E-04	2.39E-05	5.04E-04	1.74E-05
Ethyl benzene	122667	9.28	3.294	1.14E+00	1.61E+00	3.00E-01	3.93E-01	3.57E-01	3.59E-01	4.08E-02	2.75E-01	3.21E-02	1.95E-01
Formaldehyde	106887	12.70	0.323	0.00E+00	1.63E-01	9.58E-02	2.29E-01	2.02E-01	3.46E-02	1.98E+00	2.90E-02	1.55E+00	2.06E-02
Hexane	75558	9.54	2.530	3.47E+00	1.13E+00	5.00E-01	2.12E-01	2.18E-01	2.91E-01	2.09E-02	1.63E-01	1.65E-02	1.16E-01
Manganese Compounds	106990	0.01	0.001	0.00E+00	3.49E-04	1.28E-05	1.59E-05	1.63E-05	3.88E-05	5.53E-04	4.77E-05	5.04E-04	3.47E-05
Mercury Compounds	542756	0.00	0.000	0.00E+00	2.91E-05	1.07E-06	1.33E-06	1.35E-06	3.24E-06	1.58E-04	3.98E-06	1.44E-04	2.89E-06
Nickel Compounds	1120714	0.00	0.001	0.00E+00	2.04E-04	7.46E-06	9.30E-06	9.48E-06	2.27E-05	2.37E-04	2.78E-05	2.16E-04	2.02E-05
Polycylic Organic Matter	106467	0.01	0.002	0.00E+00	1.07E-03	1.24E-04	2.95E-04	2.61E-04	2.26E-04	2.36E-05	1.90E-04	1.85E-05	1.34E-04
Propionaldehyde	123911	0.94	0.031	0.00E+00	1.59E-02	1.54E-02	3.67E-02	3.24E-02	3.37E-03	1.30E-01	2.82E-03	1.02E-01	2.00E-03
Styrene	540841	0.42	0.166	0.00E+00	8.34E-02	6.20E-03	1.48E-02	1.31E-02	1.77E-02	7.82E-03	1.48E-02	6.15E-03	1.05E-02
Toluene	1746016	39.56	13.727	6.13E+00	6.67E+00	1.33E+00	1.43E+00	1.32E+00	1.51E+00	1.98E-01	1.12E+00	1.55E-01	7.94E-01
Xylenes (isomers and mixture)	95954	36.95	14.313	3.31E+00	7.08E+00	9.54E-01	1.34E+00	1.21E+00	1.55E+00	1.40E-01	1.22E+00	1.10E-01	8.67E-01

Table C-4-6d
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SCC			2270002072	2265006005	2270002060	2260004030	2270002036	2260002054	2265001030	2270002069	2265006030	2270003060	2270002057
Equipment Name		Summer TOTAL (tons)	Skid Steer Loaders	Generator Sets	Rubber Tire Loaders	Leafblowers/ Vacuums (res)	Excavators	Concrete/Industrial Saws	All Terrain Vehicles\Motorcycles	Crawler Tractor/Dozers	Pressure Washers	AC\Refrigeration	Rough Terrain Forklift
Tech Type			Dsl	4-St	Dsl	2-St	Dsl	2-St	4-St	Dsl	4-St	Dsl	Dsl
Equipment Population			177.23	723.47	89.60	2,118.25	57.91	28.81	2,365.33	87.17	336.30	195.70	48.15
Activity (hrs/season)			96,501.8	41,599.8	45,390.4	21,182.5	42,092.9	11,552.4	40,210.6	54,309.3	19,337.2	144,223.5	21,220.1
Activity (hrs/season/unit)			544.51	57.50	506.57	10.00	726.90	401.02	17.00	623.06	57.50	736.95	440.67
Exhaust PM (tons)		65.92	5.23E+00	4.76E-02	5.00E+00	2.58E-01	3.85E+00	3.61E-01	1.68E-02	3.63E+00	2.62E-02	3.03E+00	1.77E+00
TOTAL VOC (tons)		616.06	7.86E+00	7.66E+00	7.40E+00	7.31E+00	6.59E+00	6.09E+00	5.44E+00	4.02E+00	3.44E+00	2.64E+00	2.48E+00
Total Exhaust VOC (tons)		393.20	7.86E+00	6.76E+00	7.40E+00	7.28E+00	6.59E+00	6.08E+00	1.82E+00	4.02E+00	3.20E+00	2.64E+00	2.48E+00
Exh VOC		387.22	7.71E+00	5.74E+00	7.25E+00	7.28E+00	6.47E+00	6.08E+00	1.44E+00	3.94E+00	3.00E+00	2.59E+00	2.43E+00
Crankcase VOC		5.98	1.54E-01	1.02E+00	1.45E-01	0.00E+00	1.29E-01	0.00E+00	3.75E-01	7.88E-02	1.97E-01	5.18E-02	4.85E-02
Total Evap VOC (tons)		222.86	0.00E+00	9.06E-01	0.00E+00	3.04E-02	0.00E+00	1.22E-02	3.62E+00	0.00E+00	2.39E-01	0.00E+00	0.00E+00
Chemical Name	**CAS No.**												
1,3-Butadiene	79345	0.74	1.46E-02	6.43E-03	1.38E-02	1.57E-02	1.23E-02	1.31E-02	1.73E-03	7.47E-03	3.05E-03	4.92E-03	4.60E-03
Acetaldehyde	79005	6.26	5.84E-01	2.77E-02	5.50E-01	1.21E-02	4.90E-01	1.01E-02	7.45E-03	2.99E-01	1.31E-02	1.96E-01	1.84E-01
Acrolein	57147	0.98	9.04E-02	4.73E-03	8.51E-02	2.19E-03	7.58E-02	1.82E-03	1.27E-03	4.62E-02	2.24E-03	3.04E-02	2.85E-02
Benzene (including benzene from gasoline)	120821	16.45	1.60E-01	3.75E-01	1.50E-01	1.84E-01	1.34E-01	1.54E-01	1.75E-01	8.16E-02	1.73E-01	5.36E-02	5.02E-02
Chromium Chompounds	96128	0.00	3.66E-04	2.86E-06	3.50E-04	1.55E-05	2.69E-04	2.17E-05	1.01E-06	2.54E-04	1.57E-06	2.12E-04	1.24E-04
Ethyl benzene	122667	9.28	2.44E-02	1.41E-01	2.29E-02	1.75E-01	2.04E-02	1.46E-01	6.38E-02	1.25E-02	6.52E-02	8.19E-03	7.67E-03
Formaldehyde	106887	12.70	1.18E+00	7.91E-02	1.11E+00	1.85E-02	9.89E-01	1.54E-02	2.13E-02	6.03E-01	3.74E-02	3.96E-01	3.71E-01
Hexane	75558	9.54	1.25E-02	8.82E-02	1.18E-02	1.04E-01	1.05E-02	8.66E-02	1.03E-01	6.39E-03	3.74E-02	4.20E-03	3.94E-03
Manganese Compounds	106990	0.01	3.66E-04	5.72E-06	3.50E-04	3.10E-05	2.69E-04	4.34E-05	2.02E-06	2.54E-04	3.15E-06	2.12E-04	1.24E-04
Mercury Compounds	542756	0.00	1.05E-04	4.76E-07	1.00E-04	2.58E-06	7.70E-05	3.61E-06	1.68E-07	7.25E-05	2.62E-07	6.07E-05	3.54E-05
Nickel Compounds	1120714	0.00	1.57E-04	3.33E-06	1.50E-04	1.81E-05	1.15E-04	2.53E-05	1.18E-06	1.09E-04	1.84E-06	9.10E-05	5.31E-05
Polycylic Organic Matter	106467	0.01	1.41E-05	1.02E-04	1.32E-05	1.21E-04	1.18E-05	1.01E-04	2.74E-05	7.19E-06	4.83E-05	4.73E-06	4.43E-06
Propionaldehyde	123911	0.94	7.74E-02	1.27E-02	7.29E-02	1.80E-03	6.50E-02	1.50E-03	3.42E-03	3.96E-02	6.02E-03	2.60E-02	2.44E-02
Styrene	540841	0.42	4.67E-03	5.12E-03	4.39E-03	9.47E-03	3.92E-03	7.91E-03	1.38E-03	2.39E-03	2.43E-03	1.57E-03	1.47E-03
Toluene	1746016	39.56	1.18E-01	5.23E-01	1.11E-01	7.14E-01	9.89E-02	5.95E-01	2.80E-01	6.03E-02	2.40E-01	3.96E-02	3.71E-02
Xylenes (isomers and mixture)	95954	36.95	8.33E-02	4.78E-01	7.84E-02	7.80E-01	6.99E-02	6.51E-01	2.04E-01	4.26E-02	2.22E-01	2.80E-02	2.62E-02

Table C-4-6d
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SCC			2260002006	2260006010	2270002051	2270005015	2270002045	2265006010	2265004015	2270002075	2270002048	2265004075
Equipment Name		Summer TOTAL (tons)	Tampers/Rammers	Pumps	Off-highway Trucks	Agricultural Tractors	Cranes	Pumps	Rotary Tillers < 6 HP (res)	Off-Highway Tractors	Graders	Other Lawn & Garden Eqp. (res)
Tech Type			2-St	2-St	Dsl	Dsl	Dsl	4-St	4-St	Dsl	Dsl	4-St
Equipment Population			65.89	74.99	7.77	79.74	40.69	125.96	871.83	12.95	36.12	177.91
Activity (hrs/season)			7,017.5	8,285.9	8,489.5	27,298.4	26,813.2	13,918.5	14,821.1	7,372.0	23,127.4	10,852.2
Activity (hrs/season/unit)			106.51	110.50	1,092.35	342.34	659.01	110.50	17.00	569.14	640.37	61.00
Exhaust PM (tons)		65.92	1.43E-01	8.98E-02	1.70E+00	1.19E+00	1.58E+00	1.54E-02	5.16E-03	1.18E+00	1.34E+00	2.00E-02
TOTAL VOC (tons)		616.06	2.36E+00	2.28E+00	2.27E+00	2.11E+00	2.01E+00	1.94E+00	1.75E+00	1.61E+00	1.55E+00	1.55E+00
Total Exhaust VOC (tons)		393.20	2.34E+00	2.27E+00	2.27E+00	2.11E+00	2.01E+00	1.82E+00	1.67E+00	1.61E+00	1.55E+00	1.53E+00
Exh VOC		387.22	2.34E+00	2.27E+00	2.22E+00	2.07E+00	1.97E+00	1.75E+00	1.59E+00	1.58E+00	1.52E+00	1.48E+00
Crankcase VOC		5.98	0.00E+00	0.00E+00	4.44E-02	4.14E-02	3.95E-02	7.57E-02	7.52E-02	3.16E-02	3.05E-02	5.08E-02
Total Evap VOC (tons)		222.86	2.60E-02	1.29E-02	0.00E+00	0.00E+00	0.00E+00	1.16E-01	7.80E-02	0.00E+00	0.00E+00	1.81E-02
Chemical Name	**CAS No.**											
1,3-Butadiene	79345	0.74	5.03E-03	4.88E-03	4.22E-03	3.93E-03	3.74E-03	1.73E-03	1.59E-03	3.00E-03	2.89E-03	1.45E-03
Acetaldehyde	79005	6.26	3.88E-03	3.77E-03	1.68E-01	1.57E-01	1.50E-01	7.47E-03	6.84E-03	1.20E-01	1.15E-01	6.26E-03
Acrolein	57147	0.98	7.01E-04	6.81E-04	2.61E-02	2.43E-02	2.32E-02	1.28E-03	1.17E-03	1.86E-02	1.79E-02	1.07E-03
Benzene (including benzene from gasoline)	120821	16.45	5.95E-02	5.75E-02	4.60E-02	4.29E-02	4.09E-02	9.82E-02	8.93E-02	3.28E-02	3.15E-02	8.06E-02
Chromium Chompounds	96128	0.00	8.57E-06	5.39E-06	1.19E-04	8.33E-05	1.11E-04	9.23E-07	3.10E-07	8.23E-05	9.37E-05	1.20E-06
Ethyl benzene	122667	9.28	5.63E-02	5.46E-02	7.03E-03	6.55E-03	6.24E-03	3.70E-02	3.37E-02	5.00E-03	4.82E-03	3.04E-02
Formaldehyde	106887	12.70	5.94E-03	5.76E-03	3.40E-01	3.17E-01	3.02E-01	2.13E-02	1.95E-02	2.42E-01	2.33E-01	1.79E-02
Hexane	75558	9.54	3.38E-02	3.25E-02	3.60E-03	3.36E-03	3.20E-03	2.08E-02	1.84E-02	2.57E-03	2.47E-03	1.56E-02
Manganese Compounds	106990	0.01	1.71E-05	1.08E-05	1.19E-04	8.33E-05	1.11E-04	1.85E-06	6.19E-07	8.23E-05	9.37E-05	2.40E-06
Mercury Compounds	542756	0.00	1.43E-06	8.98E-07	3.40E-05	2.38E-05	3.17E-05	1.54E-07	5.16E-08	2.35E-05	2.68E-05	2.00E-07
Nickel Compounds	1120714	0.00	1.00E-05	6.29E-06	5.09E-05	3.57E-05	4.75E-05	1.08E-06	3.61E-07	3.53E-05	4.02E-05	1.40E-06
Polycylic Organic Matter	106467	0.01	3.88E-05	3.77E-05	4.06E-06	3.78E-06	3.60E-06	2.75E-05	2.52E-05	2.89E-06	2.78E-06	2.31E-05
Propionaldehyde	123911	0.94	5.77E-04	5.61E-04	2.23E-02	2.08E-02	1.98E-02	3.42E-03	3.14E-03	1.59E-02	1.53E-02	2.87E-03
Styrene	540841	0.42	3.04E-03	2.95E-03	1.35E-03	1.26E-03	1.20E-03	1.38E-03	1.27E-03	9.59E-04	9.23E-04	1.16E-03
Toluene	1746016	39.56	2.30E-01	2.23E-01	3.40E-02	3.17E-02	3.02E-02	1.36E-01	1.23E-01	2.42E-02	2.33E-02	1.10E-01
Xylenes (isomers and mixture)	95954	36.95	2.51E-01	2.43E-01	2.40E-02	2.24E-02	2.13E-02	1.26E-01	1.15E-01	1.71E-02	1.65E-02	1.04E-01

Table C-4-6d
FNSB NONROAD Emissions - Summer 1999

SCC			2265006025	2265001060	2265004035	2282020005	2265004040	2260001060	2270002015	2265001020	2270002018	2270008005
Equipment Name		Summer TOTAL (tons)	Welders	Specialty Vehicle Carts	Snowblowers (res)	Inboard	Rear Engine Riding Mowers (res)	Specialty Vehicle Carts	Rollers	Snowmobiles	Scrapers	Airport Support Equipment
Tech Type			4-St	4-St	4-St	Dsl	4-St	2-St	Dsl	4-St	Dsl	Dsl
Equipment Population			38.49	96.01	2,677.90	66.76	528.31	244.38	47.54	86.23	13.26	20.85
Activity (hrs/season)			7,851.7	4,297.6	-	11,347.4	19,019.2	10,938.6	24,053.1	-	8,066.2	7,630.4
Activity (hrs/season/unit)			204.00	44.76	-	169.97	36.00	44.76	505.90	-	608.42	366.00
Exhaust PM (tons)		65.92	1.51E-02	8.38E-03	0.00E+00	6.93E-01	9.93E-03	9.30E-03	1.09E+00	0.00E+00	8.84E-01	6.90E-01
TOTAL VOC (tons)		616.06	1.48E+00	1.35E+00	1.35E+00	1.35E+00	1.32E+00	1.15E+00	1.08E+00	1.07E+00	1.05E+00	9.83E-01
Total Exhaust VOC (tons)		393.20	1.40E+00	1.14E+00	0.00E+00	1.35E+00	1.21E+00	9.38E-01	1.08E+00	0.00E+00	1.05E+00	9.83E-01
Exh VOC		387.22	1.31E+00	8.99E-01	0.00E+00	1.35E+00	1.16E+00	9.38E-01	1.06E+00	0.00E+00	1.03E+00	9.64E-01
Crankcase VOC		5.98	8.85E-02	2.41E-01	0.00E+00	0.00E+00	4.79E-02	0.00E+00	2.12E-02	0.00E+00	2.06E-02	1.93E-02
Total Evap VOC (tons)		222.86	8.25E-02	2.14E-01	1.35E+00	0.00E+00	1.07E-01	2.09E-01	0.00E+00	1.07E+00	0.00E+00	0.00E+00
Chemical Name	**CAS No.**											
1,3-Butadiene	79345	0.74	1.33E-03	1.09E-03	0.00E+00	2.51E-03	1.15E-03	2.02E-03	2.02E-03	0.00E+00	1.95E-03	1.83E-03
Acetaldehyde	79005	6.26	5.73E-03	4.68E-03	0.00E+00	1.00E-01	4.97E-03	1.56E-03	8.05E-02	0.00E+00	7.80E-02	7.30E-02
Acrolein	57147	0.98	9.79E-04	7.98E-04	0.00E+00	1.55E-02	8.49E-04	2.81E-04	1.25E-02	0.00E+00	1.21E-02	1.13E-02
Benzene (including benzene from gasoline)	120821	16.45	7.52E-02	6.46E-02	2.98E-02	2.74E-02	6.60E-02	2.82E-02	2.20E-02	2.36E-02	2.13E-02	2.00E-02
Chromium Chompounds	96128	0.00	9.04E-07	5.03E-07	0.00E+00	4.85E-05	5.96E-07	5.58E-07	7.65E-05	0.00E+00	6.19E-05	4.83E-05
Ethyl benzene	122667	9.28	2.83E-02	2.42E-02	1.04E-02	4.19E-03	2.48E-02	2.41E-02	3.36E-03	8.28E-03	3.25E-03	3.05E-03
Formaldehyde	106887	12.70	1.64E-02	1.33E-02	0.00E+00	2.03E-01	1.42E-02	2.38E-03	1.63E-01	0.00E+00	1.57E-01	1.47E-01
Hexane	75558	9.54	1.58E-02	1.63E-02	3.17E-02	2.15E-03	1.45E-02	1.82E-02	1.72E-03	2.52E-02	1.67E-03	1.56E-03
Manganese Compounds	106990	0.01	1.81E-06	1.01E-06	0.00E+00	4.85E-05	1.19E-06	1.12E-06	7.65E-05	0.00E+00	6.19E-05	4.83E-05
Mercury Compounds	542756	0.00	1.51E-07	8.38E-08	0.00E+00	1.39E-05	9.93E-08	9.30E-08	2.19E-05	0.00E+00	1.77E-05	1.38E-05
Nickel Compounds	1120714	0.00	1.05E-06	5.87E-07	0.00E+00	2.08E-05	6.95E-07	6.51E-07	3.28E-05	0.00E+00	2.65E-05	2.07E-05
Polycylic Organic Matter	106467	0.01	2.11E-05	1.72E-05	0.00E+00	2.42E-06	1.83E-05	1.56E-05	1.94E-06	0.00E+00	1.88E-06	1.76E-06
Propionaldehyde	123911	0.94	2.63E-03	2.14E-03	0.00E+00	1.33E-02	2.28E-03	2.32E-04	1.07E-02	0.00E+00	1.03E-02	9.68E-03
Styrene	540841	0.42	1.06E-03	8.64E-04	0.00E+00	8.03E-04	9.19E-04	1.22E-03	6.44E-04	0.00E+00	6.24E-04	5.84E-04
Toluene	1746016	39.56	1.04E-01	9.07E-02	5.59E-02	2.03E-02	9.15E-02	1.00E-01	1.63E-02	4.44E-02	1.57E-02	1.47E-02
Xylenes (isomers and mixture)	95954	36.95	9.66E-02	8.21E-02	3.02E-02	1.43E-02	8.46E-02	1.05E-01	1.15E-02	2.40E-02	1.11E-02	1.04E-02

Table C-4-6d
FNSB NONROAD Emissions - Summer 1999

SCC			2265006015	2265002042	2265003020	2265002039	2270002030	2265002021	2270006005	2260004015	2260004035	2270001060
Equipment Name		Summer TOTAL (tons)	Air Compressors	Cement & Mortar Mixers	Forklifts	Concrete/Industrial Saws	Trenchers	Paving Equipment	Generator Sets	Rotary Tillers < 6 HP (res)	Snowblowers (res)	Specialty Vehicle Carts
Tech Type			4-St	4-St	4-St	4-St	Dsl	4-St	Dsl	2-St	2-St	Dsl
Equipment Population			27.20	102.97	9.53	16.41	33.83	44.91	69.25	140.22	2,506.75	8.49
Activity (hrs/season)			6,581.4	5,757.6	8,713.6	6,662.6	13,354.0	5,232.1	11,703.3	2,383.7	-	2,543.1
Activity (hrs/season/unit)			242.00	55.92	914.45	406.05	394.74	116.49	169.00	17.00	-	299.55
Exhaust PM (tons)		65.92	8.23E-03	7.57E-03	1.77E-02	8.91E-03	6.98E-01	5.56E-03	5.37E-01	2.11E-02	0.00E+00	3.66E-01
TOTAL VOC (tons)		616.06	9.03E-01	8.87E-01	8.31E-01	8.25E-01	8.00E-01	7.16E-01	7.00E-01	6.34E-01	6.32E-01	5.65E-01
Total Exhaust VOC (tons)		393.20	8.53E-01	8.14E-01	8.24E-01	8.04E-01	8.00E-01	6.75E-01	7.00E-01	6.28E-01	0.00E+00	5.65E-01
Exh VOC		387.22	7.81E-01	7.00E-01	6.20E-01	7.73E-01	7.84E-01	6.16E-01	6.86E-01	6.28E-01	0.00E+00	5.54E-01
Crankcase VOC		5.98	7.21E-02	1.14E-01	2.03E-01	3.06E-02	1.57E-02	5.94E-02	1.37E-02	0.00E+00	0.00E+00	1.11E-02
Total Evap VOC (tons)		222.86	4.95E-02	7.30E-02	7.23E-03	2.08E-02	0.00E+00	4.11E-02	0.00E+00	6.85E-03	6.32E-01	0.00E+00
Chemical Name	**CAS No.**											
1,3-Butadiene	79345	0.74	8.12E-04	7.75E-04	7.84E-04	7.65E-04	1.49E-03	6.43E-04	1.30E-03	1.35E-03	0.00E+00	1.05E-03
Acetaldehyde	79005	6.26	3.50E-03	3.34E-03	3.38E-03	3.30E-03	5.94E-02	2.77E-03	5.20E-02	1.04E-03	0.00E+00	4.20E-02
Acrolein	57147	0.98	5.97E-04	5.70E-04	5.76E-04	5.63E-04	9.20E-03	4.72E-04	8.05E-03	1.88E-04	0.00E+00	6.50E-03
Benzene (including benzene from gasoline)	120821	16.45	4.59E-02	4.43E-02	4.34E-02	4.27E-02	1.62E-02	3.63E-02	1.42E-02	1.60E-02	1.39E-02	1.15E-02
Chromium Chompounds	96128	0.00	4.94E-07	4.54E-07	1.06E-06	5.34E-07	4.88E-05	3.34E-07	3.76E-05	1.26E-06	0.00E+00	2.56E-05
Ethyl benzene	122667	9.28	1.73E-02	1.67E-02	1.64E-02	1.61E-02	2.48E-03	1.37E-02	2.17E-03	1.51E-02	4.86E-03	1.75E-03
Formaldehyde	106887	12.70	9.98E-03	9.52E-03	9.64E-03	9.41E-03	1.20E-01	7.90E-03	1.05E-01	1.59E-03	0.00E+00	8.48E-02
Hexane	75558	9.54	9.62E-03	9.78E-03	8.34E-03	8.46E-03	1.27E-03	7.66E-03	1.11E-03	9.07E-03	1.48E-02	8.98E-04
Manganese Compounds	106990	0.01	9.88E-07	9.08E-07	2.12E-06	1.07E-06	4.88E-05	6.68E-07	3.76E-05	2.53E-06	0.00E+00	2.56E-05
Mercury Compounds	542756	0.00	8.23E-08	7.57E-08	1.77E-07	8.91E-08	1.40E-05	5.56E-08	1.07E-05	2.11E-07	0.00E+00	7.32E-06
Nickel Compounds	1120714	0.00	5.76E-07	5.30E-07	1.24E-06	6.24E-07	2.09E-05	3.89E-07	1.61E-05	1.48E-06	0.00E+00	1.10E-05
Polycylic Organic Matter	106467	0.01	1.29E-05	1.23E-05	1.24E-05	1.21E-05	1.43E-06	1.02E-05	1.25E-06	1.04E-05	0.00E+00	1.01E-06
Propionaldehyde	123911	0.94	1.60E-03	1.53E-03	1.55E-03	1.51E-03	7.88E-03	1.27E-03	6.90E-03	1.55E-04	0.00E+00	5.57E-03
Styrene	540841	0.42	6.47E-04	6.17E-04	6.24E-04	6.09E-04	4.75E-04	5.12E-04	4.16E-04	8.16E-04	0.00E+00	3.36E-04
Toluene	1746016	39.56	6.33E-02	6.15E-02	5.94E-02	5.86E-02	1.20E-02	5.02E-02	1.05E-02	6.17E-02	2.61E-02	8.48E-03
Xylenes (isomers and mixture)	95954	36.95	5.90E-02	5.68E-02	5.60E-02	5.50E-02	8.48E-03	4.67E-02	7.42E-03	6.73E-02	1.41E-02	5.99E-03

