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Development of the 1980 NAPAP Emissions Inventory

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DEVELOPMENT OF THE 1980 NAPAP EMISSIONS INVENTORY

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ABSTRACT

This report documents the development of the 1980 National Acid Precipitation Assessment Program (NAPAP) Emissions Inventory. The current version of the annual inventory, Version 5.0, and the related Version 5.2 Eulerian Modeling Inventory and Version 5.3 Regional Oxidant Modeling Inventory represent the most comprehensive, highest quality emissions data available for the 1980 base year. The inventory spans the 48 contiguous states and 10 Canadian provinces, providing detailed point source data for over 14,000 plants and area source information by source category for 3,070 U.S counties. Canadian area source data are reported at the province level. Emissions from 11 pollutants (SO_2, SO_4, NO_x, Pb, CO, HCl, HF, NH_3, TSP, VOC, and total hydrocarbons) are included in Version 5.0 of the inventory, while in the 5.2 modeling inventory, pollutants are disaggregated into 39 individual classes. NAPAP Version 5.0/5.2 emissions of SO_2, NO_x and VOC are 32.1, 24.4, and 26.2 million tons/year, respectively. Summaries of emissions data are presented at various levels of aggregation including nation, EPA region, state/province, and source category. Emissions data are also analyzed by plant size, stack height, and general source type, and emissions variations are examined on a seasonal and daily basis. The Version 5.0 NAPAP Emissions Inventory represents the last of a series of NAPAP inventory compilation efforts for base year 1980. This report provides a history of the inventory development, focusing on enhancements made from version to version. It also includes a number of topics specific to development of Version 5.0 and 5.2, including development of emission factors for newly-added pollutants; incorporation of updated utility data with information from the NAPAP Utility Reference File (NURF); development of temporal, spatial and species allocation factors; and creation of the Flexible Regional Emissions Data System, used to process the 5.0 inventory into the 5.2 and 5.3 modeling inventories.

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National coverage	Source type	Level of resolution	Hydrocarbon classes ?	Units	Page
U.S.	Area	SCC	No	Tons	A-4 - A-5
				Metric Tons	A-6 - A-7
		State	No	Tons	A-8
				Metric Tons	A-9
		Region	No	Tons	A-10
				Metric Tons	A-10
	Point	SCC	No	Tons	A-11 - A-17
				Metric Tons	A-18 - A-24
		State	No	Tons	A-25
				Metric Tons	A-26
		Region	No	Tons	A-27
				Metric Tons	A-27
	Area & Point	State	No	Tons	A-28
				Metric Tons	A-29
		Region	No	Tons	A-30
				Metric Tons	A-30
Canada	Area	SCC	No	Tons	A-31 - A-33
				Metric Tons	A-34 - A-36
		Province	No	Tons	A-37
				Metric Tons	A-37
	Point	SCC	No	Tons	A-38 - A-39
				Metric Tons	A-40 - A-41
		Province	No	Tons	A-42
				Metric Tons	A-42
	Area & Point	Province	No	Tons	A-43
				Metric Tons	A-43
U.S. & Canada	Area & Point	Totals	No	Tons	A-44
				Metric Tons	A-44
U.S.	Area & Point (Emissions density)	State	No	Tons/sq mi.	A-45 - A-46

KEY TO APPENDIX A TABLES, 1980 NAPAP EMISSIONS INVENTORY VERSION 5.2

National coverage	Source type	Level of resolution	Hydrocarbon classes ?	Units	Page
U.S.	Area	SCC	No	Tons	A-47 - A-48
				Metric Tons	A-49 - A-50
			Yes	Moles	A-51 - A-54
		State	No	Tons	A-55
				Metric Tons	A-56
			Yes	Moles	A-57 - A-58
		Region	No	Tons	A-59
				Metric Tons	A-59
			Yes	Moles	A-60
	Point	SCC	No	Tons	A-61 - A-67
				Metric Tons	A-68 - A-74
			Yes	Moles	A-75 - A-88
		State	No	Tons	A-89
				Metric Tons	A-90
			Yes	Moles	A-91 - A-92
		Region	No	Tons	A-93
				Metric Tons	A-93
			Yes	Moles	A-94
	Area & Point	State	No	Tons	A-95
				Metric Tons	A-96
			Yes	Moles	A-97 - A-98
		Region	No	Tons	A-99
				Metric Tons	A-99
			Yes	Moles	A-100
Canada	Area	SCC	No	Tons	A-101 - A-103
				Metric Tons	A-104 - A-106
			Yes	Moles	A-107 - A-112
		Province	No	Tons	A-113
				Metric Tons	A-113
			Yes	Moles	A-114
	Point	SCC	No	Tons	A-115 - A-116
				Metric Tons	A-117 - A-118
			Yes	Moles	A-119 - A-122
		Province	No	Tons	A-123
				Metric Tons	A-123
			Yes	Moles	A-124
	Area & Point	Province	No	Tons	A-125
				Metric Tons	A-125
			Yes	Moles	A-126
U.S. & Canada	Area & Point	Totals	No	Tons	A-127
				Metric Tons	A-127
			Yes	Moles	A-128

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The project has been a cooperative effort involving personnel from both the EPA Office of Research and Development (ORD) and the EPA Office of Air Quality Planning and Standards (OAQPS). In particular, Lowell Smith, Mike Maxwell and Dale Pahl made significant contributions from ORD, while John Bosch and Chuck Mann were the primary contributors from OAQPS. In addition, several contractors contributed to the compilation of the 1980 NAPAP Emissions Inventory. Douglas Toothman and the staff of Engineering-Science were responsible for the creation of the 1980 NAPAP Annual Emissions Inventory described in Section 3. Emission factors discussed in Section 4 were developed by James Homolya of Radian and by David Misenheimer of Alliance. Edward Pechan of E. H. Pechan & Associates developed the NAPAP Utility Reference File (NURF) used to generate emissions estimates for utilities in the NAPAP 5.0 inventory (as described in Section 5). Canadian emissions and allocation factors were provided by Frank Vena of Environment Canada. In addition, Joan Novak of EPA's Atmospheric Sciences Research Laboratory provided valuable support and guidance.

EXECUTIVE SUMMARY

The 1980 NAPAP Emissions Inventory has been developed by the Task Group on Emissions and Controls of the National Acid Precipitation Assessment Program (NAPAP). This report summarizes the data in the emissions inventory and documents the history of its development and enhancements to previous versions.

SCOPE OF THE 1980 NAPAP EMISSIONS INVENTORY

The 1980 NAPAP Emissions Inventory represents the best available point and area source emissions data for the United States and Canada for the base year 1980. The NAPAP study area extends from 25 to 60 degrees north latitude and 50 to 125 degrees west longitude.

Annual Emissions Inventory

Within the NAPAP study area, the inventory contains annual point source emissions data for 14,244 plants encompassing 36,807 emission points and 52,904 source classification code (SCC) or process level records. Area source emissions are reported for 88 emissions categories for the 3,070 counties in the 48 contiguous United States and the District of Columbia, and for 157 categories for 10 Canadian provinces. Emissions for 11 pollutants are reported in the annual emissions inventory: SO_2, SO_4, NO_x, Pb, CO, HCl, HF, NH_3, TSP, VOC, and THC. Volatile Organic Compounds (VOC) are defined as reactive hydrocarbon species, whereas the Total Hydrocarbon (THC) category includes both reactive and nonreactive species. This annual emissions inventory is termed "Version 5.0."

Eulerian Modeling Emissions Inventory

NAPAP requires an emissions inventory that is suitable as input to the Regional Acid Deposition Model (RADM). The RADM dictates that annual emissions be further resolved temporally, spatially, and by pollutant species.

Temporal resolution is accomplished by applying factors which allocate annual emissions to 24 hourly emissions totals for a "typical" weekday, Saturday, and Sunday in each season, giving a total of 12 temporal scenarios, each suitable as RADM input. The point source and county-level area source emissions are spatially allocated to 63,000 20 x 20 kilometer grid cells, each representing 1/6 degree latitude by 1/4 degree longitude.

Three pollutants from the annual inventory (NO_x, TSP, and total hydrocarbons) are further resolved into constituent species or classes of species. Although the data handling system was designed to accommodate the 29 hydrocarbon classes used in the RADM, lack of speciation profiles resulted in estimated emissions of zero for some classes. In addition, NO_x emissions were not maintained in the resolved inventory following speciation into NO and NO_2. As a result, the Eulerian Modeling Emissions Inventory (Version 5.2) contains a total of 39 pollutants as follows:

SO_2	Sodium	Other Alkanes
SO_4	VOC	Other Alkenes
NO	THC	Other Organic Acids
NO_2	Methane	Formaldehyde
Pb	Ethane	Acetaldehyde
CO	Ethylene	Acetone
HCl	Propane	Other Ketones
HF	Propylene	Other Aldehydes
NH_3	N-butane	Xylene
TSP	Isobutane	Benzene
Calcium	Isobutene	Toluene
Magnesium	Pentane	Ethylbenzene
Potassium	Isopentane	Other Aromatics

EMISSIONS SUMMARY

Annual Emissions Inventory

Table 1 details the annual U.S. and Canadian emissions of the 11 pollutants in Version 5.0 of the 1980 NAPAP Emissions Inventory. The distribution of SO_2 emissions among major source categories and by source type (point and area) is shown in Figure 1. Clearly, point sources (mainly utilities and smelters) are the major SO_2 emitters. State and county SO_2 emission density maps are shown in Figures 2 and 3; the concentration of SO_2 emissions east of the Mississippi River is apparent. This report contains similar maps for additional pollutants; SO_2 is used here as an example.

Eulerian Modeling Emissions Inventory

The annual emissions of the 39 species represented in Version 5.2 of the 1980 NAPAP Emissions Inventory are summarized in Table 2. These totals reflect the application of species allocation factors to NO_x, TSP, and THC emissions.

Emissions totals for some pollutants in Version 5.2 are slightly lower than in Version 5.0, because a small number of sources could not be properly allocated. As an example, 40 Canadian point source observations fell outside

TABLE 1. 1980 NAPAP EMISSIONS INVENTORY VERSION 5.0 - AREA AND POINT SOURCES

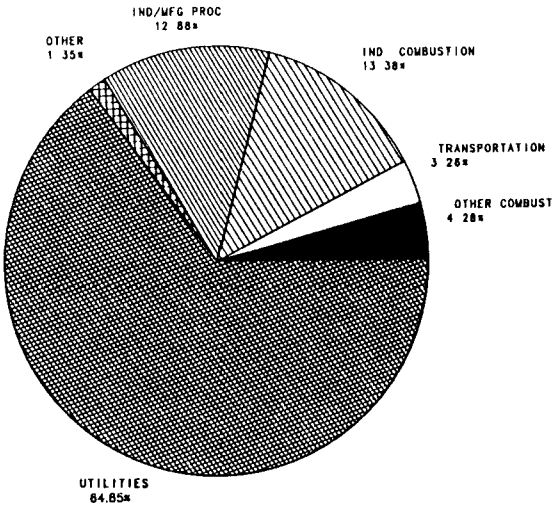
Country	SO2	SO4	NOX	PB	CO	HCL	HF	NH3	TSP	VOC	THC
	THOUSAND TONS/YEAR										
Canada	5,109	188	2,054	NR	18,036	NR	NR	210	31,574	2,994	5,138
Contig. U.S.	26,954	976	22,352	32	99,309	527	115	839	42,617	23,165	24,977
Total	32,063	1,164	24,406	32	117,345	527	115	1,048	74,192	26,158	30,115

NR => Not Reported

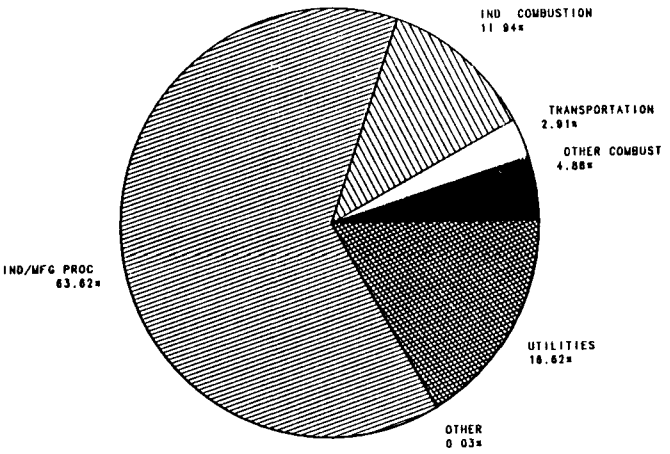
Note: Numbers may not sum due to rounding.

Annual SO_2 emissions by source category

U.S.



CANADA



Annual SO_2 emissions by source type

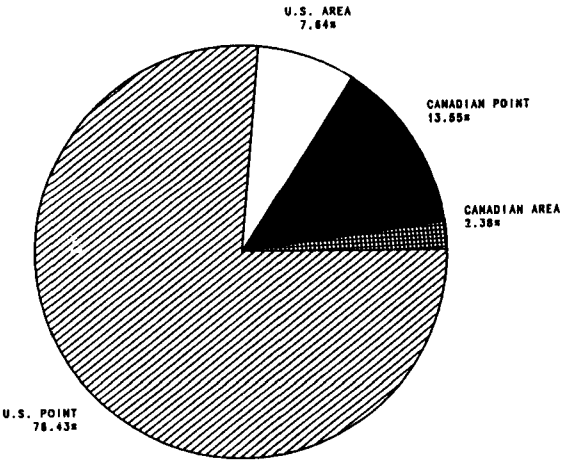


Figure 1. 1980 NAPAP Emissions Inventory Version 5.0 - SO_2 emissions by source category and source type.

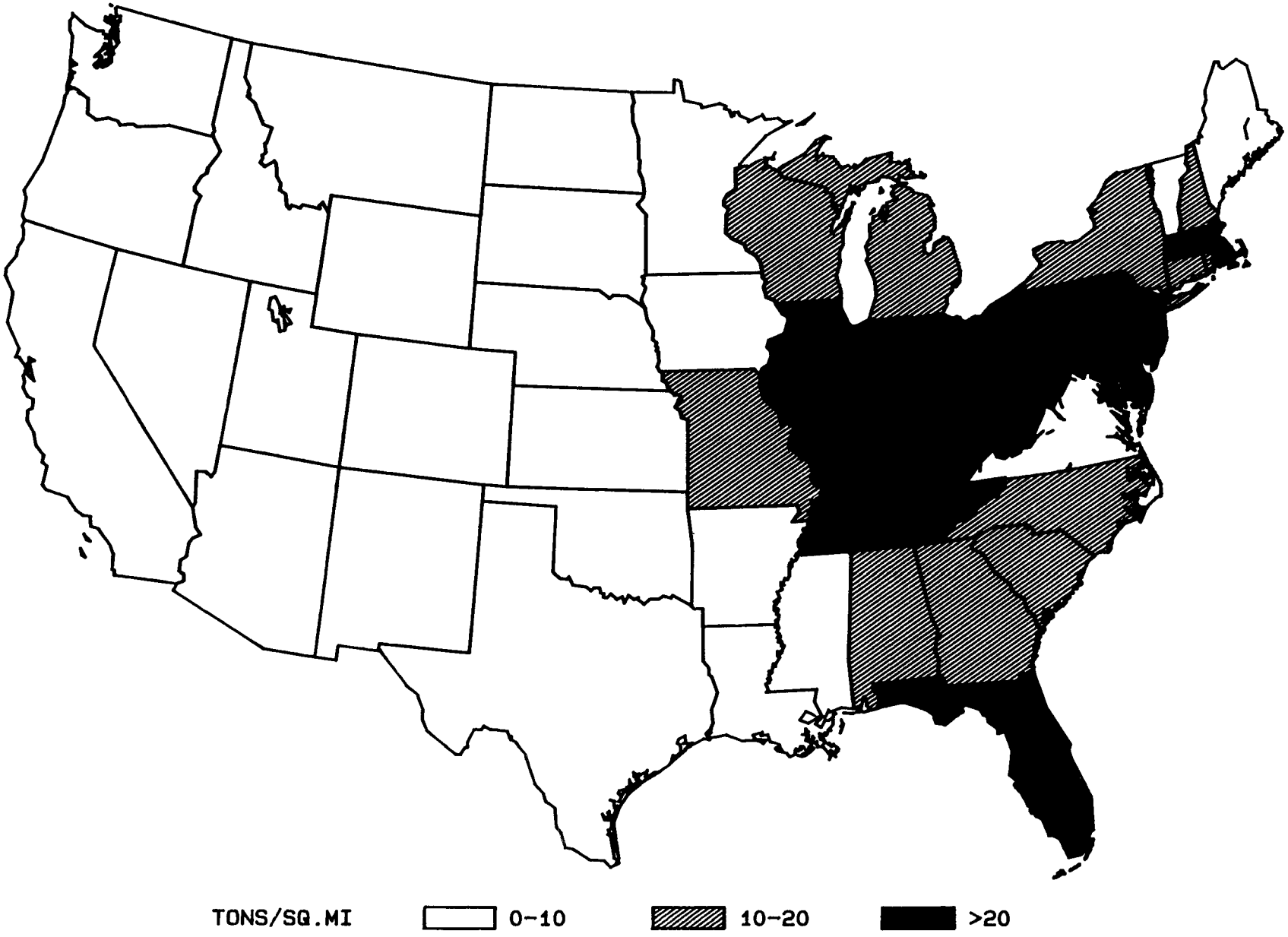


Figure 2. 1980 NAPAP Emissions Inventory Version 5.0 - SO_2 state emissions density.

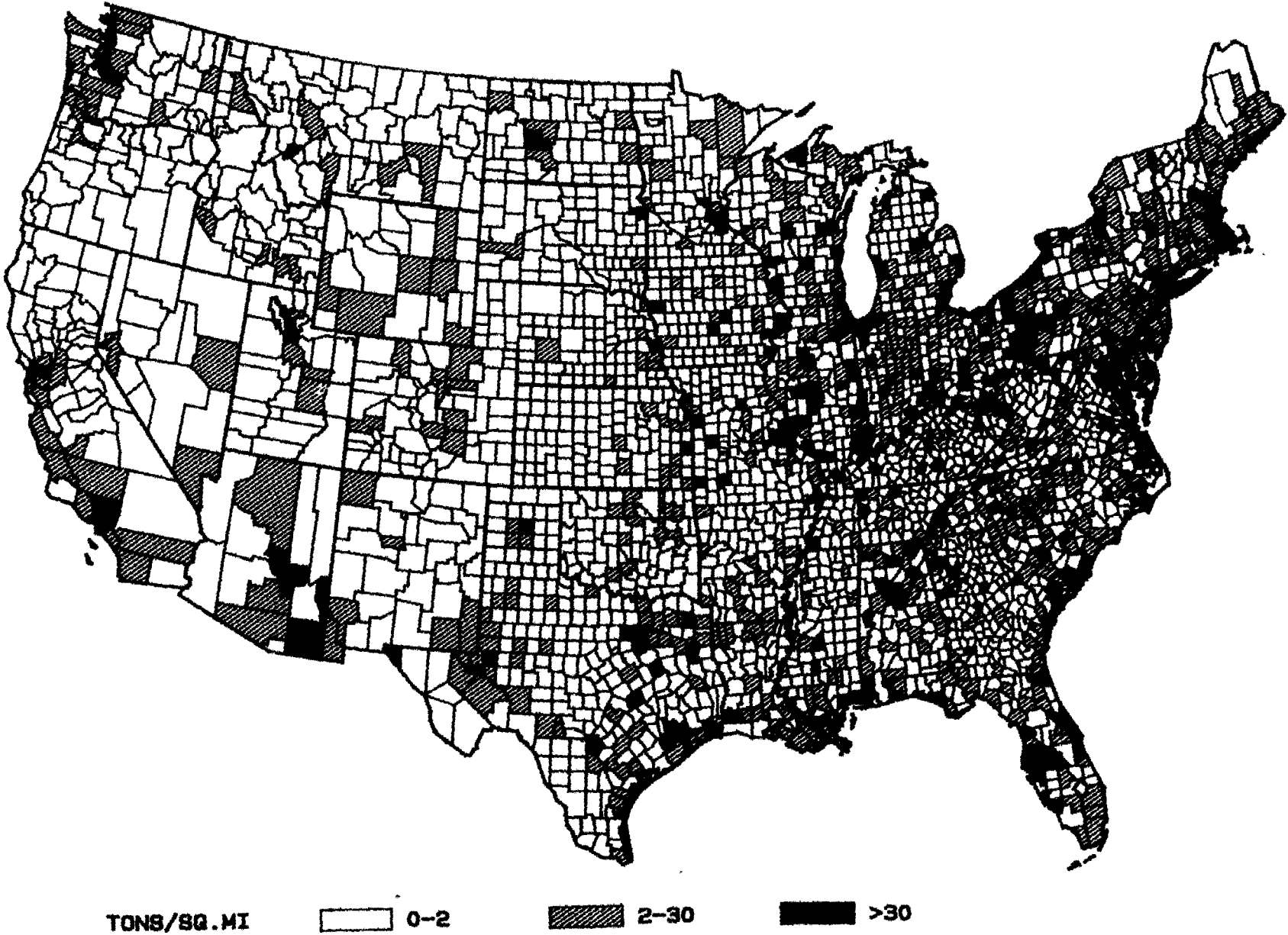


Figure 3. 1980 NAPAP Emissions Inventory Version 5.0 - SO_2 county emissions density.

TABLE 2. 1980 NAPAP EMISSIONS INVENTORY VERSION 5.2 - AREA AND POINT SOURCES

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL CANADIAN & U.S. EMISSIONS, AREA & POINT SOURCES

Country	SO2	SO4	NO	NO2	PB	CO	HCL	HF	NH3	TSP	CA	MG	NA	K	VOC	TNC
	THOUSAND TONS/YEAR															
Canada	5,095	167	1,879	171	NR	17,986	NR	NR	210	31,509	17	5	3	3	2,992	5,135
Contig. U.S.	26,954	976	20,877	1,475	32	99,309	527	115	839	42,617	114	32	13	15	23,165	24,977
Total	32,049	1,143	22,756	1,646	32	117,295	527	115	1,049	74,126	130	37	16	18	26,156	30,113

NR => Not Reported

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL CANADIAN & U.S. EMISSIONS OF HYDROCARBON SPECIES, AREA & POINT SOURCES

Country	METHANE	ETHANE	PROPANE	BUTANE	ISO-BUTANE	PENTANE	ISO-PENT	ALKANES	ETHYLENE	PROPYLENE	ISO-BUTENE
	THOUSAND MOLES/YEAR										
Canada	120,389,361	759,253	1,096,057	2,339,149	643,943	814,803	27,796	15,103,733	9,434,992	2,001,986	14,897
Contig. U.S.	91,994,146	6,698,261	4,079,718	15,972,045	3,301,153	3,294,293	340,374	134,447,565	41,611,730	15,457,664	103,241
Total	212,383,507	7,457,514	5,175,775	18,311,194	3,945,097	4,109,096	368,171	149,551,298	51,046,722	17,459,650	118,138

Country	ALKENES	BENZENE	TOLUENE	XYLENE	ETH BENZ	AROMATIC	FORMALDEH	ACETALDEH	ALDEHYDES	ACETONE	KETONES	ORG. ACID
	THOUSAND MOLES/YEAR											
Canada	6,317,955	547,649	1,172,180	1,129,434	238,103	398,445	2,626,378	330,143	105,814	424,770	309,714	33,100
Contig. U.S.	28,722,513	5,492,770	16,492,428	13,762,475	2,870,820	4,011,537	19,199,592	2,247,947	816,293	7,253,977	4,376,829	1,594,637
Total	35,040,468	6,040,419	17,664,608	14,891,909	3,108,923	4,409,982	21,825,970	2,578,090	922,107	7,678,747	4,686,543	1,627,737

For conversion of hydrcarbon classes to tons/year, see discussion in Appendix E.
Note: Numbers may not sum due to rounding.

the northern and western boundaries of the NAPAP domain (60° north latitude and 125° west longitude, respectively) and were therefore not retained in Version 5.2 of the inventory.

The temporal variability of SO_2 emissions is graphically shown in Figure 4. Since hour 12 Greenwich Mean Time corresponds to 8 a.m. Eastern Daylight Time, it is clear that national SO_2 emissions are greatest during the daytime.

Data in the Version 5.2 inventory are spatially resolved into grids measuring 1/6 degree latitude by 1/4 degree longitude (approximately 20 x 20 km). Figure 5 is a surface plot showing the spatial distribution of point and area source annual SO_2 emissions. Point and area source SO_2 emissions for a typical summer weekday (1 of 12 temporal scenarios) are shown in Figure 6; here an 80 x 80 km grid is used for clarity of presentation. Additional surface plots and grid maps are provided in Section 2.

INVENTORY ENHANCEMENTS

Several related NAPAP work assignments resulted in work products which have been applied in the development of the current version of the 1980 NAPAP Emissions Inventory. Emission factors were developed for HCl, HF, NH_3, and SO_4, and applied to generate emissions estimates in the current inventory. A significant improvement to the previous inventory was the integration of the NAPAP Utility Reference File into the inventory, replacing previous National Emissions Data System (NEDS) data with quality assured emissions estimates for the utility sector.

In order to create the Eulerian Modeling Emissions Inventory (Version 5.2) used in the testing of the RADM, temporal, spatial, and species allocation factors were developed. The basis for these factors was the Northeast Corridor Regional Modeling Project (NECRMP); these factors were quality assured and revised as necessary. Allocation factors were developed for those states not considered in the NECRMP study. The allocation factors and the 1980 NAPAP Annual Emissions Inventory (Version 5.0) were used as inputs to the Flexible Regional Emissions Data System (FREDS), an emissions inventory data processing system developed for NAPAP. Written in the command language of the Statistical Analysis System (SAS), FREDS was designed to allow the vast amount of data in the NAPAP inventory to be processed efficiently.

EPA's Atmospheric Sciences Research Lab (ASRL) requested that an emissions inventory be developed to enable testing of the Regional Oxidant Model (ROM), which requires hydrocarbon species consistent with Carbon Bond IV mechanisms as input. The flexibility of FREDS was utilized and a Version 5.3 inventory was developed.

An uncertainty methodology was developed by Brookhaven National Laboratory and applied to the 1980 NAPAP Emissions Inventory; this effort and its results are documented in a separate EPA report.

A complete listing of the products of this effort in printed and magnetic form is presented in Table 3.

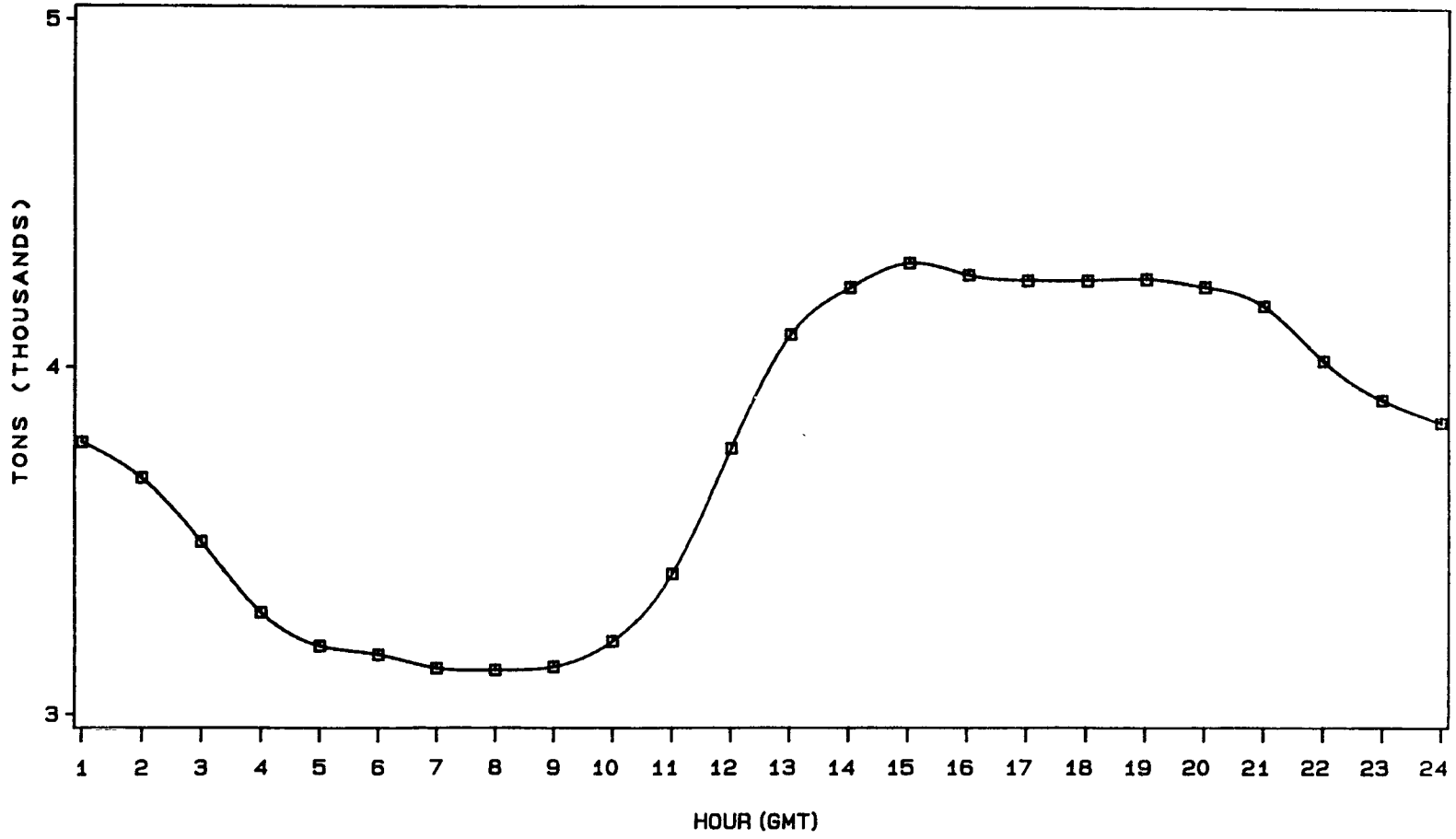


Figure 4. 1980 NAPAP Emissions Inventory Verison 5.2 - hourly emissions pattern for SO_2 for a typical summer weekday.

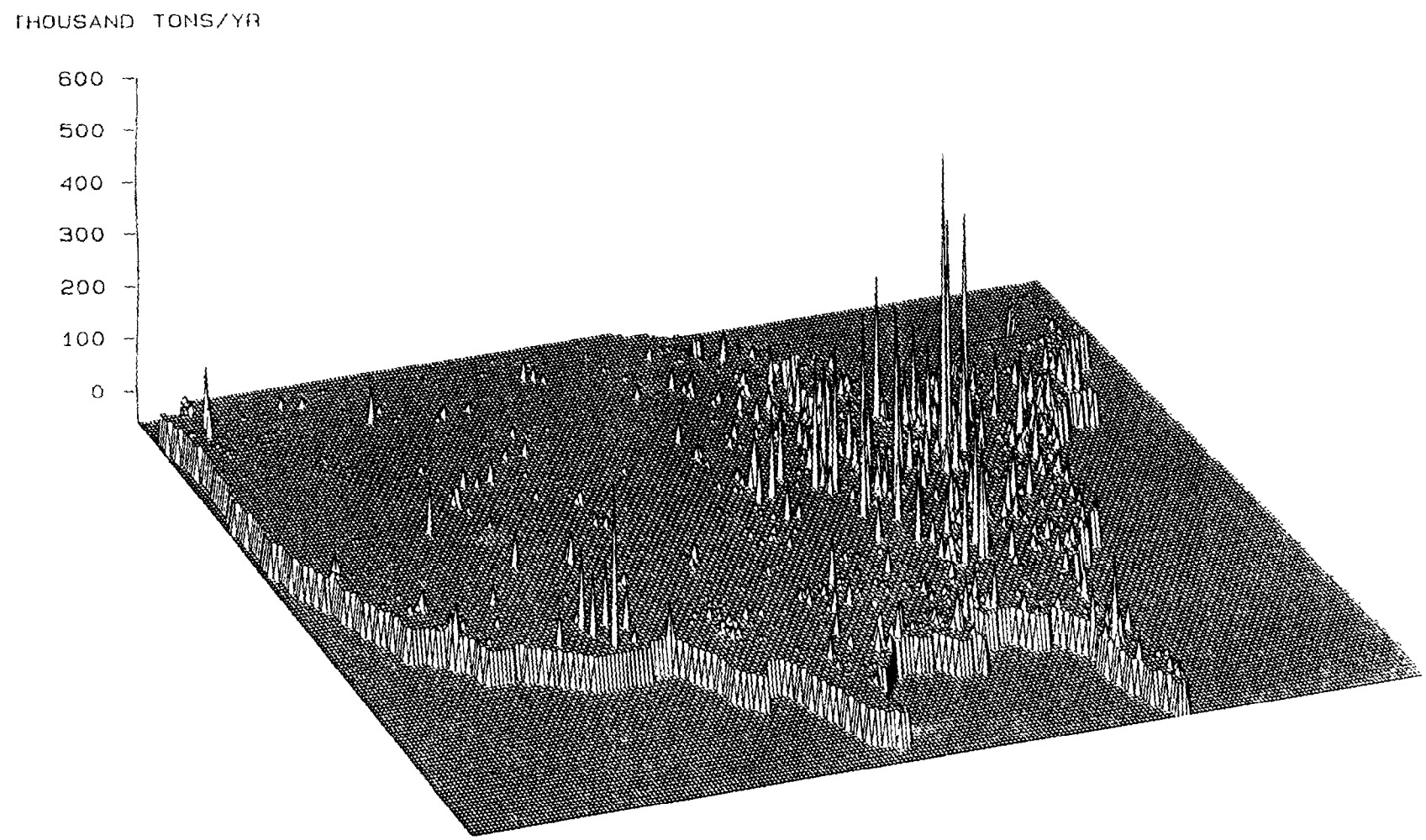


Figure 5. 1980 NAPAP Emissions Inventory Version 5.2 - Annual SO_2 emissions, U.S. point and area sources.

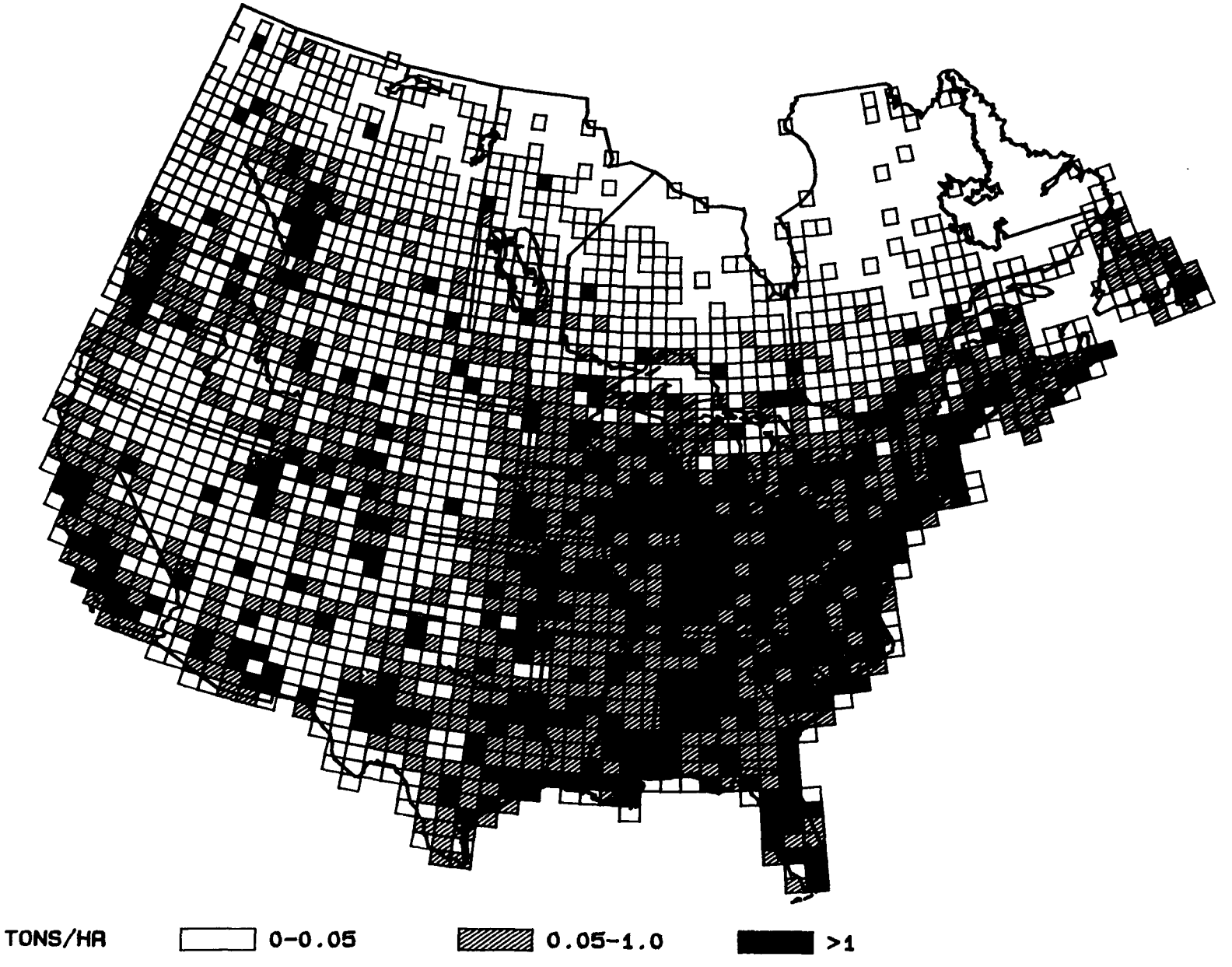


Figure 6. 1980 NAPAP Emissions Inventory Version 5.2 - SO_2 emissions for a typical summer weekday at 1700 GMT.

TABLE 3. NAPAP VERSION 5 PRODUCTS

	Version	Description	Temporal resolution
A	5.0/5.2/5.3	Development of the 1980 NAPAP Emissions Inventory (Report)	
B	5.0 (Tape)	U.S. Point Sources	Annual
C		Canada Point Sources	Annual
D-1		U.S. Area Sources (Volume 1 of 3)	Annual
D-2		U.S. Area Sources (Volume 2 of 3)	Annual
D-3		U.S. Area Sources (Volume 3 of 3)	Annual
E		Canada Area Sources	Annual
F	5.2 (Tape)	Point Sources	Hourly
G-1		**Area Sources (West) - Winter Weekday	Hourly
G-2		Area Sources (East) - Winter Weekday	Hourly
H-1		Area Sources (West) - Winter Saturday	Hourly
H-2		Area Sources (East) - Winter Saturday	Hourly
I-1		Area Sources (West) - Winter Sunday	Hourly
I-2		Area Sources (East) - Winter Sunday	Hourly
J-1		Area Sources (West) - Spring Weekday	Hourly
J-2		Area Sources (East) - Spring Weekday	Hourly
K-1		Area Sources (West) - Spring Saturday	Hourly
K-2		Area Sources (East) - Spring Saturday	Hourly
L-1		Area Sources (West) - Spring Sunday	Hourly
L-2		Area Sources (East) - Spring Sunday	Hourly
M-1		Area Sources (West) - Summer Weekday	Hourly
M-2		Area Sources (East) - Summer Weekday	Hourly
N-1		Area Sources (West) - Summer Saturday	Hourly
N-2		Area Sources (East) - Summer Saturday	Hourly
O-1		Area Sources (West) - Summer Sunday	Hourly
O-2		Area Sources (East) - Summer Sunday	Hourly
P-1		Area Sources (West) - Fall Weekday	Hourly
P-2		Area Sources (East) - Fall Weekday	Hourly
Q-1		Area Sources (West) - Fall Saturday	Hourly
Q-2		Area Sources (East) - Fall Saturday	Hourly
R-1		Area Sources (West) - Fall Sunday	Hourly
R-2		Area Sources (East) - Fall Sunday	Hourly

*Data on all tapes are in EBCDIC characters.

**Area Sources are divided into 2 regions separated at 100°W longitude.

(continued)

TABLE 3 (continued)

Version		Description	Temporal resolution
S	5.3 (Tape)	Point Sources	Hourly
T-1		**Area Sources (West) - Winter Weekday	Hourly
T-2		Area Sources (East) - Winter Weekday	Hourly
U-1		Area Sources (West) - Winter Saturday	Hourly
U-2		Area Sources (East) - Winter Saturday	Hourly
V-1		Area Sources (West) - Winter Sunday	Hourly
V-2		Area Sources (East) - Winter Sunday	Hourly
W-1		Area Sources (West) - Spring Weekday	Hourly
W-2		Area Sources (East) - Spring Weekday	Hourly
X-1		Area Sources (West) - Spring Saturday	Hourly
X-2		Area Sources (East) - Spring Saturday	Hourly
Y-1		Area Sources (West) - Spring Sunday	Hourly
Y-2		Area Sources (East) - Spring Sunday	Hourly
Z-1		Area Sources (West) - Summer Weekday	Hourly
Z-2		Area Sources (East) - Summer Weekday	Hourly
AA-1		Area Sources (West) - Summer Saturday	Hourly
AA-2		Area Sources (East) - Summer Saturday	Hourly
BB-1		Area Sources (West) - Summer Sunday	Hourly
BB-2		Area Sources (East) - Summer Sunday	Hourly
CC-1		Area Sources (West) - Fall Weekday	Hourly
CC-2		Area Sources (East) - Fall Weekday	Hourly
DD-1		Area Sources (West) - Fall Saturday	Hourly
DD-2		Area Sources (East) - Fall Saturday	Hourly
EE-1		Area Sources (West) - Fall Sunday	Hourly
EE-2		Area Sources (East) - Fall Sunday	Hourly

*Data on all tapes are in EBCDIC characters.

**Area Sources are divided into 2 regions delineated by 100°W longitude.

SECTION 1

INTRODUCTION

BACKGROUND

The National Acid Precipitation Assessment Program (NAPAP) was established by Congress in 1980 to coordinate and expand research on problems posed by acid deposition in and around the United States. The program is managed through the Interagency Task Force on Acid Precipitation which coordinates eight task groups having specific technical responsibilities. The Task Group on Emissions and Controls is charged with development of comprehensive and accurate inventories of emissions from sources thought to be important in acid deposition processes. To fulfill its stated objective and to support other related NAPAP research, the Task Group on Emissions and Controls has generated a number of major emissions data bases. This report focuses on the development of Version 5.0 of the 1980 NAPAP Annual Emissions Inventory and the related Version 5.2 and 5.3 Modeling Emissions Inventories.

OBJECTIVES

The primary focus of the 1980 NAPAP Emissions Inventory is the fulfillment of the emissions data requirements for development and testing of the Eulerian Regional Acid Deposition Model (RADM). Within EPA's Office of Research and Development, the Atmospheric Sciences Research Laboratory (ASRL) has been assigned lead responsibility for developing the RADM. The National Center for Atmospheric Research (NCAR) has been assigned the task of developing the model framework, which includes a number of chemical transformation modules. Since the RADM reflects the most extensive data requirements of the anticipated applications of the NAPAP Emissions Inventory, the specific requirements of the modules dictate the chemical species contained in Version 5.2 of the NAPAP Emissions Inventory.

Subsequent to the definition of the requirements of the NAPAP Version 5.2 Emissions Inventory, EPA expressed its need for emissions data to support applications of the Regional Oxidant Model (ROM), which requires hydrocarbon speciation data consistent with Carbon Bond IV chemistry. Version 5.3 of the 1980 NAPAP Emissions Inventory was developed to meet the modelers' needs.

The NAPAP Emissions Inventory data will also support certain NAPAP assessment activities. The emissions inventory needs for assessment purposes are generally less detailed and resource-intensive than those required by the modelers, but are nonetheless extremely important to the overall NAPAP

program. Assessment projects use more aggregated emissions information in combination with models or other analytical techniques to evaluate the relative importance of various pollutants, regions, and types of sources to the acid deposition problem. Results of these studies have implications for planning additional research needed and development of potential control/mitigation strategies.

1980 NAPAP EMISSIONS INVENTORY

Versions 5.0, 5.2, and 5.3 of the 1980 NAPAP Emissions Inventory used as their bases earlier versions (4.0 and 4.2) of the inventory. Compilation and development of the current inventory required the integration of several unique but related work efforts, as shown in Figure 1-1. The contents of the primary products of this effort, Versions 5.0, 5.2, and 5.3, are described in Table 1-1. Both Volatile Organic Compounds (VOC) and Total Hydrocarbons (THC) are present in the inventory; the VOC category is defined as reactive hydrocarbon species (no methane or ethane), while THC is comprised of both reactive and nonreactive species.

The 1980 NAPAP Emissions Inventory, representing the most comprehensive and highest quality emissions data available for the 1980 base year, evolved from EPA's National Emissions Data System (NEDS) 1980 "snapshot" inventory. A number of updates were made to enhance the quality and comprehensiveness of the NEDS data. These included substitution of specific data items with information from other inventories or data bases believed to be more reliable. Since NAPAP requires emissions data for a number of pollutants not included in NEDS, emission factors and corresponding emissions estimates had to be developed and incorporated. Emissions data from Canada were added, and improvements were made to methods used to calculate area source and highway vehicle emissions.

Recognizing the importance of the utility industry in the estimation of both current and future emissions levels, NAPAP has developed a single data base designed to address utility-related data needs of all NAPAP task groups (Pechan, 1983). The NAPAP Utility Reference File (NURF) consists of four component files: the master unit data file (containing information on all electric generating units), the fuel-specific emissions file (containing emissions information by fuel type), the stack parameters file (containing stack information on a unit-specific basis), and the announced unit file (containing unit-specific information on units coming on-line or converting to coal-firing after 1980). The NURF was utilized to derive and verify emissions data from the utility sector in Version 5.0 of the NAPAP Emissions Inventory.

To support development and testing of the models, one of the most extensive applications of the NAPAP Emissions Inventory, the 1980 Annual Inventory (Version 5.0) had to be resolved temporally, spatially, and by component species to create an Eulerian modeling emissions inventory (Version 5.2) and an oxidant modeling emissions inventory (Version 5.3). Annual emissions were allocated to the hourly level for a typical weekday, Saturday, and Sunday in each season (12 temporal scenarios); county-level area sources and major and minor point sources were spatially resolved to modeling

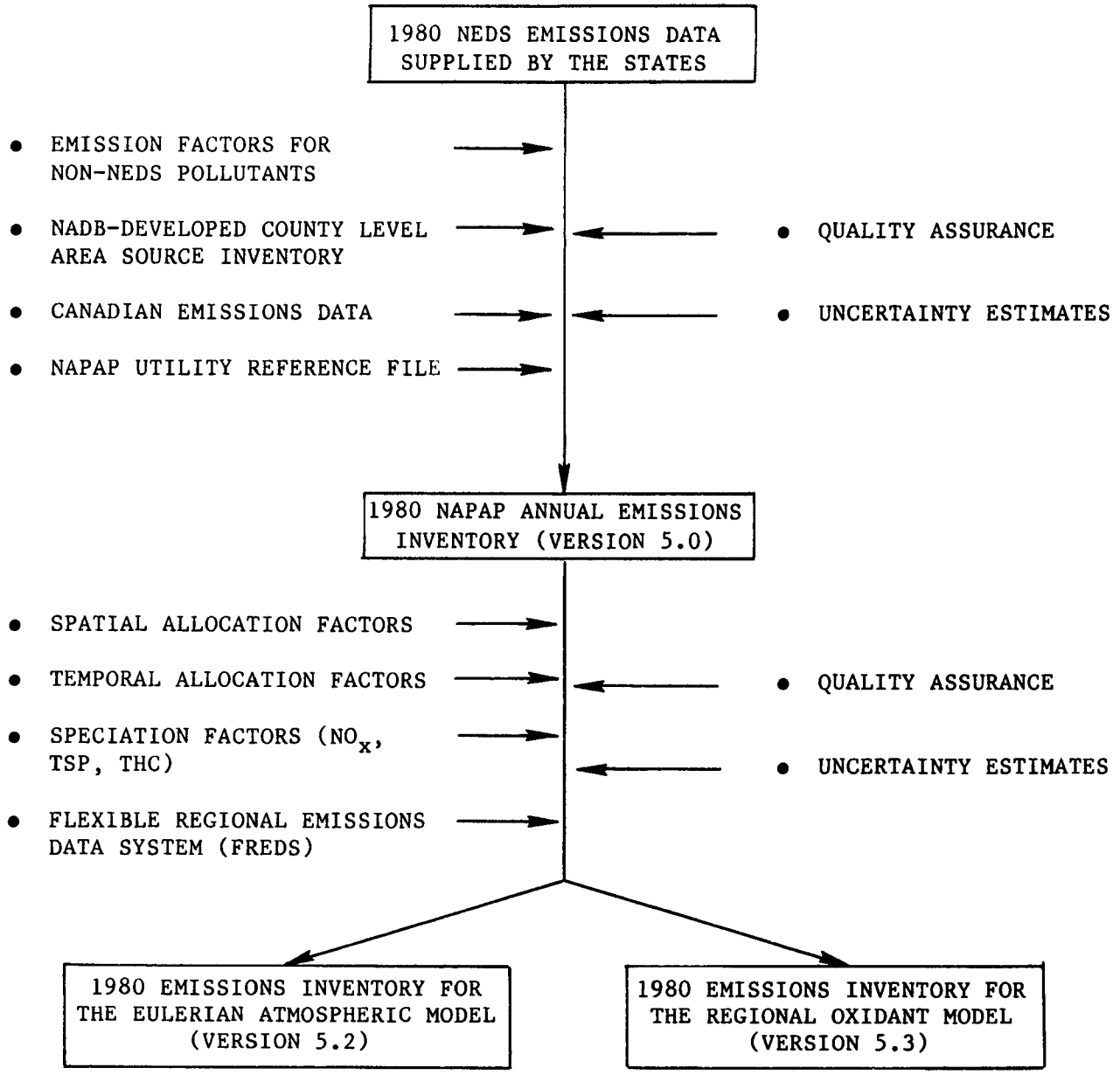


Figure 1-1. Major program components for developing the 1980 NAPAP emissions inventory.

TABLE 1-1. 1980 NAPAP EMISSIONS INVENTORY COVERAGE

	Annual Emissions Inventory Version 5.0	Eulerian Model Emissions Inventory Version 5.2	Oxidant Model Emissions Inventory Version 5.3
Temporal resolution	Annual/seasonal	Hourly emissions values for typical weekday, Saturday, and Sunday for all four seasons	
Geographic domain and resolution	48 contiguous states and Canada; area sources at the county level	48 states and Canada from 50° to 125° west longitude and from 25° to 60° north latitude; separate major point source file with minor point sources and area sources assigned to 20 x 20 km grid cells	
Anthropogenic point sources	Stationary sources emitting greater than or equal to 100 tons of criteria pollutants in 1980		
Anthropogenic area sources	Stationary sources emitting less than 100 tons of criteria pollutants in 1980 and county-level area sources		
Pollutants	SO_2, SO_4, TSP, Pb, CO, HCl, HF, NO_x, NH_3, VOC, total hydrocarbons (THC)	SO_2, SO_4, TSP (Ca, Mg, K, Na), Pb, CO, HCl, HF, NO, NO_2, NH_3, VOC, THC (methane, ethane, ethylene, propane, propylene, N-butane, 1,2-butane, isobutene, pentane, isopentane, other alkenes, other alkanes, other organic acids, formaldehyde, acetaldehyde, acetone, other ketones, other aldehydes, xylene, benzene, toluene, ethylbenzene, other aromatics)	SO_2, SO_4, TSP (Ca, Mg, K, Na), Pb, CO, HCl, HF, NO, NO_2, NH_3, VOC, THC (methane, paraffins, ethylene, olefins, formaldehyde, other aldehydes, toluene, xylene, isoprene, nonreactives)

grid cells; TSP emissions were assigned to alkalinity classes; NO_x emissions were split into NO and NO_2 constituents; and THC emissions were apportioned into as many as 28 photochemical reactivity classes.

To create the 1980 NAPAP Modeling Emissions Inventories, temporal, spatial, and pollutant species allocation factors were developed and applied to the Version 5.0 data base. In addition to creating allocation factors to address the requirements of the models, a data handling system capable of creating subsequent versions of the NAPAP Emissions Inventory was developed. The Flexible Regional Emissions Data System (FREDS), consisting of five primary independent subsystems written in the command language of the Statistical Analysis System (SAS), was used to preprocess the Emissions Inventory System (EIS) formatted emissions data for input to the RADM. FREDS was also used to generate a SAS version of the 5.0 NAPAP Emissions Inventory for incorporation into the Acid Deposition Data Network (ADDNET).

To be able to evaluate the results of the NAPAP modeling and assessment analyses, it was necessary to estimate the uncertainty associated with the NAPAP Emissions Inventory data. The analysis of uncertainty, while important for all NAPAP Emissions Inventory applications, is particularly crucial for the atmospheric modeling efforts aimed at establishing relationships between the release of precursor emissions and acid deposition. The degree of uncertainty in the emissions inventory will be a limiting factor in the quantification of these relationships.

NAPAP has developed a methodology for quantifying the degree of uncertainty associated with the NAPAP emissions data (Benkovitz, 1985). Ongoing NAPAP efforts are developing uncertainty estimates for the individual parameters that will be input to the NAPAP uncertainty methodology. To enable development of preliminary estimates of uncertainty within the 1980 NAPAP Emissions Inventory prior to completion of these efforts, a NAPAP Emissions Inventory Uncertainty Workshop was held (Homolya, 1985). At that workshop a panel was assembled to develop a consensus regarding the uncertainty associated with parameters used to calculate annual emissions and resolve them in space, in time, and by pollutant species. Based on these uncertainty estimates, the methodology was tested and preliminary estimates of emissions uncertainties were derived and documented in an EPA report (Wagner, et al., 1986).

REPORT ORGANIZATION

Section 2 summarizes emissions data from Version 5.0 and Version 5.2 of the 1980 NAPAP Emissions Inventory. A discussion of the evolution of the 1980 NAPAP Emissions Inventories is presented in Section 3. Section 4 describes the formulation of emission factors used to derive estimates of emissions of hydrogen chloride (HCl), hydrogen fluoride (HF), ammonia (NH_3), primary sulfate (SO_4), and alkaline dust. The development of emissions estimates for the utility sector is discussed in Section 5. The development of temporal, spatial, and pollutant species allocation factors required to generate the modeling emissions inventories is covered in Section 6. Section 7 discusses the creation of the data handling system used to process Version 5.0 and create Version 5.2 and 5.3 of the 1980 NAPAP Emissions Inventory.

SECTION 2

OVERVIEW OF EMISSIONS DATA

The following pages present summary data from Version 5 of the 1980 NAPAP Emissions Inventory in tabular and graphic form. The Version 5.0 inventory contains annual point source emissions data for over 14,000 plants in the United States and Canada, encompassing more than 36,000 emissions points. It also contains area source data for the 3,070 counties in the 48 contiguous United States and the District of Columbia, as well as province level data from Canada south of 60° latitude and east of 125° longitude. The Version 5.2 Eulerian Modeling Inventory covers a similar study area, providing additional temporal, spatial, and species resolution.

VERSION 5.0

Summary of Total Emissions

Table 2-1 summarizes emissions for the 11 pollutants in the Version 5.0 inventory by EPA Region. Both Volatile Organic Compounds (VOC) and Total Hydrocarbon (THC) categories are present in the inventory; the VOC category is defined as reactive hydrocarbon species (no methane or ethane), while THC is comprised of both reactive and nonreactive species. Region 5 is the most significant contributor in 7 of the 11 categories, while Region 6 contributes the most NO_x and TSP emissions. Region 4 is also a significant source of emissions, leading all regions in sulfate and hydrogen fluoride; the 14 states in Regions 4 and 5 contribute over half the inventory's SO_2 emissions.

The data in Table 2-1 are further subdivided by state in Table 2-2. In nearly all categories, Ohio (most SO_2), Texas (most NO_x and TSP), and California (most CO and VOC) contribute significantly to U.S. emission totals.

Canadian emissions data are summarized at the province level in Table 2-3. It should be noted at the outset that Canadian data do not include emissions of chloride, fluoride and lead, and that Canadian emissions reported include only that portion of Canada within the NAPAP study area and therefore do not constitute total national emissions. Emissions for all Canadian provinces are available from Environment Canada. Ontario is clearly the largest emissions source, leading in emissions of SO_2, NO_x, CO, VOC, and total hydrocarbons, while Alberta contributes more ammonia and TSP than any other province.

TABLE 2-1. 1980 NAPAP EMISSIONS INVENTORY VERSION 5.0 - ANNUAL U.S. POINT AND AREA SOURCE EMISSIONS BY EPA REGION

	TONS/YEAR										
EPA REGION	SO2	SO4	NOx	Pb	CO	HCl	HF	NH3	TSP	VOC	THC
REGION 1	685,936	41,953	596,578	1,415	4,703,212	3,847	215	2,470	657,426	1,185,538	1,274,058
REGION 2	1,180,163	63,920	1,154,353	1,979	7,052,898	11,835	2,208	14,042	1,204,930	1,857,619	2,016,830
REGION 3	3,858,772	126,506	2,234,725	3,748	9,526,520	86,787	13,285	40,660	2,573,135	2,210,510	2,360,328
REGION 4	6,473,217	206,358	3,978,083	5,199	16,253,808	130,211	48,740	135,784	5,088,856	4,075,244	4,316,670
REGION 5	7,867,419	202,874	4,467,218	8,105	18,753,223	165,692	27,076	205,228	5,286,234	4,414,825	4,805,098
REGION 6	2,179,556	113,688	4,957,327	3,573	15,437,049	35,964	10,851	133,234	9,727,381	3,537,629	3,847,014
REGION 7	1,973,687	45,243	1,541,904	1,725	4,993,826	44,940	5,768	176,547	7,049,162	1,285,770	1,409,712
REGION 8	793,365	54,576	1,065,188	1,485	6,096,071	28,165	3,765	55,581	5,204,444	1,005,242	1,073,957
REGION 9	1,512,034	73,455	1,743,576	3,116	11,356,048	12,963	1,676	44,639	3,297,549	2,564,528	2,785,895
REGION 10	429,988	47,035	613,287	1,387	5,136,282	6,120	1,850	30,479	2,528,253	1,027,643	1,087,898
Contig. U.S.	26,954,136	975,608	22,352,239	31,732	99,308,937	526,524	115,434	838,664	42,617,370	23,164,547	24,977,459

TABLE 2-2. 1980 NAPAP EMISSIONS INVENTORY VERSION 5.0 - ANNUAL U.S. POINT AND AREA SOURCE EMISSIONS BY STATE

State	SO2	SO4	NOx	Pb	CO	HCl	HF	NH3	TSP	VOC	THC
	TONS/YEAR										
Alabama	857,549	32,991	487,256	681	1,811,119	19,542	3,539	11,964	439,271	391,455	425,591
Arizona	844,078	30,871	263,894	366	1,310,433	8,937	1,087	11,921	841,489	254,096	271,243
Arkansas	87,127	10,478	211,143	264	1,045,560	1,786	1,445	25,418	874,245	223,135	234,377
California	519,799	35,917	1,382,764	2,643	9,524,250	472	145	32,013	1,536,414	2,216,485	2,414,927
Colorado	140,138	9,347	304,778	756	2,302,185	9,110	1,186	24,987	1,134,995	356,946	385,554
Connecticut	63,665	8,110	139,750	381	1,192,328	491	0	1,946	120,226	284,183	299,090
Delaware	124,669	4,645	62,266	71	242,885	1,152	184	2,051	49,382	77,101	81,188
Dist. of Colum.	15,325	1,121	25,352	39	338,780	655	23	59	15,099	44,081	48,400
Florida	1,102,994	30,793	712,209	1,087	4,071,755	8,834	29,228	28,793	919,841	828,561	868,694
Georgia	900,080	30,684	590,650	697	2,335,826	20,453	2,503	35,359	882,031	508,361	530,222
Idaho	56,210	8,676	91,874	548	1,280,507	329	242	8,133	330,728	222,050	230,398
Illinois	1,464,520	42,270	972,987	2,635	4,246,797	34,318	7,937	68,633	932,702	988,586	1,092,842
Indiana	1,970,870	38,111	786,843	1,101	2,374,627	33,494	4,607	29,361	496,649	562,647	623,821
Iowa	334,278	11,010	305,754	427	1,105,666	11,505	1,706	80,410	1,237,845	237,157	258,603
Kansas	228,074	7,409	513,314	250	1,072,560	6,614	799	34,189	1,852,371	250,269	298,662
Kentucky	1,150,036	23,108	551,354	519	1,594,516	22,635	3,841	8,185	452,395	441,688	469,555
Louisiana	401,333	24,581	708,966	554	2,541,546	857	1,761	26,314	559,071	625,559	669,847
Maine	133,369	11,223	67,068	124	506,637	40	5	417	127,174	141,991	149,051
Maryland	303,471	10,727	261,103	456	1,459,780	6,559	1,307	2,992	227,611	363,270	394,420
Massachusetts	358,065	14,498	270,770	666	2,133,002	2,241	86	104	210,504	515,765	568,190
Michigan	841,399	32,609	715,377	1,148	3,613,069	22,871	3,150	10,433	880,263	916,363	987,380
Minnesota	238,705	14,535	366,630	469	1,928,665	8,820	1,120	48,624	1,199,026	469,214	496,094
Mississippi	303,846	11,281	294,511	297	991,881	2,599	314	7,809	587,204	261,800	278,672
Missouri	1,333,218	22,746	549,797	849	2,206,090	22,184	2,681	17,264	2,877,954	629,726	673,526
Montana	169,224	7,583	140,299	310	1,422,156	2,003	243	3,890	880,654	236,467	245,600
Nebraska	78,117	4,078	173,039	199	609,510	4,637	582	44,683	1,080,992	168,618	178,920
Nevada	148,157	6,667	96,918	107	521,365	3,554	444	705	919,646	93,948	99,725
New Hampshire	108,484	4,867	58,957	100	352,582	1,036	124	1	66,310	103,987	109,401
New Jersey	309,856	20,690	417,509	706	2,294,053	2,566	328	80	402,215	696,758	749,784
New Mexico	262,555	9,202	254,116	174	932,466	8,299	977	4,523	1,249,009	191,042	213,500
New York	870,307	43,230	736,844	1,273	4,758,845	9,269	1,880	13,961	802,715	1,160,860	1,267,046
North Carolina	655,591	31,046	532,675	727	2,289,334	23,667	3,310	21,118	700,462	614,002	655,149
North Dakota	115,391	11,574	136,091	72	282,219	119	60	6,642	1,295,268	53,274	58,166
Ohio	2,681,314	51,554	1,217,607	2,160	4,697,200	50,783	7,934	16,124	1,070,910	1,001,059	1,092,677
Oklahoma	104,168	9,558	453,066	412	1,854,007	5,765	768	15,266	1,107,180	324,988	347,352
Oregon	55,987	18,601	226,767	334	1,454,001	729	92	4,249	1,849,960	340,267	363,147
Pennsylvania	1,899,006	60,532	1,041,556	1,918	4,377,701	42,015	5,525	24,309	1,432,694	1,043,563	1,113,027
Rhode Island	14,168	1,491	36,253	82	316,586	27	0	0	32,323	81,042	86,846
South Carolina	344,968	17,550	278,092	459	1,207,907	9,045	1,648	4,440	451,493	474,791	501,073
South Dakota	40,863	3,798	79,356	70	509,495	235	38	12,941	715,996	95,639	101,160
Tennessee	1,158,153	28,905	531,336	732	1,951,470	23,436	4,357	18,117	656,159	554,586	587,715
Texas	1,324,373	59,869	3,330,036	2,169	9,063,470	19,257	5,900	61,713	5,937,876	2,172,905	2,381,939
Utah	116,615	8,886	155,757	191	990,051	3,588	511	1,961	690,811	160,449	172,386
Vermont	8,185	1,764	23,780	62	202,077	12	0	3	100,889	58,570	61,481
Virginia	370,780	21,579	383,434	646	2,322,403	7,328	1,385	10,913	466,354	527,715	561,508
Washington	317,791	19,758	294,646	505	2,401,774	5,062	1,516	18,097	347,565	465,326	494,352
West Virginia	1,145,522	27,902	461,014	618	784,971	29,078	4,861	335	381,995	154,780	161,785
Wisconsin	670,610	23,795	407,774	592	1,892,865	15,406	2,328	32,054	706,684	476,956	512,284
Wyoming	211,134	13,388	248,907	86	589,965	13,110	1,727	5,159	486,720	102,467	111,091
Contig. U.S.	26,954,136	975,608	22,352,239	31,732	99,308,937	526,524	115,434	838,664	42,617,370	23,164,547	24,977,459

TABLE 2-3. 1980 NAPAP EMISSIONS INVENTORY VERSION 5.0 - ANNUAL CANADIAN POINT AND AREA SOURCE EMISSIONS BY PROVINCE

	TONS/YEAR										
Province	SO2	SO4	NOx	Pb	CO	HCl	HF	NH3	TSP	VOC	THC
Alberta	660,788	7,677	485,564	0	3,023,686	0	0	83,323	8,828,141	685,711	898,962
British Columbia	184,106	34,915	221,795	0	2,203,914	0	0	7,012	2,025,634	285,050	530,780
Manitoba	533,199	13,790	102,392	0	1,603,510	0	0	21,011	3,142,219	233,681	325,091
New Brunswick	223,053	14,963	58,760	0	347,965	0	0	1,024	415,749	51,010	114,009
Newfoundland	65,635	4,604	35,930	0	197,323	0	0	123	280,665	28,948	78,892
Nova Scotia	212,343	11,094	83,476	0	393,785	0	0	1,646	763,019	73,664	149,945
Ontario	1,954,125	45,947	563,749	0	4,424,186	0	0	46,260	6,604,382	733,251	1,482,757
Prince Edward Island	4,973	343	6,130	0	57,947	0	0	832	41,629	6,501	17,202
Quebec	1,210,291	50,699	321,999	0	2,409,711	0	0	16,564	2,491,946	390,108	946,493
Saskatchewan	60,125	4,250	174,217	0	3,373,897	0	0	31,879	6,980,762	505,957	593,482
Canada	5,108,638	188,282	2,054,012	NR	18,035,924	NR	NR	209,674	31,574,146	2,993,881	5,137,613

NR = NOT REPORTED

The relative weight of point and area source contribution to emissions varies from state to state and pollutant to pollutant. Appendix A provides additional resolution of point and area source emissions on the state/province and SCC level. Figure 2-1 illustrates graphically the relative contributions of point and area source emissions for SO_2, NO_x, and VOC. Sulfur dioxide, associated primarily with utilities and industrial operations, is heavily represented by point sources. VOC emissions are concentrated in the area sources, including the solvent use/evaporation and transportation categories. NO_x represents a more even distribution between point and area sources, reflecting a relatively equal mix of industrial sources and vehicular transportation. Canadian emissions generally represent 10-20 percent of NAPAP totals, with Canadian area source TSP being a noteworthy exception (41 percent of NAPAP total). The relatively heavy TSP emissions in Canada reflect emissions estimation methodology differences between the two nations; attempts have been made to minimize these differences by removing from Canadian totals those area source categories having no U.S. counterparts, namely agricultural tilling, construction, and wind erosion. The distribution of Canadian emissions between point and area sources generally parallels U.S. data.

Table 2-4 illustrates SO_2, NO_x, and VOC emissions aggregated by major source categories. U.S. emissions of SO_2 are dominated by the electric utility sector (65 percent); the overwhelming majority of these emissions are from coal-fired external combustion boilers. Industrial combustion sources and manufacturing operations combine for another 25 percent of total U.S. SO_2 emissions. NO_x emissions, as mentioned earlier, are fairly evenly distributed between combustion sources and vehicular transportation. Emissions of VOC are dominated by transportation and manufacturing operations, including solvent losses. Other sources, constituting about 13 percent of U.S. VOC totals, include forest fires and managed burning (1.2 million tons), gasoline marketed (950,000 tons), agricultural processes, and minor point sources, which are aggregated into a single area source category to facilitate processing (see Section 3 for details). Canadian sources are distributed in a similar fashion with one notable exception. A much higher percentage of Canadian SO_2 emissions is attributed to industrial/manufacturing operations than in the U.S. This is due primarily to the fact that nonferrous smelters contribute over one-third of total Canadian SO_2 emissions, a much larger percentage than in the United States. Forest fires and managed burning also contribute heavily to Canadian VOC emissions, accounting for over 1 million tons of VOC per year. Pie charts depicting the data in Table 2-4 are shown in Figures 2-2 and 2-3.

Though the 1980 NAPAP Emissions Inventory was based on NEDS data for base year 1980, information in the file was actually collected over a range of years from 1966 to 1982. The current distribution of U.S. and Canadian point and area source emissions by year of record, shown in Figure 2-4, represents a number of updates and improvements to the original NEDS data, particularly with regard to utility sources. These updates are discussed in Section 3. It should be noted that most identification and stack parameter data would not be expected to change on a yearly basis, and that annual throughputs remain fairly constant over the short term; therefore, data not associated with a 1980 year of record are not necessarily in error.

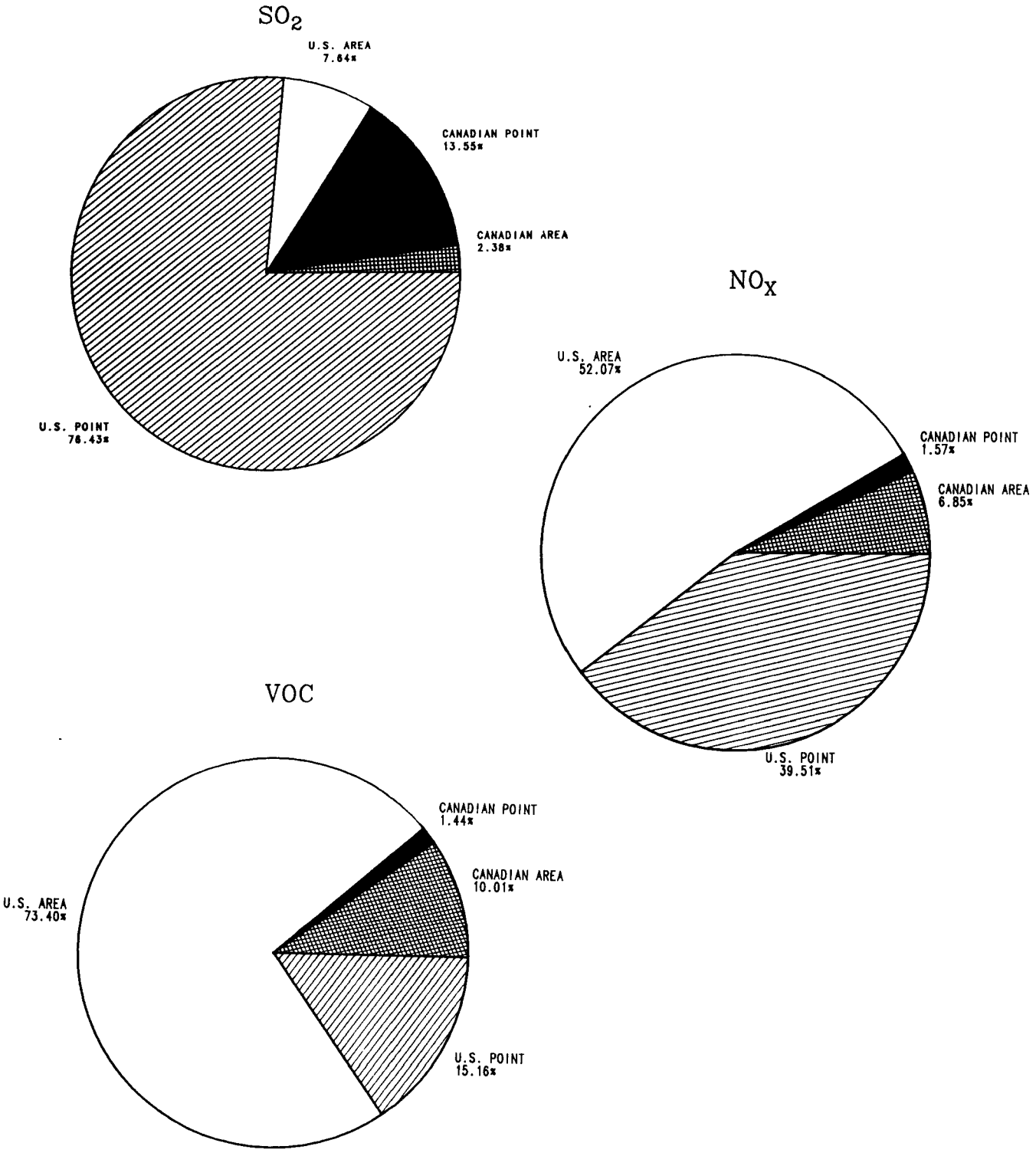


Figure 2-1. 1980 NAPAP Emissions Inventory Version 5.0 - relative distribution of point versus area source emissions for SO_2, NO_x, and VOC.

TABLE 2-4. 1980 NAPAP EMISSIONS INVENTORY VERSION 5.0 - POINT AND AREA SOURCE EMISSIONS BY MAJOR CATEGORY

	Emissions (10^3 tons/yr)		
	SO_2	NO_x	VOC
U.S. sources			
Electric utilities	17,479	6,448	47
Industrial combustion	3,606	4,283	197
Commercial/residential/other combustion	1,153	1,061	2,563
Industrial/manufacturing processes (including solvent evaporation)	3,473	693	7,079
Transportation	879	9,266	10,348
Other	365	601	2,931
U.S. Total:	26,954	22,352	23,165
Canadian sources			
Electric utilities	849	249	6
Industrial combustion	610	146	4
Commercial/residential/other combustion	249	122	22
Industrial/manufacturing processes	3,250	179	1,018
Transportation	149	1,023	823
Other	1	335	1,120
Canadian total:	5,109	2,054	2,994

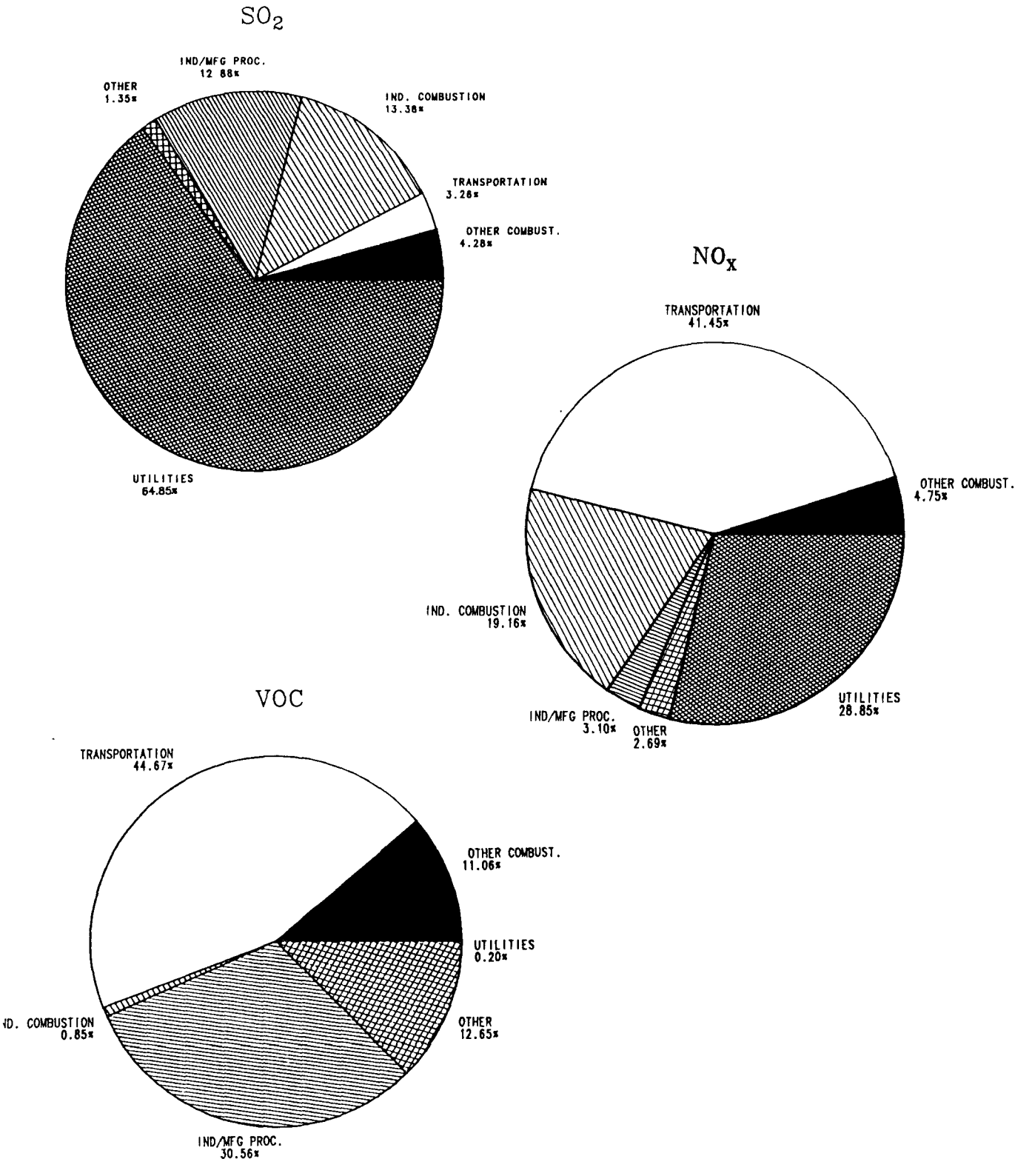


Figure 2-2. 1980 NAPAP Emissions Inventory Version 5.0 - distribution of U.S. emissions by source category for SO_2, NO_x and VOC.

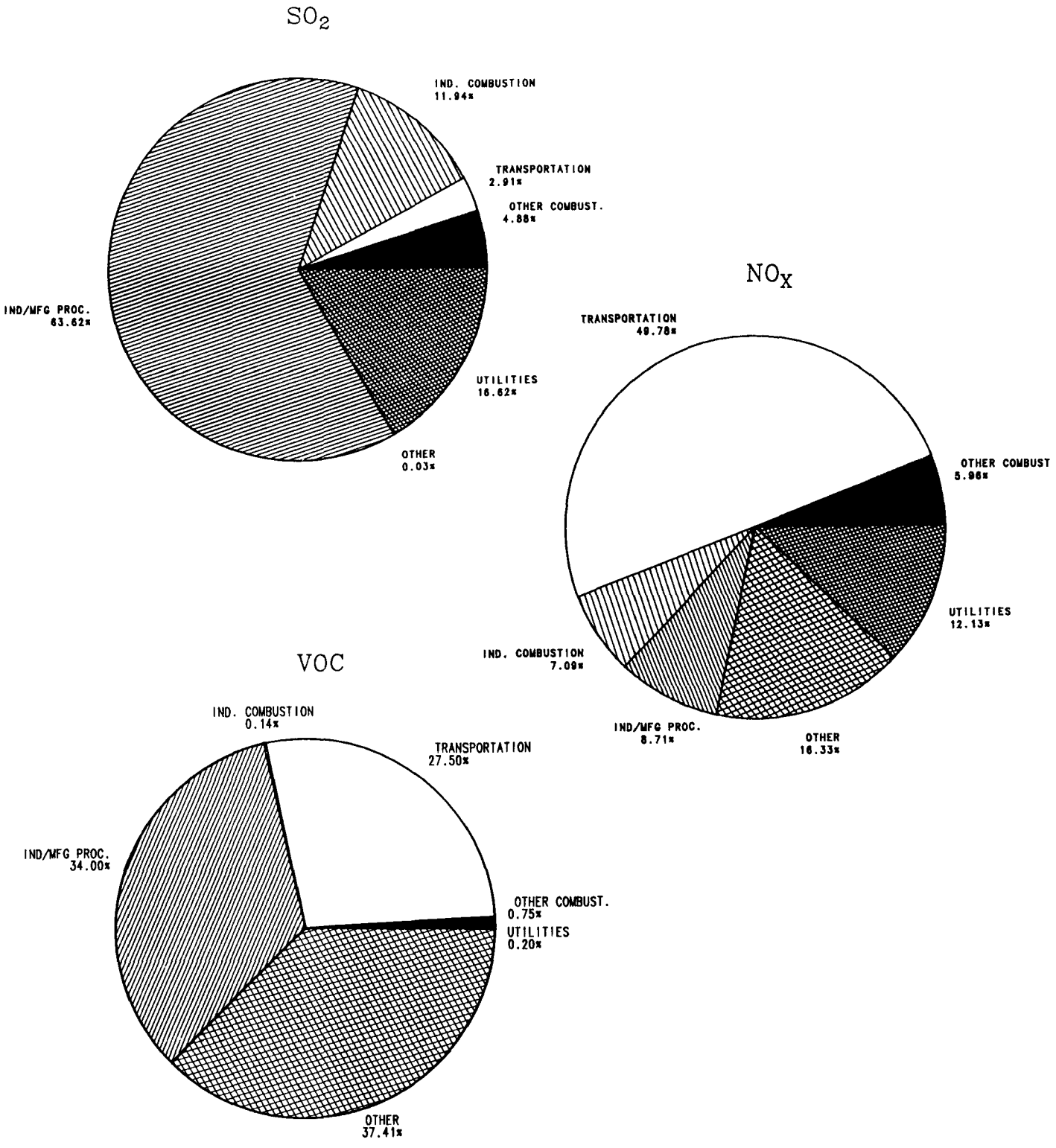


Figure 2-3. 1980 NAPAP Emissions Inventory Version 5.0 - distribution of Canadian emissions by source category for SO_2, NO_x and VOC.

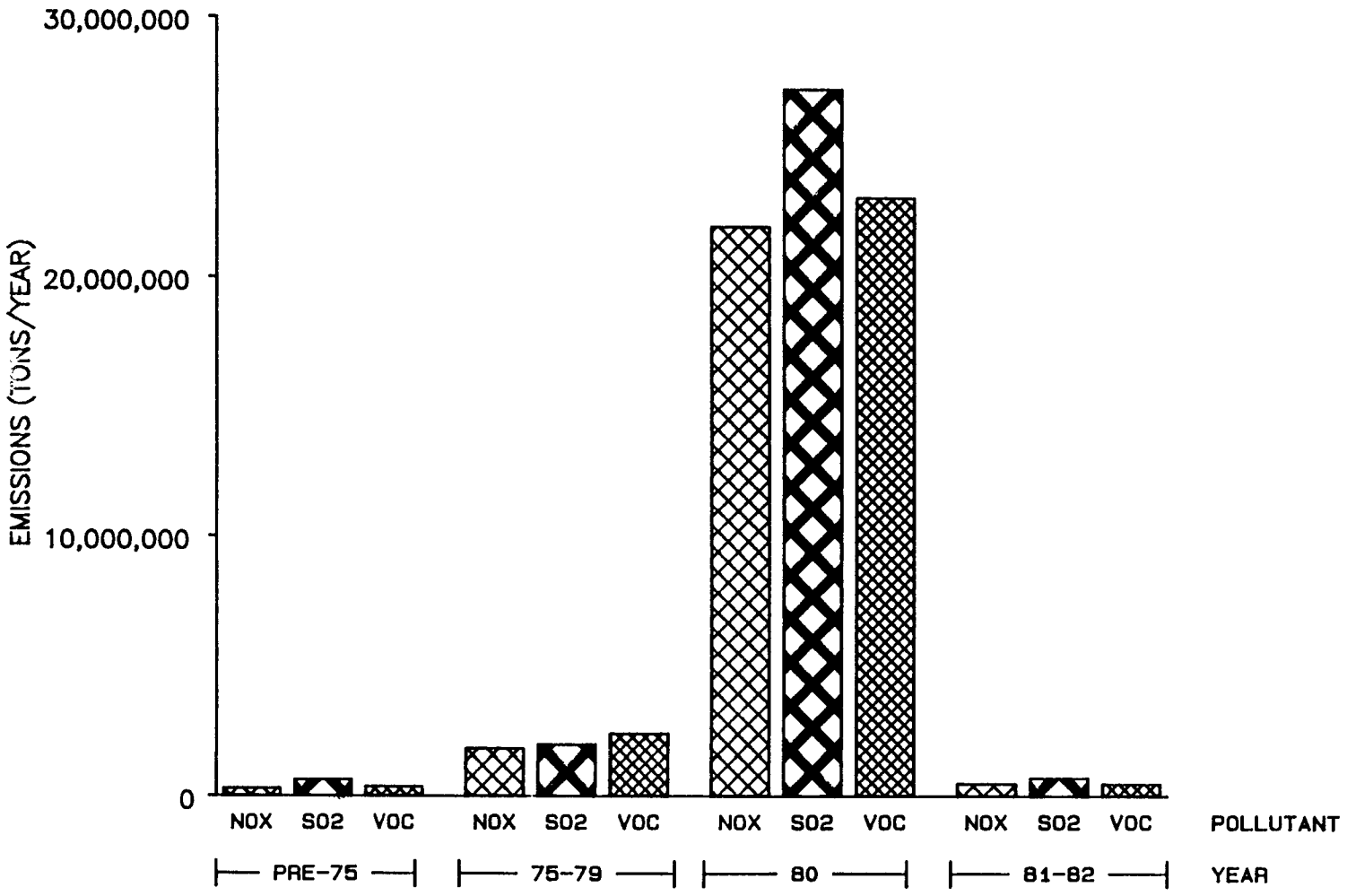


Figure 2-4. 1980 NAPAP Emissions Inventory Version 5.0 - combined U.S. and Canadian emissions totals by year of record.

Point and area source emissions percentages are tabulated by release height, an important modeling parameter, in Table 2-5. SO_2 emissions are dominated by point sources in the high stack height ranges; over 68 percent of SO_2 comes from stacks in excess of 240 feet in height. Again, these large stacks correspond to utilities, smelters, and other major emitters. VOC emissions are concentrated at the lowest release height range, representing fugitive solvent evaporation, transportation, and emissions from area sources to an overwhelming degree.

Point-Specific Emissions Data

Point source data in the NAPAP inventory can be considered to exist on three levels--plant, point, and SCC. Each SCC, representing the greatest degree of disaggregation, represents a process or function within a source category logically associated with a point of air pollution emissions. Several SCC-level observations may be associated with a single "point"; similarly, several point-level records may exist for each individual plant. There are 52,904 SCC-level records in Version 5.0 of the NAPAP Emissions Inventory, corresponding to 36,807 individual points located in 14,244 unique plants. Table 2-6 presents a distribution of these sources by emissions range. Emissions of SO_2, and to a lesser degree NO_x, are concentrated within a small number of large emitters, such as utilities and smelters. VOC emissions, on the other hand, are distributed among a much larger number of proportionally minor emissions sources. A total of 225 plants emit greater than 25,000 tons of SO_2 annually; the locations of these major emitters are shown in Figure 2-5.

Figure 2-6 illustrates the distribution of point source emissions of SO_2, NO_x, and VOC by emissions estimation method. Estimation methods 3 and 5 constitute the vast majority of criteria pollutant emissions in the inventory. Utility source estimation methods were changed to 3 during the utility updates discussed in Section 3. Systematic QA checks also necessitated computer recalculation of emissions for many other sources; these methods were also changed to 3. In general, any estimation method other than 3 would provide (in theory) a better estimate of emissions than would method 3. The preponderance of method 3 emissions as shown in Figure 2-4 merely indicates that the states requested that OAQPS calculate emissions based on AP-42 emission factors in NEDS and reported operating data. SO_2 data for copper smelters taken from the Work Group 3B inventory and nonutility NO_x and VOC emissions from the NECRMP modeling effort constitute the majority of method 5 emissions in the United States. In addition, all Canadian emissions are reported under estimation method 5.