Table C-4-6d
FNSB NONROAD Emissions - Summer 1999

SCC			2270006025	2265002030	2265002009	2270006015	2270002033	2270002003	2270002021	2260006005	2265002033	2265002072
Equipment Name		Summer TOTAL (tons)	Welders	Trenchers	Plate Compactors	Air Compressors	Bore/Drill Rigs	Pavers	Paving Equipment	Generator Sets	Bore/Drill Rigs	Skid Steer Loaders
Tech Type			Dsl	4-St	4-St	Dsl	Dsl	Dsl	Dsl	2-St	4-St	4-St
Equipment Population			32.90	13.90	42.84	24.50	9.91	13.56	17.07	21.88	44.19	5.95
Activity (hrs/season)			10,577.3	3,720.5	4,734.1	9,984.7	3,072.6	7,412.0	7,066.6	1,258.1	3,147.1	1,226.9
Activity (hrs/season/unit)			321.50	267.60	110.50	407.50	310.20	546.51	414.04	57.50	71.23	206.36
Exhaust PM (tons)		65.92	4.05E-01	5.30E-03	3.88E-03	4.03E-01	3.64E-01	3.59E-01	3.57E-01	1.37E-02	2.72E-03	2.94E-03
TOTAL VOC (tons)		616.06	5.64E-01	5.61E-01	4.97E-01	4.96E-01	4.41E-01	3.88E-01	3.49E-01	3.39E-01	3.34E-01	3.25E-01
Total Exhaust VOC (tons)		393.20	5.64E-01	5.39E-01	4.75E-01	4.96E-01	4.41E-01	3.88E-01	3.49E-01	3.36E-01	3.10E-01	2.97E-01
Exh VOC		387.22	5.53E-01	5.01E-01	4.53E-01	4.86E-01	4.32E-01	3.80E-01	3.42E-01	3.36E-01	2.88E-01	2.39E-01
Crankcase VOC		5.98	1.11E-02	3.78E-02	2.17E-02	9.72E-03	8.64E-03	7.61E-03	6.84E-03	0.00E+00	2.28E-02	5.81E-02
Total Evap VOC (tons)		222.86	0.00E+00	2.27E-02	2.28E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.76E-03	2.33E-02	2.84E-02
Chemical Name	**CAS No.**											
1,3-Butadiene	79345	0.74	1.05E-03	5.13E-04	4.52E-04	9.22E-04	8.20E-04	7.22E-04	6.49E-04	7.22E-04	2.95E-04	2.83E-04
Acetaldehyde	79005	6.26	4.19E-02	2.21E-03	1.95E-03	3.68E-02	3.27E-02	2.88E-02	2.59E-02	5.57E-04	1.27E-03	1.22E-03
Acrolein	57147	0.98	6.49E-03	3.77E-04	3.32E-04	5.70E-03	5.07E-03	4.46E-03	4.01E-03	1.01E-04	2.17E-04	2.08E-04
Benzene (including benzene from gasoline)	120821	16.45	1.15E-02	2.88E-02	2.54E-02	1.01E-02	8.95E-03	7.88E-03	7.08E-03	8.54E-03	1.68E-02	1.62E-02
Chromium Chompounds	96128	0.00	2.83E-05	3.18E-07	2.33E-07	2.82E-05	2.55E-05	2.51E-05	2.50E-05	8.23E-07	1.63E-07	1.77E-07
Ethyl benzene	122667	9.28	1.75E-03	1.08E-02	9.57E-03	1.54E-03	1.37E-03	1.20E-03	1.08E-03	8.09E-03	6.32E-03	6.09E-03
Formaldehyde	106887	12.70	8.46E-02	6.30E-03	5.55E-03	7.44E-02	6.61E-02	5.82E-02	5.23E-02	8.53E-04	3.63E-03	3.47E-03
Hexane	75558	9.54	8.97E-04	5.87E-03	5.24E-03	7.88E-04	7.01E-04	6.17E-04	5.55E-04	4.86E-03	3.62E-03	3.61E-03
Manganese Compounds	106990	0.01	2.83E-05	6.36E-07	4.66E-07	2.82E-05	2.55E-05	2.51E-05	2.50E-05	1.65E-06	3.26E-07	3.53E-07
Mercury Compounds	542756	0.00	8.10E-06	5.30E-08	3.88E-08	8.06E-06	7.27E-06	7.18E-06	7.14E-06	1.37E-07	2.72E-08	2.94E-08
Nickel Compounds	1120714	0.00	1.21E-05	3.71E-07	2.72E-07	1.21E-05	1.09E-05	1.08E-05	1.07E-05	9.60E-07	1.90E-07	2.06E-07
Polycylic Organic Matter	106467	0.01	1.01E-06	8.13E-06	7.17E-06	8.87E-07	7.89E-07	6.95E-07	6.24E-07	5.57E-06	4.69E-06	4.48E-06
Propionaldehyde	123911	0.94	5.56E-03	1.01E-03	8.92E-04	4.88E-03	4.34E-03	3.82E-03	3.44E-03	8.29E-05	5.83E-04	5.58E-04
Styrene	540841	0.42	3.35E-04	4.08E-04	3.60E-04	2.94E-04	2.62E-04	2.30E-04	2.07E-04	4.36E-04	2.35E-04	2.25E-04
Toluene	1746016	39.56	8.46E-03	3.96E-02	3.50E-02	7.44E-03	6.61E-03	5.82E-03	5.23E-03	3.30E-02	2.32E-02	2.25E-02
Xylenes (isomers and mixture)	95954	36.95	5.98E-03	3.70E-02	3.27E-02	5.25E-03	4.67E-03	4.11E-03	3.70E-03	3.60E-02	2.16E-02	2.08E-02

Table C-4-6d
FNSB NONROAD Emissions - Summer 1999

SCC			2270006010	2265008005	2265002066	2265002015	2270002054	2270002027	2265002024	2265002060	2265004030	2260002021
Equipment Name		Summer TOTAL (tons)	Pumps	Airport Support Equipment	Tractors/Loaders/Backhoes	Rollers	Crushing/Proc. Equipment	Signal Boards/Light Plants	Surfacing Equipment	Rubber Tire Loaders	Leafblowers/Vacuums (res)	Paving Equipment
Tech Type			Dsl	4-St	4-St	4-St	Dsl	Dsl	4-St	4-St	4-St	2-St
Equipment Population			31.52	3.24	3.40	4.44	4.27	28.65	8.13	1.20	110.14	5.91
Activity (hrs/season)			6,351.1	1,689.5	1,967.8	1,834.8	2,712.5	10,202.7	2,639.4	407.3	1,101.4	688.4
Activity (hrs/season/unit)			201.50	521.71	579.13	413.38	635.71	356.13	324.84	340.82	10.00	116.49
Exhaust PM (tons)		65.92	2.43E-01	3.35E-03	2.77E-03	2.72E-03	1.77E-01	2.27E-01	2.11E-03	2.19E-03	7.17E-04	7.42E-03
TOTAL VOC (tons)		616.06	2.98E-01	2.64E-01	2.58E-01	2.56E-01	2.46E-01	2.42E-01	2.26E-01	2.12E-01	1.88E-01	1.80E-01
Total Exhaust VOC (tons)		393.20	2.98E-01	2.53E-01	2.52E-01	2.47E-01	2.46E-01	2.42E-01	2.18E-01	2.01E-01	1.84E-01	1.79E-01
Exh VOC		387.22	2.92E-01	2.05E-01	2.51E-01	2.27E-01	2.41E-01	2.37E-01	2.17E-01	1.52E-01	1.78E-01	1.79E-01
Crankcase VOC		5.98	5.84E-03	4.86E-02	1.49E-03	2.02E-02	4.82E-03	4.74E-03	1.69E-03	4.83E-02	6.76E-03	0.00E+00
Total Evap VOC (tons)		222.86	0.00E+00	1.10E-02	6.04E-03	8.99E-03	0.00E+00	0.00E+00	7.16E-03	1.19E-02	3.58E-03	1.13E-03
Chemical Name	**CAS No.**											
1,3-Butadiene	79345	0.74	5.54E-04	2.41E-04	2.40E-04	2.36E-04	4.57E-04	4.49E-04	2.08E-04	1.91E-04	1.76E-04	3.85E-04
Acetaldehyde	79005	6.26	2.21E-02	1.04E-03	1.03E-03	1.01E-03	1.83E-02	1.79E-02	8.96E-04	8.22E-04	7.56E-04	2.97E-04
Acrolein	57147	0.98	3.43E-03	1.77E-04	1.77E-04	1.73E-04	2.83E-03	2.78E-03	1.53E-04	1.40E-04	1.29E-04	5.38E-05
Benzene (including benzene from gasoline)	120821	16.45	6.05E-03	1.35E-02	1.34E-02	1.32E-02	4.99E-03	4.90E-03	1.16E-02	1.08E-02	9.76E-03	4.54E-03
Chromium Chompounds	96128	0.00	1.70E-05	2.01E-07	1.66E-07	1.63E-07	1.24E-05	1.59E-05	1.27E-07	1.31E-07	4.30E-08	4.45E-07
Ethyl benzene	122667	9.28	9.24E-04	5.10E-03	5.04E-03	4.97E-03	7.62E-04	7.49E-04	4.38E-03	4.06E-03	3.68E-03	4.31E-03
Formaldehyde	106887	12.70	4.47E-02	2.96E-03	2.95E-03	2.90E-03	3.69E-02	3.62E-02	2.56E-03	2.35E-03	2.16E-03	4.55E-04
Hexane	75558	9.54	4.74E-04	2.77E-03	2.64E-03	2.66E-03	3.91E-04	3.84E-04	2.33E-03	2.27E-03	1.91E-03	2.57E-03
Manganese Compounds	106990	0.01	1.70E-05	4.02E-07	3.33E-07	3.26E-07	1.24E-05	1.59E-05	2.53E-07	2.63E-07	8.60E-08	8.91E-07
Mercury Compounds	542756	0.00	4.86E-06	3.35E-08	2.77E-08	2.72E-08	3.55E-06	4.53E-06	2.11E-08	2.19E-08	7.17E-09	7.42E-08
Nickel Compounds	1120714	0.00	7.29E-06	2.34E-07	1.94E-07	1.90E-07	5.32E-06	6.80E-06	1.48E-07	1.53E-07	5.02E-08	5.20E-07
Polycylic Organic Matter	106467	0.01	5.33E-07	3.83E-06	3.81E-06	3.74E-06	4.40E-07	4.32E-07	3.30E-06	3.03E-06	2.79E-06	2.97E-06
Propionaldehyde	123911	0.94	2.93E-03	4.76E-04	4.74E-04	4.65E-04	2.42E-03	2.38E-03	4.11E-04	3.77E-04	3.47E-04	4.43E-05
Styrene	540841	0.42	1.77E-04	1.92E-04	1.91E-04	1.88E-04	1.46E-04	1.44E-04	1.66E-04	1.52E-04	1.40E-04	2.33E-04
Toluene	1746016	39.56	4.47E-03	1.86E-02	1.84E-02	1.81E-02	3.69E-03	3.62E-03	1.60E-02	1.49E-02	1.34E-02	1.76E-02
Xylenes (isomers and mixture)	95954	36.95	3.16E-03	1.74E-02	1.72E-02	1.70E-02	2.60E-03	2.56E-03	1.50E-02	1.39E-02	1.26E-02	1.92E-02

Table C-4-6d
FNSB NONROAD Emissions - Summer 1999

SCC			2265002003	2270002081	2260002009	2270002024	2270005020	2270002063	2270003020	2285002015	2265005040	2265002078
Equipment Name		Summer TOTAL (tons)	Pavers	Other Construction Equipment	Plate Compactors	Surfacing Equipment	Combines	Rubber Tire Tractor/Dozers	Forklifts	Railway Maintenance	Tillers > 6 HP	Dumpers/Tenders
Tech Type			4-St	Dsl	2-St	Dsl	Dsl	Dsl	Dsl	Dsl	4-St	4-St
Equipment Population			4.00	5.64	6.20	2.59	12.05	1.83	2.65	2.75	25.18	12.11
Activity (hrs/season)			1,042.5	2,274.5	685.6	967.4	1,303.1	1,094.3	2,471.4	1,294.9	780.3	1,024.1
Activity (hrs/season/unit)			260.94	403.39	110.50	373.44	108.11	598.43	934.23	471.50	30.99	84.54
Exhaust PM (tons)		65.92	1.62E-03	1.47E-01	6.17E-03	1.52E-01	1.45E-01	1.04E-01	1.08E-01	7.86E-02	4.89E-04	8.16E-04
TOTAL VOC (tons)		616.06	1.62E-01	1.53E-01	1.50E-01	1.49E-01	1.39E-01	1.30E-01	1.27E-01	1.20E-01	1.14E-01	1.12E-01
Total Exhaust VOC (tons)		393.20	1.54E-01	1.53E-01	1.49E-01	1.49E-01	1.39E-01	1.30E-01	1.27E-01	1.20E-01	9.56E-02	1.01E-01
Exh VOC		387.22	1.41E-01	1.50E-01	1.49E-01	1.46E-01	1.36E-01	1.28E-01	1.25E-01	1.17E-01	7.38E-02	8.40E-02
Crankcase VOC		5.98	1.35E-02	3.00E-03	0.00E+00	2.93E-03	2.73E-03	2.55E-03	2.49E-03	2.35E-03	2.18E-02	1.67E-02
Total Evap VOC (tons)		222.86	7.72E-03	0.00E+00	1.08E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.79E-02	1.08E-02
Chemical Name	**CAS No.**											
1,3-Butadiene	79345	0.74	1.47E-04	2.84E-04	3.21E-04	2.78E-04	2.59E-04	2.42E-04	2.37E-04	2.23E-04	9.11E-05	9.59E-05
Acetaldehyde	79005	6.26	6.31E-04	1.14E-02	2.48E-04	1.11E-02	1.03E-02	9.67E-03	9.45E-03	8.89E-03	3.92E-04	4.13E-04
Acrolein	57147	0.98	1.08E-04	1.76E-03	4.47E-05	1.72E-03	1.60E-03	1.50E-03	1.46E-03	1.38E-03	6.70E-05	7.05E-05
Benzene (including benzene from gasoline)	120821	16.45	8.25E-03	3.10E-03	3.78E-03	3.03E-03	2.82E-03	2.64E-03	2.58E-03	2.43E-03	5.42E-03	5.53E-03
Chromium Chompounds	96128	0.00	9.74E-08	1.03E-05	3.70E-07	1.06E-05	1.01E-05	7.30E-06	7.57E-06	5.50E-06	2.93E-08	4.89E-08
Ethyl benzene	122667	9.28	3.11E-03	4.74E-04	3.59E-03	4.63E-04	4.31E-04	4.03E-04	3.94E-04	3.71E-04	2.03E-03	2.08E-03
Formaldehyde	106887	12.70	1.80E-03	2.29E-02	3.79E-04	2.24E-02	2.09E-02	1.95E-02	1.91E-02	1.80E-02	1.12E-03	1.18E-03
Hexane	75558	9.54	1.71E-03	2.43E-04	2.14E-03	2.37E-04	2.21E-04	2.07E-04	2.02E-04	1.90E-04	1.37E-03	1.25E-03
Manganese Compounds	106990	0.01	1.95E-07	1.03E-05	7.40E-07	1.06E-05	1.01E-05	7.30E-06	7.57E-06	5.50E-06	5.87E-08	9.79E-08
Mercury Compounds	542756	0.00	1.62E-08	2.93E-06	6.17E-08	3.04E-06	2.90E-06	2.09E-06	2.16E-06	1.57E-06	4.89E-09	8.16E-09
Nickel Compounds	1120714	0.00	1.14E-07	4.40E-06	4.32E-07	4.56E-06	4.35E-06	3.13E-06	3.24E-06	2.36E-06	3.42E-08	5.71E-08
Polycylic Organic Matter	106467	0.01	2.33E-06	2.74E-07	2.48E-06	2.67E-07	2.49E-07	2.33E-07	2.28E-07	2.14E-07	1.44E-06	1.52E-06
Propionaldehyde	123911	0.94	2.89E-04	1.51E-03	3.68E-05	1.47E-03	1.37E-03	1.28E-03	1.25E-03	1.18E-03	1.80E-04	1.89E-04
Styrene	540841	0.42	1.17E-04	9.08E-05	1.94E-04	8.87E-05	8.26E-05	7.73E-05	7.56E-05	7.11E-05	7.25E-05	7.64E-05
Toluene	1746016	39.56	1.14E-02	2.29E-03	1.46E-02	2.24E-03	2.09E-03	1.95E-03	1.91E-03	1.80E-03	7.61E-03	7.68E-03
Xylenes (isomers and mixture)	95954	36.95	1.06E-02	1.62E-03	1.60E-02	1.58E-03	1.47E-03	1.38E-03	1.35E-03	1.27E-03	6.88E-03	7.07E-03

Table C-4-6d
FNSB NONROAD Emissions - Summer 1999

SCC			2268006020	2265002081	2265004025	2265002057	2265003040	2270005060	2265002054	2270003030	2265003010	2265005035
Equipment Name		Summer TOTAL (tons)	Gas Compressors	Other Construction Equipment	Trimmers/Edgers/Brush Cutter (res)	Rough Terrain Forklift	Other General Industrial Eqp	Irrigation Sets	Crushing/Proc. Equipment	Sweepers/Scrubbers	Aerial Lifts	Sprayers
Tech Type			4-St	4-St	4-St	4-St	4-St	Dsl	4-St	Dsl	4-St	4-St
Equipment Population			0.11	0.60	68.26	0.60	1.90	1.39	2.81	0.81	1.18	4.58
Activity (hrs/season)			343.7	147.6	614.3	164.3	745.2	750.8	450.3	543.5	234.6	263.9
Activity (hrs/season/unit)			3,000.00	246.96	9.00	274.92	391.83	539.82	160.42	670.45	198.39	57.66
Exhaust PM (tons)		65.92	2.47E-03	9.55E-04	3.66E-04	7.32E-04	5.47E-04	4.31E-02	5.68E-04	3.66E-02	5.12E-04	4.37E-04
TOTAL VOC (tons)		616.06	1.03E-01	9.59E-02	9.52E-02	7.26E-02	6.72E-02	6.11E-02	6.07E-02	5.81E-02	5.57E-02	4.96E-02
Total Exhaust VOC (tons)		393.20	1.03E-01	8.74E-02	9.30E-02	6.70E-02	6.61E-02	6.11E-02	5.84E-02	5.81E-02	4.92E-02	4.62E-02
Exh VOC		387.22	7.75E-02	6.64E-02	8.96E-02	5.09E-02	6.60E-02	5.99E-02	5.80E-02	5.70E-02	3.88E-02	4.01E-02
Crankcase VOC		5.98	2.56E-02	2.10E-02	3.40E-03	1.61E-02	7.46E-05	1.20E-03	4.50E-04	1.14E-03	1.05E-02	6.06E-03
Total Evap VOC (tons)		222.86	0.00E+00	8.42E-03	2.14E-03	5.55E-03	1.16E-03	0.00E+00	2.29E-03	0.00E+00	6.46E-03	3.39E-03
Chemical Name	**CAS No.**											
1,3-Butadiene	79345	0.74	9.81E-05	8.32E-05	8.86E-05	6.38E-05	6.29E-05	1.14E-04	5.56E-05	1.08E-04	4.69E-05	4.40E-05
Acetaldehyde	79005	6.26	4.22E-04	3.59E-04	3.81E-04	2.75E-04	2.71E-04	4.54E-03	2.40E-04	4.32E-03	2.02E-04	1.89E-04
Acrolein	57147	0.98	7.21E-05	6.12E-05	6.51E-05	4.69E-05	4.62E-05	7.03E-04	4.09E-05	6.68E-04	3.45E-05	3.23E-05
Benzene (including benzene from gasoline)	120821	16.45	5.41E-03	4.78E-03	4.93E-03	3.64E-03	3.49E-03	1.24E-03	3.12E-03	1.18E-03	2.73E-03	2.50E-03
Chromium Chompounds	96128	0.00	1.48E-07	5.73E-08	2.19E-08	4.39E-08	3.28E-08	3.02E-06	3.41E-08	2.56E-06	3.07E-08	2.62E-08
Ethyl benzene	122667	9.28	2.04E-03	1.80E-03	1.86E-03	1.37E-03	1.32E-03	1.89E-04	1.17E-03	1.80E-04	1.02E-03	9.41E-04
Formaldehyde	106887	12.70	1.21E-03	1.02E-03	1.09E-03	7.84E-04	7.73E-04	9.16E-03	6.84E-04	8.71E-03	5.76E-04	5.40E-04
Hexane	75558	9.54	1.02E-03	1.06E-03	9.73E-04	7.95E-04	6.83E-04	9.71E-05	6.33E-04	9.24E-05	6.39E-04	5.38E-04
Manganese Compounds	106990	0.01	2.96E-07	1.15E-07	4.39E-08	8.78E-08	6.56E-08	3.02E-06	6.82E-08	2.56E-06	6.14E-08	5.24E-08
Mercury Compounds	542756	0.00	2.47E-08	9.55E-09	3.66E-09	7.32E-09	5.47E-09	8.62E-07	5.68E-09	7.33E-07	5.12E-09	4.37E-09
Nickel Compounds	1120714	0.00	1.73E-07	6.68E-08	2.56E-08	5.12E-08	3.83E-08	1.29E-06	3.98E-08	1.10E-06	3.58E-08	3.06E-08
Polycylic Organic Matter	106467	0.01	1.56E-06	1.32E-06	1.40E-06	1.01E-06	9.98E-07	1.09E-07	8.82E-07	1.04E-07	7.43E-07	6.97E-07
Propionaldehyde	123911	0.94	1.94E-04	1.64E-04	1.75E-04	1.26E-04	1.24E-04	6.02E-04	1.10E-04	5.72E-04	9.25E-05	8.68E-05
Styrene	540841	0.42	7.81E-05	6.63E-05	7.05E-05	5.08E-05	5.01E-05	3.63E-05	4.43E-05	3.45E-05	3.73E-05	3.50E-05
Toluene	1746016	39.56	7.40E-03	6.63E-03	6.77E-03	5.04E-03	4.79E-03	9.16E-04	4.29E-03	8.71E-04	3.80E-03	3.46E-03
Xylenes (isomers and mixture)	95954	36.95	6.98E-03	6.12E-03	6.36E-03	4.67E-03	4.51E-03	6.48E-04	4.01E-03	6.16E-04	3.48E-03	3.21E-03