State and County Emissions Density

Emissions density maps were created on the state and county level by aggregating point and area source emissions and dividing by land area. The state emission density maps, Figures 2-7 through 2-17, provide a general geographic distribution of emissions on a statewide basis. Maps of emissions density at the county level, shown in Figures 2-18 through 2-22, provide a

TABLE 2-5. 1980 NAPAP EMISSIONS INVENTORY VERSION 5.0 - EMISSIONS PERCENTAGES BY EMISSIONS RELEASE HEIGHT (COMBINED U.S. AND CANADIAN SOURCES)

Stack height range (ft)	Emissions percentages		
	SO_2	NO_x	VOC
0-120	19.2	69.1	98.7
121-240	12.5	7.1	0.9
241-480	30.1	12.7	0.3
>480	38.2	11.1	0.1
	100.0	100.0	100.0
Emissions Totals: (10^3 tons/year)	32,063	24,406	26,158

TABLE 2-6. 1980 NAPAP EMISSIONS INVENTORY VERSION 5.0 - DISTRIBUTION OF SO_2, NO_x, AND VOC EMISSIONS POINT SOURCES BY SIZE RANGE

NUMBER OF PLANT-LEVEL RECORDS

EMISSIONS RANGE (TONS/YEAR)	SO2 US	SO2 CANADA	SO2 TOTAL	NOX US	NOX CANADA	NOX TOTAL	VOC US	VOC CANADA	VOC TOTAL
>10,000	418	50	468	224	6	230	54	3	57
2,500 - 10,000	595	65	660	513	23	536	277	42	319
1,000 - 2,500	598	61	659	582	33	615	411	20	431
100 - 1,000	2,118	109	2,227	2,624	138	2,762	2,971	103	3,074
0 - 100	9,950	280	10,230	9,736	365	10,101	9,966	397	10,363
PLANT-LEVEL TOTAL:	13,679	565	14,244	13,679	565	14,244	13,679	565	14,244

NUMBER OF POINT-LEVEL RECORDS

EMISSIONS RANGE (TONS/YEAR)	SO2 US	SO2 CANADA	SO2 TOTAL	NOX US	NOX CANADA	NOX TOTAL	VOC US	VOC CANADA	VOC TOTAL
>10,000	518	53	571	164	6	170	23	3	26
2,500 - 10,000	887	88	975	706	21	727	221	38	259
1,000 - 2,500	1,223	106	1,329	834	41	875	502	40	542
100 - 1,000	6,674	313	6,987	6,841	305	7,146	5,236	188	5,424
0 - 100	25,181	1,764	26,945	25,938	1,951	27,889	28,501	2,055	30,556
POINT-LEVEL TOTAL:	34,483	2,324	36,807	34,483	2,324	36,807	34,483	2,324	36,807

NUMBER OF SCC-LEVEL RECORDS

EMISSIONS RANGE (TONS/YEAR)	SO2 US	SO2 CANADA	SO2 TOTAL	NOX US	NOX CANADA	NOX TOTAL	VOC US	VOC CANADA	VOC TOTAL
>10,000	516	73	589	162	6	168	20	3	23
2,500 - 10,000	867	93	960	694	28	722	222	38	260
1,000 - 2,500	1,237	111	1,348	771	40	811	490	40	530
100 - 1,000	7,030	335	7,365	7,297	334	7,631	5,352	189	5,541
0 - 100	40,509	2,133	42,642	41,235	2,337	43,572	44,075	2,475	46,550
SCC-LEVEL TOTAL:	50,159	2,745	52,904	50,159	2,745	52,904	50,159	2,745	52,904

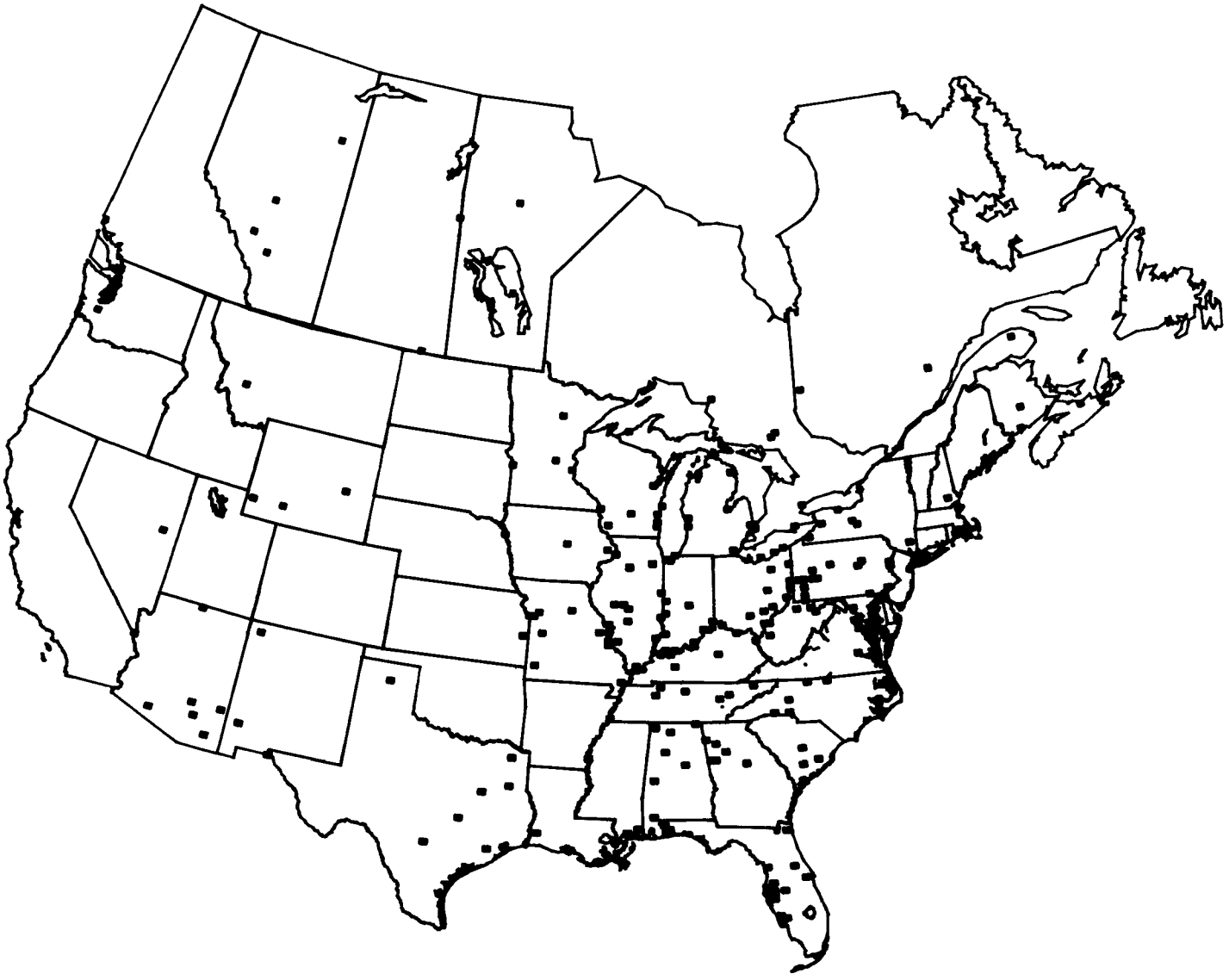
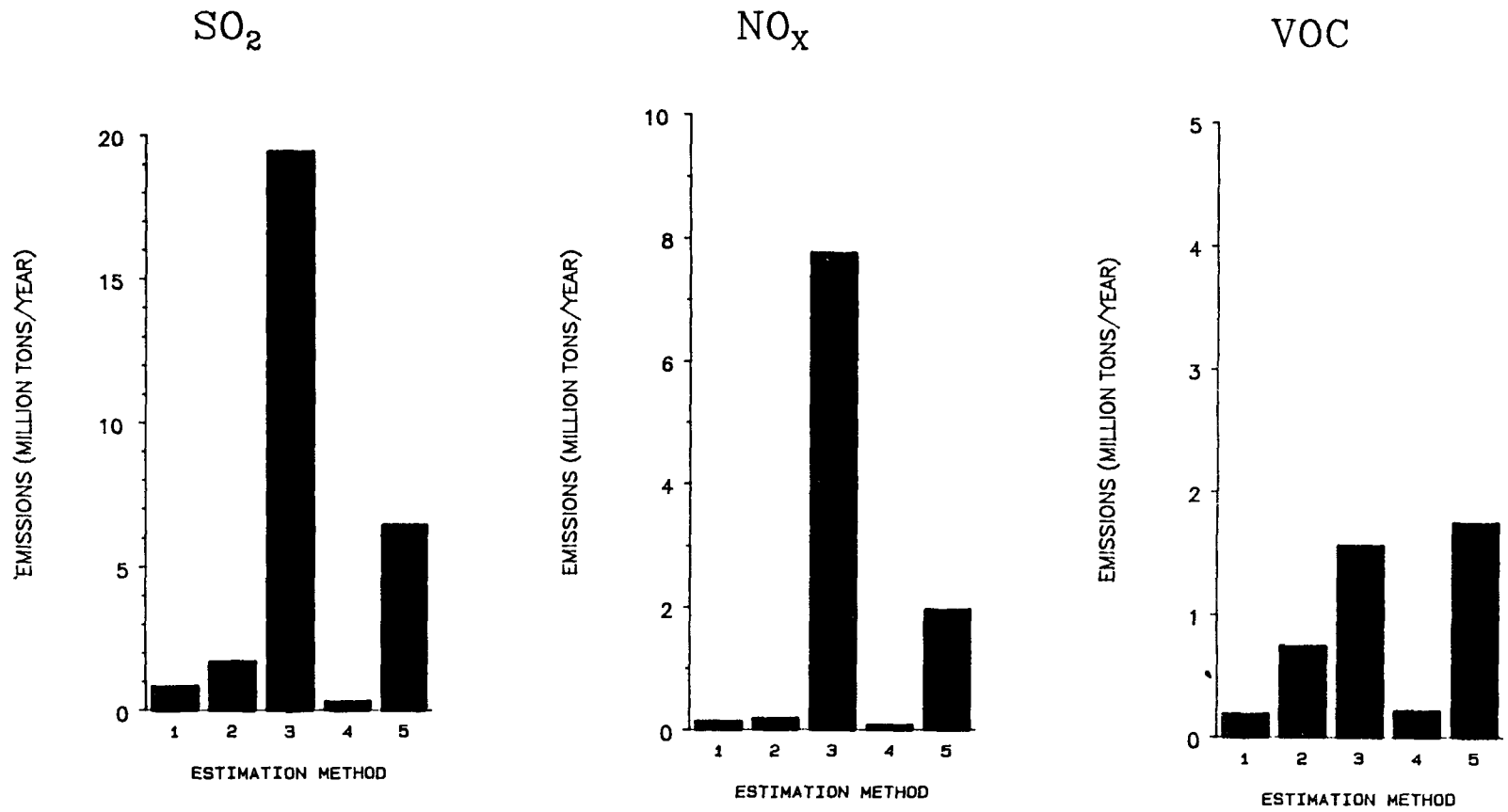


Figure 2-5. 1980 NAPAP Emissions Inventory Version 5.0 - spatial distribution of point sources emitting greater than 25,000 tons/year SO_2.



Key to estimation method codes:

1. Stack Test
2. Material Balance
3. Emission Factor (AP-42)
4. Engineering Judgement
5. Local/Other Emission Factor

Figure 2-6. 1980 NAPAP Emissions Inventory Version 5.0 - distribution of point source emissions by estimation method.

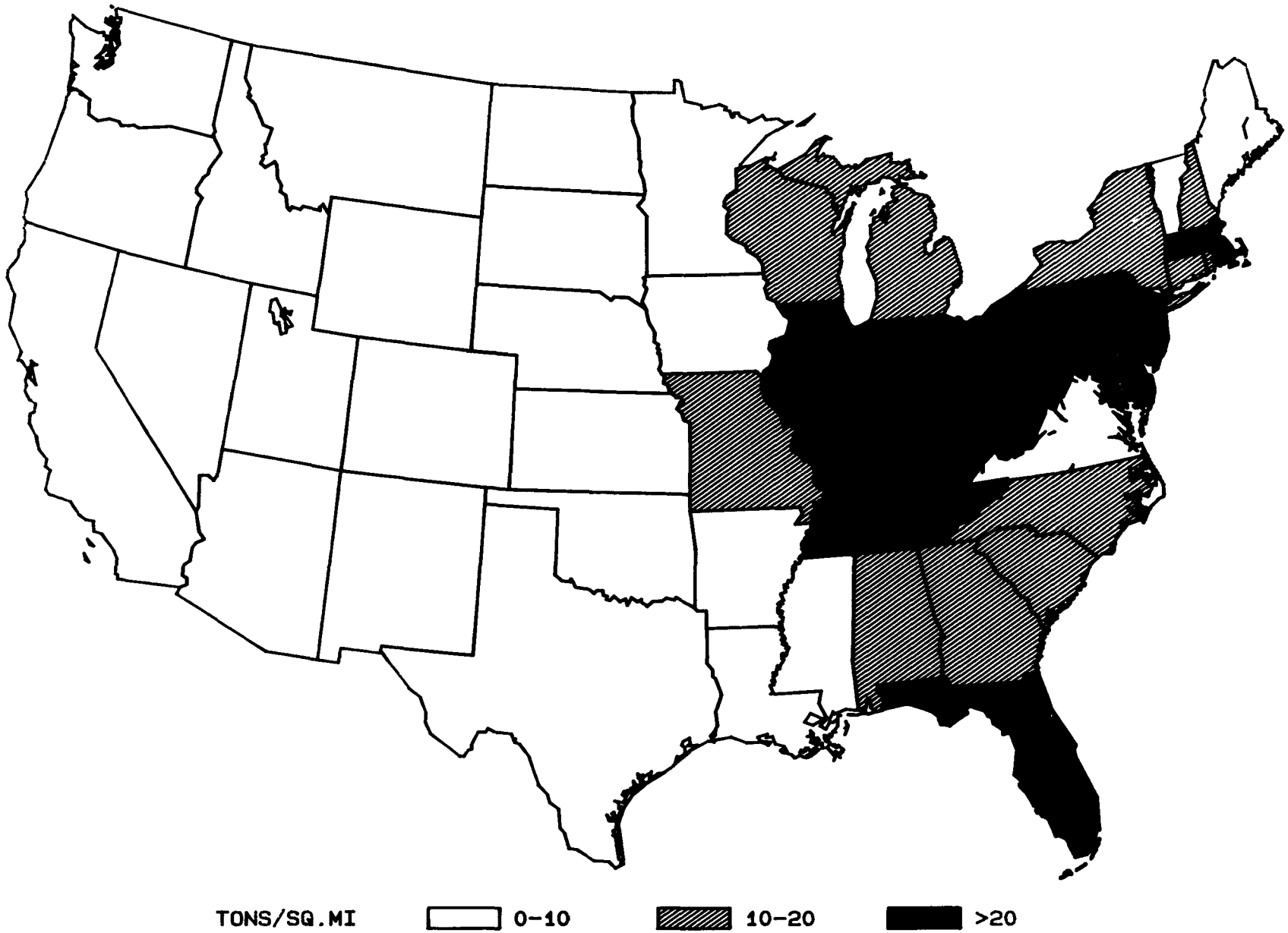


Figure 2-7. 1980 NAPAP Emissions Inventory Version 5.0 - SO_2 state emissions density.

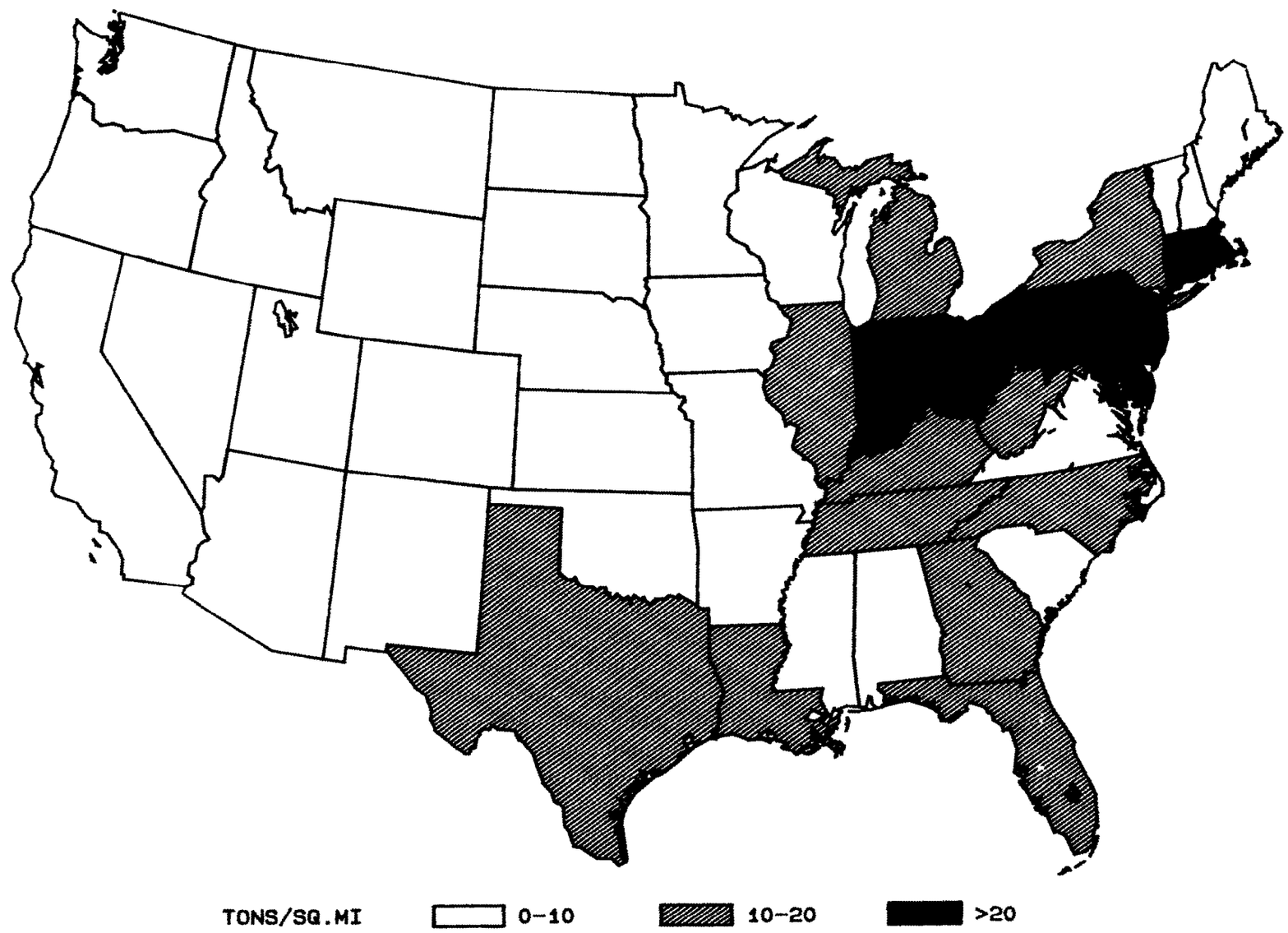


Figure 2-8. 1980 NAPAP Emissions Inventory Version 5.0 - NO_x state emissions density.

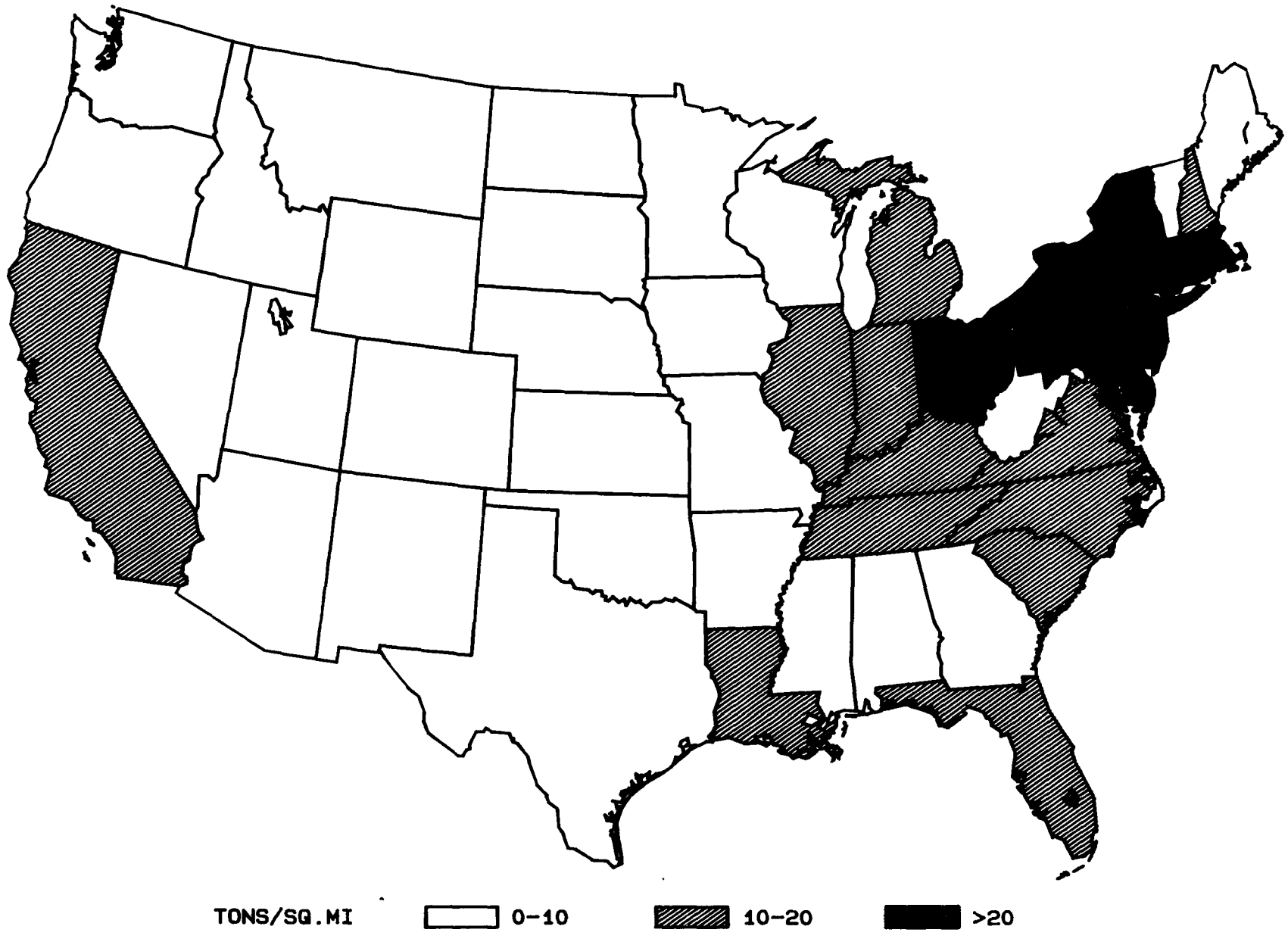


Figure 2-9. 1980 NAPAP Emissions Inventory Version 5.0 - VOC state emissions density.

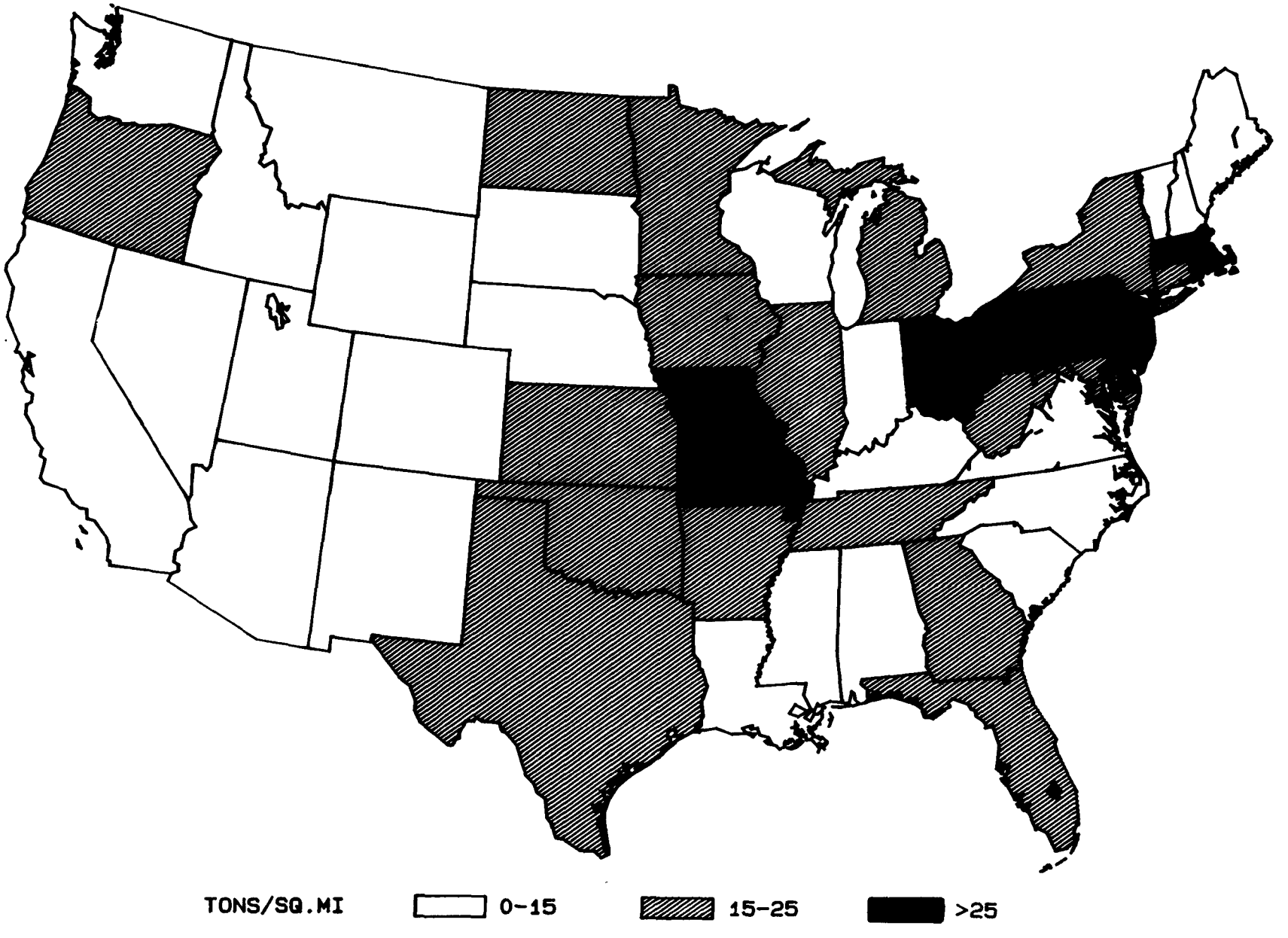


Figure 2-10. 1980 NAPAP Emissions Inventory Version 5.0 - TSP state emissions density.

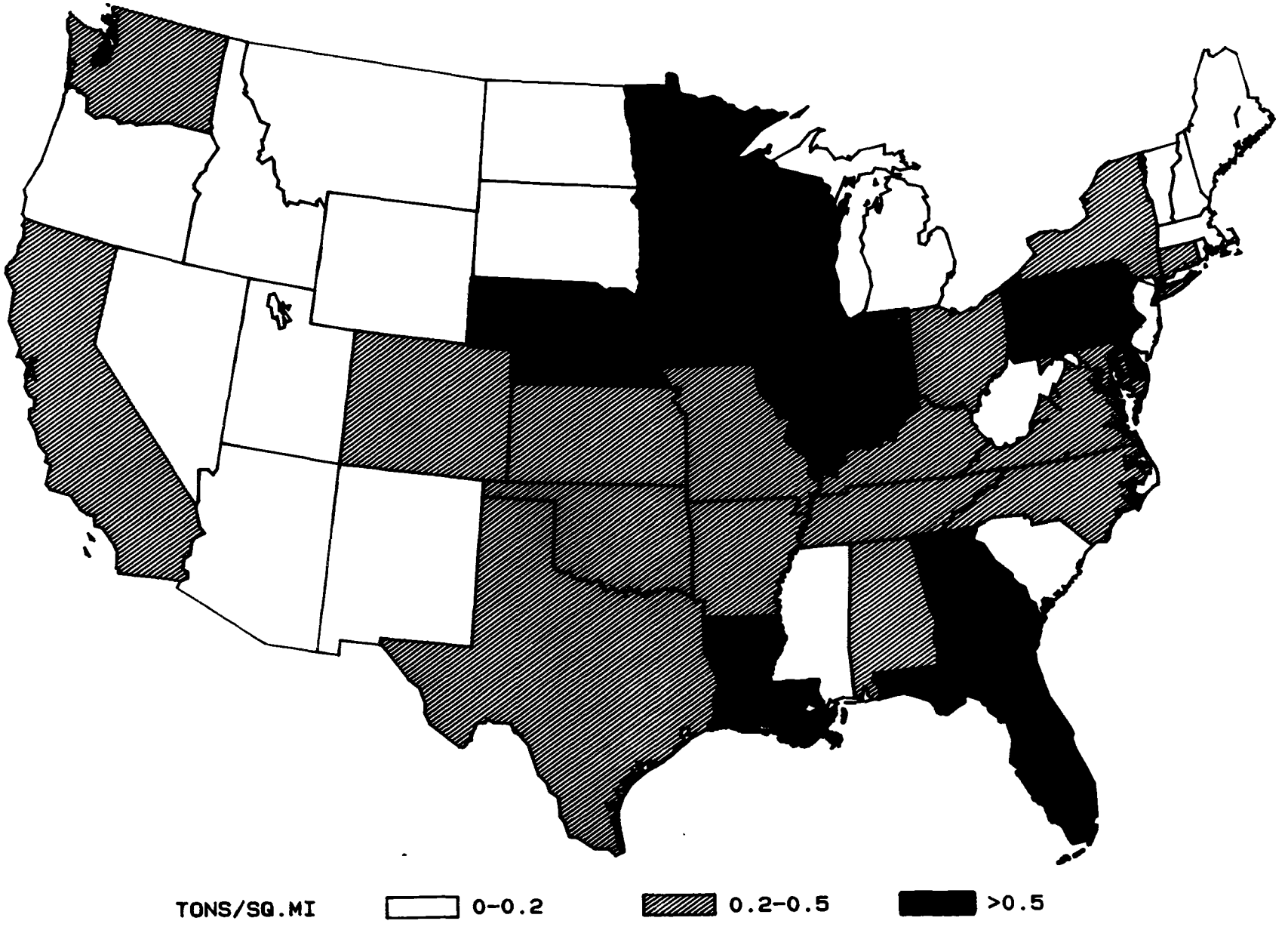


Figure 2-11. 1980 NAPAP Emissions Inventory Version 5.0 - NH_3 state emissions density.

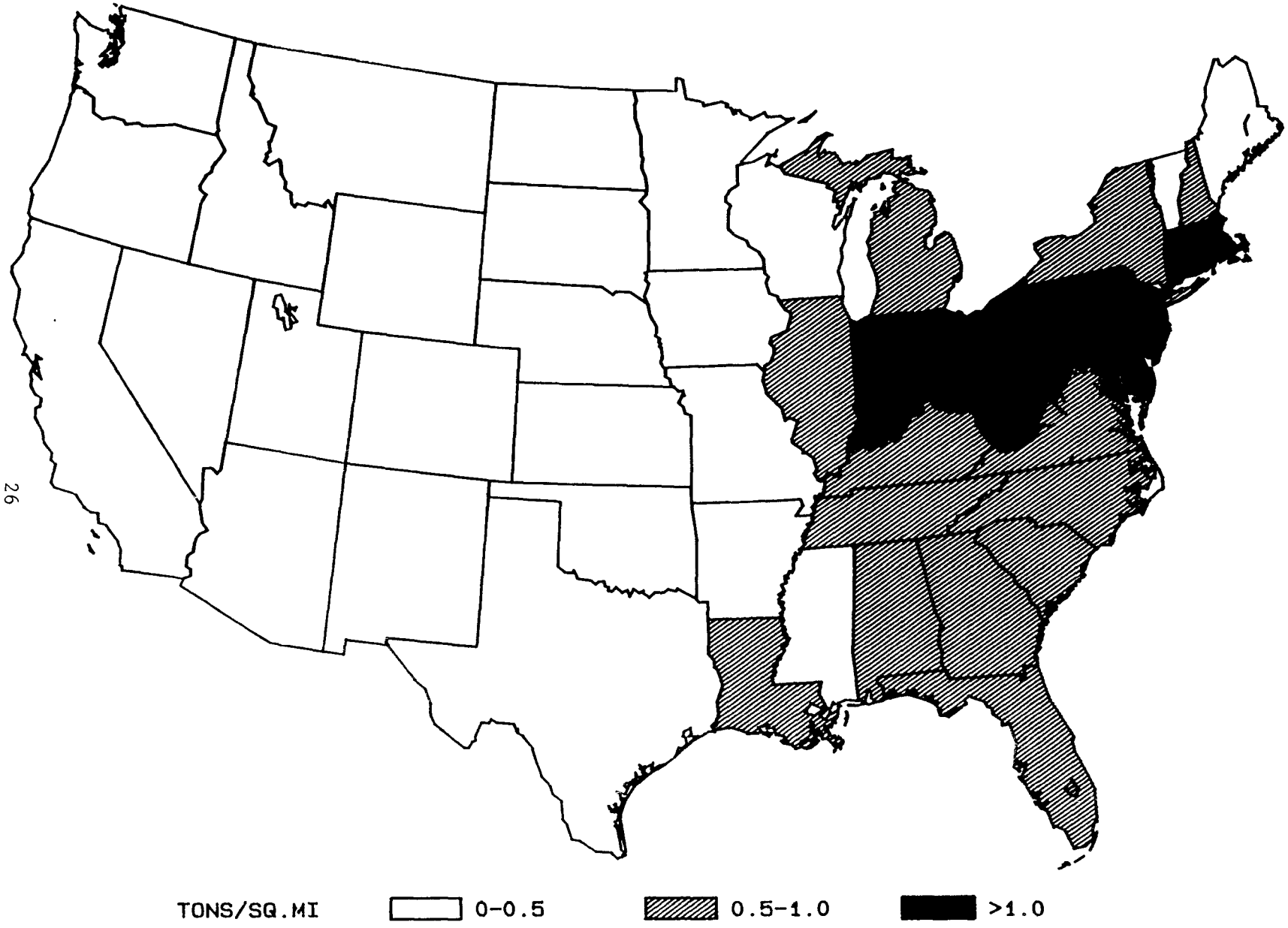


Figure 2-12. 1980 NAPAP Emissions Inventory Version 5.0 - SO_4 state emissions density.

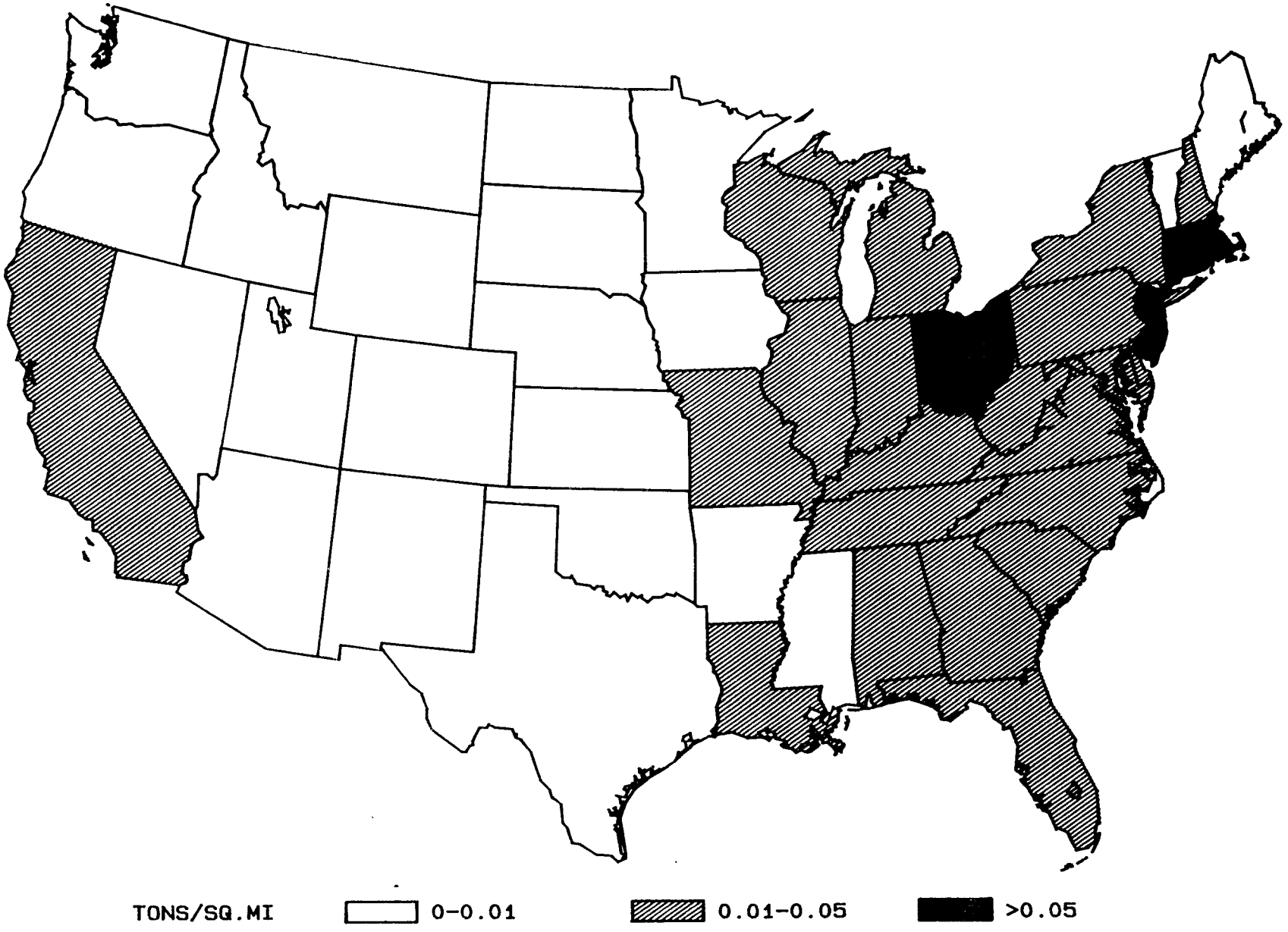


Figure 2-13. 1980 NAPAP Emissions Inventory Version 5.0 - Pb state emissions density.

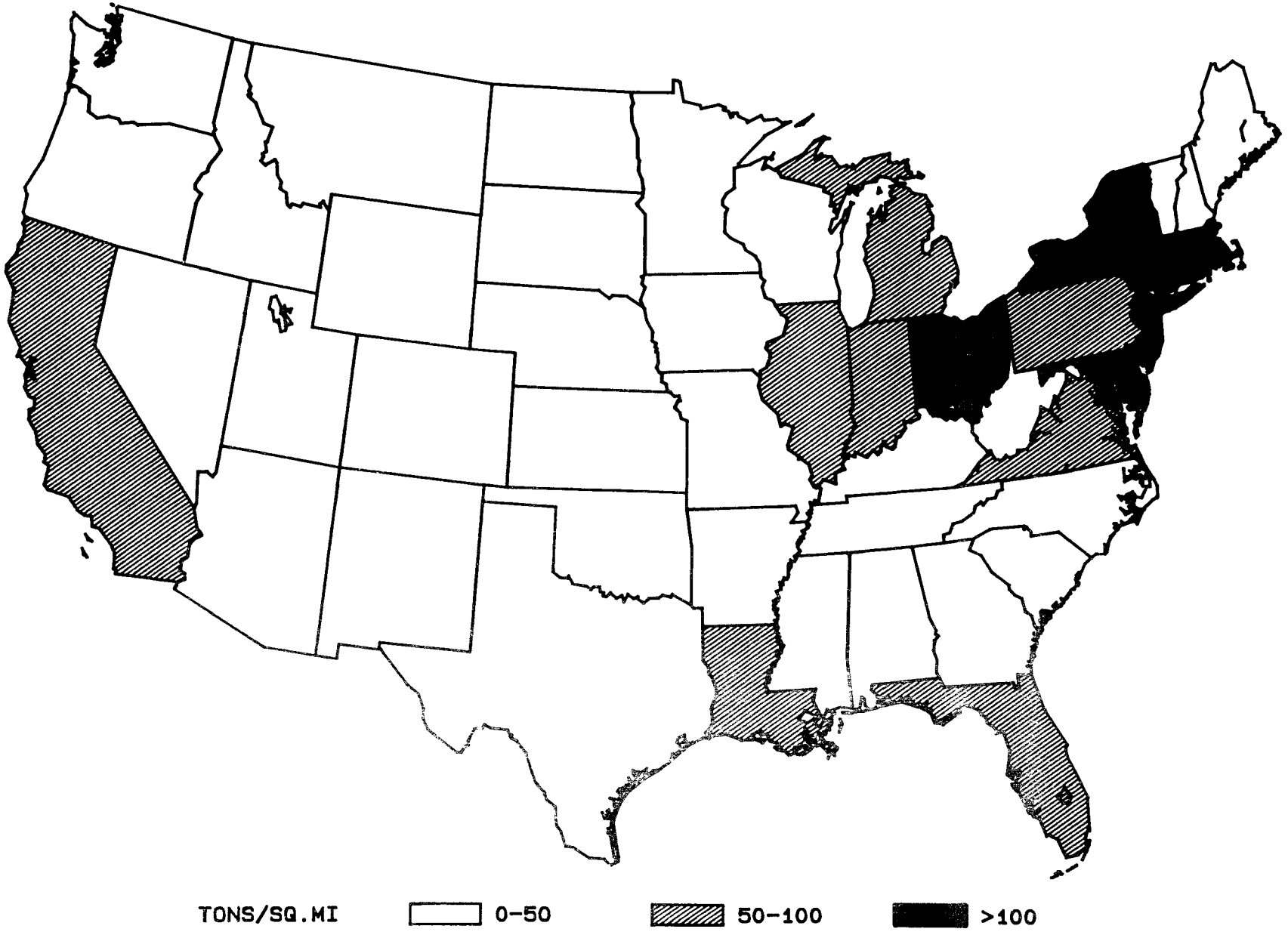


Figure 2-14. 1980 NAPAP Emissions Inventory Version 5.0 - CO state emissions density.

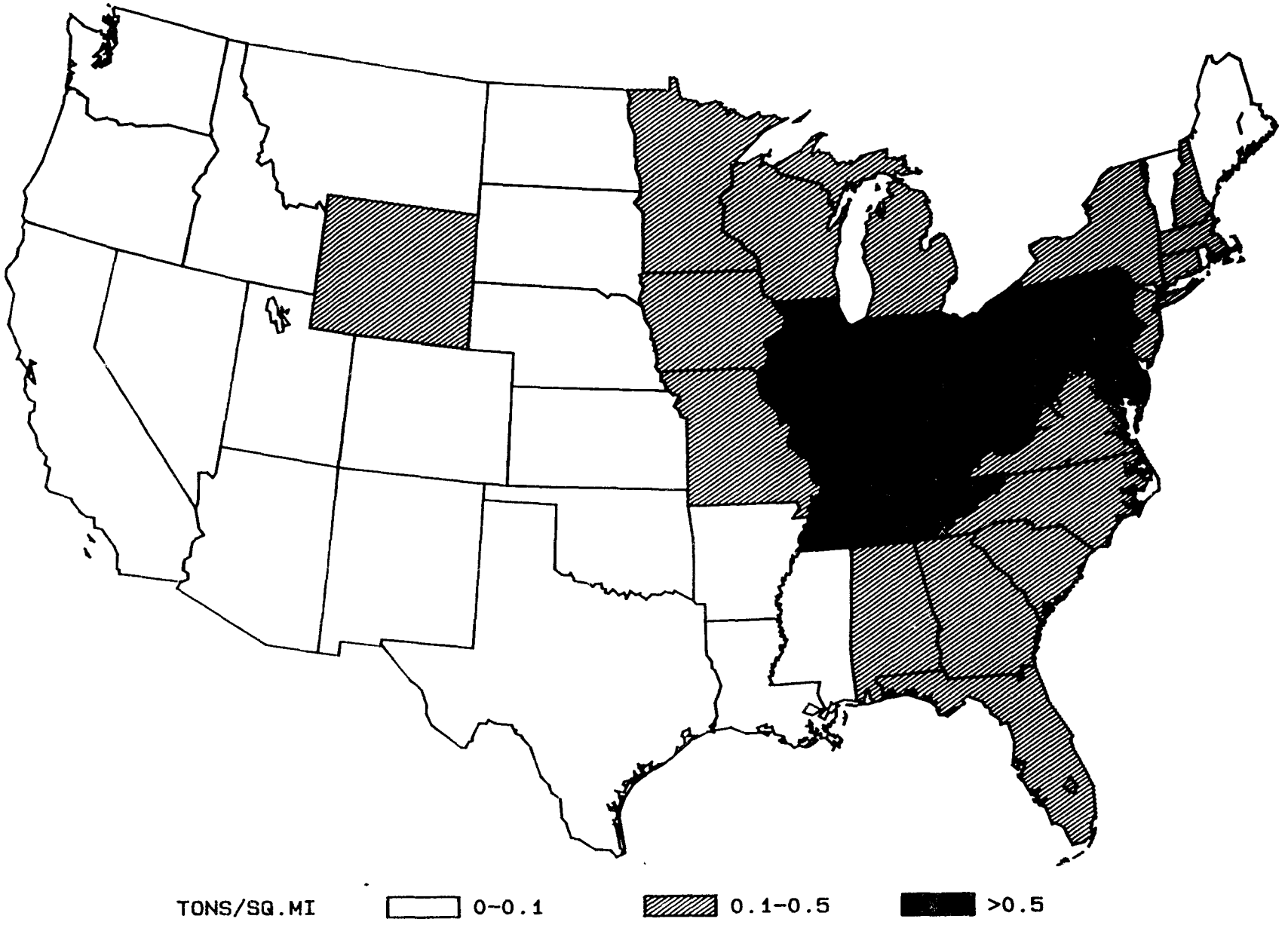


Figure 2-15. 1980 NAPAP Emissions Inventory Version 5.0 - HCl state emissions density.

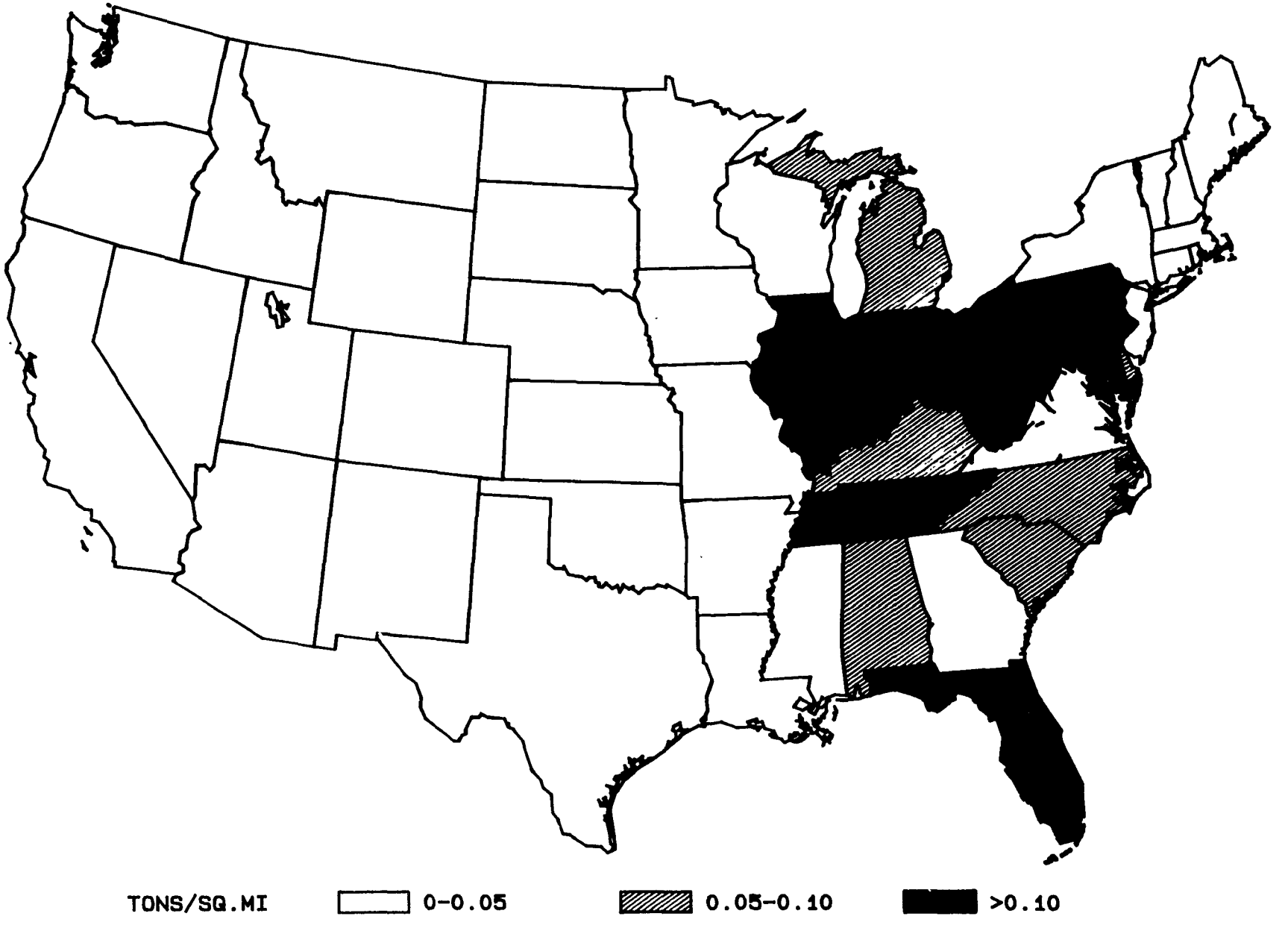


Figure 2-16. 1980 NAPAP Emissions Inventory Version 5.0 - HF state emissions density.

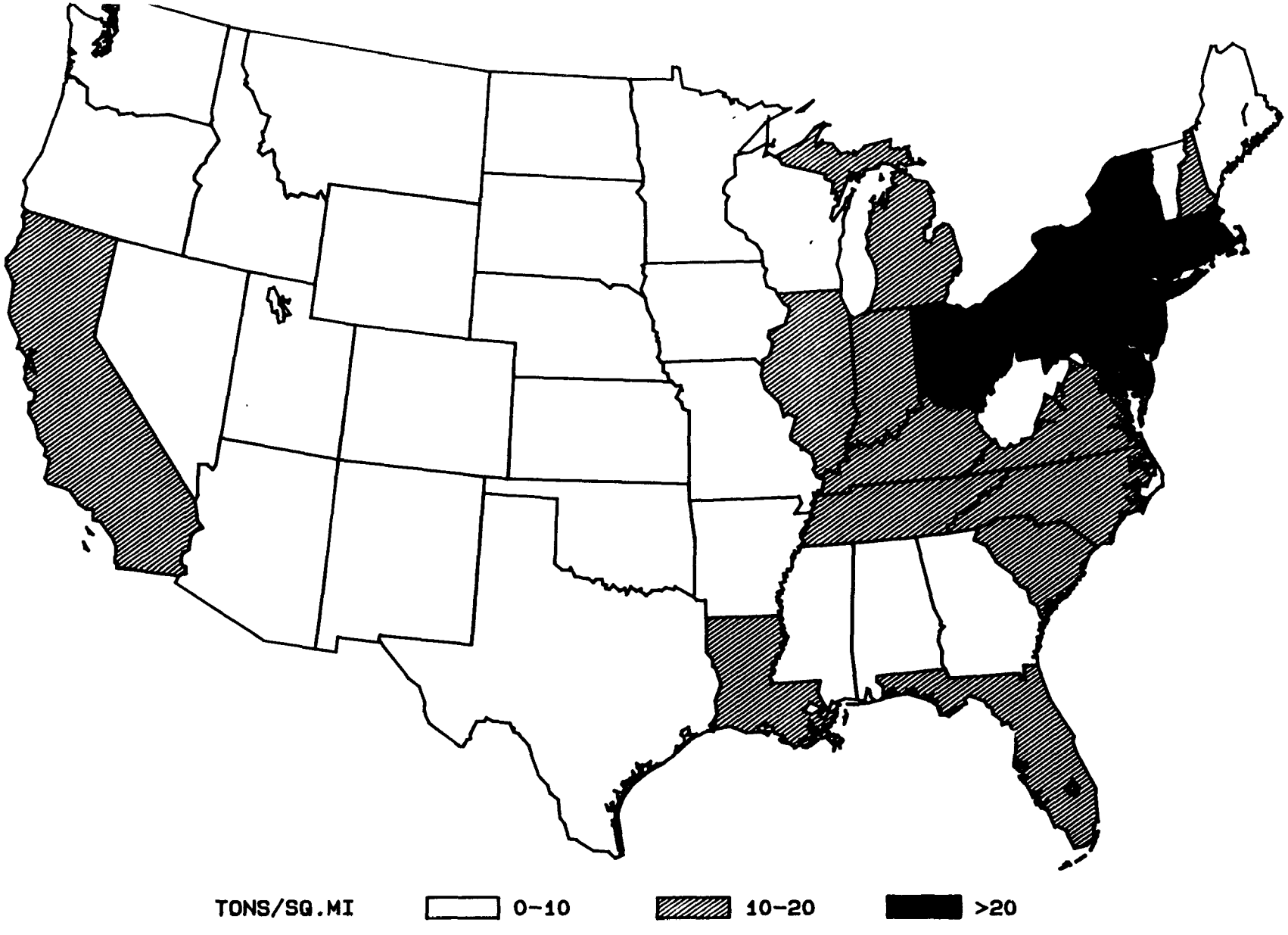


Figure 2-17. 1980 NAPAP Emissions Inventory Version 5.0 - THC state emissions density.

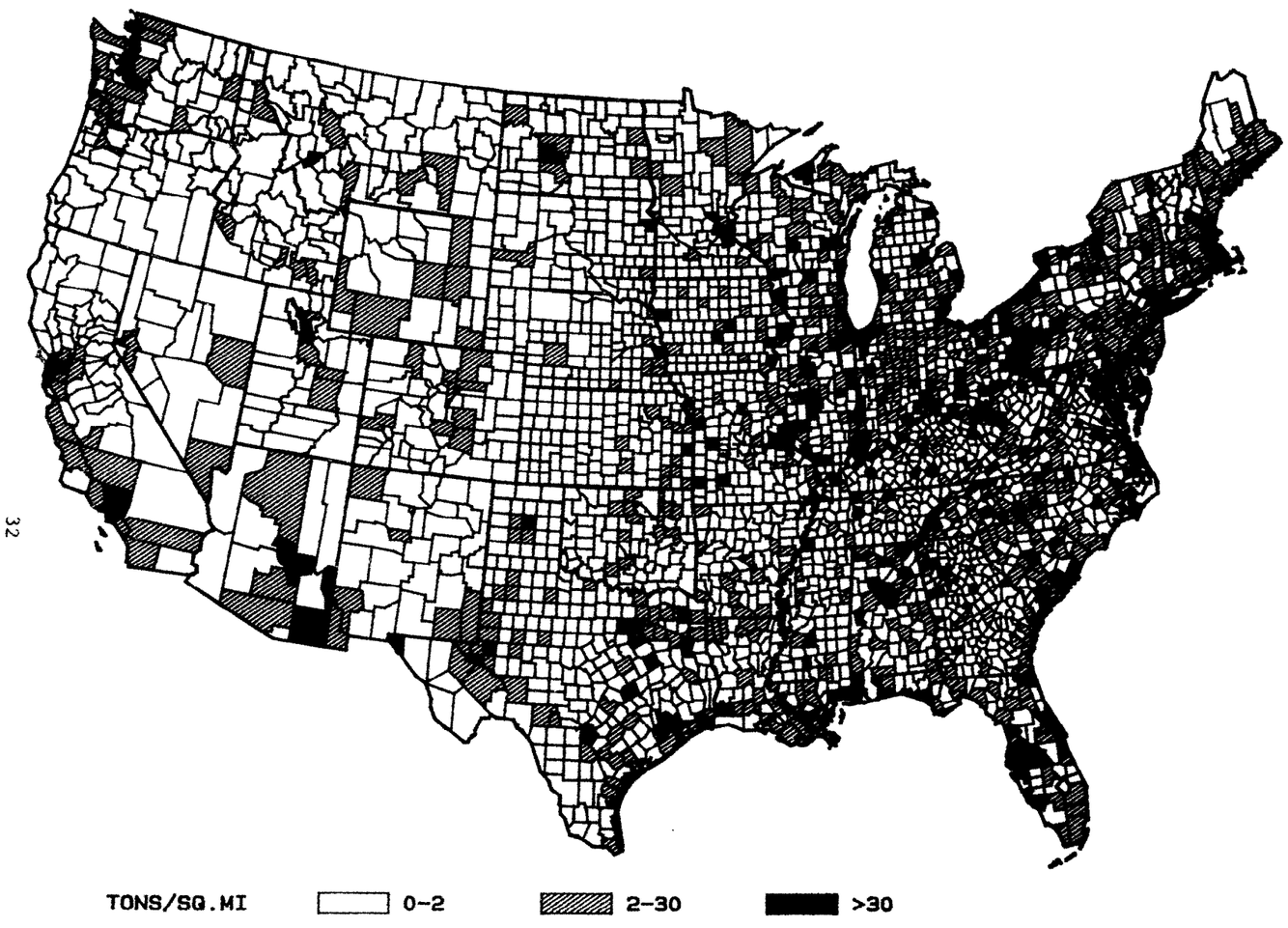


Figure 2-18. 1980 NAPAP Emissions Inventory Version 5.0 - SO_2 county emissions density.

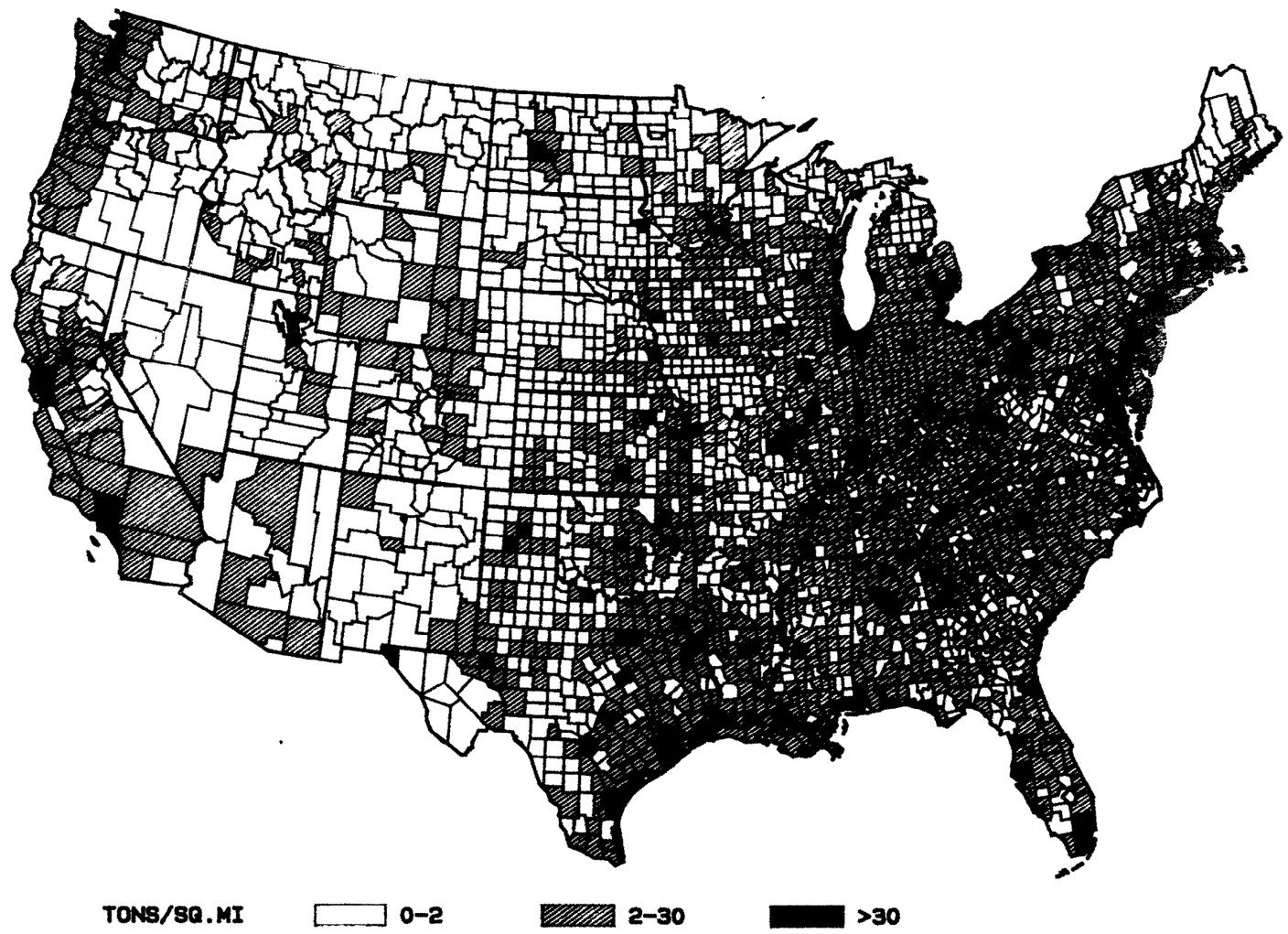


Figure 2-19. 1980 NAPAP Emissions Inventory Version 5.0 - NO_x county emissions density.

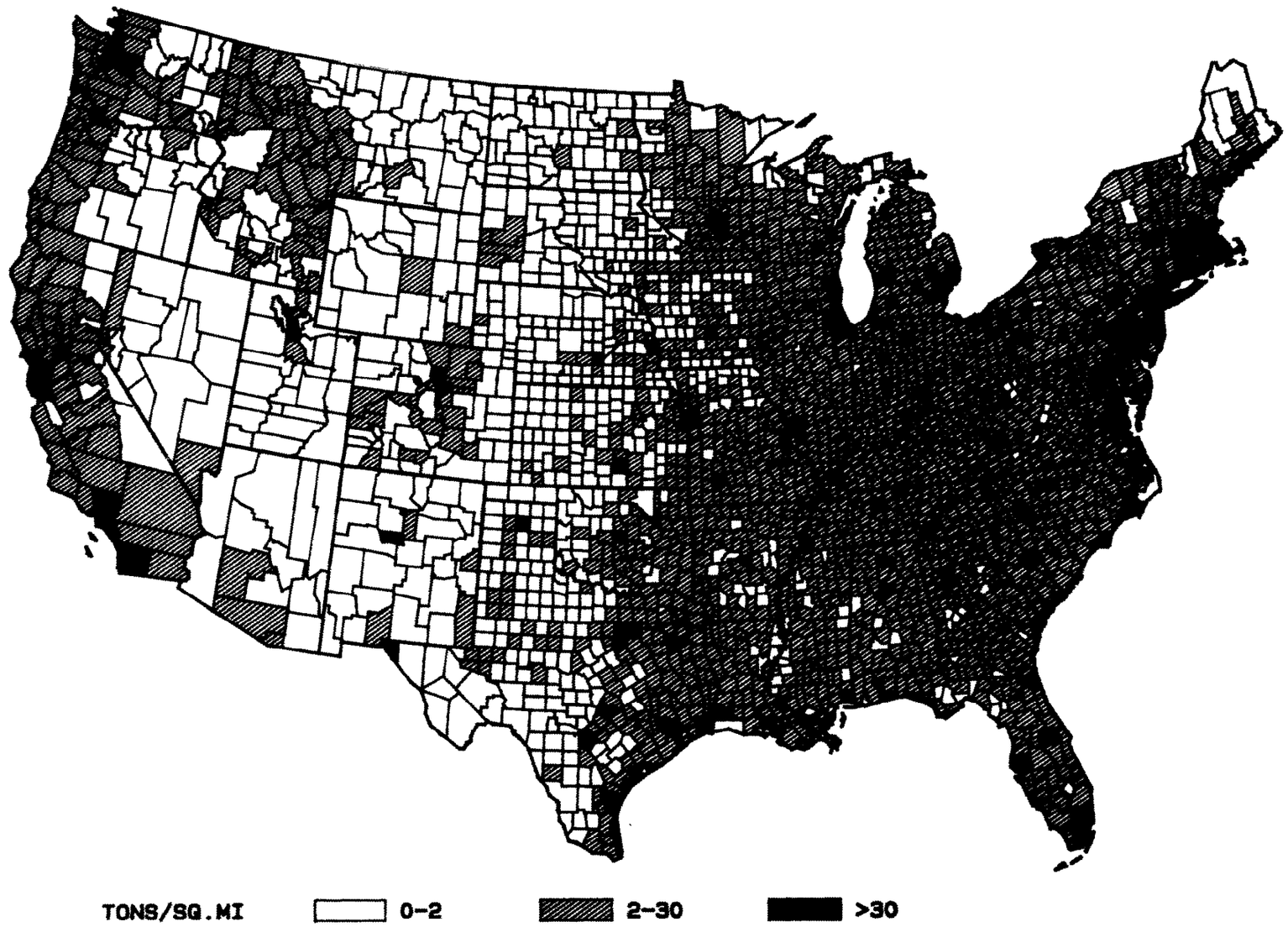


Figure 2-20. 1980 NAPAP Emissions Inventory Version 5.0 - VOC county emissions density.

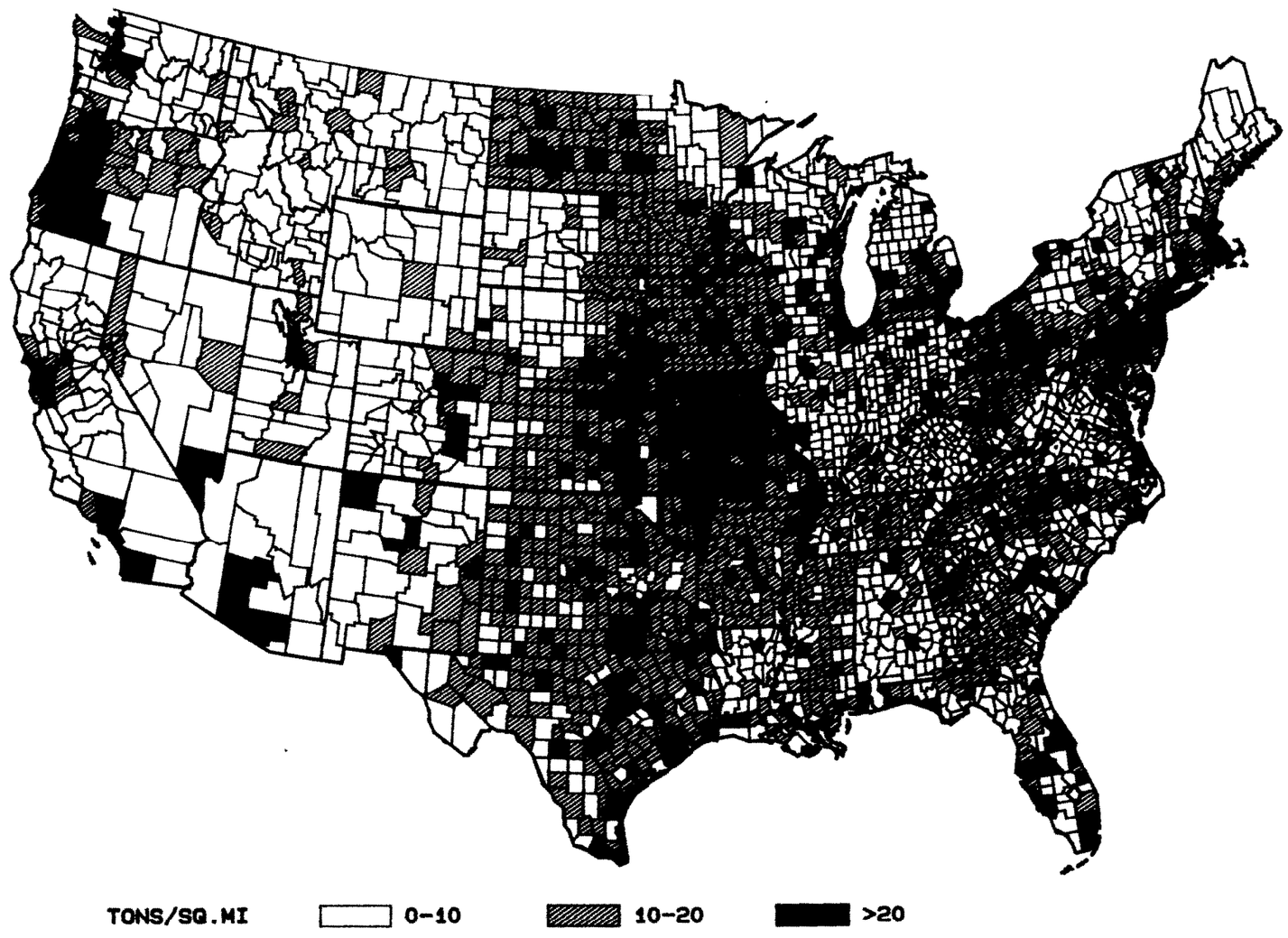


Figure 2-21. 1980 NAPAP Emissions Inventory Version 5.0 - TSP county emissions density.

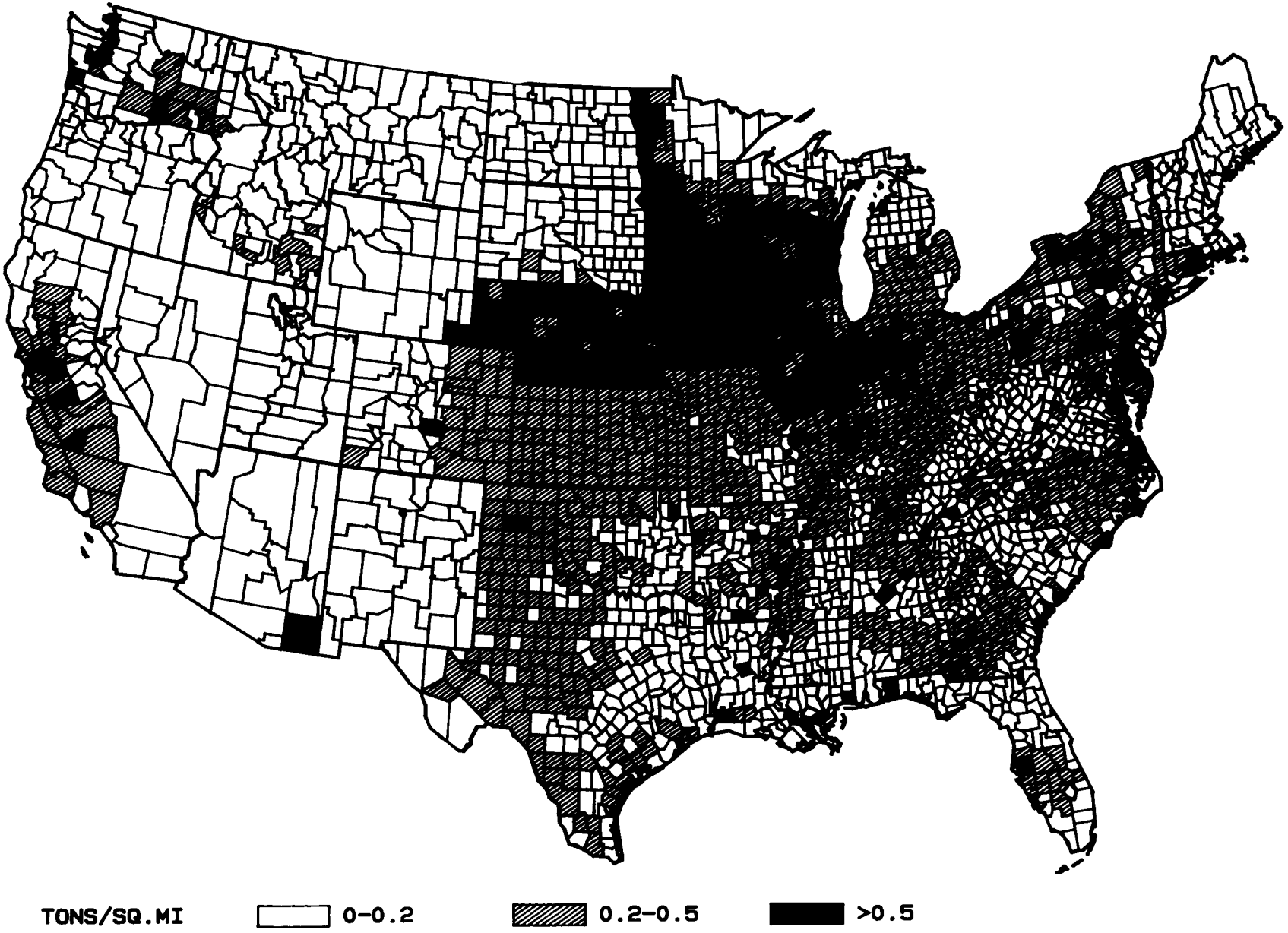


Figure 2-22. 1980 NAPAP Emissions Inventory Version 5.0 - NH_3 county emissions density.

significantly greater degree of resolution. Emissions ranges for SO_2, NO_x and VOC were standardized for comparative purposes, but it was not practical to extend this standardization to other pollutants due to their radically different emissons levels. In addition, emissions ranges on the state density maps generally differ from those on the county density maps for the same pollutant. This accounts for the presence of many counties in Arizona and New Mexico in the middle SO_2 emissions range, while the aggregated state density falls in the lowest category in Figure 2-7. Ammonia ranges are comparatively narrow, making the state density categories highly sensitive to individual counties with exceptionally high emissions. In Louisiana, for example, enough ammonia is generated by three counties to place the entire state within the high range on the state density map. The majority of SO_2, NO_x, and VOC emissions are associated with heavily industrialized areas, primarily east of the Mississippi River. Total particulate emissions are concentrated in both urban and agricultural areas, while ammonia emissions are centered in the midwest, due principally to agricultural applications.

VERSION 5.2

The 1980 NAPAP Eulerian Modeling Emissions Inventory (Version 5.2) provides additional temporal, spatial, and species resolution of the information contained in Version 5.0 by applying a series of allocation factors to the annual emissions data. A detailed description of the development and application of these factors is the subject of Section 6 of this report.

Tables 2-7 through 2-9 summarize emissions by EPA region, state, and province, respectively. Note that NO_x emissions are apportioned into NO and NO_2, TSP emissions include four classes of alkaline dust, and total hydrocarbons (THC) are allocated to classes based on photochemical reactivity. Region 5 remains the largest source of hydrocarbon emissions, while Regions 4 and 6 also contribute significantly. Among hydrocarbons, alkanes have the largest emissions, primarily due to the large number of individual species represented in the class (approximately half of the 160 species in the inventory). On a state level, Texas and California lead in emissions of virtually all hydrocarbon species; in Canada, Ontario, Quebec, and Alberta are the greatest contributors.

The reader will note that Version 5.2 emissions totals for some pollutants are slightly smaller than those in the 5.0 inventory. This is due to the fact that some emissions sources could not be properly allocated due to missing or invalid data. As an example, 40 Canadian point source observations fell outside the northern and western boundaries of the NAPAP grid system and were therefore not retained in Version 5.2 of the inventory. A complete synopsis of inventory processing is contained in Section 7.

The NAPAP 5.2 Inventory can temporally allocate emissions to the hourly level for a typical weekday, Saturday, or Sunday in any of the four seasons. Table 2-10 illustrates the seasonal variation in emissions of SO_2, NO_x, and VOC. The greatest variation (2.7 percentage points between spring and fall) occurs for VOC, while NO_x emissions are relatively independent of

TABLE 2-7a. 1980 NAPAP EMISSIONS INVENTORY VERSION 5.2 - ANNUAL U.S. POINT AND AREA SOURCE EMISSIONS BY EPA REGION

EPA REGION	SO2	SO4	NO	NO2	Pb	CO	HCl	HF	NH3	TSP	Ca	Mg	Na	K	VOC	THC
	TONS/YEAR															
REGION 1	685,936	41,953	552,696	43,882	1,415	4,703,212	3,847	215	2,470	657,426	312	183	169	80	1,185,538	1,274,058
REGION 2	1,180,163	63,920	1,075,799	78,555	1,979	7,052,898	11,835	2,208	14,042	1,204,930	1,404	1,168	559	315	1,857,619	2,016,830
REGION 3	3,858,772	126,506	2,096,543	138,182	3,748	9,526,520	86,787	13,285	40,660	2,573,135	10,367	4,162	1,713	1,991	2,210,510	2,360,328
REGION 4	6,473,217	206,358	3,725,913	252,170	5,199	16,253,808	130,211	48,740	135,784	5,088,856	13,766	4,664	2,049	1,306	4,075,244	4,316,670
REGION 5	7,867,419	202,874	4,187,088	280,130	8,105	18,753,223	165,692	27,076	205,228	5,286,234	38,742	10,528	4,869	7,451	4,414,825	4,805,098
REGION 6	2,179,556	113,688	4,640,733	316,592	3,573	15,437,049	35,964	10,851	133,234	9,727,381	13,762	3,265	696	751	3,537,629	3,847,014
REGION 7	1,973,687	45,243	1,440,226	101,678	1,725	4,993,826	44,940	5,768	176,547	7,049,162	22,074	4,103	1,124	429	1,285,770	1,409,712
REGION 8	793,365	54,576	993,160	72,028	1,485	6,096,071	28,165	3,765	55,581	5,204,444	8,339	2,758	1,362	2,220	1,005,242	1,073,957
REGION 9	1,512,034	73,455	1,604,421	139,155	3,116	11,356,048	12,963	1,676	44,639	3,297,549	3,359	800	181	304	2,564,528	2,785,895
REGION 10	429,988	47,035	560,507	52,780	1,387	5,136,282	6,120	1,850	30,479	2,528,253	1,684	396	253	627	1,027,643	1,087,898
Contig. U.S.	26,954,136	975,608	20,877,086	1,475,151	31,732	99,308,937	526,524	115,434	838,664	42,617,370	113,808	32,025	12,975	15,474	23,164,547	24,977,459

TABLE 2-7b. 1980 NAPAP EMISSIONS INVENTORY VERSION 5.2 - ANNUAL U.S. POINT AND AREA SOURCE HYDROCARBON SPECIES EMISSIONS BY EPA REGION

EPA REGION	Methane	Ethane	Propane	Butane	Iso-Butane	Pentane	Iso-Pent	Alkanes	Ethylene	Propylene	Iso-Buten	Alkenes
	THOUSAND MOLES/YEAR											
REGION 1	4,488,261	327,245	134,969	854,466	128,371	123,580	30,523	6,570,576	1,428,731	674,720	2,332	1,258,505
REGION 2	8,243,208	491,826	324,307	1,414,954	268,306	294,022	37,972	11,110,085	2,414,630	1,116,702	4,020	1,988,577
REGION 3	7,164,608	797,476	453,331	1,528,977	341,262	261,384	53,953	12,535,958	3,187,076	1,346,102	9,897	2,445,803
REGION 4	11,923,392	1,102,242	555,938	2,615,654	565,032	428,845	60,880	24,080,968	7,256,567	2,580,343	18,138	5,180,087
REGION 5	19,943,921	1,348,978	501,301	2,778,259	506,159	485,791	81,174	26,050,896	6,487,520	2,766,134	21,432	4,770,952
REGION 6	15,760,210	1,070,750	1,008,229	2,561,530	591,888	858,782	17,009	19,898,278	7,984,392	3,111,527	15,376	4,616,501
REGION 7	6,391,697	395,581	202,425	806,464	149,087	154,481	15,734	7,408,045	2,344,611	890,088	7,961	1,492,723
REGION 8	3,569,567	224,119	193,733	715,431	162,461	153,049	8,838	5,623,277	2,804,459	620,664	9,109	1,789,389
REGION 9	11,455,675	708,892	517,552	2,085,014	421,084	400,152	18,456	15,441,577	4,787,257	1,792,586	10,240	3,243,512
REGION 10	3,053,606	231,153	187,933	611,297	167,503	134,208	15,835	5,727,904	2,916,488	558,798	4,737	1,936,466
Contig. U.S.	91,994,146	6,698,261	4,079,718	15,972,045	3,301,153	3,294,293	340,374	134,447,565	41,611,730	15,457,664	103,241	28,722,513

EPA REGION	Benzene	Toluene	Xylene	Eth Benz	Aromatics	Formaldeh	Acetaldeh	Aldeh	Acetone	Ketones	Org. Acid
	THOUSAND MOLES/YEAR										
REGION 1	227,905	931,231	1,056,215	231,621	162,388	1,411,102	49,580	28,945	507,699	261,771	121,765
REGION 2	433,089	1,337,002	1,352,810	301,227	277,135	1,837,451	88,371	43,927	587,929	333,884	164,995
REGION 3	477,301	1,673,599	1,871,433	411,867	356,953	1,746,176	210,780	59,670	623,232	411,091	198,794
REGION 4	895,017	2,960,603	2,439,933	501,777	679,826	2,868,961	392,474	199,568	1,336,863	881,286	280,819
REGION 5	949,131	3,295,684	3,082,877	687,808	723,409	3,014,136	452,399	88,477	1,528,633	1,080,721	392,563
REGION 6	1,154,477	2,223,543	1,233,095	186,129	798,511	3,481,031	370,831	158,497	1,054,279	566,651	153,211
REGION 7	311,050	1,064,588	789,555	137,583	244,343	923,051	174,703	37,233	399,882	323,485	84,856
REGION 8	195,570	616,120	393,871	82,388	179,678	865,120	190,449	38,435	126,026	75,275	23,812
REGION 9	684,105	1,833,406	987,454	206,728	449,368	2,422,941	218,516	132,590	951,808	353,087	120,563
REGION 10	165,126	556,652	555,232	123,692	139,926	629,623	99,842	28,951	137,627	89,578	53,259
Contig. U.S.	5,492,770	16,492,428	13,762,475	2,870,820	4,011,537	19,199,592	2,247,947	816,293	7,253,977	4,376,829	1,594,637

For conversion of hydrocarbon classes to tons/year, see discussion in Appendix E.

TABLE 2-8a. 1980 NAPAP EMISSIONS INVENTORY VERSION 5.2 - ANNUAL U.S. POINT AND AREA SOURCE EMISSIONS BY STATE

State	SO2	SO4	NO	NO2	Pb	CO	HCl	HF	NH3	TSP	Ca	Mg	Na	K	VOC	THC
	TONS/YEAR															
Alabama	857,549	32,991	457,653	29,603	681	1,811,119	19,542	3,539	11,964	439,271	1,604	488	356	280	391,455	425,591
Arizona	844,078	30,871	245,625	18,269	366	1,310,433	8,937	1,087	11,921	841,489	1,175	334	111	57	254,096	271,243
Arkansas	87,127	10,478	194,532	16,611	264	1,045,560	1,786	1,445	25,418	874,245	307	95	23	48	223,135	234,377
California	519,799	35,917	1,268,139	114,625	2,643	9,524,250	472	145	32,013	1,536,414	1,777	375	48	235	2,216,485	2,414,927
Colorado	140,138	9,347	284,405	20,372	756	2,302,185	9,110	1,186	24,987	1,134,995	2,320	445	177	119	356,946	385,554
Connecticut	63,665	8,110	128,656	11,094	381	1,192,328	491	0	1,946	120,226	28	8	3	3	284,183	299,090
Delaware	124,669	4,645	58,416	3,850	71	242,885	1,152	184	2,051	49,382	167	176	84	45	77,101	81,188
Dist. of Colum.	15,325	1,121	23,194	2,158	39	338,780	655	23	59	15,099	7	7	4	2	44,081	48,400
Florida	1,102,994	30,793	663,745	48,464	1,087	4,071,755	8,834	29,228	28,793	919,841	6,269	931	201	84	828,561	868,694
Georgia	900,080	30,684	553,085	37,565	697	2,335,826	20,453	2,503	35,359	882,031	299	263	201	222	508,361	530,222
Idaho	56,210	8,676	82,313	9,561	548	1,280,507	329	242	8,133	330,728	87	23	10	37	222,050	230,398
Illinois	1,464,520	42,270	909,708	63,279	2,635	4,246,797	34,318	7,937	68,633	932,702	5,892	1,899	708	899	988,586	1,092,842
Indiana	1,970,870	38,111	741,610	45,233	1,101	2,374,627	33,494	4,607	29,361	496,649	5,026	2,324	1,694	4,565	562,647	623,821
Iowa	334,278	11,010	284,792	20,962	427	1,105,666	11,505	1,706	80,410	1,237,845	3,038	685	386	54	237,157	258,603
Kansas	228,074	7,409	479,624	33,690	250	1,072,560	6,614	799	34,189	1,852,371	354	103	42	22	250,269	298,662
Kentucky	1,150,036	23,108	519,674	31,680	519	1,594,516	22,635	3,841	8,185	452,395	1,734	970	349	183	441,688	469,555
Louisiana	401,333	24,581	664,196	44,770	554	2,541,546	857	1,761	26,314	559,071	407	58	133	219	625,559	669,847
Maine	133,369	11,223	62,433	4,635	124	506,637	40	5	417	127,174	72	21	75	36	141,991	149,051
Maryland	303,471	10,727	242,626	18,477	456	1,459,780	6,559	1,307	2,992	227,611	442	217	101	79	363,270	394,420
Massachusetts	358,065	14,498	251,390	19,380	666	2,133,002	2,241	86	104	210,504	193	142	65	35	515,765	568,190
Michigan	841,399	32,609	668,942	46,435	1,148	3,613,069	22,871	3,150	10,433	880,263	9,496	1,217	482	565	916,363	987,380
Minnesota	238,705	14,535	340,540	26,090	469	1,928,665	8,820	1,120	48,624	1,199,026	2,218	624	160	79	469,214	496,094
Mississippi	303,846	11,281	274,714	19,797	297	991,881	2,599	314	7,809	587,204	125	68	86	41	261,800	278,672
Missouri	1,333,218	22,746	515,805	33,992	849	2,206,090	22,184	2,681	17,264	2,877,954	18,356	3,228	685	347	629,726	673,526
Montana	169,224	7,583	127,844	12,455	310	1,422,156	2,003	243	3,890	880,654	129	56	23	26	236,467	245,600
Nebraska	78,117	4,078	160,005	13,034	199	609,510	4,637	582	44,683	1,080,992	326	87	12	6	168,618	178,920
Nevada	148,157	6,667	90,658	6,260	107	521,365	3,554	444	705	919,646	407	91	21	12	93,948	99,725
New Hampshire	108,484	4,867	55,291	3,666	100	352,582	1,036	124	1	66,310	15	9	23	3	103,987	109,401
New Jersey	309,856	20,690	387,707	29,802	706	2,294,053	2,566	328	80	402,215	37	24	11	6	696,758	749,784
New Mexico	262,555	9,202	237,643	16,473	174	932,466	8,299	977	4,523	1,249,009	923	409	178	105	191,042	213,500
New York	870,307	43,230	688,092	48,752	1,273	4,758,845	9,269	1,880	13,961	802,715	1,367	1,144	548	310	1,160,860	1,267,046
North Carolina	655,591	31,046	499,064	33,611	727	2,289,334	23,667	3,310	21,118	700,462	2,247	943	303	165	614,002	655,149
North Dakota	115,391	11,574	128,008	8,083	72	282,219	119	60	6,642	1,295,268	777	786	371	199	53,274	58,166
Ohio	2,681,314	51,554	1,145,357	72,251	2,160	4,697,200	50,783	7,934	16,124	1,070,910	7,714	3,538	1,500	1,131	1,001,059	1,092,677
Oklahoma	104,168	9,558	422,056	31,010	412	1,854,007	5,765	768	15,266	1,107,180	5,438	648	34	29	324,988	347,352
Oregon	55,987	18,601	207,286	19,481	334	1,454,001	729	92	4,249	1,849,960	1,103	54	54	310	340,267	363,147
Pennsylvania	1,899,006	60,532	976,345	65,211	1,918	4,377,701	42,015	5,525	24,309	1,432,694	6,383	2,006	826	1,400	1,043,563	1,113,027
Rhode Island	14,168	1,491	33,295	2,958	82	316,586	27	0	0	32,323	1	0	1	1	81,042	86,846
South Carolina	344,968	17,550	259,758	18,334	459	1,207,907	9,045	1,648	4,440	451,493	486	337	178	122	474,791	501,073
South Dakota	40,863	3,798	73,063	6,293	70	509,495	235	38	12,941	715,996	2,168	475	89	9	95,639	101,160
Tennessee	1,158,153	28,905	498,219	33,117	732	1,951,470	23,436	4,357	18,117	656,159	1,002	665	375	299	554,586	587,715
Texas	1,324,373	59,869	3,122,306	207,728	2,169	9,063,470	19,257	5,900	61,713	5,937,876	6,686	2,056	329	351	2,172,905	2,381,939
Utah	116,615	8,886	145,205	10,552	191	990,051	3,588	511	1,961	690,811	2,831	892	658	1,844	160,449	172,386
Vermont	8,185	1,764	21,631	2,149	62	202,077	12	0	3	100,889	3	3	1	2	58,570	61,481
Virginia	370,780	21,579	355,772	27,662	646	2,322,403	7,328	1,385	10,913	466,354	2,422	1,090	402	223	527,715	561,508
Washington	317,791	19,758	270,908	23,738	505	2,401,774	5,062	1,516	18,097	347,565	494	319	188	280	465,326	494,352
West Virginia	1,145,522	27,902	440,190	20,824	618	784,971	29,078	4,861	335	381,995	946	666	296	240	154,780	161,785
Wisconsin	670,610	23,795	380,932	26,842	592	1,892,865	15,406	2,328	32,054	706,684	8,395	927	324	213	476,956	512,284
Wyoming	211,134	13,388	234,634	14,273	86	589,965	13,110	1,727	5,159	486,720	116	103	44	25	102,467	111,091
Contig. U.S.	26,954,136	975,608	20,877,086	1,475,151	31,732	99,308,937	526,524	115,434	838,664	42,617,370	113,808	32,025	12,975	15,474	23,164,547	24,977,459

TABLE 2-8b. 1980 NAPAP EMISSIONS INVENTORY VERSION 5.2 - ANNUAL U.S. POINT AND AREA SOURCE HYDROCARBON SPECIES EMISSIONS BY STATE

State	Methane	Ethane	Propane	Butane	Iso-Butane	Pentane	Iso-Penta	Alkanes	Ethylene	Propylene	Iso-Buten	Alkenes
	THOUSAND MOLES/YEAR											
Alabama	1,573,771	209,627	155,998	320,528	116,617	35,204	5,329	2,319,833	756,285	257,270	2,385	482,416
Arizona	896,985	53,822	24,755	150,781	26,862	14,227	1,646	1,520,405	656,653	181,695	1,725	422,069
Arkansas	558,234	52,601	25,129	140,577	30,055	24,437	3,369	1,305,146	503,046	177,029	1,458	321,801
California	10,260,471	633,765	484,114	1,862,844	382,842	375,136	16,040	13,384,252	3,927,557	1,541,610	7,648	2,684,126
Colorado	1,485,865	93,589	36,497	271,698	40,933	29,784	3,191	2,127,989	794,754	263,880	2,383	517,496
Connecticut	732,077	72,370	25,185	181,076	29,891	19,613	7,270	1,606,122	353,013	170,873	558	309,577
Delaware	205,177	17,314	11,797	52,016	10,594	13,841	922	381,500	100,872	46,113	321	80,139
Dist. of Colum.	204,402	23,401	1,196	18,458	3,051	385	105	290,630	72,146	82,772	131	32,585
Florida	1,996,490	190,339	64,620	603,312	111,848	90,327	4,996	5,048,220	1,667,630	660,287	3,215	1,153,037
Georgia	1,085,897	106,257	51,751	360,837	76,178	62,646	6,224	2,946,840	981,268	325,575	2,947	700,443
Idaho	430,560	28,034	59,608	105,347	48,168	38,322	2,387	1,109,709	971,704	73,974	768	629,825
Illinois	5,380,945	325,420	129,931	666,352	127,598	113,602	12,821	5,880,990	1,480,249	633,184	5,548	1,087,219
Indiana	3,147,863	193,805	71,539	339,975	61,311	55,777	11,583	3,242,282	883,593	341,907	4,005	594,963
Iowa	1,139,796	54,180	15,863	174,794	30,326	22,480	1,305	1,560,840	427,234	194,612	1,667	268,938
Kansas	2,474,816	155,411	105,469	189,434	42,278	58,562	1,112	1,446,173	480,608	170,076	2,744	298,532
Kentucky	1,374,175	124,553	76,867	282,557	60,201	61,642	7,962	2,670,051	914,457	270,926	2,320	681,889
Louisiana	2,084,408	245,672	197,016	372,151	91,413	123,265	2,452	3,488,418	1,800,977	827,238	2,032	931,941
Maine	309,467	51,938	26,038	70,755	13,461	23,856	8,232	661,775	129,826	63,819	270	152,992
Maryland	1,393,384	213,749	182,598	363,460	125,305	50,603	5,860	2,062,491	489,473	226,538	1,069	387,379
Massachusetts	2,766,519	130,616	51,565	461,183	59,912	57,754	5,858	2,978,536	683,158	320,678	1,101	530,006
Michigan	3,599,190	262,855	94,209	549,635	103,574	110,405	16,521	5,584,447	1,202,002	540,016	2,214	922,305
Minnesota	1,332,039	121,895	51,657	281,453	51,668	64,524	10,332	2,733,721	723,385	315,331	1,813	548,556
Mississippi	875,921	53,722	33,106	160,996	33,654	39,125	4,703	1,507,955	450,615	137,992	1,196	337,040
Missouri	2,230,248	157,675	71,577	341,325	59,661	55,707	12,647	3,568,453	1,179,046	425,759	2,317	765,362
Montana	468,310	32,253	71,890	120,748	54,709	47,323	2,290	1,149,951	1,017,435	70,750	1,429	655,280
Nebraska	546,837	28,316	9,516	100,912	16,823	17,732	670	832,578	257,722	99,641	1,233	159,891
Nevada	298,220	21,304	8,682	71,389	11,379	10,789	770	536,920	203,047	69,281	866	137,317
New Hampshire	253,471	31,403	15,062	55,770	10,431	8,508	4,357	546,596	98,438	43,540	127	111,563
New Jersey	2,757,208	161,291	106,216	506,219	93,946	134,033	10,574	4,093,330	973,665	442,308	1,914	736,594
New Mexico	1,124,795	88,358	54,137	142,060	23,652	60,161	3,063	1,007,218	312,587	121,450	1,856	221,475
New York	5,486,000	330,535	218,091	908,735	174,360	159,989	27,398	7,016,755	1,440,965	674,394	2,106	1,251,982
North Carolina	2,017,901	190,226	76,421	369,005	71,208	58,440	14,924	3,623,809	956,294	353,734	2,193	711,531
North Dakota	260,510	12,471	7,131	41,316	7,710	7,032	291	318,645	109,770	42,115	768	64,435
Ohio	4,705,255	305,838	103,317	650,221	112,347	91,706	18,485	5,867,268	1,546,811	627,042	6,018	1,110,201
Oklahoma	1,043,501	131,690	152,523	284,130	93,091	87,690	4,775	1,757,806	569,149	176,897	1,373	413,355
Oregon	1,146,557	92,788	57,838	198,968	49,745	36,867	6,562	1,886,315	873,792	192,263	2,155	578,528
Pennsylvania	3,390,799	332,268	170,193	656,095	124,571	128,805	29,232	5,860,445	1,477,528	570,729	4,951	1,134,168
Rhode Island	297,983	19,886	6,513	56,233	9,077	9,398	1,284	499,415	104,316	49,250	150	85,884
South Carolina	1,350,544	86,039	37,137	216,852	40,853	32,610	3,829	2,783,383	681,306	238,179	1,120	455,019
South Dakota	288,618	16,303	20,223	55,791	19,018	17,209	693	522,694	349,198	53,037	367	222,061
Tennessee	1,648,692	141,478	60,037	301,568	54,473	48,850	12,913	3,180,878	848,711	336,381	2,761	658,712
Texas	10,949,271	552,430	579,425	1,622,612	353,678	563,229	3,349	12,339,690	4,798,633	1,808,913	8,657	2,727,929
Utah	622,059	39,437	17,872	128,881	19,625	20,713	1,387	961,298	323,377	124,809	1,875	209,609
Vermont	128,745	21,031	10,607	29,449	5,599	4,452	3,521	278,131	59,980	26,560	126	68,482
Virginia	1,643,629	166,156	64,313	338,089	57,062	52,722	12,118	3,097,842	777,212	330,061	2,319	598,216
Washington	1,476,488	110,331	70,487	306,982	69,590	59,018	6,886	2,731,880	1,070,991	292,561	1,814	728,113
West Virginia	327,217	44,587	23,232	100,858	20,680	15,028	5,716	843,050	269,844	89,889	1,106	213,316
Wisconsin	1,778,628	139,165	50,648	290,622	49,660	49,776	11,432	2,742,188	651,480	308,655	1,832	507,707
Wyoming	444,205	30,067	40,121	96,998	20,467	30,988	986	542,700	209,926	66,074	2,287	120,507
Contig. U.S.	91,994,146	6,698,261	4,079,718	15,972,045	3,301,153	3,294,293	340,374	134,447,565	41,611,730	15,457,664	103,241	28,722,513

TABLE 2-8b (continued)

State	Benzene	Toluene	Xylene	Eth Benz	Aromatics	Formaldeh	Acetaldeh	Aldeh	Acetone	Ketones	Org Acid
	THOUSAND MOLES/YEAR										
Alabama	89,501	243,603	205,961	45,062	67,071	249,170	50,371	21,887	72,265	45,057	19,763
Arizona	59,304	174,565	90,847	18,922	49,833	190,691	36,076	21,823	62,885	23,869	8,026
Arkansas	52,999	151,319	127,830	27,638	43,493	159,273	31,923	8,380	28,718	28,515	13,611
California	601,833	1,584,475	853,308	179,897	375,576	2,156,076	164,316	98,469	868,194	321,086	110,828
Colorado	86,940	286,203	158,408	32,321	66,789	314,604	49,907	19,947	64,785	39,890	14,501
Connecticut	57,234	281,066	266,244	55,178	34,433	215,616	11,899	5,370	105,038	62,707	19,773
Delaware	17,754	104,644	57,451	8,471	11,509	94,179	7,169	2,186	41,253	21,433	3,504
Dist. of Colum.	11,251	38,583	15,058	1,978	16,965	25,185	2,737	6,187	4,636	4,675	4,195
Florida	229,249	617,922	312,838	60,615	177,855	687,059	68,558	80,150	291,242	102,741	39,105
Georgia	109,761	423,006	280,901	55,337	87,188	346,609	61,687	24,059	136,169	82,615	36,945
Idaho	20,278	70,819	80,110	17,959	19,006	76,609	16,064	4,698	12,527	8,714	3,994
Illinois	204,777	772,740	566,170	119,973	179,184	654,043	117,253	28,759	324,306	221,031	90,195
Indiana	133,299	432,474	426,143	91,273	90,543	402,404	84,240	8,726	227,464	160,694	29,901
Iowa	58,579	176,389	78,445	16,790	42,367	194,161	34,862	4,958	45,902	30,748	11,986
Kansas	61,218	174,385	88,969	14,440	68,225	217,084	57,995	7,101	50,294	29,807	17,188
Kentucky	101,038	262,336	278,477	61,032	73,033	365,889	52,507	12,834	91,699	55,738	34,538
Louisiana	276,075	341,397	172,142	26,884	158,281	560,405	64,275	29,712	160,493	86,379	30,115
Maine	20,448	96,607	245,155	54,220	25,794	77,004	5,730	3,557	26,388	21,949	17,005
Maryland	83,079	277,321	230,376	48,135	58,151	309,082	22,435	11,559	87,166	70,755	34,690
Massachusetts	108,988	371,886	253,931	53,991	72,912	961,810	23,316	14,552	305,718	121,552	66,391
Michigan	194,116	643,102	634,751	157,943	132,620	571,711	46,636	15,765	309,737	264,206	82,420
Minnesota	96,152	330,655	370,252	77,633	86,113	330,437	38,445	9,118	120,696	86,368	26,848
Mississippi	44,746	172,776	179,149	36,189	44,256	267,383	24,991	11,733	74,158	47,226	9,718
Missouri	159,348	447,560	516,632	97,448	104,642	386,118	56,082	20,155	188,836	176,818	49,833
Montana	21,505	68,376	76,475	17,169	21,816	152,828	29,867	3,776	12,484	7,597	2,136
Nebraska	31,904	266,253	105,508	8,906	29,109	125,688	25,764	5,019	114,850	86,111	5,849
Nevada	22,968	74,367	43,300	7,910	23,959	76,174	18,123	12,298	20,730	8,132	1,709
New Hampshire	14,444	77,267	136,578	32,243	10,227	65,899	2,705	2,241	29,880	29,900	7,013
New Jersey	183,820	495,186	428,671	88,890	136,296	781,319	43,853	13,557	290,770	114,213	62,114
New Mexico	45,818	149,511	143,272	24,461	69,805	145,756	38,933	9,236	27,194	11,532	2,586
New York	249,269	841,816	924,138	212,338	140,839	1,056,132	44,518	30,370	297,159	219,671	102,881
North Carolina	114,625	413,488	505,266	111,876	90,602	376,800	46,766	25,189	179,863	150,545	40,532
North Dakota	11,712	35,477	17,738	3,598	13,433	80,657	16,040	4,299	7,096	3,995	1,224
Ohio	229,760	736,290	681,147	153,976	157,209	753,465	127,213	18,187	415,042	224,326	80,248
Oklahoma	65,700	205,473	195,591	38,620	64,190	312,669	29,221	12,408	59,881	31,171	10,160
Oregon	55,358	196,172	217,570	49,540	47,373	194,580	45,412	7,551	53,671	35,018	25,949
Pennsylvania	225,515	775,370	976,773	215,513	160,949	806,177	105,124	23,703	308,948	205,283	104,205
Rhode Island	18,262	64,222	52,729	12,022	13,110	57,583	3,270	1,962	26,925	16,629	7,575
South Carolina	84,966	463,241	237,428	34,329	55,479	228,471	26,512	11,849	269,015	283,609	55,381
South Dakota	13,649	43,718	30,857	6,305	13,670	49,333	7,671	3,084	7,640	4,614	1,484
Tennessee	121,130	364,231	439,913	97,337	84,342	347,580	61,082	11,866	222,452	113,755	44,837
Texas	713,885	1,375,843	594,260	68,527	462,742	2,302,927	206,478	98,762	777,994	409,054	96,738
Utah	39,639	121,038	67,823	14,360	36,190	147,018	39,190	5,677	27,658	14,695	3,831
Vermont	8,529	40,183	101,578	23,967	5,913	33,191	2,662	1,263	13,751	9,035	4,008
Virginia	113,069	375,119	418,972	97,394	86,086	397,547	50,108	12,626	165,600	96,536	47,743
Washington	89,491	289,661	257,552	56,192	73,547	358,434	38,367	16,703	71,429	45,846	23,316
West Virginia	26,632	102,562	172,803	40,376	23,292	114,005	23,208	3,408	15,629	12,410	4,458
Wisconsin	91,027	380,425	404,415	87,009	77,741	302,076	38,612	7,921	131,387	124,095	82,950
Wyoming	22,126	61,308	42,571	8,635	27,780	120,680	47,775	1,653	6,362	4,484	636
Contig. U.S.	5,492,770	16,492,428	13,762,475	2,870,820	4,011,537	19,199,592	2,247,947	816,293	7,253,977	4,376,829	1,594,637

For conversion of hydrocarbon classes to tons/year, see discussion in Appendix E.

TABLE 2-9a. 1980 NAPAP EMISSIONS INVENTORY VERSION 5.2 - ANNUAL CANADIAN POINT AND AREA SOURCE EMISSIONS BY PROVINCE

Province	SO2	SO4	NO	NO2	Pb	CO	HCl	HF	NH3	TSP	Ca	Mg	Na	K	VOC	THC
	TONS/YEAR															
Alberta	660,788	7,677	447,652	37,913	0	3,023,686	0	0	83,323	8,828,141	709	249	152	66	685,711	898,962
British Columbia	170,640	13,903	197,116	20,060	0	2,153,713	0	0	7,012	1,967,089	1,354	159	266	19	283,067	528,424
Manitoba	533,199	13,790	91,581	10,811	0	1,603,510	0	0	21,011	3,142,219	602	153	55	28	233,681	325,091
New Brunswick	223,053	14,963	55,120	3,640	0	347,965	0	0	1,024	415,749	743	233	232	53	51,010	114,009
Newfoundland	65,635	4,604	33,220	2,710	0	197,323	0	0	123	280,665	508	178	1	0	28,948	78,892
Nova Scotia	212,343	11,094	78,375	5,101	0	393,785	0	0	1,646	763,019	483	250	238	389	73,664	149,945
Ontario	1,954,125	45,947	517,732	46,017	0	4,424,186	0	0	46,260	6,604,382	6,461	1,265	838	1,350	733,251	1,482,757
Prince Edward	4,973	343	5,624	506	0	57,947	0	0	832	41,629	0	0	0	0	6,501	17,202
Quebec	1,210,291	50,699	297,214	24,785	0	2,409,711	0	0	16,564	2,484,937	3,883	761	687	282	390,108	946,493
Saskatchewan	60,125	4,250	155,082	19,135	0	3,373,897	0	0	31,879	6,980,762	1,936	1,623	821	412	505,957	593,482
Canada	5,095,172	167,270	1,878,716	170,677	NR	17,985,723	NR	NR	209,674	31,508,592	16,680	4,870	3,289	2,599	2,991,898	5,135,257

NR = NOT REPORTED

TABLE 2-9b. 1980 NAPAP EMISSIONS INVENTORY VERSION 5.2 - ANNUAL CANADIAN POINT AND AREA SOURCE HYDROCARBON SPECIES EMISSIONS BY PROVINCE

Province	Methane	Ethane	Propane	Butane	Iso-Butane	Pentane	Iso-Pen	Alkanes	Ethylene	Propylene	Iso-Buten	Alkenes	Benzene	Toluene	Xylene	Eth Benz	Aromatics	Formaldeh	Acetaldeh	Aldeh	Acetone	Ketones	Org Acid
	THOUSAND MOLES/YEAR																						
Alberta	11,767,688	244,099	353,461	497,510	129,735	188,312	11,632	3,153,143	2,611,986	413,931	3,606	1,700,819	168,267	207,056	357,078	79,550	98,130	455,622	88,824	23,656	54,432	22,228	8,027
Brit.Col.	13,744,136	100,764	78,290	224,948	44,684	57,496	8,916	1,393,282	495,673	170,165	2,105	386,827	49,748	159,900	282,269	63,336	50,425	290,111	46,880	20,464	56,317	35,850	3,108
Manitoba	5,143,306	25,654	77,185	117,894	57,563	53,469	100	1,145,443	1,139,139	82,670	1,122	716,521	21,680	55,092	19,652	3,637	23,338	61,738	24,135	4,507	8,537	9,589	1,294
New Brun.	3,540,911	19,213	24,317	68,831	13,490	24,315	266	286,046	65,434	30,142	305	49,121	9,968	27,597	16,514	3,458	9,310	84,721	6,381	4,249	8,719	5,738	683
Newfound.	2,816,537	10,116	10,341	37,951	6,734	10,099	48	167,312	42,847	20,811	273	30,369	5,649	18,777	7,577	1,672	6,262	58,197	5,697	2,107	4,911	4,344	543
Nova Scot	4,270,917	32,081	35,417	86,577	13,651	26,381	2,329	362,041	81,958	45,396	440	75,160	12,438	44,940	72,679	16,943	10,030	109,845	9,207	1,578	7,533	7,445	831
Ontario	42,288,130	141,549	165,843	592,743	155,139	181,941	439	4,035,725	1,849,973	731,441	3,528	1,275,151	165,690	352,940	154,512	25,018	109,588	808,285	76,953	28,863	157,779	135,767	10,331
Prince Ed	604,107	1,756	669	6,875	1,302	1,382	28	39,333	10,093	5,517	46	7,379	1,449	5,074	2,302	504	1,414	8,326	967	300	720	1,034	117
Quebec	31,357,047	122,510	143,555	473,749	91,040	146,480	248	2,221,058	536,115	398,776	2,126	396,238	92,840	223,733	96,794	17,256	62,645	668,593	44,986	16,021	119,173	78,463	7,211
Saskatch.	4,856,581	61,512	206,981	232,071	130,606	124,927	3,789	2,300,349	2,601,774	103,137	1,345	1,680,370	19,920	77,070	120,057	26,729	27,304	80,939	28,114	4,067	6,649	9,256	955
Canada	120,389,361	759,253	1,096,057	2,339,149	643,943	814,803	27,796	15,103,733	9,434,992	2,001,986	14,897	6,317,955	547,649	1,172,180	1,129,434	238,103	398,445	2,626,378	330,143	105,814	424,770	309,714	33,100

For conversion of hydrocarbon classes to tons/year, see discussion in Appendix E.

TABLE 2-10. 1980 NAPAP EMISSIONS INVENTORY VERSION 5.2 - SEASONAL VARIATION IN EMISSIONS OF SO_2, NO_x and VOC

	Emissions percentages		
	SO_2	NO_x	VOC
Winter	26.15	24.80	24.62
Spring	24.68	25.02	26.62
Summer	24.65	25.47	24.81
Fall	24.52	24.71	23.95
	100.00	100.00	100.00

season, showing a variation of less than one percentage point. SO_2 emissions show an intermediate degree of variation, reaching a maximum in winter but remaining fairly constant throughout the remainder of the year.

Figure 2-23 illustrates the hourly variation of SO_2, NO_x, and VOC emissions for one possible scenario, a typical summer weekday. Hours are expressed in Greenwich Mean Time; as an example, hour 17 would correspond to 1:00 p.m. Eastern Daylight Time. Note that diurnal SO_2 emissions exhibit relatively little variation, indicative of a more uniform operating pattern, while NO_x and VOC emissions, highly dependent on highway traffic, vary more widely over a 24-hour period.

The spatial resolution capabilities of the 1980 NAPAP Version 5.2 inventory are shown in Figures 2-24 to 2-32, which illustrate emissions apportioned into grid cells measuring 1/6 degree latitude by 1/4 degree longitude (approximately 20 x 20 km) for U.S. point and area source emissions of SO_2, NO_x, and VOC. Figures 2-33 to 2-37 provide gridded emissions at the 80 x 80 km level for clarity of presentation, and show hourly emissions distribution for a typical summer weekday at 1700 GMT.

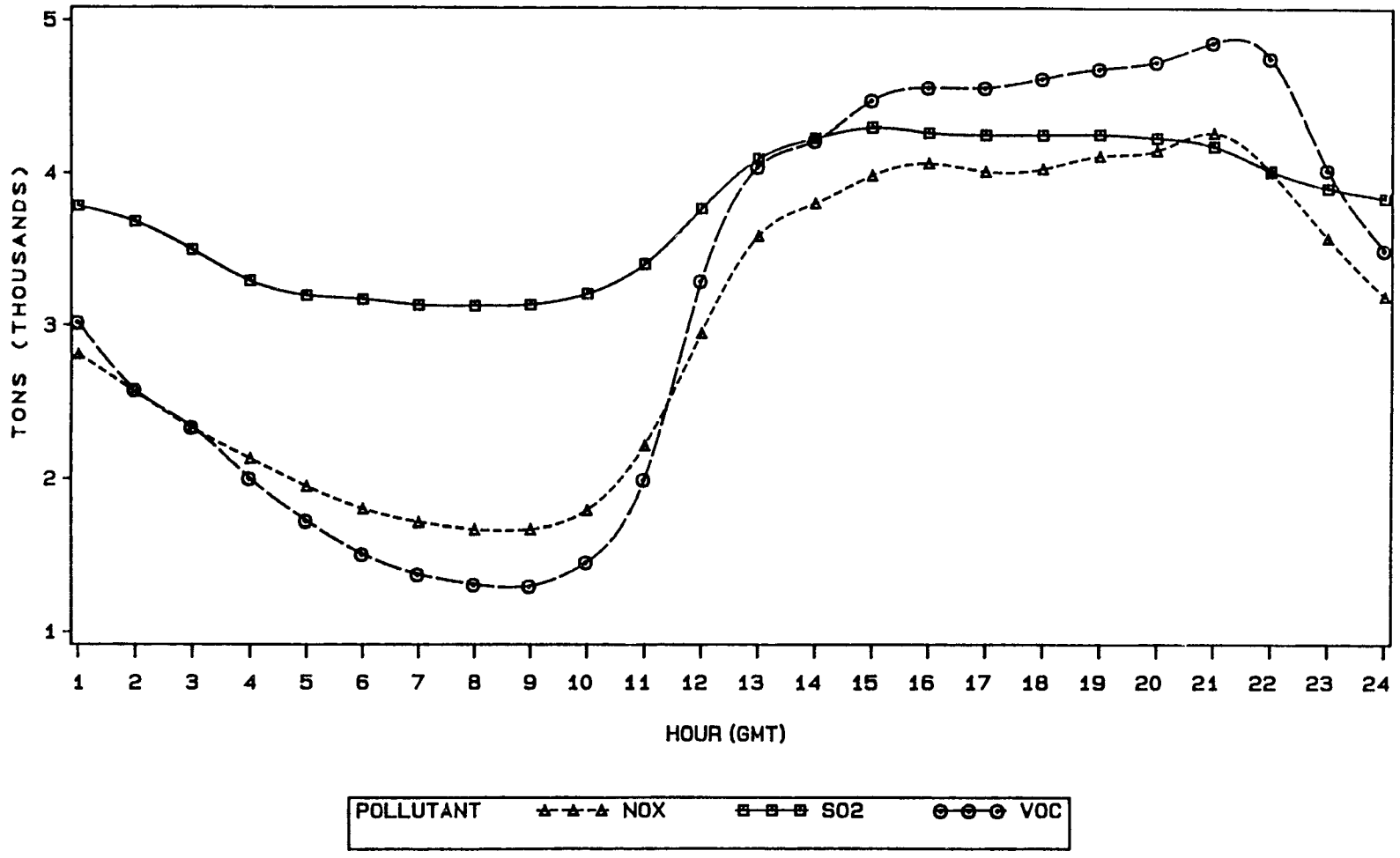


Figure 2-23. 1980 NAPAP Emissions Inventory Version 5.2 - hourly emissions patterns for SO_2, NO_x, and VOC for a typical summer weekday.

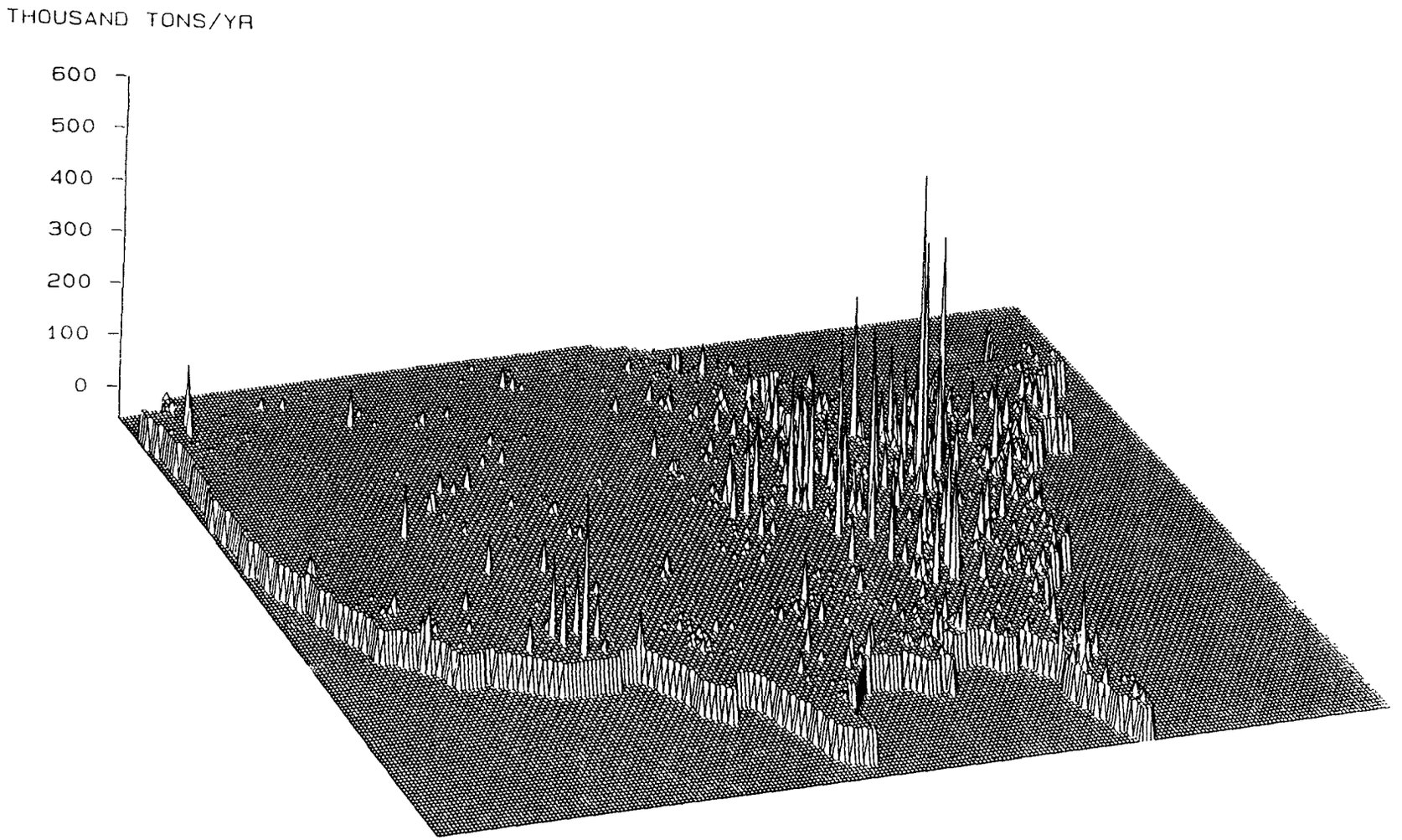


Figure 2-24. 1980 NAPAP Emissions Inventory Version 5.2 - Annual SO_2 emissions, U.S. point sources.

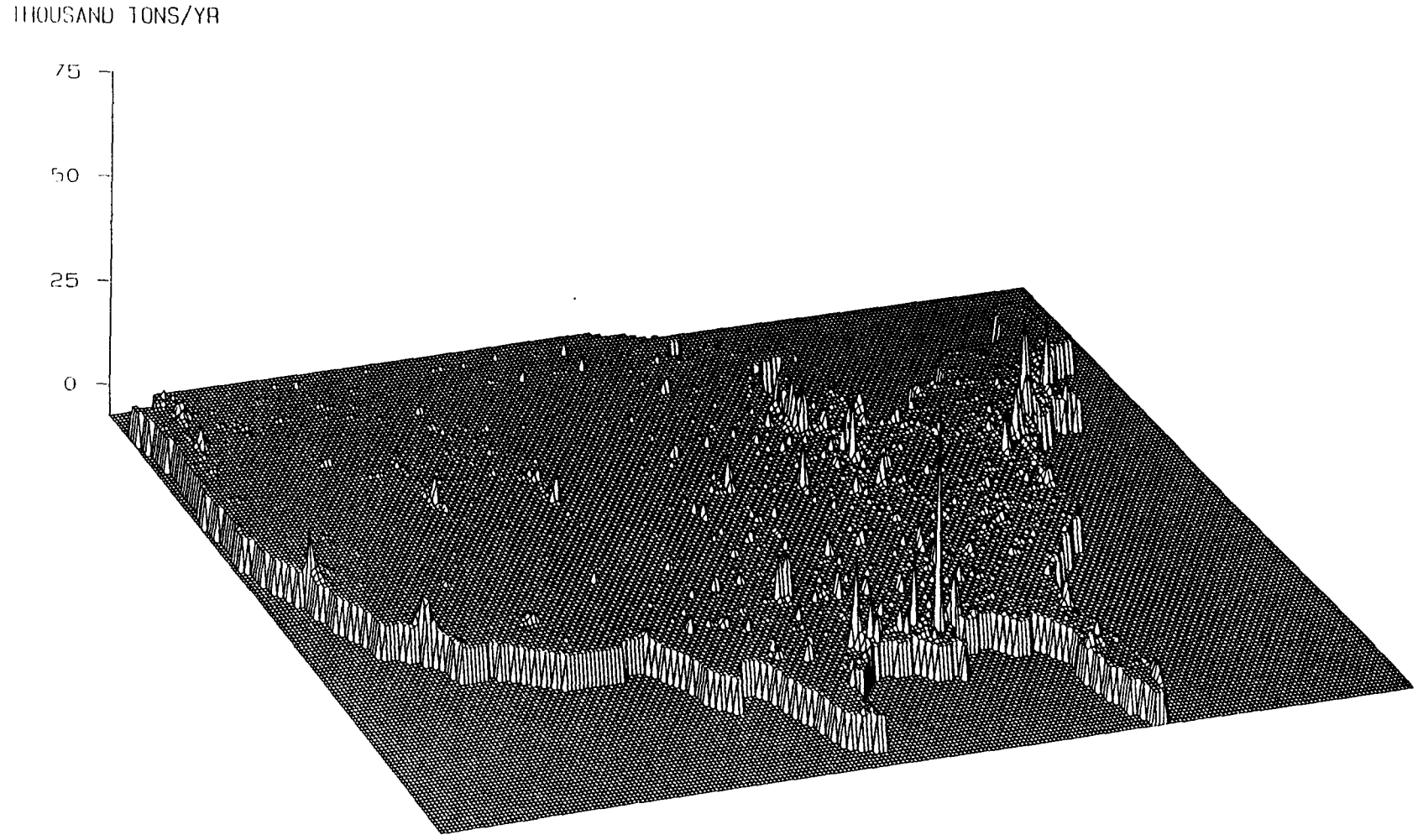


Figure 2-25. 1980 NAPAP Emissions Inventory Version 5.2 - Annual SO_2 emissions, U.S. area sources.

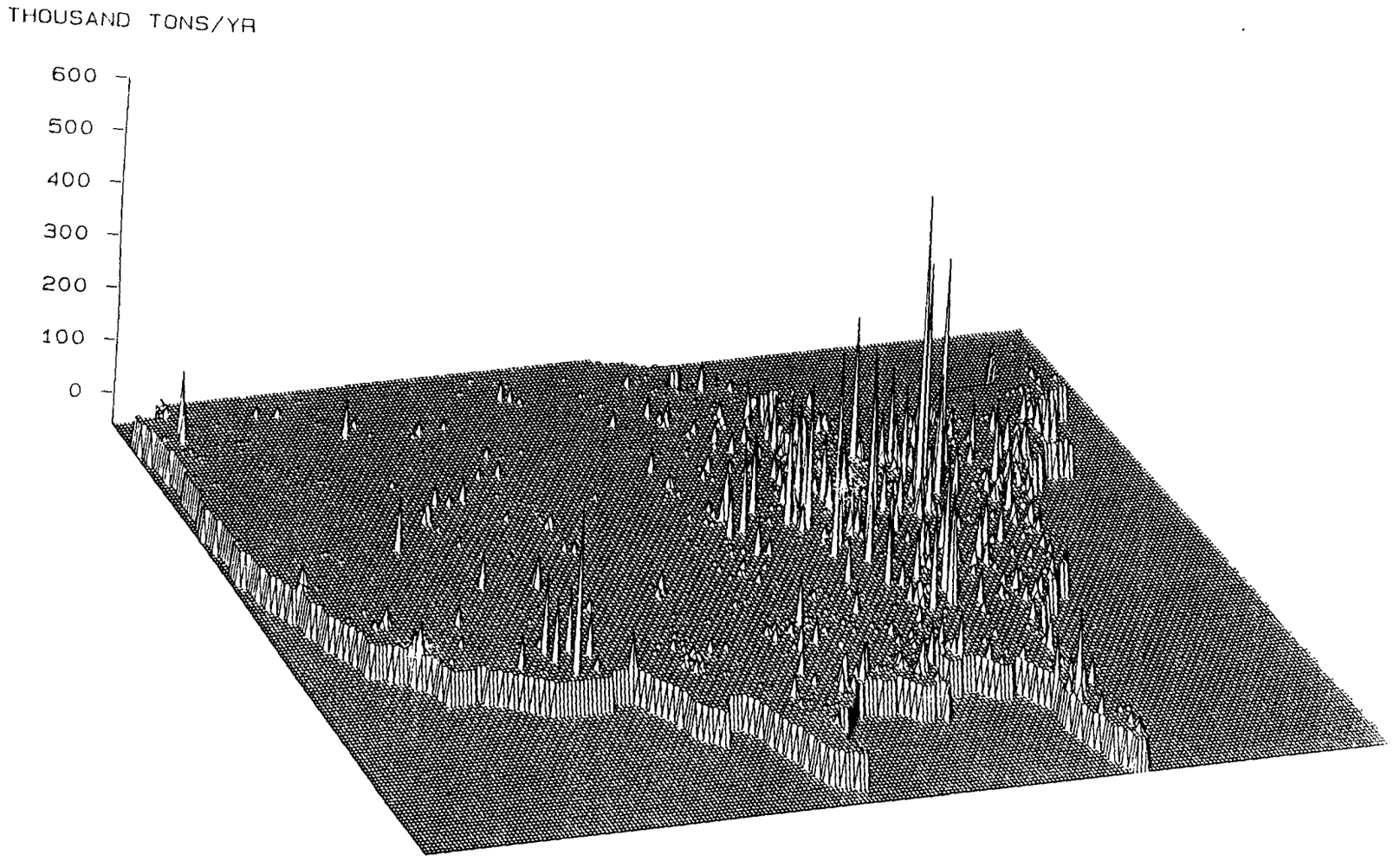


Figure 2-26. 1980 NAPAP Emissions Inventory Version 5.2 - Annual SO_2 emissions, U.S. point and area sources.

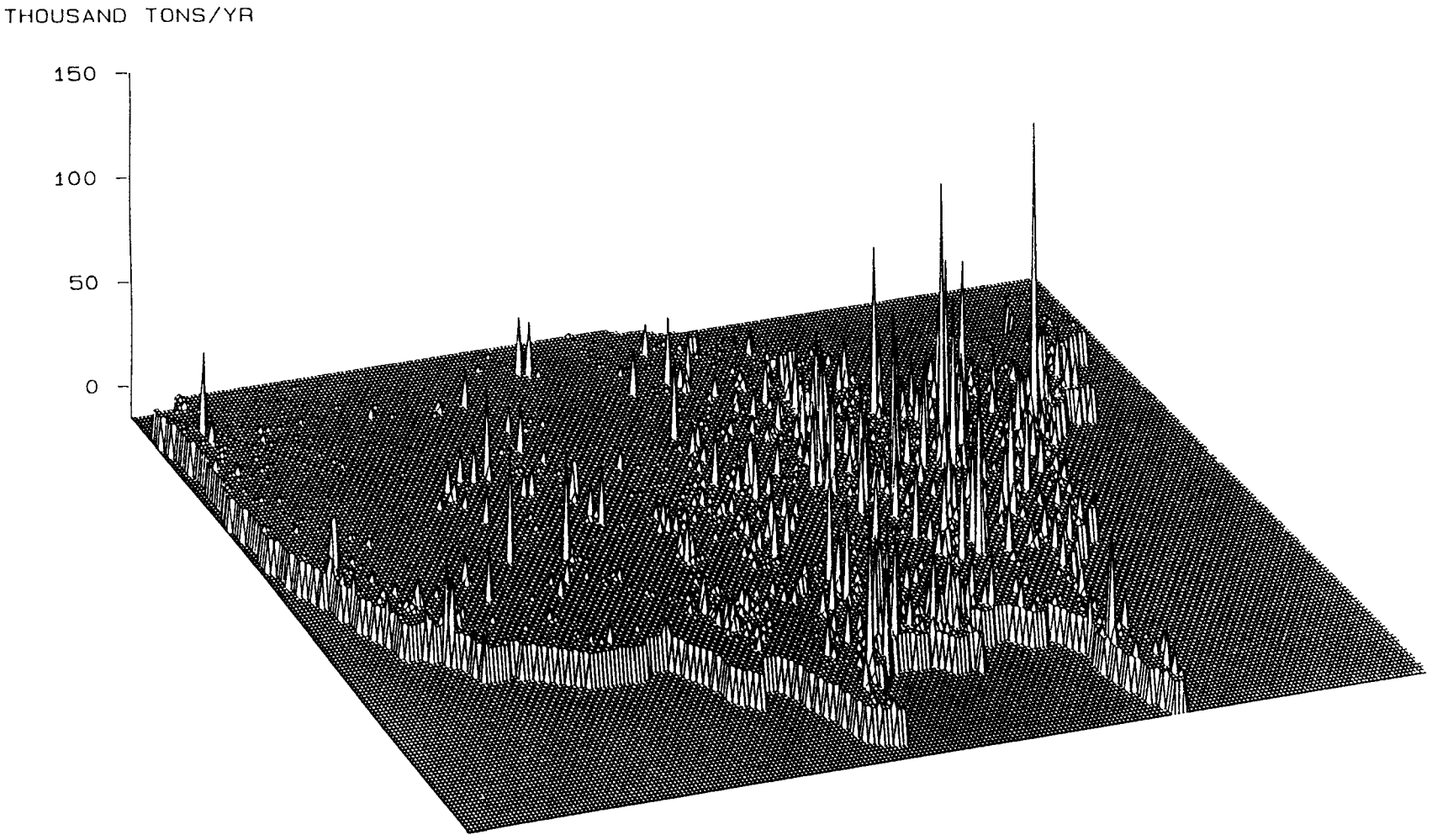


Figure 2-27. 1980 NAPAP Emissions Inventory Version 5.2 - Annual NO_x emissions, U.S. point sources.

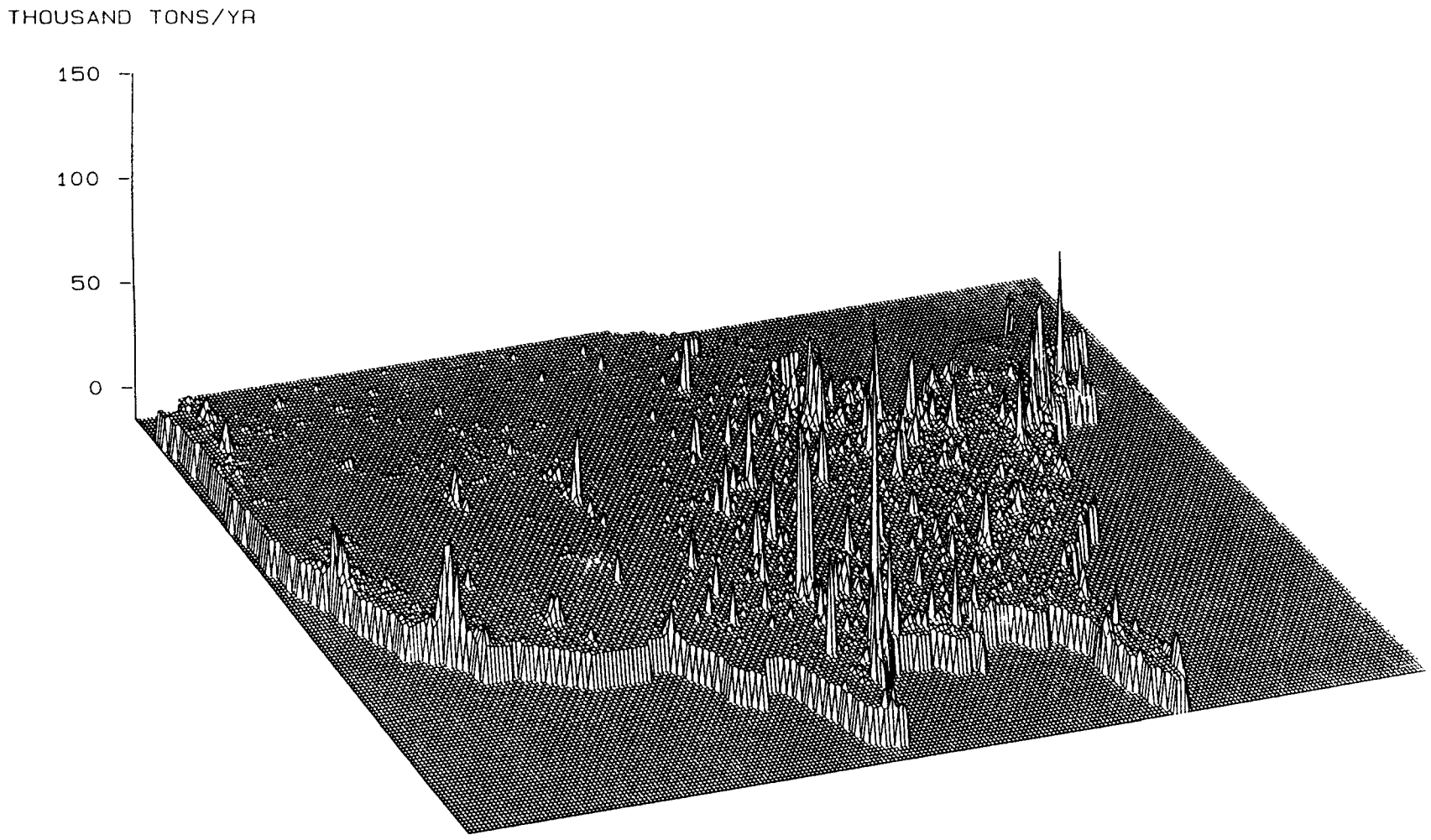


Figure 2-28. 1980 NAPAP Emissions Inventory Version 5.2 - Annual NO_x emissions, U.S. area sources.

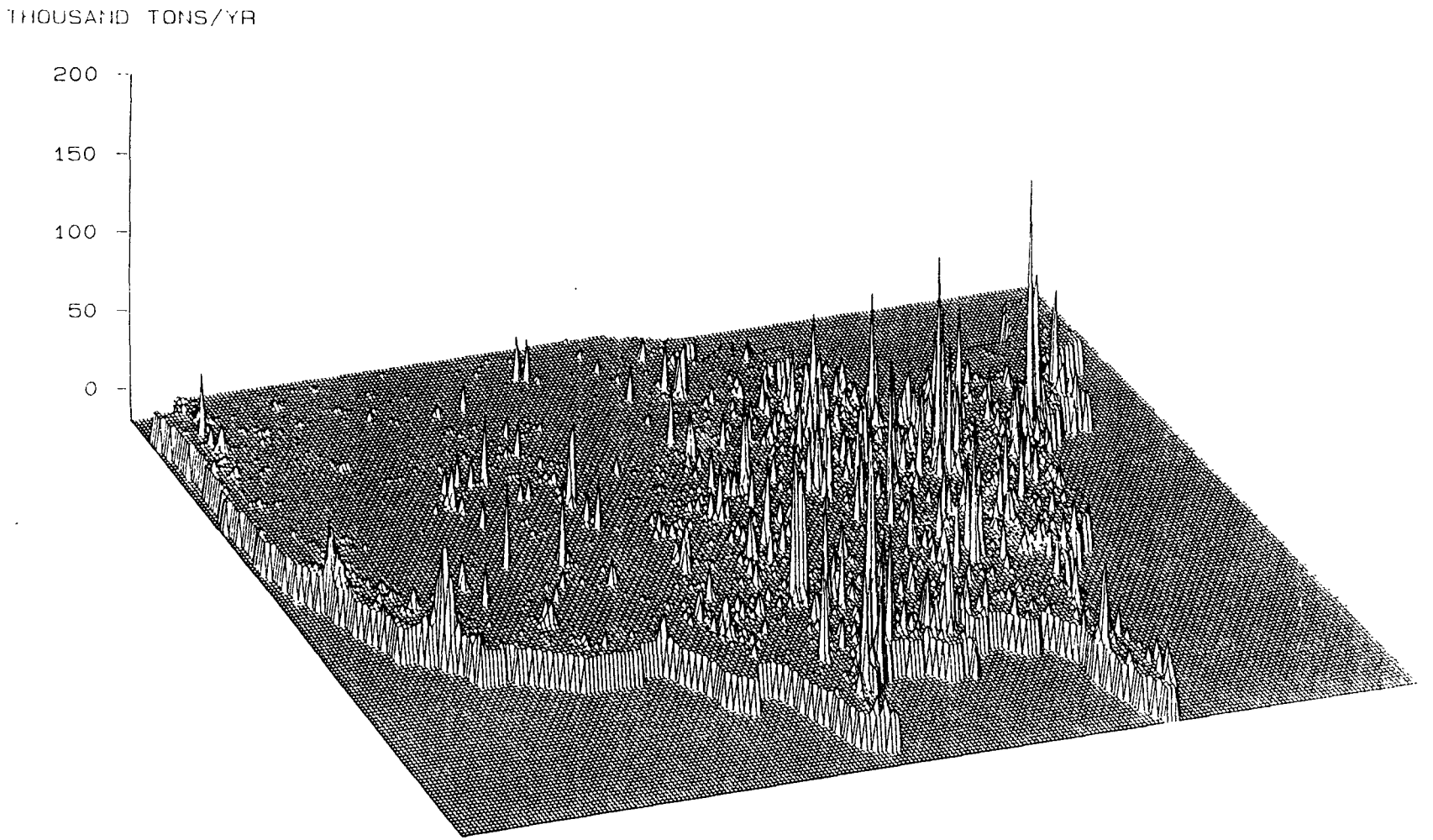


Figure 2-29. 1980 NAPAP Emissions Inventory Version 5.2 - Annual NO_x emissions, U.S. point and area sources.

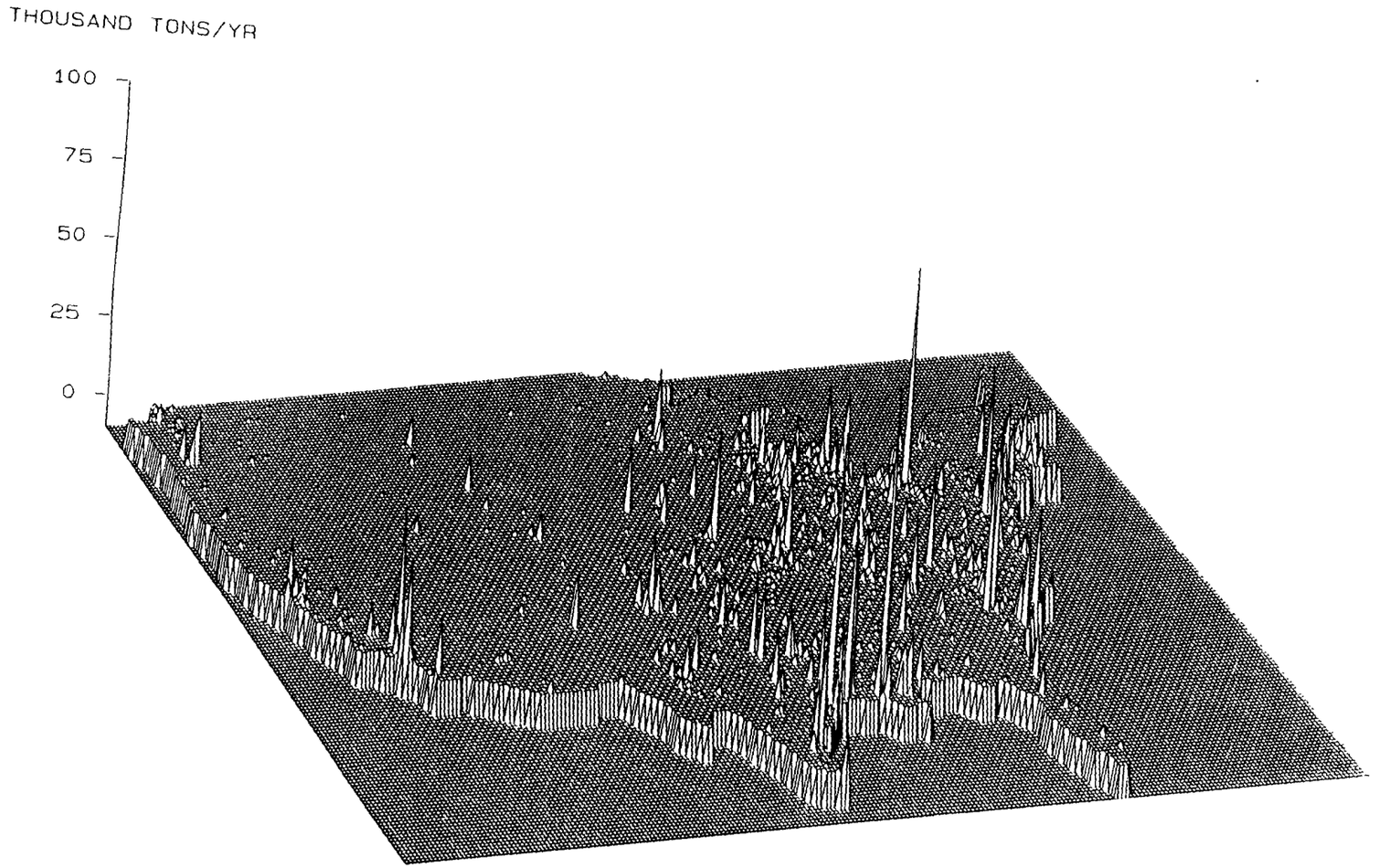


Figure 2-30. 1980 NAPAP Emissions Inventory Version 5.2 - Annual VOC emissions, U.S. point sources.

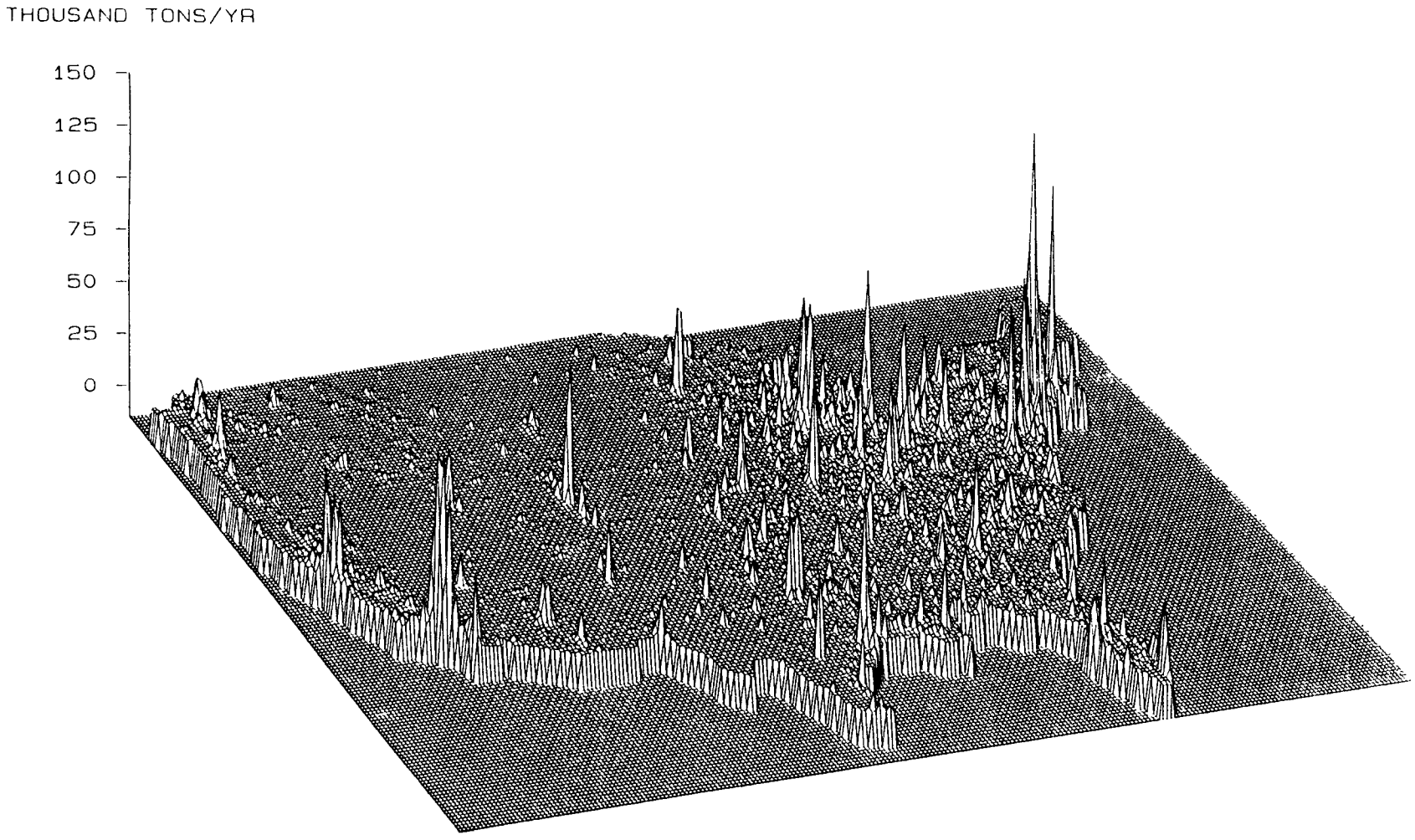


Figure 2-31. 1980 NAPAP Emissions Inventory Version 5.2 - Annual VOC emission, U.S. area sources.

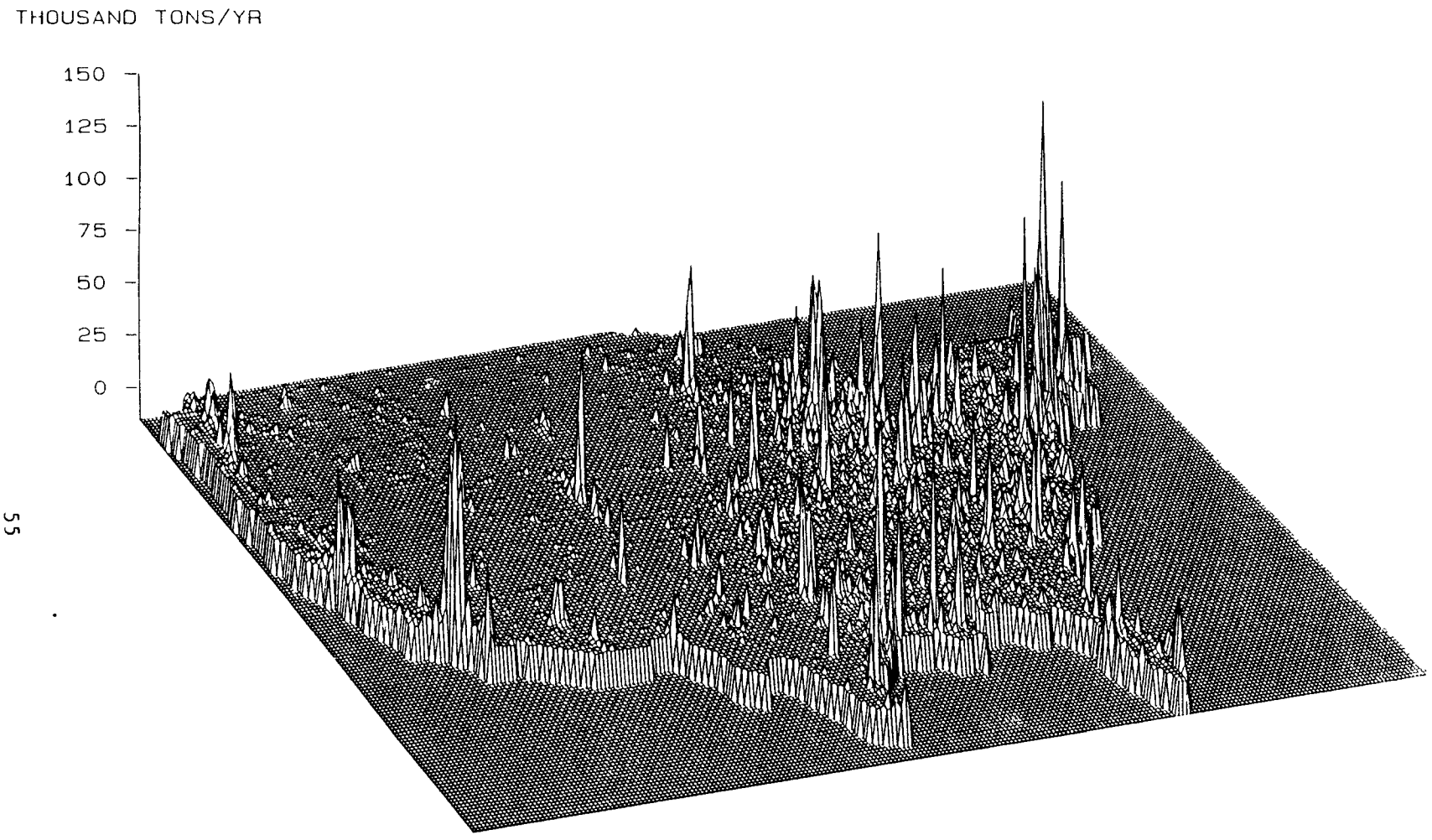


Figure 2-32. 1980 NAPAP Emissions Inventory Version 5.2 - Annual VOC emissions, U.S. point and area sources.

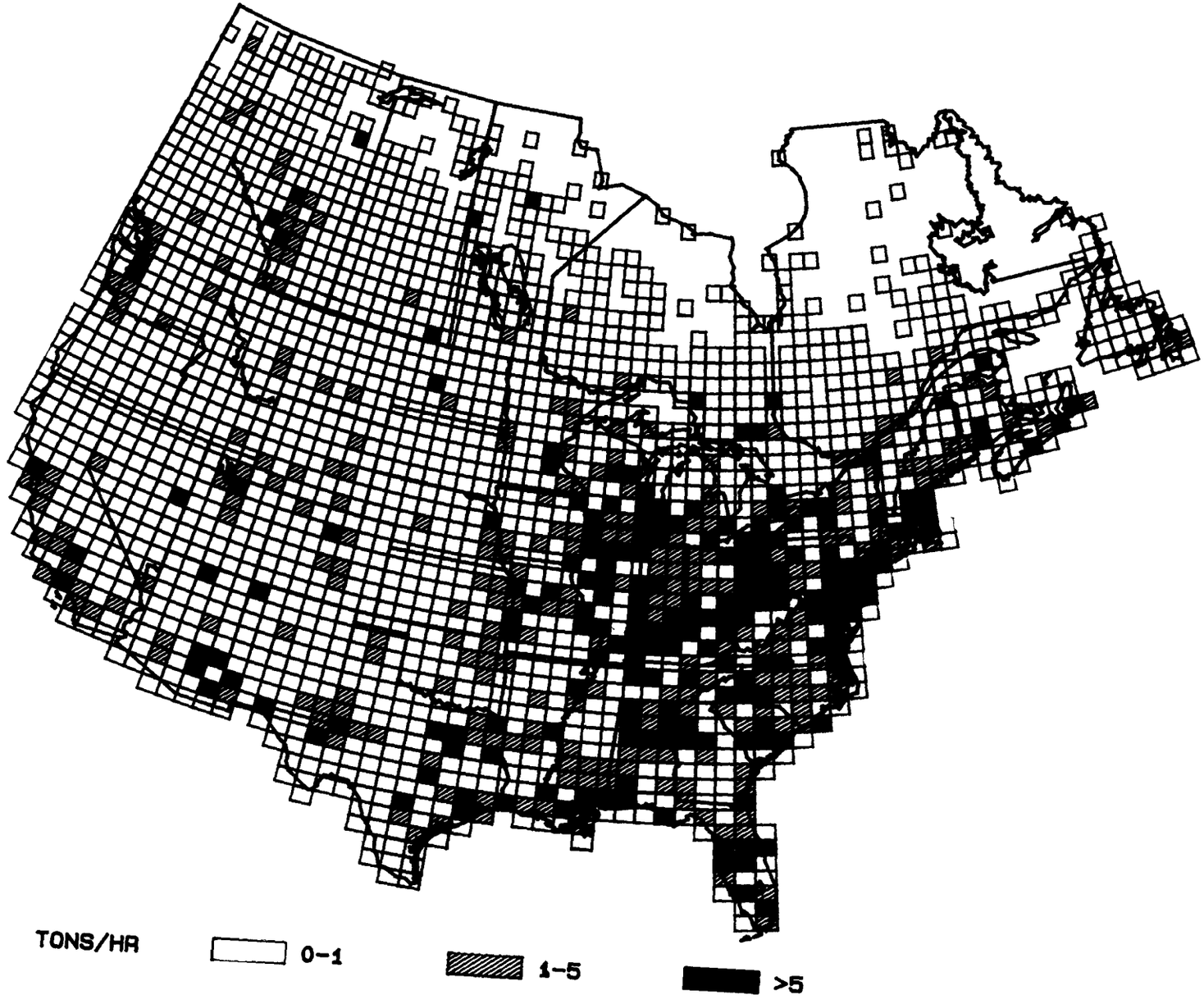


Figure 2-33. 1980 NAPAP Emissions Inventory Version 5.2 - SO_2 emissions for a typical summer weekday at 1700 GMT.

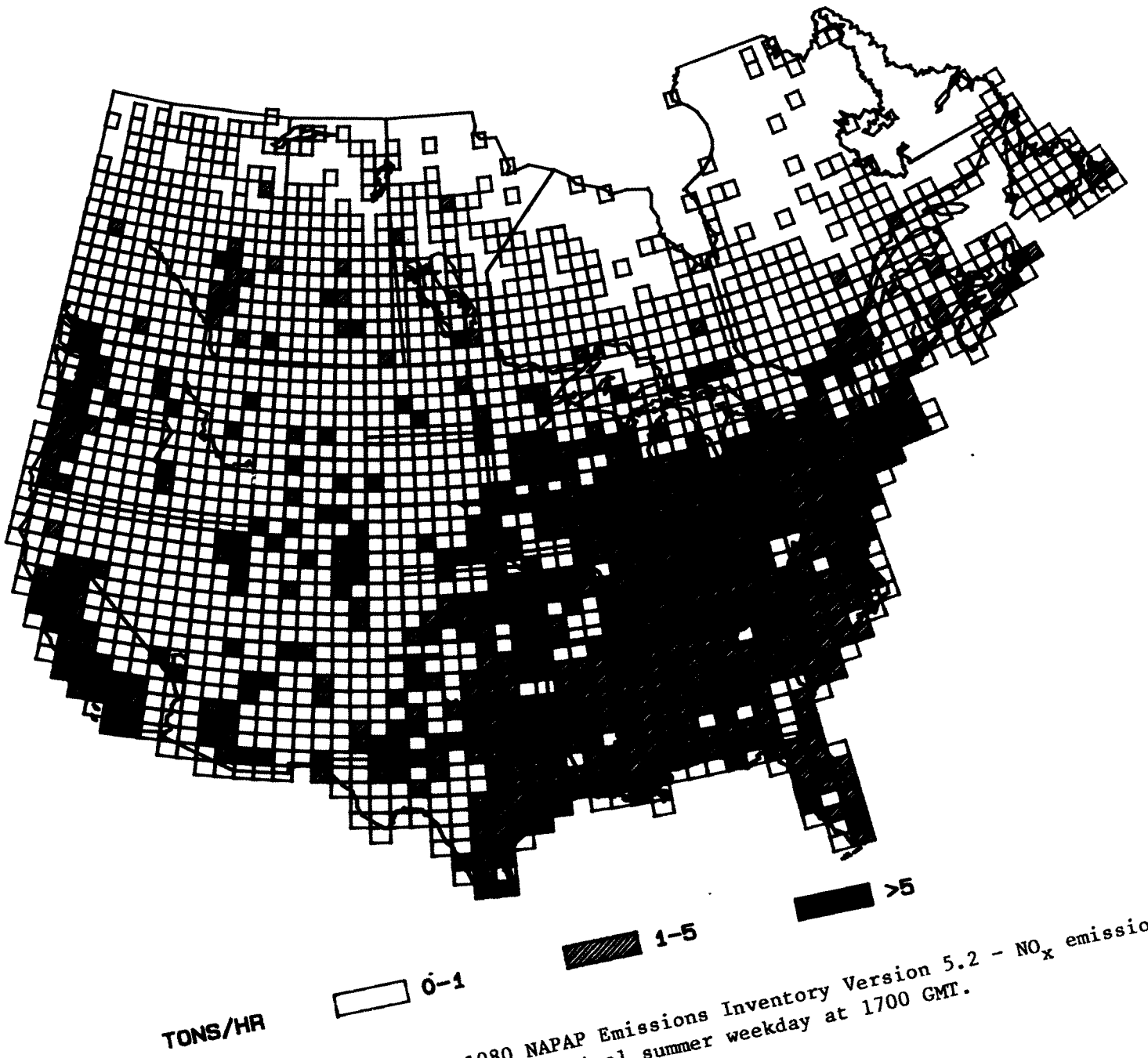


Figure 2-34. 1980 NAPAP Emissions Inventory Version 5.2 - NO_x emissions for a typical summer weekday at 1700 GMT.

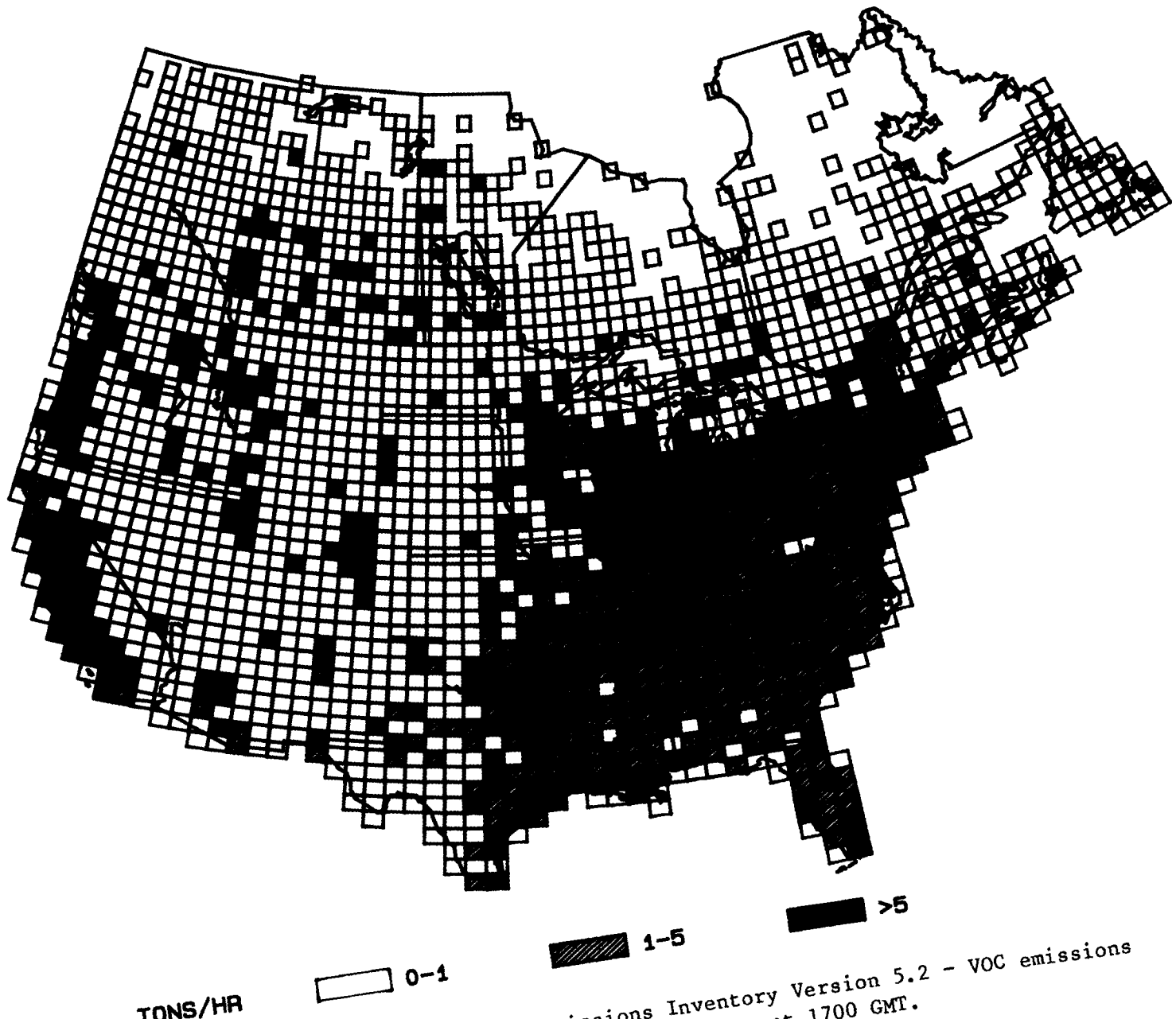


Figure 2-35. 1980 NAPAP Emissions Inventory Version 5.2 - VOC emissions for a typical summer weekday at 1700 GMT.

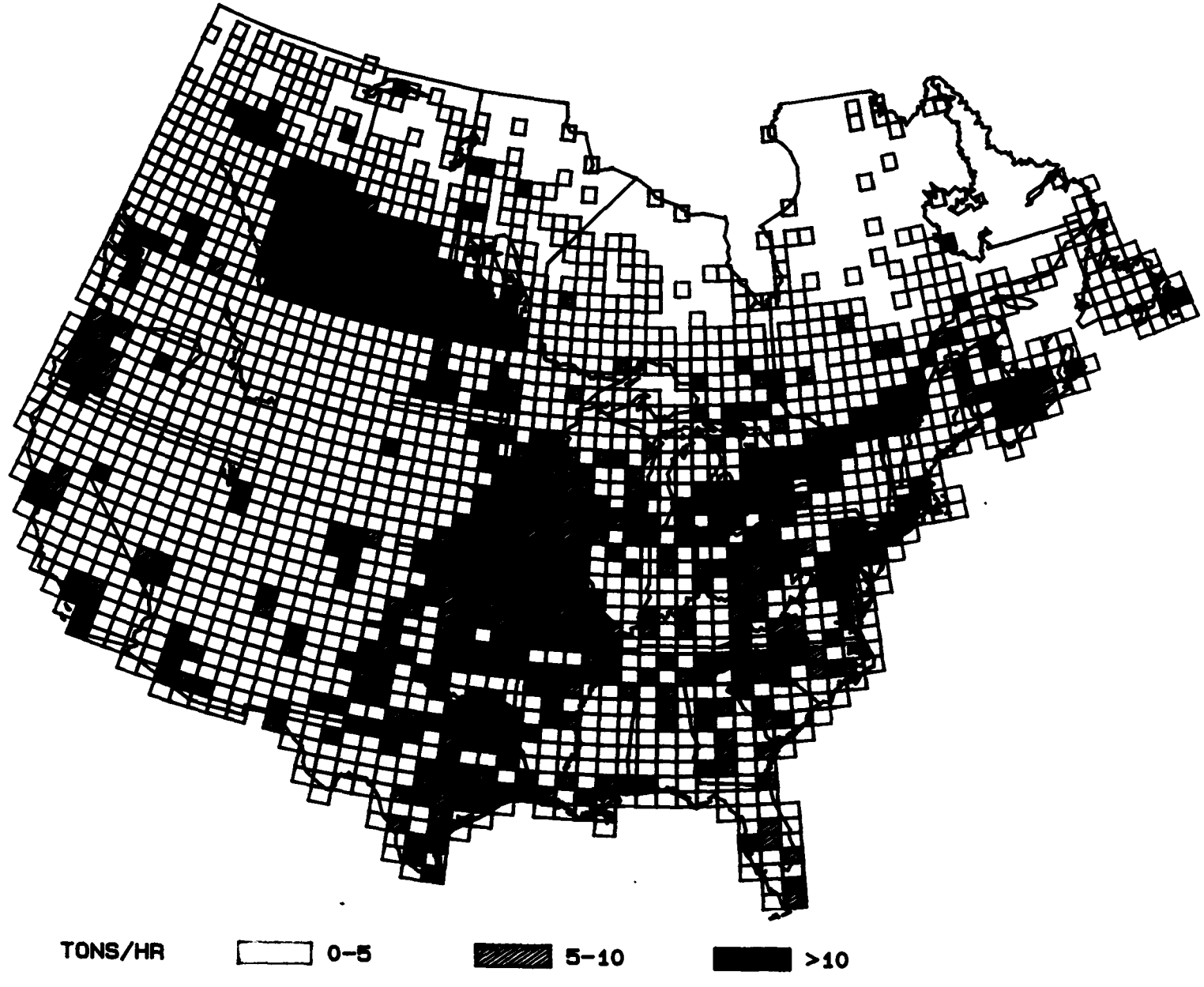


Figure 2-36. 1980 NAPAP Emissions Inventory Version 5.2 - TSP emissions for a typical summer weekday at 1700 GMT.

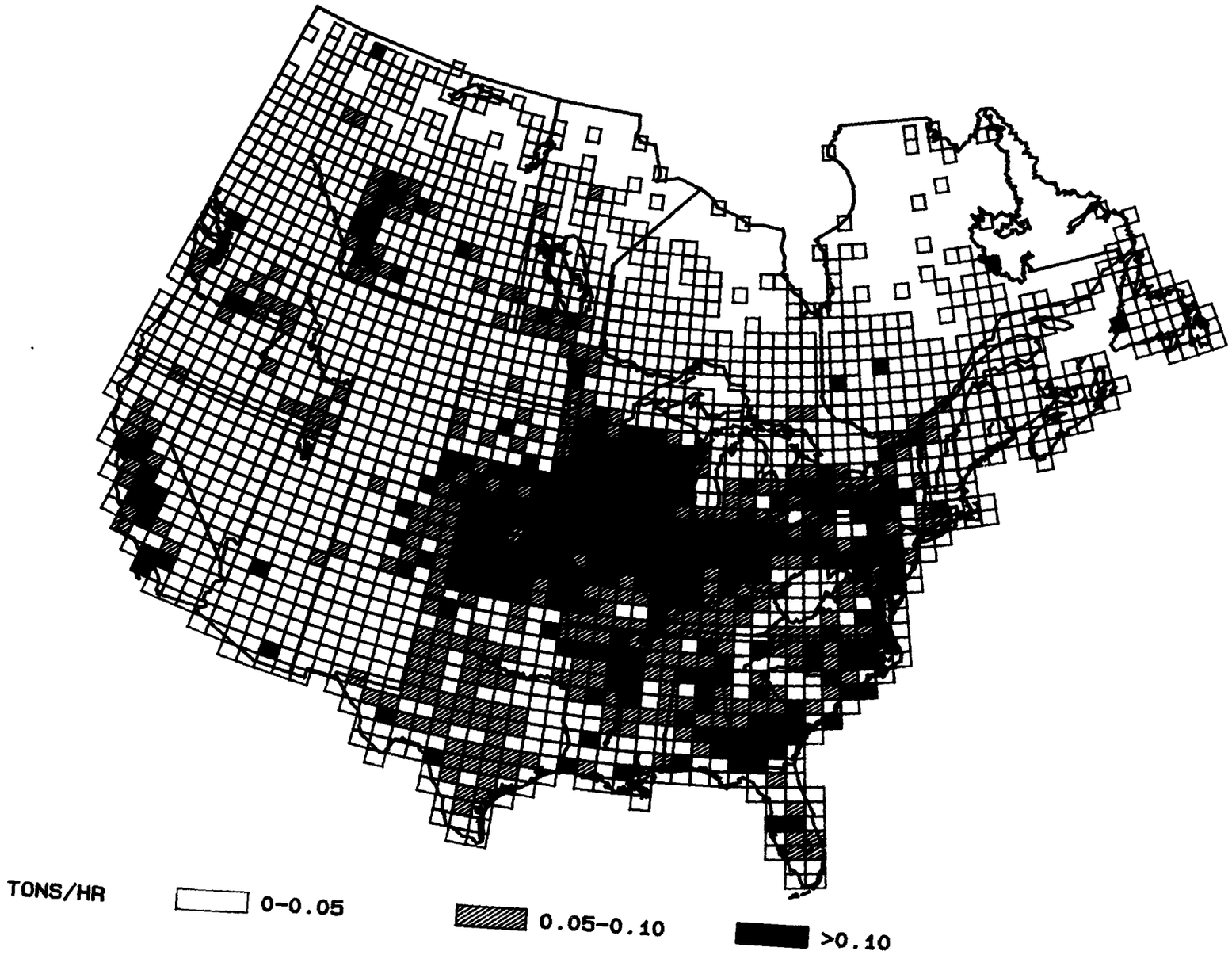


Figure 2-37. 1980 NAPAP Emissions Inventory Version 5.2 - NH_3 emissions for a typical summer weekday at 1700 GMT.

SECTION 3

CREATION AND QUALITY ASSURANCE OF THE 1980 NAPAP EMISSIONS INVENTORY

The primary goal of the 1980 NAPAP Emissions Inventory development effort is to provide an emissions data base adequate for acid deposition research and modeling. The basic requirements of the emissions inventory include a comprehensive data base of anthropogenic emissions data representing a common year, 1980; coverage of all pollutants believed to be important in acid deposition processes; detailed information on all point and area sources; accurate accounting of all emissions sources; and a high level of quality assurance.

Several versions of the 1980 NAPAP Emissions Inventory have been developed with each new version representing enhancements over the previous version. This section discusses the evolution of the 1980 NAPAP Emissions Inventory in both its annual and fully resolved forms, highlighting improvements made from version to version and describing the quality assurance activities that were undertaken.

NAPAP EMISSIONS INVENTORY DEVELOPMENT APPROACH

Several constraints to inventory development existed at the outset of the NAPAP program. Limited funding was available for the initial year of the program and future resource commitments were uncertain. Inventory data were needed for preliminary analyses in a relatively short time frame, yet the final set of data needs had not been fully defined. As a result, the approach adopted for the inventory was to start with the best data base available at the time and to supplement and improve the initial inventory as time and resources permitted.

The inventory judged to be best suited for the 1980 NAPAP Annual Emissions Inventory was the 1980 "snapshot" inventory of the National Emissions Data System (NEDS), maintained by EPA's National Air Data Branch (NADB). NEDS, selected as the logical starting point for the NAPAP development effort, includes: comprehensive coverage of the contiguous United States, data at the emission point level for point sources, county-level area source data for each area source category, and annual emissions estimates for five criteria pollutants (TSP, CO, SO_2, NO_x, and VOC).

Although NEDS represented the most logical starting point for development of the 1980 NAPAP Annual Emissions Inventory, NEDS has several data processing limitations which precluded its use in NAPAP; its primary limitation is its

inability to handle more than the five criteria pollutants. Although at the outset of the NAPAP effort all of the requirements of the emissions inventory were not fully defined, it was known that data for additional pollutants would be desired. It was also known that modeling applications of the data would require further temporal, spatial, and species resolution. It was determined that the Emissions Inventory System (EIS) represented the most logical data handling system for the intended application. EIS has the capability to carry the number of pollutants desired, does not present the data processing limitations of NEDS, and has been used in similar programs in the past, such as the Northeast Corridor Regional Modeling Project (NECRMP) (Sellars, et al., 1982). EIS is also supported on the National Computing Center's IBM mainframe and enabled use of the Regional Modeling Data Handling System (RMDHS), developed for NECRMP, in generating the preliminary version of the NAPAP Eulerian Modeling Inventory (Version 4.2).

The inventory formulation process began in 1983 with the 1980 NEDS snapshot file. It was recognized that a number of improvements and additions were necessary. As previously indicated, only five pollutants were included in the inventory. Stack data and coordinates were missing or suspect in a number of cases. The emission factors used to develop emissions estimates did not reflect the latest supplement of EPA's emission factor publication, AP-42 (U.S. EPA, 1985). The development procedures used by the states to compile the individual inventories included in the 1980 NEDS snapshot were likely to be inconsistent, and the degree of quality control employed by the states was unknown. The inventory covered the contiguous United States, but emissions inventory data were also needed for Canada. Improved methodologies for developing emissions estimates for certain area source categories were available. These improvements were the focus of the 1980 NAPAP inventory development process. Thus, the remainder of the program was entirely a quality assurance effort related to improving and supplementing the initial inventory. The improvements/additions made were prioritized over time, based on available funding, NAPAP data needs, and inventory quality. This evolutionary process, culminating in the NAPAP 5.0/5.2 inventory, is summarized schematically in Figure 3-1.

EVOLUTION AND QUALITY ASSURANCE OF THE 1980 ANNUAL NAPAP EMISSIONS INVENTORY

Version 1.0

The first version of the NAPAP Emissions Inventory was prepared in mid-1983 and represented a number of enhancements to the NEDS snapshot file. Using a program developed by EPA's Atmospheric Sciences Research Laboratory (ASRL), missing or suspect Universal Transverse Mercator (UTM) coordinates were identified. Sources with missing UTMs, or those falling outside of county boundaries, were updated to reflect the centroid of the county.

NEDS data from previous or later versions than the 1980 snapshot file were investigated. It was determined that for 12 states, data from other versions of NEDS were more representative of calendar year 1980 than those

	Annual Inventories	Resolved Inventories
1983		
	• NEDS snapshot inventory converted to EIS format, creating initial inventory	
	• Version 1.0 developed	
1984		
	• Version 2.0 developed	
	• Version 3.0 developed	
	• Version 4.0 developed	
1985		
		• Version 4.1 developed by compressing data from Version 4.0
		• Version 4.2 resolved file containing emissions for a summer weekday created by processing Version 4.1 data
1986		
	• Version 5.0 developed	
		• Version 5.2 developed by processing Version 5.0 data, creating fully resolved emissions inventory
		• Version 5.3 created by processing Version 5.0 data using carbon bond IV speciation chemistry

Figure 3-1. Evolution of the 1980 NAPAP Emissions Inventory.

found in the snapshot file. These data were obtained, converted to EIS format and substituted as appropriate.

The NAPAP emission factor file was updated to reflect changes through Supplement 14 of AP-42 (the NEDS data reflected emission factors only through Supplement 13). Emissions for the five NEDS pollutants were recalculated using the updated emission factors and the EIS maintenance routine.

The significance of SO_x, NO_x, and other pollutant emissions from the electric utility industry made it necessary to have consistent, quality data for utilities for 1980. Data from the Pechan Unit Inventory, compiled using 1980 utility data from the DOE, were obtained and used to update the initial NAPAP inventory. Individual units were matched with boilers in the NAPAP inventory to the extent possible. Updates were made for source classification code, fuel quantity and quality, and control type and efficiency. Emissions were calculated using these updated data and the latest EPA emission factors previously discussed. Monthly fuel use data from Federal Power Commission (FPC) Form 4 were used to determine seasonal throughput percentages.

One of the most significant uses of Version 1.0 was to support Lagrangian modeling being conducted by ASRL. To support this application, seasonal percentage factors were developed for each area source category.

Version 2.0

Version 2.0 of the NAPAP Emissions Inventory, released in late 1983, was utilized by ASRL to support Lagrangian modeling and represented a number of enhancements of Version 1.0.

SO_x emissions from copper smelters contained in the Work Group 3B inventory (1982) were believed to be more reliable than those in the NAPAP inventory since the WG3B effort involved procurement of 1980 data directly from the 15 significant smelters in the United States. Data on emissions were updated to agree with the WG3B data; updates were also made to process rates and control efficiencies when possible.

Because the Northeast Corridor Regional Modeling Project (NECRMP) (Sellars, et al., 1982) entailed collection of state supplied data for 1980 with a high level of quality assurance with regard to VOC and NO_x, these data were considered to be of generally higher quality than those contained in NAPAP. The NECRMP data were reviewed for potential incorporation into NAPAP. Since reliable utility data had previously been substituted, it was decided to limit the review to nonutility point sources. Major VOC and NO_x emitters were compared and NECRMP data were substituted for all but 30 plants. The 30 plants not changed either reflected more current data or data judged to be more reliable. Following substitution, emissions were recalculated using the NAPAP (AP-42 Supplement 14) emission factors and the EIS maintenance routine.

In reviewing the electric utility updates made for Version 1.0 of the NAPAP inventory, it was discovered that some transactions had not been run and that errors were made in a few cases. Transactions to correct these problems were generated and used to update the NAPAP file.

Version 3.0

A number of additional refinements were made in Version 3.0, released in mid-1984 and extensively documented in a report published by EPA in December 1984 (Toothman, 1984).

Fuel combustion in stationary sources is responsible for over 80 percent of total SO_x emissions and over half of the NO_x emissions. Because of the significance of fuel combustion, fuel data by type, consuming sector, and state were summarized from Version 2.0 and compared to data taken from the 1980 State Energy Data Report published by the DOE. For fuel types and consuming sectors that exhibited large differences (factor of two or more), reports were generated from the point source inventory by state and reviewed in an attempt to identify obvious errors in units (gallons versus thousand gallons, thousand barrels versus thousand gallons, etc.) or inconsistencies in fuel type. Update transactions for fuel quantity and source classification code (identifies fuel type) were generated in these cases, and the point source inventory was updated.

Additional work was performed to more completely match combustion units in the Pechan Unit Inventory with boilers in the NAPAP inventory. As a result, updates for several plants and/or boilers not previously matched were generated and made. During this process, some problems with previous updates were discovered and corrected. As before, the updates included source classification code (SCC), fuel quantity and quality, and control type and efficiency.

In addition to the Unit Inventory, Pechan and Associates also compiled a plant-level inventory based on 1980 DOE data. Plant-level emissions of sulfur oxides were calculated by Pechan using a different procedure than applying EPA emission factors. In order to be consistent with data in the Pechan inventories, plant-level sulfur oxides emissions in Version 2.0 were updated to match those in the Pechan plant inventory. In general, point-level emissions in Version 2.0 were normalized as necessary to obtain the appropriate plant-level emissions.