Table C-4-6d
FNSB NONROAD Emissions - Summer 1999

SCC			2265003030	2265002045	2270003070	2270003040	2260005050	2265005045	2285004015	2270005055	2270002039	2270002009
Equipment Name		Summer TOTAL (tons)	Sweepers/Scrubbers	Cranes	Terminal Tractors	Other General Industrial Eqp	Sprayers	Swathers	Railway Maintenance	Other Agricultural Equipment	Concrete/Industrial Saws	Plate Compactors
Tech Type			4-St	4-St	Dsl	Dsl	2-St	4-St	4-St	Dsl	Dsl	Dsl
Equipment Population			0.56	0.45	0.73	1.75	1.83	0.47	3.81	0.93	1.22	4.57
Activity (hrs/season)			160.1	123.3	501.1	844.1	105.6	32.5	350.2	254.6	470.7	1,472.9
Activity (hrs/season/unit)			283.57	276.25	690.78	482.50	57.66	68.47	92.00	274.59	386.08	322.18
Exhaust PM (tons)		65.92	3.71E-04	3.29E-04	3.03E-02	2.68E-02	1.15E-03	1.45E-04	2.40E-04	1.62E-02	2.14E-02	2.90E-02
TOTAL VOC (tons)		616.06	3.66E-02	3.32E-02	3.20E-02	3.14E-02	3.09E-02	3.02E-02	2.98E-02	2.64E-02	2.26E-02	2.01E-02
Total Exhaust VOC (tons)		393.20	3.47E-02	3.01E-02	3.20E-02	3.14E-02	3.06E-02	1.94E-02	2.75E-02	2.64E-02	2.26E-02	2.01E-02
Exh VOC		387.22	2.91E-02	2.38E-02	3.14E-02	3.08E-02	3.06E-02	1.48E-02	2.53E-02	2.59E-02	2.22E-02	1.97E-02
Crankcase VOC		5.98	5.54E-03	6.37E-03	6.28E-04	6.16E-04	0.00E+00	4.63E-03	2.16E-03	5.18E-04	4.43E-04	3.94E-04
Total Evap VOC (tons)		222.86	1.94E-03	3.10E-03	0.00E+00	0.00E+00	3.32E-04	1.08E-02	2.33E-03	0.00E+00	0.00E+00	0.00E+00
Chemical Name	**CAS No.**											
1,3-Butadiene	79345	0.74	3.30E-05	2.87E-05	5.95E-05	5.84E-05	6.57E-05	1.85E-05	2.62E-05	4.91E-05	4.21E-05	3.74E-05
Acetaldehyde	79005	6.26	1.42E-04	1.24E-04	2.38E-03	2.33E-03	5.08E-05	7.95E-05	1.13E-04	1.96E-03	1.68E-03	1.49E-03
Acrolein	57147	0.98	2.43E-05	2.11E-05	3.68E-04	3.61E-04	9.17E-06	1.36E-05	1.92E-05	3.04E-04	2.60E-04	2.31E-04
Benzene (including benzene from gasoline)	120821	16.45	1.86E-03	1.65E-03	6.50E-04	6.38E-04	7.78E-04	1.26E-03	1.49E-03	5.36E-04	4.59E-04	4.08E-04
Chromium Chompounds	96128	0.00	2.23E-08	1.97E-08	2.12E-06	1.88E-06	6.90E-08	8.71E-09	1.44E-08	1.13E-06	1.50E-06	2.03E-06
Ethyl benzene	122667	9.28	7.02E-04	6.21E-04	9.92E-05	9.74E-05	7.36E-04	4.67E-04	5.62E-04	8.19E-05	7.01E-05	6.24E-05
Formaldehyde	106887	12.70	4.06E-04	3.53E-04	4.80E-03	4.71E-03	7.77E-05	2.27E-04	3.22E-04	3.96E-03	3.39E-03	3.02E-03
Hexane	75558	9.54	3.89E-04	3.72E-04	5.09E-05	4.99E-05	4.42E-04	4.45E-04	3.27E-04	4.20E-05	3.60E-05	3.20E-05
Manganese Compounds	106990	0.01	4.46E-08	3.94E-08	2.12E-06	1.88E-06	1.38E-07	1.74E-08	2.88E-08	1.13E-06	1.50E-06	2.03E-06
Mercury Compounds	542756	0.00	3.71E-09	3.29E-09	6.05E-07	5.37E-07	1.15E-08	1.45E-09	2.40E-09	3.24E-07	4.29E-07	5.80E-07
Nickel Compounds	1120714	0.00	2.60E-08	2.30E-08	9.08E-07	8.05E-07	8.05E-08	1.02E-08	1.68E-08	4.85E-07	6.43E-07	8.70E-07
Polycylic Organic Matter	106467	0.01	5.24E-07	4.55E-07	5.73E-08	5.62E-08	5.08E-07	2.93E-07	4.15E-07	4.73E-08	4.05E-08	3.60E-08
Propionaldehyde	123911	0.94	6.52E-05	5.66E-05	3.15E-04	3.09E-04	7.55E-06	3.64E-05	5.17E-05	2.60E-04	2.23E-04	1.98E-04
Styrene	540841	0.42	2.63E-05	2.28E-05	1.90E-05	1.87E-05	3.98E-05	1.47E-05	2.08E-05	1.57E-05	1.34E-05	1.19E-05
Toluene	1746016	39.56	2.57E-03	2.29E-03	4.80E-04	4.71E-04	3.00E-03	1.84E-03	2.07E-03	3.96E-04	3.39E-04	3.02E-04
Xylenes (isomers and mixture)	95954	36.95	2.40E-03	2.11E-03	3.39E-04	3.33E-04	3.28E-03	1.56E-03	1.92E-03	2.80E-04	2.40E-04	2.13E-04

Table C-4-6d
FNSB NONROAD Emissions - Summer 1999

SCC			2270005035	2265002027	2265005025	2265003060	2270005045	2270006030	2270003010	2270002042	2260003030	2265005055
Equipment Name		Summer TOTAL (tons)	Sprayers	Signal Boards/Light Plants	Balers	AC\Refrigeration	Swathers	Pressure Washers	Aerial Lifts	Cement & Mortar Mixers	Sweepers/Scrubbers	Other Agricultural Equipment
Tech Type			Dsl	4-St	4-St	4-St	Dsl	Dsl	Dsl	Dsl	2-St	4-St
Equipment Population			1.39	0.59	0.46	0.27	2.78	4.72	0.81	2.59	0.08	0.46
Activity (hrs/season)			90.2	125.1	22.4	88.3	220.5	341.9	171.1	474.2	22.5	40.9
Activity (hrs/season/unit)			64.86	211.68	49.01	332.48	79.28	72.50	211.03	183.06	283.57	89.37
Exhaust PM (tons)		65.92	7.76E-03	1.17E-04	5.54E-05	1.15E-04	1.17E-02	9.83E-03	7.42E-03	8.15E-03	2.03E-04	3.20E-05
TOTAL VOC (tons)		616.06	1.53E-02	1.37E-02	1.19E-02	1.17E-02	9.83E-03	9.54E-03	9.15E-03	5.70E-03	4.92E-03	4.48E-03
Total Exhaust VOC (tons)		393.20	1.53E-02	1.34E-02	7.40E-03	1.12E-02	9.83E-03	9.54E-03	9.15E-03	5.70E-03	4.91E-03	4.08E-03
Exh VOC		387.22	1.50E-02	1.33E-02	5.63E-03	1.08E-02	9.64E-03	9.36E-03	8.97E-03	5.59E-03	4.91E-03	3.43E-03
Crankcase VOC		5.98	3.00E-04	2.47E-05	1.77E-03	4.26E-04	1.93E-04	1.87E-04	1.79E-04	1.12E-04	0.00E+00	6.51E-04
Total Evap VOC (tons)		222.86	0.00E+00	3.73E-04	4.51E-03	4.54E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.06E-05	3.97E-04
Chemical Name	**CAS No.**											
1,3-Butadiene	79345	0.74	2.85E-05	1.27E-05	7.05E-06	1.07E-05	1.83E-05	1.77E-05	1.70E-05	1.06E-05	1.06E-05	3.88E-06
Acetaldehyde	79005	6.26	1.14E-03	5.48E-05	3.04E-05	4.60E-05	7.30E-04	7.09E-04	6.80E-04	4.24E-04	8.15E-06	1.67E-05
Acrolein	57147	0.98	1.76E-04	9.36E-06	5.18E-06	7.86E-06	1.13E-04	1.10E-04	1.05E-04	6.56E-05	1.47E-06	2.86E-06
Benzene (including benzene from gasoline)	120821	16.45	3.11E-04	7.10E-04	4.88E-04	5.99E-04	2.00E-04	1.94E-04	1.86E-04	1.16E-04	1.24E-04	2.23E-04
Chromium Chompounds	96128	0.00	5.43E-07	7.03E-09	3.33E-09	6.93E-09	8.16E-07	6.88E-07	5.20E-07	5.71E-07	1.22E-08	1.92E-09
Ethyl benzene	122667	9.28	4.75E-05	2.68E-04	1.81E-04	2.26E-04	3.05E-05	2.96E-05	2.84E-05	1.77E-05	1.18E-04	8.39E-05
Formaldehyde	106887	12.70	2.30E-03	1.56E-04	8.66E-05	1.31E-04	1.47E-03	1.43E-03	1.37E-03	8.56E-04	1.25E-05	4.77E-05
Hexane	75558	9.54	2.43E-05	1.41E-04	1.79E-04	1.22E-04	1.56E-05	1.52E-05	1.45E-05	9.07E-06	7.00E-05	4.98E-05
Manganese Compounds	106990	0.01	5.43E-07	1.41E-08	6.65E-09	1.39E-08	8.16E-07	6.88E-07	5.20E-07	5.71E-07	2.44E-08	3.84E-09
Mercury Compounds	542756	0.00	1.55E-07	1.17E-09	5.54E-10	1.15E-09	2.33E-07	1.97E-07	1.48E-07	1.63E-07	2.03E-09	3.20E-10
Nickel Compounds	1120714	0.00	2.33E-07	8.20E-09	3.88E-09	8.08E-09	3.50E-07	2.95E-07	2.23E-07	2.45E-07	1.42E-08	2.24E-09
Polycylic Organic Matter	106467	0.01	2.74E-08	2.02E-07	1.12E-07	1.69E-07	1.76E-08	1.71E-08	1.64E-08	1.02E-08	8.15E-08	6.16E-08
Propionaldehyde	123911	0.94	1.51E-04	2.51E-05	1.39E-05	2.11E-05	9.68E-05	9.40E-05	9.01E-05	5.62E-05	1.21E-06	7.67E-06
Styrene	540841	0.42	9.09E-06	1.01E-05	5.61E-06	8.51E-06	5.84E-06	5.67E-06	5.44E-06	3.39E-06	6.38E-06	3.09E-06
Toluene	1746016	39.56	2.30E-04	9.76E-04	7.18E-04	8.25E-04	1.47E-04	1.43E-04	1.37E-04	8.56E-05	4.81E-04	3.09E-04
Xylenes (isomers and mixture)	95954	36.95	1.62E-04	9.15E-04	6.02E-04	7.71E-04	1.04E-04	1.01E-04	9.70E-05	6.05E-05	5.25E-04	2.86E-04

Table C-4-6d
FNSB NONROAD Emissions - Summer 1999

SCC			2270002078
Equipment Name		Summer TOTAL (tons)	Dumpers/Tenders
Tech Type			Dsl
Equipment Population			0.30
Activity (hrs/season)			114.8
Activity (hrs/season/unit)			376.8
Exhaust PM (tons)		65.92	2.75E-03
TOTAL VOC (tons)		616.06	3.20E-03
Total Exhaust VOC (tons)		393.20	3.20E-03
Exh VOC		387.22	3.14E-03
Crankcase VOC		5.98	6.28E-05
Total Evap VOC (tons)		222.86	0.00E+00
Chemical Name	**CAS No.**		
1,3-Butadiene	79345	0.74	5.96E-06
Acetaldehyde	79005	6.26	2.38E-04
Acrolein	57147	0.98	3.69E-05
Benzene (including benzene from gasoline)	120821	16.45	6.50E-05
Chromium Chompounds	96128	0.00	1.93E-07
Ethyl benzene	122667	9.28	9.93E-06
Formaldehyde	106887	12.70	4.81E-04
Hexane	75558	9.54	5.10E-06
Manganese Compounds	106990	0.01	1.93E-07
Mercury Compounds	542756	0.00	5.51E-08
Nickel Compounds	1120714	0.00	8.26E-08
Polycylic Organic Matter	106467	0.01	5.74E-09
Propionaldehyde	123911	0.94	3.16E-05
Styrene	540841	0.42	1.90E-06
Toluene	1746016	39.56	4.81E-05
Xylenes (isomers and mixture)	95954	36.95	3.40E-05

Table C-4-6e
Juneau NONROAD Emissions - Winter 1999

SCC		2260007005	2282005010	2260001030	2270007015	2260001020	2260004036	2265006005	2260004035	2270002066	2265001030	2265006030	2265007015
Equipment Name	Winter TOTAL (tons)	Logging Equipment Chain Saws > 6 HP	Outboard	All Terrain Vehicles\Motorcycles	Forest Eqp - Feller/Bunch/Skidder	Snowmobiles	Snowblowers (com)	Generator Sets	Snowblowers (res)	Tractors/Loaders/Backhoes	All Terrain Vehicles\Motorcycles	Pressure Washers	Shredders > 6 HP
Tech Type		2-St	2-St	2-St	Dsl	2-St	2-St	4-St	2-St	Dsl	4-St	4-St	4-St
Equipment Population		2,171.8	18,140.7	504.8	72.2	141.2	93.3	292.0	802.8	39.4	1,576.9	135.8	306.1
Activity (hrs/season)		329,033.5	94,789.0	8,581.6	46,066.0	2,117.7	12,687.7	16,792.6	6,422.5	14,966.6	26,807.0	7,805.9	7,741.8
Activity (hrs/season/unit)		151.50	5.23	17.00	638.00	15.00	136.00	57.50	8.00	379.47	17.00	57.50	25.29
Exhaust PM (tons)	36.66	1.66E+01	7.84E+00	2.16E-01	4.12E+00	1.15E-01	1.67E-01	1.93E-02	8.45E-02	9.82E-01	1.12E-02	1.02E-02	8.16E-03
TOTAL VOC (tons)	463.76	2.68E+02	1.45E+02	9.23E+00	5.23E+00	4.95E+00	4.66E+00	2.78E+00	2.37E+00	1.40E+00	1.39E+00	1.31E+00	1.19E+00
Total Exhaust VOC (tons)	452.60	2.68E+02	1.35E+02	9.08E+00	5.23E+00	4.84E+00	4.66E+00	2.76E+00	2.36E+00	1.40E+00	1.25E+00	1.30E+00	1.18E+00
Exh VOC	450.86	2.68E+02	1.35E+02	9.08E+00	5.13E+00	4.84E+00	4.66E+00	2.38E+00	2.36E+00	1.37E+00	1.00E+00	1.24E+00	9.70E-01
Crankcase VOC	1.74	0.00E+00	0.00E+00	0.00E+00	1.03E-01	0.00E+00	0.00E+00	3.77E-01	0.00E+00	2.74E-02	2.49E-01	6.33E-02	2.11E-01
Total Evap VOC (tons)	11.16	9.44E-02	1.04E+01	1.54E-01	0.00E+00	1.12E-01	1.31E-03	2.04E-02	1.13E-02	0.00E+00	1.35E-01	5.39E-03	1.39E-02
Chemical Name													
1,3-Butadiene	0.955	5.77E-01	2.89E-01	1.95E-02	9.73E-03	1.04E-02	1.00E-02	2.62E-03	5.07E-03	2.60E-03	1.19E-03	1.24E-03	1.12E-03
Acetaldehyde	1.844	4.45E-01	2.23E-01	1.51E-02	3.89E-01	8.04E-03	7.74E-03	1.13E-02	3.92E-03	1.04E-01	5.13E-03	5.34E-03	4.84E-03
Acrolein	0.305	8.05E-02	4.04E-02	2.72E-03	6.02E-02	1.45E-03	1.40E-03	1.93E-03	7.08E-04	1.61E-02	8.76E-04	9.11E-04	8.27E-04
Benzene (including benzene from gasoline)	11.897	6.76E+00	3.62E+00	2.32E-01	1.06E-01	1.24E-01	1.18E-01	1.45E-01	5.97E-02	2.84E-02	6.87E-02	6.85E-02	6.23E-02
Chromium Chompounds	0.002	9.98E-04	4.70E-04	1.29E-05	2.89E-04	6.90E-06	1.00E-05	1.16E-06	5.07E-06	6.87E-05	6.70E-07	6.13E-07	4.90E-07
Ethyl benzene	10.593	6.44E+00	3.31E+00	2.19E-01	1.62E-02	1.17E-01	1.12E-01	5.48E-02	5.67E-02	4.34E-03	2.58E-02	2.58E-02	2.35E-02
Formaldehyde	3.417	6.81E-01	3.42E-01	2.31E-02	7.85E-01	1.23E-02	1.18E-02	3.23E-02	5.99E-03	2.10E-01	1.46E-02	1.52E-02	1.38E-02
Hexane	6.454	3.81E+00	2.15E+00	1.33E-01	8.32E-03	7.14E-02	6.62E-02	2.78E-02	3.38E-02	2.23E-03	1.56E-02	1.30E-02	1.20E-02
Manganese Compounds	0.004	2.00E-03	9.41E-04	2.59E-05	2.89E-04	1.38E-05	2.00E-05	2.32E-06	1.01E-05	6.87E-05	1.34E-06	1.23E-06	9.79E-07
Mercury Compounds	0.000	1.66E-04	7.84E-05	2.16E-06	8.24E-05	1.15E-06	1.67E-06	1.93E-07	8.45E-07	1.96E-05	1.12E-07	1.02E-07	8.16E-08
Nickel Compounds	0.002	1.16E-03	5.49E-04	1.51E-05	1.24E-04	8.05E-06	1.17E-05	1.35E-06	5.92E-06	2.95E-05	7.82E-07	7.15E-07	5.71E-07
Polycylic Organic Matter	0.007	4.45E-03	2.23E-03	1.51E-04	9.37E-06	8.04E-05	7.74E-05	4.16E-05	3.92E-05	2.51E-06	1.89E-05	1.97E-05	1.78E-05
Propionaldehyde	0.271	6.62E-02	3.32E-02	2.24E-03	5.15E-02	1.20E-03	1.15E-03	5.18E-03	5.83E-04	1.38E-02	2.35E-03	2.45E-03	2.22E-03
Styrene	0.572	3.49E-01	1.75E-01	1.18E-02	3.11E-03	6.29E-03	6.06E-03	2.09E-03	3.07E-03	8.31E-04	9.49E-04	9.87E-04	8.95E-04
Toluene	43.210	2.62E+01	1.36E+01	8.94E-01	7.85E-02	4.78E-01	4.56E-01	1.99E-01	2.31E-01	2.10E-02	9.54E-02	9.37E-02	8.54E-02
Xylenes (isomers and mixture)	46.809	2.87E+01	1.46E+01	9.75E-01	5.55E-02	5.21E-01	4.99E-01	1.87E-01	2.53E-01	1.48E-02	8.79E-02	8.84E-02	8.04E-02