A review of the area source emissions data revealed that 15 counties which fall within more than one Air Quality Control Region (AQCR) were not properly converted from NEDS to EIS. The county data were re-combined such that only one AQCR was reported and the area source data were replaced in Version 3.0.

Version 4.0

Version 4.0 was released in late 1984 and reflected a number of enhancements to Version 3.0, primarily related to generation of an Eulerian modeling emissions inventory. The preliminary Eulerian modeling emissions inventory reflected further temporal, spatial, and species allocation and was numbered Version 4.2; it is discussed in more detail later in this section.

To support testing of the Eulerian Regional Acid Deposition Model (RADM), two additional pollutants, ammonia and primary sulfate, were required. Uncontrolled emission factors were developed for these two pollutants under NAPAP direction; this work is detailed in Section 4. Information from the emission factor reports was used to develop removal efficiencies for a number of control devices. Assumed control efficiencies for ammonia and sulfate are provided in Appendix B.

The sulfate emission factors and assumed control efficiencies were coded along with operating data in the inventory to update the NAPAP EIS master file and generate sulfate emissions estimates. For cases in which more than one control device existed, credit was given only for the most effective device. Plants with the greatest sulfate emissions were reviewed to identify any problems with data used in the calculations and adjustments were made as necessary. A similar process was undertaken for ammonia, with one exception: for sulfate, point source emission factors were used for area source categories where appropriate; point and area sources of ammonia were, however, not as interchangeable. One significant area source of ammonia is manure application. State level ammonia estimates for manure application were allocated to counties on the basis of farm acreage.

The procedure used to add sulfate and ammonia emissions to the inventory resulted in the addition of emission estimates for other pollutants in certain cases. Some SCCs had emission factors in the NAPAP emission factor file for a given pollutant but did not have emission estimates in the inventory. The omitted pollutant was added and an emission estimate generated based on the emission factor in the emission factor file and on the operating rate and other data in the inventory.

Another enhancement of Version 4.0 entailed a review of UTM coordinates for sources added as a result of the Version 2.0 and 3.0 efforts. It was determined that a number of sources added to the NAPAP Emissions Inventory as a result of these efforts had missing or invalid location coordinates. In these instances, county centroid latitude and longitude data were added and UTM coordinates calculated.

It was discovered that the emission factor data supplied by NADB and used in the NEDS contained roundoff errors, e.g., 24.99 instead of 25.0. NADB supplied a substitute emission factor file to correct the earlier data used in NAPAP. An updated NAPAP emission factor file was created and used to revise the emission estimates.

Version 5.0

Version 5.0 of the NAPAP Emissions Inventory was generated to support applications of the RADM and to support NAPAP assessment activities. As Version 5.0 represents the final version of the 1980 Annual Inventory, a number of additions and refinements were made to improve the quality of the inventory.

Canadian Data--

The RADM study area includes Canada, north to 60 degrees latitude. Environment Canada provided 1980 data for both point and area sources of particulates, sulfur dioxide, nitrogen oxides, total hydrocarbons, carbon monoxide, sulfate, ammonia, and four classes of alkaline particulates: calcium, magnesium, potassium, and sodium. These data were not in EIS format, and did not contain information on plant name, UTM coordinates, SCC, ash/sulfur flags, control equipment code/efficiencies, emission estimation method, annual throughput, seasonal throughput percentages, operating schedule, points sharing common stacks, boiler capacity, maximum design rate, and fuel heat content.

The Canadian data were converted into EIS format. This required revising province, SIC, and some pollutant SAROAD codes to be consistent with the United States data. Area source categories had to be renumbered, and units had to be converted to be consistent with EIS. To enable matching of temporal, spatial, and pollutant species allocation factors (described in Section 6), SCCs had to be manually assigned based on source descriptions.

Although the area source categories used in the Canadian inventory were not consistent with those in the United States inventory, they were left intact. A review of the converted inventory was conducted to ensure agreement with the original emissions data.

Utility Data--

The importance of the utility sector to the NAPAP emissions inventory was previously discussed. The utility data used to update earlier versions of the inventory did not reflect EPA emission factors and procedures for classifying fuels. In addition, better data concerning the distribution of fuels to combustion units within plants for 1980 became available from DOE. It was also desirable to maintain all utility data needed for NAPAP (emissions and projections) in one file for consistency. For these reasons, NAPAP sponsored the development of the NAPAP Utility Reference File (Pechan, 1983). Section 5 of this report presents a comprehensive accounting of the development of the NURF, and details how data in the NURF were used to generate emissions estimates for the utility sector in Version 5.0 of the NAPAP Emissions Inventory.

Chloride, Fluoride, and Lead Emissions--

Estimates of emissions of chloride (HCl), fluoride (HF), and lead (Pb) were derived in a manner similar to ammonia and sulfate in the Version 4.0 inventory. NAPAP developed emission factors for HCl and HF, and coded Pb emission factors from AP-42. These factors were added to the NAPAP Emission Factor File and utilized in conjunction with operating rate data contained in the NAPAP inventory and EIS software to calculate emissions estimates for these three pollutants.

The assumed removal efficiencies for HCl and HF were determined from information in the emission factor report and are presented in Appendix B. The removal efficiencies for Pb were assumed to be equivalent to those in the inventory for particulate matter.

Improvement of VOC Area Source Categories--

The most significant contributors to VOC emissions are area and mobile sources. In creating the Version 5.0 NAPAP Emissions Inventory, improvements were made to three significant area source categories: organic solvent evaporation, residential wood combustion, and highway vehicles.

Previous versions of the NAPAP Emissions Inventory reported a large composite category for organic solvent evaporation which had to be assigned to a composite VOC profile in speciating the emissions data for RADM input. A program was written to obtain emissions data for the 18 individual categories of solvent use normally aggregated by NEDS to make up the organic solvent use category. The organic solvent evaporation category was then replaced in Version 5.0 of the inventory by the following individual categories:

- degreasing
- dry cleaning
- graphic arts
- rubber and plastics manufacture
- architectural surface coating
- auto body repair
- motor vehicle surface coating
- paper coating
- fabricated metals coating
- machinery coating
- furniture coating
- flatwood products coating
- transportation equipment coating
- electrical equipment coating
- ship building surface coating
- miscellaneous industrial surface coating
- miscellaneous industrial solvent use
- miscellaneous nonindustrial solvent use

VOC speciation profiles for many of these categories were developed for the Northeast Corridor Regional Modeling Project (Sellars, et al., 1982). To

enable use of the more detailed NECRMP speciation data, the NAPAP area source emissions data for organic solvent evaporation were expanded to reflect the above subcategories.

Previous versions of the NAPAP Emissions Inventory did not properly reflect the quantity of wood burned in the residential sector, nor did it accurately reflect the proportion of wood burned in wood stoves versus fireplaces in 1980. In addition, earlier versions of the NAPAP Emission Factor File did not reflect recent test data which indicate VOC emissions from wood burning are considerably higher than previously thought. State-level wood consumption estimates were obtained from DOE, adjusted to agree with more recent regional data for 1980, and allocated to counties on the basis of wood burning households from the 1980 Census. Consumption data for each county were adjusted to reflect the fact that the emission factors for wood combustion reflect oven-dried equivalent rates, while the fuel use data reflect undried wood. The revised emission factors for VOC were weighted on the basis of the nationwide proportion of wood stove versus fireplace wood combustion to obtain a single emission factor from which emission estimates were developed.

Emissions data for highway vehicles in previous versions of the NAPAP Emissions Inventory were based on the MOBILE2 emissions model. To support Version 5.0, the MOBILE3 emissions model was incorporated into the NEDS system. Revised highway vehicle emission factors for each U.S. county were generated for hydrocarbons, NO_x, and CO and incorporated into the NAPAP Emission Factor File. Using EIS software, revised emissions estimates for all highway vehicle categories were calculated. It should be noted that nonmethane emission factors were generated using MOBILE2 (i.e. VOC), while MOBILE3 calculated emission factors are for total hydrocarbons.

Systematic Quality Assurance Checks--

Previous quality assurance (QA) efforts focused on the expansion of the NAPAP Emissions Inventory to reflect the needs of the RADM or substitution of certain emissions data with those judged to be of higher quality. The Version 5.0 data base was subjected to a detailed systematic quality check. Specific checks applied to the annual data base are described in the following paragraphs.

Ash and Sulfur Flags and Percents--Calculation of SO_2 and TSP emissions for certain SCCs requires knowledge of the sulfur and/or ash content of the fuel used. If any of these values are missing, emissions cannot be properly calculated. All SCCs whose emissions calculations are dependent on ash and/or sulfur percents were identified. Records in the NAPAP Emissions Inventory with those SCCs were examined; those records that were missing the needed data were identified. Similar processes at the same plant were first examined. If sulfur and/or ash percentages were available on those records, the same values were substituted for the missing values. When this approach could not be used, default ash and/or sulfur percentages (see Appendix B) were used. This procedure was also applied to ash and/or sulfur contents that appeared to be unreasonably high or low.

Estimation Methods--In cases where the estimation method is 0 or blank, NEDS calculates emissions using data in the inventory and the appropriate emission factor from the emission factor file. EIS does not calculate emissions in these cases. Therefore, all estimation methods of zero and blank were identified and changed to 3 so that EIS would calculate emissions in the same manner as NEDS. Estimation method 6 or 7 indicates that the emission point has not yet begun to operate or has ceased operations. Many times, however, these emission points had emissions in the NAPAP inventory. Though NEDS recognizes that such points should not have emissions and does not report emissions for them, EIS reports the emissions just as for any other estimation method. To correct this, all emission points with estimation method 6 or 7 for one or more pollutants were deleted from the inventory.

Incorrect SCCs--A number of emission records appearing in the NAPAP Emissions Inventory had SCCs that are not considered valid by NADB (e.g., 00000000, 19999999, 29999999, and 39999999). In cases where an SCC had a zero operating rate and occurred at an emission point with multiple SCCs, the incorrect SCC was deleted. In all other cases, data in the inventory were reviewed, and manual updates were generated where possible to change the incorrect SCC. In addition, the data identified by Pechan as nonutility but given a utility SCC were reviewed and manually updated to accurately define the type of source.

Asterisks in Data Fields--EIS allows an asterisk in the first space of certain data fields which instructs the system to "blank out" the field when the data are converted back into NEDS format. Because the NAPAP Emissions Inventory data are never reconverted into NEDS, the asterisks remained, creating data processing problems for a number of inventory users. To eliminate this problem, fields with asterisks were blanked out using the EIS to NEDS program.

Zero or Blank Emissions Rates--A number of emission sources were detected that had blank or zero emission rates for certain pollutants, and based on emissions of other pollutants, were suspected to be incorrect. In instances in which the estimation method was 3 (EIS calculates automatically), it was found that a data item crucial to the emissions calculation was missing or zero. To correct the error, where the missing data item was such that a default value could be utilized (e.g., sulfur or ash content), emissions were recalculated with the default value. In many instances, however, the affected data item involved operating rate information, or the SCC did not have an emission factor, despite the use of estimation method 3. Nothing could realistically be done in these instances within the time and budget constraints of the program, so they were noted but not addressed.

Missing or Anomalous Stack Data--Stack data are important because they are required by the RADM. The NAPAP Emissions Inventory was screened to identify sources with missing stack data. Average values based on SCC were substituted in these instances. For sources with multiple SCCs, the primary SCC was utilized in selecting default stack data.

Limit checks were applied to all stack data in the NAPAP Emissions Inventory, as follows:

- Stack height greater than 900 feet
- Utility boiler stack heights less than 100 feet
- Stack diameter greater than 30 feet
- Stack gas temperatures for scrubber stacks greater than 250 degrees
- Stack gas temperatures less than 250 degrees for nonscrubber stacks
- Stack flow rate greater than temperature (degrees R) x capacity for fuel combustion sources.

Stacks exceeding the above limits were identified and reviewed. Suspected problems were resolved based on engineering judgment. In addition all stacks with exit temperatures less than 77°F were changed to 77. Stack gas flow rates were also screened. Those found to exceed the product of capacity and temperature were set to a default flow rate equal to 1/2 the product of capacity and temperature:

$$\text{ACFM} = \frac{(250\ \text{SCFM/MMBtu/hr})\ (\text{Capacity in MMBtu/hr})\ (\text{stack temperature in °R})}{\text{Ambient temperature in °R}}$$

$$= \frac{250\ (\text{capacity})\ (\text{temperature})}{520} \cong 1/2\ (\text{capacity})\ (\text{temperature})$$

As previously indicated, the utility data in Version 4.0 were completely replaced with data generated by Pechan. In creating the new utility data, Pechan renumbered the emission points at a plant. Emission points were matched to those in Version 4.0 where possible but many of the emission points were not matched and several new emission points were created. For the unmatched or new emission points, no stack data were placed in NURF and therefore none were entered into the NAPAP inventory. These emission points were treated like other emission points in the inventory in that average values were substituted.

Operating Rates--Operating rate data were screened for consistency with maximum hourly operating capacities and operating hours. Sources with inconsistent operating rate data were identified. In some instances it was determined that maximum design capacity data were in error; these data were corrected. However, only a few annual operating rates could be corrected, and in most cases, it was not possible to determine whether the annual rate or the maximum rate was in error.

Control Equipment Efficiency--The data were screened to identify emission points which reported control types, but not efficiencies. In these instances, default efficiencies were substituted (see Appendix B). If more than one device was found, the efficiency corresponding to the most efficient device

was entered. In instances in which the control efficiency was present, but the control equipment code was missing, no action was taken.

Non-Computer Calculated Emissions--Sources whose emissions are based on an estimation method other than 3 (e.g., stack test, material balance) were identified. Emissions were estimated using the NAPAP Emission Factor File and operating data reported for the source. In cases in which the calculated emissions differed from the reported emissions by more than a factor of three, the estimation method was changed to 3 so that the computer calculated emissions would be substituted.

Two exceptions to the above procedure should be noted. The emissions estimation method for SO_x emissions from copper smelters was changed to 5 (indicating state-supplied data) when the data were updated with Work Group 3B data, to prevent EIS from changing the estimates automatically. The same procedure was followed in NECRMP, the source of considerable VOC and NO_x data in NAPAP. The copper smelter data were left unchanged in Version 5.0. However, since the NECRMP data had been developed prior to the release of Supplement 14 of AP-42, the following procedure was undertaken. NO_x and VOC emissions were computer-calculated using Supplement 13 emission factors and compared to the NECRMP values. If the two values matched, emissions were recalculated to reflect supplement 14, using estimation method 3. Sources whose emissions did not match the computer calculated values were left unchanged.

Operating Data--Operating data consist of seasonal throughput and hours/day, days/week, and weeks/year of operation. These data are needed for major point sources to obtain the temporal emissions detail required for Eulerian modeling. Seasonal throughput percentages that did not sum to 100 were identified and reviewed. Additional updates were made manually based on the type of source and engineering judgement.

Fuel Heat Content--For fuel-burning sources, missing heat values or values falling outside an appropriate range were replaced with default values as specified in Appendix B.

Emission Factor Confidence Levels--

The procedure adopted to develop uncertainty estimates for emissions in the 1980 NAPAP inventory required the compilation of confidence levels for the factors in the emission factor file. It was decided to assign confidence levels on the basis of the letter ratings included in AP-42 which are indicative of the amount and quality of emissions test data used to develop each factor. The confidence levels were assigned to the letter ratings as follows: A: $\pm$10%, B: $\pm$ 25%, C: $\pm$50%, D: $\pm$75%, and E: $\pm$100%. The confidence ratings (1 through 5 correspond to A through E) were added to the point and area source emission factor files in the appropriate fields. Ratings could not be found in AP-42 for several factors in the emission factor file. These cases were discussed with NADB personnel and engineering judgement was used to assign a confidence level. In cases where a zero emission factor occurred, a confidence rating of 1 was assigned.

SCC-Level Emissions--

The program which speciates total hydrocarbons, NO_x, and TSP from the NAPAP inventory into the components required for the Eulerian model is based upon the SCC. Emissions by SCC were thus needed for the program. The NAPAP inventory has the capability to calculate and store SCC-level emissions. Emissions are inserted for the SCC when calculations are based on factors from the emission factor file. In other cases, however, SCC-level emissions are not available. A computer program was developed to handle these cases using the algorithms included in NEDS for reporting SCC-level emissions. When only one SCC existed at an emission point, the point-level emissions were assigned to the SCC. The NEDS algorithms could not handle situations where all process rates or emission factors were zero or blank for the emission point. Point-level emissions were assigned in such situations equally to each SCC that occurred at the emission point.

York County--

During the creation of Version 5.0 of the 1980 NAPAP inventory, it was discovered that York County, Pennsylvania, did not exist in earlier versions of the area source inventory or in the original NEDS data supplied by NADB. Area source activity data for York County were obtained from NADB and, together with the factors in the emission factor file (including MOBILE3 factors for highway vehicles), were used to create a separate inventory for York County in EIS/AS format. The inventory was supplied to Alliance for developing Eulerian model input and later merged with the area source inventory for other counties in the U.S.

Correction of Canadian Emissions and Stack Parameters--

Communication with Environment Canada uncovered a problem with reported ammonia emissions from Canadian sources. A tape was provided with new emissions values which were substituted into the inventory. After updating, ammonia emissions were reevaluated and determined to be correct.

The Canadians revised their estimate of total hydrocarbon emissions from fuel marketing and landfills based on recent surveys. Canadian area source THC emissions were updated accordingly.

Environment Canada also provided a complete point source printout containing additions and corrections to previous stack parameter data. The Canadian point source file was updated as follows:

1. Additions and corrections were made as reported.

2. Average stack parameter values, based on SCC, were added to point sources missing some, but not all, stack data. SCC averages were also added to sources missing all stack data if SO_2 emissions from the point source were 100 or more tons/year.

3. The remaining points missing all stack parameters were given nominal plume heights to facilitate modeling applications.

Ammonia Emission Factor Updates--

A review of ammonia emissions estimates from the NAPAP ammonia emission factor report revealed that reported ammonia emissions in the NAPAP inventory were much higher than expected. A revised version of the ammonia emission factor report was obtained, and a systematic check of point and area source emission factors was undertaken. New factors were inserted where appropriate and emissions recalculated, resulting in a much better agreement between estimated and reported values.

VOC and THC Emissions--

Previous versions of the 1980 NAPAP inventory contain a mixture of hydrocarbon types including nonmethane VOCs, nonreactive VOCs, and total VOCs. In cases where the NAPAP emission factor file was used to calculate emissions, the emissions are generally nonmethane or nonreactive, because the NEDS emission factor file (on which the NAPAP file was based) contains nonmethane or nonreactive "VOC" factors to the extent possible. However, the program to speciate hydrocarbons for Version 5.2 assumes that total hydrocarbons are being provided, and in the case of non-computer-calculated emissions (estimation method $\neq$ 3), VOC and THC were set equal to each other. In addition, the AP-42 emission factors for hydrocarbons do not account for aldehydes because the flame ionization technique used to determine the emission factor does not detect aldehydes. Though the speciation program accounts for this and adds a mass for aldehydes to the appropriate Version 5.2 photochemical class, this mass was not being accounted for in the 5.0 inventory.

Total hydrocarbon emission factors were added to the inventory using information provided by NADB and AP-42. These factors were evaluated for consistency and judged to be of higher quality than those for VOC. At the recommendation of ASRL, the speciation program was run on the 5.0 inventory and the resulting aldehyde mass was added to the Version 5.0 total hydrocarbon value to yield adjusted THC. VOC emissions were then calculated by subtracting those species considered photochemically nonreactive (essentially methane and ethane) from the revised hydrocarbon emissions.

The final Version 5.0 emission inventory was subjected to a series of QA checks. Tables 3-1 through 3-4 summarize the QA checks and present the total number of records flagged for review. Because the NAPAP inventory is an emissions inventory rather than a compliance data base, no QA was performed on allowable emissions and compliance data that were present in NEDS.

A summary of emissions for Version 1.0 through 5.0 of the 1980 NAPAP inventory is shown in Table 3-5. The emission changes on a nationwide basis are minor, with the exception of ammonia, which has been reduced greatly as a result of the emission factor updates discussed earlier. Sulfur oxides emissions have generally decreased while VOC emissions have increased slightly. Nitrogen oxide emissions increased from Versions 1.0 to 4.0, but decreased in Version 5.0. Emission changes at the state and especially at the plant and emission point level are more dramatic from Versions 1.0 to 5.0. The changes reflect the greater degree of quality in each succeeding version of the 1980 NAPAP inventory.

TABLE 3-1. EMISSIONS TOTALS FOR 1980 AND NON-1980 SOURCES IN 1980 NAPAP INVENTORY (VERSION 5.0)

CHECK DESCRIPTION	COMBUSTION SOURCES[1] UTILITIES	INDUSTRIAL	COMMERCIAL	OTHER	OTHER SOURCES[2] POINT	AREA	TOTAL
TOTAL SO2 EMISSIONS (TONS/YEAR)	17,478,705	3,480,756	560,696	460,109	3,766,301	1,207,568	26,954,135
NON-1980 SO2 EMISSIONS	0	1,912,003	124,386	151,033	2,608,596	0	4,796,018
PCT OF EMISSIONS FROM 1980	100.0%	45.1%	77.8%	67.2%	30.7%	100.0%	82.2%
PCT OF EMISSIONS NOT FROM 1980	0.0%	54.9%	22.2%	32.8%	69.3%	0.0%	17.8%
TOTAL NOX EMISSIONS (TONS/YEAR)	6,448,070	3,565,714	287,502	727,851	1,472,412	9,850,690	22,352,239
NON-1980 NOX EMISSIONS	0	1,128,913	63,601	168,070	1,094,111	0	2,454,695
PCT OF EMISSIONS FROM 1980	100.0%	68.3%	77.9%	76.9%	25.7%	100.0%	89.0%
PCT OF EMISSIONS NOT FROM 1980	0.0%	31.7%	22.1%	23.1%	74.3%	0.0%	11.0%
TOTAL VOC EMISSIONS (TONS/YEAR)	46,644	372,053	17,648	2,650,912	3,400,594	16,676,697	23,164,548
NON-1980 VOC EMISSIONS	0	286,749	9,289	104,407	2,725,275	0	3,125,720
PCT OF EMISSIONS FROM 1980	100.0%	22.9%	47.4%	96.1%	19.9%	100.0%	86.5%
PCT OF EMISSIONS NOT FROM 1980	0.0%	77.1%	52.6%	3.9%	80.1%	0.0%	13.5%
TOTAL TSP EMISSIONS (TONS/YEAR)	637,746	1,000,393	103,510	1,585,726	2,537,357	36,752,638	42,617,370
NON-1980 TSP EMISSIONS	0	766,437	63,114	75,458	1,975,020	0	2,880,029
PCT OF EMISSIONS FROM 1980	100.0%	23.4%	39.0%	95.2%	22.2%	100.0%	93.2%
PCT OF EMISSIONS NOT FROM 1980	0.0%	76.6%	61.0%	4.8%	77.8%	0.0%	6.8%
TOTAL CO EMISSIONS (TONS/YEAR)	309,189	2,520,855	52,551	9,109,898	6,034,925	81,281,519	99,308,937
NON-1980 CO EMISSIONS	0	2,007,362	11,471	365,619	4,702,272	0	7,086,724
PCT OF EMISSIONS FROM 1980	100.0%	20.4%	78.2%	96.0%	22.1%	100.0%	92.9%
PCT OF EMISSIONS NOT FROM 1980	0.0%	79.6%	21.8%	4.0%	77.9%	0.0%	7.1%

1 - Utility sources include SCCs 101xxxxx and 201xxxxx, and area source SCCs 96-98.
Industrial sources include SCCs 102xxxxx, 202xxxxx and 105001xx, and area source SCCs 14-20.
Commercial sources include SCCs 103xxxxx, 203xxxxx and 105002xx, and area source SCCs 7-12.
Other combustion sources include all SCCs under 300xxxxx not mentioned above, 306001xx-306002xx, 390xxxxx-391xxxxx, 40201xxx-402011xx, 5xxxxxxx-51xxxxxx, and 30500206-3050028x, and area source SCCs 1-6 and 21-26.

2 - Other sources include all point and area source SCCs not included in note (1) above.

TABLE 3-2. PLANT LEVEL QA CHECKS OF 1980 NAPAP U.S. POINT SOURCES (VERSION 5.0)

CHECK NUMBER AND DESCRIPTION	COMBUSTION SOURCES[1] UTILITIES	INDUSTRIAL	COMMERCIAL	OTHER	OTHER SOURCES[2]	TOTAL FLAGGED	PERCENT FLAGGED
SAMPLE POOL	1,364	2,879	392	621	8,423	13,679	NA
1: DATE OF RECORD NOT 1980	0	2,402	318	522	6,647	9,889	72.29
2: PLANTS FLAGGED IN CHECK 1 EMITTING > 1,000 TONS/YEAR	0	6	0	3	14	23	0.17
3: PLANTS WITH MISSING SO2, NOX, TSP, VOC AND CO EMISSIONS	0	0	0	0	0	0	0.00

1 - Utility sources include SCCs 101xxxxx and 201xxxxx
Industrial sources include SCCs 102xxxxx, 202xxxxx, 105001xx, and 390xxxxx
Commercial sources include SCCs 103xxxxx, 203xxxxx and 105002xx
Other combustion sources include all SCCs under 300xxxxx not mentioned above, 306001xx-306002xx, 40201xxx-402011xx, 5xxxxxxx-51xxxxxx, and 30500206-3050028x

2 - Other sources include all point source SCCs not included in note (1) above.

TABLE 3-3. POINT LEVEL QA CHECKS OF 1980 NAPAP U.S. POINT SOURCES (VERSION 5.0)

CHECK NUMBER AND DESCRIPTION	COMBUSTION SOURCES[1] UTILITIES	INDUSTRIAL	COMMERCIAL	OTHER	OTHER PT SOURCES[2]	TOTAL FLAGGED	PERCENT FLAGGED
SAMPLE POOL	4,472	7,637	764	1,591	20,019	34,483	NA
1: VELOCITY DATA MISSING AND PLUME HEIGHT 0 OR MISSING	0	0	0	0	0	0	0.00
2: VELOCITY PRESENT, BUT NOT BETWEEN 5 AND 130 FT/SEC	223	1,027	155	232	2,341	3,978	11.54
3: STACK PARAMS (HT,DIA,TEMP,OR FLOW) AND PLUME HEIGHT MISSING	0	0	0	0	0	0	0.00
4: STACK HGT > 1000 FT.	4	0	0	0	1	5	0.01
5: STACK DIAMETER NOT BETWEEN 0.5 AND 30 FT.	44	496	10	160	567	1,277	3.70
6: RATIO OF STACK HGT. TO DIA. NOT BETWEEN 5 AND 60	326	765	42	353	1,844	3,330	9.66
7: STACK FLOW RATE IS MISSING	0	84	5	19	1,547	1,655	4.80
8: STACK TEMPERATURE NOT BETWEEN 60 AND 2000 DEGREES F	12	24	3	19	1,880	1,938	5.62
9: DAYS PER YEAR NOT BETWEEN 0 AND 365	0	0	0	0	0	0	0.00
10: SUM OF SEASONAL THRUPUTS NOT EQUAL TO 100 +/- 5%	0	3	0	0	9	12	0.03
11: DAYS PER WEEK NOT BETWEEN 0 AND 7	0	0	0	0	0	0	0.00
12: HOURS PER DAY NOT BETWEEN 0 AND 24	0	0	0	0	0	0	0.00
13: WEEKS PER YEAR NOT BETWEEN 0 AND 52	0	0	0	0	0	0	0.00
14: EMISSIONS < 100 TONS/YEAR[3]	NA[4]	471	47	73	7,139	7,730	22.42
15: UTILITIES WITH ESTIMATION METHOD OTHER THAN 3	0	NA	NA	NA	NA	0	0.00
16: ESTIMATION METHOD OF 0, 6, OR 7	0	0	0	0	0	0	0.00
17: CONTROL EQUIPMENT PRESENT BUT CONTROL EFFICIENCY MISSING	0	0	0	0	2	2	0.01

TABLE 3-3 (continued)

CHECK NUMBER AND DESCRIPTION	COMBUSTION SOURCES[1] UTILITIES	INDUSTRIAL	COMMERCIAL	OTHER	OTHER PT SOURCES[2]	TOTAL FLAGGED	PERCENT FLAGGED
SAMPLE POOL	4,472	7,637	764	1,591	20,019	34,483	NA
18: ESTIMATION METHOD 3 AND EMISSIONS MISSING	0	0	0	0	0	0	0.00
19: ESTIMATION METHOD NOT EQUAL TO 3 AND EMISSIONS MISSING	0	0	0	0	0	0	0.00
20: SO2 > 25,000 TONS/YEAR	187	0	0	0	16	203	0.59
21: TSP > 25,000 TONS/YEAR	0	0	0	0	8	8	0.02
22: NOX > 25,000 TONS/YEAR	14	0	0	0	2	16	0.05
23: VOC > 25,000 TONS/YEAR	0	0	0	0	0	0	0.00
24: CO > 25,000 TONS/YEAR	0	1	0	1	88	90	0.26
25: SPACE HEAT % > 0 AND POINT IS NOT A COMBUSTION SOURCE	NA	NA	NA	NA	162	162	0.47
26: SPACE HEAT % > 30 AND WINTER THRUPUT < SUMMER THRUPUT	0	27	31	1	11	70	0.20

1 - Utility sources include SCCs 101xxxxx and 201xxxxx
Industrial sources include SCCs 102xxxxx, 202xxxxx, 105001xx, and 390xxxxx
Commercial sources include SCCs 103xxxxx, 203xxxxx and 105002xx
Other combustion sources include all SCCs under 300xxxxx not mentioned above, 306001xx-306002xx, 40201xxx-402011xx, 5xxxxxxx-51xxxxxx, and 30500206-3050028x

2 - Other sources include all point source SCCs not included in note (1) above.

3 - These point sources have been flagged because at least one point within the same plant has emissions exceeding 100 tons/year.

4 - For utility sources, the cutoff for all sources was 100 tons/year at the plant level rather than the point level.

TABLE 3-4. SCC LEVEL QA CHECKS OF 1980 NAPAP U.S. POINT SOURCES (VERSION 5.0)

CHECK NUMBER AND DESCRIPTION	COMBUSTION SOURCES[1] UTILITIES	INDUSTRIAL	COMMERCIAL	OTHER	OTHER SOURCES[2]	TOTAL FLAGGED	PERCENT FLAGGED
SAMPLE POOL	7,834	13,029	973	2,108	26,215	50,159	NA
1: HOURLY OPERATING RATE > MAXIMUM HOURLY OPERATING RATE	156	1,270	108	268	3,170	4,972	9.91
2: ALL SCC-LEVEL EMISSIONS MISSING	0	60	0	63	755	878	1.75
3: SULFUR FLAG = 'S' AND SULFUR CONTENT = 0 OR MISSING	0	8	0	0	41	49	0.10
4: ASH CODE 'A' BUT ASH CONTENT 0 OR MISSING	0	0	0	0	0	0	0.00
5: THRUPUT = 0 AND SO2 OR NOX > 0	0	742	8	287	331	1,368	2.73
6: SO2 = 0, SULFUR CONTENT > 0, AND THRUPUT NOT EQUAL TO 0	0	404	8	9	24	445	0.89
7: HEATRATE = 0 AND THRUPUT > 0 OR SO2 > 0	0	320	6	164	6	496	0.99
8: HEATRATE = 0 AND SO2 = 0 AND THRUPUT=0	110[3]	502	18	101	3	734	1.46
9: SO2 NOT EQUAL TO CALCULATED SO2 +/- 15%	0	1,688	48	506	936	3,178	6.34
10: SOURCES FLAGGED IN CHECK 9 WITH ESTIMATION METHOD 3	0	0	0	0	0	0	0.00
11: SAME AS CHECK 9 NOT INCLUDING FLAGS OF CHECKS 5 AND 6	0	1,381	41	327	829	2,578	5.14
12: SO2 NOT EQUAL TO CALCULATED SO2 +/- 50%	0	1,339	26	405	830	2,600	5.18
13: SO2 NOT EQUAL TO CALCULATED SO2 +/- 100%	0	997	19	281	550	1,847	3.68
14: SO2 NOT EQUAL TO CALCULATED SO2 +/- 200%	0	918	18	264	500	1,700	3.39
15: NOX NOT EQUAL TO CALCULATED NOX +/- 50%	0	2,074	106	574	432	3,186	6.35
16: VOC NOT EQUAL TO CALCULATED VOC +/- 50%	0	3	1	1	237	242	0.48
17: TSP NOT EQUAL TO CALCULATED TSP +/- 50%	0	2,654	183	604	2,562	6,003	11.97

TABLE 3-4 (continued)

CHECK NUMBER AND DESCRIPTION	COMBUSTION SOURCES[1] UTILITIES	INDUSTRIAL	COMMERCIAL	OTHER	OTHER SOURCES[2]	TOTAL FLAGGED	PERCENT FLAGGED
SAMPLE POOL	7,834	13,029	973	2,108	26,215	50,159	NA
18: CO NOT EQUAL TO CALCULATED CO +/- 50%	0	1,944	148	429	390	2,911	5.80
19: POINTS NOT IN CORRECT COUNTY	0	0	0	0	0	0	0.00

1 - Utility sources include SCCs 101xxxxx and 201xxxxx
Industrial sources include SCCs 102xxxxx, 202xxxxx, 105001xx, and 390xxxxx
Commercial sources include SCCs 103xxxxx, 203xxxxx and 105002xx
Other combustion sources include all SCCs under 300xxxxx not mentioned above, 306001xx-306002xx, 40201xxx-402011xx, 5xxxxxxx-51xxxxxx, and 30500206-3050028x

2 - Other sources include all point source SCCs not included in note (1) above.

3 - These utility sources have zero annual thruput due to intermittent operation throughout the year.

TABLE 3-5. SUMMARY OF TOTAL U.S. EMISSIONS FROM VERSIONS 1.0 - 5.0 OF THE 1980 NAPAP INVENTORY

	Emissions (thousand tons per year) Version				
Pollutant	1.0	2.0	3.0	4.0	5.0[a]
SO_2	27,916	27,784	27,111	27,222	26,954
NO_x	22,905	23,198	23,667	23,833	22,352
VOC	22,582	22,520	23,269	23,307	23,165
Sulfate	--	--	--	947	976
Ammonia	--	--	--	4,250	838
Chloride	--	--	--	--	527
Fluoride	--	--	--	--	115
Lead	--	--	--	--	32

[a]Version 5.0 totals shown do not include Canadian emissions which are as follows:

SO_2	-	5,109
NO_x	-	2,054
VOC	-	2,994
Sulfate	-	188
Ammonia	-	210

EVOLUTION AND QUALITY ASSURANCE OF THE 1980 RESOLVED NAPAP EMISSIONS INVENTORY

One of the primary functions of the NAPAP emissions inventory, as recognized at the project's outset, was to serve as a source of data for emissions modeling. The development of an Eulerian modeling inventory was initiated with Version 4.0. In order to create a suitable data set, it was necessary to further resolve the emissions data spatially (to 20 x 20 kilometer grids) and temporally (to the hourly level), and to resolve selected pollutants (nitrogen oxides, alkaline particulates, and total hydrocarbons) into their component species. The remainder of this section documents the development of the fully resolved inventories. A detailed discussion of allocation factor development appears in Section 6, and a more in-depth accounting of quality assurance checks applied to the 5.2 inventory can be found in Section 7.

Versions 4.1 and 4.2

Version 4.0 of the 1980 NAPAP inventory could not be input directly into the data processing system used to create Eulerian model input. The point source file had to be compressed to keep data processing costs within reason, and some additional data processing was necessary to accommodate the system used to develop Eulerian model input.

The NAPAP point source master file was analyzed to determine how many emission points would be required to represent 90 percent or more of total SO_2, NO_x, and VOC emissions. It was discovered that with an emission cutoff of 100 tons per year for SO_2 and NO_x and 50 tons per year for VOC, 98.1% of SO_2, 94.5% of NO_x, and 89.9% of VOC would be represented. It was decided to use these cutoffs for the file compression and also to include all ammonia emission points. Sulfate emissions in the compressed file represented 91.2% of total point source sulfate emissions. The compressed file of major point sources contained 25,298 emission points compared to about 201,000 in the entire master file. The remaining point sources were combined by county and included as a separate area source category for every county in the study area.

Due to limitations of the data processing, some modifications to the master files were made to facilitate the use of NAPAP data for developing Eulerian model input. These included:

- Elimination of TSP and CO data from the point and area source master files.
- Elimination of industrial fuel-coke, industrial fuel-process gas, vessels-coal, unpaved road travel, and unpaved airstrip LTOs from the area source master file.
- Restructuring the area source master file to occupy the first 54 available locations.
- Disaggregating the nationwide NAPAP master files into four smaller files based on time zone boundaries.

The compressed inventory, designated Version 4.1, was processed into an input file for use in Eulerian modeling by the Regional Model Data Handling System (RMDHS) which applied temporal, spatial, and species allocation factors to the data. The resulting Eulerian Modeling Emissions Inventory Version 4.2 represented hourly emissions for 15 pollutants for a typical summer weekday in 1980.

Version 5.2

As was the case for Version 4.0 of the 1980 NAPAP inventory, it was desirable to compress Version 5.0 of the point source file to limit data processing time for developing Eulerian model input. Table 3-6 summarizes the emission cutoffs for each pollutant and the percentage of the total point source emissions represented by the major emission points in Version 5.0. Detailed data for only the 34,500 major emission points is maintained in Version 5.0. The remaining point source emissions (minor points) were aggregated by county and treated as an area source category in Version 5.0.

Canadian emissions, added to the Version 5.0 inventory, were needed on a 20 x 20 kilometer grid basis. The grid system being used for the U.S. was extended northward into Canada to 60° latitude, while the westernmost boundary of the U.S. grid system, 125° longitude, was preserved for the Canadian inventory. Thus, a portion of northern Quebec and Western British Columbia fell outside the grid system. The grid system was extended on the east to cover all Canadian provinces. It should therefore be noted that the Canadian emission values reported in the Version 5.2 NAPAP inventory do not constitute total Canadian emissions.

Once the NAPAP grid system for Canada was defined, its description was furnished to the Canadian Land Directorate, which provided available allocation data for the 20 x 20 kilometer NAPAP grids in each province in Canada. A more detailed discussion of spatial allocation of Canadian data can be found in Section 6.

A number of data processing limitations were discovered during the development and QA of the 4.2 resolved inventory, which led to the conclusion that RMDHS was unsuitable for use with the Version 5 data. The Flexible Regional Emissions Data System (FREDS) was developed as a replacement. Each of the five FREDS modules, executed sequentially to generate the NAPAP Version 5.2 Emission Inventory, analyzes incoming data for validity and quality. The development and QA of the 5.2 inventory using FREDS is documented in detail in Section 7 of this report.

The resulting NAPAP 5.2 Emissions Inventory contains data resolved to the hourly level for any of the 12 temporal scenarios shown in Table 3-7. NO_x emissions are allocated between NO and NO_2, TSP emissions are allocated into constituent alkaline dust species, and hydrocarbons are divided into 28 photochemical reactivity classes. Data can be resolved to the 20 x 20 kilometer grid level for the 48 contiguous United States and Canada north to 60° latitude.

TABLE 3-6. SIZE CUTOFFS FOR VERSION 5.0 OF THE NAPAP POINT SOURCE INVENTORY

Pollutant	Emission point cutoff (tons/yr)	Percentage of total point source emissions represented
SO_x	100	98.1
NO_x	100	93.4
Total VOC	50	89.9
Sulfate	50	86.4
Ammonia	100	93.4
Chloride	100	91.4
Fluoride	50	86.6
Lead	5	89.1
TSP	50	88.2
CO	100	96.7

TABLE 3-7. TEMPORAL SCENARIOS AVAILABLE UNDER THE 1980 NAPAP EMISSIONS INVENTORY, VERSIONS 5.2 AND 5.3

FREDS temporal allocation scenario number	Scenario
1	Winter Weekday
2	Winter Saturday
3	Winter Sunday
4	Spring Weekday
5	Spring Saturday
6	Spring Sunday
7	Summer Weekday
8	Summer Saturday
9	Summer Sunday
10	Fall Weekday
11	Fall Saturday
12	Fall Sunday

Following the original processing of the 5.0 inventory through FREDS, a problem was discovered with the speciation of hydrocarbons which resulted in an overestimation of all THC classes, particularly formaldehyde. FREDS was rerun on point sources to correct the averages; however, data processing costs and the relative magnitude of the overall error for area sources (roughly 3.5%) precluded rerunning the area source FREDS modules. The precise magnitude of the hydrocarbon class overestimation is dependent on source category, and can range as high as 95 percent for SCCs corresponding to distillate oil combustion. Most categories, however, show zero error, and all major THC source categories exhibit errors of no more than 5 percent

Additional QA revealed that not all point source NO_x emissions in the 5.0 inventory were being apportioned into NO and NO_2 in the 5.2 inventory, resulting in an apparent shortfall of 1.3 percent. This was due to the presence of several blank NO_x speciation profiles in source categories with nonzero NO_x emissions. The profiles were updated to reflect the default NO_x split (95% NO, 5% NO_2) prior to the rerunning of FREDS to ensure that all annual NO_x is accounted for in the resolved inventory.

It should also be noted that the QA for the 5.0 and 5.2 inventories is not mutually exclusive. A number of additions and modifications performed on the Version 5.0 inventory and enumerated in previous sections were geared toward development and QA of the resolved inventory. Examples include operating data updates (temporal), SCC level emissions (spatial) and VOC/THC updates (species). Conversely, the gridded emission density maps developed from Version 5.2 were instrumental in locating inconsistencies within the 5.0 inventory. For example, a grid map of annual NO_x emissions identified a problem with data from area source category 44 in Vermont, which was traced to an order of magnitude error in activity level and subsequently rectified.

Also, the updates performed on hydrocarbon classes described above necessitated an update to annual (5.0) VOC emissions to ensure that they accurately represented total hydrocarbons less nonreactive species. Since area source emissions of THC classes remained slightly high, area source VOC in both the 5.0 and 5.2 inventories is correspondingly low; however, this error has been estimated to be no greater than 0.4 percent over the NAPAP study area.

Version 5.3

EPA's Atmospheric Sciences Research Laboratory requested an inventory to support applications of the Regional Oxidant Model (ROM) throughout the NAPAP study area. The ROM apportions hydrocarbons into classes based on carbon bond IV chemistry, a method not supported under Version 5.2. However, the flexible speciation capabilities of FREDS and the associated program PSPLIT allowed the generation of a new resolved inventory from the Version 5.0 annual data. ASRL modified the speciation program (PSPLIT) and generated a set of speciation factors to apportion total hydrocarbons into 10 reactivity classes consistent with carbon bond IV mechanisms. Using the new factors, the Version 5.0 inventory was reprocessed through the FREDS system to create Version 5.3. This newest version of the NAPAP inventory was forwarded to ASRL, which verified the accuracy of the speciated data. Version 5.3 emissions were also checked against totals in Version 5.2 to ensure consistency and accuracy.

SECTION 4

NAPAP VERSION 5 EMISSION FACTORS

Emission factors are used by NEDS to compute estimates of emissions associated with a process when a more accurate estimate is not supplied to the system. For the NEDS criteria pollutants (SO_2, NO_x, CO, VOC, and total suspended particulates), these factors were available from the October 1985 NEDS Emission Factor Listing. Generally, these factors are taken from AP-42. In some cases, however, they may be derived from better information not yet incorporated into AP-42 or based on the similarity of one process to another for which emissions information does exist.

Emissions component species included in the 1980 NAPAP Emission Inventory are:

- Sulfur Dioxide (SO_2)
- Oxides of Nitrogen (NO_x)
- Volatile Organic Compounds (VOC)
- Total Hydrocarbons (THC)
- Carbon Monoxide (CO)
- Lead (Pb)
- Primary Sulfates (SO_4)
- Ammonia (NH_3)
- Hydrogen Chloride (HCl)
- Hydrogen Fluoride (HF)
- Total Suspended Particulates (TSP), including Alkaline Dusts

Due to a lack of standardized, reliable sources of data, NAPAP developed emission factor reports specifically for primary sulfates, hydrogen fluoride, hydrogen chloride, and ammonia. In addition, emission factors for alkaline dust fractions were developed by Canada and incorporated into the NAPAP inventory. These reports review analyses of existing data on emissions from a

variety of source categories and present a tabulation of emission factors appropriate for use with the NAPAP Emissions Inventory. The reliability of the emission factors is discussed and areas where data are either lacking or incomplete are identified. A summary of each report is presented below.

PRIMARY SULFATE EMISSION FACTORS

The primary sulfate emission factor report discussed four major activities:

1. a summary discussion of primary sulfate formation mechanisms thought to be prevalent in combustion processes;

2. assessment of the state-of-the-art methodology for primary sulfate sampling and analysis of source emissions;

3. review of the SURE (Klemm, 1981) and WG3B (1982) primary sulfate emission inventories; and

4. collection, review, and calculation of primary sulfate emission factors derived from additional field studies not included in the SURE and WG3B inventories.

Primary sulfate emission factors recommended for use in the NAPAP Emissions Inventory are given in Table 4-1. The factors are reported for a number of SCCs based on an analysis of available data. Most of the current data set is for fossil fuel combustion in the industrial and utility sectors. The emission factors have been calculated to a normalized Emissions Information System (EIS) format as:

Sulfate emissions per SCC unit = (Emission factor x percent sulfur content of fuel)

The emission factors given in Table 4-1 reflect sulfate emitted as SO_4^{-2}. Limited data available suggest that sulfate emissions can be markedly affected by fuel sulfur content and other parameters such as furnace oxygen levels and trace element content of the fuel. For source categories other than fossil fuel combustion, sulfate emission factors are reported in standard SCC units or as percentages of mass particulate emissions.

The calculation of specific primary sulfate emission factors was based on the following hierarchical selection process.

1. Where available, all field measurements using the CCS procedure were considered as the prime data set.

2. Sulfate emission assessments were aggregated for different point sources within the same source category only if fuel composition and emission controls were similar.

TABLE 4-1. PRIMARY SULFATE EMISSION FACTORS

Source category	Control device	Primary sulfate emission factor	Rating
Electric Utilities - External Combustion			
Eastern bituminous coal	ESP	0.385 lb/ton	A
	ESP and FGD	0.250[a]	C
Western bituminous coal	ESP	1.290	B
	ESP and FGD	0.761	C
Lignite	ESP	1.951	C
Residual oil (>1% sulfur content)	Fuel oil additives	5.439 lb/1,000 gallons[b]	B
Industrial - External Combustion			
Eastern bituminous coal	Multiclones	2.646 lb/ton	B
	Multiclones and FGD	0.462	C
Residual oil	Multiclones	5.296 lb/1,000 gallons	D
	Multiclones and FGD	2.616	D
Commercial/Institutional - External Combustion			
Residual oil (<1% sulfur content)	Fuel oil additives	25.07 lb/1,000 gallons[b]	C
Space Heating - External Combustion			
Distillate oil	None	5.65 lb/1,000 gallons[b]	C
Industrial Process - Chemical Manufacturing			
H_2SO_4 - contact process	Demister	0.100 lb/ton acid produced	C
Electric Utilities - External Combustion			
Industrial Process - Primary Metals			
Primary copper smelters	None		
total		22.5 lb/ton concentrated ore	C
roaster		1.08	C
smelter		5.76	D
converter		15.66	D
Primary zinc smelters	None	55.5 lb/ton processed	D

(continued)

TABLE 4-1 (continued)

Source category	Control device	Primary sulfate emission factor	Rating
Industrial Process - Primary Metals (cont.)			
Primary aluminum smelter	None	0.5% of SO_2	D
Iron production	None	2.0% of SO_2	D
Coke	None	0.320 lb/ton coal charged	D
Industrial Process - Wood Products			
Kraft pulp mill	None	(1)	C
Sulfite pulp mill	None	(2)	C
Wood/bark waste	Multiclone	3.6 lb/ton bark	D
Industrial Process - Mineral Product			
Cement manufacturing	None	(3)	D
Gypsum manufacturing	None	(4)	D
Industrial Process - Petroleum Industry			
Fluid crackers	ESP	15.0 lb/1,000 barrels oil	C
Sulfur recovery Claus plants	None	2.8 lb/ton produced	C

[a]Emission factor based on average sulfate scrubbing efficiency of 35 percent.

[b]Emission factor applicable only to low sulfur content (0.3 percent S) residual fuel oil.

(1)Total sulfate emissions for kraft pulp mills estimated as 85 percent of NEDS total particulate emissions from kraft recovery boilers.

(2)Total sulfate emissions from sodium-base sulfite mills estimated as 70 percent of NEDS SO_2 emissions; for calcium-base sulfite mills estimated as 25 percent of NEDS SO_2 emissions.

(3)Total sulfate emissions from cement kilns estimated as 5.6 lb/ton of cement on an uncontrolled basis. Average particulate control efficiency from NEDS data assumed to apply in order to calculate actual emissions.

(4)Total sulfate from gypsum plants estimated as 56 percent as NEDS actual particulate emissions.

The percentage estimates of the sulfate content of particulate matter in footnotes 1 through 4 were reported in: Draft Report P-3901/6, Anthropogenic Sources and Emissions of Primary Sulfates in Canada, Ontario Research Foundation, Contract No. 477SS.KE204-1-0318, November 30, 1981.

3. Emissions data acquired through the use of methods other than CCS were included only if multiple measurements yielded data with minimal scatter.

There are a number of source categories for which no experimental field data exist. At present, the only alternative to an emission factor for the NAPAP Emissions Inventory is the assignment of an "assumed" factor already contained within the source allocation codes for the Regional Model Data Handling System (RMDHS). However, most of the regional mass emissions of primary sulfates should occur from those source categories for which emission factors have already been substantiated (utility and industrial fossil fuel burning). The best approach to improving the NAPAP Emissions Inventory sulfate component may be an expanded field measurement activity which focuses on the source categories which have not been characterized sufficiently, but which are potentially significant contributors to regional emissions. Improvements are needed in the data base for low sulfur residual oil-fired industrial and commercial boilers. Field measurements using the CCS procedure are recommended for this source type which is a significant source of sulfur emissions in major metropolitan areas in the eastern United States. In addition, sulfate emissions from the pulp and paper industry need further characterization given the large preliminary emission factors reported by WG3B. Pulp mill operations are concentrated in the acid deposition sensitive Northeast and represent a major SO_2 and particulate source contributor in the southeastern United States.

HCl AND HF EMISSION FACTORS

A literature search was conducted to identify significant anthropogenic emission sources and to estimate emission rates for each source. The emission factors summarized in Table 4-2 were developed from the most recent data available. When available, emission factors based on tests performed by a sound methodology and accompanied by adequate background data were chosen. Emission factors were evaluated on a scale of A through E, with an A representing data taken from a large data base covering a good cross section of the industry, determined from valid test methods, and possessing a high confidence level. Data rated E were developed from a small data base, which was not necessarily representative of the industry, and consequently have a low confidence level. Ratings of B through D represent data with intermediate confidence levels. National emission estimates for base year 1980 were calculated by multiplying the level of activity (production/use rates) for each emission factor for that source. National emission estimates provide a measure of the relative importance of each source category.

Hydrogen chloride is emitted from coal combustion, waste incineration, and organic chemical manufacture. Hydrogen fluoride is emitted primarily as a by-product of coal combustion and primary aluminum production. Other sources of HF include the fertilizer industry and the hydrogen fluoride manufacturing industry.

The rates at which HCl and HF are emitted during coal combustion are functions of coal composition and air pollution control techniques. A study

TABLE 4-2. HYDROGEN CHLORIDE AND HYDROGEN FLUORIDE EMISSION FACTORS

Source	Emission factor	Rating
--HCl--		
Coal Combustion		
Utility Boiler		
Bituminous	78.8 lb/10^9 Btu	A
Anthracite	35.5 lb/10^9 Btu	A
Lignite	1.0 lb/10^9 Btu	A
Industrial Boilers		
Bituminous	78.8 lb/10^9 Btu	A
Anthracite	35.5 lb/10^9 Btu	A
Lignite	1.0 lb/10^9 Btu	A
Residential Boilers		
Bituminous	60.5 lb/10^9 Btu	C
Anthracite	120 lb/10^9 Btu	C
Lignite	35.1 lb/10^9 Btu	C
Propylene Oxide Manufacture	7.46 lb/ton	B
Incineration		
Municipal Waste	5.0 lb/ton[a]	E
Industrial Waste	5.35 lb/ton[a]	E
Liquid Waste	1.19 lb/ton[a]	E
By-product Hydrochloric Acid Production		
(without final scrubber)	3.0 lb/ton	C
(with final scrubber)	0.2 lb/ton	C
--HF--		
Coal Combustion		
Utility Boiler		
Bituminous	9.4 lb/10^9 Btu	A
Anthracite	7.2 lb/10^9 Btu	A
Lignite	1.2 lb/10^9 Btu	A
Industrial Boilers		
Bituminous	9.4 lb/10^9 Btu	A
Anthracite	7.2 lb/10^9 Btu	A
Lignite	1.2 lb/10^9 Btu	A
Residential Boilers		
Bituminous	6.37 lb/10^9 Btu	C
Anthracite	4.95 lb/10^9 Btu	C
Lignite	6.34 lb/10^9 Btu	C
Hydrogen Fluoride Manufacture		
Tail gas vent		
Uncontrolled	25.0 lb/ton	E
Controlled - caustic rubber	0.2 lb/ton	E

[a]Based on 1970 data.

of coal combustion in utility boilers conducted by the Bureau of Mines found the majority of chlorine contained in coal to volatilize and form HCl. There is a need for additional scientific data which directly assess the chemical form of fluorine emitted during coal combustion. In lieu of such data and because of the chemical similarity between fluorine and chlorine, it is assumed that all fluorine in the feed coal reacts to form HF.

Data compiled in 1979 on trace element compositions in coal were obtained from studies by TRW and Alliance and were used to calculate emission factors for coal combustion in utility and industrial boilers. These factors were assigned an A ranking due to the number of tests conducted, availability of information concerning accuracy, and type of test methods used. Recent data (1985) developed by the Department of Energy's Pittsburgh Energy Technology Center from lab tests on bituminous coal in utility boilers resulted in emission factors which compare favorably with those developed from the TRW/Alliance study.

Scrubbers, electrostatic precipitators (ESPs), cyclones, and baghouses are used frequently on coal-fired utility boilers as flue gas control techniques. The primary purpose of these controls is to remove particulate matter from the flue gas stream. The efficiency of wet scrubbing devices has been reported at about 80 percent for HCl and HF emissions from bituminous coal-fired utility boilers. Baghouses which have sorbent or alkaline materials introduced may remove a substantial amount of HCl and HF. A study of the use of nacholite and sodium bicarbonate as dry sorbent resulted in a 95 to 98 percent HCl removal. However, under normal operating practices, baghouses, ESPs, and cyclones have no significant effect on removal of HCl or HF.

Another control technique, flue gas desulfurization, is used to remove sulfur oxides from coal combustion. Data have indicated that flue gas desulfurization is at least 95 percent effective in removal of HCl. No data are available to quantify removal efficiencies of HF.

Several emission factors received low ratings because of limited data. Factors for HCl from residential boilers, hydrochloric acid manufacturing, and waste incineration received intermediate to poor rankings because of the small number of plants actually tested and the absence of information concerning test methodology. Factors for HF emissions from residential boilers, phosphoric acid production, and hydrogen fluoride manufacture were assigned low rankings based upon the low number of studies, absence of information concerning accuracy of test methods, and the number of assumptions made in determining these factors. Additional data which address emission rates of HCl and HF from these sources would be beneficial.

NH_3 EMISSION FACTORS

Ammonia emission factors for the 1980 NAPAP inventory were developed using a methodology similar to that used for HCl/HF emission factors, including a literature search, identification of the best available data, and assignment of confidence ratings. As was done for emission factors for HF and

HCl, emission factors for NH_3 were assigned a confidence rating on a scale of A through E, with an A representing a high confidence level, and ratings of B through D representing intermediate confidence levels. The ammonia emission factors and their related confidence ratings are summarized in Table 4-3.

Anthropogenic sources of ammonia emissions include field application of livestock wastes, beef cattle feedlots, fertilizer manufacture and use, fuel combustion, ammonia synthesis, petroleum refineries, and coke manufacture.

Ammonia volatilization rates from livestock wastes applied to agricultural land are based on several sets of data. Van Dyne, et al. compiled information on amounts of manure used in land application while estimates of ammonia volatilization for various waste management practices and for various types of livestock were calculated from data developed by Huff, et al. and Westerman, et al. Ammonia emission factors were calculated from these data. Because several assumptions were made in deriving the factors, and because the accuracy of these assumptions is uncertain, these factors should be considered at best to be gross estimates. Volatilization rates vary drastically with weather conditions and waste management practices.

Ammonia from beef cattle feedlots were reported by Peters, et al., and Hutchinson, et al. Data ranged over three orders of magnitude; averages of the data from these two studies provide emission factors which should again be considered gross estimates which will vary depending on weather and waste management practices.

AP-42 data were used to characterize emissions from fertilizer manufacture, ammonia synthesis, petroleum refineries, and coke manufacture. The fertilizer manufacture emission factor varies over several orders of magnitude depending upon whether a plant uses an excess of ammonia or an excess of acid in the process. Emissions from petroleum refineries are primarily from catalytic cracking operations. Sources in the manufacture of coke include oven charging, door leaks, coke pushing, and quenching. Emission factors from all of these source categories were rated at a high level of confidence except coke manufacture, which is based on a small amount of data from tests conducted in Poland.

Other ammonia sources include land application of anhydrous ammonia fertilizer and combustion of fuels such as coal, fuel oil, natural gas, and gasoline. Emission factors for these sources were rated at intermediate to low confidence levels because they were based on small amounts of data as well as data of questionable origin. Several emission factors for fuel combustion were found to originate from estimates published three decades ago that lack a published basis; despite this deficiency, these estimates have been repeated in numerous subsequent reports. Additional data addressing ammonia emissions from combustion sources that use current technology are needed to properly characterize NH_3 emissions.

TABLE 4-3. AMMONIA EMISSION FACTORS

Source	Emission factor	Rating
Combustion Sources		
Coal	0.00056 lb/ton coal[a]	D
Fuel oil	0.8 lb/10^3 gallons fuel[a]	E
Natural gas		
utility boilers	3.2 lb/10^6 ft^3 gas[a]	C
industrial boilers	3.2 lb/10^6 ft^3 gas[a]	C
commercial boilers	0.49 lb/10^6 ft^3 gas[a]	C
Mobile sources		
leaded gasoline	0.42 lb/10^3 gallons fuel[a]	D
unleaded gasoline	0.63 lb/10^3 gallons fuel[a]	D
diesel	0.95 lb/10^3 gallons fuel[a]	E
Livestock Wastes		
Beef cattle feedlocks	13 lb/animal marketed[b]	E
Manure field application		
feed cattle	7.9	E
range cattle	0.22	E
dairy cows	26	E
swine	3.1	E
sheep	2.0	E
laying hens	0.19	E
broilers	0.024	E
turkeys	0.16	E
Ammonium Nitrate Manufacture		
Neutralizer	0.86-36.0 lb/ton	B
Solids formation		
evaporation/concentration	0.54-33.4 lb/ton[c]	A
high density prill towers	57.2 lb/ton[c]	A
low density prill towers	0.26 lb/ton[c]	A
rotary drum granulators	59.4 lb/ton[c]	A
pan granulator	0.14 lb/ton[c]	A
high density prill coolers	0.04 lb/ton[c]	A
low density prill coolers	0.30 lb/ton[c]	A
low density prill dryers	0-3.18 lb/ton[c]	A
rotary drum granulator coolers	1.19 lb/ton[c]	A
pan granulator coolers	0 lb/ton[c]	A

(continued)

TABLE 4-3 (continued)

Source	Emission factor	Rating
Anhydrous Ammonia Fertilizer Application	19 lb/ton fertilizer	C
Petroleum Refineries		
FCC units	54 lb/10^3 barrels feed[d]	B
TCC units	6 lb/10^3 barrels feed[d]	B
Reciprocating engine compressors	0.2 lb/10^3 ft^3 gas[a]	B
Ammonia Synthesis		
Carbon dioxide regeneration	2.0 lb/ton[c]	A
Condensate stripping	2.2 lb/ton[c]	A
Urea Manufacture		
Solution formation/ concentration	18.2 lb/ton[c]	A
Solid formation		
nonfluidized bed prilling		
agricultural grade	0.87 lb/ton[c]	A
fluidized bed prilling		
agricultural grade	2.9 lb/ton[c]	A
feed grade	4.1 lb/ton[c]	
drum granulation	2.2 lb/ton[c]	A
rotary drum cooler	0.0051 lb/ton[c]	A
Coke Manufacture		
Oven charging	0.02 lb/ton coal charged	D
Door leaks	0.06 lb/ton coal charged	D
Coke pushing	0.1 lb/ton coal charged	D
Quenching (contaminated water)	0.28 lb/ton coal charged	D
Ammonium Phosphate Manufacture	0.14 lb/ton[c]	A

[a]Refers to pounds ammonia emitted per unit of fuel burned.

[b]Refers to pounds ammonia emitted per head of cattle marketed from feedlots.

[c]Refers to pounds ammonia emitted per ton of product.

[d]Refers to pounds ammonia emitted per 10^3 barrels of feed to the cracking unit.

ALKALINE DUST EMISSION FACTORS

Anthropogenic point source alkaline particulate emission factors were developed by Meteorological and Environmental Planning Limited and the Ontario Research Foundation using the following approach:

1. Identify major anthropogenic sources of particulate Ca, Mg, Na, and K emissions.

2. Estimate the amount of total particulate substances from these sources in all the provinces and nationally.

3. Estimate the amount of Ca, Mg, Na, and K in these particulates.

4. Estimate the specific types of alkali metal compounds. The total elemental emission estimates include both the reactive and nonreactive compounds (from the acid rain point of view). The nonreactive compounds are salts or rock materials (e.g., calcium silicates), whereas the reactive materials are defined as portions of elements associated with carbonates, hydroxides, oxides, and carbides.

Sources considered were grouped into six sectors:

- Industrial Processes (21 classes of sources)
- Fuel combustion (power generation and fuel wood)
- Transportation (gasoline powered vehicles)
- Solid Waste Incinerators (municipal incinerators and wigwam burners)
- Open sources (paved roads, unpaved roads, agricultural tillings, construction, mine tillings)
- Open burning (slash burning)

Alkaline particulate emissions from these sectors are assumed to be 89 percent of total Canadian anthropogenic particulate emissions.

Generic source descriptions were allocated to SCC categories. Where possible, six-digit SCCs are utilized, with the assumption that the factors are equally applicable to all relevant particulate emissions within subcategories to the eight-digit level. Table 4-4 presents a listing of emission factors as well as an uncertainty rating defined as follows:

A: Actual Canadian test data.

B: Source measurement conducted elsewhere for similar industry.

TABLE 4-4. ANTHROPOGENIC POINT SOURCE ALKALINE PARTICULATE EMISSION FACTORS

SCC	Generic source description	Units	Percentage of total particulate emission as an alkali metal[a]				Rating[b]
			Ca	Mg	Na	K	
3-03-023	Iron Ore Mining and Beneficiation	Tons Pellets Produced	0.49	0.24	0	0	E
3-03-008	Iron and Steel Industry	Tons Produced	3.98	1.66	1.74	5.63	E
3-03-006	Ferroalloy Manufacture	Tons Produced	1.06	1.45	1.35	0	C
3-04-006	Magnesium Production	Tons Processed	23.81	13.90	0	0	C
3-04-020	Mining and Rock Quarrying	Tons Raw Material	5.77	1.69	0	0	D
3-05-016	Line Manufacture	Tons Limestone Processed	33.89	5.01	0.50	0	C
3-05-020	Stone Processing	Tons Raw Material	14.38	4.12	0	0	C
3-05-025	Sand and Gravel	Tons Product	0.65	0.70	0	0	D
3-05-006	Cement Manufacture	Tons Cement Produced	28.50	0.78	0	0	B
3-05-011	Concrete Batching	Tons Processed	46.00	1.50	0	0	C
3-05-008	Clay Products Manufacture	Tons Input to Process	0.85	0.90	0	0	D
3-07-001	Sulphate (Kraft) Pulping	Air Dry Tons Unbleached Pulp	0.12	0	1.38	0	C
1-01-001	Power Generation by Utilities	Tons Burned	1.62	1.71	0.82	0.44	C
1-01-002							
1-01-003							
1-02-001							
1-02-002							
1-02-003							
1-03-001							
1-03-002							
1-03-003							
3-90-001							
3-90-002							
3-90-003							
1-01-009	Fuelwood Combustion	Tons Burned	0.05	0.04	0.04	1.95	E
1-02-009							
1-03-009							
1-05-002-09							
3-90-009							
5-02-002-01							
5-01-001	Municipal Incineration	Tons Burned	0.57	0.14	0.57	0.48	E
5-01-002-01							
5-01-005-07							
5-02-001							

[a]Example: For SCC 3-03-023, emissions of alkaline calcium particulate are calculated as: (particulate per ton pellet produced) x (0.0049). Total alkaline particulate emitted is calculated as: [(particulate per ton pellet produced) x (0.0049)] + [(particulate per ton pellet produced) x (0.0024)].

[b]Uncertainty rating of alkali metal content as B = ±25%, C = ±50%, D = ±75%, and E = ±100%.

C: Inferred data based on product analysis, feed analysis or other secondary material.

D: Limited data for one or more operations or materials within a sector or related sector. This is extrapolated to estimate required data.

E: Estimate only.

It should be noted that there is additional uncertainty associated with assigning these Canadian factors to U.S. particulate emissions. It has been assumed that the alkali metal contents of U.S. and Canadian particulate emissions are identical. It should also be noted that there are other source categories which emit particulate matter containing calcium, magnesium, sodium, and/or potassium. However, these elements were found to be associated anions other than carbonates, hydroxides, oxides, and carbides which represent the alkaline fraction.

SECTION 5

DEVELOPMENT OF EMISSIONS ESTIMATES FOR THE UTILITY SECTOR

Emissions from electric utilities account for a large share of the total acid deposition precursor emissions; it has been estimated that in 1980 these emissions accounted for 65 percent of SO_2 and 29 percent of NO_x emissions from all U.S. sources. As a result, the National Acid Precipitation Assessment Program (NAPAP) has placed special emphasis on the development of accurate utility emissions data. NAPAP's Task Group on Emissions and Controls has sponsored work both in developing estimates of current emissions from the utility industry and in projecting future emissions. Part of this work entailed the development of a single, comprehensive utility-related data file: the NAPAP Utility Reference File (NURF) (Pechan, 1985). The NURF was created to meet the broad utility-related data needs of all NAPAP work groups, including atmospheric modeling, emissions forecasting, and assessment. In the 1980 NAPAP Emissions Inventory Version 5.0, the NURF data were used to provide the utility sector emissions estimates; these estimates were integrated into the NAPAP inventory for all U.S. electric utilities. This section documents the development and use of the NURF and its derivative files, focusing on the integration of the NURF data into the NAPAP inventory.

NAPAP UTILITY REFERENCE FILE (NURF)

Introduction

The NURF is a central repository of data for utility operations and emissions, designed to facilitate analysis of the electric utility sector. Information is maintained on all conventional, nuclear, and hydroelectric utility generating units, including the following data: SO_2, NO_x, and TSP emissions by fuel and unit; stack parameters on a unit-specific basis; and information on units coming on-line or converting to coal after 1980. Because the NURF data were compiled and cross checked using several data sources, the NURF is considered to present an accurate picture of the U.S. utility industry for 1980.

Data Sources

NURF was developed using information from Version 4.0 of the 1980 NAPAP Emissions Inventory (Toothman, 1984), a reimplementation of the Unit Inventory (Pechan, 1983), and new data; additional updates were obtained from a variety of sources. Table 5-1 lists major data inputs to NURF. In developing NURF, the greatest reliance was placed on data available from public sources, especially files available in machine-readable form.

TABLE 5-1. MAJOR DATA INPUTS TO NURF

Name	Type[a]	Level of detail	Data provided
EIA Form 759	A	Plant	Fuel consumption and generation
FPC Form 423	A	Plant	Cost and quality of fuels
FPC Form 67	A	Boiler/fuel feeder	Fuels consumed, control equipment, firing type, and bottom type
FGDIS	A	Boiler	SO_2 scrubber data
NAPAP Inventory	A	Boiler	Stack parameters
Generating Unit Reference File	A	Unit	Year online, year retired, capacity
EPA State Implementation Plan file	A	Unit	TSP, SO_2, and NO_x emission limits
NERC planned plants	M	Unit	New plants
NERC coal conversions	M	Unit	Plant converted or planning conversion to coal
DOE coal conversions	M	Unit	Plants converted or planning conversion to coal
Nuclear plant status	M	Unit	Status of planned nuclear units
NO_x control update	M	Unit	NO_x control measures
ANL firing data	A	Unit	Supplemental data on firing types and bottom type

[a]A = Automated
M = Manual

In most cases, a single primary source for each NURF data element was selected. In some cases, more than one source of data was scrutinized and the most appropriate information chosen. These selections were based on the quality of the data source, its date of publication, and its coverage. All other things being equal, published reports (or data files which directly support them) were given highest preference. Data supplied to DOE or reported directly by the industry were given the next highest preference. A summary of the hierarchy of the data sources is presented in Figure 5-1. Some data elements (e.g., heat rate and capacity factor) could not be obtained from standard sources and, therefore, had to be calculated from data that were available. For those cases in which the calculated values were unreasonable, judgments were made as to which of the input values were most accurate; other data were adjusted on a unit-specific basis so that all resultant values were consistent.

Because the coverage of the major contributing data files to NURF differed, it was necessary to compare several data files on a plant-specific basis in order to develop the best possible universe of facilities. Table 5-2 identifies the sources and coverage of the files contributing unit-specific information to NURF. Conflicts between these files were resolved on a case-by-case basis. In most cases in which a conflict occurred, two or more files contained consistent information, and in those cases, the most consistent data were chosen. Preference was given to the U.S. Department of Energy's (DOE) 1980 Form 67 data (U.S. DOE, 1980b) and the Generating Unit Reference File (GURF--U.S. DOE, 1981b), as they contained more recent information.

Operating characteristics such as total generation and total fuels consumed for generation were obtained from DOE's Form 4 (U.S. DOE, 1980a). Form 4 is a monthly data base; for use in NURF, however, the monthly data for 1980 were aggregated into annual totals. Form 4 data were reported by plant and prime mover. For example, a plant having both steam and combustion turbine units would have fuel use and generation data provided for each of these two prime movers.

Unit-specific operational data for 1980 were estimated by applying 1980 unit shares computed from 1980 Form 67 data on fuel use and generation to the corresponding data elements from the 1980 plant and prime mover totals from Form 4. This method was adopted to correct errors associated with the use of incorrectly reported units on Form 67 submissions. Because the Form 67 data were used only to compute shares of violated totals, unit errors in Form 67 data were not carried through to the NURF.

Fuel quality data were obtained from the Federal Power Commission (FPC) Form 423 (U.S. DOE, 1981a). For units with no reported Form 423 information, State average data obtained from Form 423 were used. The State average values used in NURF are listed in the NAPAP Utility Reference File (NURF), Final Report (Pechan, 1985).

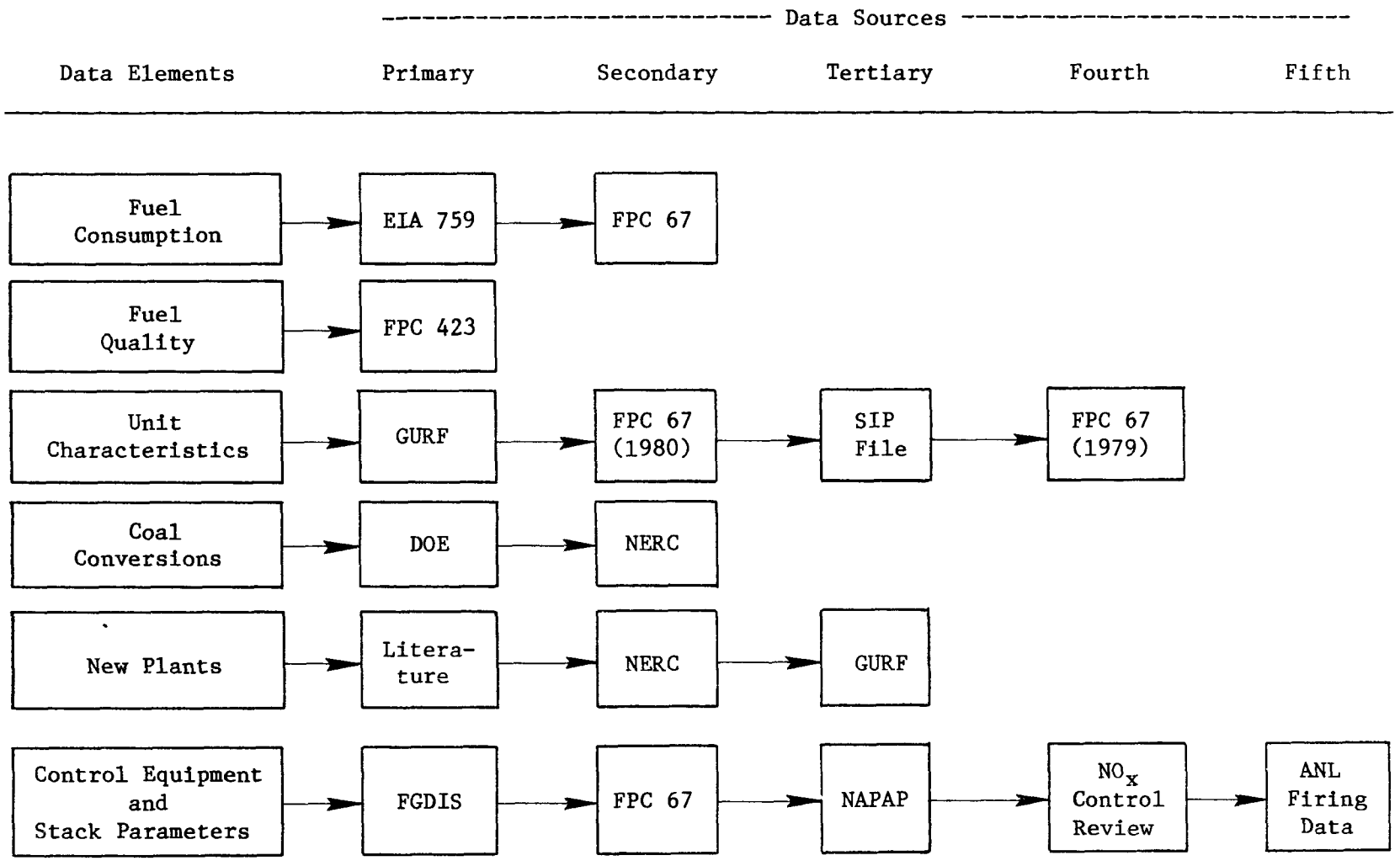


Figure 5-1. Hierarchy of NURF data sources by data element.

TABLE 5-2. SOURCES OF UNIT-SPECIFIC DATA

Source	Coverage	Unit identifier
1979 FPC Form 67	Boilers at plants with more than 25 MW steam capacity	Boiler number
1980 FPC Form 67	Boilers at plants with more than 25 MW steam capacity	Boiler/feeder number
EPA State Implementation Plan File	Boilers at plants with more than 25 MW steam capacity (based on 1979 Form 67)	Generating unit number
Generating Unit Reference File	All electric utility generating units	Generating unit number

NURF Structure

Although labeled the NAPAP Utility Reference File for convenience, the NURF is actually a data system, consisting of several data files and computer programs. Because of the diversity of data processing required to create NURF, a combination of programming languages and methodologies was used in its development. Initial data reduction of the larger data files was performed by a series of programs written in Programming Language/I (PL/I). These larger files were reduced to one record per unit (or plant if a plant-level file) and converted to a consistent format using the Statistical Analysis System (SAS). These SAS files were then combined and manipulated using a series of SAS programs. Examples of the processing required include calculation of default state average fuel quality data and assignment of plant technology codes. The result of these manipulations was a final NURF in SAS format. The final processing steps converted the NURF data in its component file form into the set of derivative files which are discussed below.

NAPAP INVENTORY UPDATES FILE (NIUF)

Because of the vast number of data elements in NURF taken as a whole, it was considered impractical to extensively quality assure the file in its entirety. As a result, only subsets of the NURF data are in distributable form. Three NURF derivative files have been compiled, QA'd, and made available for distribution:

- the Unit Inventory, listing unit-specific data on larger generating units and aggregated information on smaller units;
- the Announced Inventory, containing information on units coming on-line or planned for conversion to coal after 1980; and
- the NAPAP Inventory Updates File (NIUF), containing corrections and addenda to the 1980 NAPAP Inventory.

The NIUF contains EIS transactions that are designed to delete, replace, and supplement utility information in Version 5.0 of the 1980 NAPAP Inventory. In order to accomplish this update of the NAPAP utility data, the NIUF was developed as four subfiles:

- plant I.D. information for facilities which appear to be improperly categorized as utilities in the NAPAP Inventory;
- EIS delete transactions to remove properly categorized utilities from the NAPAP Inventory, in anticipation of their replacement with NURF data;
- EIS add transactions of NURF emissions data for utility sources emitting 100 tons/year or more of SO_2, NO_x, or TSP; and
- EIS area source add transactions to provide county-level aggregates of utility sources emitting less than 100 tons/year.

Creation of the NIUF required the extraction of all relevant information on utilities from the NAPAP point source file. A candidate list of utility facilities was identified by selecting points that met at least one of the following three criteria:

1. The first three digits of the SCC were 101 or 201.

2. The Standard Industrial Classification Code was 4911, 4931, 4961, or 4900.

3. The first digit of the SCC was one (boiler) and the design capacity was 1 billion Btu per hour or greater.

These criteria were designed to be general enough that all utility sources in the NAPAP Inventory would be identified. It was anticipated that some nonutility sources may have also satisfied these general screening criteria; as a result, the candidate list of facilities meeting the initial screening criteria for utilities was reviewed and compared with other data sources contributing to NURF. A total of 599 NAPAP facilities which were not utility sources as defined in NURF were identified. The state, county, and NAPAP plant ID for each of these sources are listed in the first component of the NIUF. It appears that these sources have been incorrectly classified as utilities in the NAPAP Inventory; as a result, they were not updated in the NAPAP Inventory updates process discussed herein. Source information for these nonutility plants was reviewed; whenever possible, corrections were made to eliminate the utility information. Changes to SIC and SCC codes and heat input were made as necessary to reflect reviews of the data.

Existing data from NURF were match-merged at the plant level with the extracted NAPAP utility point source data. Special emphasis was placed on matching plants that emit at least 100 tons per year of any criteria pollutant because point level emissions data were to be provided for plants having emissions greater than this level. EIS transactions were prepared to delete data for the matched facilities from the NAPAP Inventory in preparation for the replacement with the more accurate NURF data. A total of 1,358 delete transactions were prepared, forming the second component of the NIUF.

After completion of the plant level matching, unit-level matching was performed. Applying the 100 tons per year cutoff, data for 4,648 NURF units were then prepared in the form of EIS transactions to be added to the NAPAP Inventory. These transactions constitute the third component of the NIUF. There are a total of 41,899 transaction records provided.

The fourth component of the NIUF contains aggregated data, by county, on the 3,089 NURF units that emitted less than 100 tons per year of any of the NURF pollutants (TSP, SO_2, and NO_x). Reported information includes state; county; fuel type; quantity-weighted fuel characteristics (sulfur, ash, and heating value); fuel quantity; and emissions of TSP, SO_2, and NO_x. This produced a total of 657 data records.

Integration of the NIUF Into the 1980 NAPAP Inventory (Version 5.0)

In May 1985, the NIUF data were received for integration into the 1980 NAPAP Inventory. Delete transactions from the NIUF were used to delete all utility sources in the NAPAP Inventory. Add transactions, containing point source information for major utilities, were then merged into the point source inventory. Emissions estimates for these additions were generated using the operating rate data supplied in the NIUF and AP-42 emission factors, input to the EIS Master File Maintenance routine. Area source data for minor utility sources were merged into the NAPAP area source inventory in the following categories:

96 Minor Utility Sources - Coal;

97 Minor Utility Sources - Oil; and

98 Minor Utility Sources - Gas.

Emission factors were then prepared to generate HCl, HF, and Pb emissions estimates for the above sources.

SECTION 6

DEVELOPMENT OF TEMPORAL, SPECIES, AND SPATIAL ALLOCATION FACTORS

TEMPORAL ALLOCATION FACTOR DEVELOPMENT

The FREDS Temporal Allocation Module generates a set of temporal allocation factors for each NAPAP point or area source emission record. These factors serve to apportion the annual emissions totals contained in the emission records into 24 hourly totals for a typical weekday, Saturday, or Sunday in each of the four seasons of the year. This discussion of temporal allocation factor development is structured as follows:

1. the form and use of the temporal allocation factors;

2. the development of the factors; and

3. file creation and quality assurance (QA).

Form and Use of Temporal Allocation Factors

NAPAP emission data records contain a single annual emissions total. The purpose of the temporal allocation factors is to accurately apportion this total into hour-by-hour subtotals for a weekday, a Saturday, or a Sunday in any season of the year.

The temporal allocation factors take the form of three sets of fractional multipliers, applied to the NAPAP annual emissions records in sequence as follows:

1. Four seasonal factors divide the annual total into four subtotals representing emissions in each of the four seasons;

2. Three daily factors per season divide each seasonal total into three subtotals representing emissions for a typical weekday, Saturday, and Sunday in each season;

3. Twenty-four hourly factors per day divide each daily total into 24 subtotals representing emissions for each hour of that day. After this final step, the annual emissions total has been divided into 288 subtotals (four seasons * 3 day "types"/season * 24 hours/day "type").

The seasonal multipliers for each record sum to unity, as do the hourly multipliers for each season/day type combination. Since daily emissions totals represent emissions for one typical weekday, Saturday, or Sunday in each season, the governing equation for daily allocation factors is:

$$(65 \times \text{weekday factor}) + (13 \times \text{Saturday factor}) + (13 \times \text{Sunday factor}) = 1$$

where a season is defined as 91 days (13 weeks). For the purposes of the NAPAP inventory, the four seasons are defined as:

Season	Months
Winter	December, January, February
Spring	March, April, May
Summer	June, July, August
Fall	September, October, November

Table 6-1 presents an example of the application of a set of temporal allocation factors to total hydrocarbon emissions from area source category 32 (Medium Duty Gasoline Vehicles--Rural Roads). For the sake of clarity, hourly emissions are shown only for summer; however, a similar set of data can be generated for each of the four seasons using the appropriate hourly multipliers. In most emissions categories, the daily and hourly factors do not exhibit a full range of variation, because the data upon which they are based do not allow such fine resolution.

The hourly temporal allocation factors are based on local time. For many applications of the NAPAP emissions data, temporally resolved emissions must be standardized to a common reference (e.g., Greenwich Mean Time). To allow this standardization, a separate Time Zone File was created. For each county in the United States (or Canadian county equivalent), this file contains a key to offset the appropriate hourly emissions pattern from a common reference point. For each county, this file also contains a flag to key proper offset of the hourly emissions if and when Daylight Savings Time is in effect for the county.

Development of Temporal Allocation Factors

The NAPAP point source emissions records contain operating rate data which allow temporal allocation of yearly emissions to be made on a point-by-point or plant-by-plant basis. For this reason, emphasis was placed on development of temporal allocation factors for area source emissions categories. Independent point source temporal allocation factors were developed only for a subset of all electric power plants.

U.S. Area Source Factor Development--

The NAPAP Version 5.2 U.S. temporal allocation factors were derived from three sources:

TABLE 6-1. APPLICATION OF TEMPORAL ALLOCATION FACTORS TO TOTAL HYDROCARBON EMISSIONS FOR U.S. AREA SOURCE CATEGORY 32, MEDIUM DUTY GASOLINE VEHICLES - RURAL ROADS

ANNUAL THC EMISSIONS: 690,863
(TONS/YEAR)

SEASON:	WINTER	SPRING	SUMMER	FALL
SEASONAL MULTIPLIERS:	0.216	0.239	0.289	0.256
SEASONAL EMISSIONS TOTAL: (TONS/SEASON)	149,226	165,116	199,659	176,861

DAY:	WEEKDAY	SATURDAY	SUNDAY	WEEKDAY	SATURDAY	SUNDAY	WEEKDAY	SATURDAY	SUNDAY	WEEKDAY	SATURDAY	SUNDAY
DAILY MULTIPLIERS:	0.0115	0.0104	0.0089	0.0111	0.0111	0.0100	0.0110	0.0113	0.0105	0.0111	0.0111	0.0097
DAILY EMISSIONS TOTAL: (TONS/DAY)	1,716	1,552	1,328	1,833	1,833	1,651	2,196	2,256	2,096	1,963	1,963	1,716

HOURLY ALLOCATION (SHOWN: SUMMER ONLY)
(TONS/HOUR)

HOUR	SUMMER WEEKDAY HOURLY MULTIPLIER	SUMMER WEEKDAY HOURLY EMISSIONS	SUMMER SATURDAY HOURLY MULTIPLIER	SUMMER SATURDAY HOURLY EMISSIONS	SUMMER SUNDAY HOURLY MULTIPLIER	SUMMER SUNDAY HOURLY EMISSIONS
MNT - 1AM	0.014	31	0.022	50	0.025	52
1AM - 2AM	0.010	22	0.016	36	0.019	40
2AM - 3AM	0.009	20	0.012	27	0.014	29
3AM - 4AM	0.009	20	0.010	23	0.011	23
4AM - 5AM	0.011	24	0.009	20	0.010	21
5AM - 6AM	0.019	42	0.013	29	0.012	25
6AM - 7AM	0.041	90	0.021	47	0.017	36
7AM - 8AM	0.056	123	0.031	70	0.022	46
8AM - 9AM	0.051	112	0.042	95	0.031	65
9AM - 10AM	0.052	114	0.055	124	0.044	92
10AM - 11AM	0.056	123	0.065	147	0.054	113
11AM - NOON	0.057	125	0.069	156	0.062	130
NOON - 1PM	0.056	123	0.067	151	0.068	143
1PM - 2PM	0.057	125	0.065	147	0.068	143
2PM - 3PM	0.060	132	0.064	144	0.069	145
3PM - 4PM	0.066	145	0.063	142	0.069	145
4PM - 5PM	0.073	160	0.062	140	0.070	147
5PM - 6PM	0.071	156	0.059	133	0.069	145
6PM - 7PM	0.059	130	0.057	129	0.065	136
7PM - 8PM	0.049	108	0.052	117	0.058	122
8PM - 9PM	0.040	88	0.045	102	0.050	105
9PM - 10PM	0.035	77	0.040	90	0.042	88
10PM - 11PM	0.028	61	0.034	77	0.031	65
11PM - MNT	0.021	46	0.029	65	0.023	48

1. the NECRMP inventory effort (Sellars, et al. 1982d);

2. the NAPAP Version 4.2 inventory effort (Sellars, et al. 1985); and

3. new research.

The first step in completion of the NAPAP Version 5.2 factors was a review of each set of factors created for the earlier NECRMP and NAPAP Version 4.2 inventories. Based on this review, a decision was made to take one of three actions:

1. Accept the NECRMP/NAPAP Version 4.2 factors without modification.

2. Review the data sources used to compile the NECRMP/NAPAP Version 4.2 factors. If it was determined that the most accurate available data had been used, the factors were accepted without modification. If more accurate or more recently available data promised to make possible an improvement in the factors, new research was conducted and new factors developed.

3. Develop new factors from scratch. For a few categories where either (a) NECRMP/NAPAP Version 4.2 factors had been based on engineering judgment, or (b) the importance of the emission category warranted the effort, new factors were developed after only a cursory review of the NECRMP/NAPAP Version 4.2 factors.

Sixteen area source emissions categories in the NAPAP Version 5.0 Inventory were not present in the earlier inventories. Eight of these categories represented minor variations of an existing category (e.g., a different fuel), and existing factors could be reviewed and utilized as appropriate. New factors were developed for the remaining newly added categories.

Table 6-2 summarizes the actions taken to produce the NAPAP Version 5.2 temporal allocation factors. The table lists each emission category and notes whether factors had been developed for earlier inventory efforts. The action taken to produce the NAPAP Version 5.0 factors is listed in the right hand column.