Table C-4-6e
Juneau NONROAD Emissions - Winter 1999

SCC		2270002072	2270002060	2265003020	2260006010	2260002054	2270002036	2270003060	2265006010	2265006025	2270002069	2265004036	2270008005
Equipment Name	Winter TOTAL (tons)	Skid Steer Loaders	Rubber Tire Loaders	Forklifts	Pumps	Concrete/Industrial Saws	Excavators	AC\Refrigeration	Pumps	Welders	Crawler Tractor/Dozers	Snowblowers (com)	Airport Support Equipment
Tech Type		Dsl	Dsl	4-St	2-St	2-St	Dsl	Dsl	4-St	4-St	Dsl	4-St	Dsl
Equipment Population		49.3	24.9	13.5	30.3	8.0	16.1	69.7	50.8	15.5	24.3	99.6	8.7
Activity (hrs/season)		13,489.0	6,344.6	10,094.7	3,344.8	1,614.8	5,883.7	42,073.4	5,618.5	3,169.5	7,591.3	13,549.1	3,195.5
Activity (hrs/season/unit)		273.49	254.43	749.55	110.50	201.42	365.10	604.05	110.50	204.00	312.94	136.00	366.00
Exhaust PM (tons)	36.66	7.16E-01	6.84E-01	2.06E-02	3.70E-02	5.40E-02	5.20E-01	8.88E-01	6.07E-03	6.09E-03	4.97E-01	4.92E-03	2.83E-01
TOTAL VOC (tons)	463.76	1.06E+00	9.98E-01	9.62E-01	9.35E-01	9.07E-01	8.81E-01	7.69E-01	7.45E-01	5.91E-01	5.48E-01	5.35E-01	3.98E-01
Total Exhaust VOC (tons)	452.60	1.06E+00	9.98E-01	9.61E-01	9.35E-01	9.07E-01	8.81E-01	7.69E-01	7.43E-01	5.89E-01	5.48E-01	5.32E-01	3.98E-01
Exh VOC	450.86	1.04E+00	9.79E-01	7.26E-01	9.35E-01	9.07E-01	8.64E-01	7.54E-01	7.14E-01	5.54E-01	5.38E-01	5.32E-01	3.91E-01
Crankcase VOC	1.74	2.08E-02	1.96E-02	2.36E-01	0.00E+00	0.00E+00	1.73E-02	1.51E-02	2.87E-02	3.46E-02	1.08E-02	0.00E+00	7.81E-03
Total Evap VOC (tons)	11.16	0.00E+00	0.00E+00	5.71E-04	2.92E-04	1.90E-04	0.00E+00	0.00E+00	2.61E-03	1.86E-03	0.00E+00	2.81E-03	0.00E+00
Chemical Name													
1,3-Butadiene	0.955	1.97E-03	1.86E-03	9.15E-04	2.01E-03	1.95E-03	1.64E-03	1.43E-03	7.07E-04	5.61E-04	1.02E-03	5.06E-04	7.41E-04
Acetaldehyde	1.844	7.88E-02	7.42E-02	3.94E-03	1.55E-03	1.51E-03	6.55E-02	5.71E-02	3.05E-03	2.41E-03	4.07E-02	2.18E-03	2.96E-02
Acrolein	0.305	1.22E-02	1.15E-02	6.73E-04	2.81E-04	2.72E-04	1.01E-02	8.84E-03	5.20E-04	4.12E-04	6.31E-03	3.72E-04	4.58E-03
Benzene (including benzene from gasoline)	11.897	2.15E-02	2.03E-02	5.05E-02	2.36E-02	2.29E-02	1.79E-02	1.56E-02	3.91E-02	3.10E-02	1.11E-02	2.80E-02	8.09E-03
Chromium Chompounds	0.002	5.01E-05	4.79E-05	1.23E-06	2.22E-06	3.24E-06	3.64E-05	6.21E-05	3.64E-07	3.65E-07	3.48E-05	2.95E-07	1.98E-05
Ethyl benzene	10.593	3.29E-03	3.10E-03	1.90E-02	2.24E-02	2.18E-02	2.73E-03	2.38E-03	1.47E-02	1.17E-02	1.70E-03	1.05E-02	1.24E-03
Formaldehyde	3.417	1.59E-01	1.50E-01	1.12E-02	2.38E-03	2.30E-03	1.32E-01	1.15E-01	8.69E-03	6.89E-03	8.22E-02	6.22E-03	5.98E-02
Hexane	6.454	1.69E-03	1.59E-03	9.55E-03	1.33E-02	1.29E-02	1.40E-03	1.22E-03	7.43E-03	5.89E-03	8.72E-04	5.34E-03	6.34E-04
Manganese Compounds	0.004	5.01E-05	4.79E-05	2.47E-06	4.44E-06	6.47E-06	3.64E-05	6.21E-05	7.28E-07	7.31E-07	3.48E-05	5.91E-07	1.98E-05
Mercury Compounds	0.000	1.43E-05	1.37E-05	2.06E-07	3.70E-07	5.40E-07	1.04E-05	1.78E-05	6.07E-08	6.09E-08	9.95E-06	4.92E-08	5.65E-06
Nickel Compounds	0.002	2.15E-05	2.05E-05	1.44E-06	2.59E-06	3.78E-06	1.56E-05	2.66E-05	4.25E-07	4.26E-07	1.49E-05	3.45E-07	8.48E-06
Polycylic Organic Matter	0.007	1.90E-06	1.79E-06	1.45E-05	1.55E-05	1.51E-05	1.58E-06	1.38E-06	1.12E-05	8.89E-06	9.81E-07	8.03E-06	7.13E-07
Propionaldehyde	0.271	1.04E-02	9.83E-03	1.81E-03	2.31E-04	2.24E-04	8.68E-03	7.57E-03	1.40E-03	1.11E-03	5.40E-03	1.00E-03	3.92E-03
Styrene	0.572	6.30E-04	5.93E-04	7.29E-04	1.22E-03	1.18E-03	5.24E-04	4.57E-04	5.63E-04	4.46E-04	3.26E-04	4.03E-04	2.37E-04
Toluene	43.210	1.59E-02	1.50E-02	6.91E-02	9.15E-02	8.87E-02	1.32E-02	1.15E-02	5.34E-02	4.24E-02	8.22E-03	3.83E-02	5.98E-03
Xylenes (isomers and mixture)	46.809	1.12E-02	1.06E-02	6.52E-02	1.00E-01	9.71E-02	9.34E-03	8.15E-03	5.04E-02	4.00E-02	5.81E-03	3.61E-02	4.22E-03

Table C-4-6e
Juneau NONROAD Emissions - Winter 1999

SCC		2265006015	2265001060	2270002057	2260002006	2270002051	2265004035	2270002045	2260001060	2270006005	2270006025	2270002075
Equipment Name	Winter TOTAL (tons)	Air Compressors	Specialty Vehicle Carts	Rough Terrain Forklift	Tampers/Rammers	Off-highway Trucks	Snowblowers (res)	Cranes	Specialty Vehicle Carts	Generator Sets	Welders	Off-Highway Tractors
Tech Type		4-St	4-St	Dsl	2-St	Dsl	4-St	Dsl	2-St	Dsl	Dsl	Dsl
Equipment Population		11.0	64.0	13.4	18.3	2.2	857.6	11.3	162.9	28.0	13.3	3.6
Activity (hrs/season)		2,656.7	1,295.5	2,966.1	980.9	1,186.7	6,861.0	3,747.9	3,297.4	4,724.3	4,269.7	1,030.5
Activity (hrs/season/unit)		242.00	20.24	221.33	53.49	548.65	8.00	330.99	20.24	169.00	321.50	285.86
Exhaust PM (tons)	36.66	3.46E-03	2.50E-03	2.44E-01	1.97E-02	2.33E-01	2.49E-03	2.20E-01	2.77E-03	2.16E-01	1.64E-01	1.59E-01
TOTAL VOC (tons)	463.76	3.79E-01	3.61E-01	3.36E-01	3.21E-01	3.10E-01	2.94E-01	2.85E-01	2.83E-01	2.82E-01	2.24E-01	2.17E-01
Total Exhaust VOC (tons)	452.60	3.78E-01	3.53E-01	3.36E-01	3.21E-01	3.10E-01	2.69E-01	2.85E-01	2.76E-01	2.82E-01	2.24E-01	2.17E-01
Exh VOC	450.86	3.49E-01	2.82E-01	3.30E-01	3.21E-01	3.04E-01	2.69E-01	2.79E-01	2.76E-01	2.77E-01	2.20E-01	2.13E-01
Crankcase VOC	1.74	2.88E-02	7.14E-02	6.60E-03	0.00E+00	6.08E-03	0.00E+00	5.58E-03	0.00E+00	5.53E-03	4.40E-03	4.26E-03
Total Evap VOC (tons)	11.16	1.12E-03	7.98E-03	0.00E+00	4.04E-04	0.00E+00	2.42E-02	0.00E+00	7.76E-03	0.00E+00	0.00E+00	0.00E+00
Chemical Name												
1,3-Butadiene	0.955	3.60E-04	3.36E-04	6.26E-04	6.90E-04	5.77E-04	2.56E-04	5.30E-04	5.92E-04	5.25E-04	4.17E-04	4.04E-04
Acetaldehyde	1.844	1.55E-03	1.45E-03	2.50E-02	5.32E-04	2.30E-02	1.10E-03	2.12E-02	4.57E-04	2.10E-02	1.67E-02	1.61E-02
Acrolein	0.305	2.65E-04	2.47E-04	3.87E-03	9.62E-05	3.57E-03	1.89E-04	3.28E-03	8.27E-05	3.24E-03	2.58E-03	2.50E-03
Benzene (including benzene from gasoline)	11.897	1.99E-02	1.87E-02	6.83E-03	8.09E-03	6.29E-03	1.47E-02	5.78E-03	7.11E-03	5.73E-03	4.55E-03	4.41E-03
Chromium Chompounds	0.002	2.08E-07	1.50E-07	1.71E-05	1.18E-06	1.63E-05	1.50E-07	1.54E-05	1.66E-07	1.52E-05	1.15E-05	1.11E-05
Ethyl benzene	10.593	7.50E-03	7.06E-03	1.04E-03	7.70E-03	9.61E-04	5.52E-03	8.83E-04	6.67E-03	8.75E-04	6.95E-04	6.73E-04
Formaldehyde	3.417	4.43E-03	4.13E-03	5.05E-02	8.15E-04	4.65E-02	3.15E-03	4.27E-02	7.00E-04	4.23E-02	3.37E-02	3.26E-02
Hexane	6.454	3.78E-03	3.69E-03	5.35E-04	4.56E-03	4.93E-04	3.24E-03	4.53E-04	4.09E-03	4.49E-04	3.57E-04	3.45E-04
Manganese Compounds	0.004	4.15E-07	3.01E-07	1.71E-05	2.36E-06	1.63E-05	2.99E-07	1.54E-05	3.33E-07	1.52E-05	1.15E-05	1.11E-05
Mercury Compounds	0.000	3.46E-08	2.50E-08	4.87E-06	1.97E-07	4.66E-06	2.49E-08	4.40E-06	2.77E-08	4.33E-06	3.27E-06	3.18E-06
Nickel Compounds	0.002	2.42E-07	1.75E-07	7.31E-06	1.38E-06	6.99E-06	1.75E-07	6.61E-06	1.94E-07	6.49E-06	4.91E-06	4.78E-06
Polycylic Organic Matter	0.007	5.71E-06	5.34E-06	6.02E-07	5.32E-06	5.55E-07	4.07E-06	5.10E-07	4.57E-06	5.05E-07	4.02E-07	3.89E-07
Propionaldehyde	0.271	7.11E-04	6.64E-04	3.31E-03	7.92E-05	3.05E-03	5.06E-04	2.81E-03	6.81E-05	2.78E-03	2.21E-03	2.14E-03
Styrene	0.572	2.87E-04	2.68E-04	2.00E-04	4.17E-04	1.84E-04	2.04E-04	1.69E-04	3.58E-04	1.68E-04	1.33E-04	1.29E-04
Toluene	43.210	2.72E-02	2.57E-02	5.05E-03	3.14E-02	4.65E-03	2.03E-02	4.27E-03	2.73E-02	4.23E-03	3.37E-03	3.26E-03
Xylenes (isomers and mixture)	46.809	2.57E-02	2.41E-02	3.57E-03	3.43E-02	3.29E-03	1.88E-02	3.02E-03	2.97E-02	2.99E-03	2.38E-03	2.30E-03

Table C-4-6e
Juneau NONROAD Emissions - Winter 1999

SCC		2270002048	2270006015	2268006020	2270001060	2265008005	2270002015	2270002018	2282010005	2270003020	2260006005	2265002039	2270006010
Equipment Name	Winter TOTAL (tons)	Graders	Air Compressors	Gas Compressors	Specialty Vehicle Carts	Airport Support Equipment	Rollers	Scrapers	Inboard/Sterndrive	Forklifts	Generator Sets	Concrete/Industrial Saws	Pumps
Tech Type		Dsl	Dsl	4-St	Dsl	4-St	Dsl	Dsl	4-St	Dsl	2-St	4-St	Dsl
Equipment Population		10.1	9.9	0.0	5.7	2.4	13.2	3.7	116.0	3.7	8.8	4.6	12.7
Activity (hrs/season)		3,232.7	4,030.5	138.7	766.6	1,399.1	3,362.1	1,127.5	-	2,863.1	507.9	931.3	2,563.8
Activity (hrs/season/unit)		321.63	407.50	3,000.00	135.45	589.59	254.10	305.58	-	765.77	57.50	203.95	201.50
Exhaust PM (tons)	36.66	1.84E-01	1.62E-01	1.14E-03	1.08E-01	2.38E-03	1.51E-01	1.20E-01	0.00E+00	1.23E-01	5.53E-03	1.33E-03	9.78E-02
TOTAL VOC (tons)	463.76	2.12E-01	2.01E-01	1.78E-01	1.67E-01	1.53E-01	1.48E-01	1.43E-01	1.41E-01	1.41E-01	1.35E-01	1.26E-01	1.20E-01
Total Exhaust VOC (tons)	452.60	2.12E-01	2.01E-01	1.78E-01	1.67E-01	1.53E-01	1.48E-01	1.43E-01	0.00E+00	1.41E-01	1.35E-01	1.25E-01	1.20E-01
Exh VOC	450.86	2.08E-01	1.97E-01	1.34E-01	1.64E-01	1.22E-01	1.45E-01	1.40E-01	0.00E+00	1.39E-01	1.35E-01	1.21E-01	1.18E-01
Crankcase VOC	1.74	4.15E-03	3.94E-03	4.43E-02	3.28E-03	3.01E-02	2.91E-03	2.80E-03	0.00E+00	2.77E-03	0.00E+00	4.22E-03	2.36E-03
Total Evap VOC (tons)	11.16	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.57E-04	0.00E+00	0.00E+00	1.41E-01	0.00E+00	8.47E-05	3.23E-04	0.00E+00
Chemical Name													
1,3-Butadiene	0.955	3.94E-04	3.74E-04	1.70E-04	3.11E-04	1.45E-04	2.76E-04	2.65E-04	0.00E+00	2.63E-04	2.90E-04	1.19E-04	2.23E-04
Acetaldehyde	1.844	1.57E-02	1.49E-02	7.32E-04	1.24E-02	6.26E-04	1.10E-02	1.06E-02	0.00E+00	1.05E-02	2.24E-04	5.14E-04	8.93E-03
Acrolein	0.305	2.44E-03	2.31E-03	1.25E-04	1.93E-03	1.07E-04	1.71E-03	1.64E-03	0.00E+00	1.63E-03	4.04E-05	8.77E-05	1.38E-03
Benzene (including benzene from gasoline)	11.897	4.30E-03	4.08E-03	9.37E-03	3.40E-03	8.02E-03	3.01E-03	2.89E-03	3.11E-03	2.87E-03	3.40E-03	6.59E-03	2.44E-03
Chromium Chompounds	0.002	1.29E-05	1.14E-05	6.85E-08	7.58E-06	1.43E-07	1.06E-05	8.41E-06	0.00E+00	8.59E-06	3.32E-07	7.96E-08	6.85E-06
Ethyl benzene	10.593	6.57E-04	6.24E-04	3.53E-03	5.19E-04	3.02E-03	4.60E-04	4.42E-04	1.09E-03	4.38E-04	3.24E-03	2.48E-03	3.72E-04
Formaldehyde	3.417	3.18E-02	3.02E-02	2.09E-03	2.51E-02	1.79E-03	2.22E-02	2.14E-02	0.00E+00	2.12E-02	3.42E-04	1.47E-03	1.80E-02
Hexane	6.454	3.37E-04	3.20E-04	1.77E-03	2.66E-04	1.52E-03	2.36E-04	2.27E-04	3.31E-03	2.25E-04	1.92E-03	1.25E-03	1.91E-04
Manganese Compounds	0.004	1.29E-05	1.14E-05	1.37E-07	7.58E-06	2.86E-07	1.06E-05	8.41E-06	0.00E+00	8.59E-06	6.64E-07	1.59E-07	6.85E-06
Mercury Compounds	0.000	3.68E-06	3.25E-06	1.14E-08	2.17E-06	2.38E-08	3.01E-06	2.40E-06	0.00E+00	2.46E-06	5.53E-08	1.33E-08	1.96E-06
Nickel Compounds	0.002	5.51E-06	4.87E-06	7.99E-08	3.25E-06	1.67E-07	4.52E-06	3.61E-06	0.00E+00	3.68E-06	3.87E-07	9.29E-08	2.93E-06
Polycylic Organic Matter	0.007	3.79E-07	3.60E-07	2.69E-06	3.00E-07	2.30E-06	2.65E-07	2.55E-07	0.00E+00	2.53E-07	2.24E-06	1.89E-06	2.15E-07
Propionaldehyde	0.271	2.09E-03	1.98E-03	3.36E-04	1.65E-03	2.87E-04	1.46E-03	1.40E-03	0.00E+00	1.39E-03	3.33E-05	2.36E-04	1.18E-03
Styrene	0.572	1.26E-04	1.19E-04	1.35E-04	9.94E-05	1.16E-04	8.81E-05	8.47E-05	0.00E+00	8.40E-05	1.75E-04	9.50E-05	7.14E-05
Toluene	43.210	3.18E-03	3.02E-03	1.28E-02	2.51E-03	1.10E-02	2.22E-03	2.14E-03	5.84E-03	2.12E-03	1.32E-02	9.01E-03	1.80E-03
Xylenes (isomers and mixture)	46.809	2.25E-03	2.13E-03	1.21E-02	1.77E-03	1.04E-02	1.57E-03	1.51E-03	3.15E-03	1.50E-03	1.44E-02	8.51E-03	1.27E-03

Table C-4-6e
Juneau NONROAD Emissions - Winter 1999

SCC		2265002042	2270002030	2265002021	2265003040	2265002030	2265002009	2270003030	2270002033	2265003010	2270002003	2270002021	2265002033
Equipment Name	Winter TOTAL (tons)	Cement & Mortar Mixers	Trenchers	Paving Equipment	Other General Industrial Eqp	Trenchers	Plate Compactors	Sweepers/Scrubbers	Bore/Drill Rigs	Aerial Lifts	Pavers	Paving Equipment	Bore/Drill Rigs
Tech Type		4-St	Dsl	4-St	4-St	4-St	4-St	Dsl	Dsl	4-St	Dsl	Dsl	4-St
Equipment Population		28.7	9.4	12.5	2.7	3.9	11.9	1.1	2.8	1.7	3.8	4.7	12.3
Activity (hrs/season)		804.8	1,866.6	731.3	863.4	520.0	661.7	629.7	429.5	271.8	1,036.0	987.8	439.9
Activity (hrs/season/unit)		28.08	198.26	58.51	321.17	134.40	55.50	549.55	155.80	162.61	274.49	207.96	35.77
Exhaust PM (tons)	36.66	9.89E-04	9.54E-02	7.60E-04	7.45E-04	7.67E-04	5.12E-04	4.11E-02	5.03E-02	5.91E-04	4.92E-02	4.92E-02	3.60E-04
TOTAL VOC (tons)	463.76	1.14E-01	1.07E-01	9.67E-02	9.60E-02	8.24E-02	6.67E-02	6.37E-02	6.17E-02	5.88E-02	5.26E-02	4.79E-02	4.38E-02
Total Exhaust VOC (tons)	452.60	1.13E-01	1.07E-01	9.60E-02	9.59E-02	8.20E-02	6.63E-02	6.37E-02	6.17E-02	5.83E-02	5.26E-02	4.79E-02	4.34E-02
Exh VOC	450.86	9.86E-02	1.05E-01	8.87E-02	9.59E-02	7.69E-02	6.39E-02	6.25E-02	6.05E-02	4.64E-02	5.15E-02	4.70E-02	4.05E-02
Crankcase VOC	1.74	1.46E-02	2.11E-03	7.32E-03	4.54E-05	5.13E-03	2.43E-03	1.25E-03	1.21E-03	1.19E-02	1.03E-03	9.40E-04	2.97E-03
Total Evap VOC (tons)	11.16	1.13E-03	0.00E+00	6.38E-04	9.17E-05	3.52E-04	3.54E-04	0.00E+00	0.00E+00	5.09E-04	0.00E+00	0.00E+00	3.62E-04
Chemical Name													
1,3-Butadiene	0.955	1.08E-04	2.00E-04	9.14E-05	9.13E-05	7.81E-05	6.31E-05	1.18E-04	1.15E-04	5.55E-05	9.78E-05	8.91E-05	4.14E-05
Acetaldehyde	1.844	4.64E-04	7.98E-03	3.94E-04	3.93E-04	3.36E-04	2.72E-04	4.73E-03	4.58E-03	2.39E-04	3.91E-03	3.56E-03	1.78E-04
Acrolein	0.305	7.92E-05	1.24E-03	6.72E-05	6.72E-05	5.74E-05	4.64E-05	7.33E-04	7.09E-04	4.08E-05	6.04E-04	5.51E-04	3.04E-05
Benzene (including benzene from gasoline)	11.897	5.97E-03	2.18E-03	5.06E-03	5.04E-03	4.31E-03	3.49E-03	1.29E-03	1.25E-03	3.07E-03	1.07E-03	9.73E-04	2.29E-03
Chromium Chompounds	0.002	5.94E-08	6.68E-06	4.56E-08	4.47E-08	4.60E-08	3.07E-08	2.88E-06	3.52E-06	3.54E-08	3.44E-06	3.44E-06	2.16E-08
Ethyl benzene	10.593	2.25E-03	3.33E-04	1.91E-03	1.90E-03	1.63E-03	1.32E-03	1.97E-04	1.91E-04	1.16E-03	1.63E-04	1.49E-04	8.63E-04
Formaldehyde	3.417	1.32E-03	1.61E-02	1.12E-03	1.12E-03	9.60E-04	7.76E-04	9.56E-03	9.25E-03	6.82E-04	7.88E-03	7.19E-03	5.08E-04
Hexane	6.454	1.15E-03	1.71E-04	9.68E-04	9.54E-04	8.22E-04	6.66E-04	1.01E-04	9.81E-05	5.90E-04	8.36E-05	7.62E-05	4.39E-04
Manganese Compounds	0.004	1.19E-07	6.68E-06	9.12E-08	8.95E-08	9.20E-08	6.15E-08	2.88E-06	3.52E-06	7.09E-08	3.44E-06	3.44E-06	4.32E-08
Mercury Compounds	0.000	9.89E-09	1.91E-06	7.60E-09	7.45E-09	7.67E-09	5.12E-09	8.22E-07	1.01E-06	5.91E-09	9.84E-07	9.83E-07	3.60E-09
Nickel Compounds	0.002	6.93E-08	2.86E-06	5.32E-08	5.22E-08	5.37E-08	3.59E-08	1.23E-06	1.51E-06	4.13E-08	1.48E-06	1.47E-06	2.52E-08
Polycylic Organic Matter	0.007	1.71E-06	1.92E-07	1.45E-06	1.45E-06	1.24E-06	1.00E-06	1.14E-07	1.10E-07	8.80E-07	9.41E-08	8.58E-08	6.56E-07
Propionaldehyde	0.271	2.13E-04	1.06E-03	1.81E-04	1.80E-04	1.54E-04	1.25E-04	6.28E-04	6.08E-04	1.10E-04	5.18E-04	4.72E-04	8.17E-05
Styrene	0.572	8.58E-05	6.38E-05	7.28E-05	7.27E-05	6.22E-05	5.03E-05	3.78E-05	3.66E-05	4.42E-05	3.12E-05	2.85E-05	3.29E-05
Toluene	43.210	8.18E-03	1.61E-03	6.92E-03	6.89E-03	5.90E-03	4.78E-03	9.56E-04	9.25E-04	4.20E-03	7.88E-04	7.19E-04	3.13E-03
Xylenes (isomers and mixture)	46.809	7.70E-03	1.14E-03	6.52E-03	6.51E-03	5.57E-03	4.50E-03	6.75E-04	6.54E-04	3.96E-03	5.57E-04	5.08E-04	2.95E-03

Table C-4-6e
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SCC		2265003030	2265002072	2265002066	2265002015	2270003070	2270003040	2265004055	2270002054	2270002027	2265002024	2265002060	2260002021
Equipment Name	Winter TOTAL (tons)	Sweepers/Scrubbers	Skid Steer Loaders	Tractors/Loaders/Backhoes	Rollers	Terminal Tractors	Other General Industrial Eqp	Lawn & Garden Tractors (res)	Crushing/Proc. Equipment	Signal Boards/Light Plants	Surfacing Equipment	Rubber Tire Loaders	Paving Equipment
Tech Type		4-St	4-St	4-St	4-St	Dsl	Dsl	4-St	Dsl	Dsl	4-St	4-St	2-St
Equipment Population		0.8	1.7	0.9	1.2	1.0	2.5	1,156.5	1.2	8.0	2.3	0.3	1.6
Activity (hrs/season)		185.5	171.5	275.1	256.5	580.5	977.9	-	379.1	1,426.1	368.9	56.9	96.2
Activity (hrs/season/unit)		232.43	103.64	290.87	207.62	566.22	395.50	-	319.29	178.87	163.16	171.18	58.51
Exhaust PM (tons)	36.66	4.37E-04	4.09E-04	3.91E-04	3.88E-04	3.42E-02	3.05E-02	0.00E+00	2.47E-02	3.17E-02	3.06E-04	3.04E-04	1.03E-03
TOTAL VOC (tons)	463.76	4.26E-02	4.25E-02	3.72E-02	3.69E-02	3.58E-02	3.55E-02	3.54E-02	3.47E-02	3.37E-02	3.35E-02	2.89E-02	2.49E-02
Total Exhaust VOC (tons)	452.60	4.25E-02	4.21E-02	3.71E-02	3.68E-02	3.58E-02	3.55E-02	0.00E+00	3.47E-02	3.37E-02	3.34E-02	2.87E-02	2.49E-02
Exh VOC	450.86	3.61E-02	3.43E-02	3.70E-02	3.40E-02	3.51E-02	3.48E-02	0.00E+00	3.40E-02	3.30E-02	3.32E-02	2.20E-02	2.49E-02
Crankcase VOC	1.74	6.35E-03	7.79E-03	8.17E-05	2.75E-03	7.03E-04	6.96E-04	0.00E+00	6.79E-04	6.60E-04	1.52E-04	6.70E-03	0.00E+00
Total Evap VOC (tons)	11.16	1.53E-04	4.41E-04	9.39E-05	1.40E-04	0.00E+00	0.00E+00	3.54E-02	0.00E+00	0.00E+00	1.11E-04	1.84E-04	1.76E-05
Chemical Name													
1,3-Butadiene	0.955	4.04E-05	4.01E-05	3.53E-05	3.50E-05	6.67E-05	6.60E-05	0.00E+00	6.45E-05	6.26E-05	3.18E-05	2.73E-05	5.34E-05
Acetaldehyde	1.844	1.74E-04	1.73E-04	1.52E-04	1.51E-04	2.66E-03	2.64E-03	0.00E+00	2.57E-03	2.50E-03	1.37E-04	1.18E-04	4.13E-05
Acrolein	0.305	2.97E-05	2.95E-05	2.60E-05	2.57E-05	4.12E-04	4.08E-04	0.00E+00	3.98E-04	3.87E-04	2.34E-05	2.01E-05	7.46E-06
Benzene (including benzene from gasoline)	11.897	2.23E-03	2.22E-03	1.95E-03	1.93E-03	7.28E-04	7.20E-04	7.80E-04	7.03E-04	6.83E-04	1.75E-03	1.51E-03	6.27E-04
Chromium Chompounds	0.002	2.62E-08	2.45E-08	2.35E-08	2.33E-08	2.40E-06	2.14E-06	0.00E+00	1.73E-06	2.22E-06	1.83E-08	1.83E-08	6.18E-08
Ethyl benzene	10.593	8.42E-04	8.37E-04	7.35E-04	7.29E-04	1.11E-04	1.10E-04	2.73E-04	1.07E-04	1.04E-04	6.61E-04	5.70E-04	5.97E-04
Formaldehyde	3.417	4.97E-04	4.92E-04	4.34E-04	4.30E-04	5.38E-03	5.32E-03	0.00E+00	5.20E-03	5.05E-03	3.90E-04	3.36E-04	6.31E-05
Hexane	6.454	4.25E-04	4.28E-04	3.70E-04	3.68E-04	5.70E-05	5.64E-05	8.29E-04	5.51E-05	5.35E-05	3.34E-04	2.89E-04	3.53E-04
Manganese Compounds	0.004	5.24E-08	4.90E-08	4.69E-08	4.66E-08	2.40E-06	2.14E-06	0.00E+00	1.73E-06	2.22E-06	3.67E-08	3.65E-08	1.24E-07
Mercury Compounds	0.000	4.37E-09	4.09E-09	3.91E-09	3.88E-09	6.84E-07	6.10E-07	0.00E+00	4.94E-07	6.34E-07	3.06E-09	3.04E-09	1.03E-08
Nickel Compounds	0.002	3.06E-08	2.86E-08	2.74E-08	2.72E-08	1.03E-06	9.15E-07	0.00E+00	7.41E-07	9.51E-07	2.14E-08	2.13E-08	7.21E-08
Polycylic Organic Matter	0.007	6.41E-07	6.36E-07	5.60E-07	5.55E-07	6.42E-08	6.35E-08	0.00E+00	6.20E-08	6.02E-08	5.04E-07	4.33E-07	4.13E-07
Propionaldehyde	0.271	7.99E-05	7.91E-05	6.97E-05	6.91E-05	3.53E-04	3.49E-04	0.00E+00	3.41E-04	3.32E-04	6.27E-05	5.40E-05	6.14E-06
Styrene	0.572	3.22E-05	3.19E-05	2.81E-05	2.79E-05	2.13E-05	2.11E-05	0.00E+00	2.06E-05	2.00E-05	2.53E-05	2.18E-05	3.23E-05
Toluene	43.210	3.06E-03	3.04E-03	2.67E-03	2.65E-03	5.38E-04	5.32E-04	1.46E-03	5.20E-04	5.05E-04	2.40E-03	2.07E-03	2.43E-03
Xylenes (isomers and mixture)	46.809	2.88E-03	2.86E-03	2.52E-03	2.50E-03	3.80E-04	3.76E-04	7.90E-04	3.67E-04	3.57E-04	2.26E-03	1.95E-03	2.66E-03

Table C-4-6e
Juneau NONROAD Emissions - Winter 1999

SCC		2265002003	2270002081	2260002009	2270002024	2270002063	2270004036	2265002078	2265004010	2265002081	2270003010	2265002057	2265002054
Equipment Name	Winter TOTAL (tons)	Pavers	Other Construction Equipment	Plate Compactors	Surfacing Equipment	Rubber Tire Tractor/Dozers	Snowblowers (com)	Dumpers/Tenders	Lawn mowers (res)	Other Construction Equipment	Aerial Lifts	Rough Terrain Forklift	Crushing/Proc. Equipment
Tech Type		4-St	Dsl	2-St	Dsl	Dsl	Dsl	4-St	4-St	4-St	Dsl	4-St	4-St
Equipment Population		1.1	1.6	1.7	0.7	0.5	0.2	3.4	3,175.5	0.2	1.1	0.2	0.8
Activity (hrs/season)		145.7	317.9	95.8	135.2	153.0	75.3	143.1	-	20.6	198.2	23.0	62.9
Activity (hrs/season/unit)		131.06	202.61	55.50	187.56	300.57	400.00	42.46	-	124.04	172.97	138.08	80.58
Exhaust PM (tons)	36.66	2.29E-04	2.02E-02	8.65E-04	2.10E-02	1.43E-02	1.09E-02	1.11E-04	0.00E+00	1.33E-04	8.56E-03	1.02E-04	8.13E-05
TOTAL VOC (tons)	463.76	2.27E-02	2.10E-02	2.09E-02	2.06E-02	1.78E-02	1.49E-02	1.44E-02	1.37E-02	1.27E-02	1.05E-02	9.70E-03	8.81E-03
Total Exhaust VOC (tons)	452.60	2.26E-02	2.10E-02	2.09E-02	2.06E-02	1.78E-02	1.49E-02	1.43E-02	0.00E+00	1.26E-02	1.05E-02	9.62E-03	8.78E-03
Exh VOC	450.86	2.08E-02	2.06E-02	2.09E-02	2.02E-02	1.74E-02	1.46E-02	1.21E-02	0.00E+00	9.62E-03	1.03E-02	7.37E-03	8.74E-03
Crankcase VOC	1.74	1.81E-03	4.12E-04	0.00E+00	4.04E-04	3.48E-04	2.92E-04	2.21E-03	0.00E+00	2.93E-03	2.06E-04	2.25E-03	3.49E-05
Total Evap VOC (tons)	11.16	1.20E-04	0.00E+00	1.67E-05	0.00E+00	0.00E+00	0.00E+00	1.67E-04	1.37E-02	1.31E-04	0.00E+00	8.63E-05	3.56E-05
Chemical Name													
1,3-Butadiene	0.955	2.15E-05	3.90E-05	4.49E-05	3.83E-05	3.30E-05	2.77E-05	1.36E-05	0.00E+00	1.20E-05	1.95E-05	9.16E-06	8.35E-06
Acetaldehyde	1.844	9.26E-05	1.56E-03	3.47E-05	1.53E-03	1.32E-03	1.11E-03	5.85E-05	0.00E+00	5.15E-05	7.80E-04	3.94E-05	3.60E-05
Acrolein	0.305	1.58E-05	2.41E-04	6.27E-06	2.37E-04	2.04E-04	1.71E-04	9.99E-06	0.00E+00	8.79E-06	1.21E-04	6.73E-06	6.14E-06
Benzene (including benzene from gasoline)	11.897	1.19E-03	4.26E-04	5.27E-04	4.18E-04	3.61E-04	3.02E-04	7.53E-04	3.02E-04	6.62E-04	2.13E-04	5.07E-04	4.61E-04
Chromium Chompounds	0.002	1.37E-08	1.41E-06	5.19E-08	1.47E-06	1.00E-06	7.65E-07	6.66E-09	0.00E+00	7.99E-09	5.99E-07	6.12E-09	4.88E-09
Ethyl benzene	10.593	4.48E-04	6.51E-05	5.01E-04	6.39E-05	5.51E-05	4.62E-05	2.84E-04	1.06E-04	2.50E-04	3.25E-05	1.91E-04	1.74E-04
Formaldehyde	3.417	2.64E-04	3.15E-03	5.31E-05	3.09E-03	2.66E-03	2.24E-03	1.67E-04	0.00E+00	1.47E-04	1.57E-03	1.13E-04	1.03E-04
Hexane	6.454	2.27E-04	3.34E-05	2.97E-04	3.28E-05	2.82E-05	2.37E-05	1.46E-04	3.21E-04	1.28E-04	1.67E-05	9.74E-05	8.79E-05
Manganese Compounds	0.004	2.75E-08	1.41E-06	1.04E-07	1.47E-06	1.00E-06	7.65E-07	1.33E-08	0.00E+00	1.60E-08	5.99E-07	1.22E-08	9.75E-09
Mercury Compounds	0.000	2.29E-09	4.03E-07	8.65E-09	4.20E-07	2.86E-07	2.19E-07	1.11E-09	0.00E+00	1.33E-09	1.71E-07	1.02E-09	8.13E-10
Nickel Compounds	0.002	1.60E-08	6.05E-07	6.06E-08	6.29E-07	4.29E-07	3.28E-07	7.77E-09	0.00E+00	9.32E-09	2.57E-07	7.14E-09	5.69E-09
Polycylic Organic Matter	0.007	3.41E-07	3.76E-08	3.47E-07	3.69E-08	3.18E-08	2.67E-08	2.16E-07	0.00E+00	1.90E-07	1.88E-08	1.45E-07	1.33E-07
Propionaldehyde	0.271	4.25E-05	2.07E-04	5.16E-06	2.03E-04	1.75E-04	1.47E-04	2.68E-05	0.00E+00	2.36E-05	1.03E-04	1.81E-05	1.65E-05
Styrene	0.572	1.71E-05	1.25E-05	2.72E-05	1.22E-05	1.06E-05	8.85E-06	1.08E-05	0.00E+00	9.52E-06	6.24E-06	7.29E-06	6.65E-06
Toluene	43.210	1.63E-03	3.15E-04	2.04E-03	3.09E-04	2.66E-04	2.24E-04	1.03E-03	5.66E-04	9.07E-04	1.57E-04	6.94E-04	6.32E-04
Xylenes (isomers and mixture)	46.809	1.53E-03	2.23E-04	2.24E-03	2.18E-04	1.88E-04	1.58E-04	9.72E-04	3.06E-04	8.54E-04	1.11E-04	6.54E-04	5.96E-04

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SCC		2260003030	2282005015	2265002045	2265001020	2270005015	2270006030	2265003060	2270002039	2270003050	2270002009	2265002027	2265004040
Equipment Name	Winter TOTAL (tons)	Sweepers/Scrubbers	Personal Water Craft	Cranes	Snowmobiles	Agricultural Tractors	Pressure Washers	AC\Refrigeration	Concrete/Industrial Saws	Other Material Handling Eqp	Plate Compactors	Signal Boards/Light Plants	Rear Engine Riding Mowers (res)
Tech Type		2-St	2-St	4-St	4-St	Dsl	Dsl	4-St	Dsl	Dsl	Dsl	4-St	4-St
Equipment Population		0.1	10.0	0.1	1.2	0.4	1.9	0.1	0.3	0.1	1.3	0.2	169.2
Activity (hrs/season)		26.0	-	17.2	17.7	50.8	138.0	25.8	65.8	22.9	205.9	17.5	-
Activity (hrs/season/unit)		232.43	-	138.75	15.00	132.66	72.50	272.52	193.92	189.64	161.82	106.32	-
Exhaust PM (tons)	36.66	2.54E-04	0.00E+00	4.58E-05	3.05E-05	2.18E-03	3.96E-03	3.37E-05	2.95E-03	2.15E-03	4.05E-03	1.74E-05	0.00E+00
TOTAL VOC (tons)	463.76	6.13E-03	5.94E-03	4.37E-03	4.37E-03	3.85E-03	3.85E-03	3.38E-03	3.07E-03	2.90E-03	2.81E-03	2.11E-03	1.91E-03
Total Exhaust VOC (tons)	452.60	6.13E-03	0.00E+00	4.33E-03	3.56E-03	3.85E-03	3.85E-03	3.37E-03	3.07E-03	2.90E-03	2.81E-03	2.10E-03	0.00E+00
Exh VOC	450.86	6.13E-03	0.00E+00	3.44E-03	2.75E-03	3.78E-03	3.77E-03	3.27E-03	3.01E-03	2.84E-03	2.75E-03	2.10E-03	0.00E+00
Crankcase VOC	1.74	0.00E+00	0.00E+00	8.84E-04	8.08E-04	7.56E-05	7.54E-05	9.52E-05	6.02E-05	5.69E-05	5.51E-05	8.09E-07	0.00E+00
Total Evap VOC (tons)	11.16	8.40E-07	5.94E-03	4.82E-05	8.10E-04	0.00E+00	0.00E+00	9.03E-06	0.00E+00	0.00E+00	0.00E+00	5.79E-06	1.91E-03
Chemical Name													
1,3-Butadiene	0.955	1.32E-05	0.00E+00	4.12E-06	3.39E-06	7.17E-06	7.16E-06	3.21E-06	5.71E-06	5.39E-06	5.23E-06	2.00E-06	0.00E+00
Acetaldehyde	1.844	1.02E-05	0.00E+00	1.77E-05	1.46E-05	2.86E-04	2.86E-04	1.38E-05	2.28E-04	2.15E-04	2.09E-04	8.61E-06	0.00E+00
Acrolein	0.305	1.84E-06	0.00E+00	3.03E-06	2.49E-06	4.43E-05	4.42E-05	2.36E-06	3.53E-05	3.33E-05	3.23E-05	1.47E-06	0.00E+00
Benzene (including benzene from gasoline)	11.897	1.55E-04	1.31E-04	2.28E-04	2.05E-04	7.82E-05	7.81E-05	1.77E-04	6.23E-05	5.89E-05	5.70E-05	1.10E-04	4.21E-05
Chromium Chompounds	0.002	1.52E-08	0.00E+00	2.75E-09	1.83E-09	1.53E-07	2.77E-07	2.02E-09	2.07E-07	1.50E-07	2.84E-07	1.04E-09	0.00E+00
Ethyl benzene	10.593	1.47E-04	4.57E-05	8.60E-05	7.67E-05	1.19E-05	1.19E-05	6.68E-05	9.52E-06	8.99E-06	8.71E-06	4.16E-05	1.47E-05
Formaldehyde	3.417	1.56E-05	0.00E+00	5.06E-05	4.16E-05	5.78E-04	5.77E-04	3.94E-05	4.61E-04	4.35E-04	4.21E-04	2.46E-05	0.00E+00
Hexane	6.454	8.71E-05	1.39E-04	4.40E-05	5.43E-05	6.13E-06	6.12E-06	3.36E-05	4.88E-06	4.61E-06	4.47E-06	2.10E-05	4.48E-05
Manganese Compounds	0.004	3.05E-08	0.00E+00	5.49E-09	3.66E-09	1.53E-07	2.77E-07	4.04E-09	2.07E-07	1.50E-07	2.84E-07	2.09E-09	0.00E+00
Mercury Compounds	0.000	2.54E-09	0.00E+00	4.58E-10	3.05E-10	4.37E-08	7.92E-08	3.37E-10	5.90E-08	4.29E-08	8.11E-08	1.74E-10	0.00E+00
Nickel Compounds	0.002	1.78E-08	0.00E+00	3.20E-09	2.13E-09	6.55E-08	1.19E-07	2.36E-09	8.85E-08	6.44E-08	1.22E-07	1.22E-09	0.00E+00
Polycylic Organic Matter	0.007	1.02E-07	0.00E+00	6.53E-08	5.37E-08	6.90E-09	6.89E-09	5.09E-08	5.50E-09	5.19E-09	5.03E-09	3.17E-08	0.00E+00
Propionaldehyde	0.271	1.51E-06	0.00E+00	8.13E-06	6.69E-06	3.80E-05	3.79E-05	6.33E-06	3.02E-05	2.86E-05	2.77E-05	3.95E-06	0.00E+00
Styrene	0.572	7.97E-06	0.00E+00	3.28E-06	2.70E-06	2.29E-06	2.29E-06	2.55E-06	1.82E-06	1.72E-06	1.67E-06	1.59E-06	0.00E+00
Toluene	43.210	6.00E-04	2.45E-04	3.13E-04	2.89E-04	5.78E-05	5.77E-05	2.42E-04	4.61E-05	4.35E-05	4.21E-05	1.51E-04	7.90E-05
Xylenes (isomers and mixture)	46.809	6.56E-04	1.32E-04	2.94E-04	2.59E-04	4.09E-05	4.08E-05	2.29E-04	3.25E-05	3.07E-05	2.98E-05	1.43E-04	4.26E-05