Table 6-2 also lists the resolution of each set of temporal allocation factors. The factors for a given area source category apply either to a single state, a group of states, or to the entire nation. The level of resolution for each category was determined by:

1. Importance of the category in terms of emissions. Raw data were scanned; categories which contributed little to national emissions totals were generally given national resolution;

2. Data availability. State- or region-specific factors could not be developed where data were not available to support this resolution.

TABLE 6-2. TEMPORAL ALLOCATION FACTOR DEVELOPMENT FOR NAPAP VERSION 5.2 EMISSIONS CATEGORIES

CATEGORY NUMBER 'NEW'	CATEGORY NUMBER 'OLD'	EMISSIONS CATEGORY	FACTORS PRESENT IN NECRMP OR NAPAP V. 4 INVENTORY	ACTION TAKEN FOR NAPAP V. 5 INVENTORY	RESOLUTION
1	1	Residential Fuel -- Anthracite Coal	YES	REVIEW, USE NAPAP V.4	STATE
2	2	Residential Fuel -- Bituminous Coal	YES	REVIEW, USE NAPAP V.4	STATE
3		Residential Fuel -- Distillate Oil	NO	USE CAT. 4 FACTORS	STATE
4	3	Residential Fuel -- Residual Oil	YES	REVIEW, USE NAPAP V.4	STATE
5	4	Residential Fuel -- Natural Gas	YES	REVIEW, USE NAPAP V.4	STATE
6	5	Residential Fuel -- Wood	YES	REVIEW, USE NAPAP V.4	STATE
7	6	Commercial/Institutional Fuel -- Anthracite Coal	YES	REVIEW, USE NAPAP V.4	STATE (NECRMP STATES), NATIONAL (OTHER)
8	7	Commercial/Institutional Fuel -- Bituminous Coal	YES	REVIEW, USE NAPAP V.4	STATE (NECRMP STATES), NATIONAL (OTHER)
9	8	Commercial/Institutional Fuel -- Distillate Oil	YES	REVIEW, USE NAPAP V.4	STATE (NECRMP STATES), NATIONAL (OTHER)
10	9	Commercial/Institutional Fuel -- Residual Oil	YES	REVIEW, USE NAPAP V.4	STATE (NECRMP STATES), NATIONAL (OTHER)
11	10	Commercial/Institutional Fuel -- Natural Gas	YES	REVIEW, USE NAPAP V.4	STATE (NECRMP STATES), NATIONAL (OTHER)
12	11	Commercial/Institutional Fuel -- Wood	YES	REVIEW, USE NAPAP V.4	STATE (NECRMP STATES), NATIONAL (OTHER)
13	12	Industrial Fuel -- Anthracite Coal	YES	REVIEW, USE NAPAP V.4	NATIONAL
14	13	Industrial Fuel -- Bituminous Coal	YES	REVIEW, USE NAPAP V.4	NATIONAL
15		Industrial Fuel -- Coke	NO	USE CAT. 14 FACTORS	NATIONAL
16	14	Industrial Fuel -- Distillate Oil	YES	REVIEW, USE NAPAP V.4	NATIONAL
17	15	Industrial Fuel -- Residual Oil	YES	REVIEW, USE NAPAP V.4	NATIONAL
18	16	Industrial Fuel -- Natural Gas	YES	REVIEW, USE NAPAP V.4	NATIONAL
19	17	Industrial Fuel -- Wood	YES	REVIEW, USE NAPAP V.4	NATIONAL
20		Industrial Fuel -- Industrial Process Gas	YES	REVIEW, USE NAPAP V.4	NATIONAL
21	18	Incineration -- Residential		REVIEW, USE NAPAP V.4	NATIONAL
22	19	Incineration -- Industrial		REVIEW, USE NAPAP V.4	NATIONAL
23	20	Incineration -- Commercial/Institutional		REVIEW, USE NAPAP V.4	NATIONAL
24	21	Open Burning -- Residential		REVIEW, USE NAPAP V.4	NATIONAL
25	22	Open Burning -- Industrial		REVIEW, USE NAPAP V.4	NATIONAL
26	23	Open Burning -- Commerical/Institutional		REVIEW, USE NAPAP V.4	NATIONAL
27		Light Duty Gas Vehicles -- Limited Access	NO	DEVELOP NEW FACTORS	NATIONAL
28	24	Light Duty Gas Vehicles -- Rural	YES	DEVELOP NEW FACTORS	NATIONAL
29		Light Duty Gas Vehicles -- Suburban	NO	DEVELOP NEW FACTORS	NATIONAL
30	25	Light Duty Gas Vehicles -- Urban	YES	DEVELOP NEW FACTORS	NATIONAL
31		Medium Duty Gas Vehicles -- Limited Access	NO	DEVELOP NEW FACTORS	NATIONAL

TABLE 6-2 (continued)

CATEGORY NUMBER 'NEW'	CATEGORY NUMBER 'OLD'	EMISSIONS CATEGORY	FACTORS PRESENT IN NECRMP OR NAPAP V. 4 INVENTORY	ACTION TAKEN FOR NAPAP V. 5 INVENTORY	RESOLUTION
32	26	Medium Duty Gas Vehicles -- Rural	YES	DEVELOP NEW FACTORS	NATIONAL
33		Medium Duty Gas Vehicles -- Suburban	NO	DEVELOP NEW FACTORS	NATIONAL
34	27	Medium Duty Gas Vehicles -- Urban	YES	DEVELOP NEW FACTORS	NATIONAL
35		Heavy Duty Gas Vehicles -- Limited Access	NO	USE CAT. 36 FACTORS	NATIONAL
36	28	Heavy Duty Gas Vehicles -- Rural	YES	REVIEW, USE NAPAP V.4	NATIONAL
37		Heavy Duty Gas Vehicles -- Suburban	NO	USE CAT. 38 FACTORS	NATIONAL
38	29	Heavy Duty Gas Vehicles -- Urban	YES	REVIEW, USE NAPAP V.4	NATIONAL
39	30	Off-Highway Gas Vehicles	YES	REVIEW, USE NAPAP V.4	STATE
40		Heavy Duty Diesel Vehicles -- Limited Access	NO	USE CAT. 41 FACTORS	NATIONAL
41	31	Heavy Duty Diesel Vehicles -- Rural	YES	REVIEW, USE NAPAP V.4	NATIONAL
42		Heavy Duty Diesel Vehicles -- Suburban	NO	USE CAT. 43 FACTORS	NATIONAL
43	32	Heavy Duty Diesel Vehicles -- Urban	YES	REVIEW, USE NAPAP V.4	NATIONAL
44	33	Off-Highway Diesel Vehicles	YES	REVIEW, USE NAPAP V.4	STATE
45	34	Railroad Locomotives	YES	Q.A. ONLY	REGION
46	35	Aircraft -- Military	YES	Q.A. ONLY	NATIONAL
47	36	Aircraft -- Civil	YES	Q.A. ONLY	NATIONAL
48	37	Aircraft -- Commercial	YES	Q.A. ONLY	NATIONAL
49		Vessels -- Coal-Powered	NO	USE CAT. 50 FACTORS	NATIONAL
50	38	Vessels -- Diesel	YES	REVIEW, USE NAPAP V.4	NATIONAL
51	39	Vessels -- Residual Oil	YES	REVIEW, USE NAPAP V.4	NATIONAL
52	40	Vessels -- Gasoline	YES	REVIEW, USE NAPAP V.4	STATE
53	41	BLANK (formerly Solvents Purchased)			
54	42	Gasoline Marketed	YES	REVIEW, USE NAPAP V.4	NATIONAL
55		Unpaved Roads	NO	DEVELOP NEW FACTORS	NATIONAL
56		Unpaved Airport LTO's (NO EMISSIONS DATA)			
57		Construction Sites (NO EMISSIONS DATA)			
58		Miscellaneous Wind Erosion (NO EMISSIONS DATA)			
59		Agricultural Tilling (NO EMISSIONS DATA)			
60	43	Forest Fires	YES	REVIEW, USE NAPAP V.4	NATIONAL
61	44	Managed Burning	YES	Q.A. ONLY	NATIONAL
62	45	Agricultural Field Burning	YES	Q.A. ONLY	NATIONAL

TABLE 6-2 (continued)

CATEGORY NUMBER 'NEW'	'OLD'	EMISSIONS CATEGORY	FACTORS PRESENT IN NECRMP OR NAPAP V. 4 INVENTORY	ACTION TAKEN FOR NAPAP V. 5 INVENTORY	RESOLUTION
63		Orchard Heaters (NO EMISSIONS DATA)			
64	46	Structural Fires	YES	Q.A. ONLY	NATIONAL
65		(UNFILLED)			
66		(UNFILLED)			
67		(UNFILLED)			
68		(UNFILLED)			
69		(UNFILLED)			
70		(UNFILLED)			
71	47	Manure Field Application -- Beef Cattle	YES	DEVELOP NEW FACTORS	REGION
72	48	Manure Field Application -- Dairy Cows	YES	DEVELOP NEW FACTORS	REGION
73	49	Manure Field Application -- Hogs and Pigs	YES	DEVELOP NEW FACTORS	REGION
74	50	Manure Field Application -- Broilers	YES	DEVELOP NEW FACTORS	NATIONAL
75	51	Manure Field Application -- Other Chickens	YES	DEVELOP NEW FACTORS	NATIONAL
76	52	Anhydrous NH3 Fertilizer Application	YES	DEVELOP NEW FACTORS	REGION
77	53	Beef Cattle Feed Lots	YES	Q.A. ONLY	NATIONAL
78		Degreasing	YES (NECRMP only)	NEW SEASONAL, DAILY FACTORS	NATIONAL
79		Drycleaning	YES (NECRMP only)	NEW SEASONAL, DAILY FACTORS	NATIONAL
80		Graphic Arts	YES (NECRMP only)	NEW SEASONAL, DAILY FACTORS	NATIONAL
81		Rubber and Plastic Manufacturing	YES (NECRMP only)	NEW SEASONAL, DAILY FACTORS	NATIONAL
82		Architectural Coating	YES (NECRMP only)	NEW SEASONAL, DAILY FACTORS	NATIONAL
83		Auto Body Repair	YES (NECRMP only)	NEW SEASONAL, DAILY FACTORS	NATIONAL
84		Motor Vehicle Manufacturing	YES (NECRMP only)	NEW SEASONAL, DAILY FACTORS	NATIONAL
85		Paper Coating	YES (NECRMP only)	NEW SEASONAL, DAILY FACTORS	NATIONAL
86		Fabricated Metals	YES (NECRMP only)	NEW SEASONAL, DAILY FACTORS	NATIONAL
87		Machinery Manufacturing	YES (NECRMP only)	NEW SEASONAL, DAILY FACTORS	NATIONAL
88		Furniture Manufacturing	YES (NECRMP only)	NEW SEASONAL, DAILY FACTORS	NATIONAL
89		Flat Wood Products	YES (NECRMP only)	NEW SEASONAL, DAILY FACTORS	NATIONAL
90		Other Transportation Equipment Manufacturing	YES (NECRMP only)	NEW SEASONAL, DAILY FACTORS	NATIONAL
91		Electrical Equipment Manufacturing	YES (NECRMP only)	NEW SEASONAL, DAILY FACTORS	NATIONAL
92		Ship Building and Repair	YES (NECRMP only)	NEW SEASONAL, DAILY FACTORS	NATIONAL
93		Miscellaneous Industrial Manufacturing	YES (NECRMP only)	NEW SEASONAL, DAILY FACTORS	NATIONAL

TABLE 6-2 (continued)

CATEGORY NUMBER 'NEW'	CATEGORY NUMBER 'OLD'	EMISSIONS CATEGORY	FACTORS PRESENT IN NECRMP OR NAPAP V. 4 INVENTORY	ACTION TAKEN FOR NAPAP V. 5 INVENTORY	RESOLUTION
94		Miscellaneous Industrial Solvent Use	YES (NECRMP only)	NEW SEASONAL, DAILY FACTORS	NATIONAL
95		Miscellaneous Non-Industrial Solvent Use	YES (NECRMP only)	NEW SEASONAL, DAILY FACTORS	NATIONAL
96		Utility Area Sources -- Coal Fired Plants	NO	DEVELOP NEW FACTORS	NATIONAL
97		Utility Area Sources -- Oil Fired Plants	NO	DEVELOP NEW FACTORS	NATIONAL
98		Utility Area Sources -- Natural Gas Fired Plants	NO	DEVELOP NEW FACTORS	NATIONAL
99	54	Minor Point Sources	YES	Q.A. ONLY	NATIONAL

1 - NECRMP STATES: Connecticut, Delaware, District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Vermont, Virginia, West Virginia.

A description of the development of the area source temporal allocation factors for each category or set of categories follows.

Residential Fuel Combustion (Categories 1-6)--Monthly average heating degree days for a representative meteorological recording station from each state were obtained from State, Regional, and National Monthly and Seasonal Heating Degree Days Weighted by Population (U.S. Department of Commerce, 1983); from these data, the seasonal temporal factors for each state were developed. The hourly variations in residential fuel use were developed with data from NOAA (U.S. Department of Commerce, 1980). Monthly averages of the 3-hour meteorological records were obtained for each meteorological station to determine these diurnal patterns. For each month, the average temperature was subtracted from 18.7°C (the value used to calculate degree days). Negative values (indicating temperatures above 18.7°C) were set to zero. The resulting eight values were proportional to the variation in diurnal heating for a selected station for a month. Months were then averaged to obtain seasonally adjusted diurnal factors for each state.

Commercial/Institutional Fuel Use (Categories 7-12)--Seasonal, daily, and hourly fuel use patterns for these categories were developed from the EPA Guidelines (U.S. EPA, 1979b). For the NECRMP study area, daily and hourly patterns were developed from data collected for the Philadelphia AQCR Inventory (Engineering-Science, 1981).

Industrial Fuel Use (Categories 13-20)--National seasonal patterns were developed from the EPA Guidelines (U.S. EPA, 1979b), in which a uniform distribution is recommended. The daily pattern was based on U.S. Bureau of Labor statistics on average overtime at manufacturing facilities (U.S. Department of Labor, 1981). The assumption was made that all overtime hours were worked on weekends, and that three times as much overtime was put in on Saturdays as on Sundays. The daily patterns developed from these data indicate that approximately 93 percent of emissions occur on weekdays, 5 percent of Saturdays, and 2 percent on Sundays. This distribution varied slightly depending on the season. The hourly pattern was developed during the Philadelphia AQCR inventory effort (Engineering-Science, 1981). In the Philadelphia study, 50 percent of industrial coal and oil fuel use emissions were allocated uniformly from 7 a.m. to 4 p.m., to reflect greater production during business hours. The remaining 50 percent of emissions were uniformly allocated to the remaining hours in a day. This pattern was applied nationwide to all industrial fuel use categories in the NAPAP inventory.

Onsite Incineration and Open Burning (Categories 21-26)--Seasonal, daily, and hourly patterns were developed from existing inventories (Klemm and Brennan, 1981; U.S. EPA, 1979a; New Jersey Department of Environmental Protection, 1980; New York Department of Environmental Conservation, 1980; U.S. EPA, 1980).

Highway Vehicles, Light and Medium Duty (Categories 27-34)--The U.S. Department of Transportation (USDOT) collects Continuous Traffic Count (CTC) data from all 50 states, and uses a subset of these data representing 13 states as a basis for estimating national traffic patterns. These 13 states' data allow hourly temporal allocation factors to be derived for each day of the week in each month of the year for six roadway types. This

data set was obtained and analyzed to yield seasonal, daily, and hourly temporal allocation factors for light and medium duty vehicles (Welty, personal communication).

Highway Vehicles, Heavy Duty (Categories 35-38, 40-43)--These eight categories represent gas and diesel heavy duty vehicles on limited access, urban, suburban, and rural roads. The NECRMP uniform seasonal pattern was used for NAPAP Version 5.2 after its applicability was confirmed by the U.S. Trucking Association (Roth, personal communication).

Off-Highway Vehicles (Categories 39, 44)--State-specific seasonal emission patterns were derived from data contained in Highway Statistics (U.S. DOT, 1980). Monthly distribution of off-highway motor fuel use was calculated by subtracting monthly on-highway fuel use from total monthly fuel use. Seasonal allocation factors were then derived from the monthly pattern.

Daily patterns were derived from the EPA Guidelines (U.S. EPA, 1979b), and are a composite (weighted by emission strength) of the daily patterns for the five subcategories of off-highway vehicles (agricultural equipment, construction equipment, industrial equipment, lawn and garden equipment, and motorcycles) for which factors are separately described in the Guidelines.

Separate hourly patterns were derived for gasoline (Category 39) and diesel (Category 44) vehicles using data from a variety of sources, including the EPA Guidelines (U.S. EPA, 1979b), the Regional Air Pollution Study: Off-Highway Mobile Sources Emission Inventory (U.S. EPA, 1977), Highway Statistics, 1980 (U.S. Department of Transportation, 1980) and several statewide area source emission inventories (Sellars, et al., 1982a, 1982b, 1982c; Haupt, et al., 1982).

Railroads (Category 45)--The temporal factors developed for railroad locomotives in the NECRMP study were based on information provided by Conrail and in the Philadelphia AQCR inventory (Engineering-Science, 1981). These data are probably not representative of the entire nation. Thus, the NECRMP-developed temporal profile for railroads was used only for those states within the NECRMP study area; new seasonal, daily, and hourly patterns, developed from factors in the EPA Guidelines (U.S. EPA, 1979b), were used for the remaining states in the NAPAP inventory.

Aircraft (Categories 46-48)--For civil aircraft, seasonal, daily, and hourly patterns were derived from the EPA Guidelines (U.S. EPA, 1979b). For military aircraft, patterns were derived from the Philadelphia AQCR Inventory (Engineering-Science, 1981). For commercial aircraft, patterns were derived from data presented in Seasonally Adjusted Traffic and Capacity (U.S. Civil Aeronautics Board, 1981).

Vessels (Categories 49-52)--Patterns for coal (Category 49), diesel (Category 50), and residual oil (Category 51) powered vessels were developed from the EPA Guidelines (U.S. EPA, 1979b). For gasoline powered vessels (dominated by pleasure boats), the Guidelines recommend that seasonal patterns be based on the number of months the mean temperature exceeds 45°F; State, Regional, and National Monthly and Annual Average Temperatures Weighted by Area (U.S. Department of Commerce, 1983) provided this information, and

seasonal patterns were created as recommended. Daily and hourly patterns were developed from the Guidelines.

Gasoline Marketed (Category 54)--The primary sources of information for seasonal patterns were the U.S. Department of Energy's (DOE's) Petroleum Marketing Monthly (U.S. Department of Energy, 1984) and the U.S. Department of Transportation's (DOT's) Highway Statistics, 1980 (U.S. Department of Transportation, 1980). Analyses of these data yielded the conclusion that evidence was insufficient to justify using other than a uniform seasonal distribution. Daily and hourly patterns were based on the EPA Guidelines (U.S. EPA, 1979b).

Unpaved Roads (Category 55)--The seasonal, daily, and hourly patterns for this category were assigned those for Light Duty Vehicles on rural roads (Category 28).

Agricultural, Structural, and Forest Fires (Categories 60, 61, 62, 64)--Managed burning (Category 61) and agricultural field burning (Category 62) used the patterns developed for field/slash burning in the NECRMP study (Sellars, et al., 1982d). Structural fires (Category 64) and forest fires (Category 60) were assumed to occur randomly, 7 days per week, 24 hours per day. Structural fires were assumed to occur uniformly throughout the year. It was estimated that 90 percent of forest fires occur during summer or fall, and that the remaining 10 percent are split evenly between winter and spring.

Manure Field Application (Categories 71-75)--Agricultural Extension Agents in 12 states across the country (Indiana, Wisconsin, Nebraska, Kansas, North Dakota, Idaho, Iowa, North Carolina, Alabama, New York, Texas and Arkansas) were contacted; they provided information on the seasonal pattern of manure application in their states. These patterns were extended to nearby states not contacted directly. Daily patterns were governed by the assumption that most farm activity takes place on weekdays and Saturdays; hourly patterns assume this activity takes place during daylight hours.

NH_3 Fertilizer Application (Category 76)--The 12 Agricultural Extension Agents contacted to provide information on manure spreading practices (see above) were also asked to share their knowledge of NH_3 fertilization practices. Daily and hourly factors were assigned under the same assumptions which governed the selection of factors for the manure spreading categories (see above).

Beef Cattle Feed Lots (Category 77)--Emissions were assumed to be uniform throughout the year and the week.

Solvent Use Categories (Categories 78-95)--U.S. Department of Labor statistics on 1980 working hours (U.S. Department of Labor, 1981) were consulted to derive seasonal and daily temporal variation in these emission categories. These data were broken down by SIC code; the NAPAP emission categories were matched with the most appropriate code in the data set. Monthly data on total hours worked served as the basis for seasonal allocation factors. Data on overtime hours worked served as the basis for daily factors; the assumption was made that all overtime hours were worked on weekends, and that three times as much overtime was put in on Saturdays as on Sundays.

Utility Point Source Emissions (Categories 96-98)--The seasonal factors were based on electric generation data contained in the EPRI Regional Systems (EPRI, 1981). Daily factors are governed by the assumption that utility activity is constant during the week; hourly factors assume that most activity around these plants occurs during normal working hours.

Minor Point Sources (Category 99)--The temporal variation for this minor emissions category assumes an operating "schedule" of 52 weeks per year, 5 days per week, and 8 hours per day.

Summary--Appendix C contains figures which highlight the seasonal, daily, and hourly temporal allocation patterns for the United States area source emission categories. Categories for which temporal allocation factors were resolved by state are represented only by the mean pattern for all states.

Canadian Area Source Temporal Allocation Factors--

The Canadian area source temporal allocation factors were developed under the auspices of Supply and Services Canada by the MEP company of Markham, Ontario, and the Ontario Research Foundation of Mississauga, Ontario; they were adopted without substantial changes for incorporation into the NAPAP Inventory effort. The Canadian factors were developed through the same sort of research which went into development of the U.S. factors. Business and government statistics and meteorological and climatological data formed the raw input into development of the factors. Where the data made such resolution possible, factors were developed at the individual province level. Where emissions for a category are climate-dependent, an attempt was made to refine province-level factors further by 4 degree zone of latitude. Where appropriate and possible, separate factors were developed for different pollutant species within a single emissions category (this resolution applied only to factors for automobile emissions).

The Canadian temporal allocation factors were provided to NAPAP in a written report (MEP/Ontario Research Foundation, 1985). The factors were extracted from this report and reformatted by a procedure described below. The FREDS handling of the Canadian emissions data did not allow use of either (a) the latitude-zone-specific factors, or (b) the species-specific factors. Where appropriate, the mean of the latitude-zone-specific factors was calculated and used to represent an entire province; where species-specific factors had been calculated, the factors for a pollutant for which emissions vary directly with temperature were used for the emissions category.

Table 6-3 summarizes the Canadian area source emission categories and the level of resolution of the associated temporal allocation factors.

U.S. Point Source Temporal Allocation Factors--

State- and fuel-specific temporal allocation factors were developed only for a subset of all electric generating emissions sources. For the remaining point sources in the NAPAP Version 5.0 Inventory, operating rate data contained in the emissions records themselves formed the basis for the temporal allocation of emissions.

TABLE 6-3. CANADIAN AREA SOURCE CATEGORIES AND TEMPORAL FACTOR LEVEL OF SPECIFICITY

CATEGORY NUMBER	BASE CATEGORY	SUB-CATEGORY	LEVEL
10101	GASOLINE POWERED MOTOR VEH.	LIGHT DUTY TRUCKS	PROVINCE
10102	GASOLINE POWERED MOTOR VEH.	HEAVY DUTY TRUCKS	PROVINCE
10103	GASOLINE POWERED MOTOR VEH.	MEDIUM DUTY VEHICLES	PROVINCE
10104	GASOLINE POWERED MOTOR VEH.	AUTOMOBILES	PROVINCE
10105	GASOLINE POWERED MOTOR VEH.	MOTORCYCLES	NATIONAL
10106	GASOLINE POWERED MOTOR VEH.	SNOWMOBILES	NATIONAL
10201	OFF-HIGHWAY MOBILE SOURCES	HELICOPTERS	PROVINCE
10202	OFF-HIGHWAY MOBILE SOURCES	HELICOPTER FLIGHTS	
10203	OFF-HIGHWAY MOBILE SOURCES	JET AIRCRAFT	
10204	OFF-HIGHWAY MOBILE SOURCES	JET AIRCRAFT FLIGHT	
10206	OFF-HIGHWAY MOBILE SOURCES	LOCAL AIRCRAFT FLIGHT	
10207	OFF-HIGHWAY MOBILE SOURCES	PISTON ENGINE AIRCRAFT	
10208	OFF-HIGHWAY MOBILE SOURCES	PISTON ENGINE INFLIGHT	
10210	OFF-HIGHWAY MOBILE SOURCES	PISTON TRANSPORT INFLIGHT	
10211	OFF-HIGHWAY MOBILE SOURCES	SMALL PISTON AIRCRAFT	
10213	OFF-HIGHWAY MOBILE SOURCES	TURBOPROP AIRCRAFT	
10214	OFF-HIGHWAY MOBILE SOURCES	DIESEL OIL -- RAILROADS	PROVINCE
10215	OFF-HIGHWAY MOBILE SOURCES	GASOLINE OUTBOARD MOTORS	PROVINCE
10217	OFF-HIGHWAY MOBILE SOURCES	MOTORSHIPS DOCKSIDE	
10218	OFF-HIGHWAY MOBILE SOURCES	MOTORSHIPS UNDERWAY	
10220	OFF-HIGHWAY MOBILE SOURCES	STEAMSHIPS DOCKSIDE	
10221	OFF-HIGHWAY MOBILE SOURCES	STEAMSHIPS UNDERWAY	
10301	NON-HIGHWAY USE OF GASOLINE		PROVINCE
10501	FOREST FIRES		PROVINCE
10601	SLASH BURNING		NATIONAL
10701	STRUCTURAL FIRES		PROVINCE
10801	FERTILIZER APPLICATION		PROVINCE
11201	DRY CLEANING		NATIONAL
11301	SAND AND GRAVEL PROCESSING		NATIONAL
11401	COAL INDUSTRY	COAL HANDLING	NATIONAL
11402	COAL INDUSTRY	COAL MINING	
11403	COAL INDUSTRY	OVERBURDEN REMOVAL	
11404	COAL INDUSTRY	COAL TRANSPORTATION	
11501	WOOD INDUSTRY	SAWMILL PRODUCTION	PROVINCE
11502	WOOD INDUSTRY	PLYWOOD AND VENEER PROD.	PROVINCE
11503	WOOD INDUSTRY	HARDWOOD PRODUCTION	PROVINCE
11504	WOOD INDUSTRY	PULPBOARD PRODUCTION	NATIONAL
11702	FUEL COMB. -- STATIONARY SRCS.	ELEC PWR -- DISTILLATE OIL	PROVINCE
11703	FUEL COMB. -- STATIONARY SRCS.	ELEC PWR -- DIESEL TURBINES	
11704	FUEL COMB. -- STATIONARY SRCS.	ELEC PWR -- HEAVY OIL	
11705	FUEL COMB. -- STATIONARY SRCS.	ELEC PWR -- MISC DIESEL	
11706	FUEL COMB. -- STATIONARY SRCS.	ELEC PWR -- NATURAL GAS	
11711	FUEL COMB. -- STATIONARY SRCS.	RESIDENTIAL COAL	PROVINCE
11712	FUEL COMB. -- STATIONARY SRCS.	RESIDENTIAL DISTILLATE OIL	
11713	FUEL COMB. -- STATIONARY SRCS.	RESIDENTIAL KEROSENE	
11714	FUEL COMB. -- STATIONARY SRCS.	RESIDENTIAL LIQ. PETROLEUM	
11715	FUEL COMB. -- STATIONARY SRCS.	RESIDENTIAL NATURAL GAS	
11716	FUEL COMB. -- STATIONARY SRCS.	RESIDENTIAL RESIDUAL OIL	
11721	FUEL COMB. -- STATIONARY SRCS.	COMM/INST COAL	PROVINCE
11722	FUEL COMB. -- STATIONARY SRCS.	COMM/INST DISTILLATE OIL	
11723	FUEL COMB. -- STATIONARY SRCS.	COMM/INST KEROSENE	
11724	FUEL COMB. -- STATIONARY SRCS.	COMM/INST LIQ. PETROLEUM	
11725	FUEL COMB. -- STATIONARY SRCS.	COMM/INST NATURAL GAS	

TABLE 6-3 (continued)

CATEGORY NUMBER	BASE CATEGORY	SUB-CATEGORY	LEVEL
11725	FUEL COMB. -- STATIONARY SRCS.	COMM/INST RESIDUAL OIL	PROVINCE
11731	FUEL COMB. -- STATIONARY SRCS.	INDUSTRIAL COAL	PROVINCE
11732	FUEL COMB. -- STATIONARY SRCS.	INDUSTRIAL DISTILLATE OIL	PROVINCE
11733	FUEL COMB. -- STATIONARY SRCS.	INDUSTRIAL KEROSENE	PROVINCE
11734	FUEL COMB. -- STATIONARY SRCS.	INDUSTRIAL LIQUID PETROLEUM	PROVINCE
11735	FUEL COMB. -- STATIONARY SRCS.	INDUSTRIAL NATURAL GAS	PROVINCE
11736	FUEL COMB. -- STATIONARY SRCS.	INDUSTRIAL RESIDUAL OIL	PROVINCE
11740	FUEL COMB. -- STATIONARY SRCS.	FUELWOOD COMBUSTION	PROVINCE
11801	BAKERIES		PROVINCE
12001	ASPHALT PRODUCTION	ASPHALT DRYING	PROVINCE
12002	ASHPALT PRODUCTION	ASPHALT FUGITIVES	PROVINCE
12101	STONE PROCESSING	CRUSHED STONE -- PRIMARY	PROVINCE
12102	STONE PROCESSING	CRSH STN -- SCREEN, CONVEY	PROVINCE
12103	STONE PROCESSING	CRSH STN -- SECONDARY	PROVINCE
12104	STONE PROCESSING	CRSH STN -- SECONDARY	PROVINCE
12111	STONE PROCESSING	PULV STONE -- PRIMARY	PROVINCE
12112	STONE PROCESSING	PULV STN -- RECRUSH, SCREEN	PROVINCE
12113	STONE PROCESSING	PULV STN -- SCREEN, CONVEY	PROVINCE
12114	STONE PROCESSING	PULV STN -- SECONDARY	PROVINCE
12115	STONE PROCESSING	PULV STN -- SECONDARY, FINAL	PROVINCE
12116	STONE PROCESSING	PULV STN -- FINES	PROVINCE
12117	STONE PROCESSING	PULV STN -- STORAGE PILES	PROVINCE
12121	STONE PROCESSING	BUILDING STONE	PROVINCE
12501	CLAY PRODUCTS MANUFACTURE	DRYING, GRINDING	NATIONAL
12502	CLAY PRODUCTS MANUFACTURE	STORAGE	NATIONAL
12601	GRAIN HANDLING AND MILLING	TERM ELEV -- CLEANING	PROVINCE
12602	GRAIN HANDLING AND MILLING	TERM ELEV -- DRYING	PROVINCE
12603	GRAIN HANDLING AND MILLING	TERM ELEV -- HEADHOUSE	PROVINCE
12604	GRAIN HANDLING AND MILLING	TERM ELEV -- SHIP, RECEIVE	PROVINCE
12605	GRAIN HANDLING AND MILLING	TERM ELEV -- TRANSFER	PROVINCE
12606	GRAIN HANDLING AND MILLING	TERM ELEV -- TRIPPER	PROVINCE
12613	GRAIN HANDLING AND MILLING	PRIM ELEV -- HEADHOUSE	PROVINCE
12614	GRAIN HANDLING AND MILLING	PRIM ELEV -- SHIP, RECEIVE	PROVINCE
12615	GRAIN HANDLING AND MILLING	PRIM ELEV -- TRANSFER	PROVINCE
12623	GRAIN HANDLING AND MILLING	XFER ELEV -- HEADHOUSE	PROVINCE
12624	GRAIN HANDLING AND MILLING	XFER ELEV -- SHIP, RECEIVE	PROVINCE
12625	GRAIN HANDLING AND MILLING	XFER ELEV -- TRANSFER	PROVINCE
12626	GRAIN HANDLING AND MILLING	XFER ELEV -- TRIPPER	PROVINCE
12641	GRAIN HANDLING AND MILLING	PROC ELEV -- CLEANING	NATIONAL
12642	GRAIN HANDLING AND MILLING	PROC ELEV -- MILLHOUSE	NATIONAL
12643	GRAIN HANDLING AND MILLING	PROC ELEV -- PRECLEAN	NATIONAL
12644	GRAIN HANDLING AND MILLING	PROC ELEV -- RECEIVING	NATIONAL
12701	NATURAL GAS PROCESSING	COMPRESSOR ENGINES	PROVINCE
12702	NATURAL GAS PROCESSING	COMPRESSOR TURBINES	PROVINCE
12703	NATURAL GAS PROCESSING	COMPRESSORS IN-PLANT	PROVINCE
12704	NATURAL GAS PROCESSING	HEATERS, BOILERS IN-PLANT	PROVINCE
12705	NATURAL GAS PROCESSING		PROVINCE
12801	SOLID WASTE INCINERATION	WOOD WASTE DISPOSAL	PROVINCE
12802	SOLID WASTE INCINERATION	CONTROLLED AIR	NATIONAL
12803	SOLID WASTE INCINERATION	MULTIPLE CHAMBER	NATIONAL
12901	DIESEL AND GASOLINE MARKETING	FILLING VEHICLE TANKS	PROVINCE
12902	DIESEL AND GASOLINE MARKETING	REFINERY STORAGE, TRANSFER	PROVINCE
12903	DIESEL AND GASOLINE MARKETING	SPILLAGE AT STATION	PROVINCE

TABLE 6-3 (continued)

CATEGORY NUMBER	BASE CATEGORY	SUB-CATEGORY	LEVEL
12904	DIESEL AND GASOLINE MARKETING	STATION STORAGE, TRANSFER	PROVINCE
12905	DIESEL AND GASOLINE MARKETING	TRANSFER TO CARS	
12906	DIESEL AND GASOLINE MARKETING	VAPOR LOSS AT STATION	
12907	DIESEL AND GASOLINE MARKETING	DIESEL EVAPORATION	
13001	SURFACE COATINGS	INDUSTRIAL USE	NATIONAL
13002	SURFACE COATINGS	TRADE, SALES USE	
13101	LANDFILL SITES		PROVINCE
13201	FERROUS FOUNDRIES	CUPOLA FURNACE	NATIONAL
13202	FERROUS FOUNDRIES	CUPOLA(+1 REVERB) FURNACE	
13203	FERROUS FOUNDRIES	ELECTRIC ARC FURNACE	NATIONAL
13204	FERROUS FOUNDRIES	INDUCTION FURNACE	
13205	FERROUS FOUNDRIES	ROTARY OIL FURNACE	
13701	DUST FROM UNPAVED ROADS	TRUCKS, EARTH ROADS	
13702	DUST FROM UNPAVED ROADS	TRUCKS, TREATED GRAVEL	
13703	DUST FROM UNPAVED ROADS	TRUCKS, UNTREATED GRAVEL	PROVINCE
13704	DUST FROM UNPAVED ROADS	VEHICLES, EARTH ROADS	
13705	DUST FROM UNPAVED ROADS	VEHICLES, TREATED GRAVEL	
13706	DUST FROM UNPAVED ROADS	VEHICLES, UNTREATED GRAVEL	
13901	CONCRETE BATCHING		PROVINCE
13902	CONCRETE BATCHING	FUGITIVE	
14001	CIGARETTE SMOKING		NATIONAL
14101	CRUDE OIL PRODUCTION	EVAPORATION FROM SHIPS	PROVINCE
14102	CRUDE OIL PRODUCTION	EVAPORATION	
14201	MINING AND ROCK QUARRYING	CONCENTRATE DRYERS	
14202	MINING AND ROCK QUARRYING	CONCENTRATE TRANSPORT	
14203	MINING AND ROCK QUARRYING	OPEN PIT MINING	PROVINCE
14204	MINING AND ROCK QUARRYING	OVERBURDEN REMOVAL	
14205	MINING AND ROCK QUARRYING	UNDERGROUND MINING	
14401	TIRE WEAR		PROVINCE
14501	PESTICIDE APPLICATION		PROVINCE
14601	DIESEL-POWERED ENGINES	AGRICULTURAL	
14602	DIESEL-POWERED ENGINES	CONSTRUCTION	PROVINCE
14603	DIESEL-POWERED ENGINES	HEAVY DUTY VEHICLES	
14604	DIESEL-POWERED ENGINES	OTHER INDUSTRIAL ENGINES	
14801	AGRICULTURE	WIND EROSION OF CROPLAND	PROVINCE
14802	AGRICULTURE	FUGITIVE TILLING EMIS.	
14901	TAILING PILES		NATIONAL
15001	CONSTRUCTION SITES	BRIDGES, TUNNELS, ROADS	
15002	CONSTRUCTION SITES	HEAVY CONSTRUCTION	
15003	CONSTRUCTION SITES	NON-RESIDENTIAL CONSTRUCTION	PROVINCE
15004	CONSTRUCTION SITES	RESIDENTIAL CONSTRUCTION	
15005	CONSTRUCTION SITES	WATER, SEWER, UTILITY	
15101	GENERAL SOLVENT USE		NATIONAL
15201	DUST FROM PAVED ROADS	TRUCKS	PROVINCE
15202	DUST FROM PAVED ROADS	OTHER VEHICLES	

Temporal Allocation Factors for Utilities--State- and fuel-specific temporal allocation factors were developed during the NECRMP study for power plants within the Northeast Corridor (the region comprised of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Vermont, Virginia, the District of Columbia, and West Virginia). For NAPAP Version 5.2, most of the NECRMP factors were retained for sources inside the NECRMP region, while some were replaced by new factors, derived from additional data. For sources outside the NECRMP region, some factors were based on the original NECRMP figures, while most were developed from additional data. Following is a description of the data sources consulted for the utility point source temporal allocation factors.

Seasonal Factors--The fuel- and state-specific seasonal temporal factors which were derived for the NECRMP study from power generation statistics obtained from the U.S. Department of Energy's (DOE's) 1979 Data Reports were retained for NAPAP Version 5.2 (U.S. Department of Energy, 1979). To avoid the climatic bias of the northeast seasonal statistics, a uniform seasonal temporal factor of 25 percent was assigned to all sources outside the NECRMP region.

Daily Factors--The daily factors developed for the NECRMP study were inadequate for use with the NAPAP Version 5.2 Inventory. Daily factors for the entire nation were developed from weekly load cycle listings in the EPRI Regional Systems (EPRI, 1981). These were calculated by normalizing the averages of daily load statistics.

Hourly Factors--For the NECRMP study, fuel- and state-specific weekday hourly temporal factors were calculated using hourly power plant fuel use data previously collected by GCA for use in the Electric Power Research Institute's (EPRI's) SURE Program (Klemm and Brennan, 1981). Included in this effort was the acquisition of hourly fuel use data for approximately 300 power plants within the SURE region for several study periods, at least one in each season. Since the SURE study area included all of the NECRMP study area, and the power plants contained in the hourly inventory represented approximately 90 percent of the utility SO_x emissions in the SURE region, the SURE data are believed to represent the best available data for determining hourly emission patterns within the Northeast Corridor.

There were no SURE hourly fuel use data available for the states of Rhode Island or Vermont. Weekday factors were assigned from the neighboring states of Connecticut and New Hampshire, respectively. For sources outside the NECRMP region, global fuel-specific hourly factors for weekdays were calculated by taking averages of the NECRMP figures.

Because the temporal resolution of the NECRMP study was limited to hourly emissions on a typical weekday, national Saturday and Sunday allocation factors were developed for NAPAP Version 5.2 from the weekly load cycle listings in the EPRI Regional Systems (EPRI, 1981). These were calculated by normalizing the averages of hourly load statistics.

Point Source Default Temporal Allocation Patterns--Most NAPAP point source emission records contain operating rate data which make possible the point-specific temporal allocation of emissions. These data consist of information on:

1. Seasonal throughput percentages for each of the four seasons;

2. The number of days per week the process operates; and

3. The number of hours per day the process operates.

For all SCC for which specific temporal allocation factors were not developed, these operating rate data were used to divide yearly emission totals into subtotals for the 24 hours of a typical weekday, Saturday, and Sunday in each of the four seasons. The algorithms used to allocate yearly emissions were as follows:

Seasonal Patterns--The operating rate data contains specific information on the percent of yearly emissions attributable to each of the four seasons.

Daily Patterns--The operating rate data provide information on the number of days per week the process is in operation. This information is used to allocate emissions among the days of the week according to the following schedule:

If the process operates x days per week:	Then emissions are allocated as follows:
1	Saturdays only
2	Equally on Saturdays and Sundays
3-5	Weekdays only
6	Equally on weekdays and Saturdays
7	Equally on all days of the week.

Hourly Patterns--The operating rate data state how many hours per day the process is in operation. Since this information does not allow precise diurnal patterns to be defined, hourly patterns were created according to the following simple algorithm:

- If the process operates $\geq$17 hours/day, the hourly allocation pattern divides emissions equally among the 24 hours of the day;

- If the process operates 1 through 17 hours/day, hourly allocation factors are made 0 for the hours from midnight to 7 A.M. Total daily emissions are divided evenly among the following x hours, where x = the number of hours the process operates (for example, if

the process operates 8 hours/day, the 8 hourly factors from 7 A.M. through 3 P.M. would all equal 0.125). The remaining hourly factors (filling out the 24 hours of the day) are all set equal to zero.

Canadian Point Source Temporal Allocation Factors--

Temporal allocation factors for Canadian point sources have not been developed by NAPAP, and the emissions records for Canadian point sources do not contain operating rate data. As a result of this lack of temporal profiles and operating rate data, most Canadian point sources have been assigned a default operating pattern which assumes: (1) equal emissions in all seasons, (2) equal emissions for all days of the week, and (3) constant emissions throughout the 24 hours of each day. Canadian point source utility emissions, however, were allocated using the appropriate U.S. point source utility temporal allocation factors, whose development is described above.

File Creation and Quality Assurance

Extensive effort was put into the task of creating the temporal allocation factor files and into assuring the quality of these data. A variety of data entry, data modification, and quality assurance software was written which will speed the process of incorporating further improvements to the temporal allocation factors for future NAPAP Inventory efforts.

The U.S. temporal allocation factors were put into FREDS format in one of two ways:

- Factors which were adapted from earlier inventory efforts, and which therefore already existed in computer data files, were reformatted to the required input format; and

- Factors which were the product of new research conducted for this NAPAP effort were put into data files through a system of data entry programs designed for this effort.

The Canadian factors were not supplied on a magnetic medium, but were extracted from a written report. The data entry programs written to accept the U.S. temporal allocation factors were modified slightly to allow straightforward creation of data files for the Canadian factors.

The temporal allocation factors were put through a series of quality assurance checks before further processing:

- Files were scanned following data reformatting or transferring to insure that no errors were made during transcription. All data entry and data manipulation software was checked to be sure that all factors summed to the correct values;

- Printouts similar to those presented in Appendix C were created and visually scanned to be sure that all temporal allocation factor patterns were reasonable. As an example, this process revealed that the NAPAP Version 4.2 factors for Industrial Fuel Use emissions allocated no emissions to Sundays; this omission seemed unusual, so further research was initiated to reveal what portion of weekly emissions should properly be allocated to this day;

- When the factors were in final form for input into the FREDS system, a statistical check was made to find outliers. Software was written which scanned similar sets of factors (for example, factors for the Residential Heating emissions category for all 48 States) and calculated the mean value for each factor. The factors were then scanned a second time, and all factors more than two standard deviations from the mean value were pinpointed for explicit examination. When such "abnormal" factors were located, the original data sources were re-examined to assure that no errors in calculation or transcription had been made.

File Format for Input to the FREDS System--

Table 6-4 displays a portion of the U.S. temporal allocation factors as they are formatted for input into the FREDS system. Separate files have been created for the Canadian and the U.S. factors. One line of data contains seasonal, daily, and hourly factors for a single emissions category, for a single state or province (if applicable), for a single day. There are therefore 12 lines of data for each emissions category for each State or province--one line each for a weekday, a Saturday, and a Sunday in each of the four seasons.

SPATIAL ALLOCATION FACTOR DEVELOPMENT

Introduction

In the NAPAP emissions records, area source emissions are inventoried by county; for modeling applications of the NAPAP data, area source emissions must be allocated to individual grid cells. The allocation of county-wide area source emissions to grid cells is accomplished by the FREDS Spatial Allocation Module, and depends on the existence of a set of spatial allocation factors. This section describes the development and application of these factors.

The NAPAP Version 5.2 grid system is comprised of 63,000 individual grid cells (210 rows by 300 columns), each 1/6° latitude by 1/4° longitude (approximately 20 km x 20 km), extending from 50° to 125° west longitude and from 25° to 60° north latitude. The grid system covers the continental United States and Canada south of the 60th parallel (the southern border of the Yukon and Northwest Territories). Grid cells are assigned numbers on a Cartesian coordinate system, with row numbers increasing from south to north and column numbers increasing from west to east. Thus, the cell at the southwestern corner of the grid is denoted (1,1); the cell at the northeastern corner is denoted (300,210). Latitude/longitude data can be converted to row/column format using the following equations:

$$\text{Column} = ((125 - \text{longitude}) \times 4) + 1$$

$$\text{Row} = ((\text{latitude} - 25) \times 6) + 1$$

where the numbers 4 and 6 represent the number of grids per degree longitude and latitude, respectively. The resultant integer parts are the row and column; fractional parts are truncated.

TABLE 6-4. SAMPLE DISPLAYING FORMAT OF U.S. AREA SOURCE TEMPORAL ALLOCATION FACTOR RECORDS

Season/Day Identifier (1 through 12)	State	Emission Category (1 through 99)	Seasonal Multiplier	Daily Multiplier	24 Hourly Multipliers																					
10	4	1185	110	67	67	67	83	83	83	100	100	100	43	43	43	0	0	0	0	0	0	0	0	0	43	43	43
11	4	1185	110	67	67	67	83	83	83	100	100	100	43	43	43	0	0	0	0	0	0	0	0	0	43	43	43
12	4	1185	110	67	67	67	83	83	83	100	100	100	43	43	43	0	0	0	0	0	0	0	0	0	43	43	43
1	5	1452	110	47	47	47	53	53	53	53	53	53	40	40	40	30	30	30	26	26	26	40	40	40	47	47	47
2	5	1452	110	47	47	47	53	53	53	53	53	53	40	40	40	30	30	30	26	26	26	40	40	40	47	47	47
3	5	1452	110	47	47	47	53	53	53	53	53	53	40	40	40	30	30	30	26	26	26	40	40	40	47	47	47
4	5	1333	110	77	77	77	86	86	86	77	77	77	20	20	20	0	0	0	0	0	0	20	20	20	56	56	56
5	5	1333	110	77	77	77	86	86	86	77	77	77	20	20	20	0	0	0	0	0	0	20	20	20	56	56	56
6	5	1333	110	77	77	77	86	86	86	77	77	77	20	20	20	0	0	0	0	0	0	20	20	20	56	56	56

For each area source emissions category, the purpose of the spatial allocation factors is to allocate emissions for each county among all grid cells which contain a portion of the county. Since the actual areal distribution of emissions within a county is unknown, emissions are assumed to be distributed according to the known distribution of a surrogate indicator. For example, the distribution of housing within a county should be an accurate surrogate indicator for residential fuel use emissions; if 50 percent of County X's housing were located in Grid Cell Y, then 50 percent of County X's residential fuel emissions should be allocated to Grid Cell Y.

An extensive development effort for the spatial allocation factors took place for the NAPAP Version 4.2 Inventory; that development effort is summarized here. For NAPAP Version 5.2, effort has been focused on assuring the quality and completeness of the factors.

The goal of the spatial allocation factor development effort was to create as many surrogate values as possible for each county in the NAPAP study area to allow the user maximum flexibility in assigning county level emissions to specific grid cells. A total of 14 surrogate indicators have been developed, based on the areal distribution of housing, population, land area, and 11 land use categories. After the distribution of the surrogate indicators had been calculated and allocated to grid cells, county level area source emissions could be spatially distributed by matching area source emission categories to the most appropriate surrogate indicators.

Spatial Allocation Factor Development

The two major data sources used to compile the spatial allocation factors were:

1. 1980 Bureau of the Census population and housing data, and

2. Land use classification data derived from LANDSAT satellite imagery.

Spatial allocation factors were developed separately from the housing/population data and the LANDSAT data during the NAPAP Version 4.2 inventory effort. These separate sets of factors were then merged to create the single spatial allocation factor file used for NAPAP Version 4.2. This file served as the starting point for the quality assurance and reformatting performed for NAPAP Version 5.2.

The following discussion of the development of spatial allocation factors applies only to factors for the U.S. area source emission categories. Because of the different method of compilation of the Canadian area source inventory, and a lack of data on Canadian land use comparable to the U.S. LANDSAT data, no spatial allocation factors like those discussed below exist for the Canadian area source emissions. The allocation of Canadian area source emissions to individual grid cells is discussed under a separate heading.

Population and Housing Allocation Factors--

U.S. Bureau of the Census data contain information on the distribution of housing and population at several levels of detail more precise than

whole-county totals, including (where applicable) township, place, tract, block, and election district. To make possible the spatial allocation of area source emission categories for which housing or population is an appropriate surrogate (e.g., residential heating emissions), NAPAP obtained and adapted these refined Census data, which are available as part of EPA's STF3A Census tapes.

These data allowed the resolution of population and housing patterns to the subcounty level; based on this resolution, a match based on latitude and longitude was made between the subcounty population and housing patterns and individual grid cells, and the allocation of county-wide population and housing to grid cells was completed.

The computer programs written to accomplish this allocation were designed to accommodate anomalies in the Census or emissions data. For example, some localities repress portions of their housing and population data to maintain confidentiality, while the commonwealth of Massachusetts maintains emissions data by AQCR instead of by county. Such problems were overcome after discussion within NAPAP had yielded consensus on appropriate solutions.

Land Use Spatial Allocation Factors--

The development of the spatial allocation factors based on land use patterns proceeded in three steps:

1. Allocation of land use categories to individual grid cells;

2. Determination of the area of each county located in each grid cell;

3. Calculation of spatial allocation factors based on land use categories and county areas in each grid cell.

This process is portrayed in Figure 6-1.

Allocation of Land Use Categories to Grid Cells--Land use data were obtained through the EPA/ASRL's Meteorology and Assessment Division and consist of 10 land use and land cover classification percentages for each NAPAP grid cell. The data were developed under EPA contract by Lockheed Engineering and Management Services Company's Remote Sensing Laboratory using LANDSAT mosaic images covering the periods 23 July through 31 October 1972, and 1 January through 31 March 1973. Total land use and land cover in each grid cell was divided into the following classifications:

- Urban Land
- Agricultural Land
- Rangeland
- Deciduous Forest Land
- Coniferous Forest land
- Mixed Forest Land (including forested wetlands)
- Water
- Barren Land
- Nonforested Wetland
- Mixed Agricultural Land and Rangeland

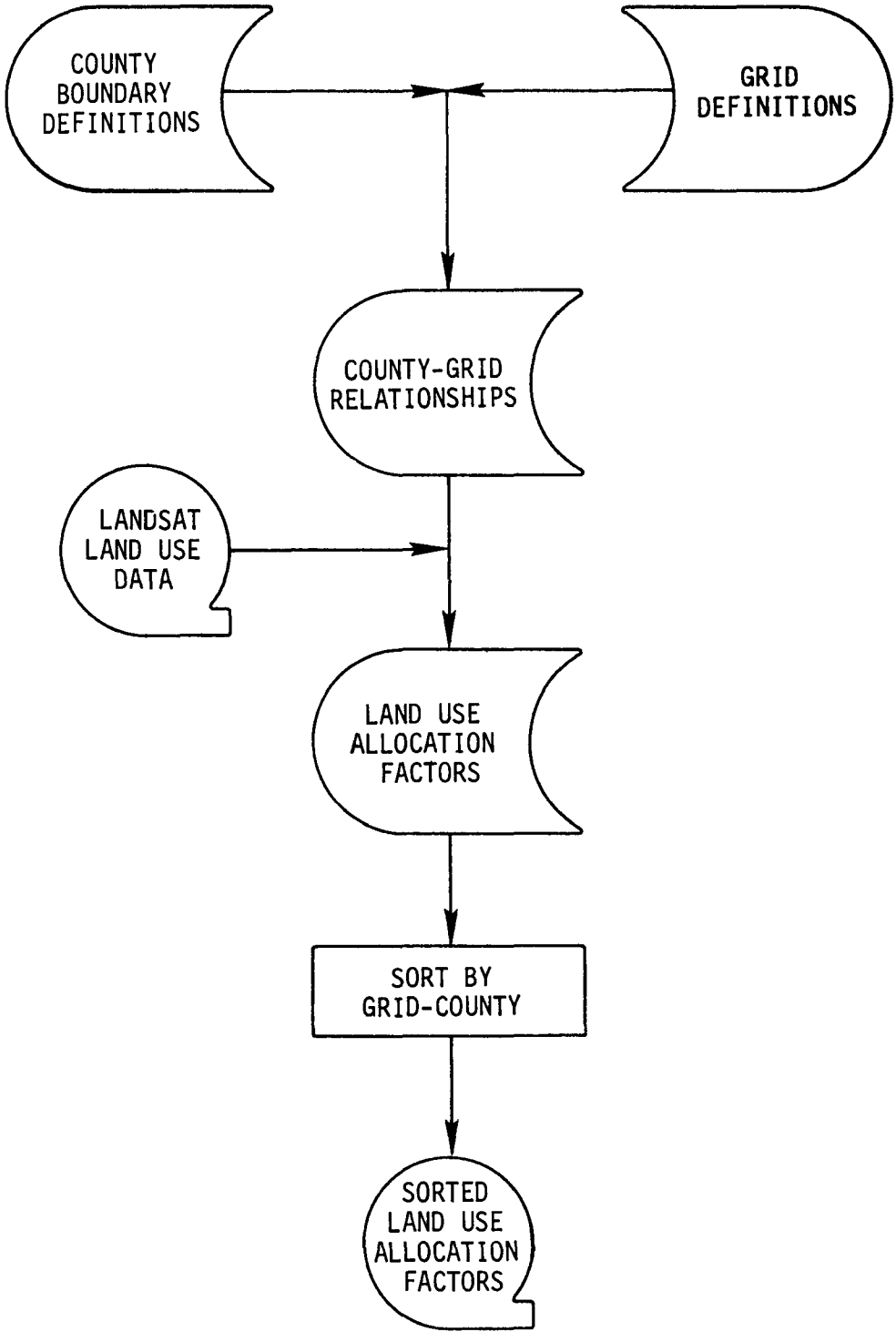


Figure 6-1. Development of land use allocation factors.

Two additional categories--Composite Forest (the sum of Coniferous Forest, Deciduous Forest, and Mixed Forest Land) and Total Land Area (the sum of all classifications minus area covered with water)--were calculated by NAPAP.

Prior to further processing, these data are formatted as a single data file with one record per grid cell. Each record documents the fraction of the grid cell covered by each of the 12 land use categories. These fractions sum to 1 for the 10 LANDSAT categories; the Total Land Area category and Composite Forest fractions both have values less than or equal to one.

Determination of Grid Cell/County Areas Relationships--Since land use classification data were available for each grid cell, while emissions data are stored for individual counties, it was necessary to allocate the total area of each county to all of the grid cells in which a portion of the county is located. EPA/ASRL developed the software to perform this match.

Very simply, this software takes a file which defines the boundaries of each county in the United States and overlays it on the NAPAP grid system. The software then calculates the fraction of each county located in each grid cell which the county overlaps. Figure 6-2 illustrates this process for a single grid cell which contains portions of three counties. For this grid cell, the ASRL software would calculate the proportion of each of Counties A, B, and C located in the cell as follows:

County	Total Area	Area in Cell	Fraction in Cell
A	500	150	0.30
B	1,000	50	0.05
C	800	200	0.25

The fractional totals calculated for each county must sum to 1; the fractional totals for each grid cell do not have to sum to a particular number. The output of this software is a single file, sorted by grid cell number, which contains an identification code for each county overlapping the grid cell, and the fraction of each such county located in the cell.

Calculation of Spatial Allocation Factors--The final step in the calculation of spatial allocation factors based on the LANDSAT land use categories is to match the grid cell/land use allocation pattern with the grid cell/county pattern. For each land use classification in each county overlapping each grid cell, the spatial allocation factor is calculated as follows:

$$SPAFCT_{CSi} = \frac{(A_{Ci})(A_{Si})}{\sum_i^n (A_{Ci})(A_{Si})}$$

where: $SPAFCT_{CSi}$ = The spatial allocation factor for County C, land use Type S, and grid i

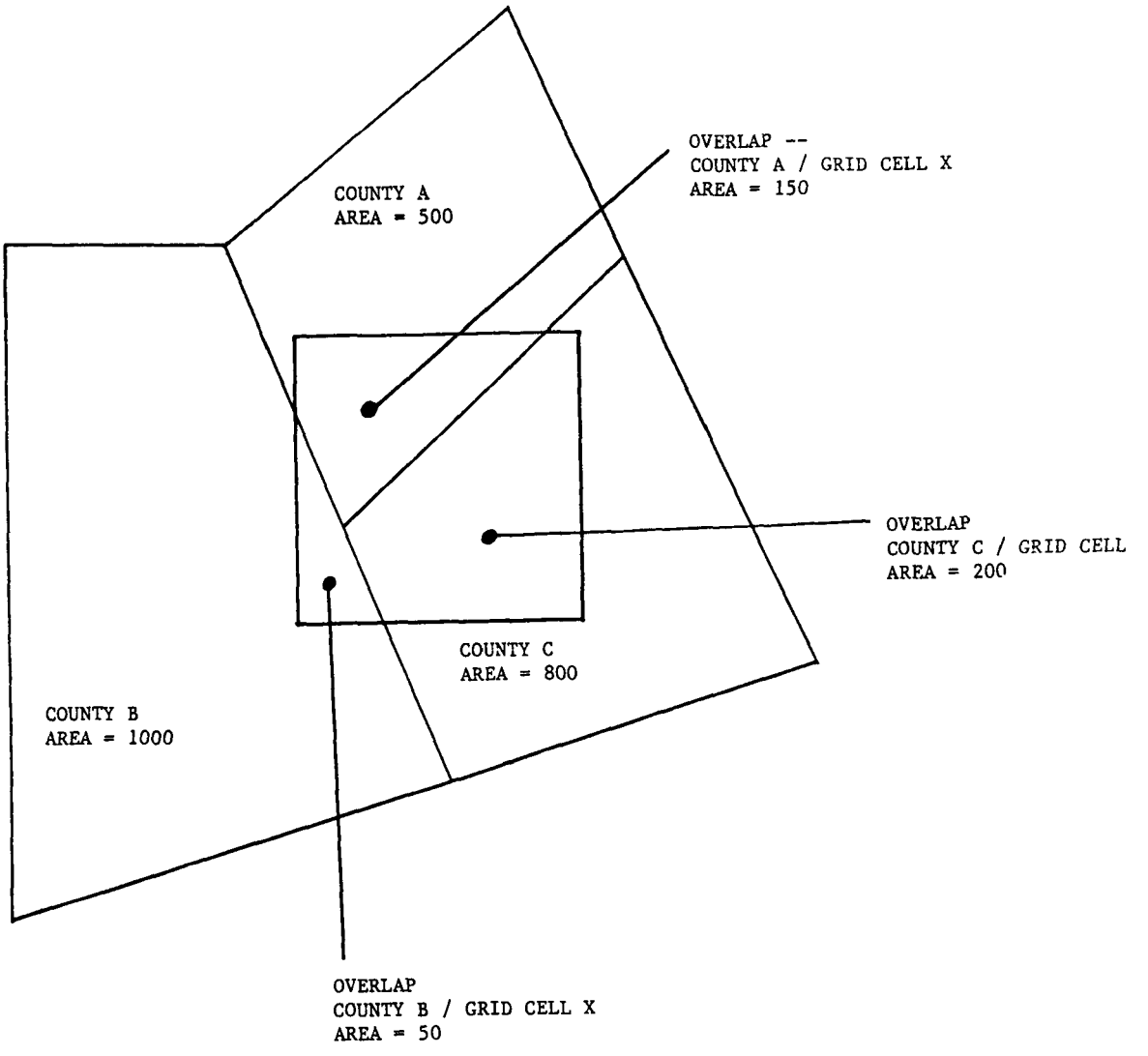


Figure 6-2. Example of county to grid cell areal relationship.

A_{Ci} = The portion of County C that falls within grid i

A_{Si} = The portion of grid i with land use type S

n = The total number of grids covering County C

For example:

Assume 80 percent of County A falls within grid 1 and 20 percent within grid 2. Agricultural land comprises 10 percent of grid 1 and 75 percent of grid 2. The distribution of emissions from pesticide application, using agricultural land use as the surrogate indicator, would be calculated:

$$SPAFCT_{grid\ 1} = \frac{(0.80)(0.10)}{[(0.80)(0.10) + (0.20)(0.75)]} = 0.35$$

$$SPAFCT_{grid\ 2} = \frac{(0.20)(0.75)}{[(0.80)(0.10) + (0.20)(0.75)]} = 0.65$$

In the above example, 65 percent of County A's emissions from pesticide application are assigned to grid 2, even though more of County A falls within grid 1, because grid 2 has much more agricultural land than grid 1. One limitation of this methodology is that the grids are necessarily assumed to be homogeneous in terms of land use. In the previous example, 10 percent of the land in grid 1 was agricultural and, therefore, 10 percent of the portion of County A that falls within grid 1 is assumed to be agricultural, even if only a fraction of grid 1 covers County A.

The file output from this process contains one record for each county overlapping each grid cell, and 12 spatial allocation factors per record (one factor for each of the 10 LANDSAT land use classifications and one each for the two composite classifications devised by NAPAP). This file is sorted by grid cell number, then merged with the population and housing factors created as described above to yield the complete set of spatial allocation factors suitable for further processing.

Allocation of Canadian Area Source Emissions to Grid Cells--

The Canadian area source emissions files contain data already allocated to individual grid cells (unlike the U.S. emissions data files, in which emissions are initially allocated to counties). Nothing comparable to the U.S. LANDSAT data exists for Canada, nor does the Canadian government maintain statistics as detailed as the U.S. Census data on areal distribution of housing; the best surrogates available as a basis to distribute Canadian area source emissions are various categories of population.

The Canadian Land Directorate provided available allocation data for the 20 x 20 kilometer NAPAP grids in each province in Canada. The Land Directorate was responsible for providing Environment Canada with population, employment, and other data on a grid basis to allocate province-level emissions to the 127 x 127 kilometer grid system used by the Canadians. Environment Canada manually developed additional allocation factors to supplement those generated by the Land Directorate. The factors used by Environment Canada to allocate each area source category were applied to the

NAPAP grid in Canada to the extent possible. However, the allocation parameters developed manually by Environment Canada were not considered. Allocation factors provided by the Land Directorate were used to allocate all area source categories including those for which Environment Canada applied manually-developed factors. Table 6-5 identifies the allocation factors provided and shows which factor was used to allocate each of the area source categories.

Quality Assurance and File Formatting

Before the spatial allocation factors were processed, they were subjected to quality assurance checks. These checks confirmed: (1) that factors summed to 1 (where appropriate) for each county, and (2) that a nonzero surrogate factor existed for each land use classification in each grid cell.

The first check assured that all emissions assigned a given surrogate would be allocated to grid cells. Without this QA check, if the factors for Agricultural Land, County X, summed to only 0.5, then only half of all emissions assigned Agricultural Land as a spatial allocation surrogate would be allocated to the grid cells covering this county--after processing, half of these emissions would have "disappeared". Conversely, if the factors summed to a value greater than 1, emissions would appear to increase. This QA check summed the allocation factors for each surrogate in each county; if they did not sum to 1, the nonzero factors were normalized to yield this sum.

The second QA check verified that a nonzero factor existed for each spatial allocation surrogate in each county. Another example will highlight the importance of this check: if the LANDSAT data indicated that there was no Agricultural Land in County X, yet the NAPAP Inventory for County X contained emissions for an emission category for which Agricultural Land was the spatial allocation surrogate, these emissions would "disappear" during processing--the spatial allocation factor for this emissions category in County X would equal 0. To insure that all area source emissions are allocated to grid cells, all factors which equalled 0 were set equal to the spatial allocation factor for population.

Assignment of Spatial Allocation Surrogates

To accomplish the allocation of area source emissions to individual grid cells, each area source emissions category must be matched with one of the spatial allocation surrogates. For example, if Residential Heating emissions are to be allocated to grid cells on the basis of housing patterns, a mechanism must exist to instruct the FREDS Spatial Allocation Module to make this match.

A surrogate factor selection file has been developed to perform this function. Based on discussion within NAPAP, each area source emissions category has been assigned to one of the 14 spatial allocation surrogates. This file is an independent input, so that assignments can be easily changed as new emissions categories are added, or as the development of new surrogates makes the revision of these assignments desirable. The NAPAP Version 5.2 surrogate factor assignments for the U.S. area source emission categories are shown in Table 6-6.

TABLE 6-5. ALLOCATION FACTORS FOR CANADIAN AREA SOURCES

Allocation factor	Categories allocated
Population	Gasoline-powered motor vehicles, off-highway mobile sources, non-highway use of gasoline, dry cleaning, sand and gravel processing, electric power fuel combustion, asphalt production, stone processing, clay products manufacture, refuse incineration, diesel and gasoline marketing, application of surface coatings, landfill sites, concrete batching, cigarette smoking, tire wear, diesel-powered engines, construction sites, general solvent use, and dust from paved roads.
Oil Dwellings	None.
Gas Dwellings	None.
Total Dwellings	Structural fires, residential fuel combustion, fuelwood combustion.
Industrial Labor Force	Industrial fuel combustion, ferrous foundries, plastics fabrication.
Commercial Labor Force	Commercial fuel combustion, bakeries.
Agricultural Labor Force	Fertilizer application, dust from unpaved roads, pesticide application, agricultural tilling and wind erosion, grain handling and milling.
Mining Labor Force	Forest fires, slash burning, coal industry, wood industry, natural gas processing, wood waste disposal, crude oil production, mining and rock quarrying, tailing piles.

TABLE 6-6. SPATIAL ALLOCATION FACTOR SURROGATES FOR NAPAP VERSION 5.2 AREA SOURCE EMISSIONS CATEGORIES

CAT. ID	SURROGATE ID	SURROGATE INDICATOR	EMISSIONS CATEGORY
1	2	Housing	Residential Fuel -- Anthracite Coal
2	2	Housing	Residential Fuel -- Bituminous Coal
3	2	Housing	Residential Fuel -- Distillate Oil
4	2	Housing	Residential Fuel -- Residual Oil
5	2	Housing	Residential Fuel -- Natural Gas
6	2	Housing	Residential Fuel -- Wood
7	3	Urban Land	Commercial/Institutional Fuel -- Anthracite Coal
8	3	Urban Land	Commercial/Institutional Fuel -- Bituminous Coal
9	3	Urban Land	Commercial/Institutional Fuel -- Distillate Oil
10	3	Urban Land	Commercial/Institutional Fuel -- Residual Oil
11	3	Urban Land	Commercial/Institutional Fuel -- Natural Gas
12	3	Urban Land	Commercial/Institutional Fuel -- Wood
13	3	Urban Land	Industrial Fuel -- Anthracite Coal
14	3	Urban Land	Industrial Fuel -- Bituminous Coal
15	3	Urban Land	Industrial Fuel -- Coke
16	3	Urban Land	Industrial Fuel -- Distillate Oil
17	3	Urban Land	Industrial Fuel -- Residual Oil
18	3	Urban Land	Industrial Fuel -- Natural Gas
19	3	Urban Land	Industrial Fuel -- Wood
20	3	Urban Land	Industrial Fuel -- Industrial Process Gas
21	2	Housing	Incineration -- Residential
22	3	Urban Land	Incineration -- Industrial
23	3	Urban Land	Incineration -- Commercial/Institutional
24	2	Housing	Open Burning -- Residential
25	3	Urban Land	Open Burning -- Industrial
26	3	Urban Land	Open Burning -- Commerical/Institutional
27	14	Land Area	Light Duty Gas Vehicles -- Limited Access
28	14	Land Area	Light Duty Gas Vehicles -- Rural
29	2	Housing	Light Duty Gas Vehicles -- Suburban
30	3	Urban Land	Light Duty Gas Vehicles -- Urban
31	14	Land Area	Medium Duty Gas Vehicles -- Limited Access
32	14	Land Area	Medium Duty Gas Vehicles -- Rural

TABLE 6-6 (continued)

CAT. ID	SURROGATE ID	SURROGATE INDICATOR	EMISSIONS CATEGORY
33	2	Housing	Medium Duty Gas Vehicles -- Suburban
34	3	Urban Land	Medium Duty Gas Vehicles -- Urban
35	14	Land Area	Heavy Duty Gas Vehicles -- Limited Access
36	14	Land Area	Heavy Duty Gas Vehicles -- Rural
37	2	Housing	Heavy Duty Gas Vehicles -- Suburban
38	3	Urban Land	Heavy Duty Gas Vehicles -- Urban
39	14	Land Area	Off-Highway Gas Vehicles
40	14	Land Area	Heavy Duty Diesel Vehicles -- Limited Access
41	14	Land Area	Heavy Duty Diesel Vehicles -- Rural
42	2	Housing	Heavy Duty Diesel Vehicles -- Suburban
43	3	Urban Land	Heavy Duty Diesel Vehicles -- Urban
44	14	Land Area	Off-Highway Diesel Vehicles
45	3	Urban Land	Railroad Locomotives
46	1	Population	Aircraft -- Military
47	1	Population	Aircraft -- Civil
48	1	Population	Aircraft -- Commercial
49	1	Population	Vessels -- Coal-Powered
50	1	Population	Vessels -- Diesel
51	1	Population	Vessels -- Residual Oil
52	1	Population	Vessels -- Gasoline
53	N.A.	N.A.	BLANK (formerly Solvents Purchased)
54	1	Population	Gasoline Marketed
55	14	Land Area	Unpaved Roads
56	N.A.	N.A.	Unpaved Airport LTO's (NO EMISSIONS DATA)
57	N.A.	N.A.	Construction Sites (NO EMISSIONS DATA)
58	N.A.	N.A.	Miscellaneous Wind Erosion (NO EMISSIONS DATA)
59	N.A.	N.A.	Agricultural Tilling (NO EMISSIONS DATA)
60	13	Composite Forest	Forest Fires
61	13	Composite Forest	Managed Burning
62	4	Agricultural Land	Agricultural Field Burning
63	N.A.	N.A.	Orchard Heaters (NO EMISSIONS DATA)
64	2	Housing	Structural Fires

TABLE 6-6 (continued)

CAT. ID	SURROGATE ID	SURROGATE INDICATOR	EMISSIONS CATEGORY
65	N.A.	N.A.	(UNFILLED)
66	N.A.	N.A.	(UNFILLED)
67	N.A.	N.A.	(UNFILLED)
68	N.A.	N.A.	(UNFILLED)
69	N.A.	N.A.	(UNFILLED)
70	N.A.	N.A.	(UNFILLED)
71	4	Agricultural Land	Manure Field Application -- Beef Cattle
72	4	Agricultural Land	Manure Field Application -- Dairy Cows
73	4	Agricultural Land	Manure Field Application -- Hogs and Pigs
74	4	Agricultural Land	Manure Field Application -- Broilers
75	4	Agricultural Land	Manure Field Application -- Other Chickens
76	4	Agricultural Land	Anhydrous NH3 Fertilizer Application
77	4	Agricultural Land	Beef Cattle Feed Lots
78	1	Population	Degreasing
79	1	Population	Drycleaning
80	1	Population	Graphic Arts
81	1	Population	Rubber and Plastic Manufacturing
82	1	Population	Architectural Coating
83	1	Population	Auto Body Repair
84	1	Population	Motor Vehicle Manufacturing
85	1	Population	Paper Coating
86	1	Population	Fabricated Metals
87	1	Population	Machinery Manufacturing
88	1	Population	Furniture Manufacturing
89	1	Population	Flat Wood Products
90	1	Population	Other Transportation Equipment Manufacturing
91	1	Population	Electrical Equipment Manufacturing
92	1	Population	Ship Building and Repair
93	1	Population	Miscellaneous Industrial Manufacturing
94	1	Population	Miscellaneous Industrial Solvent Use
95	1	Population	Miscellaneous Non-Industrial Solvent Use
96	1	Population	Utility Area Sources -- Coal Fired Plants

TABLE 6-6 (continued)

CAT. ID	SURROGATE ID	SURROGATE INDICATOR	EMISSIONS CATEGORY
97	1	Population	Utility Area Sources -- Oil Fired Plants
98	1	Population	Utility Area Sources -- Natural Gas Fired Plants
99	3	Urban Land	Minor Area Sources

SPECIATION FACTOR DEVELOPMENT

Introduction

The NAPAP Version 5.0 emissions records contain emissions data for 11 pollutant classes:

NO_x	SO_2
SO_4	Pb
CO	HCl
HF	NH_3
TSP	VOC
THC	

For three of these classes--NO_x, TSP, and THC--a further subclassification is performed for the NAPAP modeling inventories. NO_x emissions are allocated between NO and NO_2; TSP emissions are allocated among calcium (Ca), potassium (K), magnesium (Mg), sodium (Na), and "other" species. THC emissions are allocated among up to 30 classes based on photochemical reactivity (28 of these classes are utilized in NAPAP Version 5.2; 10 are used in Version 5.3; see Table 6-7). For TSP emissions, only about 10 percent of point source SCCs are allocated among the five cation species; the balance of point source TSP emissions and area source TSP emissions are not speciated in NAPAP Version 5.2 or 5.3.

Speciation Methodology

The speciation requirement for hydrocarbon emissions can change depending on the modeling chemistry used in a particular application of an emissions data set. Therefore, it was decided during the development of the NECRMP Inventory in the early 1980s (the speciation methodology adapted for NAPAP) to make hydrocarbon speciation as flexible as possible. This objective was achieved by creating an independent program (PSPLIT) to compute factors which can be used to disaggregate hydrocarbon emissions into selected groups of compounds.

PSPLIT was primarily developed to automate a method for generating hydrocarbon speciation factors for any specified chemistry mechanism or species classification scheme. It also provides an effective means of incorporating revised species profiles for each source type.

The first step in using the flexible speciation capabilities of PSPLIT is to code a set of "species profiles," each of which provides a breakdown of THC emissions to a typical set of component species. In these profiles, each hydrocarbon species is defined by its Storage and Retrieval of Aerometric Data

TABLE 6-7. DEFINITION OF CLASSES FOR HYDROCARBON SPECIATION, VERSIONS 5.2 AND 5.3

REACTIVITY CLASSES FOR 1980 NAPAP INVENTORY VERSION 5.2

Class Number	Class Name	Class SAROAD Code
01	METHANE	43201
02	ETHANE	43202
03	PROPANE	43204
04	N-BUTANE	43212
05	ISO-BUTANE	43214
06	2,3-DIMETHYLBUTANE	43244
07	PENTANE	43220
08	ISO-PENTANE	43221
09	OTHER ALKANES	43299
10	ETHYLENE	43203
11	PROPYLENE	43205
12	Not Used	-
13	ISO-BUTENE	43215
14	TRANS-2-BUTENE	43216
15	OTHER ALKENES	43298
16	BENZENE	45201
17	TOLUENE	45202
18	XYLENES	45102
19	ETHYL BENZENES	45203
20	OTHER AROMATICS	45999
21	FORMALDEHYDE	43502
22	ACETALDEHYDE	43503
23	PROPIONALDEHYDE	43504
24	OTHER ALDEHYDES	43599
25	ACETONE	43551
26	OTHER KETONES	43598
27	FORMIC ACID	43403
28	ACETIC ACID	43404
29	OTHER ORGANIC ACIDS	43499
30	Not Used	-

REACTIVITY CLASSES FOR 1980 NAPAP INVENTORY VERSION 5.3

Class Number	Class Name	Class SAROAD Code
01	OLEFINS	43298
02	PARAFFINS	43199
03	TOLUENE	45202
04	XYLENE	45102
05	FORMALDEHYDE	43502
06	OTHER ALDEHYDES	43511
07	ETHYLENE	43203
08	NON-REACTIVES	43899
09	ISOPRENE	43243
10	METHANE	43201
11-30	Not Used	-

(SAROAD) Code, its molecular weight, and its percentage contribution (by weight) to total profile THC emissions. These profiles are independent of any reactivity scheme. Each species is then matched to a reactivity class using a Species/Class File, allowing the conversion of species profiles (which define emissions for a given SCC) to a reactivity class profile required by users of the NAPAP emissions data. Manipulation of the class assignments in the Species/Class file allows users to modify the definitions of reactivity classes to fit particular modeling requirements.

The creation of the Hydrocarbon Splits file, then, requires three independent input files:

1. An SCC/Profile file, which assigns each SCC to a species profile;

2. A Species/Profile file, which documents the relative contribution of different individual SAROAD species to each species profile; and

3. A Species/Class file, which assigns each SAROAD species to one of up to 30 photochemical classes.

Hydrocarbon speciation then proceeds as follows:

1. The Species/Profile file is merged with the Species/Class file; the result is a set of profiles defined by the relative contribution of each photochemical class to total profile composition; and

2. The Class/Profile matches produced in Step 1 are merged with the SCC/Profile file; the result is an output file in which each SCC is matched with the relative contribution of each photochemical class to total SCC THC emissions by the use of mole factors. These factors are in moles per kilogram, and thus when multiplied by total hydrocarbon emissions for a given SCC, they will yield moles of hydrocarbon in each class.

SCC/Profile and Species/Profile assignments for Version 5.2 are provided in Appendix E. Table 6-8 presents the species/class assignments for Version 5.2, in which each species is assigned to one and only one reactivity class. In Version 5.3, species are assigned to classes on the basis of carbon bond structures rather than photochemical reactivity, and since it is possible for a single compound to have bonds of different character, a species can be apportioned on a percentage basis to more than one class. A list of 5.3 species and their class assignments is presented in Table 6-8. The species/class matrix is filled with "carbon numbers," used to determine mole factors for the respective class. For example, assume that a hypothetical emissions profile contained only one species, 1-heptene. Given a molecular weight of 98.19 grams/mole and a weight fraction of 1.0:

$$\frac{1.0}{98.19 \text{ gm/mole}} \times 1000 \text{ gm/kg} = 10.18 \text{ moles/kg}$$

This result is multiplied by the carbon numbers in the table. Since 1-heptene has an olefin carbon number of 1 and a paraffin carbon number of 5, the resultant mole factors are:

TABLE 6-8. HYDROCARBON SPECIES/CLASS ASSIGNMENTS FOR 1980 NAPAP INVENTORY VERSIONS 5.2 AND 5.3

HYDROCARBON SPECIES	SAROAD CODE	5.2 CLASS	5.3 CLASS:	5.3 CARBON NUMBER/CLASS ASSIGNMENTS 1	2	3	4	5	6	7	8	9	10
UNIDENTIFIED HYDROCARBONS	43000	09			2						3		
ISOMERS OF HEXANE	43105	09			6								
ISOMERS OF HEPTANE	43106	09			7								
ISOMERS OF OCTANE	43107	09			8								
ISOMERS OF NONANE	43108	09			9								
ISOMERS OF DECANE	43109	09			10								
ISOMERS OF UNDECANE	43110	09			11								
ISOMERS OF TRIDECANE	43111	09			13								
ISOMERS OF DODECANE	43112	09			12								
ISOMERS OF TETRADECANE	43113	09			14								
ISOMERS OF PENTADECANE	43114	09			15								
C-7 CYCLOPARAFFINS	43115	09			7								
C-8 CYCLOPARAFFINS	43116	09			8								
C-9 CYCLOPARAFFINS	43117	09			9								
MINERAL SPIRITS	43118	09			6				1				
LACTOL SPIRITS	43119	09			8								
ISOMERS OF BUTENE	43120	15							2				
ISOMERS OF PENTENE	43121	15			1				2				
ISOMERS OF PENTANE	43122	09			5								
TERPENES	43123	15		1	8								
METHANE	43201	01			0.01								0.99
ETHANE	43202	02			0.4						1.6		
ETHYLENE	43203	10								1			
PROPANE	43204	03			1.5						1.5		
PROPYLENE	43205	11		1	1								
ACETYLENE	43206	09			1						1		
CYCLOPROPANE	43207	09			3								
PROPADIENE	43208	15						1	1				
METHYLACETYLENE	43209	15			1.5						1.5		
N-BUTANE	43212	04			4								
BUTENE	43213	15		1	2								
ISOBUTANE	43214	05			4								
ISOBUTYLENE	43215	13			1			1	1				
1,3-BUTADIENE	43218	15		1				2					
ETHYLACETYLENE	43219	15			4								
N-PENTANE	43220	07			5								
ISOPENTANE	43221	08			5								
3-METHYL-1-BUTENE	43223	15		1	3								
1-PENTENE	43224	15		1	3								
CIS, 2-PENTENE	43227	15			1				2				
2-METHYL,2-BUTENE	43228	15			3				1				
N-HEXANE	43231	09			6								
N-HEPTANE	43232	09			7								
N-OCTANE	43233	09			8								
N-NONANE	43235	09			9								
N-DECANE	43238	09			10								
N-UNDECANE	43241	09			11								
CYCLOPENTANE	43242	09			5								
1-HEXENE	43245	15		1	4								
2,4, DIMETHYL PENTANE	43247	09			7								

TABLE 6-8 (continued)

HYDROCARBON SPECIES	SAROAD CODE	5.2 CLASS	5.3 CLASS:	5.3 CARBON NUMBER/CLASS ASSIGNMENTS 1	2	3	4	5	6	7	8	9	10
CYCLOHEXANE	43248	09			6								
N-DODECANE	43255	09			12								
N-TRIDECANE	43258	09			13								
N-TETRADECANE	43259	09			14								
N-PENTADECANE	43260	09			15								
METHYLCYCLOHEXANE	43261	09			7								
METHYLCYCLOPENTANE	43262	09			6								
1-HEPTENE	43264	15		1	5								
1-OCTENE	43265	15		1	6								
3,3 DIMETHYL, 1-PENTENE	43268	15			5								
N-HEXADECANE	43281	09			16								
N-HEPTADECANE	43282	09			17								
N-OCTADECANE	43283	09			18								
N-NONADECANE	43284	09			19								
N-EICOSANE	43285	09			20								
N-HENEICOSANE	43286	09			21								
N-DOCOSANE	43287	09			22								
C8 OLEFIN UNK	43290	15		1	6								
METHYL ALCOHOL	43301	09			1								
ETHYL ALCOHOL	43302	09			2								
N-PROPYL ALCOHOL	43303	09			3								
ISOPROPYL ALCOHOL	43304	09			3								
N-BUTYL ALCOHOL	43305	09			2				1				
ISOBUTYL ALCOHOL	43306	09			4								
BUTYL CELLOSOLVE	43308	09			4				1				
TERT-BUTYL ALCOHOL	43309	09									4		
METHYL CELLOSOLVE	43310	09			1				1				
CELLOSOLVE	43311	09			2				1				
DIACETONE ALCOHOL	43320	26			4				1				
ETHYL ETHER	43351	09			2				1				
GLYCOL ETHER	43367	09			2								
GLYCOL	43368	09			2								
PROPYLENE GLYCOL	43369	09			3								
ETHYLENE GLYCOL	43370	09			2								
TETRAHYDROFURAN	43390	09			3			1					
ACETIC ACID	43404	28			1						1		
METHYL ACETATE	43432	29									3		
ETHYL ACETATE	43433	29			3						1		
PROPYL ACETATE	43434	29			4						1		
N-BUTYL ACETATE	43435	29			5						1		
ETHYL ACRYLATE	43438	15			1				2				
CELLOSOLVE ACETATE	43443	09			3				1		1		
ISOPROPYL ACETATE	43444	09			5								
METHYL AMYL ACETATE	43445	09			8								
ISOBUTYL ACETATE	43446	09			6								
DIMETHYLFORMAMIDE	43450	24									3		
ISOBUTYL ISOBUTYRATE	43451	09			6				1				
2-ETHOXYETHYL ACETATE	43452	09			4				1				
FORMALDEHYDE	43502	21						1					
ACETALDEHYDE	43503	22							1				

TABLE 6-8 (continued)

HYDROCARBON SPECIES	SAROAD CODE	5.2 CLASS	5.3 CLASS:	5.3 CARBON NUMBER/CLASS ASSIGNMENTS 1	2	3	4	5	6	7	8	9	10
BUTYRALDEHYDE	43510	24			2				1				
ALDEHYDE	43513	24			6				1				
ACETONE	43551	25			3								
METHYL ETHYL KETONE	43552	26			4								
METHYL N-BUTYL KETONE	43559	26			6								
METHYL ISOBUTYL KETONE	43560	26			6								
CYCLOHEXANONE	43561	26			7								
ETHYLENE OXIDE	43601	09			1						1		
PROPYLENE OXIDE	43602	09			2						1		
ACETONITRILE	43702	15			1						1		
ACRYLONITRILE	43704	15		1	1								
METHYLAMINE	43720	09									1		
ETHYLAMINE	43721	09			1						1		
TRIMETHYLAMINE	43740	09			3								
METHYL CHLORIDE	43801	09									1		
DICHLOROMETHANE	43802	09									1		
CHLOROFORM	43803	09									1		
CARBON TETRABROMIDE	43807	09									1		
TRICHLORO-FLUOROMETHANE	43811	09									1		
ETHYL CHLORIDE	43812	09									2		
1,1,DICHLOROETHANE	43813	09									2		
1,1,1,-TRICHLOROETHANE	43814	09									2		
ETHYLENE DICHLORIDE	43815	09								1			
PERCHLOROETHYLENE	43817	15									2		
METHYLENE BROMIDE	43819	09									1		
1,1,2-TRICHLOROETHANE	43820	09									2		
TRICHLOROTRIFLUOROETHANE	43821	09									2		
TRIMETHYLFLUOROSILANE	43822	09									3		
DICHLORODIFLUOROMETHANE	43823	09									1		
TRICHLOROETHYLENE	43824	15								1			
VINYL CHLORIDE	43860	15								1			
PRIM. & SEC-ALKYL BENZENES	45100	20			3		1						
NAPHTHA	45101	09			8								
ISOMERS OF XYLENE	45102	18					1						
DIMETHYLETHYLBENZENE	45103	20			2		1						
ISOMERS OF ETHYLTOLUENE	45104	20			1		1						
ISOMERS OF BUTYLBENZENE	45105	20			3	1							
ISOMERS OF DIETHYLBENZENE	45106	20			2		1						
ISOMERS OF TRIMETHYLBENZENE	45107	20			1		1						
ISOMERS OF PROPYLBENZENE	45108	20			2	1							
BENZENE	45201	16			1						5		
TOLUENE	45202	17				1							
ETHYLBENZENE	45203	19			1	1							
ORTHO XYLENE	45204	18					1						
1,3 DIMETHYLBENZENE	45205	18					1						
1,3,5-TRIMETHYLBENZENE	45207	20			1		1						
M-ETHYLTOLUENE	45212	20			1		1						
N-BUTYLBENZENE	45214	20											
TERT-BUTYLBENZENE	45215	20			1	1					3		
SEC-BUTYLBENZENE	45216	20			3	1							

TABLE 6-8 (continued)

HYDROCARBON SPECIES	SAROAD CODE	5.2 CLASS	5.3 CLASS:	5.3 CARBON NUMBER/CLASS ASSIGNMENTS 1	2	3	4	5	6	7	8	9	10
STYRENE	45220	20				1		1					
A-METHYLSTYRENE	45221	20			1	1		1					
1,2,3-TRIMETHYLBENZENE	45225	20			1		1						
ISOMERS OF TRIMETHYLBENZENE	45230	20			1		1						
TETRAMETHYLBENZENE	45232	20			2		1						
TRI/TETRAALKYL BENZENE	45233	20			3		1						
PHENOLS	45300	20							1		4		
XYLENE BASE ACIDS	45401	29					1						
CHLOROBENZENE	45801	20			5						1		
1,4 DIOXANE	46201	09		1					1				

$$\text{olefin:} \quad 10.18\ (1) = 10.18\ \frac{\text{moles olefin}}{\text{kg THC emissions}}$$

$$\text{paraffin:} \quad 10.18\ (5) = 50.9\ \frac{\text{moles paraffin}}{\text{kg THC emissions}}$$

Emissions profiles containing more than one species are handled in the same manner, by using the appropriate profile weight fractions and summing each species' contribution to each bond class.