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SCC		2265003050	2265004015	2265004071	2260004025	2270002042	2260004020	2260004030	2270002078	2265004075	2270005020	2265004056	2265004046
Equipment Name	Winter TOTAL (tons)	Other Material Handling Eqp	Rotary Tillers < 6 HP (res)	Commercial Turf Equipment (com)	Trimmers/Edgers/Brush Cutter (res)	Cement & Mortar Mixers	Chain Saws < 6 HP (res)	Leafblowers/Vacuums (res)	Dumpers/Tenders	Other Lawn & Garden Eqp. (res)	Combines	Lawn & Garden Tractors (com)	Front Mowers (com)
Tech Type		4-St	4-St	4-St	2-St	Dsl	2-St	2-St	Dsl	4-St	Dsl	4-St	4-St
Equipment Population		0.1	279.2	21.4	1,337.0	0.7	524.0	678.4	0.1	57.0	0.1	7.3	3.7
Activity (hrs/season)		9.7	-	-	-	66.3	-	-	16.1	-	2.4	-	-
Activity (hrs/season/unit)		173.87	-	-	-	91.94	-	-	189.23	-	41.89	-	-
Exhaust PM (tons)	36.66	1.46E-05	0.00E+00	0.00E+00	0.00E+00	1.14E-03	0.00E+00	0.00E+00	3.85E-04	0.00E+00	2.68E-04	0.00E+00	0.00E+00
TOTAL VOC (tons)	463.76	1.63E-03	1.40E-03	1.06E-03	9.69E-04	7.97E-04	6.64E-04	5.43E-04	4.48E-04	3.24E-04	2.57E-04	2.25E-04	1.98E-04
Total Exhaust VOC (tons)	452.60	1.62E-03	0.00E+00	0.00E+00	0.00E+00	7.97E-04	0.00E+00	0.00E+00	4.48E-04	0.00E+00	2.57E-04	0.00E+00	0.00E+00
Exh VOC	450.86	1.50E-03	0.00E+00	0.00E+00	0.00E+00	7.81E-04	0.00E+00	0.00E+00	4.39E-04	0.00E+00	2.52E-04	0.00E+00	0.00E+00
Crankcase VOC	1.74	1.23E-04	0.00E+00	0.00E+00	0.00E+00	1.56E-05	0.00E+00	0.00E+00	8.78E-06	0.00E+00	5.05E-06	0.00E+00	0.00E+00
Total Evap VOC (tons)	11.16	5.38E-06	1.40E-03	1.06E-03	9.69E-04	0.00E+00	6.64E-04	5.43E-04	0.00E+00	3.24E-04	0.00E+00	2.25E-04	1.98E-04
Chemical Name													
1,3-Butadiene	0.955	1.54E-06	0.00E+00	0.00E+00	0.00E+00	1.48E-06	0.00E+00	0.00E+00	8.33E-07	0.00E+00	4.79E-07	0.00E+00	0.00E+00
Acetaldehyde	1.844	6.64E-06	0.00E+00	0.00E+00	0.00E+00	5.92E-05	0.00E+00	0.00E+00	3.33E-05	0.00E+00	1.91E-05	0.00E+00	0.00E+00
Acrolein	0.305	1.13E-06	0.00E+00	0.00E+00	0.00E+00	9.17E-06	0.00E+00	0.00E+00	5.15E-06	0.00E+00	2.96E-06	0.00E+00	0.00E+00
Benzene (including benzene from gasoline)	11.897	8.52E-05	3.07E-05	2.33E-05	2.13E-05	1.62E-05	1.46E-05	1.20E-05	9.09E-06	7.13E-06	5.23E-06	4.95E-06	4.36E-06
Chromium Chompounds	0.002	8.79E-10	0.00E+00	0.00E+00	0.00E+00	7.98E-08	0.00E+00	0.00E+00	2.69E-08	0.00E+00	1.87E-08	0.00E+00	0.00E+00
Ethyl benzene	10.593	3.21E-05	1.07E-05	8.17E-06	7.46E-06	2.47E-06	5.12E-06	4.18E-06	1.39E-06	2.49E-06	7.98E-07	1.73E-06	1.53E-06
Formaldehyde	3.417	1.90E-05	0.00E+00	0.00E+00	0.00E+00	1.20E-04	0.00E+00	0.00E+00	6.72E-05	0.00E+00	3.86E-05	0.00E+00	0.00E+00
Hexane	6.454	1.62E-05	3.27E-05	2.48E-05	2.27E-05	1.27E-06	1.55E-05	1.27E-05	7.12E-07	7.58E-06	4.09E-07	5.26E-06	4.64E-06
Manganese Compounds	0.004	1.76E-09	0.00E+00	0.00E+00	0.00E+00	7.98E-08	0.00E+00	0.00E+00	2.69E-08	0.00E+00	1.87E-08	0.00E+00	0.00E+00
Mercury Compounds	0.000	1.46E-10	0.00E+00	0.00E+00	0.00E+00	2.28E-08	0.00E+00	0.00E+00	7.70E-09	0.00E+00	5.36E-09	0.00E+00	0.00E+00
Nickel Compounds	0.002	1.03E-09	0.00E+00	0.00E+00	0.00E+00	3.42E-08	0.00E+00	0.00E+00	1.15E-08	0.00E+00	8.03E-09	0.00E+00	0.00E+00
Polycylic Organic Matter	0.007	2.45E-08	0.00E+00	0.00E+00	0.00E+00	1.43E-09	0.00E+00	0.00E+00	8.02E-10	0.00E+00	4.61E-10	0.00E+00	0.00E+00
Propionaldehyde	0.271	3.05E-06	0.00E+00	0.00E+00	0.00E+00	7.85E-06	0.00E+00	0.00E+00	4.41E-06	0.00E+00	2.54E-06	0.00E+00	0.00E+00
Styrene	0.572	1.23E-06	0.00E+00	0.00E+00	0.00E+00	4.73E-07	0.00E+00	0.00E+00	2.66E-07	0.00E+00	1.53E-07	0.00E+00	0.00E+00
Toluene	43.210	1.17E-04	5.76E-05	4.38E-05	4.00E-05	1.20E-05	2.74E-05	2.24E-05	6.72E-06	1.34E-05	3.86E-06	9.29E-06	8.19E-06
Xylenes (isomers and mixture)	46.809	1.10E-04	3.11E-05	2.37E-05	2.16E-05	8.45E-06	1.48E-05	1.21E-05	4.75E-06	7.22E-06	2.73E-06	5.02E-06	4.42E-06

Table C-4-6e
Juneau NONROAD Emissions - Winter 1999

SCC		2265005040	2265002006	2265004011	2265004066	2260004015	2270005060
Equipment Name	Winter TOTAL (tons)	Tillers > 6 HP	Tampers/Rammers	Lawn mowers (Com)	Chippers/Stump Grinders (com)	Rotary Tillers < 6 HP (res)	Irrigation Sets
Tech Type		4-St	4-St	4-St	4-St	2-St	Dsl
Equipment Population		0.1	0.0	35.1	0.6	44.9	0.0
Activity (hrs/season)		1.5	2.2	-	-	-	1.4
Activity (hrs/season/unit)		12.01	53.49	-	-	-	209.18
Exhaust PM (tons)	36.66	9.10E-07	1.42E-06	0.00E+00	0.00E+00	0.00E+00	8.01E-05
TOTAL VOC (tons)	463.76	1.89E-04	1.75E-04	1.52E-04	1.30E-04	1.22E-04	1.15E-04
Total Exhaust VOC (tons)	452.60	1.84E-04	1.73E-04	0.00E+00	0.00E+00	0.00E+00	1.15E-04
Exh VOC	450.86	1.44E-04	1.53E-04	0.00E+00	0.00E+00	0.00E+00	1.12E-04
Crankcase VOC	1.74	4.01E-05	2.05E-05	0.00E+00	0.00E+00	0.00E+00	2.25E-06
Total Evap VOC (tons)	11.16	4.81E-06	1.64E-06	1.52E-04	1.30E-04	1.22E-04	0.00E+00
Chemical Name							
1,3-Butadiene	0.955	1.75E-07	1.65E-07	0.00E+00	0.00E+00	0.00E+00	2.13E-07
Acetaldehyde	1.844	7.54E-07	7.10E-07	0.00E+00	0.00E+00	0.00E+00	8.52E-06
Acrolein	0.305	1.29E-07	1.21E-07	0.00E+00	0.00E+00	0.00E+00	1.32E-06
Benzene (including benzene from gasoline)	11.897	9.76E-06	9.13E-06	3.34E-06	2.86E-06	2.69E-06	2.33E-06
Chromium Chompounds	0.002	5.46E-11	8.54E-11	0.00E+00	0.00E+00	0.00E+00	5.61E-09
Ethyl benzene	10.593	3.68E-06	3.44E-06	1.17E-06	1.00E-06	9.43E-07	3.56E-07
Formaldehyde	3.417	2.15E-06	2.03E-06	0.00E+00	0.00E+00	0.00E+00	1.72E-05
Hexane	6.454	1.94E-06	1.76E-06	3.55E-06	3.04E-06	2.87E-06	1.82E-07
Manganese Compounds	0.004	1.09E-10	1.71E-10	0.00E+00	0.00E+00	0.00E+00	5.61E-09
Mercury Compounds	0.000	9.10E-12	1.42E-11	0.00E+00	0.00E+00	0.00E+00	1.60E-09
Nickel Compounds	0.002	6.37E-11	9.96E-11	0.00E+00	0.00E+00	0.00E+00	2.40E-09
Polycylic Organic Matter	0.007	2.78E-09	2.62E-09	0.00E+00	0.00E+00	0.00E+00	2.05E-10
Propionaldehyde	0.271	3.46E-07	3.26E-07	0.00E+00	0.00E+00	0.00E+00	1.13E-06
Styrene	0.572	1.39E-07	1.31E-07	0.00E+00	0.00E+00	0.00E+00	6.81E-08
Toluene	43.210	1.34E-05	1.25E-05	6.26E-06	5.37E-06	5.06E-06	1.72E-06
Xylenes (isomers and mixture)	46.809	1.26E-05	1.18E-05	3.38E-06	2.90E-06	2.73E-06	1.22E-06

Table C-4-6f
Juneau NONROAD Emissions - Summer 1999

SCC		2282005010	2282005015	2260007005	2282010005	2260001030	2282020005	2270007015	2265004010	2265004055	2270002066	2265006005	2260004025
Equipment Name	Summer TOTAL (tons)	Outboard	Personal Water Craft	Logging Equipment Chain Saws > 6 HP	Inboard/Stern drive	All Terrain Vehicles\Motor cycles	Inboard	Forest Eqp - Feller/Bunch/ Skidder	Lawn mowers (res)	Lawn & Garden Tractors (res)	Tractors/Loaders/Backhoes	Generator Sets	Trimmers/Edgers/Brush Cutter (res)
Tech Type		2-St	2-St	2-St	4-St	2-St	Dsl	Dsl	4-St	4-St	Dsl	4-St	2-St
Equipment Population		18,140.7	2,452.3	2,171.8	3,793.4	504.8	401.2	72.2	3,175.5	1,156.5	39.4	292.0	1,337.0
Activity (hrs/season)		536,505.9	161,097.2	329,033.5	153,454.3	11,819.0	68,192.6	46,066.0	57,216.6	37,507.4	29,798.4	16,792.6	8,672.7
Activity (hrs/season/unit)		29.57	65.69	151.50	40.45	23.41	169.97	638.00	18.02	32.43	755.53	57.50	6.49
Exhaust PM (tons)	105.7	4.44E+01	2.18E+01	1.62E+01	6.40E-01	2.97E-01	4.17E+00	4.29E+00	3.07E-02	3.13E-02	2.00E+00	1.92E-02	9.18E-02
TOTAL VOC (tons)	1,728.5	8.10E+02	4.96E+02	2.61E+02	7.57E+01	1.32E+01	8.12E+00	5.73E+00	4.62E+00	4.18E+00	2.88E+00	2.82E+00	2.64E+00
Total Exhaust VOC (tons)	1,640.0	7.65E+02	4.82E+02	2.61E+02	4.96E+01	1.25E+01	8.12E+00	5.73E+00	4.56E+00	4.03E+00	2.88E+00	2.73E+00	2.64E+00
Exh VOC	1,637.3	7.65E+02	4.82E+02	2.61E+02	4.96E+01	1.25E+01	8.12E+00	5.62E+00	4.38E+00	3.87E+00	2.83E+00	2.32E+00	2.64E+00
Crankcase VOC	2.7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.12E-01	1.80E-01	1.59E-01	5.65E-02	4.12E-01	0.00E+00
Total Evap VOC (tons)	88.5	4.50E+01	1.38E+01	4.10E-01	2.61E+01	6.71E-01	0.00E+00	0.00E+00	5.95E-02	1.54E-01	0.00E+00	8.87E-02	4.21E-03
Chemical Name													
1,3-Butadiene	3.427	1.65E+00	1.04E+00	5.60E-01	4.72E-02	2.69E-02	1.51E-02	1.07E-02	4.34E-03	3.83E-03	5.36E-03	2.60E-03	5.67E-03
Acetaldehyde	5.185	1.27E+00	8.00E-01	4.32E-01	2.03E-01	2.08E-02	6.03E-01	4.26E-01	1.87E-02	1.65E-02	2.14E-01	1.12E-02	4.38E-03
Acrolein	0.873	2.30E-01	1.45E-01	7.82E-02	3.47E-02	3.76E-03	9.34E-02	6.59E-02	3.19E-03	2.82E-03	3.31E-02	1.91E-03	7.91E-04
Benzene (including benzene from gasoline)	45.163	2.03E+01	1.24E+01	6.57E+00	3.18E+00	3.30E-01	1.65E-01	1.16E-01	2.41E-01	2.15E-01	5.85E-02	1.45E-01	6.65E-02
Chromium Chompounds	0.007	2.66E-03	1.31E-03	9.70E-04	3.84E-05	1.78E-05	2.92E-04	3.00E-04	1.84E-06	1.88E-06	1.40E-04	1.15E-06	5.51E-06
Ethyl benzene	39.071	1.87E+01	1.17E+01	6.26E+00	1.18E+00	3.06E-01	2.52E-02	1.78E-02	9.07E-02	8.09E-02	8.94E-03	5.47E-02	6.33E-02
Formaldehyde	9.479	1.94E+00	1.22E+00	6.62E-01	5.80E-01	3.18E-02	1.22E+00	8.59E-01	5.33E-02	4.71E-02	4.32E-01	3.19E-02	6.70E-03
Hexane	24.643	1.19E+01	7.17E+00	3.71E+00	1.10E+00	1.93E-01	1.29E-02	9.11E-03	4.66E-02	4.35E-02	4.58E-03	2.92E-02	3.75E-02
Manganese Compounds	0.012	5.32E-03	2.62E-03	1.94E-03	7.68E-05	3.57E-05	2.92E-04	3.00E-04	3.68E-06	3.75E-06	1.40E-04	2.31E-06	1.10E-05
Mercury Compounds	0.001	4.44E-04	2.18E-04	1.62E-04	6.40E-06	2.97E-06	8.34E-05	8.57E-05	3.07E-07	3.13E-07	4.01E-05	1.92E-07	9.18E-07
Nickel Compounds	0.007	3.11E-03	1.53E-03	1.13E-03	4.48E-05	2.08E-05	1.25E-04	1.29E-04	2.15E-06	2.19E-06	6.01E-05	1.35E-06	6.43E-06
Polycylic Organic Matter	0.027	1.27E-02	8.00E-03	4.32E-03	7.49E-04	2.08E-04	1.45E-05	1.03E-05	6.88E-05	6.08E-05	5.16E-06	4.12E-05	4.38E-05
Propionaldehyde	0.829	1.89E-01	1.19E-01	6.44E-02	9.32E-02	3.09E-03	8.00E-02	5.64E-02	8.57E-03	7.57E-03	2.84E-02	5.13E-03	6.51E-04
Styrene	2.069	9.95E-01	6.27E-01	3.39E-01	3.76E-02	1.63E-02	4.82E-03	3.40E-03	3.45E-03	3.05E-03	1.71E-03	2.07E-03	3.43E-03
Toluene	159.502	7.67E+01	4.77E+01	2.55E+01	4.64E+00	1.25E+00	1.22E-01	8.59E-02	3.30E-01	2.95E-01	4.32E-02	2.00E-01	2.58E-01
Xylenes (isomers and mixture)	171.495	8.29E+01	5.19E+01	2.79E+01	3.94E+00	1.35E+00	8.61E-02	6.07E-02	3.10E-01	2.76E-01	3.06E-02	1.87E-01	2.82E-01

Table C-4-6f
Juneau NONROAD Emissions - Summer 19

SCC		2260004020	2265001030	2270002072	2270002060	2270002036	2260002054	2260004030	2265004071	2265006030	2260004026	2260001020	2265007015
Equipment Name	Summer TOTAL (tons)	Chain Saws < 6 HP (res)	All Terrain Vehicles\Motorcycles	Skid Steer Loaders	Rubber Tire Loaders	Excavators	Concrete/Industrial Saws	Leafblowers/ Vacuums (res)	Commercial Turf Equipment (com)	Pressure Washers	Trimmers/Edgers/Brush Cutter (com)	Snowmobiles	Shredders > 6 HP
Tech Type		2-St	4-St	Dsl	Dsl	Dsl	2-St	2-St	4-St	4-St	2-St	2-St	4-St
Equipment Population		524.0	1,576.9	49.3	24.9	16.1	8.0	678.4	21.4	135.8	42.2	368.5	306.1
Activity (hrs/season)		5,953.6	36,919.9	26,856.4	12,632.1	11,714.4	3,215.0	4,889.3	10,541.1	7,805.9	4,164.8	-	7,741.8
Activity (hrs/season/unit)		11.36	23.41	544.51	506.57	726.90	401.02	7.21	491.53	57.50	98.74	-	25.29
Exhaust PM (tons)	105.7	1.08E-01	1.54E-02	1.45E+00	1.39E+00	1.07E+00	1.01E-01	5.96E-02	1.28E-02	1.06E-02	5.48E-02	0.00E+00	8.20E-03
TOTAL VOC (tons)	1,728.5	2.35E+00	2.25E+00	2.19E+00	2.06E+00	1.84E+00	1.69E+00	1.68E+00	1.34E+00	1.32E+00	1.29E+00	1.26E+00	1.22E+00
Total Exhaust VOC (tons)	1,640.0	2.35E+00	1.66E+00	2.19E+00	2.06E+00	1.84E+00	1.69E+00	1.68E+00	1.34E+00	1.29E+00	1.29E+00	0.00E+00	1.16E+00
Exh VOC	1,637.3	2.35E+00	1.32E+00	2.15E+00	2.02E+00	1.80E+00	1.69E+00	1.68E+00	1.30E+00	1.21E+00	1.29E+00	0.00E+00	9.39E-01
Crankcase VOC	2.7	0.00E+00	3.44E-01	4.29E-02	4.04E-02	3.60E-02	0.00E+00	0.00E+00	4.19E-02	7.96E-02	0.00E+00	0.00E+00	2.20E-01
Total Evap VOC (tons)	88.5	2.89E-03	5.85E-01	0.00E+00	0.00E+00	0.00E+00	8.25E-04	2.36E-03	4.61E-03	2.34E-02	1.64E-04	1.26E+00	6.04E-02
Chemical Name													
1,3-Butadiene	3.427	5.06E-03	1.58E-03	4.07E-03	3.83E-03	3.41E-03	3.64E-03	3.61E-03	1.27E-03	1.23E-03	2.77E-03	0.00E+00	1.10E-03
Acetaldehyde	5.185	3.90E-03	6.82E-03	1.63E-01	1.53E-01	1.36E-01	2.81E-03	2.79E-03	5.49E-03	5.30E-03	2.14E-03	0.00E+00	4.75E-03
Acrolein	0.873	7.06E-04	1.17E-03	2.52E-02	2.37E-02	2.11E-02	5.08E-04	5.04E-04	9.37E-04	9.05E-04	3.86E-04	0.00E+00	8.11E-04
Benzene (including benzene from gasoline)	45.163	5.93E-02	1.00E-01	4.44E-02	4.18E-02	3.73E-02	4.27E-02	4.24E-02	7.04E-02	6.84E-02	3.24E-02	2.78E-02	6.22E-02
Chromium Chompounds	0.007	6.47E-06	9.27E-07	1.02E-04	9.75E-05	7.50E-05	6.03E-06	3.58E-06	7.66E-07	6.35E-07	3.29E-06	0.00E+00	4.92E-07
Ethyl benzene	39.071	5.65E-02	3.75E-02	6.78E-03	6.38E-03	5.69E-03	4.06E-02	4.04E-02	2.66E-02	2.58E-02	3.09E-02	9.74E-03	2.34E-02
Formaldehyde	9.479	5.97E-03	1.95E-02	3.28E-01	3.09E-01	2.75E-01	4.30E-03	4.27E-03	1.57E-02	1.51E-02	3.27E-03	0.00E+00	1.36E-02
Hexane	24.643	3.35E-02	3.02E-02	3.48E-03	3.27E-03	2.92E-03	2.41E-02	2.39E-02	1.34E-02	1.34E-02	1.83E-02	2.96E-02	1.29E-02
Manganese Compounds	0.012	1.29E-05	1.85E-06	1.02E-04	9.75E-05	7.50E-05	1.21E-05	7.16E-06	1.53E-06	1.27E-06	6.58E-06	0.00E+00	9.84E-07
Mercury Compounds	0.001	1.08E-06	1.54E-07	2.91E-05	2.79E-05	2.14E-05	1.01E-06	5.96E-07	1.28E-07	1.06E-07	5.48E-07	0.00E+00	8.20E-08
Nickel Compounds	0.007	7.55E-06	1.08E-06	4.36E-05	4.18E-05	3.21E-05	7.04E-06	4.18E-06	8.94E-07	7.41E-07	3.84E-06	0.00E+00	5.74E-07
Polycylic Organic Matter	0.027	3.90E-05	2.51E-05	3.92E-06	3.69E-06	3.29E-06	2.81E-05	2.79E-05	2.02E-05	1.95E-05	2.14E-05	0.00E+00	1.75E-05
Propionaldehyde	0.829	5.81E-04	3.13E-03	2.16E-02	2.03E-02	1.81E-02	4.18E-04	4.15E-04	2.52E-03	2.43E-03	3.18E-04	0.00E+00	2.18E-03
Styrene	2.069	3.06E-03	1.26E-03	1.30E-03	1.22E-03	1.09E-03	2.20E-03	2.19E-03	1.02E-03	9.80E-04	1.67E-03	0.00E+00	8.78E-04
Toluene	159.502	2.30E-01	1.44E-01	3.28E-02	3.09E-02	2.75E-02	1.66E-01	1.65E-01	9.63E-02	9.38E-02	1.26E-01	5.22E-02	8.57E-02
Xylenes (isomers and mixture)	171.495	2.52E-01	1.26E-01	2.32E-02	2.18E-02	1.95E-02	1.81E-01	1.80E-01	9.09E-02	8.82E-02	1.38E-01	2.82E-02	7.99E-02