A separate species profile does not exist for every SCC. Since many SCCs produce emissions with the same or very similar THC species mixes, there are many fewer THC species profiles (approximately 175) than there are SCCs (approximately 1,250 point source SCCs, 88 U.S. area source SCCs, and 150 Canadian area source SCCs).

The speciation of NO_x emissions into NO and NO_2 is more straightforward. Each species profile also includes the weight percents of NO and NO_2 which comprise the profile's NO_x emissions. When an SCC is matched with a species profile to create a species mole factor record, these weight percents are carried along and become the allocation factors for these two species.

Speciation Factor Development

The NAPAP Version 4.2 and Version 5.2 species mole factors are built upon those originally created for the NECRMP Inventory and modeling effort. The original development of the species mole factors for NECRMP consisted of an extensive exercise in data collection and reduction.

For NECRMP, data were collected on the species makeup of hydrocarbon emissions for all SCCs included in the NECRMP Inventory. From this large data set, the smaller set of species profiles was distilled, and each SCC was assigned to one of these profiles. The NECRMP effort resulted in the creation of the first set of SCC/Profile, Species/Profile, Species/Class, and Species Mole Factor files.

A number of improvements and expansions to the NECRMP species mole factors were made during the NAPAP Version 4.2 Inventory effort. Chief among these were:

1. Addition of 198 point source SCCs. These were either matched with existing species profiles, or were assigned new profiles developed during the NAPAP Version 4.2 effort; and

2. Reassignment of the area source species profiles. The NAPAP area source categories were similar but not identical to those used for NECRMP. Some new categories were added, necessitating the assignment or development of species profiles, and some categories were combinations of several NECRMP categories, necessitating the assignment of the most appropriate species profile.

Modifications to the Species Factors for NAPAP Version 5.2

Refinement and expansion of the species mole factors for NAPAP Version 5.2 have proceeded in four areas:

1. Creation of 169 new species profiles. A review of the NAPAP Version 4.2 species mole factors revealed that species profiles assigned to some SCCs did not precisely reflect actual composition of THC emissions for these SCCs. In addition, some newly added SCCs were not adequately represented by existing species profiles.

2. Expansion of photochemical reactivity classes from 10 to 30;

3. Expansion of U.S. area source SCCs from 54 to 88, addition of Canadian area source SCCs, and addition of approximately 40 point source SCCs;

4. Addition of TSP speciation into five alkaline dust fractions for a subset of all point source SCCs.

Creation of New Species Profiles--

A thorough review of the assignment of SCCs to species profiles was undertaken for the NAPAP Version 5.2 effort. On the basis of this review, it was decided that profiles could be more precise for many SCCs. The review consisted of an engineering analysis of the match between the actual typical species composition of THC emissions for a given SCC and the species profile assignment for that SCC. For most SCCs, the assignment of SCCs to species profiles was sound, but for some the acquisition of new data on emission composition made possible the creation of a new and more accurate species profile.

A second reason for the creation of the new species profiles was the addition of new emissions categories to the NAPAP Version 5.2 Inventory (see below). For many of these new SCCs, existing species profiles accurately represented the THC composition of emissions. For others, however, a review of emissions data revealed that no existing species profile adequately mimicked this composition, and new profiles were developed to represent the species breakdowns of these emissions.

Expansion of the Number of Photochemical Reactivity Classes--

At the request of NCAR, NAPAP has expanded the number of photochemical reactivity classes into which THC emissions are allocated from 10 to 30. As explained above, each of the 160 hydrocarbon species can be assigned to a user-defined class on the basis of any scheme desired by the NAPAP user; in this case the NCAR modelers have availed themselves of this flexible feature of the NAPAP data handling system to request a species classification scheme specific to their needs.

NCAR assisted NAPAP in matching each THC species to one of the 30 photochemical classes, and reviewed and approved all such assignments before the speciation factors were processed through the FREDS system. The

NAPAP Version 5.2 Species/Class file, which defines the assignment of each SAROAD species to its photochemical class, is printed in Table 6-8.

Modifications to the PSPLIT Program--The PSPLIT program, installed on the NCC UNIVAC, performs the function of merging the Species/Class, SCC/Profile, and Species/Profile files to create a Species Mole Factor file. PSPLIT was originally written for the NECRMP modeling effort, and was used without major modification for the NAPAP Version 4.2 effort. PSPLIT was written to accept assignment of SAROAD species to only 10 classes; the program therefore had to be modified before the 30 classes requested by the NCAR modelers could be processed. This programming assignment was carried out by NAPAP, and the modified PSPLIT remains available for further use in inventory development.

Expansion of the Number of SCCs--

The NAPAP Version 5.0 emissions inventory contains some 230 Source Classification Codes not represented in earlier NAPAP inventories. These additions reflect:

1. Expansion of the number of U.S. area source emission categories from 54 to 88;

2. Inclusion of 157 Canadian area source emission categories for the first time; and

3. Addition of some 40 new point source emission categories.

After the nature of these added SCCs was known, it was possible to assign appropriate species profiles. As explained above, in many cases existing species profiles proved accurately to represent the THC composition of these emissions classes; in others, however, new species profiles were generated based on data on the composition of the hydrocarbon portion of these emissions.

Addition of TSP Speciation--

For approximately 10 percent of all point source SCCs, TSP emissions are speciated in NAPAP Version 5.2 into five alkaline dust categories according to weight percent; these categories are calcium (Ca), magnesium (Mg), potassium (K), sodium (Na), and "other". TSP emissions for a total of approximately 140 8-digit SCCs are allocated among the five alkaline dust categories.

Speciation Files

A total of five files are relevant to the development and use of the speciation factors. Three of these files serve as input to the PSPLIT program:

1. the SCC/Profile file, used to match each SCC with the appropriate THC species profile;

2. the Species/Profile file, which specifies the relative contribution of individual SAROAD species to each species profile; and

3. the Species/Class file, which assigns each SAROAD species to one of 30 photochemical classes.

The remaining two files are the speciation files themselves, the files which are processed by the FREDS system. The THC/NO_x Species Mole Factor file is output from PSPLIT, as described above. The separate TSP Species Mole Factor file was developed from Canadian data on TSP speciation in a separate development effort.

SECTION 7

EMISSIONS INVENTORY SOFTWARE DEVELOPMENT AND DATA PROCESSING

FREDS SYSTEM

The previous release of the 1980 NAPAP inventory, Version 4.0, was converted into a format suitable for input into the RADM by the Regional Model Data Handling System (RMDHS). RMDHS was originally developed to process the NECRMP emissions inventory and was subsequently modified by Alliance to accommodate the NAPAP 4.2 inventory requirements. Primarily due to limitations placed on the number of pollutants that could be processed through the system, RMDHS was judged unsuitable (Sellars, et al., 1984) for use in modifying the 1980 NAPAP Version 5.0 inventory to produce the 5.2 inventory modeler's tapes. Therefore, in order to meet the requirements of the Version 5.0/5.2 inventories, the Flexible Regional Emissions Data System was developed in 1985 (Lebowitz and Ackerman, 1987).

The FREDS system consists of a number of independent software modules written in the language of the Statistical Analysis System (SAS) on the National Computer Center's IBM 3090 computer. SAS was chosen due to its flexibility with regard to file structure, its powerful "macro" commands, and its diverse statistical and graphics capabilities which permit almost unlimited analysis of the emissions data. The role of the FREDS system in the development of the 1980 NAPAP 5.2 inventory is to extract pertinent emissions data from the 1980 NAPAP 5.0 inventory, resolve emissions data temporally and spatially, resolve composite emissions to individual species, and output the data in a format suitable for use as input to the RADM. This is accomplished by the execution of five independent FREDS modules; the Model Data Extraction Module, the Speciation Module, the Temporal Allocation Module, the Spatial Allocation Module, and the Model Input Preprocessor. A brief description of each module appears in the following paragraphs.

Model Data Extraction Module

MDEM reads the NAPAP 5.0 annual emissions file to produce a SAS file suitable for processing through the rest of the FREDS system. In addition, MDEM can produce industry-specific subfiles and/or minor point source files. Neither of these options was applied to the 5.0 inventory. MDEM must be the first module executed in order to achieve file compatibility throughout the rest of the FREDS system.

Speciation Module

The Speciation Module accepts as input any FREDS-compatible file that has not been speciated, and applies speciation factors to each record. It has been designed to receive as input two files containing speciation factors. One file, the output file of the PSPLIT program, contains mole fractions for up to 30 hydrocarbon classes in addition to NO and NO_2 percentages. The other speciation factor file provides a mechanism for including speciation factors for other pollutants; for the 5.0 inventory, this includes alkaline dust species applied to TSP emissions. The Speciation Module can support processing of up to 450 speciation factors and five levels of specificity (SCC, state, county, plant, and point), ensuring maximum flexibility for speciation strategies to be developed in future inventories.

Temporal Allocation Module

The temporal allocation of point source and area source data is carried out in the Temporal Allocation Module. Any FREDS-compatible file is suitable as input. The module applies to each emission record a time zone offset to Greenwich Mean Time (GMT) and a daylight savings time indicator, as well as seasonal, daily, and hourly temporal fractions. The temporal data are input from two separate files: the time zone file, which contains the GMT offset plus the daylight savings flag for every county in the NAPAP study area, and the temporal allocation factor file described in the previous section. Each emission record must have a time zone offset to be processed successfully. Temporal allocation factors may have the same levels of specificity as the speciation factors. Furthermore, any point source record that does not have a corresponding match in the temporal allocation factor file will have a pattern generated based on the operating rate data of the point source. If the operating rate data is missing or incomplete, a uniform temporal pattern is generated.

Spatial Allocation Module

The Spatial Allocation Module spatially allocates FREDS compatible emissions files into the 20 x 20 km (1/4 degree longitude by 1/6 degree latitude) grid system used by the RADM. For point sources, the module uses either polar coordinates or UTM coordinates to calculate the proper column (X coordinate) and row (Y coordinate) position of the source within the NAPAP study area. Point sources with missing coordinates are placed in a separate file. Area source emissions are allocated on a county-basis to the grid according to known distributions of surrogate indicators as discussed in the previous section. The Spatial Allocation Module has the ability to process grid systems using sizes other than the 20 x 20 km grids used for the NAPAP inventory. Point sources are checked for inclusion within county boundaries; if they are outside the county, they are assigned to the county centroid. Area sources with no spatial factor match are placed in an orphan file for further consideration.

Model Input Preprocessor

The Model Input Preprocessor is the last step of the FREDS system. For point sources, this module combines the resolved FREDS-compatible files (those files which have been processed through the four modules described above) to produce a master file in SAS format and a point source modeler's tape in EBCDIC format. Area sources, due to the large amount of data involved, are processed in a different manner. The user must provide the number of the temporal scenario desired (Table 3-7). The model input preprocessor will combine the speciated, temporally, and spatially resolved area source data to produce a condensed gridded hourly emission file for the chosen temporal scenario.

DATA PROCESSING RESULTS

5.0 Inventory

The 1980 NAPAP Emissions Inventory Version 5.0 resides in four files: U.S. point sources, Canadian point sources, U.S. area sources, and Canadian area sources.

The U.S. point source file contains annual emissions data at the process (SCC) level for all 11 major NAPAP pollutants. In addition to emissions, the file has complete stack information, fuel parameters, operating rate data, emission factors, identification and location information, and control equipment parameters. There are 50,159 records encompassing the contiguous United States.

The Canadian point source file has annual pollutant data, reported at the process level, for 8 of the 11 major NAPAP pollutants plus alkaline dust species. Lead, HCl, and HF are not reported in the Canadian inventory. Since the Canadian data were not based on NEDS submittals, they are incomplete in a number of areas. At this time, only the emissions and identification and location data can be considered accurate. The stack data are complete; however, SCC averages were inserted to supplement missing values in approximately two-thirds of the records. The file contains 2,745 records.

The U.S. area source data base is composed of identification information and county-level emissions for the 11 major NAPAP pollutants. Emissions within a county are divided into 88 area source categories (Appendix D). The file contains 245,405 observations which cover 3,070 counties within the contiguous U.S.

Canadian area source emissions are reported at the province level for 8 of the 11 major NAPAP pollutants. The pollutants missing in the area source file are the same as those in the Canadian point source file: lead, HF and HCl. Provincial emissions are divided into 157 area source categories (Appendix D); these categories are different than the U.S. area source categories. There are 1,255 records in the file, covering all 12 Canadian provinces.

5.2 Inventory

Each of the four 5.0 annual emissions files were processed through FREDS separately to produce the 5.2 inventory. Processing results for each file are summarized below.

The 5.0 U.S. point source annual emissions were processed by the Model Data Extraction Module to extract pertinent modeling data. Next, the MDEM output file was run through the Spatial Allociation Module, which identified 573 sources with either missing or invalid coordinate data. These sources were placed at their respective county centroids. The data were then processed successfully through the Speciation and Temporal Allocation Modules. Processing results are summarized in Table 7-1. The Temporal Allocation Module output file was used as input to the Model Input Preprocessor, where point sources from the U.S. and Canada were combined to form a single point source Version 5.2 SAS master file from which the modeler's tape was produced.

The Canadian 5.0 point source annual emissions file successfully completed MDEM. The Spatial Allocation Module identified 104 sources located outside the NAPAP 5.2 study area; a number of these points were found to have incorrect data. Those sources were corrected and resubmitted through the Spatial Allocation Module. An additional 40 sources were not within the NAPAP grid system. It should be noted that county centroid QA processing of the Canadian data was not possible since the Canadian "counties" were not counties in the U.S. sense, but rather census districts for which there were no centroids available. Speciation Module processing of the Spatial Allocation Module output file proceeded without incident. Temporal Allocation Module results showed a large number of plants (2,574) were missing operating rate data. Canadian point source results appear in Table 7-2.

Processing of the U.S. 5.0 area source annual emissions file through FREDS proceeded through the Model Data Extraction Module and the Speciation Module without incident. Upon Spatial Allocation Module execution, it became apparent that, due to the large number of records output from the Spatial Allocation Module, the U.S. file would have to be divided into smaller, more manageable pieces. Thus, the Spatial Allocation Module output file was split into four subfiles which were used as input to the Temporal Allocation Module, which was run 12 times on each subfile, once for each temporal scenario. U.S. area source processing is summarized in Table 7-3. The Model Input Preprocessor combined the four U.S. subfiles with the Canadian file to form a complete NAPAP area source modeler's tape. Twelve Model Input Preprocessor runs were required to produce all of the 5.2 area source modeler's tapes.

The Canadian 5.0 area source annual emissions file proceeded through the Model Data Extraction Module and the Speciation Module without incident. As in the 5.0 inventory, Yukon and Northwest Territories were dropped since they are outside the NAPAP study area. Due to the nature of the Canadian spatial data, the Spatial Allocation Module was bypassed in favor of a customized program which could accommodate the differences in the Canadian grid percentages. The spatially allocated emissions were run through the Temporal

TABLE 7-1. FREDS PROCESSING--U.S. POINT SOURCES

FREDS module	Input records	Output records	Comments
MDEM	50,159	50,159	
SAM	50,159	50,159	573 sources placed in county centroids
TAM	50,159	50,159	Temporal pattern basis: - 1,766 state specific factors - 5,537 SCC specific factors - 42,843 operating rate data - 13 uniform distribution
SM	50,159	50,158	1 source with invalid SCC code removed

TABLE 7-2. FREDS PROCESSING--CANADIAN POINT SOURCES

FREDS module	Input records	Output records	Comments
MDEM	2,745	2,745	
SAM	2,745	2,705	40 sources located outside NAPAP boundaries
TAM	2,705	2,705	Temporal pattern basis: - 131 SCC specific factors - 0 operating rate data - 2,574 uniform distribution
SM	2,705	2,705	

TABLE 7-3. FREDS PROCESSING--U.S. AREA SOURCES

FREDS module	Input records	Output records	Comments
MDEM	245,405	245,405	
SM	245,405	245,405	
SAM	245,405	3,184,248	Divided into four subfiles
TAM	3,184,248	3,184,248	Temporal pattern basis: - 551,043 state specific factors - 2,633,205 SCC specific factors

Allocation Module 12 times in order to produce one gridded, hourly emissions file for each temporal scenario. Processing information may be found in Table 7-4. As mentioned earlier, the Canadian Temporal Allocation Module output was combined with the U.S. Temporal Allocation Module output subfiles in the Model Input Preprocessor to produce the area source modeler's tapes.

5.3 Inventory

The 1980 NAPAP Version 5.3 inventory was produced from the NAPAP 5.0 data. It is identical to the NAPAP 5.2 inventory except in the area of hydrocarbon speciation. The 5.3 inventory contains 10 hydrocarbon classes apportioned using Carbon IV chemistry, whereas the 5.2 inventory employs 28 photochemical classes. Processing of the 5.3 inventory was similar to that of the 5.2 inventory.

PRODUCTS AVAILABLE

Major files produced by FREDS processing and brief descriptions appear in Table 7-5. In addition, intermediate FREDS processing files can be made available if necessary. Formats for each product are included in Tables 7-6 through 7-11.

TABLE 7-4. FREDS PROCESSING--CANADIAN AREA SOURCES

FREDS module	Input records	Output records	Comments
MDEM	1,255	1,255	
SM	1,255	1,114	Yukon, N.W. Territories and province totals removed
SAM	1,114	545,851	Temporal pattern basis: - 467,899 province specific factors - 77,952 SCC specific factors

TABLE 7-5. NAPAP VERSION 5 PRODUCTS

	Version	Description	Temporal resolution	Character set	Format tables
A	5.0/5.2/5.3	Development of the 1980 NAPAP Emissions Inventory (Report)			
B	5.0	U.S. Point Sources	Annual	EBCDIC	7-6
C		Canada Point Sources		EBCDIC	7-6
D		* U.S. Area Sources		EBCDIC	7-7
E		Canada Area Sources		EBCDIC	7-7
F	5.2	Point Sources	Hourly	EBCDIC	7-8
G		** Area Sources - Winter Weekday		EBCDIC	7-9
H		Area Sources - Winter Saturday		EBCDIC	7-9
I		Area Sources - Winter Sunday		EBCDIC	7-9
J		Area Sources - Spring Weekday		EBCDIC	7-9
K		Area Sources - Spring Saturday		EBCDIC	7-9
L		Area Sources - Spring Sunday		EBCDIC	7-9
M		Area Sources - Summer Weekday		EBCDIC	7-9
N		Area Sources - Summer Saturday		EBCDIC	7-9
O		Area Sources - Summer Sunday		EBCDIC	7-9
P		Area Sources - Fall Weekday		EBCDIC	7-9
Q		Area Sources - Fall Saturday		EBCDIC	7-9
R		Area Sources - Fall Sunday		EBCDIC	7-9
S	5.3	Point Sources	Hourly	EBCDIC	7-10
T		** Area Sources - Winter Weekday		EBCDIC	7-11
U		Area Sources - Winter Saturday		EBCDIC	7-11
V		Area Sources - Winter Sunday		EBCDIC	7-11
W		Area Sources - Spring Weekday		EBCDIC	7-11
X		Area Sources - Spring Saturday		EBCDIC	7-11
Y		Area Sources - Spring Sunday		EBCDIC	7-11
Z		Area Sources - Summer Weekday		EBCDIC	7-11
AA		Area Sources - Summer Saturday		EBCDIC	7-11
BB		Area Sources - Summer Sunday		EBCDIC	7-11
CC		Area Sources - Fall Weekday		EBCDIC	7-11
DD		Area Sources - Fall Saturday		EBCDIC	7-11
EE		Area Sources - Fall Sunday		EBCDIC	7-11

* This data set spans three tapes.

** 5.2 and 5.3 Area Source data sets each span two tapes, and are divided at 100°W longitude.

TABLE 7-6. VERSION 5.0, U.S. AND CANADIAN POINT SOURCES (SAS AND EBCDIC FORMAT)

Start (EBCDIC)	End (EBCDIC)	Format	Variable (SAS)	Description
1	2	N2	STATE	NEDS State Code
3	6	N4	COUNTY	NEDS County Code
7	9	N3	AQCR	Air Quality Control Region Code
10	13	A4	PLANT_ID	NEDS Plant ID Code
14	18	N5	TRDATE	Date of Transaction Information (YYDDD)
19	21	A3	UCONREG	User Control Region
22	23	A2	LCONREG	Under Jurisdiction of Another UCONREG
24	35	A12	UPLANTID	User Plant ID
36	39	N4	CITY	NEDS City Code
40	41	N2	UTM_ZONE	UTM Zone
42	42	A1	OWNER	Ownership Code (P-Private, L-Local Gov., S-State Gov., F-Federal Gov., U-Utility)
43	57	A15	CONTACT	Person Responsible for Pollution Control
58	67	N10	PHONE	Telephone Number of Contact
68	77	A10	PRIPROD	Principal Product Produced at Plant
78	125	A48	NAMEADD	Plant Name and Mailing Address
126	129	N4	NUMEMP	Number of Employees
130	136	N7	PROPAREA	Area, in Acres, of Facility Land
137	184	A48	MAIL	Contact Mailing Address
185	185	A1	NEDP1	NEDS P1 Card Flag
186	237	A52	NEDPLCOM	NEDS P7 Plant Comment
238	238	A1	NEDPLCAR	NEDS P7 Plant Card Flag
239	240	A2	POINT_ID	NEDS Point ID
241	243	A3	UPOINTID	User Point ID
244	247	N4	SIC	Standard Industrial Classification Code
248	249	N2	IPP	NEDS Implementation Planning Process Code
250	254	N5	UTMX	UTM Horizontal Coordinate
255	260	N6	UTMY	UTM Vertical Coordinate
261	262	N2	LAT_DEG	Degrees Latitude
263	264	N2	LAT_MIN	Minutes Latitude
265	266	N2	LAT_SEC	Seconds Latitude
267	269	N3	LON_DEG	Degrees Longitude
270	271	N2	LON_MIN	Minutes Longitude
272	273	N2	LON_SEC	Seconds Longitude
274	275	N2	WINTHRU	Winter Thruput %
276	277	N2	SPRTHRU	Spring Thruput %
278	279	N2	SUMTHRU	Summer Thruput %
280	281	N2	FALTHRU	Fall Thruput %
282	283	N2	HOURS	Hours per Day in Operation
284	284	N1	DAYS	Days per Week in Operation
285	286	N2	WEEKS	Weeks per Year in Operation

(continued)

TABLE 7-6 (continued)

Start (EBCDIC)	End	Format	Variable (SAS)	Description
287	291	N5	BOILCAP	Boiler Design Capacity, Million Btu per Hour
292	295	N4	SPHEAT	Percent of Fuel Used for Space Heating
296	299	N4	STACK_HT	Stack Height, ft
300	303	N4	STACK_DI	Stack Diameter, ft
304	307	N4	STACK_TP	Stack Temperature, Degrees F
308	314	N7	FLOW	Exhaust Flow Rate, CFM
315	319	N5	VELOCITY	Velocity, ft per second
320	323	N4	PLUME_HT	Plume Height, ft
324	327	A4	PTSCOMST	Range of Points Using Common Stack
328	328	A1	NEDP2	NEDS P2 Card Flag
329	329	A1	NEDP3	NEDS P3 Card Flag
330	330	A1	NEDP4	NEDS P4 Card Flag
331	331	A1	NEDP5	NEDS P5 Card Flag
332	332	A1	PWCS	PWCS NEDS Flag
333	384	A52	NEDPTCOM	NEDS P7 Point Comment
385	385	A1	NEDPTCAR	NEDS P7 Point Card Flag
386	393	N8	EISSCC	SCC-Source Classification Code
394	395	N2	NUMSCC	SCC Sequence Number
396	400	N5	BEC	BEC-Basic Equipment Classification Code
401	401	A1	FUNITS	Fuel Units (Not Used)
402	408	N7	THRUPUT	Fuel Process Rate (Thruput)-Ann. Operating Rate
409	416	N8	MAXRATE	Maximum Hourly Design Rate
417	420	N4	SCON	Sulfur Content Percent
421	424	N4	ASHCON	Ash Content
425	429	N5	HEATCON	Heat Content in Millions of Btu
430	430	N1	CONFID	Confidentiality (1-Yes, 2-No)
431	431	A1	SCECODE	SCC Process Category (B-Boiler, P-Process, C-Other Combustion, S-Solid Waste)
432	456	A25	SCEDESC	Source Description
457	457	A1	EMFORIG	Emission Factor Origin (F-Federal, S-State, L-Local)
458	458	A1	NEDP6	NEDS P6 Card Flag
459	510	A52	NEDSCCOM	NEDS P7 SCC Comment
511	511	A1	NEDSCCAR	NEDS P7 Card Flag
512	513	N2	NUMPOLL	Number of Pollutants
514	518	N5	SAROAD1-15	Pollutant ID
519	521	N3	CONPRI1-15	Primary Control Equipment
522	524	N3	CONSEC1-15	Secondary Control Equipment
525	528	N4	CONEFF1-15	Estimated Control Efficiency Percent

(continued)

TABLE 7-6 (continued)

Start (EBCDIC)	End	Format	Variable (SAS)	Description
529	529	N1	ESTMET1-15	Estimation Method Used to Ascertain Estimated Emissions (0-Not Applicable, 1-Stack Test, 2-Material Balance, 3-Emission Factor, 4-Guess, 5-Special EMF, 6-New Construction, 7-Facility Closed)
530	538	A9	EMF1-15	Emission Factor
539	539	A1	ASCODE1-15	Ash-Sulfur Code
540	540	N1	EMFUNI1-15	EMF Units
541	547	N7	EMISS1-15	Apportioned Emissions in tons/year
	NOTE:	Columns 514 to 547 may be repeated 'NUMPOLL' (up to 15) times, once for each pollutant.		

Start/End positions refer to EBCDIC files; variables in SAS data sets are referenced by name.

TABLE 7-7. VERSION 5.0, U.S. AND CANADIAN AREA SOURCES (SAS AND EBCDIC FORMAT)

Start (EBCDIC)	End	Format	Variable (SAS)	Description
1	2	N2	STATE	NEDS State Code
3	6	N4	COUNTY	NEDS County Code
7	9	N3	AQCR	Air Quality Control Region Code
10	29	A20	AREANAME	County Name or Geographical Area
30	31	N2	POPRURAL	Rural Population Percentage
32	39	N8	POP	Population
40	93	A54	AQCRNAME	AQCR Name
94	97	N4	SCONA	Sulfur Content - Anthracite Coal
98	101	N4	SCONB	Sulfur Content - Bituminous Coal
102	105	N4	SCOND	Sulfur Content - Distillate Oil
106	109	N4	SCONR	Sulfur Content - Residual Oil
110	114	N5	ASHCONA	Ash Content - Anthracite Coal
115	119	N5	ASHCONB	Ash Content - Bituminous Coal
120	120	A1	SOURCE	Source Type (L-Line or Link, A-Area)
121	128	N8	LENAREA	Length of Line Source or Area of Area Source
129	130	A2	LAUNITS	Units Code for Length or Area
131	135	N5	TSPSIP	TSP SIP Estimate (X100 tons/year)
136	139	N4	SO2SIP	SO_2 SIP Estimate (X100 tons/year)
140	143	N4	NOXSIP	NO_x SIP Estimate (X100 tons/year)
144	148	N5	HCSIP	Hydrocarbon SIP Estimate (X100 tons/year)
149	152	N4	COSIP	CO SIP Estimate (X100 tons/year)
153	159	N7	GFLV	Gas Fuel Consumed by Light Vehicles (X1000 gal)
160	165	N6	GFHV	Gas Fuel Consumed by Heavy Vehicles (X1000 gal)
166	171	N6	DFHV	Diesel Fuel Consumed by Heavy Vehicles (X1000 gal)
172	177	N6	MVMLAR	Motor Vehicle Miles for Limited Access Roads
178	183	N6	MVMRR	Motor Vehicle Miles for Rural Roads
184	189	N6	MVMSR	Motor Vehicle Miles for Suburban Roads
190	195	N6	MVMUR	Motor Vehicle Miles for Urban Roads
196	200	N5	EISSCC	Area Source Category Number
201	202	N2	DISAGG	Category Disaggregation Number
203	227	A25	CATDESC	Category Description
228	229	N2	CATYEAR	Year of Information
230	238	A9	THRUPUT	Annual Process Rate (Thruput)
239	245	A7	CATADJ	Category Adjustment Value
246	247	A2	UCODE	Units Code for Annual Thruput
248	259	A12	UDESC	Units Code Description
260	260	A1	UNITHRU	Uniform Monthly Thruput Indicator (Y or N)
261	284	12(N2)	MTHRU1-12	Monthly Thruput Percentage (1-Jan, 2-Feb..)
285	286	N2	HOURS	Hours Per Day

(continued)

TABLE 7-7 (continued)

Start (EBCDIC)	End	Format	Variable (SAS)	Description
287	287	N1	DAYS	Days Per Week
288	289	N2	WEEKS	Weeks Per Year
290	294	N5	THRURAT	Thruput Ratio
295	305	N11	MAXTHRU	Maximum Hourly Thruput
306	306	N1	CONFRATE	Data Confidence Rating
307	310	N4	NCON	Nitrogen Content (Weight Percentage)
311	313	N3	SCON	Sulfur Content (Weight Percentage)
314	317	N4	ASHCON	Ash Content (Weight Percentage)
318	321	N4	HEATCON	Heat Content (Percent 1 Million Btu)
322	322	A1	HOURTHRU	Uniform Hourly Thruput (Y or N)
323	370	24(N2)	HTHRU1-24	Hourly Thruput Percentages
371	372	N2	NUMPOLL	Number of Category Record Pollutants
373	377	N5	SAROAD1-15	Pollutant ID
378	388	N11	EMF1-15	Emission Factor
389	389	A1	EMFCR1-15	Emission Factor Confidence Rating
390	390	A1	EMFSC1-15	Emission Factor Source Code
391	391	A1	EMFORI1-15	Emission Factor Origin (F-Fed., S-St., L-Loc.)
392	401	A10	PSD1-15	Pollutant Specific Data
402	408	N7	EMINED1-15	NEDS A7 Emissions (tons/year)
409	423	A15	NAME1-15	Pollutant Name
424	424	A1	EIS5C1-15	EIS Category 5 Card Flag
425	431	N7	EMISS1-15	Emissions Estimate (tons/year)
432	432	A1	CONRAT1-15	Confidence Rating
433	438	A6	EMIMAX1-15	Maximum Hourly Emissions

NOTE: Columns 373 to 438 may be repeated 'NUMPOLL'(up to 15) times, once for each pollutant.

Start/End positions refer to EBCDIC files; variables in SAS data sets are referenced by name.

TABLE 7-8. VERSION 5.2, POINT SOURCES (SAS* AND EBCDIC FORMAT)

Start (EBCDIC)	End	Format	Variable (SAS)	Description
1	8	N8	EISSCC	SCC Code
9	10	N2	STATE	State Code
11	14	N4	COUNTY	County Code
15	18	A4	PLANT_ID	Plant Identification Code
19	20	A2	POINT_ID	Point Identification Code
21	24	N4	AQCR	Air Quality Control Region
25	28	N4	EISSIC	SIC Code
29	30	A2	SOURCE	Source Type
31	40	N10	LAT	Fractional Latitude
41	50	N10	LON	Fractional Longitude
51	54	N4	COL	Grid Column
55	58	N4	ROW	Grid Row
59	59	N1	ZONE	Time Zone Offset
60	60	N1	DAYLITE	Daylight Savings Flag
61	67	N7	FLOW	Exhaust Gas Flow Rate (ft^3/min)
68	71	N4	PLUME_HT	Plume Height (ft)
72	75	N4	STACK_DI	Stack Diameter (ft)
76	79	N4	STACK_HT	Stack Height (ft)
80	83	N4	STACK_TP	Stack Temperature (F)
84	88	N5	VELOCITY	Stack Gas Velocity
89	93	N5	HCHOWT	Aldehyde and Methane Speciation Adjustment
94	95	N2	REC_DATE	Year of Emission Record
96	97	N2	NUMPOLL	Number of EIS Pollutants
98		N5	SAROAD1-15	SAROAD Code of EIS Pollutant
		N7	EMISS1-15	Emissions (tons/year) of EIS Pollutant

NOTE: SAROAD and EMISS will be repeated NUMPOLL (up to 15) times, once for each pollutant.

N2	NUM_DAY	Number of Temporal Factor Sets in Record
N4	SEA1-12	Seasonal Temporal Allocation Factor
N5	DAY1-12	Daily Temporal Allocation Factor
N4	HOUR1-288	Hourly Temporal Allocation Factors

NOTE: For EBCDIC files, each seasonal allocation factor is directly followed by its corresponding daily and 24 hourly factors; this sequence is repeated for each of the 12 NAPAP temporal scenarios. In the SAS data set, HOUR1-24 corresponds to the hourly factors for scenario 1, HOUR25-48 to scenario 2, and so on. All hourly factors for point sources are expressed in local time.

(continued)

TABLE 7-8 (continued)

Start	End	Format	Variable (SAS)	Description
(EBCDIC)				
		N3	NUMSP	Number of Speciation Factors
		37(N5)	CAT1-37	Major Pollutant SAROAD of Species
		37(N5)	CLASS1-37	SAROAD Code of Pollutant Species
		37(N5)	SF1-37	Speciation Factor of Species/100
		NOTE:	CAT, CLASS and SF are repeated 37 times, once for each species.	
		N4	CONEFF1-15	Control Efficiency of Point Pollutant
		N1	ESTMET1-15	Estimation Method Used for Point Pollutant
		NOTE:	CONEFF and ESTMET will be repeated NUMPOLL (up to 15) times, once for each pollutant.	

*SAS-formatted files contain two additional variables: SAF (the spatial allocation fraction) and MAJOR (the major pollutant source flag); both are equal to 1 for point sources.

Start/End positions refer to EBCDIC files; variables in SAS data sets are referenced by name.

TABLE 7-9. VERSION 5.2, AREA SOURCES (SAS AND EBCDIC FORMAT)

Start (EBCDIC)	End (EBCDIC)	Format	Variable (SAS)	Description
1	4	N4	COL	Grid Column
5	8	N4	ROW	Grid Row
9	10	N2	GMT	Hour (Greenwich Mean Time)
11	20	E10	TOT1	SO_2 Emissions (tons/hour)
21	30	E10	TOT2	SO_4 Emissions (tons/hour)
31	40	E10	TOT3	TSP Emissions (tons/hour)
41	50	E10	TOT4	Pb Emissions (tons/hour)
51	60	E10	TOT5	CO Emissions (tons/hour)
61	70	E10	TOT6	HCl Emissions (tons/hour)
71	80	E10	TOT7	HF Emissions (tons/hour)
81	90	E10	TOT8	NO_x Emissions (tons/hour)
91	100	E10	TOT9	NH_3 Emissions (tons/hour)
101	110	E10	TOT10	VOC Emissions (tons/hour)
111	120	E10	TOT11	Total HC Emissions (tons/hour)
121	130	E10	TOT12	Methane Emissions (moles/hour)
131	140	E10	TOT13	Ethane Emissions (moles/hour)
141	150	E10	TOT14	Propane Emissions (moles/hour)
151	160	E10	TOT15	n-Butane Emissions (moles/hour)
161	170	E10	TOT16	iso-Butane Emissions (moles/hour)
171	180	E10	TOT17	2,3-Dimethylbutane Emissions (moles/hour)
181	190	E10	TOT18	Pentane Emissions (moles/hour)
191	200	E10	TOT19	iso-Pentane Emissions (moles/hour)
201	210	E10	TOT20	Other Alkanes Emissions (moles/hour)
211	220	E10	TOT21	Ethylene Emissions (moles/hour)
221	230	E10	TOT22	Propylene Emissions (moles/hour)
231	240	E10	TOT23	(Not used)
241	250	E10	TOT24	iso-Butene Emissions (moles/hour)
251	260	E10	TOT25	trans-2-Butene Emissions (moles/hour)
261	270	E10	TOT26	Other Alkenes Emissions (moles/hour)
271	280	E10	TOT27	Benzene Emissions (moles/hour)
281	290	E10	TOT28	Toluene Emissions (moles/hour)
291	300	E10	TOT29	Xylenes Emissions (moles/hour)
301	310	E10	TOT30	Ethyl Benzenes Emissions (moles/hour)
311	320	E10	TOT31	Other Aromatics Emissions (moles/hour)
321	330	E10	TOT32	Formaldehyde Emissions (moles/hour)
331	340	E10	TOT33	Acetaldehyde Emissions (moles/hour)
341	350	E10	TOT34	Propionaldehyde Emissions (moles/hour)
351	360	E10	TOT35	Other Aldehydes Emissions (moles/hour)
361	370	E10	TOT36	Acetone Emissions (moles/hour)
371	380	E10	TOT37	Other Ketones Emissions (moles/hour)
381	390	E10	TOT38	Formic Acid Emissions (moles/hour)
391	400	E10	TOT39	Acetic Acid Emissions (moles/hour)
401	410	E10	TOT40	Other Organic Acids Emissions (moles/hour)
411	420	E10	TOT41	NO Emissions (tons/hour)
421	430	E10	TOT42	NO_2 Emissions (tons/hour)

Start/End positions refer to EBCDIC files; variables in SAS data sets are referenced by name.

TABLE 7-10. VERSION 5.3, POINT SOURCES (SAS* AND EBCDIC FORMAT)

Start (EBCDIC)	End	Format	Variable (SAS)	Description
1	8	N8	EISSCC	SCC Code
9	10	N2	STATE	State Code
11	14	N4	COUNTY	County Code
15	18	A4	PLANT_ID	Plant Identification Code
19	20	A2	POINT_ID	Point Identification Code
21	24	N4	AQCR	Air Quality Control Region
25	28	N4	EISSIC	SIC Code
29	30	A2	SOURCE	Source Code
31	40	N10	LAT	Fractional Latitude
41	50	N10	LON	Fractional Longitude
51	54	N4	COL	Grid Column
55	58	N4	ROW	Grid Row
59	59	N1	ZONE	Time Zone Offset
60	60	N1	DAYLITE	Daylight Savings Flag
61	67	N7	FLOW	Exhaust Gas Flow Rate (ft^3/min)
68	71	N4	PLUME_HT	Plume Height (ft)
72	75	N4	STACK_DI	Stack Diameter (ft)
76	79	N4	STACK_HT	Stack Height (ft)
80	83	N4	STACK_TP	Stack Temperature (F)
84	88	N5	VELOCITY	Stack Gas Velocity
89	93	N5	HCHOWT	Aldehyde and Methane Speciation Adjustment
94	95	N2	REC_DATE	Year of Emission Record
96	97	N2	NUMPOLL	Number of EIS Pollutants
98		N5	SAROAD1-15	SAROAD Code of EIS Pollutant
		N7	EMISS1-15	Emissions (tons/year) of EIS Pollutant

NOTE: SAROAD and EMISS will be repeated NUMPOLL (up to 15) times.

		N2	NUM_DAY	Number of Temporal Factor Sets in Record
		N4	SEA1-12	Seasonal Temporal Allocation Factor
		N5	DAY1-12	Daily Temporal Allocation Factor
		N4	HOUR1-288	Hourly Temporal Allocation Factors

NOTE: For EBCDIC files, each seasonal allocation factor is directly followed by its corresponding daily and 24 hourly factors; this sequence is repeated for each of the 12 NAPAP temporal scenarios. In the SAS data set, HOUR1-24 corresponds to the hourly factors for scenario 1, HOUR25-48 to scenario 2, and so on. All hourly factors for point sources are expressed in local time.

(continued)

TABLE 7-10 (continued)

Start (EBCDIC)	End	Format	Variable (SAS)	Description
		N3	NUMSP	Number of Speciation Factors
		17(N5)	CAT1-17	Major Pollutant SAROAD of Species
		17(N5)	CLASS1-17	SAROAD Code of Pollutant Species
		17(N5)	SF1-17	Speciation Factor of Species
NOTE: CAT, CLASS and SF are repeated 17 times, once for each species.				
		N4	CONEFF1-15	Control Efficiency of Point Pollutant
		N1	ESTMET1-15	Estimation Method Used for Point Pollutant
		NOTE: CONEFF and ESTMET will be repeated NUMPOLL (up to 15) times.		

*SAS-formatted files contain two additional variables: SAF (the spatial allocation fraction) and MAJOR (the major pollutant source flag); both are equal to 1 for point sources.

Start/End positions refer to EBCDIC files; variables in SAS data sets are referenced by name.

TABLE 7-11. VERSION 5.3, AREA SOURCES (SAS AND EBCDIC FORMAT)

Start (EBCDIC)	End	Format	Variable (SAS)	Description
1	4	N4	COL	Grid Column
5	8	N4	ROW	Grid Row
9	10	N2	GMT	Hour (Greenwich Mean Time)
11	20	E10	TOT1	SO_2 Emissions (tons/hour)
21	30	E10	TOT2	SO_4 Emissions (tons/hour)
31	40	E10	TOT3	TSP Emissions (tons/hour)
41	50	E10	TOT4	Pb Emissions (tons/hour)
51	60	E10	TOT5	CO Emissions (tons/hour)
61	70	E10	TOT6	HCl Emissions (tons/hour)
71	80	E10	TOT7	HF Emissions (tons/hour)
81	90	E10	TOT8	NO_x Emissions (tons/hour)
91	100	E10	TOT9	NH_3 Emissions (tons/hour)
101	110	E10	TOT10	VOC Emissions (tons/hour)
111	120	E10	TOT11	Total HC Emissions (tons/hour)
121	130	E10	TOT12	Olefin Emissions (moles/hour)
131	140	E10	TOT13	Paraffin Emissions (moles/hour)
141	150	E10	TOT14	Toluene Emissions (moles/hour)
151	160	E10	TOT15	Xylene Emissions (moles/hour)
161	170	E10	TOT16	Formaldehyde Emissions (moles/hour)
171	180	E10	TOT17	Other Aldehyde Emissions (moles/hour)
181	190	E10	TOT18	Ethylene Emissions (moles/hour)
191	200	E10	TOT19	Nonreactive Emissions (moles/hour)
201	210	E10	TOT20	Isoprene Emissions (moles/hour
211	220	E10	TOT21	Methane Emissions (moles/hour)
221	230	E10	TOT22	NO Emissions (tons/hour)
231	240	E10	TOT23	NO_2 Emissions (tons/hour)

Start/End positions refer to EBCDIC files; variables in SAS data sets are referenced by name.

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APPENDIX A

DETAILED EMISSIONS SUMMARIES

The emissions data contained in Versions 5.0 and 5.2 of the NAPAP Emissions Inventory are summarized at various levels of aggregation in the following pages. Tables A-1 and A-2 are provided below to facilitate the location of individual listings.

The Version 5.0 inventory includes 11 major pollutants; emissions of these materials are reported in tons as well as metric tons. Tables are also presented in thousands of moles for hydrocarbon species in Version 5.2.

Certain pollutants' emissions are slightly lower in the 5.2 inventory than in the 5.0 inventory. Some Canadian point sources, for example, were found to lie outside of the NAPAP study area and were not accepted by the FREDS Spatial Allocation Module. These differences are negligible on a percentage basis, usually amounting to significantly less than 1 percent of total emissions.

TABLE A-1. KEY TO TABLES, 1980 NAPAP EMISSIONS INVENTORY VERSION 5.0

National coverage	Source type	Level of resolution	Hydrocarbon classes ?	Units	Page
U.S.	Area	SCC	No	Tons	A-4 - A-5
				Metric Tons	A-6 - A-7
		State	No	Tons	A-8
				Metric Tons	A-9
		Region	No	Tons	A-10
				Metric Tons	A-10
	Point	SCC	No	Tons	A-11 - A-17
				Metric Tons	A-18 - A-24
		State	No	Tons	A-25
				Metric Tons	A-26
		Region	No	Tons	A-27
				Metric Tons	A-27
	Area & Point	State	No	Tons	A-28
				Metric Tons	A-29
		Region	No	Tons	A-30
				Metric Tons	A-30
Canada	Area	SCC	No	Tons	A-31 - A-33
				Metric Tons	A-34 - A-36
		Province	No	Tons	A-37
				Metric Tons	A-37
	Point	SCC	No	Tons	A-38 - A-39
				Metric Tons	A-40 - A-41
		Province	No	Tons	A-42
				Metric Tons	A-42
	Area & Point	Province	No	Tons	A-43
				Metric Tons	A-43
U.S. & Canada	Area & Point	Totals	No	Tons	A-44
				Metric Tons	A-44
U.S.	Area & Point (Emissions density)	State	No	Tons/sq mi.	A-45 - A-46

TABLE A-2. KEY TO TABLES, 1980 NAPAP EMISSIONS INVENTORY VERSION 5.2

National coverage	Source type	Level of resolution	Hydrocarbon classes ?	Units	Page
U.S.	Area	SCC	No	Tons	A-47 - A-48
				Metric Tons	A-49 - A-50
			Yes	Moles	A-51 - A-54
		State	No	Tons	A-55
				Metric Tons	A-56
			Yes	Moles	A-57 - A-58
		Region	No	Tons	A-59
				Metric Tons	A-59
			Yes	Moles	A-60
	Point	SCC	No	Tons	A-61 - A-67
				Metric Tons	A-68 - A-74
			Yes	Moles	A-75 - A-88
		State	No	Tons	A-89
				Metric Tons	A-90
			Yes	Moles	A-91 - A-92
		Region	No	Tons	A-93
				Metric Tons	A-93
			Yes	Moles	A-94
	Area & Point	State	No	Tons	A-95
				Metric Tons	A-96
			Yes	Moles	A-97 - A-98
		Region	No	Tons	A-99
				Metric Tons	A-99
			Yes	Moles	A-100
Canada	Area	SCC	No	Tons	A-101 - A-103
				Metric Tons	A-104 - A-106
			Yes	Moles	A-107 - A-112
		Province	No	Tons	A-113
				Metric Tons	A-113
			Yes	Moles	A-114
	Point	SCC	No	Tons	A-115 - A-116
				Metric Tons	A-117 - A-118
			Yes	Moles	A-119 - A-122
		Province	No	Tons	A-123
				Metric Tons	A-123
			Yes	Moles	A-124
	Area & Point	Province	No	Tons	A-125
				Metric Tons	A-125
			Yes	Moles	A-126
U.S. & Canada	Area & Point	Totals	No	Tons	A-127
				Metric Tons	A-127
			Yes	Moles	A-128

For conversion of hydrocarbon classes to tons/year, see discussion in Appendix E.

1980 NAPAP 5.0 EMISSIONS INVENTORY - ANNUAL U.S EMISSIONS, AREA SOURCES

SCC	SO2	SO4	NOX	PB	CO	HCL	HF	NH3	TSP	VOC	THC
	TONS/YEAR										
1	12,097	169	1,279	0	39,900	119	1	0	4,406	7,796	7,963
2	28,664	1,322	1,511	0	47,697	21	1	0	7,906	9,306	9,506
3	148,356	28,388	90,714	0	25,119	0	0	0	12,499	23,461	23,461
4	0	0	0	0	0	0	0	0	0	0	0
5	1,271	0	257,245	0	51,412	0	0	0	7,529	9,815	22,234
6	9,866	98,827	82,533	0	6,363,435	0	0	0	1,032,150	2,038,388	2,082,113
7	13,301	161	5,534	0	232	108	2	0	439	24	25
8	44,138	1,700	8,108	0	4,801	59	2	0	279	56	57
9	53,199	9,270	33,329	0	8,217	0	0	0	3,123	1,316	1,316
10	278,844	25,790	65,818	0	5,901	0	0	0	22,421	2,797	3,141
11	417	0	98,432	0	19,615	0	0	0	2,681	3,676	8,327
12	0	2	1	0	2	0	0	0	5	1	1
13	155	1	63	0	1	0	0	7	1	0	0
14	454,236	16,227	119,649	0	15,332	1,065	283	0	4,490	495	506
15	189	1	49	0	21	0	0	0	76	1	1
16	37,407	5,631	32,792	0	7,721	0	0	0	2,828	126	126
17	140,186	2,877	30,219	0	2,715	0	0	0	10,527	952	1,069
18	25	0	1,941,195	0	259,534	0	0	0	155	3,962	8,975
19	7	284	105	0	311	0	0	0	135	121	124
20	77	0	86	0	3	0	0	0	19	1	1
21	1,494	1	3,289	70	935,430	1,494	0	0	110,851	61,784	311,790
22	1,284	1	1,284	0	9,814	5	0	0	7,259	1,742	8,792
23	6,496	16	10,042	2	29,182	94	0	0	21,129	8,288	41,823
24	9,005	3	62,147	0	1,038,173	0	0	0	242,709	339,286	339,286
25	144	0	1,548	0	29,182	0	0	0	4,857	9,092	9,092
26	11	0	188	0	3,455	0	0	0	727	1,396	1,396
28	67,096	3,591	1,662,082	7,417	9,703,579	0	0	0	696,177	1,830,921	1,974,069
30	86,875	4,621	2,064,936	7,404	35,437,309	0	0	0	3,325,305	4,094,727	4,414,869
32	23,236	414	501,126	2,877	3,027,549	0	0	0	175,227	640,766	690,863
34	30,059	856	637,663	2,721	11,205,758	0	0	0	831,481	1,441,277	1,553,962
36	7,093	1	193,531	1,998	2,212,888	0	0	0	43,832	234,862	253,225
38	8,402	46	208,408	1,247	5,492,472	0	0	0	137,676	489,780	528,073
39	3,326	76	76,076	2	2,476,699	0	0	0	6,865	198,921	214,720
41	86,416	1,534	767,745	0	245,728	0	0	0	133,644	112,041	113,984
43	119,651	2,409	1,158,752	0	719,910	0	0	0	338,923	305,115	310,406
44	74,790	1,100	907,391	0	270,807	0	0	0	94,886	147,354	154,748
45	128,494	2,270	833,812	0	293,012	0	0	0	56,532	240,871	245,048
46	4,098	6	31,732	0	151,354	0	0	0	61,689	89,446	90,823
47	806	0	8,264	0	536,351	0	0	0	1,541	30,980	31,457
48	7,573	20	76,575	0	220,313	0	0	0	3,289	89,097	90,468
49	3,648	155	177	0	5,295	0	0	0	3,531	577	589
50	12,343	946	92,176	0	32,258	0	0	0	9,862	28,235	28,235
51	212,163	16,972	34,861	0	1,166	0	0	0	16,094	2,439	2,739
52	2,725	0	10,670	0	1,360,524	0	0	0	0	370,657	400,096
54	0	0	0	0	0	0	0	0	0	966,415	966,415
55	0	0	0	2	0	0	0	0	29,270,073	0	0
56	0	0	0	0	0	0	0	0	7,528	0	0
57	0	0	0	0	0	0	0	0	0	0	0
58	0	0	0	0	0	0	0	0	0	0	0
59	0	0	0	0	0	0	0	0	0	0	0
60	5,013	6	139,445	0	4,881,714	0	0	0	592,770	836,862	836,862
61	3,007	4	81,983	0	2,295,361	0	0	0	409,913	368,884	368,884

	TONS/YEAR										
SCC	SO2	SO4	NOX	PB	CO	HCL	HF	NH3	TSP	VOC	THC
62	0	0	8,446	0	397,513	0	0	0	60,465	68,041	68,041
63	0	0	0	0	0	0	0	0	0	0	0
64	64	0	6,595	0	230,339	0	0	0	56,693	42,334	42,334
71	0	0	0	0	0	0	0	97,193	0	0	0
72	0	0	0	0	0	0	0	129,780	0	0	0
73	0	0	0	0	0	0	0	97,606	0	0	0
74	0	0	0	0	0	0	0	44,793	0	0	0
75	0	0	0	0	0	0	0	21,163	0	0	0
76	0	0	0	0	0	0	0	50,355	0	0	0
77	0	0	0	0	0	0	0	148,502	0	0	0
78	0	0	0	0	0	0	0	0	0	506,129	506,129
79	0	0	0	0	0	0	0	0	0	300,118	300,118
80	0	0	0	0	0	0	0	0	0	175,812	175,812
81	0	0	0	0	0	0	0	0	0	126,782	126,782
82	0	0	0	0	0	0	0	0	0	473,818	473,818
83	0	0	0	0	0	0	0	0	0	182,582	182,582
84	0	0	0	0	0	0	0	0	0	12,187	12,187
85	0	0	0	0	0	0	0	0	0	157,460	157,460
86	0	0	0	0	0	0	0	0	0	31,576	31,576
87	0	0	0	0	0	0	0	0	0	20,584	20,584
88	0	0	0	0	0	0	0	0	0	52,134	52,134
89	0	0	0	0	0	0	0	0	0	18,177	18,177
90	0	0	0	0	0	0	0	0	0	1,602	1,602
91	0	0	0	0	0	0	0	0	0	1,164	1,164
92	0	0	0	0	0	0	0	0	0	3,693	3,693
93	0	0	0	0	0	0	0	0	0	248,596	250,820
94	0	0	0	0	0	0	0	0	0	342,132	345,193
95	0	0	0	0	0	0	0	0	0	1,047,157	1,047,157
96	374	17	207	0	5	19	1	19	1,282	0	0
97	739	41	5,465	0	1,196	0	0	0	3	580	652
98	0	0	5,679	0	905	0	0	0	0	129	291
99	320,535	24,503	348,181	297	83,619	3,888	1,961	3,779	418,641	344,393	350,452
Contig. U.S.	2,449,395	250,259	12,709,138	24,037	90,180,829	6,872	2,251	593,197	38,253,123	19,201,288	20,320,417

1980 NAPAP 5.0 EMISSIONS INVENTORY - ANNUAL U.S EMISSIONS, AREA SOURCES

SCC	SO2	SO4	NOX	PB	CO	HCL	HF	NH3	TSP	VOC	THC
	METRIC TONS/YEAR										
1	10,974	153	1,160	0	36,197	108	1	0	3,997	7,072	7,224
2	26,004	1,199	1,371	0	43,270	19	1	0	7,172	8,443	8,624
3	134,586	25,753	82,294	0	22,788	0	0	0	11,339	21,284	21,284
4	0	0	0	0	0	0	0	0	0	0	0
5	1,153	0	233,369	0	46,640	0	0	0	6,830	8,904	20,171
6	8,950	89,654	74,873	0	5,772,811	0	0	0	936,351	1,849,195	1,888,861
7	12,066	146	5,020	0	210	98	2	0	398	22	23
8	40,041	1,542	7,355	0	4,355	54	2	0	253	51	52
9	48,261	8,410	30,236	0	7,454	0	0	0	2,833	1,194	1,194
10	252,963	23,396	59,709	0	5,353	0	0	0	20,340	2,537	2,850
11	378	0	89,296	0	17,794	0	0	0	2,432	3,335	7,554
12	0	2	1	0	2	0	0	0	5	1	1
13	141	1	57	0	1	0	0	6	1	0	0
14	412,076	14,721	108,544	0	13,909	966	257	0	4,073	449	459
15	171	1	44	0	19	0	0	0	69	1	1
16	33,935	5,108	29,748	0	7,004	0	0	0	2,566	114	114
17	127,175	2,610	27,414	0	2,463	0	0	0	9,550	863	970
18	23	0	1,761,022	0	235,445	0	0	0	141	3,594	8,142
19	6	258	95	0	282	0	0	0	122	110	112
20	70	0	78	0	3	0	0	0	17	1	1
21	1,355	1	2,984	64	848,608	1,355	0	0	100,562	56,050	282,851
22	1,165	1	1,165	0	8,903	5	0	0	6,585	1,581	7,976
23	5,893	15	9,110	2	26,473	85	0	0	19,168	7,518	37,941
24	8,169	3	56,379	0	941,815	0	0	0	220,182	307,795	307,795
25	131	0	1,404	0	26,473	0	0	0	4,406	8,248	8,248
26	10	0	171	0	3,134	0	0	0	660	1,266	1,266
28	60,868	3,258	1,507,815	6,729	8,802,939	0	0	0	631,561	1,660,984	1,790,845
30	78,812	4,192	1,873,278	6,717	32,148,186	0	0	0	3,016,666	3,714,674	4,005,102
32	21,079	376	454,614	2,610	2,746,546	0	0	0	158,963	581,293	626,741
34	27,269	777	578,478	2,468	10,165,693	0	0	0	754,307	1,307,505	1,409,731
36	6,435	1	175,568	1,813	2,007,498	0	0	0	39,764	213,063	229,722
38	7,622	42	189,065	1,131	4,982,687	0	0	0	124,898	444,321	479,060
39	3,017	69	69,015	2	2,246,824	0	0	0	6,228	180,458	194,791
41	78,395	1,392	696,487	0	222,921	0	0	0	121,240	101,642	103,405
43	108,546	2,185	1,051,202	0	653,091	0	0	0	307,466	276,795	281,596
44	67,848	998	823,171	0	245,672	0	0	0	86,079	133,677	140,385
45	116,568	2,059	756,422	0	265,816	0	0	0	51,285	218,515	222,303
46	3,718	5	28,787	0	137,306	0	0	0	55,963	81,144	82,393
47	731	0	7,497	0	486,569	0	0	0	1,398	28,105	28,537
48	6,870	18	69,468	0	199,865	0	0	0	2,984	80,827	82,071
49	3,309	141	161	0	4,804	0	0	0	3,203	523	534
50	11,197	858	83,621	0	29,264	0	0	0	8,947	25,614	25,614
51	192,471	15,397	31,625	0	1,058	0	0	0	14,600	2,213	2,485
52	2,472	0	9,680	0	1,234,247	0	0	0	0	336,254	362,961
54	0	0	0	0	0	0	0	0	0	876,717	876,717
55	0	0	0	2	0	0	0	0	26,553,364	0	0
56	0	0	0	0	0	0	0	0	6,829	0	0
57	0	0	0	0	0	0	0	0	0	0	0
58	0	0	0	0	0	0	0	0	0	0	0
59	0	0	0	0	0	0	0	0	0	0	0
60	4,548	5	126,502	0	4,428,616	0	0	0	537,752	759,188	759,188
61	2,728	4	74,374	0	2,082,316	0	0	0	371,867	334,646	334,646

1980 NAPAP 5.0 EMISSIONS INVENTORY - ANNUAL U.S EMISSIONS, AREA SOURCES

SCC	SO2	SO4	NOX	PB	CO	HCL	HF	NH3	TSP	VOC	THC
	METRIC TONS/YEAR										
62	0	0	7,662	0	360,618	0	0	0	54,853	61,726	61,726
63	0	0	0	0	0	0	0	0	0	0	0
64	58	0	5,983	0	208,960	0	0	0	51,431	38,405	38,405
71	0	0	0	0	0	0	0	88,172	0	0	0
72	0	0	0	0	0	0	0	117,734	0	0	0
73	0	0	0	0	0	0	0	88,547	0	0	0
74	0	0	0	0	0	0	0	40,635	0	0	0
75	0	0	0	0	0	0	0	19,198	0	0	0
76	0	0	0	0	0	0	0	45,682	0	0	0
77	0	0	0	0	0	0	0	134,719	0	0	0
78	0	0	0	0	0	0	0	0	0	459,153	459,153
79	0	0	0	0	0	0	0	0	0	272,262	272,262
80	0	0	0	0	0	0	0	0	0	159,494	159,494
81	0	0	0	0	0	0	0	0	0	115,015	115,015
82	0	0	0	0	0	0	0	0	0	429,840	429,840
83	0	0	0	0	0	0	0	0	0	165,636	165,636
84	0	0	0	0	0	0	0	0	0	11,056	11,056
85	0	0	0	0	0	0	0	0	0	142,845	142,845
86	0	0	0	0	0	0	0	0	0	28,645	28,645
87	0	0	0	0	0	0	0	0	0	18,673	18,673
88	0	0	0	0	0	0	0	0	0	47,295	47,295
89	0	0	0	0	0	0	0	0	0	16,490	16,490
90	0	0	0	0	0	0	0	0	0	1,453	1,453
91	0	0	0	0	0	0	0	0	0	1,056	1,056
92	0	0	0	0	0	0	0	0	0	3,350	3,350
93	0	0	0	0	0	0	0	0	0	225,523	227,540
94	0	0	0	0	0	0	0	0	0	310,377	313,153
95	0	0	0	0	0	0	0	0	0	949,965	949,965
96	339	15	188	0	5	17	1	17	1,163	0	0
97	670	37	4,958	0	1,085	0	0	0	3	526	591
98	0	0	5,152	0	821	0	0	0	0	117	264
99	290,784	22,229	315,864	269	75,858	3,527	1,779	3,428	379,785	312,428	317,924
Contig. U.S.	2,222,054	227,031	11,529,536	21,806	81,810,673	6,234	2,042	538,140	34,702,650	17,419,116	18,434,373

1980 NAPAP 5.0 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS, AREA SOURCES

STATE	SO2	SO4	NOX	PB	CO	HCL	HF	NH3	TSP	VOC	THC
	TONS/YEAR										
ALABAMA	80,040	4,252	255,739	496	1,528,003	251	21	11,362	357,944	338,923	358,755
ARIZONA	19,942	1,566	157,130	293	1,245,599	75	16	6,912	814,038	240,850	257,295
ARKANSAS	31,473	2,142	167,618	263	910,150	25	32	13,094	840,635	207,710	217,992
CALIFORNIA	129,034	13,116	1,056,864	2,427	9,169,893	472	14	27,360	1,400,475	1,919,526	2,061,809
COLORADO	22,759	1,721	165,261	314	2,191,485	56	0	17,192	1,081,969	340,410	362,939
CONNECTICUT	29,141	5,882	117,244	303	1,180,569	105	0	1,946	112,066	260,138	274,319
DELAWARE	27,780	2,680	36,296	70	234,359	46	0	2,050	32,807	51,233	53,859
DIST. OF COLUM.	8,161	722	22,736	37	334,671	66	16	59	14,236	43,630	47,231
FLORIDA	84,235	5,532	393,835	1,064	3,926,172	164	198	6,906	819,404	780,255	816,959
GEORGIA	37,687	2,882	311,133	652	2,173,375	61	17	15,470	840,251	481,061	501,843
IDAHO	19,600	2,078	83,054	99	1,238,718	15	69	8,012	318,708	219,441	225,750
ILLINOIS	114,106	9,120	506,040	1,117	3,934,369	1,008	47	28,657	735,514	835,531	892,629
INDIANA	144,303	9,345	327,514	639	2,078,557	331	120	17,666	295,397	475,241	507,003
IOWA	26,930	1,381	180,446	356	1,050,792	71	5	61,150	1,086,371	219,375	238,339
KANSAS	34,486	1,281	299,084	249	1,011,199	62	7	34,093	1,809,113	209,966	225,356
KENTUCKY	51,676	5,090	237,911	412	1,477,488	235	73	8,069	324,834	338,901	352,949
LOUISIANA	164,422	10,581	273,726	505	1,542,880	121	98	4,454	440,200	329,807	347,058
MAINE	18,580	3,981	46,327	123	461,937	14	2	417	108,957	124,103	130,105
MARYLAND	28,208	4,524	169,757	451	1,426,057	13	47	2,991	191,542	303,376	318,323
MASSACHUSETTS	61,028	8,521	193,145	504	2,118,954	86	2	103	192,880	421,496	450,443
MICHIGAN	43,772	8,153	379,705	972	3,341,867	188	11	10,205	736,339	720,369	770,614
MINNESOTA	28,224	4,969	231,804	459	1,894,733	161	7	32,196	1,068,450	403,362	427,656
MISSISSIPPI	52,834	4,230	198,022	297	908,906	12	0	7,452	562,973	209,239	220,899
MISSOURI	62,377	5,851	261,760	561	2,125,948	146	18	17,258	2,566,115	458,893	489,566
MONTANA	22,691	1,544	102,299	97	1,282,577	9	0	3,705	861,449	224,386	230,514
NEBRASKA	13,903	690	120,336	169	599,362	60	5	44,329	1,037,379	123,167	132,498
NEVADA	7,219	553	49,281	101	508,333	39	2	704	891,181	90,550	96,164
NEW HAMPSHIRE	12,063	2,248	32,050	100	347,668	10	0	1	62,310	87,305	91,764
NEW JERSEY	76,282	14,170	285,110	706	2,210,361	124	26	68	304,009	591,931	629,848
NEW MEXICO	12,293	1,263	96,923	170	905,533	4	0	4,374	1,214,514	153,839	162,467
NEW YORK	110,225	19,585	448,945	1,257	4,644,867	69	5	13,959	556,823	1,070,711	1,125,410
NORTH CAROLINA	50,165	8,377	275,716	706	2,162,964	154	240	12,455	584,611	531,024	555,007
NORTH DAKOTA	19,500	1,386	63,744	67	226,659	48	13	6,441	1,246,423	50,658	54,742
OHIO	65,723	9,197	563,634	1,184	4,006,231	446	755	14,322	792,991	880,295	941,935
OKLAHOMA	20,181	2,226	294,801	408	1,515,621	25	5	13,862	1,039,691	261,648	273,463
OREGON	31,490	4,616	181,873	314	1,423,588	185	0	4,249	1,816,674	310,452	326,865
PENNSYLVANIA	115,853	16,547	545,877	1,155	3,906,891	640	21	15,758	1,244,910	911,242	950,321
RHODE ISLAND	7,066	1,203	32,382	78	314,572	13	0	0	31,258	71,205	75,722
SOUTH CAROLINA	28,632	2,727	153,172	374	1,128,686	72	52	3,420	308,963	264,087	279,079
SOUTH DAKOTA	6,966	546	54,016	65	494,277	15	1	12,941	682,573	93,595	98,137
TENNESSEE	37,934	4,925	245,044	589	1,797,709	170	114	7,824	541,485	420,402	443,920
TEXAS	270,694	11,972	2,021,732	1,795	6,937,315	320	59	50,179	5,549,442	1,411,256	1,481,514
UTAH	28,203	1,707	98,147	148	956,285	41	16	1,909	628,938	152,488	163,138
VERMONT	6,642	1,727	23,493	62	202,038	3	0	3	99,345	55,766	58,435
VIRGINIA	65,850	8,420	260,122	612	1,935,838	281	67	6,374	357,304	440,835	461,677
WASHINGTON	49,122	5,551	223,387	418	2,180,243	120	28	8,021	261,465	424,675	450,724
WEST VIRGINIA	14,738	2,378	122,674	203	631,776	23	0	327	321,511	149,919	156,298
WISCONSIN	28,124	5,666	225,751	513	1,847,355	191	18	31,403	607,920	413,237	442,178
WYOMING	27,038	1,435	116,478	83	507,399	26	4	1,500	458,736	83,781	88,907
CONTIG U.S.	2,449,395	250,259	12,709,138	24,037	90,180,829	6,872	2,251	593,197	38,253,123	19,201,289	20,320,417

1980 NAPAP 5.0 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS, AREA SOURCES

STATE	SO2	SO4	NOX	PB	CO	HCL	HF	NH3	TSP	VOC	THC
	METRIC TONS/YEAR										
ALABAMA	72,611	3,857	232,003	450	1,386,181	228	19	10,307	324,721	307,466	325,457
ARIZONA	18,091	1,421	142,546	266	1,129,988	68	15	6,270	738,483	218,495	233,414
ARKANSAS	28,552	1,943	152,060	239	825,674	23	29	11,879	762,611	188,431	197,759
CALIFORNIA	117,058	11,899	958,771	2,202	8,318,787	428	13	24,821	1,270,490	1,741,365	1,870,442
COLORADO	20,647	1,561	149,922	285	1,988,082	51	0	15,596	981,546	308,815	329,252
CONNECTICUT	26,436	5,336	106,362	275	1,070,994	95	0	1,765	101,665	235,993	248,858
DELAWARE	25,202	2,431	32,927	64	212,607	42	0	1,860	29,762	46,477	48,860
DIST. OF COLUM.	7,404	655	20,626	34	303,608	60	15	54	12,915	39,581	42,847
FLORIDA	76,417	5,019	357,281	965	3,561,763	149	180	6,265	743,351	707,835	741,133
GEORGIA	34,189	2,615	282,255	591	1,971,653	55	15	14,034	762,263	436,411	455,264
IDAHO	17,781	1,885	75,345	90	1,123,746	14	63	7,269	289,127	199,074	204,797
ILLINOIS	103,515	8,274	459,072	1,013	3,569,200	914	43	25,997	667,247	757,981	809,780
INDIANA	130,909	8,478	297,116	580	1,885,635	300	109	16,026	267,980	431,131	459,945
IOWA	24,430	1,253	163,698	323	953,262	64	5	55,475	985,539	199,014	216,218
KANSAS	31,285	1,162	271,324	226	917,344	56	6	30,929	1,641,200	190,477	204,439
KENTUCKY	46,880	4,618	215,829	374	1,340,355	213	66	7,320	294,684	307,445	320,190
LOUISIANA	149,161	9,599	248,320	458	1,399,677	110	89	4,041	399,343	299,195	314,845
MAINE	16,855	3,612	42,027	112	419,062	13	2	379	98,844	112,585	118,029
MARYLAND	25,590	4,104	154,001	409	1,293,697	12	43	2,713	173,764	275,218	288,777
MASSACHUSETTS	55,364	7,730	175,218	457	1,922,283	78	2	94	174,978	382,374	408,635
MICHIGAN	39,709	7,396	344,463	882	3,031,691	171	10	9,258	667,996	653,507	699,089
MINNESOTA	25,604	4,508	210,289	416	1,718,873	146	6	29,208	969,282	365,924	387,963
MISSISSIPPI	47,930	3,837	179,643	269	824,546	11	0	6,760	510,721	189,819	200,396
MISSOURI	56,587	5,308	237,465	509	1,928,628	132	16	15,656	2,327,940	416,300	444,126
MONTANA	20,585	1,401	92,804	88	1,163,534	8	0	3,361	781,493	203,560	209,119
NEBRASKA	12,613	626	109,167	153	543,732	54	5	40,214	941,094	111,735	120,200
NEVADA	6,549	502	44,707	92	461,152	35	2	639	808,466	82,145	87,238
NEW HAMPSHIRE	10,943	2,039	29,075	91	315,399	9	0	1	56,527	79,202	83,247
NEW JERSEY	69,202	12,855	258,647	640	2,005,206	112	24	62	275,792	536,991	571,389
NEW MEXICO	11,152	1,146	87,927	154	821,486	4	0	3,968	1,101,789	139,561	147,388
NEW YORK	99,994	17,767	407,276	1,140	4,213,753	63	5	12,663	505,141	971,333	1,020,955
NORTH CAROLINA	45,509	7,599	250,125	640	1,962,208	140	218	11,299	530,350	481,737	503,494
NORTH DAKOTA	17,690	1,257	57,828	61	205,622	44	12	5,843	1,130,736	45,956	49,662
OHIO	59,623	8,343	511,320	1,074	3,634,392	405	685	12,992	719,389	798,590	854,509
OKLAHOMA	18,308	2,019	267,439	370	1,374,948	23	5	12,575	943,192	237,363	248,082
OREGON	28,567	4,188	164,992	285	1,291,457	168	0	3,855	1,648,059	281,638	296,527
PENNSYLVANIA	105,100	15,011	495,211	1,048	3,544,272	581	19	14,295	1,129,363	826,664	862,116
RHODE ISLAND	6,410	1,091	29,376	71	285,375	12	0	0	28,357	64,596	68,694
SOUTH CAROLINA	25,975	2,474	138,955	339	1,023,927	65	47	3,103	280,287	239,576	253,176
SOUTH DAKOTA	6,319	495	49,002	59	448,401	14	1	11,739	619,220	84,908	89,028
TENNESSEE	34,413	4,468	222,300	534	1,630,854	154	103	7,097	491,227	381,382	402,718
TEXAS	245,569	10,861	1,834,084	1,628	6,293,426	290	54	45,521	5,034,369	1,280,270	1,344,007
UTAH	25,585	1,549	89,037	134	867,527	37	15	1,732	570,563	138,335	147,996
VERMONT	6,026	1,567	21,312	56	183,286	3	0	2	90,124	50,590	53,011
VIRGINIA	59,738	7,638	235,979	555	1,756,163	255	61	5,782	324,141	399,919	418,827
WASHINGTON	44,563	5,036	202,653	379	1,977,883	109	25	7,277	237,197	385,259	408,890
WEST VIRGINIA	13,370	2,157	111,288	184	573,138	21	0	296	291,670	136,004	141,791
WISCONSIN	25,514	5,140	204,798	465	1,675,892	173	16	28,488	551,496	374,882	401,137
WYOMING	24,528	1,302	105,667	75	460,305	24	4	1,361	416,158	76,005	80,655
CONTIG U.S.	2,222,054	227,031	11,529,536	21,806	81,810,673	6,234	2,042	538,140	34,702,650	17,419,117	18,434,372

1980 NAPAP 5.0 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS, AREA SOURCES

TONS/YEAR

EPA REGION	SO2	SO4	NOX	PB	CO	HCL	HF	NH3	TSP	VOC	THC
REGION 1	134,520	23,562	444,641	1,170	4,625,738	231	4	2,470	606,816	1,020,013	1,080,788
REGION 2	186,507	33,755	734,055	1,963	6,855,228	193	31	14,026	860,832	1,662,642	1,755,258
REGION 3	260,590	35,271	1,157,462	2,528	8,469,592	1,069	151	27,558	2,162,310	1,900,234	1,987,708
REGION 4	423,203	38,015	2,070,572	4,590	15,103,303	1,119	715	72,957	4,340,465	3,363,893	3,529,412
REGION 5	424,252	46,450	2,234,448	4,884	17,103,112	2,325	958	134,448	4,236,611	3,728,034	3,982,016
REGION 6	499,063	28,184	2,854,800	3,141	11,811,499	495	194	85,962	9,084,482	2,364,260	2,482,493
REGION 7	137,696	9,203	861,626	1,335	4,787,301	339	35	156,830	6,498,978	1,011,400	1,085,758
REGION 8	127,157	8,339	599,945	774	5,658,682	195	34	43,688	4,960,088	945,319	998,377
REGION 9	156,195	15,235	1,263,275	2,821	10,923,825	586	32	34,976	3,105,694	2,250,925	2,415,267
REGION 10	100,212	12,245	488,314	831	4,842,549	320	97	20,282	2,396,847	954,569	1,003,339
CONTIG U.S.	2,449,395	250,259	12,709,138	24,037	90,180,829	6,872	2,251	593,197	38,253,123	19,201,289	20,320,417

METRIC TONS/YEAR

EPA REGION	SO2	SO4	NOX	PB	CO	HCL	HF	NH3	TSP	VOC	THC
REGION 1	122,034	21,375	403,372	1,061	4,196,399	210	4	2,241	550,494	925,340	980,475
REGION 2	169,196	30,622	665,924	1,781	6,218,958	175	28	12,725	780,934	1,508,324	1,592,344
REGION 3	236,403	31,997	1,050,032	2,293	7,683,485	970	137	25,000	1,961,615	1,723,864	1,803,219
REGION 4	383,923	34,487	1,878,391	4,164	13,701,486	1,015	649	66,185	3,937,604	3,051,672	3,201,828
REGION 5	384,875	42,139	2,027,057	4,431	15,515,682	2,109	869	121,969	3,843,389	3,382,015	3,612,424
REGION 6	452,742	25,568	2,589,831	2,849	10,715,212	449	176	77,984	8,241,304	2,144,821	2,252,080
REGION 7	124,916	8,349	781,654	1,211	4,342,966	308	32	142,274	5,895,774	917,527	984,983
REGION 8	115,355	7,565	544,261	702	5,133,470	177	31	39,633	4,499,716	857,579	905,713
REGION 9	141,698	13,821	1,146,024	2,559	9,909,927	532	29	31,730	2,817,438	2,042,005	2,191,093
REGION 10	90,911	11,108	442,991	754	4,393,087	290	88	18,400	2,174,383	865,970	910,214
CONTIG U.S.	2,222,054	227,031	11,529,536	21,806	81,810,673	6,234	2,042	538,140	34,702,650	17,419,117	18,434,372

1980 NAPAP 5.0 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS, POINT SOURCES

SCC	SO2	SO4	NOx	Pb	CO	HCl	HF	NH3	TSP	VOC	THC
	TONS/YEAR										
101002	15,793,408	338,017	4,979,030	30	160,708	474,292	57,413	133	521,611	25,827	26,382
101003	279,553	36,021	201,285	5	13,569	158	158	7	52,263	2,022	2,065
101004	1,385,537	41,110	393,478	0	39,829	0	0	0	54,266	12,677	14,244
101005	8,359	1,035	5,247	0	1,105	0	0	0	94	45	45
101006	968	0	744,528	0	68,311	0	0	0	4,620	1,362	3,096
102001	3,590	277	2,008	0	116	374	16	0	252	10	18
102002	1,187,896	43,699	391,054	28	35,225	31,492	12,210	10	347,169	6,455	6,594
102003	52,631	3,039	11,804	0	3,691	258	44	1	24,348	132	135
102004	1,045,988	22,414	281,449	0	53,251	0	0	0	79,592	50,266	56,481
102005	95,558	4,104	39,258	0	7,814	0	0	0	6,362	16,029	16,029
102006	41,503	204	514,983	0	107,103	0	0	0	17,099	12,809	29,109
102007	301,546	1,114	101,959	0	14,157	0	0	0	11,388	7,567	11,254
102008	4,471	16	1,206	0	19,147	0	0	0	2,060	296	302
102009	15,464	70,815	97,272	0	103,091	0	0	0	91,961	62,442	63,785
102010	54	0	178	0	23	0	0	0	58	10	22
102011	616	0	1,885	0	1,443	0	0	0	8,872	4,053	4,053
102012	3,448	0	1,860	0	15	0	0	0	1,813	22	22
102013	17,505	0	2,807	366	114	0	0	0	650	64	64
103001	309	17	110	0	4	21	0	0	403	3	3
103002	83,411	3,087	19,098	1	4,435	1,730	185	1	29,094	950	970
103003	1,804	119	339	0	341	18	1	0	2,060	29	30
103004	81,373	10,099	32,493	0	2,352	0	0	0	33,884	1,353	1,521
103005	20,061	990	3,491	0	1,010	0	0	0	10,236	877	877
103006	619	0	39,538	0	4,936	0	0	0	1,300	1,174	2,668
103009	265	1,418	2,739	0	1,711	0	0	0	1,059	926	946
103012	0	0	0	0	0	0	0	0	31	0	0
103013	0	0	0	4	0	0	0	0	1	6	6
103900	0	0	0	0	0	0	0	0	3	0	0
105001	31,800	165	11,095	0	43,506	0	0	0	3,102	3,470	5,210
105002	955	615	907	0	222	0	0	0	131	218	218
199999	8,675	0	2,518	0	498	0	0	0	1,219	1,230	1,230
201001	9,741	17	31,411	0	6,994	0	0	0	2,187	1,984	2,318
201002	26	0	81,740	0	16,567	0	0	0	1,420	2,018	7,627
202001	3,215	13	13,573	0	3,656	0	0	0	817	1,517	1,772
202002	4,917	0	642,808	0	112,937	0	0	0	3,158	12,183	83,323
202003	9	0	165	0	6,440	0	0	0	187	274	320
202004	10	0	702	0	183	0	0	0	47	17	20
203001	10	0	506	0	80	0	0	0	14	19	22
203002	3	0	818	0	1,366	0	0	0	9	10	73
204001	195	0	678	0	474	0	0	0	156	76	545
204004	58	0	884	0	1,200	0	0	0	210	370	432
299999	0	0	535	0	118	0	0	0	0	1	1
301001	1,465	0	4,584	0	28,485	0	0	0	97	9,119	9,119
301003	1,415	4	6,967	0	62,182	0	0	3,108	518	15,468	15,468
301005	19,919	0	1,262	0	1,841,589	0	0	0	2,848	189,542	189,542
301006	1,820	0	20,580	0	70,711	0	0	0	76,161	94,612	94,612
301007	0	0	0	0	0	0	0	0	0	727	733
301008	0	0	0	0	100	0	0	0	54	370	370
301009	751	0	118	0	23	0	0	0	1,034	599	599
301010	80	0	2,363	0	0	0	0	0	998	714	714
301011	0	0	0	0	160	731	0	0	51	42	96
301012	125	0	0	0	0	0	0	0	1,020	0	0

SCC	SO2	SO4	NOx	Pb	CO	HCl	HF	NH3	TSP	VOC	THC
	TONS/YEAR										
301013	7,325	0	47,931	0	5,558	0	0	0	1,331	1,491	1,491
301014	4,558	0	0	0	0	0	0	0	1,862	16,010	16,010
301015	0	0	0	0	0	0	0	0	10	5,955	5,955
301016	11,975	0	0	0	12	0	1,650	0	1,067	0	0
301017	1	0	84	0	0	0	0	0	376	11	11
301018	1,808	0	304	0	223	0	0	0	58,550	105,497	106,322
301019	366	5	0	0	22,015	0	0	0	7,193	567	2,042
301020	0	0	0	0	0	0	0	0	6	1,769	1,769
301021	243	0	472	0	4,972	0	0	0	4,872	218	218
301022	7,705	0	0	0	0	0	0	0	360	0	0
301023	288,797	1,430	377	0	1,215	0	0	0	15,830	61	63
301024	7,466	0	2	0	4,165	0	0	0	1,206	17,219	17,219
301025	604	0	0	0	0	0	0	0	42	21,830	22,219
301026	5,054	0	297	0	19,004	0	0	0	1,440	90,128	90,128
301027	1,002	0	1,944	0	8,122	0	0	224,793	11,234	45	45
301028	1,049	0	0	0	0	0	0	0	3,410	0	0
301029	5,976	0	15	0	4	0	29,824	0	616	3	3
301030	8,681	0	8,166	0	4	0	1,933	766	8,205	32	32
301031	0	0	0	0	35,858	0	0	0	289	58,475	58,475
301032	251,892	3,078	674	0	2,343	0	0	0	982	1,404	1,404
301033	790	0	677	0	0	0	0	0	27	2,739	2,739
301034	1,084	0	3,605	0	113	0	0	0	415	2,677	2,711
301035	11,244	4	1,433	0	27,421	0	0	0	1,645	5	6
301036	0	0	0	0	0	0	0	0	315	0	0
301040	0	0	0	0	0	0	0	0	4,807	0	0
301041	1,909	6	0	0	112	0	0	0	334	3,256	3,314
301042	0	0	12	0	0	0	0	0	20	1,929	1,929
301050	0	0	0	0	0	0	0	0	0	1,189	1,210
301060	226	0	12	0	174	0	0	0	3,947	1,509	1,535
301091	38	0	44	0	0	0	0	0	0	797	797
301100	0	0	0	0	13,238	0	0	0	0	248	248
301111	0	0	0	0	0	0	0	0	87	0	0
301120	0	0	8	0	2	0	0	0	378	1,349	1,349
301125	250	0	53	0	0	0	0	0	16	2,107	2,107
301130	0	0	0	0	0	0	0	0	63	151	250
301132	69	0	669	0	175	0	0	0	271	4,572	4,648
301137	480	0	7	0	45	0	0	0	0	324	330
301156	0	0	0	0	0	0	0	0	0	130	130
301167	0	0	0	0	0	0	0	0	0	137	137
301169	0	0	0	0	0	0	0	0	0	380	380
301174	0	0	0	0	0	0	0	0	0	1,662	1,692
301181	0	0	0	0	10	0	0	0	0	99	99
301197	2,964	0	369	0	1,462	0	0	0	61	23,003	23,003
301202	0	0	0	0	0	0	0	0	0	1,020	1,020
301206	0	0	0	0	0	0	0	0	0	520	520
301250	1	0	2,666	0	3,964	0	0	0	5	1,371	1,371
301251	0	0	0	0	0	0	0	0	0	999	999
301253	0	0	0	0	0	0	0	0	0	106	106
301254	24	0	225	0	5,927	0	0	0	0	8,354	8,354
301258	0	0	0	0	50	0	0	0	3	7,406	7,449
301820	243	0	0	0	67	0	0	0	30	1,855	1,855
301830	0	0	0	0	0	0	0	0	182	0	0

	TONS/YEAR										
SCC	SO2	SO4	NOx	Pb	CO	HCl	HF	NH3	TSP	VOC	THC
301888	247	0	5	0	36	0	0	0	12,570	467	475
301900	182,612	0	510	0	24	0	0	0	411	651	651
301999	57,725	0	32,764	0	241,373	0	0	0	52,092	211,348	211,348
302001	1	0	197	0	15	0	0	0	18,573	4	4
302002	0	0	62	0	48	0	0	0	1,977	48	48
302004	0	0	0	0	0	0	0	0	618	0	0
302005	18	0	1	0	0	0	0	0	45,098	0	0
302006	6	0	88	0	53	0	0	0	200,334	0	0
302007	198	0	27	0	3	0	0	0	43,120	761	7,045
302008	512	0	5	0	17	0	0	0	9,680	2	2
302009	1,264	0	127	0	14	0	0	0	1,615	405	2,171
302010	0	0	0	0	0	0	0	0	614	24,034	24,034
302012	0	0	0	0	0	0	0	0	3	26	336
302013	0	0	1	0	72	0	0	0	28	840	858
302014	106	0	0	0	0	0	0	0	1,586	0	0
302015	1,674	0	0	0	18	0	0	0	1,684	0	0
302016	699	0	355	0	25	0	0	0	7,834	7	7
302017	0	0	0	0	0	0	0	0	535	0	0
302018	0	0	0	0	0	0	0	0	0	18	237
302019	0	0	0	0	0	0	0	0	109	780	10,183
302020	0	0	0	0	0	0	0	762	2,550	0	0
302026	0	0	0	0	0	0	0	0	0	0	0
302030	0	0	1	0	0	0	0	0	147	0	0
302031	0	0	0	0	0	0	0	0	487	0	0
302032	1,196	0	0	0	0	0	0	0	19	4	57
302033	0	0	0	0	0	0	0	0	0	1,913	1,913
302888	0	0	2	0	26	0	0	0	382	15	162
302999	1,241	0	426	0	16	0	0	0	5,116	371	4,840
303000	0	0	0	0	0	0	0	0	5,698	0	0
303001	87,605	561	131,298	0	678,962	0	9,749	0	46,980	15,458	33,098
303002	1,403	0	984	0	163	0	0	0	21,303	9	9
303003	75,716	12,742	4,271	0	37,997	0	0	7,373	58,581	32,629	69,863
303004	30	0	4	0	11	0	0	0	2,168	40	86
303005	1,099,046	35,393	1,038	160	7,211	0	0	0	20,562	17	20
303006	387	0	110	59	282	0	0	0	28,206	19	22
303007	92	0	0	0	363	0	0	0	1,230	0	0
303008	63,405	738	17,676	1,246	1,115,635	0	0	0	163,355	4,327	17,794
303009	53,762	0	29,971	1,679	369,322	0	0	0	64,061	4,270	4,451
303010	57,902	1,532	3	887	43,930	0	0	0	7,129	0	0
303011	1,939	0	0	0	0	0	0	0	3,969	73	73
303012	0	0	164	0	4,993	0	0	0	1	0	0
303013	0	0	0	0	0	0	0	0	0	0	0
303014	2,203	0	206	0	5,941	0	0	0	2,636	427	427
303023	10,609	34	0	0	0	0	0	0	68,416	0	0
303030	37,793	11,227	100	385	17	0	0	0	8,857	3	6
303888	3	0	1	0	0	0	0	0	1,849	0	0
303999	2,758	0	120	0	552	0	0	0	1,052	84	205
304001	1,086	0	8,852	0	983	0	0	0	11,579	3,652	5,769
304002	6	0	932	228	3,732	0	0	0	4,850	177	280
304003	7,305	9	1,276	497	491,060	0	0	0	36,836	1,822	4,468
304004	26,595	98	358	276	160	0	0	0	8,690	3,292	5,201
304005	0	0	0	0	0	0	0	0	0	0	0

	TONS/YEAR										
SCC	SO2	SO4	NOx	Pb	CO	HCl	HF	NH3	TSP	VOC	THC
304006	32	0	3	0	6,390	0	0	0	149	0	0
304007	6,809	0	3,731	0	5,332	0	0	0	6,419	104	254
304008	1,714	0	616	0	17	0	0	0	3,046	4	6
304009	0	0	0	0	0	0	0	0	139	0	0
304010	0	0	0	0	0	0	0	0	0	0	0
304020	767	0	33	0	3	0	0	0	786	166	166
304022	1	0	885	0	27	0	0	0	128	206	325
304034	67	0	170	0	0	0	0	0	0	0	0
304050	0	0	0	0	554	0	0	0	25	477	753
304888	0	0	0	0	0	0	0	0	77	1	1
304999	2,677	0	273	0	252	0	0	0	3,190	563	890
305001	10	0	3	0	2,330	0	0	0	4,647	2,875	2,881
305002	42,343	0	9,600	0	5,992	0	0	0	73,020	619	1,408
305003	6,288	26	3,675	0	1,981	0	0	0	128,969	819	1,708
305004	166	1	0	0	45	0	0	0	474	306	306
305005	829	0	901	0	64	0	0	0	8,044	19	45
305006	187,090	2,266	53,312	302	1,296	0	0	0	135,301	433	486
305007	158,859	7,611	58,727	207	2,227	0	0	0	214,451	452	512
305008	457	0	126	0	1	0	0	0	20,986	35	95
305009	472	0	187	0	4	0	0	0	9,518	10	28
305010	11,673	36	3,643	0	137	0	0	0	54,260	2,267	2,316
305011	0	0	4,386	0	86	0	0	0	3,526	6	16
305012	5,532	15	5,725	0	1,030	0	0	0	19,030	1,480	4,229
305013	0	0	0	0	0	0	0	0	96	74	211
305014	28,602	87	42,809	991	10,815	0	0	0	14,784	1,950	5,319
305015	259	13,205	68	0	16	0	0	0	21,655	8	11
305016	15,937	0	27,491	0	29,711	0	0	0	86,894	1,009	1,031
305017	1,278	0	128	0	10,806	0	0	0	3,109	49	78
305018	0	0	0	0	0	0	0	0	1,078	49	141
305019	26,487	0	648	0	3	0	0	0	17,411	0	1
305020	2,003	0	652	0	33	0	0	0	354,666	60	171
305021	440	0	621	0	0	0	0	0	827	0	0
305022	0	0	0	0	0	0	0	0	2,530	0	0
305024	0	0	64	0	43	0	0	0	13,609	0	0
305025	78	0	64	0	3	0	0	0	21,164	1	2
305026	3	0	10	0	6	0	0	0	617	0	0
305031	0	0	0	0	0	0	0	0	292	0	0
305032	0	0	0	0	1	0	0	0	83	946	2,702
305040	5,514	0	2,468	0	382	0	0	0	32,457	41	116
305100	120	0	0	0	0	0	0	0	1,233	0	0
305103	0	0	0	0	0	0	0	0	634	0	0
305888	292	0	0	0	258	0	0	0	3,216	174	174
305999	6,910	0	1,773	0	8,282	0	0	0	36,960	2,158	6,167
306001	296,609	747	194,109	0	18,384	0	0	0	18,730	6,278	11,405
306002	263,612	8,594	45,604	0	1,363,517	0	0	8,427	45,761	63,337	98,954
306003	9,474	11	451	0	102,795	0	0	87	3,097	2,294	3,584
306004	12,150	56	8,553	0	1,910	0	0	0	17	15,632	18,317
306005	1,344	0	14	0	34	0	0	0	240	107,178	112,366
306006	1,229	0	118	0	9	0	0	0	5	34,549	42,465
306007	0	0	0	0	0	0	0	0	0	6,851	6,851
306008	1,984	0	2,486	0	132	0	0	0	163	81,570	93,104
306009	16,083	0	1,804	0	104	0	0	0	391	5,809	11,620

SCC	SO2	SO4	NOx	Pb	CO	HCl	HF	NH3	TSP	VOC	THC
	TONS/YEAR										
306010	0	0	0	0	0	0	0	0	0	1,419	1,419
306011	84	0	52	0	388	0	0	0	36	50,007	60,326
306012	19,455	0	2,090	0	6	0	0	0	51,386	1,928	3,012
306014	4,021	0	1,211	0	47	0	0	0	1,786	236	536
306100	0	0	0	0	0	0	0	0	0	2,796	2,796
306888	469	0	241	0	0	0	0	0	174	20,992	30,153
306999	61,103	0	5,656	0	57,420	0	0	0	3,376	35,893	54,718
307001	106,094	41,572	47,450	0	713,756	0	0	0	78,608	11,513	11,682
307002	30,417	5,444	1,846	0	276	0	0	0	2,767	237	237
307003	10	0	0	0	0	0	0	0	89	176	176
307004	0	0	55	0	0	0	0	0	1,242	2,157	2,157
307005	0	0	0	0	0	0	0	0	1	244	244
307007	372	0	4,800	0	1,471	0	0	0	45,723	6,559	6,559
307008	3,073	0	3,668	0	763	0	0	0	13,221	1,923	1,923
307011	5	0	0	0	0	0	0	0	0	8,488	8,488
307013	0	0	0	0	0	0	0	0	0	157	157
307020	2	0	0	0	0	0	0	0	13,270	4,579	4,579
307030	7	0	48	0	148	0	0	0	2,739	189	189
307888	0	0	0	0	0	0	0	0	843	714	714
307999	919	0	683	0	9,561	0	0	0	5,243	1,617	1,617
308001	0	0	0	0	0	0	0	0	182	11,073	11,073
308006	0	0	122	0	34	0	0	0	254	1,033	1,033
308007	0	0	0	0	0	0	0	0	124	6,813	6,813
309001	0	0	0	0	0	0	0	0	93	467	737
309002	0	0	0	0	0	0	0	0	765	0	0
309010	0	0	0	0	0	0	0	0	77	1,992	2,758
309011	0	0	0	0	0	0	0	0	0	49	67
309020	0	0	4	0	1	0	0	0	61	4,450	7,031
309030	0	0	0	0	0	0	0	0	2,669	754	1,045
309060	0	0	0	0	0	0	0	0	135	0	0
309888	0	0	0	0	0	0	0	0	90,275	69	96
309999	140	0	390	0	3	0	0	0	2,022	3,198	3,198
310001	1,038	0	0	0	0	0	0	0	720	13,139	13,139
310002	1,075	5	2,904	0	1,593	0	0	0	502	804	862
312999	0	0	7	0	2	0	0	0	240	0	0
320999	0	0	0	0	0	0	0	0	4	419	419
330001	43	0	19	0	3	0	0	0	1,223	22,377	22,377
330002	0	0	0	0	0	0	0	0	98	3,766	3,766
330003	1	0	1	0	1	0	0	0	85	82	82
330004	0	0	0	0	0	0	0	0	14	94	94
390001	903	0	2,029	0	120	0	0	0	428	6	6
390002	71,893	192	2,763	0	29,478	0	0	0	8,569	664	678
390004	46,919	64	6,687	0	1,005	0	0	0	3,057	1,719	1,931
390005	4,029	9	3,550	0	1,785	0	0	0	4,251	860	860
390006	38,151	109	28,222	0	52,259	0	0	0	11,429	11,261	25,493
390007	13,403	0	2,379	0	22,220	0	0	0	2,515	234	404
390008	5,601	2	1,111	0	34,160	0	0	0	426	46	46
390009	0	0	342	0	0	0	0	0	1,612	130	130
390010	0	0	10	0	1	0	0	0	846	756	1,718
390012	62	0	0	0	0	0	0	0	10	0	0
390013	0	0	0	0	0	0	0	0	0	0	0
399999	29,212	0	14,600	0	77,163	0	0	0	48,893	90,446	205,538

	TONS/YEAR										
SCC	SO2	SO4	NOx	Pb	CO	HCl	HF	NH3	TSP	VOC	THC
401001	0	0	0	0	0	0	0	0	0	7,633	7,633
401002	327	0	2	0	3	0	0	0	205	100,419	100,419
401003	0	0	1	0	0	0	0	0	0	921	921
401888	0	0	0	0	0	0	0	0	0	407	407
401913	0	0	0	0	0	0	0	0	0	66	66
402001	2	0	318	0	84	0	0	0	1,093	245,536	245,536
402002	0	0	0	0	0	0	0	0	0	2,015	2,015
402003	0	0	0	0	0	0	0	0	103	34,008	34,008
402004	0	0	8	0	1	0	0	0	455	140,729	140,729
402005	0	0	297	0	183	0	0	0	486	122,551	122,551
402006	0	0	7	0	1	0	0	0	1,129	78,612	78,612
402007	2	0	18	0	2,048	0	0	0	69	22,573	22,573
402008	193	0	180	0	575	0	0	0	1,504	21,367	61,451
402009	1	0	619	0	42	0	0	0	818	221,147	221,147
402010	0	0	50	0	13	0	0	0	11	3,858	3,858
402011	0	0	0	0	0	0	0	0	0	1,928	1,928
402013	0	0	0	0	0	0	0	0	0	16,518	16,518
402014	0	0	0	0	0	0	0	0	0	103	103
402016	0	0	0	0	0	0	0	0	3	923	923
402017	0	0	496	0	83	0	0	0	0	31,769	32,037
402018	0	0	2	0	0	0	0	0	0	314	314
402019	0	0	0	0	0	0	0	0	0	337	337
402020	0	0	0	0	0	0	0	0	0	475	519
402021	0	0	0	0	0	0	0	0	0	140	140
402022	0	0	0	0	0	0	0	0	0	5,060	5,060
402023	0	0	0	0	0	0	0	0	49	245	245
402024	0	0	0	0	0	0	0	0	2	18	18
402025	0	0	0	0	0	0	0	0	0	1,655	1,655
402888	6	0	0	0	0	0	0	0	0	29,090	29,090
402901	0	0	0	0	0	0	0	0	0	64	64
402999	0	0	685	0	557	0	0	0	8,724	88,798	88,798
403001	425	0	4	0	1	0	0	0	1,720	161,522	170,891
403002	0	0	0	0	0	0	0	0	134	66,658	67,330
403003	0	0	0	0	0	0	0	0	0	3,839	3,868
403010	0	0	100	0	66,886	0	0	0	357	41,475	42,274
403011	4,350	0	972	0	33,443	0	0	0	1,110	34,742	34,984
403012	0	0	0	0	0	0	0	0	0	23,430	23,430
403888	0	0	0	0	0	0	0	0	0	4,627	4,736
403999	223	0	0	0	88	0	0	0	359	29,774	29,774
404001	0	0	80	0	0	0	0	0	2,982	113,930	113,930
404002	0	0	0	0	0	0	0	0	0	2,205	2,205
405001	0	0	11	0	14	0	0	0	53	24,311	101,339
405002	0	0	11	0	0	0	0	0	0	3,664	15,157
405003	0	0	290	0	38	0	0	0	45	15,344	15,344
405004	0	0	6	0	0	0	0	0	0	27,533	27,533
405005	0	0	30	0	17	0	0	0	423	66,633	66,633
405006	0	0	0	0	0	0	0	0	0	420	420
405888	3	0	0	0	0	0	0	0	0	561	1,055
406001	0	0	0	0	100,329	0	0	0	1,737	90,703	91,457
406002	0	0	0	0	0	0	0	0	2	21,748	22,615
406003	0	0	0	0	0	0	0	0	32	5,748	5,748
406004	0	0	0	0	0	0	0	0	16	8,866	8,866

1980 NAPAP 5.0 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS, POINT SOURCES

SCC	SO2	SO4	NOx	Pb	CO	HCl	HF	NH3	TSP	VOC	THC
	TONS/YEAR										
406888	0	0	0	0	0	0	0	0	0	3,147	3,147
490001	0	0	0	0	0	0	0	0	0	2,116	2,902
490999	0	0	3	0	0	0	0	0	445	95,261	130,632
501001	5,322	9	5,580	143	58,001	5,357	0	0	12,541	1,311	6,682
501002	281	0	1,747	0	25,938	0	0	0	4,905	12,612	12,612
501005	381	0	1,602	2	1,988	26	0	0	5,968	72	406
501900	1,139	0	0	0	20	0	0	0	287	0	2
501999	6	0	0	0	34	0	0	0	30	6	6
502001	2,101	4	1,988	79	14,550	2,104	0	0	1,837	1,228	2,646
502002	0	0	16	0	577	0	0	0	70	35	177
502003	0	0	0	0	0	0	0	0	0	0	0
502005	1,881	12	11,794	23	0	0	0	0	1,924	382	2,262
502900	535	0	10	0	1	0	0	0	125	82	187
503001	17,600	4	7,847	93	218,560	3,091	0	0	19,264	5,500	28,037
503002	63	0	666	0	22,412	0	0	0	1,765	4,243	7,369
503005	875	2	2,690	4	351	0	0	0	16,130	80	476
503007	0	0	0	0	0	0	0	0	95	0	0
503900	2,081	0	806	0	2,293	0	0	0	589	181	925
599999	156	0	0	0	0	0	0	0	0	19	98
Contig. U.S.	24,504,741	725,349	9,643,101	7,695	9,128,108	519,652	113,183	245,467	4,364,247	3,963,258	4,657,042

1980 NAPAP 5.0 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS, POINT SOURCES

SCC	SO2	SO4	NOx	Pb	CO	HCl	HF	NH3	TSP	VOC	THC
	METRIC TONS/YEAR										
101002	14,327,814	306,650	4,516,987	27	145,795	430,279	52,085	121	473,207	23,430	23,934
101003	253,611	32,678	182,606	5	12,310	143	143	6	47,413	1,834	1,873
101004	1,256,962	37,295	356,964	0	36,133	0	0	0	49,230	11,500	12,922
101005	7,583	939	4,760	0	1,002	0	0	0	85	41	41
101006	878	0	675,437	0	61,972	0	0	0	4,191	1,236	2,809
102001	3,257	251	1,822	0	105	339	15	0	229	9	17
102002	1,077,662	39,644	354,765	25	31,956	28,570	11,077	9	314,953	5,856	5,982
102003	47,747	2,757	10,709	0	3,348	234	40	1	22,089	120	122
102004	948,923	20,334	255,331	0	48,309	0	0	0	72,206	45,601	51,239
102005	86,690	3,723	35,615	0	7,089	0	0	0	5,772	14,541	14,541
102006	37,652	185	467,194	0	97,164	0	0	0	15,512	11,621	26,408
102007	273,564	1,011	92,497	0	12,843	0	0	0	10,331	6,865	10,210
102008	4,056	15	1,094	0	17,370	0	0	0	1,869	268	274
102009	14,029	64,244	88,245	0	93,524	0	0	0	83,427	56,648	57,866
102010	49	0	161	0	21	0	0	0	53	9	20
102011	559	0	1,710	0	1,309	0	0	0	8,049	3,677	3,677
102012	3,128	0	1,687	0	14	0	0	0	1,645	20	20
102013	15,881	0	2,547	332	103	0	0	0	590	58	58
103001	280	15	100	0	4	19	0	0	366	3	3
103002	75,671	2,801	17,326	1	4,023	1,569	168	1	26,394	861	880
103003	1,637	108	308	0	309	16	1	0	1,869	27	27
103004	73,821	9,162	29,478	0	2,134	0	0	0	30,740	1,228	1,379
103005	18,199	898	3,167	0	916	0	0	0	9,286	796	796
103006	562	0	35,869	0	4,478	0	0	0	1,179	1,065	2,420
103009	240	1,286	2,485	0	1,552	0	0	0	961	840	858
103012	0	0	0	0	0	0	0	0	28	0	0
103013	0	0	0	4	0	0	0	0	1	5	5
103900	0	0	0	0	0	0	0	0	3	0	0
105001	28,849	150	10,065	0	39,469	0	0	0	2,814	3,148	4,727
105002	866	558	823	0	201	0	0	0	119	198	198
199999	7,870	0	2,284	0	452	0	0	0	1,106	1,116	1,116
201001	8,837	15	28,496	0	6,345	0	0	0	1,984	1,800	2,103
201002	24	0	74,155	0	15,030	0	0	0	1,288	1,831	6,919
202001	2,917	12	12,313	0	3,317	0	0	0	741	1,376	1,608
202002	4,461	0	583,157	0	102,457	0	0	0	2,865	11,052	75,591
202003	8	0	150	0	5,842	0	0	0	170	249	290
202004	9	0	637	0	166	0	0	0	43	16	18
203001	9	0	459	0	73	0	0	0	13	17	20
203002	3	0	742	0	1,239	0	0	0	8	9	66
204001	177	0	615	0	430	0	0	0	142	69	494
204004	53	0	802	0	1,089	0	0	0	191	336	392
299999	0	0	485	0	107	0	0	0	0	1	1
301001	1,329	0	4,159	0	25,842	0	0	0	88	8,272	8,272
301003	1,284	4	6,320	0	56,412	0	0	2,820	470	14,033	14,033
301005	18,071	0	1,145	0	1,670,694	0	0	0	2,584	171,953	171,953
301006	1,651	0	18,670	0	64,149	0	0	0	69,093	85,832	85,832
301007	0	0	0	0	0	0	0	0	0	660	665
301008	0	0	0	0	91	0	0	0	49	336	336
301009	681	0	107	0	21	0	0	0	938	543	543
301010	73	0	2,144	0	0	0	0	0	905	648	648
301011	0	0	0	0	145	663	0	0	46	38	87
301012	113	0	0	0	0	0	0	0	925	0	0

1980 NAPAP 5.0 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS, POINT SOURCES

SCC	SO2	SO4	NOx	Pb	CO	HCl	HF	NH3	TSP	VOC	THC
	METRIC TONS/YEAR										
301013	6,645	0	43,483	0	5,042	0	0	0	1,207	1,352	1,352
301014	4,135	0	0	0	0	0	0	0	1,689	14,524	14,524
301015	0	0	0	0	0	0	0	0	9	5,402	5,402
301016	10,864	0	0	0	11	0	1,497	0	968	0	0
301017	1	0	76	0	0	0	0	0	341	10	10
301018	1,640	0	276	0	202	0	0	0	53,117	95,707	96,456
301019	332	5	0	0	19,972	0	0	0	6,526	514	1,853
301020	0	0	0	0	0	0	0	0	5	1,605	1,605
301021	220	0	428	0	4,511	0	0	0	4,420	198	198
301022	6,990	0	0	0	0	0	0	0	327	0	0
301023	261,997	1,297	342	0	1,102	0	0	0	14,361	56	57
301024	6,773	0	2	0	3,778	0	0	0	1,094	15,621	15,621
301025	548	0	0	0	0	0	0	0	38	19,804	20,157
301026	4,585	0	269	0	17,240	0	0	0	1,306	81,764	81,764
301027	909	0	1,764	0	7,368	0	0	203,933	10,192	41	41
301028	952	0	0	0	0	0	0	0	3,094	0	0
301029	5,421	0	14	0	4	0	27,056	0	559	3	3
301030	7,875	0	7,408	0	4	0	1,754	695	7,444	29	29
301031	0	0	0	0	32,530	0	0	0	262	53,049	53,049
301032	228,517	2,792	611	0	2,126	0	0	0	891	1,274	1,274
301033	717	0	614	0	0	0	0	0	24	2,485	2,485
301034	983	0	3,270	0	103	0	0	0	376	2,428	2,460
301035	10,201	4	1,300	0	24,876	0	0	0	1,492	4	6
301036	0	0	0	0	0	0	0	0	286	0	0
301040	0	0	0	0	0	0	0	0	4,361	0	0
301041	1,732	5	0	0	102	0	0	0	303	2,954	3,006
301042	0	0	11	0	0	0	0	0	18	1,750	1,750
301050	0	0	0	0	0	0	0	0	0	1,079	1,098
301060	205	0	11	0	158	0	0	0	3,581	1,369	1,392
301091	34	0	40	0	0	0	0	0	0	723	723
301100	0	0	0	0	12,010	0	0	0	0	225	225
301111	0	0	0	0	0	0	0	0	79	0	0
301120	0	0	7	0	2	0	0	0	343	1,224	1,224
301125	227	0	48	0	0	0	0	0	15	1,911	1,911
301130	0	0	0	0	0	0	0	0	57	137	227
301132	63	0	607	0	159	0	0	0	246	4,147	4,217
301137	435	0	6	0	41	0	0	0	0	294	299
301156	0	0	0	0	0	0	0	0	0	118	118
301167	0	0	0	0	0	0	0	0	0	124	124
301169	0	0	0	0	0	0	0	0	0	345	345
301174	0	0	0	0	0	0	0	0	0	1,508	1,535
301181	0	0	0	0	9	0	0	0	0	90	90
301197	2,689	0	335	0	1,326	0	0	0	55	20,868	20,868
301202	0	0	0	0	0	0	0	0	0	925	925
301206	0	0	0	0	0	0	0	0	0	472	472
301250	1	0	2,419	0	3,596	0	0	0	5	1,244	1,244
301251	0	0	0	0	0	0	0	0	0	906	906
301253	0	0	0	0	0	0	0	0	0	96	96
301254	22	0	204	0	5,377	0	0	0	0	7,579	7,579
301258	0	0	0	0	45	0	0	0	3	6,719	6,758
301820	220	0	0	0	61	0	0	0	27	1,683	1,683
301830	0	0	0	0	0	0	0	0	165	0	0

	METRIC TONS/YEAR										
SCC	SO2	SO4	NOx	Pb	CO	HCl	HF	NH3	TSP	VOC	THC
301888	224	0	5	0	33	0	0	0	11,404	424	431
301900	165,666	0	463	0	22	0	0	0	373	591	591
301999	52,368	0	29,724	0	218,974	0	0	0	47,258	191,735	191,735
302001	1	0	179	0	14	0	0	0	16,849	4	4
302002	0	0	56	0	44	0	0	0	1,794	44	44
302004	0	0	0	0	0	0	0	0	561	0	0
302005	16	0	1	0	0	0	0	0	40,913	0	0
302006	5	0	80	0	48	0	0	0	181,743	0	0
302007	180	0	24	0	3	0	0	0	39,119	690	6,391
302008	464	0	5	0	15	0	0	0	8,782	2	2
302009	1,147	0	115	0	13	0	0	0	1,465	367	1,970
302010	0	0	0	0	0	0	0	0	557	21,804	21,804
302012	0	0	0	0	0	0	0	0	3	23	305
302013	0	0	1	0	65	0	0	0	25	762	778
302014	96	0	0	0	0	0	0	0	1,439	0	0
302015	1,519	0	0	0	16	0	0	0	1,528	0	0
302016	634	0	322	0	23	0	0	0	7,107	6	6
302017	0	0	0	0	0	0	0	0	485	0	0
302018	0	0	0	0	0	0	0	0	0	16	215
302019	0	0	0	0	0	0	0	0	99	707	9,238
302020	0	0	0	0	0	0	0	691	2,313	0	0
302026	0	0	0	0	0	0	0	0	0	0	0
302030	0	0	1	0	0	0	0	0	133	0	0
302031	0	0	0	0	0	0	0	0	442	0	0
302032	1,085	0	0	0	0	0	0	0	17	4	52
302033	0	0	0	0	0	0	0	0	0	1,735	1,735
302888	0	0	2	0	24	0	0	0	347	14	147
302999	1,126	0	386	0	15	0	0	0	4,641	336	4,391
303000	0	0	0	0	0	0	0	0	5,169	0	0
303001	79,475	509	119,114	0	615,956	0	8,844	0	42,620	14,024	30,027
303002	1,273	0	893	0	148	0	0	0	19,326	8	8
303003	68,690	11,560	3,875	0	34,471	0	0	6,689	53,145	29,601	63,380
303004	27	0	4	0	10	0	0	0	1,967	36	78
303005	997,057	32,109	942	145	6,542	0	0	0	18,654	15	18
303006	351	0	100	54	256	0	0	0	25,589	17	20
303007	83	0	0	0	329	0	0	0	1,116	0	0
303008	57,521	670	16,036	1,130	1,012,107	0	0	0	148,196	3,925	16,143
303009	48,773	0	27,190	1,523	335,050	0	0	0	58,116	3,873	4,038
303010	52,529	1,390	3	805	39,853	0	0	0	6,467	0	0
303011	1,759	0	0	0	0	0	0	0	3,601	66	66
303012	0	0	149	0	4,530	0	0	0	1	0	0
303013	0	0	0	0	0	0	0	0	0	0	0
303014	1,999	0	187	0	5,390	0	0	0	2,391	387	387
303023	9,625	31	0	0	0	0	0	0	62,067	0	0
303030	34,286	10,185	91	349	15	0	0	0	8,035	3	5
303888	3	0	1	0	0	0	0	0	1,677	0	0
303999	2,502	0	109	0	501	0	0	0	954	76	186
304001	985	0	8,031	0	892	0	0	0	10,504	3,313	5,234
304002	5	0	846	207	3,386	0	0	0	4,400	161	254
304003	6,627	8	1,158	451	445,491	0	0	0	33,418	1,653	4,053
304004	24,127	89	325	250	145	0	0	0	7,884	2,987	4,718
304005	0	0	0	0	0	0	0	0	0	0	0

	METRIC TONS/YEAR										
SCC	SO2	SO4	NOx	Pb	CO	HCl	HF	NH3	TSP	VOC	THC
304006	29	0	3	0	5,797	0	0	0	135	0	0
304007	6,177	0	3,385	0	4,837	0	0	0	5,823	94	231
304008	1,555	0	559	0	15	0	0	0	2,763	3	6
304009	0	0	0	0	0	0	0	0	126	0	0
304010	0	0	0	0	0	0	0	0	0	0	0
304020	696	0	30	0	3	0	0	0	713	151	151
304022	1	0	803	0	24	0	0	0	116	187	295
304034	61	0	154	0	0	0	0	0	0	0	0
304050	0	0	0	0	503	0	0	0	23	433	683
304888	0	0	0	0	0	0	0	0	70	1	1
304999	2,429	0	248	0	229	0	0	0	2,894	511	807
305001	9	0	3	0	2,114	0	0	0	4,216	2,608	2,614
305002	38,414	0	8,709	0	5,436	0	0	0	66,244	562	1,277
305003	5,704	24	3,334	0	1,797	0	0	0	117,001	743	1,549
305004	151	1	0	0	41	0	0	0	430	278	278
305005	752	0	817	0	58	0	0	0	7,298	17	41
305006	169,728	2,056	48,365	274	1,176	0	0	0	122,745	393	441
305007	144,117	6,905	53,277	188	2,020	0	0	0	194,550	410	465
305008	415	0	114	0	1	0	0	0	19,039	32	86
305009	428	0	170	0	4	0	0	0	8,635	9	26
305010	10,590	33	3,305	0	124	0	0	0	49,225	2,057	2,101
305011	0	0	3,979	0	78	0	0	0	3,199	5	15
305012	5,019	14	5,194	0	934	0	0	0	17,264	1,343	3,836
305013	0	0	0	0	0	0	0	0	87	67	191
305014	25,948	79	38,836	899	9,811	0	0	0	13,412	1,769	4,825
305015	235	11,980	62	0	15	0	0	0	19,645	7	10
305016	14,458	0	24,940	0	26,954	0	0	0	78,830	916	935
305017	1,159	0	116	0	9,803	0	0	0	2,820	45	71
305018	0	0	0	0	0	0	0	0	978	45	128
305019	24,029	0	588	0	3	0	0	0	15,795	0	1
305020	1,817	0	591	0	30	0	0	0	321,754	54	155
305021	399	0	563	0	0	0	0	0	750	0	0
305022	0	0	0	0	0	0	0	0	2,295	0	0
305024	0	0	58	0	39	0	0	0	12,346	0	0
305025	71	0	58	0	3	0	0	0	19,200	1	2
305026	3	0	9	0	5	0	0	0	560	0	0
305031	0	0	0	0	0	0	0	0	265	0	0
305032	0	0	0	0	1	0	0	0	75	858	2,452
305040	5,002	0	2,239	0	347	0	0	0	29,445	37	105
305100	109	0	0	0	0	0	0	0	1,119	0	0
305103	0	0	0	0	0	0	0	0	575	0	0
305888	265	0	0	0	234	0	0	0	2,918	158	158
305999	6,269	0	1,608	0	7,513	0	0	0	33,530	1,958	5,595
306001	269,085	678	176,096	0	16,678	0	0	0	16,992	5,696	10,347
306002	239,149	7,796	41,372	0	1,236,986	0	0	7,645	41,514	57,459	89,771
306003	8,595	10	409	0	93,256	0	0	79	2,810	2,081	3,251
306004	11,023	51	7,759	0	1,733	0	0	0	15	14,182	16,617
306005	1,219	0	13	0	31	0	0	0	218	97,232	101,939
306006	1,115	0	107	0	8	0	0	0	5	31,343	38,524
306007	0	0	0	0	0	0	0	0	0	6,215	6,215
306008	1,800	0	2,255	0	120	0	0	0	148	74,000	84,464
306009	14,591	0	1,637	0	94	0	0	0	355	5,270	10,542

	METRIC TONS/YEAR										
SCC	SO2	SO4	NOx	Pb	CO	HCl	HF	NH3	TSP	VOC	THC
306010	0	0	0	0	0	0	0	0	0	1,287	1,287
306011	76	0	47	0	352	0	0	0	33	45,366	54,728
306012	17,650	0	1,896	0	5	0	0	0	46,617	1,749	2,733
306014	3,648	0	1,099	0	43	0	0	0	1,620	214	486
306100	0	0	0	0	0	0	0	0	0	2,537	2,537
306888	425	0	219	0	0	0	0	0	158	19,044	27,355
306999	55,433	0	5,131	0	52,092	0	0	0	3,063	32,563	49,640
307001	96,249	37,714	43,047	0	647,521	0	0	0	71,313	10,445	10,598
307002	27,594	4,939	1,675	0	250	0	0	0	2,510	215	215
307003	9	0	0	0	0	0	0	0	81	160	160
307004	0	0	50	0	0	0	0	0	1,127	1,957	1,957
307005	0	0	0	0	0	0	0	0	1	221	221
307007	337	0	4,355	0	1,334	0	0	0	41,480	5,950	5,950
307008	2,788	0	3,328	0	692	0	0	0	11,994	1,745	1,745
307011	5	0	0	0	0	0	0	0	0	7,700	7,700
307013	0	0	0	0	0	0	0	0	0	142	142
307020	2	0	0	0	0	0	0	0	12,039	4,154	4,154
307030	6	0	44	0	134	0	0	0	2,485	171	171
307888	0	0	0	0	0	0	0	0	765	648	648
307999	834	0	620	0	8,674	0	0	0	4,756	1,467	1,467
308001	0	0	0	0	0	0	0	0	165	10,046	10,046
308006	0	0	111	0	31	0	0	0	230	937	937
308007	0	0	0	0	0	0	0	0	112	6,181	6,181
309001	0	0	0	0	0	0	0	0	84	423	669
309002	0	0	0	0	0	0	0	0	694	0	0
309010	0	0	0	0	0	0	0	0	70	1,807	2,502
309011	0	0	0	0	0	0	0	0	0	44	61
309020	0	0	4	0	1	0	0	0	55	4,037	6,378
309030	0	0	0	0	0	0	0	0	2,421	684	948
309060	0	0	0	0	0	0	0	0	122	0	0
309888	0	0	0	0	0	0	0	0	81,898	63	87
309999	127	0	354	0	3	0	0	0	1,834	2,901	2,901
310001	942	0	0	0	0	0	0	0	653	11,920	11,920
310002	975	5	2,635	0	1,445	0	0	0	455	730	782
312999	0	0	6	0	2	0	0	0	218	0	0
320999	0	0	0	0	0	0	0	0	4	380	380
330001	39	0	17	0	3	0	0	0	1,110	20,300	20,300
330002	0	0	0	0	0	0	0	0	89	3,417	3,417
330003	1	0	1	0	1	0	0	0	77	74	74
330004	0	0	0	0	0	0	0	0	13	85	85
390001	819	0	1,841	0	109	0	0	0	388	5	5
390002	65,221	174	2,507	0	26,743	0	0	0	7,774	602	615
390004	42,565	58	6,066	0	912	0	0	0	2,773	1,559	1,752
390005	3,655	8	3,221	0	1,619	0	0	0	3,857	780	780
390006	34,611	99	25,603	0	47,409	0	0	0	10,368	10,216	23,127
390007	12,159	0	2,158	0	20,158	0	0	0	2,282	212	367
390008	5,081	2	1,008	0	30,990	0	0	0	386	42	42
390009	0	0	310	0	0	0	0	0	1,462	118	118
390010	0	0	9	0	1	0	0	0	767	686	1,558
390012	56	0	0	0	0	0	0	0	9	0	0
390013	0	0	0	0	0	0	0	0	0	0	0
399999	26,501	0	13,245	0	70,002	0	0	0	44,356	82,052	186,464

	METRIC TONS/YEAR										
SCC	SO2	SO4	NOx	Pb	CO	HCl	HF	NH3	TSP	VOC	THC
401001	0	0	0	0	0	0	0	0	0	6,925	6,925
401002	297	0	2	0	3	0	0	0	186	91,100	91,100
401003	0	0	1	0	0	0	0	0	0	836	836
401888	0	0	0	0	0	0	0	0	0	369	369
401913	0	0	0	0	0	0	0	0	0	60	60
402001	2	0	288	0	76	0	0	0	992	222,751	222,751
402002	0	0	0	0	0	0	0	0	0	1,828	1,828
402003	0	0	0	0	0	0	0	0	93	30,852	30,852
402004	0	0	7	0	1	0	0	0	413	127,670	127,670
402005	0	0	269	0	166	0	0	0	441	111,179	111,179
402006	0	0	6	0	1	0	0	0	1,024	71,317	71,317
402007	2	0	16	0	1,858	0	0	0	63	20,478	20,478
402008	175	0	163	0	522	0	0	0	1,364	19,384	55,748
402009	1	0	562	0	38	0	0	0	742	200,625	200,625
402010	0	0	45	0	12	0	0	0	10	3,500	3,500
402011	0	0	0	0	0	0	0	0	0	1,749	1,749
402013	0	0	0	0	0	0	0	0	0	14,985	14,985
402014	0	0	0	0	0	0	0	0	0	93	93
402016	0	0	0	0	0	0	0	0	3	837	837
402017	0	0	450	0	75	0	0	0	0	28,821	29,064
402018	0	0	2	0	0	0	0	0	0	285	285
402019	0	0	0	0	0	0	0	0	0	306	306
402020	0	0	0	0	0	0	0	0	0	431	471
402021	0	0	0	0	0	0	0	0	0	127	127
402022	0	0	0	0	0	0	0	0	0	4,590	4,590
402023	0	0	0	0	0	0	0	0	44	222	222
402024	0	0	0	0	0	0	0	0	2	16	16
402025	0	0	0	0	0	0	0	0	0	1,501	1,501
402888	5	0	0	0	0	0	0	0	0	26,391	26,391
402901	0	0	0	0	0	0	0	0	0	58	58
402999	0	0	621	0	505	0	0	0	7,914	80,558	80,558
403001	386	0	4	0	1	0	0	0	1,560	146,533	155,033
403002	0	0	0	0	0	0	0	0	122	60,472	61,082
403003	0	0	0	0	0	0	0	0	0	3,482	3,509
403010	0	0	91	0	60,679	0	0	0	324	37,626	38,351
403011	3,946	0	882	0	30,340	0	0	0	1,007	31,518	31,738
403012	0	0	0	0	0	0	0	0	0	21,256	21,256
403888	0	0	0	0	0	0	0	0	0	4,198	4,296
403999	202	0	0	0	80	0	0	0	326	27,011	27,011
404001	0	0	73	0	0	0	0	0	2,705	103,358	103,358
404002	0	0	0	0	0	0	0	0	0	2,000	2,000
405001	0	0	10	0	13	0	0	0	48	22,055	91,935
405002	0	0	10	0	0	0	0	0	0	3,324	13,750
405003	0	0	263	0	34	0	0	0	41	13,920	13,920
405004	0	0	5	0	0	0	0	0	0	24,978	24,978
405005	0	0	27	0	15	0	0	0	384	60,450	60,450
405006	0	0	0	0	0	0	0	0	0	381	381
405888	3	0	0	0	0	0	0	0	0	509	957
406001	0	0	0	0	91,019	0	0	0	1,576	82,286	82,970
406002	0	0	0	0	0	0	0	0	2	19,730	20,516
406003	0	0	0	0	0	0	0	0	29	5,215	5,215
406004	0	0	0	0	0	0	0	0	15	8,043	8,043

	METRIC TONS/YEAR										
SCC	SO2	SO4	NOx	Pb	CO	HCl	HF	NH3	TSP	VOC	THC
406888	0	0	0	0	0	0	0	0	0	2,855	2,855
490001	0	0	0	0	0	0	0	0	0	1,920	2,633
490999	0	0	3	0	0	0	0	0	404	86,421	118,510
501001	4,828	8	5,062	130	52,619	4,860	0	0	11,377	1,189	6,062
501002	255	0	1,585	0	23,531	0	0	0	4,450	11,442	11,442
501005	346	0	1,453	2	1,804	24	0	0	5,414	66	368
501900	1,033	0	0	0	18	0	0	0	260	0	2
501999	5	0	0	0	31	0	0	0	27	5	5
502001	1,906	4	1,804	72	13,200	1,909	0	0	1,667	1,114	2,400
502002	0	0	15	0	523	0	0	0	64	31	161
502003	0	0	0	0	0	0	0	0	0	0	0
502005	1,706	11	10,700	21	0	0	0	0	1,745	347	2,052
502900	485	0	9	0	1	0	0	0	113	75	170
503001	15,967	4	7,119	84	198,278	2,804	0	0	17,476	4,989	25,435
503002	57	0	604	0	20,332	0	0	0	1,601	3,849	6,685
503005	794	2	2,440	4	318	0	0	0	14,633	73	432
503007	0	0	0	0	0	0	0	0	86	0	0
503900	1,888	0	731	0	2,080	0	0	0	534	165	839
599999	142	0	0	0	0	0	0	0	0	17	89
Contig. U.S.	22,230,755	658,038	8,748,242	6,981	8,281,040	471,429	102,680	222,688	3,959,255	3,595,476	4,224,879

1980 NAPAP 5.0 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS, POINT SOURCES

State	SO2	SO4	NOx	Pb	CO	HCl	HF	NH3	TSP	VOC	THC
	TONS/YEAR										
Alabama	777,509	28,739	231,517	185	283,116	19,291	3,518	602	81,327	52,531	66,836
Arizona	824,136	29,305	106,764	73	64,834	8,862	1,071	5,009	27,451	13,246	13,948
Arkansas	55,654	8,336	43,525	1	135,410	1,761	1,413	12,324	33,610	15,425	16,385
California	390,765	22,801	325,900	216	354,357	0	131	4,653	135,939	296,959	353,118
Colorado	117,379	7,626	139,517	442	110,700	9,054	1,186	7,795	53,026	16,536	22,616
Connecticut	34,524	2,228	22,506	78	11,759	386	0	0	8,160	24,045	24,771
Delaware	96,889	1,965	25,970	1	8,526	1,106	184	1	16,575	25,868	27,329
Dist. of Colum.	7,164	399	2,616	2	4,109	589	7	0	863	451	1,169
Florida	1,018,759	25,261	318,374	23	145,583	8,670	29,030	21,887	100,437	48,306	51,735
Georgia	862,393	27,802	279,517	45	162,451	20,392	2,486	19,889	41,780	27,300	28,379
Idaho	36,610	6,598	8,820	449	41,789	314	173	121	12,020	2,608	4,649
Illinois	1,350,414	33,150	466,947	1,518	312,428	33,310	7,890	39,976	197,188	153,055	200,212
Indiana	1,826,567	28,766	459,329	462	296,070	33,163	4,487	11,695	201,252	87,406	116,818
Iowa	307,348	9,629	125,308	71	54,874	11,434	1,701	19,260	151,474	17,782	20,263
Kansas	193,588	6,128	214,230	1	61,361	6,552	792	96	43,258	40,304	73,307
Kentucky	1,098,360	18,018	313,443	107	117,028	22,400	3,768	116	127,561	102,788	116,606
Louisiana	236,911	14,000	435,240	49	998,666	736	1,663	21,860	118,871	295,753	322,789
Maine	114,789	7,242	20,741	1	44,700	26	3	0	18,217	17,888	18,945
Maryland	275,263	6,203	91,346	5	33,723	6,546	1,260	2	36,069	59,894	76,098
Massachusetts	297,037	5,977	77,625	162	14,048	2,155	84	0	17,624	94,270	117,747
Michigan	797,627	24,456	335,672	176	271,202	22,683	3,139	228	143,924	195,994	216,766
Minnesota	210,481	9,566	134,826	10	33,932	8,659	1,113	16,428	130,576	65,852	68,438
Mississippi	251,012	7,051	96,489	0	82,975	2,587	314	358	24,231	52,561	57,773
Missouri	1,270,841	16,895	288,037	288	80,142	22,038	2,663	6	311,839	170,834	183,961
Montana	146,533	6,039	38,000	213	139,579	1,994	243	185	19,205	12,081	15,086
Nebraska	64,214	3,388	52,703	30	10,148	4,577	577	354	43,613	45,451	46,423
Nevada	140,938	6,114	47,637	6	13,032	3,515	442	1	28,465	3,398	3,562
New Hampshire	96,421	2,619	26,907	0	4,914	1,026	124	0	4,000	16,682	17,636
New Jersey	233,574	6,520	132,399	0	83,692	2,442	302	12	98,206	104,827	119,935
New Mexico	250,262	7,939	157,193	4	26,933	8,295	977	150	34,495	37,202	51,033
New York	760,082	23,645	287,899	16	113,978	9,200	1,875	3	245,892	90,149	141,636
North Carolina	605,426	22,669	256,959	21	126,370	23,513	3,070	8,664	115,851	82,978	100,142
North Dakota	95,891	10,188	72,347	5	55,560	71	47	200	48,845	2,616	3,423
Ohio	2,615,591	42,357	653,973	976	690,969	50,337	7,179	1,802	277,919	120,764	150,742
Oklahoma	83,987	7,332	158,265	4	338,386	5,740	763	1,405	67,489	63,340	73,889
Oregon	24,497	13,985	44,894	20	30,413	544	92	0	33,286	29,815	36,281
Pennsylvania	1,783,153	43,985	495,679	763	470,810	41,375	5,504	8,552	187,784	132,321	162,706
Rhode Island	7,102	288	3,871	4	2,014	14	0	0	1,065	9,836	11,124
South Carolina	316,336	14,823	124,920	85	79,221	8,973	1,596	1,020	142,530	210,703	221,994
South Dakota	33,897	3,252	25,340	5	15,218	220	37	1	33,423	2,044	3,023
Tennessee	1,120,219	23,980	286,292	143	153,761	23,266	4,243	10,293	114,674	134,184	143,795
Texas	1,053,679	47,897	1,308,304	374	2,126,155	18,937	5,841	11,535	388,434	761,649	900,425
Utah	88,412	7,179	57,610	43	33,766	3,547	495	52	61,873	7,961	9,248
Vermont	1,543	37	287	0	39	9	0	0	1,544	2,804	3,047
Virginia	304,930	13,159	123,312	34	386,565	7,047	1,318	4,539	109,050	86,880	99,831
Washington	268,669	14,207	71,259	87	221,531	4,942	1,488	10,076	86,100	40,651	43,628
West Virginia	1,130,784	25,524	338,340	415	153,195	29,055	4,861	8	60,484	4,861	5,487
Wisconsin	642,486	18,129	182,023	79	45,510	15,215	2,310	651	98,764	63,719	70,106
Wyoming	184,096	11,953	132,429	3	82,566	13,084	1,723	3,660	27,984	18,685	22,183
Contig. U.S.	24,504,741	725,349	9,643,101	7,695	9,128,108	519,652	113,183	245,467	4,364,247	3,963,258	4,657,042

1980 NAPAP 5.0 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS, POINT SOURCES

State	SO2	SO4	NOx	Pb	CO	HCl	HF	NH3	TSP	VOC	THC
	METRIC TONS/YEAR										
Alabama	705,358	26,072	210,033	168	256,843	17,501	3,192	546	73,780	47,657	60,634
Arizona	747,658	26,586	96,857	66	58,818	8,040	972	4,544	24,904	12,017	12,654
Arkansas	50,489	7,562	39,486	1	122,844	1,598	1,282	11,180	30,491	13,994	14,865
California	354,503	20,685	295,657	196	321,473	0	119	4,221	123,324	269,401	320,350
Colorado	106,486	6,918	126,570	401	100,427	8,214	1,076	7,072	48,106	15,002	20,517
Connecticut	31,320	2,021	20,417	71	10,668	350	0	0	7,403	21,814	22,472
Delaware	87,898	1,783	23,560	1	7,735	1,003	167	1	15,037	23,468	24,793
Dist. of Colum.	6,499	362	2,373	2	3,728	534	6	0	783	409	1,060
Florida	924,220	22,917	288,830	21	132,073	7,865	26,336	19,856	91,117	43,824	46,934
Georgia	782,365	25,222	253,578	41	147,376	18,500	2,255	18,043	37,903	24,766	25,746
Idaho	33,213	5,986	8,002	407	37,911	285	157	110	10,905	2,366	4,217
Illinois	1,225,099	30,074	423,615	1,377	283,435	30,219	7,158	36,266	178,889	138,852	181,633
Indiana	1,657,066	26,097	416,704	419	268,595	30,086	4,071	10,610	182,576	79,295	105,977
Iowa	278,827	8,735	113,680	64	49,782	10,373	1,543	17,473	137,417	16,132	18,383
Kansas	175,623	5,559	194,350	1	55,667	5,944	719	87	39,244	36,564	66,504
Kentucky	996,435	16,346	284,356	97	106,168	20,321	3,418	105	115,724	93,249	105,785
Louisiana	214,926	12,701	394,851	44	905,992	668	1,509	19,831	107,840	268,308	292,835
Maine	104,137	6,570	18,816	1	40,552	24	3	0	16,527	16,228	17,187
Maryland	249,719	5,627	82,869	5	30,594	5,939	1,143	2	32,722	54,336	69,036
Massachusetts	269,473	5,422	70,422	147	12,744	1,955	76	0	15,989	85,522	106,820
Michigan	723,609	22,187	304,522	160	246,035	20,578	2,848	207	130,568	177,806	196,651
Minnesota	190,949	8,678	122,314	9	30,783	7,855	1,010	14,903	118,459	59,741	62,087
Mississippi	227,719	6,397	87,535	0	75,275	2,347	285	324	21,982	47,683	52,411
Missouri	1,152,910	15,327	261,308	261	72,705	19,993	2,416	6	282,901	154,981	166,890
Montana	132,935	5,479	34,474	193	126,626	1,809	220	168	17,423	10,960	13,686
Nebraska	58,255	3,074	47,812	27	9,206	4,152	523	322	39,566	41,233	42,115
Nevada	127,859	5,547	43,216	5	11,823	3,189	401	1	25,824	3,083	3,231
New Hampshire	87,473	2,376	24,410	0	4,458	931	112	0	3,629	15,134	15,999
New Jersey	211,899	5,915	120,113	0	75,926	2,215	274	11	89,093	95,099	108,806
New Mexico	227,038	7,202	142,606	4	24,434	7,525	886	136	31,294	33,750	46,297
New York	689,548	21,451	261,183	15	103,401	8,346	1,701	2	223,074	81,784	128,493
North Carolina	549,244	20,565	233,114	19	114,643	21,331	2,785	7,860	105,100	75,278	90,849
North Dakota	86,993	9,243	65,633	5	50,404	64	43	182	44,312	2,374	3,106
Ohio	2,372,870	38,426	593,286	885	626,849	45,666	6,513	1,635	252,129	109,557	136,754
Oklahoma	76,193	6,652	143,578	4	306,985	5,207	692	1,274	61,226	57,462	67,032
Oregon	22,224	12,687	40,728	18	27,591	494	83	0	30,197	27,048	32,915
Pennsylvania	1,617,680	39,903	449,681	692	427,120	37,535	4,993	7,758	170,358	120,042	147,607
Rhode Island	6,443	261	3,512	4	1,827	13	0	0	966	8,924	10,092
South Carolina	286,981	13,447	113,328	77	71,869	8,140	1,448	925	129,304	191,151	201,394
South Dakota	30,751	2,950	22,989	5	13,806	200	34	1	30,321	1,854	2,743
Tennessee	1,016,265	21,755	259,725	130	139,492	21,107	3,849	9,338	104,033	121,732	130,451
Texas	955,900	43,452	1,186,896	339	1,928,852	17,180	5,299	10,464	352,388	690,969	816,867
Utah	80,207	6,513	52,264	39	30,633	3,218	449	47	56,131	7,222	8,390
Vermont	1,400	34	260	0	35	8	0	0	1,401	2,544	2,764
Virginia	276,633	11,938	111,869	31	350,693	6,393	1,196	4,118	98,930	78,818	90,567
Washington	243,737	12,889	64,646	79	200,973	4,483	1,350	9,141	78,110	36,878	39,580
West Virginia	1,025,850	23,155	306,943	376	138,979	26,359	4,410	8	54,871	4,410	4,978
Wisconsin	582,865	16,447	165,132	72	41,287	13,803	2,096	591	89,599	57,806	63,600
Wyoming	167,012	10,844	120,140	3	74,904	11,870	1,563	3,320	25,387	16,951	20,125
Contig. U.S.	22,230,755	658,038	8,748,242	6,981	8,281,040	471,429	102,680	222,688	3,959,255	3,595,476	4,224,879

1980 NAPAP 5.0 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS, POINT SOURCES

	TONS/YEAR										
EPA REGION	SO2	SO4	NOx	Pb	CO	HCl	HF	NH3	TSP	VOC	THC
REGION 1	551,416	18,391	151,937	245	77,474	3,616	211	1	50,610	165,525	193,270
REGION 2	993,656	30,165	420,298	16	197,670	11,642	2,177	15	344,098	194,976	261,572
REGION 3	3,598,182	91,235	1,077,263	1,220	1,056,928	85,718	13,134	13,102	410,825	310,275	372,620
REGION 4	6,050,014	168,343	1,907,511	609	1,150,505	129,092	48,025	62,827	748,391	711,351	787,258
REGION 5	7,443,167	156,424	2,232,770	3,221	1,650,111	163,367	26,118	70,781	1,049,623	686,791	823,082
REGION 6	1,680,493	85,504	2,102,527	432	3,625,550	35,469	10,657	47,272	642,899	1,173,369	1,364,521
REGION 7	1,835,991	36,040	680,278	390	206,525	44,601	5,733	19,717	550,184	274,370	323,954
REGION 8	666,208	46,237	465,243	711	437,389	27,970	3,731	11,893	244,356	59,924	75,580
REGION 9	1,355,839	58,220	480,301	295	432,223	12,377	1,644	9,663	191,855	313,603	370,628
REGION 10	329,776	34,790	124,973	556	293,733	5,800	1,753	10,197	131,406	73,074	84,559
Contig. U.S.	24,504,741	725,349	9,643,101	7,695	9,128,108	519,652	113,183	245,467	4,364,247	3,963,258	4,657,042

	METRIC TONS/YEAR										
EPA REGION	SO2	SO4	NOx	Pb	CO	HCl	HF	NH3	TSP	VOC	THC
REGION 1	500,245	16,684	137,838	222	70,285	3,280	191	0	45,914	150,164	175,335
REGION 2	901,447	27,366	381,295	15	179,327	10,562	1,975	14	312,166	176,883	237,298
REGION 3	3,264,279	82,769	977,295	1,107	958,847	77,764	11,915	11,886	372,701	281,482	338,042
REGION 4	5,488,586	152,721	1,730,498	552	1,043,741	117,113	43,568	56,997	678,942	645,340	714,202
REGION 5	6,752,457	141,908	2,025,574	2,922	1,496,984	148,207	23,694	64,213	952,220	623,058	746,702
REGION 6	1,524,547	77,569	1,907,417	392	3,289,107	32,178	9,668	42,885	583,239	1,064,483	1,237,896
REGION 7	1,665,615	32,696	617,150	354	187,360	40,462	5,201	17,887	499,128	248,909	293,891
REGION 8	604,385	41,946	422,069	645	396,800	25,374	3,385	10,789	221,681	54,363	68,566
REGION 9	1,230,020	52,817	435,730	268	392,114	11,228	1,491	8,766	174,051	284,501	336,235
REGION 10	299,174	31,562	113,376	504	266,475	5,262	1,590	9,251	119,212	66,293	76,712
Contig. U.S.	22,230,755	658,038	8,748,242	6,981	8,281,040	471,429	102,680	222,688	3,959,255	3,595,476	4,224,879

1980 NAPAP 5.0 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS, AREA & POINT SOURCES

State	SO2	SO4	NOx	Pb	CO	HCl	HF	NH3	TSP	VOC	THC
	TONS/YEAR										
Alabama	857,549	32,991	487,256	681	1,811,119	19,542	3,539	11,964	439,271	391,455	425,591
Arizona	844,078	30,871	263,894	366	1,310,433	8,937	1,087	11,921	841,489	254,096	271,243
Arkansas	87,127	10,478	211,143	264	1,045,560	1,786	1,445	25,418	874,245	223,135	234,377
California	519,799	35,917	1,382,764	2,643	9,524,250	472	145	32,013	1,536,414	2,216,485	2,414,927
Colorado	140,138	9,347	304,778	756	2,302,185	9,110	1,186	24,987	1,134,995	356,946	385,554
Connecticut	63,665	8,110	139,750	381	1,192,328	491	0	1,946	120,226	284,183	299,090
Delaware	124,669	4,645	62,266	71	242,885	1,152	184	2,051	49,382	77,101	81,188
Dist. of Colum.	15,325	1,121	25,352	39	338,780	655	23	59	15,099	44,081	48,400
Florida	1,102,994	30,793	712,209	1,087	4,071,755	8,834	29,228	28,793	919,841	828,561	868,694
Georgia	900,080	30,684	590,650	697	2,335,826	20,453	2,503	35,359	882,031	508,361	530,222
Idaho	56,210	8,676	91,874	548	1,280,507	329	242	8,133	330,728	222,050	230,398
Illinois	1,464,520	42,270	972,987	2,635	4,246,797	34,318	7,937	68,633	932,702	988,586	1,092,842
Indiana	1,970,870	38,111	786,843	1,101	2,374,627	33,494	4,607	29,361	496,649	562,647	623,821
Iowa	334,278	11,010	305,754	427	1,105,666	11,505	1,706	80,410	1,237,845	237,157	258,603
Kansas	228,074	7,409	513,314	250	1,072,560	6,614	799	34,189	1,852,371	250,269	298,662
Kentucky	1,150,036	23,108	551,354	519	1,594,516	22,635	3,841	8,185	452,395	441,688	469,555
Louisiana	401,333	24,581	708,966	554	2,541,546	857	1,761	26,314	559,071	625,559	669,847
Maine	133,369	11,223	67,068	124	506,637	40	5	417	127,174	141,991	149,051
Maryland	303,471	10,727	261,103	456	1,459,780	6,559	1,307	2,992	227,611	363,270	394,420
Massachusetts	358,065	14,498	270,770	666	2,133,002	2,241	86	104	210,504	515,765	568,190
Michigan	841,399	32,609	715,377	1,148	3,613,069	22,871	3,150	10,433	880,263	916,363	987,380
Minnesota	238,705	14,535	366,630	469	1,928,665	8,820	1,120	48,624	1,199,026	469,214	496,094
Mississippi	303,846	11,281	294,511	297	991,881	2,599	314	7,809	587,204	261,800	278,672
Missouri	1,333,218	22,746	549,797	849	2,206,090	22,184	2,681	17,264	2,877,954	629,726	673,526
Montana	169,224	7,583	140,299	310	1,422,156	2,003	243	3,890	880,654	236,467	245,600
Nebraska	78,117	4,078	173,039	199	609,510	4,637	582	44,683	1,080,992	168,618	178,920
Nevada	148,157	6,667	96,918	107	521,365	3,554	444	705	919,646	93,948	99,725
New Hampshire	108,484	4,867	58,957	100	352,582	1,036	124	1	66,310	103,987	109,401
New Jersey	309,856	20,690	417,509	706	2,294,053	2,566	328	80	402,215	696,758	749,784
New Mexico	262,555	9,202	254,116	174	932,466	8,299	977	4,523	1,249,009	191,042	213,500
New York	870,307	43,230	736,844	1,273	4,758,845	9,269	1,880	13,961	802,715	1,160,860	1,267,046
North Carolina	655,591	31,046	532,675	727	2,289,334	23,667	3,310	21,118	700,462	614,002	655,149
North Dakota	115,391	11,574	136,091	72	282,219	119	60	6,642	1,295,268	53,274	58,166
Ohio	2,681,314	51,554	1,217,607	2,160	4,697,200	50,783	7,934	16,124	1,070,910	1,001,059	1,092,677
Oklahoma	104,168	9,558	453,066	412	1,854,007	5,765	768	15,266	1,107,180	324,988	347,352
Oregon	55,987	18,601	226,767	334	1,454,001	729	92	4,249	1,849,960	340,267	363,147
Pennsylvania	1,899,006	60,532	1,041,556	1,918	4,377,701	42,015	5,525	24,309	1,432,694	1,043,563	1,113,027
Rhode Island	14,168	1,491	36,253	82	316,586	27	0	0	32,323	81,042	86,846
South Carolina	344,968	17,550	278,092	459	1,207,907	9,045	1,648	4,440	451,493	474,791	501,073
South Dakota	40,863	3,798	79,356	70	509,495	235	38	12,941	715,996	95,639	101,160
Tennessee	1,158,153	28,905	531,336	732	1,951,470	23,436	4,357	18,117	656,159	554,586	587,715
Texas	1,324,373	59,869	3,330,036	2,169	9,063,470	19,257	5,900	61,713	5,937,876	2,172,905	2,381,939
Utah	116,615	8,886	155,757	191	990,051	3,588	511	1,961	690,811	160,449	172,386
Vermont	8,185	1,764	23,780	62	202,077	12	0	3	100,889	58,570	61,481
Virginia	370,780	21,579	383,434	646	2,322,403	7,328	1,385	10,913	466,354	527,715	561,508
Washington	317,791	19,758	294,646	505	2,401,774	5,062	1,516	18,097	347,565	465,326	494,352
West Virginia	1,145,522	27,902	461,014	618	784,971	29,078	4,861	335	381,995	154,780	161,785
Wisconsin	670,610	23,795	407,774	592	1,892,865	15,406	2,328	32,054	706,684	476,956	512,284
Wyoming	211,134	13,388	248,907	86	589,965	13,110	1,727	5,159	486,720	102,467	111,091
Contig. U.S.	26,954,136	975,608	22,352,239	31,732	99,308,937	526,524	115,434	838,664	42,617,370	23,164,547	24,977,459

1980 NAPAP 5.0 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS, AREA & POINT SOURCES

State	SO2	SO4	NOx	Pb	CO	HCl	HF	NH3	TSP	VOC	THC
	METRIC TONS/YEAR										
Alabama	777,969	29,929	442,035	618	1,643,024	17,729	3,211	10,854	398,501	355,123	386,090
Arizona	765,749	28,006	239,402	332	1,188,806	8,108	986	10,815	763,386	230,512	246,068
Arkansas	79,041	9,506	191,546	239	948,518	1,620	1,311	23,059	793,102	202,425	212,624
California	471,560	32,584	1,254,428	2,398	8,640,261	428	132	29,042	1,393,814	2,010,766	2,190,791
Colorado	127,133	8,480	276,492	686	2,088,509	8,265	1,076	22,668	1,029,651	323,817	349,769
Connecticut	57,756	7,357	126,779	346	1,081,662	445	0	1,765	109,067	257,807	271,330
Delaware	113,099	4,214	56,487	64	220,342	1,045	167	1,861	44,799	69,945	73,653
Dist. of Colum.	13,903	1,017	22,999	35	307,336	594	21	54	13,698	39,990	43,907
Florida	1,000,637	27,935	646,111	986	3,693,837	8,014	26,516	26,121	834,467	751,659	788,067
Georgia	816,554	27,837	535,834	632	2,119,029	18,555	2,271	32,077	800,166	461,178	481,010
Idaho	50,993	7,871	83,347	497	1,161,657	298	220	7,378	300,032	201,440	209,014
Illinois	1,328,614	38,347	882,687	2,390	3,852,635	31,133	7,200	62,263	846,136	896,833	991,413
Indiana	1,787,975	34,574	713,820	999	2,154,231	30,386	4,179	26,636	450,556	510,426	565,923
Iowa	303,258	9,988	277,378	387	1,003,044	10,437	1,548	72,947	1,122,956	215,146	234,601
Kansas	206,909	6,721	465,674	227	973,011	6,000	725	31,016	1,680,443	227,041	270,943
Kentucky	1,043,314	20,964	500,185	471	1,446,523	20,535	3,485	7,425	410,408	400,695	425,975
Louisiana	364,088	22,300	643,171	503	2,305,669	777	1,598	23,872	507,183	567,503	607,681
Maine	120,992	10,181	60,843	112	459,614	36	5	379	115,371	128,812	135,217
Maryland	275,309	9,731	236,870	414	1,324,291	5,950	1,186	2,715	206,486	329,554	357,813
Massachusetts	324,836	13,152	245,640	604	1,935,027	2,033	78	94	190,966	467,896	515,456
Michigan	763,319	29,583	648,985	1,041	3,277,726	20,749	2,858	9,465	798,564	831,314	895,740
Minnesota	216,554	13,186	332,603	425	1,749,656	8,002	1,016	44,111	1,087,740	425,665	450,050
Mississippi	275,649	10,234	267,178	269	899,821	2,358	285	7,084	532,703	237,502	252,808
Missouri	1,209,497	20,635	498,772	770	2,001,333	20,125	2,432	15,662	2,610,841	571,281	611,016
Montana	153,520	6,879	127,278	281	1,290,161	1,817	220	3,529	798,916	214,520	222,805
Nebraska	70,868	3,700	156,979	181	552,938	4,207	528	40,536	980,660	152,968	162,315
Nevada	134,408	6,048	87,923	97	472,975	3,224	403	640	834,289	85,228	90,469
New Hampshire	98,417	4,415	53,485	91	319,857	940	112	1	60,155	94,335	99,247
New Jersey	281,101	18,770	378,760	640	2,081,131	2,328	298	73	364,885	632,090	680,194
New Mexico	238,190	8,348	230,533	158	845,919	7,529	886	4,103	1,133,083	173,311	193,684
New York	789,543	39,218	668,459	1,155	4,317,154	8,409	1,706	12,665	728,215	1,053,116	1,149,447
North Carolina	594,752	28,165	483,239	660	2,076,851	21,471	3,003	19,158	635,450	557,015	594,343
North Dakota	104,683	10,500	123,461	65	256,026	108	54	6,025	1,175,048	48,330	52,767
Ohio	2,432,493	46,770	1,104,606	1,960	4,261,240	46,070	7,198	14,627	971,518	908,147	991,263
Oklahoma	94,501	8,671	411,017	374	1,681,933	5,230	697	13,849	1,004,418	294,825	315,114
Oregon	50,791	16,875	205,720	303	1,319,048	661	83	3,855	1,678,256	308,686	329,442
Pennsylvania	1,722,780	54,914	944,892	1,740	3,971,392	38,116	5,012	22,053	1,299,721	946,707	1,009,724
Rhode Island	12,853	1,353	32,888	74	287,202	24	0	0	29,323	73,520	78,786
South Carolina	312,955	15,921	252,283	416	1,095,796	8,206	1,495	4,028	409,590	430,726	454,570
South Dakota	37,071	3,446	71,991	64	462,206	213	34	11,740	649,541	86,762	91,771
Tennessee	1,050,678	26,223	482,025	664	1,770,347	21,261	3,953	16,435	595,260	503,114	533,168
Texas	1,201,469	54,313	3,020,981	1,968	8,222,279	17,470	5,352	55,986	5,386,757	1,971,239	2,160,874
Utah	105,793	8,061	141,301	173	898,160	3,255	464	1,779	626,694	145,557	156,386
Vermont	7,425	1,600	21,573	56	183,321	11	0	2	91,525	53,134	55,775
Virginia	336,371	19,576	347,848	586	2,106,855	6,648	1,256	9,900	423,071	478,736	509,394
Washington	288,300	17,924	267,300	458	2,178,857	4,592	1,375	16,418	315,307	422,137	448,470
West Virginia	1,039,220	25,313	418,231	561	712,116	26,380	4,410	304	346,541	140,414	146,769
Wisconsin	608,378	21,587	369,930	537	1,717,179	13,976	2,112	29,079	641,095	432,688	464,738
Wyoming	191,541	12,146	225,807	78	535,209	11,893	1,567	4,681	441,545	92,956	100,780
Contig. U.S.	24,452,809	885,069	20,277,779	28,787	90,091,712	477,664	104,722	760,828	38,661,904	21,014,593	22,659,252

1980 NAPAP 5.0 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS, AREA & POINT SOURCES

TONS/YEAR

EPA REGION	SO2	SO4	NOx	Pb	CO	HCl	HF	NH3	TSP	VOC	THC
REGION 1	685,936	41,953	596,578	1,415	4,703,212	3,847	215	2,470	657,426	1,185,538	1,274,058
REGION 2	1,180,163	63,920	1,154,353	1,979	7,052,898	11,835	2,208	14,042	1,204,930	1,857,619	2,016,830
REGION 3	3,858,772	126,506	2,234,725	3,748	9,526,520	86,787	13,285	40,660	2,573,135	2,210,510	2,360,328
REGION 4	6,473,217	206,358	3,978,083	5,199	16,253,808	130,211	48,740	135,784	5,088,856	4,075,244	4,316,670
REGION 5	7,867,419	202,874	4,467,218	8,105	18,753,223	165,692	27,076	205,228	5,286,234	4,414,825	4,805,098
REGION 6	2,179,556	113,688	4,957,327	3,573	15,437,049	35,964	10,851	133,234	9,727,381	3,537,629	3,847,014
REGION 7	1,973,687	45,243	1,541,904	1,725	4,993,826	44,940	5,768	176,547	7,049,162	1,285,770	1,409,712
REGION 8	793,365	54,576	1,065,188	1,485	6,096,071	28,165	3,765	55,581	5,204,444	1,005,242	1,073,957
REGION 9	1,512,034	73,455	1,743,576	3,116	11,356,048	12,963	1,676	44,639	3,297,549	2,564,528	2,785,895
REGION 10	429,988	47,035	613,287	1,387	5,136,282	6,120	1,850	30,479	2,528,253	1,027,643	1,087,898
Contig. U.S.	26,954,136	975,608	22,352,239	31,732	99,308,937	526,524	115,434	838,664	42,617,370	23,164,547	24,977,459

METRIC TONS/YEAR

EPA REGION	SO2	SO4	NOx	Pb	CO	HCl	HF	NH3	TSP	VOC	THC
REGION 1	622,280	38,059	541,209	1,284	4,266,684	3,490	195	2,241	596,408	1,075,505	1,155,810
REGION 2	1,070,643	57,988	1,047,219	1,795	6,398,285	10,737	2,003	12,738	1,093,100	1,685,207	1,829,642
REGION 3	3,500,682	114,766	2,027,327	3,400	8,642,332	78,733	12,052	36,886	2,334,316	2,005,346	2,141,260
REGION 4	5,872,509	187,208	3,608,890	4,716	14,745,227	118,128	44,217	123,182	4,616,546	3,697,012	3,916,031
REGION 5	7,137,332	184,047	4,052,631	7,353	17,012,667	150,316	24,563	186,181	4,795,609	4,005,073	4,359,126
REGION 6	1,977,289	103,138	4,497,248	3,241	14,004,319	32,627	9,844	120,869	8,824,543	3,209,303	3,489,976
REGION 7	1,790,531	41,044	1,398,804	1,565	4,530,326	40,770	5,233	160,161	6,394,901	1,166,436	1,278,875
REGION 8	719,740	49,511	966,330	1,347	5,530,270	25,551	3,416	50,423	4,721,397	911,942	974,279
REGION 9	1,371,718	66,638	1,581,754	2,827	10,302,041	11,760	1,520	40,496	2,991,490	2,326,506	2,527,328
REGION 10	390,084	42,670	556,367	1,258	4,659,562	5,552	1,678	27,651	2,293,595	932,263	986,926
Contig. U.S.	24,452,809	885,069	20,277,779	28,787	90,091,712	477,664	104,722	760,828	38,661,904	21,014,593	22,659,252

SCC	SO2	SO4	NOX	PB	CO	HCL	HF	NH3	TSP	VOC	THC
	TONS/YEAR										
10101	3,524	151	75,089	0	1,100,692	0	0	0	6,089	76,543	82,528
10102	1,926	20	51,612	0	1,035,780	0	0	0	4,904	65,662	70,796
10103	2,130	49	51,816	0	782,189	0	0	0	3,680	63,894	68,890
10104	14,150	969	315,962	0	4,087,204	0	0	0	33,616	410,708	442,819
10105	49	0	327	0	51,875	0	0	0	272	14,012	15,108
10106	30	0	347	0	33,909	0	0	0	963	21,025	22,669
10201	28	0	46	0	460	0	0	0	21	53	54
10202	47	0	155	0	1,550	0	0	0	66	172	174
10203	562	0	5,986	0	11,978	0	0	0	330	7,266	7,378
10204	1,676	0	36,613	0	1,536	0	0	0	762	350	356
10206	47	0	294	0	68,717	0	0	0	110	6,187	6,283
10207	29	0	38	0	12,674	0	0	0	21	754	766
10208	57	0	85	0	61,680	0	0	0	113	9,996	10,150
10210	88	0	695	0	373	0	0	0	93	17	17
10211	42	0	53	0	16,498	0	0	0	29	651	661
10213	48	0	342	0	770	0	0	0	125	341	346
10214	4,664	201	117,994	0	42,910	0	0	0	8,030	35,115	35,724
10215	202	0	205	0	102,292	0	0	0	0	32,236	34,796
10217	3,780	0	4,399	0	4,045	0	0	0	1,452	5,659	5,659
10218	2,164	0	16,437	0	3,295	0	0	0	862	12,407	12,407
10220	5,576	0	1,692	0	0	0	0	0	127	117	131
10221	60,657	0	11,638	0	718	0	0	0	4,169	218	245
10301	1,357	0	29,013	0	967,453	0	0	0	1,803	47,632	51,415
10501	0	0	168,590	0	6,743,663	0	0	12,646	6,322,187	1,011,551	1,011,551
10601	0	0	20,018	0	1,145,919	0	0	0	225,073	21,643	21,643
10701	0	0	0	0	11,111	0	0	0	5,556	5,556	5,556
10801	0	145	0	0	0	0	0	147,983	7,852	0	0
11201	0	0	0	0	0	0	0	0	0	18,243	18,243
11301	0	0	0	0	0	0	0	0	11,245	0	0
11401	0	0	0	0	0	0	0	0	1,820	0	0
11402	0	0	0	0	0	0	0	0	526	165,936	169,495
11403	0	0	0	0	0	0	0	0	6,931	0	0
11404	0	0	0	0	0	0	0	0	100,888	0	0
11501	0	0	0	0	0	0	0	0	60,835	0	0
11502	0	0	0	0	0	0	0	0	7,025	250	250
11503	0	0	0	0	0	0	0	0	110	9	9
11504	0	0	0	0	0	0	0	0	1,483	119	119
11702	72	3	116	0	6	0	0	0	9	2	2
11703	19	0	31	0	2	0	0	0	2	0	0
11704	3,391	201	560	0	44	0	0	0	250	14	16
11705	1,460	20	10,072	0	3,143	0	0	0	904	831	970
11706	272	0	4,055	0	139	0	0	0	23	6	14
11711	4,266	82	265	0	7,457	0	0	169	1,477	1,462	1,493
11712	59,117	3,855	24,581	0	6,719	0	0	1,310	3,328	6,374	6,374
11713	2,793	301	2,812	0	770	0	0	144	378	715	715
11714	2	0	1,097	0	232	0	0	0	29	44	99
11715	115	1	19,235	0	6,731	0	0	0	576	733	1,660
11716	7,959	859	1,295	0	124	0	0	22	687	60	67
11721	1,098	19	195	0	668	0	0	0	904	631	645
11722	21,561	2,888	6,756	0	1,742	0	0	0	703	357	357
11723	676	90	757	0	199	0	0	0	82	39	39
11724	2	0	826	0	147	0	0	0	139	25	58

1980 NAPAP 5.0 EMISSIONS INVENTORY - ANNUAL CANADIAN EMISSIONS, AREA SOURCES

SCC	TONS/YEAR SO2	SO4	NOX	PB	CO	HCL	HF	NH3	TSP	VOC	THC
11725	115	8	18,798	0	6,580	0	0	0	562	716	1,623
11726	69,506	6,249	12,347	0	1,177	0	0	0	6,546	574	645
11731	72,651	1,166	11,061	0	5,556	0	0	0	28,024	304	311
11732	6,569	704	2,973	0	762	0	0	0	312	158	158
11733	172	17	220	0	55	0	0	0	23	8	8
11734	2	0	903	0	228	0	0	0	81	16	36
11735	178	13	41,865	0	10,467	0	0	0	897	826	1,871
11736	320,833	26,967	55,878	0	5,334	0	0	0	29,673	2,597	2,917
11740	2,790	0	5,734	0	428,957	0	0	0	96,093	3,550	3,626
11801	0	0	0	0	0	0	0	0	0	1,934	4,382
12001	0	0	0	0	0	0	0	0	43,307	0	0
12002	0	0	0	0	0	0	0	0	6,019	0	0
12101	0	0	0	0	0	0	0	0	970	0	0
12102	0	0	0	0	0	0	0	0	23,289	0	0
12103	0	0	0	0	0	0	0	0	466	0	0
12104	0	0	0	0	0	0	0	0	9,317	0	0
12111	0	0	0	0	0	0	0	0	13	0	0
12112	0	0	0	0	0	0	0	0	123	0	0
12113	0	0	0	0	0	0	0	0	300	0	0
12114	0	0	0	0	0	0	0	0	3	0	0
12115	0	0	0	0	0	0	0	0	240	0	0
12116	0	0	0	0	0	0	0	0	149	0	0
12117	0	0	0	0	0	0	0	0	160	0	0
12121	0	0	0	0	0	0	0	0	30	0	0
12501	0	0	0	0	0	0	0	0	9,370	0	0
12502	0	0	0	0	0	0	0	0	3,318	0	0
12601	0	0	0	0	0	0	0	0	9,778	0	0
12602	0	0	0	0	0	0	0	0	248	0	0
12603	0	0	0	0	0	0	0	0	8,043	0	0
12604	0	0	0	0	0	0	0	0	1,737	0	0
12605	0	0	0	0	0	0	0	0	3,802	0	0
12606	0	0	0	0	0	0	0	0	2,308	0	0
12613	0	0	0	0	0	0	0	0	17,199	0	0
12614	0	0	0	0	0	0	0	0	3,425	0	0
12615	0	0	0	0	0	0	0	0	10,946	0	0
12623	0	0	0	0	0	0	0	0	3,027	0	0
12624	0	0	0	0	0	0	0	0	1,836	0	0
12625	0	0	0	0	0	0	0	0	1,541	0	0
12626	0	0	0	0	0	0	0	0	1,009	0	0
12641	0	0	0	0	0	0	0	0	919	0	0
12642	0	0	0	0	0	0	0	0	2,896	0	0
12643	0	0	0	0	0	0	0	0	1,147	0	0
12644	0	0	0	0	0	0	0	0	227	0	0
12701	0	0	76,341	0	9,673	0	0	0	0	14,416	32,657
12702	0	0	2,196	0	906	0	0	0	0	63	142
12703	0	0	7,686	0	974	0	0	0	0	1,451	3,287
12704	0	0	570	0	0	0	0	0	24	4	9
12705	0	0	0	0	0	0	0	0	0	1,880	4,258
12801	302	0	3,029	0	393,658	0	0	0	33,311	6,601	33,311
12802	104	0	226	0	0	0	0	28	125	0	0
12803	526	0	466	0	759	0	0	83	929	42	212
12901	0	0	0	0	0	0	0	0	0	55,130	55,130

SCC	SO2	SO4	NOX	PB	CO	HCL	HF	NH3	TSP	VOC	THC
	TONS/YEAR										
12902	0	0	0	0	0	0	0	0	0	26,538	26,538
12903	0	0	0	0	0	0	0	0	0	3,317	3,317
12904	0	0	0	0	0	0	0	0	0	35,068	35,068
12905	0	0	0	0	0	0	0	0	0	5,055	5,055
12906	0	0	0	0	0	0	0	0	0	30,013	30,013
12907	0	0	0	0	0	0	0	0	0	2,843	2,843
13001	0	0	0	0	0	0	0	0	0	81,760	81,760
13002	0	0	0	0	0	0	0	0	0	74,060	74,060
13101	0	0	0	0	0	0	0	0	0	31,456	2,019,013
13201	0	0	0	0	1,045	0	0	0	2,749	0	0
13202	0	0	0	0	4,682	0	0	0	2,945	0	0
13203	0	0	0	0	0	0	0	0	2,276	0	0
13204	0	0	0	0	0	0	0	0	1,120	0	0
13205	0	0	0	0	2	0	0	0	4	0	0
13701	0	0	0	0	0	0	0	0	1,294,970	0	0
13702	0	0	0	0	0	0	0	0	71,945	0	0
13703	0	0	0	0	0	0	0	0	3,270,672	0	0
13704	0	0	0	0	0	0	0	0	3,866,796	0	0
13705	0	0	0	0	0	0	0	0	311,669	0	0
13706	0	0	0	0	0	0	0	0	13,284,702	0	0
13901	0	0	0	0	0	0	0	0	486	0	0
13902	0	0	0	0	0	0	0	0	1,935	0	0
14001	0	0	0	0	2,132	0	0	0	5,329	0	0
14101	0	0	0	0	0	0	0	0	0	5,047	5,720
14102	36,201	181	0	0	0	0	0	0	0	22,296	25,271
14201	657	0	0	0	0	0	0	0	1,609	0	0
14202	0	0	0	0	0	0	0	0	7,382	0	0
14203	0	0	0	0	0	0	0	0	143,020	0	0
14204	0	0	0	0	0	0	0	0	61,615	0	0
14205	0	0	0	0	0	0	0	0	4,381	0	0
14401	0	0	0	0	0	0	0	0	3,762	267	758
14501	0	0	0	0	0	0	0	0	29,441	0	0
14601	6,144	565	66,752	0	23,746	0	0	0	9,133	14,424	14,674
14602	3,990	365	67,714	0	11,862	0	0	0	2,264	4,620	4,700
14603	24,640	1,322	126,285	0	60,210	0	0	0	11,439	22,901	23,298
14604	12,359	1,136	187,733	0	40,756	0	0	0	13,364	17,889	18,200
14701	0	0	0	0	0	0	0	0	0	21,166	21,539
14901	0	0	0	0	0	0	0	0	63,786	0	0
15101	0	0	0	0	0	0	0	0	0	83,641	84,390
15201	0	0	0	0	0	0	0	0	157,366	0	0
15202	0	0	0	0	0	0	0	0	822,512	0	0
99900	0	0	0	0	0	0	0	0	0	0	0
CANADA	763,375	48,547	1,670,876	NR	17,326,935	NR	NR	162,384	30,641,093	2,618,250	4,729,547

1980 NAPAP 5.0 EMISSIONS INVENTORY - ANNUAL CANADIAN EMISSIONS, AREA SOURCES

SCC	SO2	SO4	NOX	PB	CO	HCL	HF	NH3	TSP	VOC	THC
	METRIC TONS/YEAR										
10101	3,197	137	68,120	0	998,531	0	0	0	5,524	69,439	74,868
10102	1,747	18	46,822	0	939,644	0	0	0	4,449	59,568	64,225
10103	1,932	44	47,007	0	709,590	0	0	0	3,338	57,964	62,496
10104	12,837	879	286,636	0	3,707,849	0	0	0	30,496	372,588	401,718
10105	44	0	297	0	47,060	0	0	0	247	12,712	13,706
10106	27	0	315	0	30,762	0	0	0	874	19,074	20,565
10201	25	0	42	0	417	0	0	0	19	48	49
10202	43	0	141	0	1,406	0	0	0	60	156	158
10203	510	0	5,430	0	10,866	0	0	0	299	6,592	6,693
10204	1,520	0	33,215	0	1,393	0	0	0	691	318	323
10206	43	0	267	0	62,339	0	0	0	100	5,613	5,699
10207	26	0	34	0	11,498	0	0	0	19	684	695
10208	52	0	77	0	55,955	0	0	0	103	9,069	9,208
10210	80	0	630	0	338	0	0	0	84	15	16
10211	38	0	48	0	14,967	0	0	0	26	591	600
10213	44	0	310	0	699	0	0	0	113	309	314
10214	4,231	182	107,042	0	38,927	0	0	0	7,285	31,856	32,408
10215	183	0	186	0	92,798	0	0	0	0	29,244	31,566
10217	3,429	0	3,991	0	3,670	0	0	0	1,317	5,133	5,133
10218	1,963	0	14,911	0	2,989	0	0	0	782	11,255	11,255
10220	5,058	0	1,535	0	0	0	0	0	115	106	119
10221	55,027	0	10,558	0	651	0	0	0	3,782	198	222
10301	1,231	0	26,320	0	877,659	0	0	0	1,636	43,211	46,643
10501	0	0	152,942	0	6,117,748	0	0	11,472	5,735,392	917,664	917,664
10601	0	0	18,160	0	1,039,560	0	0	0	204,183	19,634	19,634
10701	0	0	0	0	10,080	0	0	0	5,040	5,040	5,040
10801	0	132	0	0	0	0	0	134,248	7,123	0	0
11201	0	0	0	0	0	0	0	0	0	16,550	16,550
11301	0	0	0	0	0	0	0	0	10,201	0	0
11401	0	0	0	0	0	0	0	0	1,651	0	0
11402	0	0	0	0	0	0	0	0	477	150,534	153,763
11403	0	0	0	0	0	0	0	0	6,288	0	0
11404	0	0	0	0	0	0	0	0	91,524	0	0
11501	0	0	0	0	0	0	0	0	55,189	0	0
11502	0	0	0	0	0	0	0	0	6,373	227	227
11503	0	0	0	0	0	0	0	0	100	8	8
11504	0	0	0	0	0	0	0	0	1,345	108	108
11702	65	3	105	0	5	0	0	0	8	2	2
11703	17	0	28	0	2	0	0	0	2	0	0
11704	3,076	182	508	0	40	0	0	0	227	13	14
11705	1,324	18	9,137	0	2,851	0	0	0	820	754	880
11706	247	0	3,679	0	126	0	0	0	21	6	13
11711	3,870	74	240	0	6,765	0	0	153	1,340	1,326	1,354
11712	53,630	3,497	22,300	0	6,095	0	0	1,188	3,019	5,782	5,782
11713	2,534	273	2,551	0	699	0	0	131	343	649	649
11714	2	0	995	0	210	0	0	0	26	40	90
11715	104	1	17,450	0	6,106	0	0	0	523	665	1,506
11716	7,220	779	1,175	0	112	0	0	20	623	54	61
11721	996	17	177	0	606	0	0	0	820	573	585
11722	19,560	2,620	6,129	0	1,580	0	0	0	638	324	324
11723	613	82	687	0	181	0	0	0	74	35	35
11724	2	0	749	0	133	0	0	0	126	23	52

SCC	SO2	SO4	NOX	PB	CO	HCL	HF	NH3	TSP	VOC	THC
	METRIC TONS/YEAR										
11725	104	7	17,053	0	5,969	0	0	0	510	650	1,472
11726	63,055	5,669	11,201	0	1,068	0	0	0	5,938	521	585
11731	65,908	1,058	10,034	0	5,040	0	0	0	25,423	276	282
11732	5,959	639	2,697	0	691	0	0	0	283	143	143
11733	156	15	200	0	50	0	0	0	21	7	7
11734	2	0	819	0	207	0	0	0	73	14	33
11735	161	12	37,979	0	9,496	0	0	0	814	749	1,697
11736	291,055	24,464	50,692	0	4,839	0	0	0	26,919	2,356	2,646
11740	2,531	0	5,202	0	389,143	0	0	0	87,174	3,220	3,289
11801	0	0	0	0	0	0	0	0	0	1,755	3,975
12001	0	0	0	0	0	0	0	0	39,287	0	0
12002	0	0	0	0	0	0	0	0	5,460	0	0
12101	0	0	0	0	0	0	0	0	880	0	0
12102	0	0	0	0	0	0	0	0	21,127	0	0
12103	0	0	0	0	0	0	0	0	423	0	0
12104	0	0	0	0	0	0	0	0	8,452	0	0
12111	0	0	0	0	0	0	0	0	12	0	0
12112	0	0	0	0	0	0	0	0	112	0	0
12113	0	0	0	0	0	0	0	0	272	0	0
12114	0	0	0	0	0	0	0	0	3	0	0
12115	0	0	0	0	0	0	0	0	218	0	0
12116	0	0	0	0	0	0	0	0	135	0	0
12117	0	0	0	0	0	0	0	0	145	0	0
12121	0	0	0	0	0	0	0	0	27	0	0
12501	0	0	0	0	0	0	0	0	8,500	0	0
12502	0	0	0	0	0	0	0	0	3,010	0	0
12601	0	0	0	0	0	0	0	0	8,870	0	0
12602	0	0	0	0	0	0	0	0	225	0	0
12603	0	0	0	0	0	0	0	0	7,296	0	0
12604	0	0	0	0	0	0	0	0	1,576	0	0
12605	0	0	0	0	0	0	0	0	3,449	0	0
12606	0	0	0	0	0	0	0	0	2,094	0	0
12613	0	0	0	0	0	0	0	0	15,603	0	0
12614	0	0	0	0	0	0	0	0	3,107	0	0
12615	0	0	0	0	0	0	0	0	9,930	0	0
12623	0	0	0	0	0	0	0	0	2,746	0	0
12624	0	0	0	0	0	0	0	0	1,666	0	0
12625	0	0	0	0	0	0	0	0	1,398	0	0
12626	0	0	0	0	0	0	0	0	915	0	0
12641	0	0	0	0	0	0	0	0	834	0	0
12642	0	0	0	0	0	0	0	0	2,627	0	0
12643	0	0	0	0	0	0	0	0	1,041	0	0
12644	0	0	0	0	0	0	0	0	206	0	0
12701	0	0	69,255	0	8,775	0	0	0	0	13,078	29,626
12702	0	0	1,992	0	822	0	0	0	0	57	129
12703	0	0	6,973	0	884	0	0	0	0	1,316	2,982
12704	0	0	517	0	0	0	0	0	22	3	8
12705	0	0	0	0	0	0	0	0	0	1,705	3,863
12801	274	0	2,748	0	357,121	0	0	0	30,219	5,988	30,219
12802	94	0	205	0	0	0	0	25	113	0	0
12803	477	0	423	0	689	0	0	75	843	38	192
12901	0	0	0	0	0	0	0	0	0	50,013	50,013

1980 NAPAP 5.0 EMISSIONS INVENTORY - ANNUAL CANADIAN EMISSIONS, AREA SOURCES

SCC	SO2	SO4	NOX	PB	CO	HCL	HF	NH3	TSP	VOC	THC
	METRIC TONS/YEAR										
12902	0	0	0	0	0	0	0	0	0	24,075	24,075
12903	0	0	0	0	0	0	0	0	0	3,009	3,009
12904	0	0	0	0	0	0	0	0	0	31,813	31,813
12905	0	0	0	0	0	0	0	0	0	4,586	4,586
12906	0	0	0	0	0	0	0	0	0	27,228	27,228
12907	0	0	0	0	0	0	0	0	0	2,579	2,579
13001	0	0	0	0	0	0	0	0	0	74,171	74,171
13002	0	0	0	0	0	0	0	0	0	67,186	67,186
13101	0	0	0	0	0	0	0	0	0	28,537	1,831,618
13201	0	0	0	0	948	0	0	0	2,494	0	0
13202	0	0	0	0	4,247	0	0	0	2,672	0	0
13203	0	0	0	0	0	0	0	0	2,065	0	0
13204	0	0	0	0	0	0	0	0	1,016	0	0
13205	0	0	0	0	2	0	0	0	4	0	0
13701	0	0	0	0	0	0	0	0	1,174,777	0	0
13702	0	0	0	0	0	0	0	0	65,267	0	0
13703	0	0	0	0	0	0	0	0	2,967,104	0	0
13704	0	0	0	0	0	0	0	0	3,507,898	0	0
13705	0	0	0	0	0	0	0	0	282,741	0	0
13706	0	0	0	0	0	0	0	0	12,051,679	0	0
13901	0	0	0	0	0	0	0	0	441	0	0
13902	0	0	0	0	0	0	0	0	1,755	0	0
14001	0	0	0	0	1,934	0	0	0	4,834	0	0
14101	0	0	0	0	0	0	0	0	0	4,578	5,189
14102	32,841	164	0	0	0	0	0	0	0	20,227	22,925
14201	596	0	0	0	0	0	0	0	1,460	0	0
14202	0	0	0	0	0	0	0	0	6,697	0	0
14203	0	0	0	0	0	0	0	0	129,746	0	0
14204	0	0	0	0	0	0	0	0	55,896	0	0
14205	0	0	0	0	0	0	0	0	3,974	0	0
14401	0	0	0	0	0	0	0	0	3,413	242	688
14501	0	0	0	0	0	0	0	0	26,708	0	0
14601	5,574	513	60,556	0	21,542	0	0	0	8,285	13,085	13,312
14602	3,620	331	61,429	0	10,761	0	0	0	2,054	4,191	4,264
14603	22,353	1,199	114,564	0	54,622	0	0	0	10,377	20,775	21,136
14604	11,212	1,031	170,309	0	36,973	0	0	0	12,124	16,229	16,511
14701	0	0	0	0	0	0	0	0	0	19,202	19,540
14901	0	0	0	0	0	0	0	0	57,866	0	0
15101	0	0	0	0	0	0	0	0	0	75,878	76,557
15201	0	0	0	0	0	0	0	0	142,760	0	0
15202	0	0	0	0	0	0	0	0	746,170	0	0
99900	0	0	0	0	0	0	0	0	0	0	0
CANADA	692,522	44,041	1,515,793	NR	15,718,731	NR	NR	147,312	27,797,132	2,375,236	4,290,573