Table C-4-6f
Juneau NONROAD Emissions - Summer 19

SCC		2260004031	2265003020	2270002069	2270003060	2260006010	2265001060	2265006010	2270002057	2260001060	2260002006	2270002051
Equipment Name	Summer TOTAL (tons)	Leafblowers/Vacuums (com)	Forklifts	Crawler Tractor/Dozers	AC\Refrigeration	Pumps	Specialty Vehicle Carts	Pumps	Rough Terrain Forklift	Specialty Vehicle Carts	Tampers/Rammers	Off-highway Trucks
Tech Type		2-St	4-St	Dsl	Dsl	2-St	4-St	4-St	Dsl	2-St	2-St	Dsl
Equipment Population		16.4	13.5	24.3	69.7	30.3	64.0	50.8	13.4	162.9	18.3	2.2
Activity (hrs/season)		3,331.2	12,315.5	15,114.3	51,329.6	3,344.8	2,865.0	5,618.5	5,905.5	7,292.4	1,953.0	2,362.6
Activity (hrs/season/unit)		203.24	914.45	623.06	736.95	110.50	44.76	110.50	440.67	44.76	106.51	1,092.35
Exhaust PM (tons)	105.7	5.86E-02	2.50E-02	1.01E+00	1.08E+00	3.62E-02	5.59E-03	6.21E-03	4.93E-01	6.20E-03	3.97E-02	4.73E-01
TOTAL VOC (tons)	1,728.5	1.21E+00	1.17E+00	1.12E+00	9.41E-01	9.17E-01	7.98E-01	7.47E-01	6.89E-01	6.59E-01	6.52E-01	6.31E-01
Total Exhaust VOC (tons)	1,640.0	1.21E+00	1.16E+00	1.12E+00	9.41E-01	9.16E-01	7.63E-01	7.36E-01	6.89E-01	6.25E-01	6.51E-01	6.31E-01
Exh VOC	1,637.3	1.21E+00	8.77E-01	1.10E+00	9.22E-01	9.16E-01	6.02E-01	7.05E-01	6.75E-01	6.25E-01	6.51E-01	6.18E-01
Crankcase VOC	2.7	0.00E+00	2.87E-01	2.19E-02	1.84E-02	0.00E+00	1.61E-01	3.05E-02	1.35E-02	0.00E+00	0.00E+00	1.24E-02
Total Evap VOC (tons)	88.5	8.18E-05	2.48E-03	0.00E+00	0.00E+00	1.27E-03	3.46E-02	1.14E-02	0.00E+00	3.37E-02	1.76E-03	0.00E+00
Chemical Name												
1,3-Butadiene	3.427	2.61E-03	1.11E-03	2.08E-03	1.75E-03	1.97E-03	7.26E-04	7.01E-04	1.28E-03	1.34E-03	1.40E-03	1.17E-03
Acetaldehyde	5.185	2.02E-03	4.77E-03	8.31E-02	6.99E-02	1.52E-03	3.13E-03	3.02E-03	5.12E-02	1.04E-03	1.08E-03	4.69E-02
Acrolein	0.873	3.64E-04	8.15E-04	1.29E-02	1.08E-02	2.75E-04	5.34E-04	5.15E-04	7.92E-03	1.88E-04	1.95E-04	7.25E-03
Benzene (including benzene from gasoline)	45.163	3.06E-02	6.12E-02	2.27E-02	1.91E-02	2.31E-02	4.08E-02	3.89E-02	1.40E-02	1.65E-02	1.64E-02	1.28E-02
Chromium Chompounds	0.007	3.52E-06	1.50E-06	7.06E-05	7.56E-05	2.17E-06	3.35E-07	3.73E-07	3.45E-05	3.72E-07	2.38E-06	3.31E-05
Ethyl benzene	39.071	2.91E-02	2.31E-02	3.47E-03	2.92E-03	2.20E-02	1.54E-02	1.47E-02	2.14E-03	1.53E-02	1.56E-02	1.96E-03
Formaldehyde	9.479	3.08E-03	1.36E-02	1.68E-01	1.41E-01	2.33E-03	8.93E-03	8.61E-03	1.03E-01	1.59E-03	1.65E-03	9.46E-02
Hexane	24.643	1.72E-02	1.16E-02	1.78E-03	1.50E-03	1.30E-02	8.38E-03	7.57E-03	1.10E-03	9.66E-03	9.28E-03	1.00E-03
Manganese Compounds	0.012	7.03E-06	3.00E-06	7.06E-05	7.56E-05	4.35E-06	6.71E-07	7.45E-07	3.45E-05	7.44E-07	4.77E-06	3.31E-05
Mercury Compounds	0.001	5.86E-07	2.50E-07	2.02E-05	2.16E-05	3.62E-07	5.59E-08	6.21E-08	9.86E-06	6.20E-08	3.97E-07	9.45E-06
Nickel Compounds	0.007	4.10E-06	1.75E-06	3.03E-05	3.24E-05	2.54E-06	3.91E-07	4.35E-07	1.48E-05	4.34E-07	2.78E-06	1.42E-05
Polycylic Organic Matter	0.027	2.02E-05	1.76E-05	2.00E-06	1.68E-06	1.52E-05	1.15E-05	1.11E-05	1.23E-06	1.04E-05	1.08E-05	1.13E-06
Propionaldehyde	0.829	3.00E-04	2.19E-03	1.10E-02	9.26E-03	2.26E-04	1.43E-03	1.38E-03	6.79E-03	1.54E-04	1.61E-04	6.21E-03
Styrene	2.069	1.58E-03	8.82E-04	6.64E-04	5.59E-04	1.19E-03	5.78E-04	5.58E-04	4.09E-04	8.13E-04	8.46E-04	3.75E-04
Toluene	159.502	1.19E-01	8.37E-02	1.68E-02	1.41E-02	8.97E-02	5.62E-02	5.33E-02	1.03E-02	6.25E-02	6.37E-02	9.46E-03
Xylenes (isomers and mixture)	171.495	1.30E-01	7.90E-02	1.19E-02	9.97E-03	9.81E-02	5.25E-02	5.02E-02	7.30E-03	6.76E-02	6.96E-02	6.69E-03

Table C-4-6f
Juneau NONROAD Emissions - Summer 19

SCC		2265006025	2270002045	2265004011	2265004016	2270002075	2270002048	2270008005	2265004015	2270001060	2265004075	2265004056	2265006015
Equipment Name	Summer TOTAL (tons)	Welders	Cranes	Lawn mowers (Com)	Rotary Tillers < 6 HP (com)	Off-Highway Tractors	Graders	Airport Support Equipment	Rotary Tillers < 6 HP (res)	Specialty Vehicle Carts	Other Lawn & Garden Eqp. (res)	Lawn & Garden Tractors (com)	Air Compressors
Tech Type		4-St	Dsl	4-St	4-St	Dsl	Dsl	Dsl	4-St	Dsl	4-St	4-St	4-St
Equipment Population		15.5	11.3	35.1	11.1	3.6	10.1	8.7	279.2	5.7	57.0	7.3	11.0
Activity (hrs/season)		3,169.5	7,462.1	10,283.1	3,770.8	2,051.6	6,436.3	3,195.5	3,421.0	1,695.4	2,504.9	3,808.7	2,656.7
Activity (hrs/season/unit)		204.00	659.01	292.61	340.18	569.14	640.37	366.00	12.25	299.55	43.96	519.64	242.00
Exhaust PM (tons)	105.7	6.08E-03	4.40E-01	3.99E-03	5.98E-03	3.27E-01	3.72E-01	2.89E-01	1.19E-03	2.44E-01	4.62E-03	3.63E-03	3.32E-03
TOTAL VOC (tons)	1,728.5	5.73E-01	5.60E-01	5.18E-01	4.56E-01	4.49E-01	4.32E-01	4.12E-01	3.95E-01	3.77E-01	3.58E-01	3.58E-01	3.50E-01
Total Exhaust VOC (tons)	1,640.0	5.65E-01	5.60E-01	5.17E-01	4.56E-01	4.49E-01	4.32E-01	4.12E-01	3.89E-01	3.77E-01	3.56E-01	3.57E-01	3.45E-01
Exh VOC	1,637.3	5.29E-01	5.49E-01	5.16E-01	4.44E-01	4.40E-01	4.24E-01	4.04E-01	3.72E-01	3.69E-01	3.45E-01	3.53E-01	3.16E-01
Crankcase VOC	2.7	3.57E-02	1.10E-02	1.46E-03	1.12E-02	8.81E-03	8.48E-03	8.07E-03	1.74E-02	7.39E-03	1.17E-02	3.81E-03	2.91E-02
Total Evap VOC (tons)	88.5	8.08E-03	0.00E+00	6.59E-04	2.41E-04	0.00E+00	0.00E+00	0.00E+00	6.06E-03	0.00E+00	1.41E-03	9.77E-04	4.85E-03
Chemical Name													
1,3-Butadiene	3.427	5.38E-04	1.04E-03	4.93E-04	4.34E-04	8.35E-04	8.04E-04	7.66E-04	3.71E-04	7.01E-04	3.39E-04	3.40E-04	3.28E-04
Acetaldehyde	5.185	2.32E-03	4.16E-02	2.12E-03	1.87E-03	3.34E-02	3.21E-02	3.06E-02	1.60E-03	2.80E-02	1.46E-03	1.46E-03	1.41E-03
Acrolein	0.873	3.95E-04	6.44E-03	3.62E-04	3.19E-04	5.16E-03	4.97E-03	4.73E-03	2.73E-04	4.33E-03	2.50E-04	2.50E-04	2.41E-04
Benzene (including benzene from gasoline)	45.163	2.98E-02	1.14E-02	2.72E-02	2.39E-02	9.12E-03	8.78E-03	8.36E-03	2.06E-02	7.65E-03	1.87E-02	1.88E-02	1.82E-02
Chromium Chompounds	0.007	3.65E-07	3.08E-05	2.40E-07	3.59E-07	2.29E-05	2.61E-05	2.02E-05	7.15E-08	1.71E-05	2.77E-07	2.18E-07	1.99E-07
Ethyl benzene	39.071	1.12E-02	1.74E-03	1.02E-02	9.03E-03	1.39E-03	1.34E-03	1.28E-03	7.76E-03	1.17E-03	7.07E-03	7.07E-03	6.86E-03
Formaldehyde	9.479	6.61E-03	8.40E-02	6.05E-03	5.33E-03	6.74E-02	6.49E-02	6.18E-02	4.56E-03	5.65E-02	4.17E-03	4.17E-03	4.03E-03
Hexane	24.643	5.79E-03	8.91E-04	5.15E-03	4.53E-03	7.14E-04	6.87E-04	6.55E-04	4.00E-03	5.99E-04	3.57E-03	3.56E-03	3.53E-03
Manganese Compounds	0.012	7.29E-07	3.08E-05	4.79E-07	7.18E-07	2.29E-05	2.61E-05	2.02E-05	1.43E-07	1.71E-05	5.54E-07	4.36E-07	3.99E-07
Mercury Compounds	0.001	6.08E-08	8.81E-06	3.99E-08	5.98E-08	6.54E-06	7.45E-06	5.78E-06	1.19E-08	4.88E-06	4.62E-08	3.63E-08	3.32E-08
Nickel Compounds	0.007	4.26E-07	1.32E-05	2.80E-07	4.19E-07	9.82E-06	1.12E-05	8.67E-06	8.34E-08	7.32E-06	3.23E-07	2.54E-07	2.33E-07
Polycylic Organic Matter	0.027	8.53E-06	1.00E-06	7.81E-06	6.88E-06	8.04E-07	7.74E-07	7.37E-07	5.88E-06	6.74E-07	5.38E-06	5.39E-06	5.20E-06
Propionaldehyde	0.829	1.06E-03	5.52E-03	9.73E-04	8.57E-04	4.42E-03	4.26E-03	4.06E-03	7.32E-04	3.71E-03	6.70E-04	6.71E-04	6.48E-04
Styrene	2.069	4.28E-04	3.33E-04	3.92E-04	3.45E-04	2.67E-04	2.57E-04	2.45E-04	2.95E-04	2.24E-04	2.70E-04	2.70E-04	2.61E-04
Toluene	159.502	4.09E-02	8.40E-03	3.72E-02	3.27E-02	6.74E-03	6.49E-03	6.18E-03	2.82E-02	5.65E-03	2.57E-02	2.57E-02	2.49E-02
Xylenes (isomers and mixture)	171.495	3.85E-02	5.94E-03	3.51E-02	3.09E-02	4.76E-03	4.58E-03	4.36E-03	2.65E-02	3.99E-03	2.42E-02	2.42E-02	2.35E-02

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Juneau NONROAD Emissions - Summer 19

SCC		2270002015	2270002018	2265004040	2270006005	2265004031	2265002042	2270006025	2265002039	2270002030	2270004071	2270006015	2265002021
Equipment Name	Summer TOTAL (tons)	Rollers	Scrapers	Rear Engine Riding Mowers (res)	Generator Sets	Leafblowers/Vacuums (com)	Cement & Mortar Mixers	Welders	Concrete/Industrial Saws	Trenchers	Commercial Turf Equipment (com)	Air Compressors	Paving Equipment
Tech Type		Dsl	Dsl	4-St	Dsl	4-St	4-St	Dsl	4-St	Dsl	Dsl	Dsl	4-St
Equipment Population		13.2	3.7	169.2	28.0	8.0	28.7	13.3	4.6	9.4	9.6	9.9	12.5
Activity (hrs/season)		6,694.0	2,244.8	4,390.0	4,724.3	1,622.4	1,602.3	4,269.7	1,854.2	3,716.4	7,427.2	4,030.5	1,456.1
Activity (hrs/season/unit)		505.90	608.42	25.95	169.00	203.24	55.92	321.50	406.05	394.74	769.73	407.50	116.49
Exhaust PM (tons)	105.7	3.04E-01	2.46E-01	2.29E-03	2.17E-01	2.31E-03	2.11E-03	1.63E-01	2.48E-03	1.94E-01	1.73E-01	1.63E-01	1.55E-03
TOTAL VOC (tons)	1,728.5	3.02E-01	2.92E-01	2.91E-01	2.83E-01	2.40E-01	2.32E-01	2.28E-01	2.26E-01	2.23E-01	2.13E-01	2.00E-01	1.91E-01
Total Exhaust VOC (tons)	1,640.0	3.02E-01	2.92E-01	2.83E-01	2.83E-01	2.40E-01	2.27E-01	2.28E-01	2.25E-01	2.23E-01	2.13E-01	2.00E-01	1.89E-01
Exh VOC	1,637.3	2.96E-01	2.86E-01	2.72E-01	2.77E-01	2.25E-01	1.95E-01	2.23E-01	2.16E-01	2.18E-01	2.09E-01	1.96E-01	1.72E-01
Crankcase VOC	2.7	5.91E-03	5.73E-03	1.10E-02	5.54E-03	1.49E-02	3.19E-02	4.47E-03	8.50E-03	4.37E-03	4.17E-03	3.92E-03	1.65E-02
Total Evap VOC (tons)	88.5	0.00E+00	0.00E+00	8.31E-03	0.00E+00	2.90E-04	4.93E-03	0.00E+00	1.40E-03	0.00E+00	0.00E+00	0.00E+00	2.77E-03
Chemical Name													
1,3-Butadiene	3.427	5.61E-04	5.43E-04	2.69E-04	5.26E-04	2.29E-04	2.16E-04	4.24E-04	2.14E-04	4.14E-04	3.96E-04	3.72E-04	1.80E-04
Acetaldehyde	5.185	2.24E-02	2.17E-02	1.16E-03	2.10E-02	9.85E-04	9.32E-04	1.69E-02	9.21E-04	1.65E-02	1.58E-02	1.49E-02	7.73E-04
Acrolein	0.873	3.47E-03	3.36E-03	1.98E-04	3.25E-03	1.68E-04	1.59E-04	2.62E-03	1.57E-04	2.56E-03	2.45E-03	2.30E-03	1.32E-04
Benzene (including benzene from gasoline)	45.163	6.12E-03	5.93E-03	1.50E-02	5.74E-03	1.26E-02	1.20E-02	4.62E-03	1.18E-02	4.52E-03	4.32E-03	4.06E-03	9.96E-03
Chromium Chompounds	0.007	2.13E-05	1.72E-05	1.37E-07	1.52E-05	1.38E-07	1.26E-07	1.14E-05	1.49E-07	1.36E-05	1.21E-05	1.14E-05	9.29E-08
Ethyl benzene	39.071	9.35E-04	9.06E-04	5.66E-03	8.76E-04	4.76E-03	4.54E-03	7.06E-04	4.46E-03	6.90E-04	6.60E-04	6.20E-04	3.75E-03
Formaldehyde	9.479	4.52E-02	4.38E-02	3.31E-03	4.24E-02	2.81E-03	2.66E-03	3.42E-02	2.63E-03	3.34E-02	3.19E-02	3.00E-02	2.21E-03
Hexane	24.643	4.80E-04	4.64E-04	3.00E-03	4.49E-04	2.39E-03	2.37E-03	3.62E-04	2.26E-03	3.54E-04	3.38E-04	3.18E-04	1.94E-03
Manganese Compounds	0.012	2.13E-05	1.72E-05	2.75E-07	1.52E-05	2.77E-07	2.53E-07	1.14E-05	2.97E-07	1.36E-05	1.21E-05	1.14E-05	1.86E-07
Mercury Compounds	0.001	6.08E-06	4.92E-06	2.29E-08	4.34E-06	2.31E-08	2.11E-08	3.27E-06	2.48E-08	3.88E-06	3.47E-06	3.25E-06	1.55E-08
Nickel Compounds	0.007	9.12E-06	7.38E-06	1.60E-07	6.51E-06	1.62E-07	1.47E-07	4.90E-06	1.74E-07	5.82E-06	5.20E-06	4.88E-06	1.08E-07
Polycylic Organic Matter	0.027	5.40E-07	5.23E-07	4.27E-06	5.06E-07	3.63E-06	3.43E-06	4.08E-07	3.39E-06	3.98E-07	3.81E-07	3.58E-07	2.85E-06
Propionaldehyde	0.829	2.97E-03	2.88E-03	5.32E-04	2.78E-03	4.51E-04	4.27E-04	2.24E-03	4.22E-04	2.19E-03	2.10E-03	1.97E-03	3.54E-04
Styrene	2.069	1.79E-04	1.74E-04	2.14E-04	1.68E-04	1.82E-04	1.72E-04	1.35E-04	1.70E-04	1.32E-04	1.26E-04	1.19E-04	1.43E-04
Toluene	159.502	4.52E-03	4.38E-03	2.06E-02	4.24E-03	1.73E-02	1.65E-02	3.42E-03	1.62E-02	3.34E-03	3.19E-03	3.00E-03	1.37E-02
Xylenes (isomers and mixture)	171.495	3.20E-03	3.10E-03	1.94E-02	3.00E-03	1.63E-02	1.55E-02	2.41E-03	1.53E-02	2.36E-03	2.26E-03	2.12E-03	1.28E-02

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SCC		2270003020	2265008005	2260004016	2265002030	2260004015	2260006005	2265002009	2270002033	2270006010	2270002003	2265004035	2265004076
Equipment Name	Summer TOTAL (tons)	Forklifts	Airport Support Equipment	Rotary Tillers < 6 HP (com)	Trenchers	Rotary Tillers < 6 HP (res)	Generator Sets	Plate Compactors	Bore/Drill Rigs	Pumps	Pavers	Snowblowers (res)	Other Lawn & Garden Eqp. (com)
Tech Type		Dsl	4-St	2-St	4-St	2-St	2-St	4-St	Dsl	Dsl	Dsl	4-St	4-St
Equipment Population		3.7	2.4	1.8	3.9	44.9	8.8	11.9	2.8	12.7	3.8	857.6	16.2
Activity (hrs/season)		3,493.0	1,637.4	615.6	1,035.4	550.2	507.9	1,317.5	855.1	2,563.8	2,062.8	-	710.1
Activity (hrs/season/unit)		934.23	690.00	340.18	267.60	12.25	57.50	110.50	310.20	201.50	546.51	-	43.96
Exhaust PM (tons)	105.7	1.53E-01	2.68E-03	5.50E-03	1.47E-03	4.87E-03	5.53E-03	1.08E-03	1.01E-01	9.81E-02	9.99E-02	0.00E+00	1.31E-03
TOTAL VOC (tons)	1,728.5	1.80E-01	1.61E-01	1.56E-01	1.52E-01	1.45E-01	1.36E-01	1.34E-01	1.23E-01	1.20E-01	1.08E-01	1.05E-01	1.01E-01
Total Exhaust VOC (tons)	1,640.0	1.80E-01	1.59E-01	1.56E-01	1.50E-01	1.45E-01	1.36E-01	1.33E-01	1.23E-01	1.20E-01	1.08E-01	0.00E+00	1.01E-01
Exh VOC	1,637.3	1.76E-01	1.26E-01	1.56E-01	1.40E-01	1.45E-01	1.36E-01	1.27E-01	1.20E-01	1.18E-01	1.06E-01	0.00E+00	9.77E-02
Crankcase VOC	2.7	3.53E-03	3.36E-02	0.00E+00	1.05E-02	0.00E+00	0.00E+00	6.05E-03	2.40E-03	2.36E-03	2.12E-03	0.00E+00	3.32E-03
Total Evap VOC (tons)	88.5	0.00E+00	1.12E-03	2.14E-05	1.53E-03	5.32E-04	3.68E-04	1.54E-03	0.00E+00	0.00E+00	0.00E+00	1.05E-01	3.99E-04
Chemical Name													
1,3-Butadiene	3.427	3.34E-04	1.52E-04	3.36E-04	1.43E-04	3.11E-04	2.91E-04	1.26E-04	2.28E-04	2.24E-04	2.01E-04	0.00E+00	9.61E-05
Acetaldehyde	5.185	1.34E-02	6.54E-04	2.59E-04	6.17E-04	2.40E-04	2.25E-04	5.44E-04	9.11E-03	8.94E-03	8.02E-03	0.00E+00	4.14E-04
Acrolein	0.873	2.07E-03	1.12E-04	4.68E-05	1.05E-04	4.35E-05	4.07E-05	9.28E-05	1.41E-03	1.38E-03	1.24E-03	0.00E+00	7.07E-05
Benzene (including benzene from gasoline)	45.163	3.65E-03	8.40E-03	3.93E-03	7.93E-03	3.66E-03	3.42E-03	7.00E-03	2.49E-03	2.44E-03	2.19E-03	2.31E-03	5.31E-03
Chromium Chompounds	0.007	1.07E-05	1.61E-07	3.30E-07	8.85E-08	2.92E-07	3.32E-07	6.48E-08	7.08E-06	6.87E-06	6.99E-06	0.00E+00	7.85E-08
Ethyl benzene	39.071	5.57E-04	3.17E-03	3.75E-03	2.99E-03	3.48E-03	3.26E-03	2.64E-03	3.80E-04	3.73E-04	3.35E-04	8.10E-04	2.00E-03
Formaldehyde	9.479	2.70E-02	1.87E-03	3.97E-04	1.76E-03	3.68E-04	3.44E-04	1.55E-03	1.84E-02	1.80E-02	1.62E-02	0.00E+00	1.18E-03
Hexane	24.643	2.86E-04	1.61E-03	2.22E-03	1.53E-03	2.07E-03	1.93E-03	1.35E-03	1.95E-04	1.91E-04	1.72E-04	2.46E-03	1.01E-03
Manganese Compounds	0.012	1.07E-05	3.22E-07	6.60E-07	1.77E-07	5.84E-07	6.64E-07	1.30E-07	7.08E-06	6.87E-06	6.99E-06	0.00E+00	1.57E-07
Mercury Compounds	0.001	3.06E-06	2.68E-08	5.50E-08	1.47E-08	4.87E-08	5.53E-08	1.08E-08	2.02E-06	1.96E-06	2.00E-06	0.00E+00	1.31E-08
Nickel Compounds	0.007	4.59E-06	1.88E-07	3.85E-07	1.03E-07	3.41E-07	3.87E-07	7.56E-08	3.04E-06	2.94E-06	3.00E-06	0.00E+00	9.16E-08
Polycylic Organic Matter	0.027	3.22E-07	2.41E-06	2.59E-06	2.27E-06	2.40E-06	2.25E-06	2.00E-06	2.20E-07	2.15E-07	1.93E-07	0.00E+00	1.53E-06
Propionaldehyde	0.829	1.77E-03	3.00E-04	3.86E-05	2.83E-04	3.58E-05	3.35E-05	2.49E-04	1.21E-03	1.18E-03	1.06E-03	0.00E+00	1.90E-04
Styrene	2.069	1.07E-04	1.21E-04	2.03E-04	1.14E-04	1.88E-04	1.76E-04	1.01E-04	7.28E-05	7.14E-05	6.41E-05	0.00E+00	7.66E-05
Toluene	159.502	2.70E-03	1.15E-02	1.53E-02	1.09E-02	1.42E-02	1.33E-02	9.59E-03	1.84E-03	1.80E-03	1.62E-03	4.34E-03	7.27E-03
Xylenes (isomers and mixture)	171.495	1.91E-03	1.08E-02	1.67E-02	1.02E-02	1.55E-02	1.45E-02	9.03E-03	1.30E-03	1.27E-03	1.14E-03	2.35E-03	6.86E-03

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Juneau NONROAD Emissions - Summer 19

SCC		2270002021	2265003040	2265002033	2265002072	2270003030	2265003010	2265002066	2265002015	2270002054	2270002027	2265002024	2265004066
Equipment Name	Summer TOTAL (tons)	Paving Equipment	Other General Industrial Eqp	Bore/Drill Rigs	Skid Steer Loaders	Sweepers/Scrubbers	Aerial Lifts	Tractors/Loaders/Backhoes	Rollers	Crushing/Proc. Equipment	Signal Boards/Light Plants	Surfacing Equipment	Chippers/Stump Grinders (com)
Tech Type		Dsl	4-St	4-St	4-St	Dsl	4-St	4-St	4-St	Dsl	Dsl	4-St	4-St
Equipment Population		4.7	2.7	12.3	1.7	1.1	1.7	0.9	1.2	1.2	8.0	2.3	0.6
Activity (hrs/season)		1,966.6	1,053.3	875.8	341.4	768.2	331.5	547.6	510.6	754.9	2,839.4	734.6	222.8
Activity (hrs/season/unit)		414.04	391.83	71.23	206.36	670.45	198.39	579.13	413.38	635.71	356.13	324.84	351.71
Exhaust PM (tons)	105.7	9.93E-02	7.73E-04	7.56E-04	8.19E-04	5.18E-02	7.23E-04	7.72E-04	7.56E-04	4.94E-02	6.31E-02	5.87E-04	6.60E-04
TOTAL VOC (tons)	1,728.5	9.71E-02	9.40E-02	8.83E-02	8.47E-02	8.21E-02	7.19E-02	7.09E-02	6.97E-02	6.84E-02	6.72E-02	6.15E-02	6.12E-02
Total Exhaust VOC (tons)	1,640.0	9.71E-02	9.36E-02	8.67E-02	8.28E-02	8.21E-02	6.97E-02	7.05E-02	6.91E-02	6.84E-02	6.72E-02	6.11E-02	6.06E-02
Exh VOC	1,637.3	9.52E-02	9.35E-02	8.03E-02	6.67E-02	8.05E-02	5.49E-02	7.01E-02	6.35E-02	6.70E-02	6.59E-02	6.06E-02	5.32E-02
Crankcase VOC	2.7	1.90E-03	1.05E-04	6.35E-03	1.62E-02	1.61E-03	1.48E-02	4.15E-04	5.61E-03	1.34E-03	1.32E-03	4.70E-04	7.42E-03
Total Evap VOC (tons)	88.5	0.00E+00	3.98E-04	1.57E-03	1.91E-03	0.00E+00	2.21E-03	4.08E-04	6.06E-04	0.00E+00	0.00E+00	4.84E-04	5.65E-04
Chemical Name													
1,3-Butadiene	3.427	1.81E-04	8.91E-05	8.25E-05	7.89E-05	1.53E-04	6.63E-05	6.71E-05	6.58E-05	1.27E-04	1.25E-04	5.81E-05	5.77E-05
Acetaldehyde	5.185	7.21E-03	3.84E-04	3.55E-04	3.40E-04	6.10E-03	2.86E-04	2.89E-04	2.83E-04	5.08E-03	5.00E-03	2.50E-04	2.48E-04
Acrolein	0.873	1.12E-03	6.55E-05	6.07E-05	5.80E-05	9.44E-04	4.88E-05	4.93E-05	4.84E-05	7.86E-04	7.73E-04	4.27E-05	4.24E-05
Benzene (including benzene from gasoline)	45.163	1.97E-03	4.92E-03	4.59E-03	4.39E-03	1.67E-03	3.71E-03	3.71E-03	3.64E-03	1.39E-03	1.36E-03	3.22E-03	3.19E-03
Chromium Chompounds	0.007	6.95E-06	4.64E-08	4.53E-08	4.91E-08	3.62E-06	4.34E-08	4.63E-08	4.54E-08	3.46E-06	4.42E-06	3.52E-08	3.96E-08
Ethyl benzene	39.071	3.01E-04	1.86E-03	1.73E-03	1.65E-03	2.55E-04	1.40E-03	1.40E-03	1.37E-03	2.12E-04	2.08E-04	1.21E-03	1.20E-03
Formaldehyde	9.479	1.46E-02	1.09E-03	1.01E-03	9.69E-04	1.23E-02	8.15E-04	8.25E-04	8.09E-04	1.03E-02	1.01E-02	7.14E-04	7.09E-04
Hexane	24.643	1.54E-04	9.37E-04	8.97E-04	8.66E-04	1.31E-04	7.43E-04	7.09E-04	7.00E-04	1.09E-04	1.07E-04	6.17E-04	6.14E-04
Manganese Compounds	0.012	6.95E-06	9.27E-08	9.07E-08	9.83E-08	3.62E-06	8.68E-08	9.26E-08	9.08E-08	3.46E-06	4.42E-06	7.05E-08	7.92E-08
Mercury Compounds	0.001	1.99E-06	7.73E-09	7.56E-09	8.19E-09	1.04E-06	7.23E-09	7.72E-09	7.56E-09	9.88E-07	1.26E-06	5.87E-09	6.60E-09
Nickel Compounds	0.007	2.98E-06	5.41E-08	5.29E-08	5.73E-08	1.55E-06	5.06E-08	5.40E-08	5.29E-08	1.48E-06	1.89E-06	4.11E-08	4.62E-08
Polycylic Organic Matter	0.027	1.74E-07	1.41E-06	1.31E-06	1.25E-06	1.47E-07	1.05E-06	1.06E-06	1.04E-06	1.22E-07	1.20E-07	9.22E-07	9.15E-07
Propionaldehyde	0.829	9.56E-04	1.76E-04	1.63E-04	1.56E-04	8.09E-04	1.31E-04	1.32E-04	1.30E-04	6.74E-04	6.62E-04	1.15E-04	1.14E-04
Styrene	2.069	5.77E-05	7.09E-05	6.57E-05	6.28E-05	4.88E-05	5.28E-05	5.34E-05	5.24E-05	4.06E-05	3.99E-05	4.63E-05	4.59E-05
Toluene	159.502	1.46E-03	6.73E-03	6.29E-03	6.03E-03	1.23E-03	5.09E-03	5.08E-03	4.99E-03	1.03E-03	1.01E-03	4.40E-03	4.37E-03
Xylenes (isomers and mixture)	171.495	1.03E-03	6.35E-03	5.91E-03	5.66E-03	8.70E-04	4.77E-03	4.79E-03	4.70E-03	7.25E-04	7.13E-04	4.15E-03	4.12E-03

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Juneau NONROAD Emissions - Summer 19

SCC		2265002060	2265004051	2260002021	2265003030	2260004035	2270003070	2270003040	2265002003	2265004030	2285002015	2270002081	2270004066
Equipment Name	Summer TOTAL (tons)	Rubber Tire Loaders	Shredders < 6 HP (com)	Paving Equipment	Sweepers/Scrubbers	Snowblowers (res)	Terminal Tractors	Other General Industrial Eqp	Pavers	Leafblowers/Vacuums (res)	Railway Maintenance	Other Construction Equipment	Chippers/Stump Grinders (com)
Tech Type		4-St	4-St	2-St	4-St	2-St	Dsl	Dsl	4-St	4-St	Dsl	Dsl	Dsl
Equipment Population		0.3	6.8	1.6	0.8	802.8	1.0	2.5	1.1	35.3	1.0	1.6	1.2
Activity (hrs/season)		113.3	244.6	191.6	226.3	-	708.2	1,193.0	290.1	254.2	460.9	633.0	394.4
Activity (hrs/season/unit)		340.82	36.04	116.49	283.57	-	690.78	482.50	260.94	7.21	471.50	403.39	335.14
Exhaust PM (tons)	105.7	6.10E-04	7.50E-04	2.07E-03	5.25E-04	0.00E+00	4.28E-02	3.79E-02	4.52E-04	1.66E-04	2.80E-02	4.08E-02	3.22E-02
TOTAL VOC (tons)	1,728.5	5.68E-02	5.52E-02	4.99E-02	4.98E-02	4.90E-02	4.52E-02	4.44E-02	4.35E-02	4.33E-02	4.26E-02	4.26E-02	4.24E-02
Total Exhaust VOC (tons)	1,640.0	5.60E-02	5.51E-02	4.99E-02	4.91E-02	0.00E+00	4.52E-02	4.44E-02	4.30E-02	4.30E-02	4.26E-02	4.26E-02	4.24E-02
Exh VOC	1,637.3	4.25E-02	5.36E-02	4.99E-02	4.13E-02	0.00E+00	4.44E-02	4.35E-02	3.93E-02	4.15E-02	4.18E-02	4.17E-02	4.15E-02
Crankcase VOC	2.7	1.34E-02	1.46E-03	0.00E+00	7.83E-03	0.00E+00	8.87E-04	8.71E-04	3.74E-03	1.56E-03	8.35E-04	8.34E-04	8.31E-04
Total Evap VOC (tons)	88.5	8.00E-04	1.32E-04	7.65E-05	6.64E-04	4.90E-02	0.00E+00	0.00E+00	5.21E-04	2.78E-04	0.00E+00	0.00E+00	0.00E+00
Chemical Name													
1,3-Butadiene	3.427	5.33E-05	5.24E-05	1.07E-04	4.67E-05	0.00E+00	8.42E-05	8.26E-05	4.09E-05	4.10E-05	7.92E-05	7.92E-05	7.88E-05
Acetaldehyde	5.185	2.29E-04	2.26E-04	8.28E-05	2.01E-04	0.00E+00	3.36E-03	3.30E-03	1.76E-04	1.76E-04	3.16E-03	3.16E-03	3.15E-03
Acrolein	0.873	3.92E-05	3.85E-05	1.50E-05	3.44E-05	0.00E+00	5.20E-04	5.11E-04	3.01E-05	3.01E-05	4.90E-04	4.89E-04	4.87E-04
Benzene (including benzene from gasoline)	45.163	2.96E-03	2.89E-03	1.26E-03	2.59E-03	1.08E-03	9.19E-04	9.01E-04	2.27E-03	2.27E-03	8.65E-04	8.64E-04	8.60E-04
Chromium Chompounds	0.007	3.66E-08	4.50E-08	1.24E-07	3.15E-08	0.00E+00	3.00E-06	2.66E-06	2.71E-08	9.93E-09	1.96E-06	2.86E-06	2.25E-06
Ethyl benzene	39.071	1.11E-03	1.09E-03	1.20E-03	9.77E-04	3.78E-04	1.40E-04	1.38E-04	8.56E-04	8.54E-04	1.32E-04	1.32E-04	1.31E-04
Formaldehyde	9.479	6.55E-04	6.44E-04	1.27E-04	5.74E-04	0.00E+00	6.79E-03	6.66E-03	5.03E-04	5.04E-04	6.39E-03	6.38E-03	6.36E-03
Hexane	24.643	5.74E-04	5.49E-04	7.10E-04	5.03E-04	1.15E-03	7.19E-05	7.06E-05	4.39E-04	4.33E-04	6.77E-05	6.77E-05	6.74E-05
Manganese Compounds	0.012	7.32E-08	8.99E-08	2.48E-07	6.30E-08	0.00E+00	3.00E-06	2.66E-06	5.42E-08	1.99E-08	1.96E-06	2.86E-06	2.25E-06
Mercury Compounds	0.001	6.10E-09	7.50E-09	2.07E-08	5.25E-09	0.00E+00	8.56E-07	7.59E-07	4.52E-09	1.66E-09	5.60E-07	8.16E-07	6.44E-07
Nickel Compounds	0.007	4.27E-08	5.25E-08	1.45E-07	3.67E-08	0.00E+00	1.28E-06	1.14E-06	3.16E-08	1.16E-08	8.39E-07	1.22E-06	9.66E-07
Polycylic Organic Matter	0.027	8.45E-07	8.31E-07	8.28E-07	7.41E-07	0.00E+00	8.10E-08	7.95E-08	6.49E-07	6.50E-07	7.62E-08	7.62E-08	7.58E-08
Propionaldehyde	0.829	1.05E-04	1.04E-04	1.23E-05	9.23E-05	0.00E+00	4.46E-04	4.37E-04	8.09E-05	8.09E-05	4.20E-04	4.19E-04	4.17E-04
Styrene	2.069	4.24E-05	4.17E-05	6.48E-05	3.72E-05	0.00E+00	2.69E-05	2.64E-05	3.26E-05	3.26E-05	2.53E-05	2.53E-05	2.52E-05
Toluene	159.502	4.05E-03	3.96E-03	4.88E-03	3.55E-03	2.03E-03	6.79E-04	6.66E-04	3.11E-03	3.10E-03	6.39E-04	6.38E-04	6.36E-04
Xylenes (isomers and mixture)	171.495	3.81E-03	3.74E-03	5.34E-03	3.34E-03	1.09E-03	4.80E-04	4.71E-04	2.93E-03	2.92E-03	4.51E-04	4.51E-04	4.49E-04

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Juneau NONROAD Emissions - Summer 19

SCC		2268006020	2260002009	2270002024	2265004046	2270002063	2265002078	2265002081	2265004041	2265004025	2270004056	2265002057	2265002054
Equipment Name	Summer TOTAL (tons)	Gas Compressors	Plate Compactors	Surfacing Equipment	Front Mowers (com)	Rubber Tire Tractor/Dozers	Dumpers/Tenders	Other Construction Equipment	Rear Engine Riding Mowers (com)	Trimmers/Edgers/Brush Cutter (res)	Lawn & Garden Tractors (com)	Rough Terrain Forklift	Crushing/Proc. Equipment
Tech Type		4-St	2-St	Dsl	4-St	Dsl	4-St	4-St	4-St	4-St	Dsl	4-St	4-St
Equipment Population		0.0	1.7	0.7	3.7	0.5	3.4	0.2	1.0	21.9	2.1	0.2	0.8
Activity (hrs/season)		138.7	190.8	269.2	230.0	304.5	285.0	41.1	426.7	141.8	812.0	45.7	125.3
Activity (hrs/season/unit)		3,000.00	110.50	373.44	61.98	598.43	84.54	246.96	410.09	6.49	392.07	274.92	160.42
Exhaust PM (tons)	105.7	9.97E-04	1.72E-03	4.23E-02	3.14E-04	2.90E-02	2.27E-04	2.66E-04	2.50E-04	8.44E-05	1.77E-02	2.04E-04	1.58E-04
TOTAL VOC (tons)	1,728.5	4.16E-02	4.16E-02	4.15E-02	3.72E-02	3.62E-02	2.89E-02	2.50E-02	2.42E-02	2.19E-02	2.06E-02	1.91E-02	1.65E-02
Total Exhaust VOC (tons)	1,640.0	4.16E-02	4.15E-02	4.15E-02	3.70E-02	3.62E-02	2.81E-02	2.44E-02	2.42E-02	2.17E-02	2.06E-02	1.87E-02	1.63E-02
Exh VOC	1,637.3	3.13E-02	4.15E-02	4.07E-02	3.53E-02	3.55E-02	2.35E-02	1.85E-02	2.39E-02	2.09E-02	2.02E-02	1.42E-02	1.62E-02
Crankcase VOC	2.7	1.03E-02	0.00E+00	8.14E-04	1.69E-03	7.10E-04	4.65E-03	5.85E-03	2.52E-04	7.84E-04	4.05E-04	4.49E-03	1.25E-04
Total Evap VOC (tons)	88.5	0.00E+00	7.27E-05	0.00E+00	2.30E-04	0.00E+00	7.27E-04	5.68E-04	5.11E-05	1.66E-04	0.00E+00	3.75E-04	1.55E-04
Chemical Name													
1,3-Butadiene	3.427	3.96E-05	8.92E-05	7.73E-05	3.52E-05	6.73E-05	2.68E-05	2.32E-05	2.30E-05	2.07E-05	3.84E-05	1.78E-05	1.55E-05
Acetaldehyde	5.185	1.70E-04	6.89E-05	3.09E-03	1.52E-04	2.69E-03	1.15E-04	1.00E-04	9.91E-05	8.90E-05	1.53E-03	7.66E-05	6.70E-05
Acrolein	0.873	2.91E-05	1.24E-05	4.78E-04	2.59E-05	4.16E-04	1.97E-05	1.71E-05	1.69E-05	1.52E-05	2.37E-04	1.31E-05	1.14E-05
Benzene (including benzene from gasoline)	45.163	2.18E-03	1.05E-03	8.43E-04	1.95E-03	7.35E-04	1.49E-03	1.29E-03	1.27E-03	1.14E-03	4.19E-04	9.90E-04	8.61E-04
Chromium Chompounds	0.007	5.98E-08	1.03E-07	2.96E-06	1.88E-08	2.03E-06	1.36E-08	1.59E-08	1.50E-08	5.07E-09	1.24E-06	1.22E-08	9.49E-09
Ethyl benzene	39.071	8.23E-04	9.96E-04	1.29E-04	7.34E-04	1.12E-04	5.63E-04	4.87E-04	4.79E-04	4.31E-04	6.40E-05	3.73E-04	3.25E-04
Formaldehyde	9.479	4.87E-04	1.05E-04	6.23E-03	4.32E-04	5.43E-03	3.29E-04	2.85E-04	2.83E-04	2.54E-04	3.10E-03	2.19E-04	1.91E-04
Hexane	24.643	4.12E-04	5.91E-04	6.60E-05	3.72E-04	5.76E-05	2.96E-04	2.55E-04	2.41E-04	2.19E-04	3.28E-05	1.94E-04	1.66E-04
Manganese Compounds	0.012	1.20E-07	2.06E-07	2.96E-06	3.77E-08	2.03E-06	2.72E-08	3.19E-08	3.00E-08	1.01E-08	1.24E-06	2.44E-08	1.90E-08
Mercury Compounds	0.001	9.97E-09	1.72E-08	8.46E-07	3.14E-09	5.81E-07	2.27E-09	2.66E-09	2.50E-09	8.44E-10	3.55E-07	2.04E-09	1.58E-09
Nickel Compounds	0.007	6.98E-08	1.20E-07	1.27E-06	2.20E-08	8.71E-07	1.59E-08	1.86E-08	1.75E-08	5.91E-09	5.32E-07	1.43E-08	1.11E-08
Polycylic Organic Matter	0.027	6.28E-07	6.89E-07	7.43E-08	5.58E-07	6.48E-08	4.25E-07	3.68E-07	3.65E-07	3.28E-07	3.69E-08	2.82E-07	2.47E-07
Propionaldehyde	0.829	7.82E-05	1.02E-05	4.09E-04	6.95E-05	3.57E-04	5.29E-05	4.59E-05	4.54E-05	4.08E-05	2.03E-04	3.51E-05	3.07E-05
Styrene	2.069	3.15E-05	5.39E-05	2.47E-05	2.80E-05	2.15E-05	2.13E-05	1.85E-05	1.83E-05	1.65E-05	1.23E-05	1.42E-05	1.24E-05
Toluene	159.502	2.99E-03	4.06E-03	6.23E-04	2.66E-03	5.43E-04	2.05E-03	1.78E-03	1.74E-03	1.57E-03	3.10E-04	1.36E-03	1.18E-03
Xylenes (isomers and mixture)	171.495	2.82E-03	4.44E-03	4.40E-04	2.51E-03	3.84E-04	1.92E-03	1.67E-03	1.64E-03	1.48E-03	2.19E-04	1.28E-03	1.11E-03

Table C-4-6f
Juneau NONROAD Emissions - Summer 19

SCC		2270003010	2282020010	2265004036	2270005015	2285004015	2265001020
Equipment Name	Summer TOTAL (tons)	Aerial Lifts	Outboard	Snowblowers (com)	Agricultural Tractors	Railway Maintenance	Snowmobiles
Tech Type		Dsl	Dsl	4-St	Dsl	4-St	4-St
Equipment Population		1.1	5.4	99.6	0.4	1.4	3.0
Activity (hrs/season)		241.8	689.3	-	131.1	124.6	-
Activity (hrs/season/unit)		211.03	127.48	-	342.34	92.00	-
Exhaust PM (tons)	105.7	1.05E-02	1.26E-02	0.00E+00	5.71E-03	8.54E-05	0.00E+00
TOTAL VOC (tons)	1,728.5	1.29E-02	1.26E-02	1.22E-02	1.01E-02	1.00E-02	9.16E-03
Total Exhaust VOC (tons)	1,640.0	1.29E-02	1.26E-02	0.00E+00	1.01E-02	9.79E-03	0.00E+00
Exh VOC	1,637.3	1.27E-02	1.26E-02	0.00E+00	9.95E-03	9.03E-03	0.00E+00
Crankcase VOC	2.7	2.54E-04	0.00E+00	0.00E+00	1.99E-04	7.68E-04	0.00E+00
Total Evap VOC (tons)	88.5	0.00E+00	0.00E+00	1.22E-02	0.00E+00	2.01E-04	9.16E-03
Chemical Name							
1,3-Butadiene	3.427	2.41E-05	2.35E-05	0.00E+00	1.89E-05	9.32E-06	0.00E+00
Acetaldehyde	5.185	9.61E-04	9.39E-04	0.00E+00	7.54E-04	4.02E-05	0.00E+00
Acrolein	0.873	1.49E-04	1.45E-04	0.00E+00	1.17E-04	6.86E-06	0.00E+00
Benzene (including benzene from gasoline)	45.163	2.63E-04	2.56E-04	2.69E-04	2.06E-04	5.19E-04	2.02E-04
Chromium Chompounds	0.007	7.34E-07	8.83E-07	0.00E+00	4.00E-07	5.12E-09	0.00E+00
Ethyl benzene	39.071	4.01E-05	3.92E-05	9.41E-05	3.15E-05	1.95E-04	7.06E-05
Formaldehyde	9.479	1.94E-03	1.90E-03	0.00E+00	1.52E-03	1.15E-04	0.00E+00
Hexane	24.643	2.06E-05	2.01E-05	2.86E-04	1.61E-05	1.02E-04	2.14E-04
Manganese Compounds	0.012	7.34E-07	8.83E-07	0.00E+00	4.00E-07	1.02E-08	0.00E+00
Mercury Compounds	0.001	2.10E-07	2.52E-07	0.00E+00	1.14E-07	8.54E-10	0.00E+00
Nickel Compounds	0.007	3.15E-07	3.78E-07	0.00E+00	1.71E-07	5.98E-09	0.00E+00
Polycylic Organic Matter	0.027	2.31E-08	2.26E-08	0.00E+00	1.82E-08	1.48E-07	0.00E+00
Propionaldehyde	0.829	1.27E-04	1.24E-04	0.00E+00	1.00E-04	1.84E-05	0.00E+00
Styrene	2.069	7.68E-06	7.51E-06	0.00E+00	6.03E-06	7.42E-06	0.00E+00
Toluene	159.502	1.94E-04	1.90E-04	5.05E-04	1.52E-04	7.12E-04	3.78E-04
Xylenes (isomers and mixture)	171.495	1.37E-04	1.34E-04	2.72E-04	1.08E-04	6.69E-04	2.04E-04