1980 NAPAP 5.0 EMISSIONS INVENTORY - ANNUAL CANADIAN EMISSIONS, AREA SOURCES

TONS/YEAR

Province	SO2	SO4	NOX	PB	CO	HCL	HF	NH3	TSP	VOC	THC
Alberta	51,910	1,291	361,792	0	3,005,269	0	0	53,080	8,767,433	537,586	741,839
British Columb.	42,554	3,123	202,509	0	2,035,935	0	0	6,518	1,932,312	260,165	502,632
Manitoba	9,944	531	99,411	0	1,599,921	0	0	19,455	3,113,425	225,491	316,540
New Brunswick	53,511	4,302	36,833	0	341,763	0	0	939	386,395	42,010	103,832
Newfoundland	40,452	3,217	33,752	0	197,060	0	0	123	192,773	26,981	76,696
Nova Scotia	41,146	3,230	47,085	0	378,427	0	0	1,276	708,372	63,195	137,842
Ontario	162,161	8,702	425,273	0	4,108,803	0	0	32,758	6,401,794	637,371	1,378,759
Prince Edward	2,782	214	5,642	0	57,909	0	0	832	41,462	6,492	17,192
Quebec	345,737	23,244	298,611	0	2,236,111	0	0	15,650	2,242,053	322,901	872,031
Saskatchewan	13,178	693	159,968	0	3,365,737	0	0	31,752	6,855,074	496,059	582,184
Canada	763,375	48,547	1,670,876	NR	17,326,935	NR	NR	162,384	30,641,093	2,618,250	4,729,547

METRIC TONS/YEAR

Province	SO2	SO4	NOX	PB	CO	HCL	HF	NH3	TSP	VOC	THC
Alberta	47,092	1,171	328,212	0	2,726,334	0	0	48,153	7,953,682	487,690	672,985
British Columb.	38,604	2,833	183,713	0	1,846,969	0	0	5,913	1,752,964	236,018	455,980
Manitoba	9,021	482	90,184	0	1,451,424	0	0	17,649	2,824,452	204,562	287,160
New Brunswick	48,544	3,903	33,414	0	310,042	0	0	852	350,532	38,111	94,195
Newfoundland	36,697	2,918	30,619	0	178,770	0	0	112	174,881	24,477	69,577
Nova Scotia	37,327	2,930	42,715	0	343,303	0	0	1,158	642,624	57,329	125,049
Ontario	147,110	7,894	385,801	0	3,727,443	0	0	29,718	5,807,610	578,213	1,250,789
Prince Edward	2,524	194	5,118	0	52,534	0	0	755	37,614	5,889	15,596
Quebec	313,647	21,087	270,895	0	2,028,566	0	0	14,197	2,033,956	292,930	791,093
Saskatchewan	11,955	629	145,121	0	3,053,345	0	0	28,805	6,218,819	450,017	528,148
Canada	692,522	44,041	1,515,793	NR	15,718,731	NR	NR	147,312	27,797,132	2,375,236	4,290,573

NR => Not Reported

	TONS/YEAR										
SCC	SO2	SO4	NOx	Pb	CO	HCl	HF	NH3	TSP	VOC	THC
101002	447,467	8,485	136,282	0	15,061	0	0	0	116,032	4,498	4,595
101003	3,320	46	870	0	251	0	0	0	12,215	71	73
101004	145,392	8,077	23,122	0	1,709	0	0	0	11,744	499	560
101005	27,358	1,086	5,112	0	317	0	0	0	62	146	146
101006	5,991	0	12,585	0	420	0	0	0	428	12	27
102002	1,234	99	0	0	0	0	0	0	0	0	0
102004	146,057	4,531	17,563	0	1,050	0	0	0	13,068	212	238
102006	3,032	258	12,112	0	496	0	0	0	853	119	271
102008	0	0	0	0	0	0	0	0	0	0	0
102014	59,271	190	3,022	0	0	0	0	0	13,826	0	0
105001	0	0	3	0	0	0	0	0	0	0	0
201001	214,533	33	54,721	0	23	0	0	0	8,483	2	2
201002	5	0	1,677	0	93	0	0	0	75	3	10
301003	0	0	0	0	0	0	0	29,636	0	115,309	115,309
301005	1,842	0	0	0	123,494	0	0	0	17	66	66
301013	0	0	7,588	0	0	0	0	0	0	0	0
301014	284	2	0	0	0	0	0	0	78	0	0
301017	0	0	0	0	0	0	0	0	409	0	0
301018	0	0	0	0	0	0	0	0	0	50,439	50,708
301019	0	0	0	0	0	0	0	0	0	81	413
301021	0	0	0	0	0	0	0	1,482	1,058	0	0
301023	17,520	862	0	0	0	0	0	0	0	0	0
301026	0	0	0	0	0	0	0	0	0	9,042	9,042
301027	0	0	187	0	0	0	0	499	1,636	0	0
301028	0	0	0	0	0	0	0	0	320	0	0
301029	0	0	0	0	0	0	0	0	255	0	0
301030	0	0	0	0	0	0	0	0	1,791	0	0
301035	2,920	14	0	0	0	0	0	0	84	0	0
301040	0	0	0	0	0	0	0	10,795	5,446	0	0
301130	0	0	0	0	0	0	0	0	6	0	0
301132	0	0	0	0	0	0	0	0	0	1,458	1,484
301157	0	0	0	0	0	0	0	0	0	1,655	1,685
301174	0	0	0	0	0	0	0	0	0	2,470	2,514
301250	0	0	0	0	0	0	0	0	0	7,078	7,078
301258	0	0	0	0	0	0	0	0	0	8,504	8,504
301830	0	0	0	0	0	0	0	0	41	0	0
303000	0	0	0	0	0	0	0	0	4	0	0
303001	14,984	71	10,869	0	0	0	0	0	13,231	0	0
303002	0	0	0	0	0	0	0	0	4,041	0	0
303003	10,140	830	5	0	775	0	0	560	22,145	672	1,438
303004	0	0	0	0	28	0	0	0	512	21	46
303005	1,680,647	31,882	0	0	0	0	0	0	33,957	0	0
303006	13,440	2,359	0	0	25,453	0	0	0	28,413	0	0
303008	190,845	528	0	0	27,713	0	0	0	35,954	0	0
303009	3,010	26	20	0	43,587	0	0	72	44,043	381	429
303010	33,359	1,195	0	0	0	0	0	0	3,351	0	0
303013	16,696	0	0	0	0	0	0	0	229	0	0
303023	221	0	0	0	37,547	0	0	0	167,589	0	0
303024	0	0	0	0	0	0	0	0	296	0	0
303030	4,577	176	0	0	0	0	0	0	4,490	0	0
303888	0	0	0	0	0	0	0	0	36,301	0	0
303999	9,120	45	0	0	0	0	0	0	3,833	0	0

1980 NAPAP 5.0 EMISSIONS INVENTORY - ANNUAL CANADIAN EMISSIONS, POINT SOURCES

SCC	SO2	SO4	NOx	Pb	CO	HCl	HF	NH3	TSP	VOC	THC
	TONS/YEAR										
304001	35,491	267	0	0	148,413	0	0	0	22,499	1,250	1,975
304006	0	0	0	0	0	0	0	0	77	0	0
304010	571,740	7,889	0	0	0	0	0	0	16,933	0	0
305005	0	0	0	0	0	0	0	0	625	0	0
305006	0	496	0	0	0	0	0	0	15,325	0	0
305007	0	4	0	0	0	0	0	0	131	0	0
305010	0	0	0	0	0	0	0	0	5,536	0	0
305014	0	0	0	0	0	0	0	0	1,102	0	0
305015	0	5,594	0	0	0	0	0	0	8,771	0	0
305016	0	6	0	0	0	0	0	0	22,090	0	0
305019	1,288	0	0	0	0	0	0	0	15,896	0	0
305020	0	0	0	0	0	0	0	0	1,059	0	0
305021	0	0	0	0	0	0	0	0	8,734	0	0
305022	0	0	0	0	0	0	0	0	16,177	0	0
305025	0	0	0	0	0	0	0	0	1,254	0	0
305031	0	0	0	0	0	0	0	0	45,491	0	0
305032	0	0	0	0	0	0	0	0	15,743	0	0
305040	0	0	0	0	0	0	0	0	10,841	0	0
306001	51,645	5,760	22,216	0	1,627	0	0	0	4,222	291	384
306002	35,655	461	6,449	0	191,381	0	0	4,021	9,593	23,221	36,280
306006	68	6	103	0	8	0	0	0	30	1	2
306008	0	0	0	0	0	0	0	0	0	75,374	79,023
306012	33	2	50	0	3	0	0	0	294	1	2
306014	704	3	55	0	58	0	0	6	919	46	104
306888	10,785	54	0	0	0	0	0	0	0	0	0
307001	33,054	55,124	17,531	0	66,540	0	0	0	118,481	12,493	13,737
307002	76,491	1,039	0	0	0	0	0	0	1,385	0	0
310002	446,224	2,135	45,696	0	5,784	0	0	0	2	15,368	20,455
310004	277	0	3,569	0	7	0	0	0	112	62	87
310888	1,851	9	0	0	0	0	0	0	0	0	0
403001	0	0	0	0	0	0	0	0	0	44,626	50,597
501001	1,201	0	1,389	0	16,477	0	0	188	1,869	136	693
501002	98	0	8	0	674	0	0	17	326	8	8
501005	7	0	9	0	0	0	0	0	34	0	2
503001	11,757	34	0	0	0	0	0	0	0	0	0
503005	1,077	0	323	0	0	0	0	15	286	14	81
503007	12,552	57	0	0	0	0	0	0	0	0	0
CANADA	4,345,263	139,735	383,136	NR	708,989	NR	NR	47,290	933,053	375,631	408,066

	METRIC TONS/YEAR										
SCC	SO2	SO4	NOx	Pb	CO	HCl	HF	NH3	TSP	VOC	THC
101002	405,943	7,698	123,635	0	13,663	0	0	0	105,264	4,081	4,169
101003	3,012	42	789	0	228	0	0	0	11,081	65	66
101004	131,900	7,327	20,976	0	1,550	0	0	0	10,654	452	508
101005	24,819	985	4,638	0	288	0	0	0	56	133	133
101006	5,435	0	11,417	0	381	0	0	0	388	11	25
102002	1,119	90	0	0	0	0	0	0	0	0	0
102004	132,503	4,111	15,933	0	953	0	0	0	12,672	192	216
102006	2,751	234	10,988	0	450	0	0	0	774	108	246
102008	0	0	0	0	0	0	0	0	0	0	0
102014	53,771	172	2,742	0	0	0	0	0	12,543	0	0
105001	0	0	3	0	0	0	0	0	0	0	0
201001	194,625	30	49,643	0	21	0	0	0	7,696	2	2
201002	5	0	1,521	0	84	0	0	0	68	3	9
301003	0	0	0	0	0	0	0	26,886	0	104,608	104,608
301005	1,671	0	0	0	112,034	0	0	0	15	60	60
301013	0	0	6,884	0	0	0	0	0	0	0	0
301014	258	2	0	0	0	0	0	0	71	0	0
301017	0	0	0	0	0	0	0	0	371	0	0
301018	0	0	0	0	0	0	0	0	0	45,759	46,002
301019	0	0	0	0	0	0	0	0	0	73	375
301021	0	0	0	0	0	0	0	1,344	960	0	0
301023	15,894	782	0	0	0	0	0	0	0	0	0
301026	0	0	0	0	0	0	0	0	0	8,203	8,203
301027	0	0	170	0	0	0	0	453	1,484	0	0
301028	0	0	0	0	0	0	0	0	290	0	0
301029	0	0	0	0	0	0	0	0	231	0	0
301030	0	0	0	0	0	0	0	0	1,625	0	0
301035	2,649	13	0	0	0	0	0	0	76	0	0
301040	0	0	0	0	0	0	0	9,793	4,941	0	0
301130	0	0	0	0	0	0	0	0	5	0	0
301132	0	0	0	0	0	0	0	0	0	1,323	1,346
301157	0	0	0	0	0	0	0	0	0	1,502	1,528
301174	0	0	0	0	0	0	0	0	0	2,241	2,281
301250	0	0	0	0	0	0	0	0	0	6,421	6,421
301258	0	0	0	0	0	0	0	0	0	7,715	7,715
301830	0	0	0	0	0	0	0	0	37	0	0
303000	0	0	0	0	0	0	0	0	4	0	0
303001	13,594	64	9,860	0	0	0	0	0	12,003	0	0
303002	0	0	0	0	0	0	0	0	3,666	0	0
303003	9,199	753	5	0	703	0	0	508	20,090	609	1,305
303004	0	0	0	0	25	0	0	0	464	19	42
303005	1,524,687	28,923	0	0	0	0	0	0	30,806	0	0
303006	12,193	2,140	0	0	23,091	0	0	0	25,776	0	0
303008	173,135	479	0	0	25,141	0	0	0	32,618	0	0
303009	2,731	24	18	0	39,542	0	0	65	39,956	346	389
303010	30,263	1,084	0	0	0	0	0	0	3,040	0	0
303013	15,147	0	0	0	0	0	0	0	208	0	0
303023	200	0	0	0	34,063	0	0	0	152,037	0	0
303024	0	0	0	0	0	0	0	0	269	0	0
303030	4,152	160	0	0	0	0	0	0	4,073	0	0
303888	0	0	0	0	0	0	0	0	32,932	0	0
303999	8,274	41	0	0	0	0	0	0	3,477	0	0

1980 NAPAP 5.0 EMISSIONS INVENTORY - ANNUAL CANADIAN EMISSIONS, POINT SOURCES

	METRIC TONS/YEAR										
SCC	SO2	SO4	NOx	Pb	CO	HCl	HF	NH3	TSP	VOC	THC
304001	32,198	242	0	0	134,641	0	0	0	20,411	1,134	1,791
304006	0	0	0	0	0	0	0	0	70	0	0
304010	518,684	7,157	0	0	0	0	0	0	15,362	0	0
305005	0	0	0	0	0	0	0	0	567	0	0
305006	0	450	0	0	0	0	0	0	13,903	0	0
305007	0	4	0	0	0	0	0	0	119	0	0
305010	0	0	0	0	0	0	0	0	5,022	0	0
305014	0	0	0	0	0	0	0	0	1,000	0	0
305015	0	5,075	0	0	0	0	0	0	7,957	0	0
305016	0	5	0	0	0	0	0	0	20,040	0	0
305019	1,168	0	0	0	0	0	0	0	14,421	0	0
305020	0	0	0	0	0	0	0	0	961	0	0
305021	0	0	0	0	0	0	0	0	7,924	0	0
305022	0	0	0	0	0	0	0	0	14,676	0	0
305025	0	0	0	0	0	0	0	0	1,138	0	0
305031	0	0	0	0	0	0	0	0	41,270	0	0
305032	0	0	0	0	0	0	0	0	14,282	0	0
305040	0	0	0	0	0	0	0	0	9,835	0	0
306001	46,852	5,225	20,154	0	1,476	0	0	0	3,830	264	348
306002	32,346	418	5,851	0	173,621	0	0	3,648	8,703	21,067	32,913
306006	62	5	93	0	7	0	0	0	27	1	2
306008	0	0	0	0	0	0	0	0	0	68,380	71,690
306012	30	2	45	0	3	0	0	0	267	1	2
306014	639	3	50	0	53	0	0	5	834	42	95
306888	9,784	49	0	0	0	0	0	0	0	0	0
307001	29,987	50,009	15,904	0	60,365	0	0	0	107,486	11,334	12,462
307002	69,393	943	0	0	0	0	0	0	1,256	0	0
310002	404,815	1,937	41,456	0	5,247	0	0	0	2	13,942	18,557
310004	251	0	3,238	0	6	0	0	0	102	56	79
310888	1,679	8	0	0	0	0	0	0	0	0	0
403001	0	0	0	0	0	0	0	0	0	40,485	45,902
501001	1,090	0	1,260	0	14,948	0	0	171	1,696	123	629
501002	89	0	7	0	611	0	0	15	296	7	7
501005	6	0	8	0	0	0	0	0	31	0	2
503001	10,666	31	0	0	0	0	0	0	0	0	0
503005	977	0	293	0	0	0	0	14	259	12	73
503007	11,387	52	0	0	0	0	0	0	0	0	0
CANADA	3,942,032	126,768	347,582	NR	643,196	NR	NR	42,902	846,468	340,774	370,199

1980 NAPAP 5.0 EMISSIONS INVENTORY - ANNUAL CANADIAN EMISSIONS, POINT SOURCES

TONS/YEAR

Province	SO2	SO4	NOx	Pb	CO	HCl	HF	NH3	TSP	VOC	THC
Alberta	608,878	6,386	123,772	0	18,417	0	0	30,243	60,708	148,126	157,123
British Columbia	141,552	31,792	19,286	0	167,979	0	0	494	93,322	24,884	28,148
Manitoba	523,255	13,259	2,981	0	3,589	0	0	1,556	28,794	8,190	8,551
New Brunswick	169,542	10,661	21,927	0	6,202	0	0	85	29,354	9,001	10,177
Newfoundland	25,183	1,387	2,178	0	263	0	0	0	87,892	1,967	2,196
Nova Scotia	171,197	7,864	36,391	0	15,358	0	0	369	54,647	10,470	12,102
Ontario	1,791,964	37,245	138,476	0	315,383	0	0	13,501	202,588	95,879	103,998
Prince Edward Island	2,191	129	488	0	38	0	0	0	167	9	10
Quebec	864,554	27,455	23,388	0	173,600	0	0	915	249,893	67,207	74,462
Saskatchewan	46,947	3,557	14,249	0	8,160	0	0	127	125,688	9,898	11,299
Canada	4,345,263	139,735	383,136	NR	708,989	NR	NR	47,290	933,053	375,631	408,066

METRIC TONS/YEAR

Province	SO2	SO4	NOx	Pb	CO	HCl	HF	NH3	TSP	VOC	THC
Alberta	552,375	5,793	112,286	0	16,708	0	0	27,437	55,074	134,380	142,542
British Columbia	128,416	28,842	17,496	0	152,391	0	0	448	84,662	22,575	25,536
Manitoba	474,698	12,029	2,704	0	3,256	0	0	1,412	26,122	7,430	7,757
New Brunswick	153,809	9,672	19,892	0	5,626	0	0	77	26,630	8,165	9,232
Newfoundland	22,846	1,258	1,976	0	239	0	0	0	79,736	1,784	1,992
Nova Scotia	155,310	7,134	33,014	0	13,933	0	0	335	49,576	9,498	10,979
Ontario	1,625,674	33,789	125,426	0	286,116	0	0	12,248	183,788	86,982	94,347
Prince Edward Island	1,988	117	443	0	34	0	0	0	152	8	9
Quebec	784,325	24,907	21,218	0	157,490	0	0	830	226,703	60,971	67,552
Saskatchewan	42,590	3,227	12,927	0	7,403	0	0	115	114,024	8,979	10,250
Canada	3,942,032	126,768	347,582	NR	643,196	NR	NR	42,902	846,468	340,773	370,199

1980 NAPAP 5.0 EMISSIONS INVENTORY - ANNUAL CANADIAN EMISSIONS, AREA & POINT SOURCES

TONS/YEAR

Province	SO2	SO4	NOx	Pb	CO	HCl	HF	NH3	TSP	VOC	THC
Alberta	660,788	7,677	485,564	0	3,023,686	0	0	83,323	8,828,141	685,711	898,962
British Columbia	184,106	34,915	221,795	0	2,203,914	0	0	7,012	2,025,634	285,050	530,780
Manitoba	533,199	13,790	102,392	0	1,603,510	0	0	21,011	3,142,219	233,681	325,091
New Brunswick	223,053	14,963	58,760	0	347,965	0	0	1,024	415,749	51,010	114,009
Newfoundland	65,635	4,604	35,930	0	197,323	0	0	123	280,665	28,948	78,892
Nova Scotia	212,343	11,094	83,476	0	393,785	0	0	1,646	763,019	73,664	149,945
Ontario	1,954,125	45,947	563,749	0	4,424,186	0	0	46,260	6,604,382	733,251	1,482,757
Prince Edward Island	4,973	343	6,130	0	57,947	0	0	832	41,629	6,501	17,202
Quebec	1,210,291	50,699	321,999	0	2,409,711	0	0	16,564	2,491,946	390,108	946,493
Saskatchewan	60,125	4,250	174,217	0	3,373,897	0	0	31,879	6,980,762	505,957	593,482
Canada	5,108,638	188,282	2,054,012	NR	18,035,924	NR	NR	209,674	31,574,146	2,993,881	5,137,613

METRIC TONS/YEAR

Province	SO2	SO4	NOx	Pb	CO	HCl	HF	NH3	TSP	VOC	THC
Alberta	599,467	6,965	440,498	0	2,743,042	0	0	75,590	8,008,756	622,070	815,527
British Columbia	167,021	31,675	201,209	0	1,999,360	0	0	6,361	1,837,626	258,593	481,516
Manitoba	483,719	12,510	92,889	0	1,454,680	0	0	19,061	2,850,574	211,992	294,917
New Brunswick	202,353	13,574	53,307	0	315,669	0	0	929	377,162	46,276	103,427
Newfoundland	59,544	4,177	32,595	0	179,008	0	0	112	254,617	26,261	71,570
Nova Scotia	192,637	10,064	75,729	0	357,236	0	0	1,493	692,200	66,827	136,028
Ontario	1,772,784	41,683	511,427	0	4,013,560	0	0	41,966	5,991,398	665,195	1,345,137
Prince Edward Island	4,511	311	5,561	0	52,569	0	0	755	37,765	5,898	15,605
Quebec	1,097,973	45,994	292,113	0	2,186,056	0	0	15,027	2,260,660	353,901	858,645
Saskatchewan	54,545	3,856	158,047	0	3,060,748	0	0	28,920	6,332,843	458,996	538,398
Canada	4,634,554	170,809	1,863,375	NR	16,361,928	NR	NR	190,214	28,643,600	2,716,010	4,660,771

NR = NOT REPORTED

1980 NAPAP 5.0 EMISSIONS INVENTORY - ANNUAL CANADIAN & U.S. EMISSIONS, AREA & POINT SOURCES

TONS/YEAR

Country	SO2	SO4	NOx	Pb	CO	HCl	HF	NH3	TSP	VOC	THC
Canada	5,108,638	188,282	2,054,012	NR	18,035,924	NR	NR	209,674	31,574,146	2,993,881	5,137,613
Contig. U.S.	26,954,136	975,608	22,352,239	31,732	99,308,937	526,524	115,434	838,664	42,617,370	23,164,547	24,977,459
Total	32,062,774	1,163,890	24,406,251	31,732	117,344,861	526,524	115,434	1,048,338	74,191,516	26,158,428	30,115,073

METRIC TONS/YEAR

Country	SO2	SO4	NOx	Pb	CO	HCl	HF	NH3	TSP	VOC	THC
Canada	4,634,554	170,809	1,863,375	NR	16,361,928	NR	NR	190,214	28,643,600	2,716,010	4,660,771
Contig. U.S.	24,452,809	885,069	20,277,779	28,787	90,091,712	477,664	104,722	760,828	38,661,904	21,014,593	22,659,252
Total	29,087,363	1,055,878	22,141,154	28,787	106,453,640	477,664	104,722	951,042	67,305,504	23,730,603	27,320,023

NR = NOT REPORTED

STATE EMISSION DENSITY - NAPAP EMISSIONS INVENTORY VERSION 5.0

State Emission Density
(Tons/Sq. Mi.)

State	SO2	SO4	NOx	Pb	CO
Alabama	16.892	0.6499	9.598	0.013414	35.68
Arizona	7.436	0.2720	2.325	0.003224	11.54
Arkansas	1.638	0.1970	3.970	0.004964	19.66
California	3.326	0.2298	8.847	0.016910	60.94
Colorado	1.353	0.0902	2.942	0.007297	22.22
Connecticut	13.067	1.6646	28.684	0.078202	244.73
Delaware	64.495	2.4030	32.212	0.036730	125.65
Dist. of Colum.	243.254	17.7937	402.413	0.619048	5,377.46
Florida	20.367	0.5686	13.151	0.020071	75.18
Georgia	15.503	0.5285	10.173	0.012005	40.23
Idaho	0.682	0.1053	1.115	0.006649	15.54
Illinois	26.319	0.7596	17.485	0.047353	76.32
Indiana	54.844	1.0605	21.896	0.030638	66.08
Iowa	5.973	0.1967	5.463	0.007630	19.76
Kansas	2.789	0.0906	6.277	0.003057	13.11
Kentucky	28.987	0.5824	13.897	0.013082	40.19
Louisiana	9.015	0.5521	15.925	0.012444	57.09
Maine	4.303	0.3621	2.164	0.004001	16.35
Maryland	30.847	1.0904	26.540	0.046351	148.38
Massachusetts	45.753	1.8525	34.599	0.085101	272.55
Michigan	14.772	0.5725	12.560	0.020155	63.43
Minnesota	3.001	0.1827	4.609	0.005896	24.25
Mississippi	6.433	0.2388	6.235	0.006288	21.00
Missouri	19.337	0.3299	7.974	0.012314	32.00
Montana	1.164	0.0522	0.965	0.002132	9.78
Nebraska	1.019	0.0532	2.258	0.002597	7.95
Nevada	1.348	0.0607	0.882	0.000974	4.74
New Hampshire	12.065	0.5413	6.557	0.011121	39.21
New Jersey	41.491	2.7705	55.906	0.094537	307.18
New Mexico	2.164	0.0758	2.094	0.001434	7.68
New York	18.369	0.9124	15.552	0.026868	100.44
North Carolina	13.422	0.6356	10.906	0.014884	46.87
North Dakota	1.665	0.1670	1.964	0.001039	4.07
Ohio	65.392	1.2573	29.695	0.052678	114.55
Oklahoma	1.517	0.1392	6.599	0.006001	27.00
Oregon	0.582	0.1934	2.358	0.003472	15.12
Pennsylvania	42.302	1.3484	23.201	0.042725	97.52
Rhode Island	13.442	1.4146	34.396	0.077799	300.37
South Carolina	11.420	0.5810	9.206	0.015195	39.99
South Dakota	0.538	0.0500	1.045	0.000922	6.71
Tennessee	28.142	0.7024	12.911	0.017787	47.42
Texas	5.055	0.2285	12.709	0.008278	34.59
Utah	1.421	0.1083	1.898	0.002327	12.26
Vermont	0.883	0.1902	2.564	0.006686	21.79
Virginia	9.340	0.5436	9.658	0.016272	58.52
Washington	4.778	0.2971	4.430	0.007593	36.11
West Virginia	47.485	1.1566	19.110	0.025618	32.54
Wisconsin	12.322	0.4372	7.493	0.010878	34.78
Wyoming	2.177	0.1380	2.566	0.000887	6.28

STATE EMISSION DENSITY - NAPAP EMISSIONS INVENTORY VERSION 5.0 (continued)

State Emission Density
(Tons/Sq. Mi.)

State	HCl	HF	NH3	TSP	VOC	THC
Alabama	0.3849	0.069712	0.23567	8.653	7.711	8.383
Arizona	0.0787	0.009576	0.10502	7.413	2.239	2.390
Arkansas	0.0336	0.027168	0.47790	16.437	4.195	4.407
California	0.0030	0.000928	0.20482	9.830	14.181	15.451
Colorado	0.0879	0.011448	0.24120	10.956	3.445	3.722
Connecticut	0.1008	0.000000	0.39936	24.677	58.330	61.389
Delaware	0.5960	0.095189	1.06118	25.547	39.887	42.001
Dist. of Colum.	10.3968	0.365079	0.93679	239.667	699.703	768.247
Florida	0.1631	0.539690	0.53165	16.985	15.299	16.040
Georgia	0.3523	0.043111	0.60900	15.192	8.756	9.132
Idaho	0.0040	0.002936	0.09869	4.013	2.694	2.796
Illinois	0.6167	0.142634	1.23339	16.761	17.766	19.639
Indiana	0.9320	0.128200	0.81703	13.820	15.657	17.359
Iowa	0.2056	0.030483	1.43679	22.118	4.238	4.621
Kansas	0.0809	0.009770	0.41805	22.650	3.060	3.652
Kentucky	0.5705	0.096814	0.20630	11.403	11.133	11.835
Louisiana	0.0192	0.039555	0.59106	12.558	14.051	15.046
Maine	0.0013	0.000161	0.01347	4.103	4.581	4.809
Maryland	0.6667	0.132852	0.30418	23.136	36.925	40.092
Massachusetts	0.2864	0.010989	0.01323	26.898	65.904	72.603
Michigan	0.4015	0.055303	0.18317	15.454	16.088	17.335
Minnesota	0.1109	0.014080	0.61125	15.073	5.898	6.236
Mississippi	0.0550	0.006648	0.16533	12.432	5.543	5.900
Missouri	0.3218	0.038886	0.25041	41.743	9.134	9.769
Montana	0.0138	0.001671	0.02676	6.057	1.626	1.689
Nebraska	0.0605	0.007594	0.58303	14.105	2.200	2.335
Nevada	0.0323	0.004040	0.00641	8.368	0.855	0.907
New Hampshire	0.1152	0.013790	0.00014	7.374	11.564	12.166
New Jersey	0.3436	0.043921	0.01075	53.858	93.299	100.400
New Mexico	0.0684	0.008052	0.03728	10.294	1.574	1.760
New York	0.1956	0.039680	0.29467	16.942	24.502	26.743
North Carolina	0.4846	0.067768	0.43237	14.341	12.571	13.413
North Dakota	0.0017	0.000866	0.09584	18.691	0.769	0.839
Ohio	1.2385	0.193493	0.39323	26.117	24.414	26.648
Oklahoma	0.0840	0.011186	0.22236	16.126	4.734	5.059
Oregon	0.0076	0.000956	0.04418	19.233	3.538	3.775
Pennsylvania	0.9359	0.123073	0.54151	31.914	23.246	24.793
Rhode Island	0.0256	0.000000	.00000	30.667	76.890	82.397
South Carolina	0.2994	0.054557	0.14697	14.947	15.718	16.588
South Dakota	0.0031	0.000500	0.17038	9.426	1.259	1.332
Tennessee	0.5695	0.105871	0.44022	15.944	13.476	14.281
Texas	0.0735	0.022518	0.23553	22.662	8.293	9.091
Utah	0.0437	0.006226	0.02390	8.417	1.955	2.100
Vermont	0.0013	0.000000	0.00027	10.880	6.316	6.630
Virginia	0.1846	0.034887	0.27488	11.747	13.293	14.144
Washington	0.0761	0.022793	0.27209	5.226	6.996	7.433
West Virginia	1.2054	0.201501	0.01389	15.835	6.416	6.706
Wisconsin	0.2831	0.042775	0.58897	12.985	8.764	9.413
Wyoming	0.1352	0.017806	0.05320	5.018	1.056	1.145

SCC	SO2	SO4	NO	NO2	PB	CO	HCl	HF	NH3	TSP	CA	MG	NA	K	VOC	THC
	TONS/YEAR															
1	12,097	169	1,241	38	0	39,900	119	1	0	4,406	0	0	0	0	7,796	7,963
2	28,664	1,322	1,466	45	0	47,697	21	1	0	7,906	0	0	0	0	9,306	9,506
3	148,356	28,388	88,900	1,814	0	25,119	0	0	0	12,499	0	0	0	0	23,461	23,461
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	1,271	0	244,383	12,862	0	51,412	0	0	0	7,529	0	0	0	0	9,815	22,234
6	9,866	98,827	80,057	2,476	0	6,363,435	0	0	0	1,032,150	0	0	0	0	2,038,388	2,082,113
7	13,301	161	5,368	166	0	232	108	2	0	439	0	0	0	0	24	25
8	44,138	1,700	7,865	243	0	4,801	59	2	0	279	0	0	0	0	56	57
9	53,199	9,270	32,662	667	0	8,217	0	0	0	3,123	0	0	0	0	1,316	1,316
10	278,844	25,790	64,502	1,316	0	5,901	0	0	0	22,421	0	0	0	0	2,797	3,141
11	417	0	93,510	4,922	0	19,615	0	0	0	2,681	0	0	0	0	3,676	8,327
12	0	2	1	0	0	2	0	0	0	5	0	0	0	0	1	1
13	155	1	61	2	0	1	0	0	7	1	0	0	0	0	0	0
14	454,236	16,227	116,060	3,589	0	15,332	1,065	283	0	4,490	0	0	0	0	495	506
15	189	1	48	1	0	21	0	0	0	76	0	0	0	0	1	1
16	37,407	5,631	32,136	656	0	7,721	0	0	0	2,828	0	0	0	0	126	126
17	140,186	2,877	29,615	604	0	2,715	0	0	0	10,527	0	0	0	0	952	1,069
18	25	0	1,844,135	97,060	0	259,534	0	0	0	155	0	0	0	0	3,962	8,975
19	7	284	102	3	0	311	0	0	0	135	0	0	0	0	121	124
20	77	0	82	4	0	3	0	0	0	19	0	0	0	0	1	1
21	1,494	1	2,796	493	70	935,430	1,494	0	0	110,851	0	0	0	0	61,784	311,790
22	1,284	1	1,091	193	0	9,814	5	0	0	7,259	0	0	0	0	1,742	8,792
23	6,496	16	8,536	1,506	2	29,182	94	0	0	21,129	0	0	0	0	8,288	41,823
24	9,005	3	52,825	9,322	0	1,038,173	0	0	0	242,709	0	0	0	0	339,286	339,286
25	144	0	1,316	232	0	29,182	0	0	0	4,857	0	0	0	0	9,092	9,092
26	11	0	160	28	0	3,455	0	0	0	727	0	0	0	0	1,396	1,396
28	67,096	3,591	1,495,874	166,208	7,417	9,703,579	0	0	0	696,177	0	0	0	0	1,830,921	1,974,069
30	86,875	4,621	1,858,442	206,494	7,404	35,437,309	0	0	0	3,325,305	0	0	0	0	4,094,727	4,414,869
32	23,236	414	451,013	50,113	2,877	3,027,549	0	0	0	175,227	0	0	0	0	640,766	690,863
34	30,059	856	573,897	63,766	2,721	11,205,758	0	0	0	831,481	0	0	0	0	1,441,277	1,553,962
36	7,093	1	174,178	19,353	1,998	2,212,888	0	0	0	43,832	0	0	0	0	234,862	253,225
38	8,402	46	187,567	20,841	1,247	5,492,472	0	0	0	137,676	0	0	0	0	489,780	528,073
39	3,326	76	68,468	7,608	2	2,476,699	0	0	0	6,865	0	0	0	0	198,921	214,720
41	86,416	1,534	690,971	76,775	0	245,728	0	0	0	133,644	0	0	0	0	112,041	113,984
43	119,651	2,409	1,042,877	115,875	0	719,910	0	0	0	338,923	0	0	0	0	305,115	310,406
44	74,790	1,100	816,652	90,739	0	270,807	0	0	0	94,886	0	0	0	0	147,354	154,748
45	128,494	2,270	750,431	83,381	0	293,012	0	0	0	56,532	0	0	0	0	240,871	245,048
46	4,098	6	30,780	952	0	151,354	0	0	0	61,689	0	0	0	0	89,446	90,823
47	806	0	8,016	248	0	536,351	0	0	0	1,541	0	0	0	0	30,980	31,457
48	7,573	20	74,278	2,297	0	220,313	0	0	0	3,289	0	0	0	0	89,097	90,468
49	3,648	155	172	5	0	5,295	0	0	0	3,531	0	0	0	0	577	589
50	12,343	946	90,332	1,844	0	32,258	0	0	0	9,862	0	0	0	0	28,235	28,235
51	212,163	16,972	34,164	697	0	1,166	0	0	0	16,094	0	0	0	0	2,439	2,739
52	2,725	0	10,137	534	0	1,360,524	0	0	0	0	0	0	0	0	370,657	400,096
54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	966,415	966,415
55	0	0	0	0	2	0	0	0	0	29,270,073	0	0	0	0	0	0
56	0	0	0	0	0	0	0	0	0	7,528	0	0	0	0	0	0
57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
58	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60	5,013	6	118,528	20,917	0	4,881,714	0	0	0	592,770	0	0	0	0	836,862	836,862
61	3,007	4	69,686	12,297	0	2,295,361	0	0	0	409,913	0	0	0	0	368,884	368,884

1980 NAPAP 5.2 EMISSIONS INVENTORY, ANNUAL U.S. EMISSIONS, AREA SOURCES

SCC	SO2	SO4	NO	NO2	PB	CO	HCL	HF	NH3	TSP	CA	MG	NA	K	VOC	THC
	TONS/YEAR															
62	0	0	7,179	1,267	0	397,513	0	0	0	60,465	0	0	0	0	68,041	68,041
63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
64	64	0	5,606	989	0	230,339	0	0	0	56,693	0	0	0	0	42,334	42,334
71	0	0	0	0	0	0	0	0	97,193	0	0	0	0	0	0	0
72	0	0	0	0	0	0	0	0	129,780	0	0	0	0	0	0	0
73	0	0	0	0	0	0	0	0	97,606	0	0	0	0	0	0	0
74	0	0	0	0	0	0	0	0	44,793	0	0	0	0	0	0	0
75	0	0	0	0	0	0	0	0	21,163	0	0	0	0	0	0	0
76	0	0	0	0	0	0	0	0	50,355	0	0	0	0	0	0	0
77	0	0	0	0	0	0	0	0	148,502	0	0	0	0	0	0	0
78	0	0	0	0	0	0	0	0	0	0	0	0	0	0	506,129	506,129
79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	300,118	300,118
80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	175,812	175,812
81	0	0	0	0	0	0	0	0	0	0	0	0	0	0	126,782	126,782
82	0	0	0	0	0	0	0	0	0	0	0	0	0	0	473,818	473,818
83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	182,582	182,582
84	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12,187	12,187
85	0	0	0	0	0	0	0	0	0	0	0	0	0	0	157,460	157,460
86	0	0	0	0	0	0	0	0	0	0	0	0	0	0	31,576	31,576
87	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20,584	20,584
88	0	0	0	0	0	0	0	0	0	0	0	0	0	0	52,134	52,134
89	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18,177	18,177
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,602	1,602
91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,164	1,164
92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3,693	3,693
93	0	0	0	0	0	0	0	0	0	0	0	0	0	0	248,596	250,820
94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	342,132	345,193
95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,047,157	1,047,157
96	374	17	201	6	0	5	19	1	19	1,282	0	0	0	0	0	0
97	739	41	5,356	109	0	1,196	0	0	0	3	0	0	0	0	580	652
98	0	0	5,395	284	0	905	0	0	0	0	0	0	0	0	129	291
99	320,535	24,503	313,363	34,818	297	83,619	3,888	1,961	3,779	418,641	0	0	0	0	344,393	350,452
Contig. U.S.	2,449,395	250,259	11,592,476	1,116,662	24,037	90,180,829	6,872	2,251	593,197	38,253,123	NR	NR	NR	NR	19,201,288	20,320,417

NR => Not Reported

SCC	SO2	SO4	NO	NO2	PB	CO	HCl	HF	NH3	TSP	CA	MG	NA	K	VOC	THC
	METRIC TONS/YEAR															
1	10,974	153	1,125	35	0	36,197	108	1	0	3,997	0	0	0	0	7,072	7,224
2	26,004	1,199	1,330	41	0	43,270	19	1	0	7,172	0	0	0	0	8,443	8,624
3	134,586	25,753	80,648	1,646	0	22,788	0	0	0	11,339	0	0	0	0	21,284	21,284
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	1,153	0	221,700	11,668	0	46,640	0	0	0	6,830	0	0	0	0	8,904	20,171
6	8,950	89,654	72,626	2,246	0	5,772,811	0	0	0	936,351	0	0	0	0	1,849,195	1,888,861
7	12,066	146	4,870	151	0	210	98	2	0	398	0	0	0	0	22	23
8	40,041	1,542	7,135	221	0	4,355	54	2	0	253	0	0	0	0	51	52
9	48,261	8,410	29,631	605	0	7,454	0	0	0	2,833	0	0	0	0	1,194	1,194
10	252,963	23,396	58,515	1,194	0	5,353	0	0	0	20,340	0	0	0	0	2,537	2,850
11	378	0	84,831	4,465	0	17,794	0	0	0	2,432	0	0	0	0	3,335	7,554
12	0	2	1	0	0	2	0	0	0	5	0	0	0	0	1	1
13	141	1	55	2	0	1	0	0	6	1	0	0	0	0	0	0
14	412,076	14,721	105,287	3,256	0	13,909	966	257	0	4,073	0	0	0	0	449	459
15	171	1	43	1	0	19	0	0	0	69	0	0	0	0	1	1
16	33,935	5,108	29,153	595	0	7,004	0	0	0	2,566	0	0	0	0	114	114
17	127,175	2,610	26,866	548	0	2,463	0	0	0	9,550	0	0	0	0	863	970
18	23	0	1,672,971	88,051	0	235,445	0	0	0	141	0	0	0	0	3,594	8,142
19	6	258	92	3	0	282	0	0	0	122	0	0	0	0	110	112
20	70	0	74	4	0	3	0	0	0	17	0	0	0	0	1	1
21	1,355	1	2,536	448	64	848,608	1,355	0	0	100,562	0	0	0	0	56,050	282,851
22	1,165	1	990	175	0	8,903	5	0	0	6,585	0	0	0	0	1,581	7,976
23	5,893	15	7,743	1,366	2	26,473	85	0	0	19,168	0	0	0	0	7,518	37,941
24	8,169	3	47,922	8,457	0	941,815	0	0	0	220,182	0	0	0	0	307,795	307,795
25	131	0	1,194	211	0	26,473	0	0	0	4,406	0	0	0	0	8,248	8,248
26	10	0	145	26	0	3,134	0	0	0	660	0	0	0	0	1,266	1,266
28	60,868	3,258	1,357,034	150,782	6,729	8,802,939	0	0	0	631,561	0	0	0	0	1,660,984	1,790,845
30	78,812	4,192	1,685,950	187,328	6,717	32,148,186	0	0	0	3,016,666	0	0	0	0	3,714,674	4,005,102
32	21,079	376	409,152	45,461	2,610	2,746,546	0	0	0	158,963	0	0	0	0	581,293	626,741
34	27,269	777	520,630	57,848	2,468	10,165,693	0	0	0	754,307	0	0	0	0	1,307,505	1,409,731
36	6,435	1	158,012	17,557	1,813	2,007,498	0	0	0	39,764	0	0	0	0	213,063	229,722
38	7,622	42	170,158	18,906	1,131	4,982,687	0	0	0	124,898	0	0	0	0	444,321	479,060
39	3,017	69	62,113	6,901	2	2,246,824	0	0	0	6,228	0	0	0	0	180,458	194,791
41	78,395	1,392	626,838	69,649	0	222,921	0	0	0	121,240	0	0	0	0	101,642	103,405
43	108,546	2,185	946,082	105,120	0	653,091	0	0	0	307,466	0	0	0	0	276,795	281,596
44	67,848	998	740,854	82,317	0	245,672	0	0	0	86,079	0	0	0	0	133,677	140,385
45	116,568	2,059	680,779	75,642	0	265,816	0	0	0	51,285	0	0	0	0	218,515	222,303
46	3,718	5	27,923	864	0	137,306	0	0	0	55,963	0	0	0	0	81,144	82,393
47	731	0	7,272	225	0	486,569	0	0	0	1,398	0	0	0	0	28,105	28,537
48	6,870	18	67,384	2,084	0	199,865	0	0	0	2,984	0	0	0	0	80,827	82,071
49	3,309	141	156	5	0	4,804	0	0	0	3,203	0	0	0	0	523	534
50	11,197	858	81,948	1,672	0	29,264	0	0	0	8,947	0	0	0	0	25,614	25,614
51	192,471	15,397	30,993	633	0	1,058	0	0	0	14,600	0	0	0	0	2,213	2,485
52	2,472	0	9,196	484	0	1,234,247	0	0	0	0	0	0	0	0	336,254	362,961
54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	876,717	876,717
55	0	0	0	0	2	0	0	0	0	26,553,364	0	0	0	0	0	0
56	0	0	0	0	0	0	0	0	0	6,829	0	0	0	0	0	0
57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
58	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60	4,548	5	107,527	18,975	0	4,428,616	0	0	0	537,752	0	0	0	0	759,188	759,188
61	2,728	4	63,218	11,156	0	2,082,316	0	0	0	371,867	0	0	0	0	334,646	334,646

1980 NAPAP 5.2 EMISSIONS INVENTORY, ANNUAL U.S. EMISSIONS, AREA SOURCES

SCC	SO2	SO4	NO	NO2	PB	CO	HCl	HF	NH3	TSP	CA	MG	NA	K	VOC	THC
	METRIC TONS/YEAR															
62	0	0	6,513	1,149	0	360,618	0	0	0	54,853	0	0	0	0	61,726	61,726
63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
64	58	0	5,085	897	0	208,960	0	0	0	51,431	0	0	0	0	38,405	38,405
71	0	0	0	0	0	0	0	0	88,172	0	0	0	0	0	0	0
72	0	0	0	0	0	0	0	0	117,734	0	0	0	0	0	0	0
73	0	0	0	0	0	0	0	0	88,547	0	0	0	0	0	0	0
74	0	0	0	0	0	0	0	0	40,635	0	0	0	0	0	0	0
75	0	0	0	0	0	0	0	0	19,198	0	0	0	0	0	0	0
76	0	0	0	0	0	0	0	0	45,682	0	0	0	0	0	0	0
77	0	0	0	0	0	0	0	0	134,719	0	0	0	0	0	0	0
78	0	0	0	0	0	0	0	0	0	0	0	0	0	0	459,153	459,153
79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	272,262	272,262
80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	159,494	159,494
81	0	0	0	0	0	0	0	0	0	0	0	0	0	0	115,015	115,015
82	0	0	0	0	0	0	0	0	0	0	0	0	0	0	429,840	429,840
83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	165,636	165,636
84	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11,056	11,056
85	0	0	0	0	0	0	0	0	0	0	0	0	0	0	142,845	142,845
86	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28,645	28,645
87	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18,673	18,673
88	0	0	0	0	0	0	0	0	0	0	0	0	0	0	47,295	47,295
89	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16,490	16,490
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,453	1,453
91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,056	1,056
92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3,350	3,350
93	0	0	0	0	0	0	0	0	0	0	0	0	0	0	225,523	227,540
94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	310,377	313,153
95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	949,965	949,965
96	339	15	182	6	0	5	17	1	17	1,163	0	0	0	0	0	0
97	670	37	4,859	99	0	1,085	0	0	0	3	0	0	0	0	526	591
98	0	0	4,894	258	0	821	0	0	0	0	0	0	0	0	117	264
99	290,784	22,229	284,278	31,586	269	75,858	3,527	1,779	3,428	379,785	0	0	0	0	312,428	317,924
Contig. U.S.	2,222,054	227,031	10,516,517	1,013,019	21,806	81,810,673	6,234	2,042	538,140	34,702,650	NR	NR	NR	NR	17,419,116	18,434,373

SCC	METHANE	ETHANE	PROPANE	BUTANE	ISO-BUTANE	PENTANE	ISO-PENTANE	ALKANES	ETHYLENE	PROPYLENE	ISO-BUTENE	ALKENES
	THOUSAND MOLES/YEAR											
1	0	5,057	2,890	1,228	0	0	1,228	13,581	0	0	0	9,897
2	0	6,037	3,449	1,466	0	0	1,466	16,212	0	0	0	11,814
3	0	0	11,280	87,049	29,371	27,030	0	137,704	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0
5	765,467	0	19,969	33,886	0	18,153	0	32,474	0	0	0	0
6	0	1,322,196	755,540	321,105	0	0	321,105	3,551,040	0	0	0	2,587,726
7	0	16	9	4	0	0	4	43	0	0	0	31
8	0	36	21	9	0	0	9	98	0	0	0	71
9	0	0	633	4,882	1,647	1,516	0	7,723	0	0	0	0
10	33,682	0	0	11,826	0	0	0	2,850	0	0	0	0
11	286,681	0	7,479	12,691	0	6,799	0	12,162	0	0	0	0
12	0	1	0	0	0	0	0	2	0	0	0	1
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	321	184	78	0	0	78	863	0	0	0	629
15	0	1	0	0	0	0	0	2	0	0	0	1
16	0	0	61	468	158	145	0	740	0	0	0	0
17	11,462	0	0	4,024	0	0	0	970	0	0	0	0
18	308,986	0	8,061	13,678	0	7,328	0	13,109	0	0	0	0
19	0	79	45	19	0	0	19	211	0	0	0	154
20	5	7	5	4	1	0	0	0	0	4	0	0
21	14,026,514	79,198	48,084	87,683	16,971	0	0	390,333	181,024	175,367	0	5,657
22	395,526	2,233	1,356	2,473	479	0	0	11,007	5,105	4,945	0	160
23	1,881,494	10,623	6,450	11,762	2,276	0	0	52,359	24,282	23,523	0	759
24	0	0	132,351	101,572	101,572	80,026	0	1,520,500	2,129,931	0	0	1,360,447
25	0	0	3,547	2,722	2,722	2,145	0	40,746	57,077	0	0	36,457
26	0	0	545	418	418	329	0	6,256	8,764	0	0	5,598
28	7,485,696	501,434	0	1,916,195	0	0	0	11,783,703	4,566,633	2,149,004	0	2,722,071
30	16,741,239	1,121,423	0	4,28[illegible],437	0	0	0	26,353,433	10,212,957	4,806,097	0	6,087,723
32	2,619,762	175,486	0	670,609	0	0	0	4,123,932	1,598,180	752,085	0	952,641
34	5,892,643	394,722	0	1,508,404	0	0	0	9,275,979	3,594,794	1,691,668	0	2,142,779
36	960,231	64,322	0	245,801	0	0	0	1,511,560	585,787	275,664	0	349,175
38	2,002,459	134,136	0	512,591	0	0	0	3,152,196	1,221,596	574,869	0	728,167
39	512,297	204,529	0	0	0	0	0	1,223,279	329,195	816,169	0	0
41	133,392	0	0	0	0	0	0	317,451	238,864	44,464	17,579	58,940
43	363,257	0	0	0	0	0	0	864,495	650,483	121,086	47,871	160,509
44	437,998	21,058	0	88,442	0	39,307	0	787,554	609,266	151,615	0	0
45	286,770	0	0	0	0	0	0	682,468	515,741	95,590	37,791	126,712
46	0	51,083	0	0	0	0	0	168,081	0	0	0	144,187
47	0	17,693	0	0	0	0	0	58,215	0	0	0	49,940
48	0	50,884	0	0	0	0	0	167,425	0	0	0	143,624
49	0	374	214	91	0	0	91	1,005	0	0	0	732
50	0	0	13,575	104,762	35,347	32,530	0	165,723	0	0	0	0
51	29,375	0	0	10,314	0	0	0	2,485	0	0	0	0
52	954,582	381,107	0	0	0	0	0	2,279,383	613,401	1,520,799	0	0
54	0	0	341,918	2,866,849	955,616	1,253,699	0	5,251,507	0	0	0	1,025,753
55	0	0	0	0	0	0	0	0	0	0	0	0
56	0	0	0	0	0	0	0	0	0	0	0	0
57	0	0	0	0	0	0	0	0	0	0	0	0
58	0	0	0	0	0	0	0	0	0	0	0	0
59	0	0	0	0	0	0	0	0	0	0	0	0
60	0	0	326,449	250,531	250,531	197,388	0	3,750,371	5,253,557	0	0	3,355,595
61	0	0	143,897	110,433	110,433	87,007	0	1,653,142	2,315,738	0	0	1,479,127

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS OF HYDROCARBON SPECIES, AREA SOURCES

	THOUSAND MOLES/YEAR											
SCC	METHANE	ETHANE	PROPANE	BUTANE	ISO-BUTANE	PENTANE	ISO-PENTANE	ALKANES	ETHYLENE	PROPYLENE	ISO-BUTENE	ALKENES
62	0	0	26,542	20,369	20,369	16,049	0	304,924	427,140	0	0	272,826
63	0	0	0	0	0	0	0	0	0	0	0	0
64	0	0	16,514	12,674	12,674	9,985	0	189,719	265,760	0	0	169,748
71	0	0	0	0	0	0	0	0	0	0	0	0
72	0	0	0	0	0	0	0	0	0	0	0	0
73	0	0	0	0	0	0	0	0	0	0	0	0
74	0	0	0	0	0	0	0	0	0	0	0	0
75	0	0	0	0	0	0	0	0	0	0	0	0
76	0	0	0	0	0	0	0	0	0	0	0	0
77	0	0	0	0	0	0	0	0	0	0	0	0
78	0	0	0	0	0	0	0	2,832,956	0	0	0	941,258
79	0	0	0	0	0	0	0	1,429,370	0	0	0	449,231
80	0	0	0	0	0	0	0	1,220,122	0	0	0	0
81	0	0	0	0	0	0	0	1,197,297	0	0	0	0
82	0	0	0	0	0	0	0	4,354,261	0	0	0	0
83	0	0	0	0	0	0	0	0	0	0	0	0
84	0	0	0	0	0	0	0	111,995	0	0	0	0
85	0	0	0	0	0	0	0	689,939	0	0	0	0
86	0	0	0	0	0	0	0	290,175	0	0	0	0
87	0	0	0	0	0	0	0	189,161	0	0	0	0
88	0	0	0	0	0	0	0	235,056	0	0	0	0
89	0	0	0	0	0	0	0	77,832	0	0	0	0
90	0	0	0	0	0	0	0	14,722	0	0	0	0
91	0	0	0	0	0	0	0	10,697	0	0	0	0
92	0	0	0	0	0	0	0	33,938	0	0	0	0
93	109,219	9,102	6,826	11,377	54,609	13,652	0	2,170,721	6,826	0	0	102,393
94	150,313	12,526	9,395	15,658	75,156	18,789	0	2,987,468	9,395	0	0	140,918
95	0	0	0	0	873,963	0	0	15,835,826	0	0	0	0
96	0	0	0	0	0	0	0	0	0	0	0	0
97	6,988	0	0	2,453	0	0	0	591	0	0	0	0
98	10,030	0	262	444	0	238	0	426	0	0	0	0
99	251,159	50,868	0	0	0	0	0	1,799,443	693,072	282,951	0	365,611
Contig. U.S.	56,657,225	4,616,552	1,887,549	13,332,479	2,544,314	1,812,116	324,000	115,361,007	36,114,563	13,485,899	103,241	25,989,063

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS OF HYDROCARBON SPECIES, AREA SOURCES

SCC	BENZENE	TOLUENE	XYLENE	ETH BENZ	AROMATICS	FORMALDEH	ACETALDEH	ALDEHYDES	ACETONE	KETONES	ORG ACIDS
	THOUSAND MOLES/YEAR										
1	0	4,407	32,580	7,657	0	0	0	0	0	0	0
2	0	5,260	38,893	9,141	0	0	0	0	0	0	0
3	0	0	0	0	0	672,771	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0
5	11,295	4,841	0	0	0	58,494	0	0	0	0	0
6	0	1,152,199	8,518,718	2,002,182	0	0	0	0	0	0	0
7	0	14	102	24	0	0	0	0	0	0	0
8	0	32	235	55	0	0	0	0	0	0	0
9	0	0	0	0	0	37,730	0	0	0	0	0
10	0	0	0	0	0	68,704	0	0	23,680	0	0
11	4,230	1,813	0	0	0	21,907	0	0	0	0	0
12	0	1	4	1	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0
14	0	280	2,070	487	0	0	0	0	0	0	0
15	0	1	4	1	0	0	0	0	0	0	0
16	0	0	0	0	0	3,615	0	0	0	0	0
17	0	0	0	0	0	23,379	0	0	8,058	0	0
18	4,559	1,954	0	0	0	23,612	0	0	0	0	0
19	0	69	507	119	0	0	0	0	0	0	0
20	0	0	0	0	0	3	0	0	0	0	0
21	53,741	0	0	0	0	0	0	0	333,763	0	0
22	1,515	0	0	0	0	0	0	0	9,412	0	0
23	7,209	0	0	0	0	0	0	0	44,770	0	0
24	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	0	0	0
28	644,701	2,149,004	465,617	89,542	340,259	2,274,362	0	0	0	143,2[illegible]	0
30	1,441,829	4,806,097	1,041,321	200,254	760,965	5,086,453	0	0	0	320,4[illegible]	0
32	225,625	752,085	162,952	31,337	119,080	795,956	0	0	0	50,13[illegible]	0
34	507,500	1,691,668	366,528	70,486	267,847	1,790,348	0	0	0	112,77[illegible]	0
36	82,699	275,664	59,727	11,486	43,647	291,745	0	0	0	18,37[illegible]	0
38	172,461	574,869	124,555	23,953	91,021	608,403	0	0	0	38,325	0
39	66,228	216,217	72,072	0	132,457	0	0	0	0	0	0
41	0	2,068	0	0	109,609	187,162	367,085	0	0	0	0
43	0	5,632	0	0	298,490	509,686	999,660	0	0	0	0
44	39,307	30,884	4,212	0	2,808	649,977	0	0	0	0	0
45	0	4,446	0	0	233,417	404,590	789,173	0	0	0	0
46	7,415	0	116,998	0	158,194	0	0	322,155	0	0	0
47	2,568	0	40,522	0	54,791	0	0	111,579	0	0	0
48	7,386	0	116,541	0	157,576	0	0	320,897	0	0	0
49	0	326	2,410	566	0	0	0	0	0	0	0
50	0	0	0	0	0	809,662	0	0	0	0	0
51	0	0	0	0	0	59,918	0	0	20,652	0	0
52	123,406	402,885	134,295	0	246,812	0	0	0	0	0	0
54	131,507	236,712	184,110	0	122,740	0	0	0	0	0	0
55	0	0	0	0	0	0	0	0	0	0	0
56	0	0	0	0	0	0	0	0	0	0	0
57	0	0	0	0	0	0	0	0	0	0	0
58	0	0	0	0	0	0	0	0	0	0	0
59	0	0	0	0	0	0	0	0	0	0	0
60	0	0	0	0	0	0	0	0	0	0	0
61	0	0	0	0	0	0	0	0	0	0	0

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS OF HYDROCARBON SPECIES, AREA SOURCES

	THOUSAND MOLES/YEAR										
SCC	BENZENE	TOLUENE	XYLENE	ETH BENZ	AROMATICS	FORMALDEH	ACETALDEH	ALDEHYDES	ACETONE	KETONES	ORG ACIDS
62	0	0	0	0	0	0	0	0	0	0	0
63	0	0	0	0	0	0	0	0	0	0	0
64	0	0	0	0	0	0	0	0	0	0	0
71	0	0	0	0	0	0	0	0	0	0	0
72	0	0	0	0	0	0	0	0	0	0	0
73	0	0	0	0	0	0	0	0	0	0	0
74	0	0	0	0	0	0	0	0	0	0	0
75	0	0	0	0	0	0	0	0	0	0	0
76	0	0	0	0	0	0	0	0	0	0	0
77	0	0	0	0	0	0	0	0	0	0	0
78	55,098	179,069	73,464	0	0	0	0	0	110,196	68,873	0
79	0	0	0	0	0	0	0	0	0	0	0
80	0	207,341	0	0	0	0	0	0	22,329	172,253	349,290
81	41,405	4,601	0	0	0	0	0	0	0	0	0
82	0	249,306	103,161	176,234	0	0	0	0	236,411	395,451	94,564
83	475,372	155,697	0	0	0	0	0	0	1,964,428	0	0
84	0	6,412	2,653	4,533	0	0	0	0	6,081	10,171	2,432
85	0	145,701	0	0	0	0	0	0	0	281,404	459,959
86	0	16,614	6,875	11,744	0	0	0	0	15,755	26,354	6,302
87	0	10,831	4,482	7,656	0	0	0	0	10,270	17,180	4,108
88	0	51,551	31,215	0	0	0	0	0	105,941	156,546	0
89	0	21,931	0	0	0	0	0	0	0	56,560	17,644
90	0	843	349	596	0	0	0	0	799	1,337	320
91	0	612	253	433	0	0	0	0	581	971	232
92	0	1,943	804	1,374	0	0	0	0	1,843	3,082	737
93	13,652	65,986	52,334	15,928	6,826	11,377	0	0	134,248	147,900	25,029
94	18,789	90,814	72,025	21,921	9,395	15,658	0	0	184,760	203,549	34,447
95	0	0	0	0	0	189,992	0	0	227,990	0	104,496
96	0	0	0	0	0	0	0	0	0	0	0
97	0	0	0	0	0	14,254	0	0	4,913	0	0
98	148	63	0	0	0	766	0	0	0	0	0
99	130,348	79,481	25,434	0	47,688	50,868	15,896	9,538	1,179,493	57,226	28,613
Contig. U.S.	4,269,998	13,608,223	11,858,021	2,687,709	3,203,622	14,661,391	2,171,814	764,170	4,646,372	2,282,149	1,128,174

For conversion of hydrocarbon classes to tons/year, see discussion in Appendix E.

STATE	SO2	SO4	NO	NO2	PB	CO	HCL	HF	NH3	TSP	CA	MG	NA	K	VOC	THC
	TONS/YEAR															
ALABAMA	80,040	4,252	233,503	22,237	496	1,528,003	251	21	11,362	357,944	0	0	0	0	338,923	358,755
ARIZONA	19,942	1,566	142,625	14,505	293	1,245,599	75	16	6,912	814,038	0	0	0	0	240,850	257,295
ARKANSAS	31,473	2,142	152,714	14,904	263	910,150	25	32	13,094	840,635	0	0	0	0	207,710	217,992
CALIFORNIA	129,034	13,116	957,932	98,932	2,427	9,169,893	472	14	27,360	1,400,475	0	0	0	0	1,919,526	2,061,809
COLORADO	22,759	1,721	150,014	15,247	314	2,191,485	56	0	17,192	1,081,969	0	0	0	0	340,410	362,939
CONNECTICUT	29,141	5,882	106,721	10,523	303	1,180,569	105	0	1,946	112,066	0	0	0	0	260,138	274,319
DELAWARE	27,780	2,680	33,196	3,100	70	234,359	46	0	2,050	32,807	0	0	0	0	51,233	53,859
DIST. OF COLUM.	8,161	722	20,690	2,046	37	334,671	66	16	59	14,236	0	0	0	0	43,630	47,231
FLORIDA	84,235	5,532	356,384	37,452	1,064	3,926,172	164	198	6,906	819,404	0	0	0	0	780,255	816,959
GEORGIA	37,687	2,882	282,282	28,851	652	2,173,375	61	17	15,470	840,251	0	0	0	0	481,061	501,843
IDAHO	19,600	2,078	73,829	9,225	99	1,238,718	15	69	8,012	318,708	0	0	0	0	219,441	225,750
ILLINOIS	114,106	9,120	459,368	46,672	1,117	3,934,369	1,008	47	28,657	735,514	0	0	0	0	835,531	892,629
INDIANA	144,303	9,345	297,766	29,748	639	2,078,557	331	120	17,666	295,397	0	0	0	0	475,241	507,003
IOWA	26,930	1,381	163,456	16,990	356	1,050,792	71	5	61,150	1,086,371	0	0	0	0	219,375	238,339
KANSAS	34,486	1,281	275,625	23,459	249	1,011,199	62	7	34,093	1,809,113	0	0	0	0	209,966	225,356
KENTUCKY	51,676	5,090	216,226	21,685	412	1,477,488	235	73	8,069	324,834	0	0	0	0	338,901	352,949
LOUISIANA	164,422	10,581	250,529	23,197	505	1,542,880	121	98	4,454	440,200	0	0	0	0	329,807	347,058
MAINE	18,580	3,981	42,196	4,132	123	461,937	14	2	417	108,957	0	0	0	0	124,103	130,105
MARYLAND	28,208	4,524	154,338	15,419	451	1,426,057	13	47	2,991	191,542	0	0	0	0	303,376	318,323
MASSACHUSETTS	61,028	8,521	175,942	17,203	504	2,118,954	86	2	103	192,880	0	0	0	0	421,496	450,443
MICHIGAN	43,772	8,153	345,462	34,243	972	3,341,867	188	11	10,205	736,339	0	0	0	0	720,369	770,614
MINNESOTA	28,224	4,969	210,214	21,590	459	1,894,733	161	7	32,196	1,068,450	0	0	0	0	403,362	427,656
MISSISSIPPI	52,834	4,230	182,029	15,993	297	908,906	12	0	7,452	562,973	0	0	0	0	209,239	220,899
MISSOURI	62,377	5,851	237,283	24,477	561	2,125,948	146	18	17,258	2,566,115	0	0	0	0	458,893	489,566
MONTANA	22,691	1,544	91,446	10,853	97	1,282,577	9	0	3,705	861,449	0	0	0	0	224,386	230,514
NEBRASKA	13,903	690	109,194	11,142	169	599,362	60	5	44,329	1,037,379	0	0	0	0	123,167	132,498
NEVADA	7,219	553	44,564	4,718	101	508,333	39	2	704	891,181	0	0	0	0	90,550	96,164
NEW HAMPSHIRE	12,063	2,248	29,125	2,925	100	347,668	10	0	1	62,310	0	0	0	0	87,305	91,764
NEW JERSEY	76,282	14,170	259,930	25,180	706	2,210,361	124	26	68	304,009	0	0	0	0	591,931	629,848
NEW MEXICO	12,293	1,263	87,562	9,361	170	905,533	4	0	4,374	1,214,514	0	0	0	0	153,839	162,467
NEW YORK	110,225	19,585	408,565	40,380	1,257	4,644,867	69	5	13,959	556,823	0	0	0	0	1,070,711	1,125,410
NORTH CAROLINA	50,165	8,377	249,879	25,837	706	2,162,964	154	240	12,455	584,611	0	0	0	0	531,024	555,007
NORTH DAKOTA	19,500	1,386	57,919	5,825	67	226,659	48	13	6,441	1,246,423	0	0	0	0	50,658	54,742
OHIO	65,723	9,197	512,406	51,228	1,184	4,006,231	446	755	14,322	792,991	0	0	0	0	880,295	941,935
OKLAHOMA	20,181	2,226	271,214	23,587	408	1,515,621	25	5	13,862	1,039,691	0	0	0	0	261,648	273,463
OREGON	31,490	4,616	163,937	17,936	314	1,423,588	185	0	4,249	1,816,674	0	0	0	0	310,452	326,865
PENNSYLVANIA	115,853	16,547	496,533	49,344	1,155	3,906,891	640	21	15,758	1,244,910	0	0	0	0	911,242	950,321
RHODE ISLAND	7,066	1,203	29,543	2,839	78	314,572	13	0	0	31,258	0	0	0	0	71,205	75,722
SOUTH CAROLINA	28,632	2,727	138,681	14,491	374	1,128,686	72	52	3,420	308,963	0	0	0	0	264,087	279,079
SOUTH DAKOTA	6,966	546	48,498	5,518	65	494,277	15	1	12,941	682,573	0	0	0	0	93,595	98,137
TENNESSEE	37,934	4,925	221,770	23,274	589	1,797,709	170	114	7,824	541,485	0	0	0	0	420,402	443,920
TEXAS	270,694	11,972	1,878,177	143,555	1,795	6,937,315	320	59	50,179	5,549,442	0	0	0	0	1,411,256	1,481,514
UTAH	28,203	1,707	89,655	8,492	148	956,285	41	16	1,909	628,938	0	0	0	0	152,488	163,138
VERMONT	6,642	1,727	21,353	2,140	62	202,038	3	0	3	99,345	0	0	0	0	55,766	58,435
VIRGINIA	65,850	8,420	236,463	23,660	612	1,935,838	281	67	6,374	357,304	0	0	0	0	440,835	461,677
WASHINGTON	49,122	5,551	202,186	21,201	418	2,180,243	120	28	8,021	261,465	0	0	0	0	424,675	450,724
WEST VIRGINIA	14,738	2,378	112,133	10,541	203	631,776	23	0	327	321,511	0	0	0	0	149,919	156,298
WISCONSIN	28,124	5,666	204,753	20,998	513	1,847,355	191	18	31,403	607,920	0	0	0	0	413,237	442,178
WYOMING	27,038	1,435	106,670	9,808	83	507,399	26	4	1,500	458,736	0	0	0	0	83,781	88,907
CONTIG U.S.	2,449,395	250,259	11,592,476	1,116,662	24,037	90,180,829	6,872	2,251	593,197	38,253,123	NR	NR	NR	NR	19,201,289	20,320,417

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS, AREA SOURCES

STATE	SO2	SO4	NO	NO2	PB	CO	HCL	HF	NH3	TSP	CA	MG	NA	K	VOC	THC
	METRIC TONS															
ALABAMA	72,611	3,857	211,830	20,173	450	1,386,181	228	19	10,307	324,721	0	0	0	0	307,466	325,457
ARIZONA	18,091	1,421	129,388	13,158	266	1,129,988	68	15	6,270	738,483	0	0	0	0	218,495	233,414
ARKANSAS	28,552	1,943	138,540	13,521	239	825,674	23	29	11,879	762,611	0	0	0	0	188,431	197,759
CALIFORNIA	117,058	11,899	869,021	89,750	2,202	8,318,787	428	13	24,821	1,270,490	0	0	0	0	1,741,365	1,870,442
COLORADO	20,647	1,561	136,090	13,832	285	1,988,082	51	0	15,596	981,546	0	0	0	0	308,815	329,252
CONNECTICUT	26,436	5,336	96,816	9,546	275	1,070,994	95	0	1,765	101,665	0	0	0	0	235,993	248,858
DELAWARE	25,202	2,431	30,115	2,813	64	212,607	42	0	1,860	29,762	0	0	0	0	46,477	48,860
DIST. OF COLUM.	7,404	655	18,770	1,856	34	303,608	60	15	54	12,915	0	0	0	0	39,581	42,847
FLORIDA	76,417	5,019	323,306	33,975	965	3,561,763	149	180	6,265	743,351	0	0	0	0	707,835	741,133
GEORGIA	34,189	2,615	256,082	26,173	591	1,971,653	55	15	14,034	762,263	0	0	0	0	436,411	455,264
IDAHO	17,781	1,885	66,976	8,369	90	1,123,746	14	63	7,269	289,127	0	0	0	0	199,074	204,797
ILLINOIS	103,515	8,274	416,732	42,340	1,013	3,569,200	914	43	25,997	667,247	0	0	0	0	757,981	809,780
INDIANA	130,909	8,478	270,129	26,987	580	1,885,635	300	109	16,026	267,980	0	0	0	0	431,131	459,945
IOWA	24,430	1,253	148,285	15,413	323	953,262	64	5	55,475	985,539	0	0	0	0	199,014	216,218
KANSAS	31,285	1,162	250,043	21,282	226	917,344	56	6	30,929	1,641,200	0	0	0	0	190,477	204,439
KENTUCKY	46,880	4,618	196,157	19,672	374	1,340,355	213	66	7,320	294,684	0	0	0	0	307,445	320,190
LOUISIANA	149,161	9,599	227,276	21,044	458	1,399,677	110	89	4,041	399,343	0	0	0	0	299,195	314,845
MAINE	16,855	3,612	38,279	3,748	112	419,062	13	2	379	98,844	0	0	0	0	112,585	118,029
MARYLAND	25,590	4,104	140,013	13,988	409	1,293,697	12	43	2,713	173,764	0	0	0	0	275,218	288,777
MASSACHUSETTS	55,364	7,730	159,612	15,606	457	1,922,283	78	2	94	174,978	0	0	0	0	382,374	408,635
MICHIGAN	39,709	7,396	313,398	31,065	882	3,031,691	171	10	9,258	667,996	0	0	0	0	653,507	699,089
MINNESOTA	25,604	4,508	190,703	19,587	416	1,718,873	146	6	29,208	969,282	0	0	0	0	365,924	387,963
MISSISSIPPI	47,930	3,837	165,134	14,509	269	824,546	11	0	6,760	510,721	0	0	0	0	189,819	200,396
MISSOURI	56,587	5,308	215,260	22,205	509	1,928,628	132	16	15,656	2,327,940	0	0	0	0	416,300	444,126
MONTANA	20,585	1,401	82,958	9,846	88	1,163,534	8	0	3,361	781,493	0	0	0	0	203,560	209,119
NEBRASKA	12,613	626	99,059	10,108	153	543,732	54	5	40,214	941,094	0	0	0	0	111,735	120,200
NEVADA	6,549	502	40,427	4,280	92	461,152	35	2	639	808,466	0	0	0	0	82,145	87,238
NEW HAMPSHIRE	10,943	2,039	26,422	2,653	91	315,399	9	0	1	56,527	0	0	0	0	79,202	83,247
NEW JERSEY	69,202	12,855	235,805	22,843	640	2,005,206	112	24	62	275,792	0	0	0	0	536,991	571,389
NEW MEXICO	11,152	1,146	79,435	8,492	154	821,486	4	0	3,968	1,101,789	0	0	0	0	139,561	147,388
NEW YORK	99,994	17,767	370,644	36,632	1,140	4,213,753	63	5	12,663	505,141	0	0	0	0	971,333	1,020,955
NORTH CAROLINA	45,509	7,599	226,686	23,439	640	1,962,208	140	218	11,299	530,350	0	0	0	0	481,737	503,494
NORTH DAKOTA	17,690	1,257	52,543	5,285	61	205,622	44	12	5,843	1,130,736	0	0	0	0	45,956	49,662
OHIO	59,623	8,343	464,847	46,473	1,074	3,634,392	405	685	12,992	719,389	0	0	0	0	798,590	854,509
OKLAHOMA	18,308	2,019	246,041	21,398	370	1,374,948	23	5	12,575	943,192	0	0	0	0	237,363	248,082
OREGON	28,567	4,188	148,722	16,271	285	1,291,457	168	0	3,855	1,648,059	0	0	0	0	281,638	296,527
PENNSYLVANIA	105,100	15,011	450,447	44,765	1,048	3,544,272	581	19	14,295	1,129,363	0	0	0	0	826,664	862,116
RHODE ISLAND	6,410	1,091	26,801	2,576	71	285,375	12	0	0	28,357	0	0	0	0	64,596	68,694
SOUTH CAROLINA	25,975	2,474	125,810	13,146	339	1,023,927	65	47	3,103	280,287	0	0	0	0	239,576	253,176
SOUTH DAKOTA	6,319	495	43,996	5,006	59	448,401	14	1	11,739	619,220	0	0	0	0	84,908	89,028
TENNESSEE	34,413	4,468	201,186	21,114	534	1,630,854	154	103	7,097	491,227	0	0	0	0	381,382	402,718
TEXAS	245,569	10,861	1,703,854	130,231	1,628	6,293,426	290	54	45,521	5,034,369	0	0	0	0	1,280,270	1,344,007
UTAH	25,585	1,549	81,333	7,704	134	867,527	37	15	1,732	570,563	0	0	0	0	138,335	147,996
VERMONT	6,026	1,567	19,371	1,941	56	183,286	3	0	2	90,124	0	0	0	0	50,590	53,011
VIRGINIA	59,738	7,638	214,515	21,464	555	1,756,163	255	61	5,782	324,141	0	0	0	0	399,919	418,827
WASHINGTON	44,563	5,036	183,420	19,233	379	1,977,883	109	25	7,277	237,197	0	0	0	0	385,259	408,890
WEST VIRGINIA	13,370	2,157	101,725	9,562	184	573,138	21	0	296	291,670	0	0	0	0	136,004	141,791
WISCONSIN	25,514	5,140	185,749	19,049	465	1,675,892	173	16	28,488	551,496	0	0	0	0	374,882	401,137
WYOMING	24,528	1,302	96,769	8,898	75	460,305	24	4	1,361	416,158	0	0	0	0	76,005	80,655
CONTIG U.S.	2,222,054	227,031	10,516,517	1,013,019	21,806	81,810,673	6,234	2,042	538,140	34,702,650	NR	NR	NR	NR	17,419,117	18,434,372

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL U S. EMISSIONS OF HYDROCARBON SPECIES, AREA SOURCES

	THOUSAND MOLES/YEAR											
STATE	METHANE	ETHANE	PROPANE	BUTANE	ISO-BUTANE	PENTANE	ISO-PENT	ALKANES	ETHYLENE	PROPYLENE	ISO-BUTENE	ALKENES
ALABAMA	1,006,722	80,544	32,894	236,483	46,247	33,509	4,793	2,038,501	666,128	244,481	2,385	467,679
ARIZONA	859,962	52,379	21,176	147,539	24,629	11,165	1,555	1,455,417	613,690	181,454	1,725	393,545
ARKANSAS	507,105	50,919	22,491	136,187	29,068	22,059	3,175	1,236,663	432,071	156,816	1,458	291,925
CALIFORNIA	7,471,156	427,333	138,442	1,469,099	252,663	178,317	14,724	12,069,466	3,695,925	1,480,936	7,648	2,530,776
COLORADO	1,174,721	76,141	27,697	263,790	37,203	27,914	3,061	2,049,828	771,809	260,879	2,383	514,027
CONNECTICUT	693,374	71,118	24,758	177,593	29,829	19,606	7,270	1,552,607	350,921	170,167	558	305,801
DELAWARE	129,732	13,480	3,834	37,347	6,127	4,330	913	310,588	80,833	40,411	321	58,358
DIST. OF COLUM.	166,903	21,747	702	17,888	2,925	385	105	290,342	68,775	82,155	131	31,552
FLORIDA	1,820,154	180,960	57,752	584,929	110,420	79,584	4,396	4,829,449	1,593,204	638,842	3,215	1,079,736
GEORGIA	1,036,084	100,261	47,456	356,264	75,184	59,129	5,138	2,911,021	977,157	324,149	2,947	689,205
IDAHO	317,959	26,537	58,708	104,213	47,989	37,497	2,177	1,099,704	970,258	72,573	768	627,881
ILLINOIS	2,956,057	196,202	58,175	578,903	101,539	66,600	12,444	5,264,179	1,274,312	598,519	5,548	950,824
INDIANA	1,614,901	124,201	44,446	318,845	54,760	38,703	11,190	2,800,201	723,904	328,611	4,005	557,914
IOWA	1,007,460	49,902	14,121	173,465	30,042	22,308	1,128	1,423,644	420,131	187,799	1,667	266,563
KANSAS	820,094	42,386	15,743	156,909	27,410	21,535	1,034	1,297,866	442,297	162,053	2,744	278,262
KENTUCKY	674,969	80,651	44,159	229,541	49,999	38,069	7,697	1,922,222	713,131	209,267	2,320	506,022
LOUISIANA	875,199	75,009	28,924	249,301	51,782	38,880	2,106	2,051,293	707,675	274,084	2,032	457,735
MAINE	255,361	48,890	22,732	62,697	11,528	7,756	8,059	578,620	128,215	63,238	270	146,146
MARYLAND	731,076	78,166	25,006	231,979	40,858	28,759	5,732	1,876,443	481,081	225,112	1,069	365,446
MASSACHUSETTS	1,492,659	101,823	28,620	315,030	53,674	34,164	5,826	2,712,644	650,774	315,720	1,101	494,895
MICHIGAN	2,550,156	195,759	66,994	498,735	91,025	62,038	16,095	4,412,612	1,064,772	528,352	2,214	852,649
MINNESOTA	1,195,253	116,841	44,304	265,582	46,587	34,259	10,194	2,326,042	704,926	309,901	1,813	521,172
MISSISSIPPI	590,849	48,553	25,704	139,238	31,935	23,433	3,460	1,233,233	449,973	137,790	1,196	315,291
MISSOURI	1,544,521	127,423	51,214	319,950	54,563	40,209	12,457	2,648,867	763,549	312,111	2,317	589,752
MONTANA	312,109	24,926	60,938	105,580	48,748	38,481	2,130	1,098,161	1,014,413	69,142	1,429	652,896
NEBRASKA	495,867	26,185	8,179	97,859	16,373	12,796	622	779,023	253,303	99,208	1,233	156,644
NEVADA	289,689	20,921	7,436	69,617	10,746	8,426	739	529,155	201,289	69,281	866	135,458
NEW HAMPSHIRE	204,760	28,591	13,082	49,786	9,463	6,301	4,348	463,192	96,320	43,030	127	104,788
NEW JERSEY	1,939,221	141,811	44,667	414,929	72,989	48,383	10,553	3,677,126	877,398	411,980	1,914	674,652
NEW MEXICO	435,223	38,941	11,878	119,001	14,920	12,096	2,514	885,888	307,409	121,078	1,856	205,836
NEW YORK	2,676,448	275,873	99,802	712,633	145,119	84,234	27,191	6,677,461	1,434,242	669,141	2,106	1,231,589
NORTH CAROLINA	1,137,426	142,068	59,545	344,569	66,910	46,880	14,509	3,064,158	853,601	334,389	2,193	686,509
NORTH DAKOTA	217,595	11,017	3,494	39,334	7,113	5,782	207	311,649	109,695	41,874	768	63,624
OHIO	3,176,995	216,618	75,275	606,783	104,434	72,080	17,888	5,365,673	1,329,127	596,260	6,018	1,028,418
OKLAHOMA	581,410	59,918	32,880	176,549	40,610	31,820	4,694	1,528,458	551,953	166,844	1,373	398,523
OREGON	827,998	67,632	49,331	189,163	47,653	35,911	5,660	1,706,956	833,738	185,157	2,155	564,325
PENNSYLVANIA	1,832,852	246,612	97,997	578,053	110,299	73,148	28,688	5,290,006	1,250,245	542,564	4,951	1,068,480
RHODE ISLAND	230,278	17,153	5,350	49,168	8,847	5,520	1,284	450,030	99,806	48,326	150	82,557
SOUTH CAROLINA	755,627	62,745	26,348	181,589	38,332	27,483	3,565	1,618,386	520,749	195,554	1,120	363,185
SOUTH DAKOTA	234,389	15,667	19,313	54,188	18,762	14,752	671	514,883	347,621	52,391	367	220,751
TENNESSEE	1,158,933	112,779	45,058	284,122	51,131	37,262	11,052	2,415,745	688,630	282,739	2,761	527,477
TEXAS	3,635,133	267,130	129,482	1,011,080	210,281	166,229	2,808	8,655,100	3,409,243	1,053,936	8,657	2,197,503
UTAH	558,071	34,742	10,484	117,082	15,967	11,500	1,328	921,474	322,649	123,633	1,875	208,124
VERMONT	115,042	21,030	10,246	28,794	5,587	3,935	3,521	262,908	59,980	26,560	126	68,327
VIRGINIA	995,901	120,932	43,696	311,657	53,758	38,240	11,822	2,574,230	670,482	303,341	2,319	534,561
WASHINGTON	1,333,232	96,904	56,325	287,745	62,747	45,735	6,379	2,470,341	1,043,843	286,590	1,814	714,198
WEST VIRGINIA	296,459	42,121	21,195	98,707	20,635	14,950	5,194	831,609	264,131	88,468	1,106	207,356
WISCONSIN	1,454,004	119,623	42,639	272,044	47,096	32,689	11,066	2,421,096	621,835	304,376	1,832	482,048
WYOMING	270,130	17,386	6,853	60,941	7,804	7,276	840	456,850	207,354	64,618	2,287	118,080
CONTIG U.S.	56,657,225	4,616,552	1,887,549	13,332,479	2,544,314	1,812,116	324,000	115,361,007	36,114,563	13,485,899	103,241	25,989,063

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS OF HYDROCARBON SPECIES, AREA SOURCES

	THOUSAND MOLES/YEAR										
STATE	BENZENE	TOLUENE	XYLENE	ETH BENZ	AROMATIC	FORMALDEH	ACETALDEH	ALDEH	ACETONE	KETONES	ORG. ACID
ALABAMA	73,187	236,925	188,409	41,644	65,134	241,190	49,935	21,587	62,294	40,978	18,697
ARIZONA	58,786	170,040	86,257	18,351	48,823	184,575	36,076	21,823	60,980	22,358	7,310
ARKANSAS	40,699	140,351	118,944	26,430	37,998	142,012	30,464	7,377	24,720	26,201	12,812
CALIFORNIA	538,363	1,464,746	757,446	165,768	333,689	1,536,069	161,253	96,374	738,634	225,603	92,496
COLORADO	82,534	262,100	146,202	31,509	65,829	287,242	49,907	19,947	53,098	30,666	9,797
CONNECTICUT	56,873	195,865	235,996	54,915	34,341	204,283	11,868	5,351	63,390	34,650	16,952
DELAWARE	12,624	38,820	33,462	7,518	9,551	48,346	6,751	1,901	16,177	6,135	3,318
DIST. OF COLUM.	11,214	38,582	15,050	1,976	16,965	24,223	2,737	6,187	4,129	4,675	4,195
FLORIDA	215,701	586,293	280,358	56,079	164,885	634,024	67,244	79,247	257,016	83,108	34,446
GEORGIA	108,228	333,745	220,630	48,562	84,784	337,754	61,616	24,013	102,220	62,112	36,468
IDAHO	19,692	69,557	73,930	16,650	18,365	76,462	16,064	4,698	9,822	8,714	3,994
ILLINOIS	189,962	616,813	478,356	109,934	144,590	620,033	116,840	28,478	216,141	121,976	68,304
INDIANA	103,786	341,419	373,532	86,289	81,593	349,683	84,081	8,619	120,889	59,964	25,730
IOWA	54,330	168,013	71,183	15,689	42,367	193,543	34,862	4,958	41,246	26,597	11,935
KANSAS	49,184	149,083	64,152	13,936	45,516	181,550	57,484	6,750	43,957	22,839	11,451
KENTUCKY	64,415	216,362	253,086	58,143	53,239	323,730	48,970	10,406	71,256	30,271	13,263
LOUISIANA	75,953	231,081	115,693	24,726	64,764	336,037	42,850	15,006	85,696	34,144	17,396
MAINE	17,345	84,516	228,013	53,094	13,804	69,152	5,730	3,550	18,221	16,084	15,742
MARYLAND	71,909	235,749	207,327	47,333	49,884	264,929	22,400	11,536	60,037	35,531	18,505
MASSACHUSETTS	99,615	329,383	233,561	53,368	65,776	372,323	23,305	14,539	94,655	61,924	36,090
MICHIGAN	161,870	535,705	551,788	127,056	107,974	494,381	46,636	15,765	168,924	92,402	37,989
MINNESOTA	87,214	294,635	336,137	76,510	65,519	289,784	38,090	8,832	81,067	43,739	23,275
MISSISSIPPI	39,476	134,547	126,776	28,350	35,455	146,515	24,988	11,715	33,875	26,362	8,768
MISSOURI	94,903	336,690	405,520	93,226	71,950	334,883	48,522	14,962	74,843	52,596	27,781
MONTANA	19,391	67,274	71,609	16,168	21,230	83,576	29,867	3,776	10,447	6,713	2,136
NEBRASKA	30,882	91,700	39,381	8,608	25,472	115,943	25,764	5,019	23,413	12,119	4,782
NEVADA	22,525	66,718	38,820	7,712	22,473	73,645	18,123	12,298	18,113	6,611	1,709
NEW HAMPSHIRE	14,065	59,412	126,966	29,664	9,084	52,060	2,705	2,241	13,860	11,011	6,537
NEW JERSEY	141,042	432,726	378,940	87,453	85,305	527,852	41,937	12,246	256,135	87,902	51,359
NEW MEXICO	36,781	119,781	95,622	21,038	35,154	138,049	38,933	9,236	26,463	11,532	2,586
NEW YORK	216,729	787,545	897,992	211,044	139,868	814,902	44,484	30,349	216,515	163,604	102,347
NORTH CAROLINA	106,686	371,656	473,576	108,087	81,567	348,743	46,186	24,748	118,195	74,469	28,779
NORTH DAKOTA	11,566	34,850	15,176	3,075	13,104	54,252	16,039	4,298	6,750	3,995	1,223
OHIO	197,542	639,555	619,920	144,306	141,702	642,340	126,469	17,696	220,738	114,857	57,730
OKLAHOMA	51,617	166,509	166,045	37,590	42,170	162,683	28,889	12,180	51,547	24,422	9,410
OREGON	53,501	180,901	190,838	43,421	46,300	192,389	45,198	7,404	50,721	29,406	15,287
PENNSYLVANIA	177,140	639,918	899,765	210,314	131,788	664,008	104,468	23,263	205,879	121,868	68,444
RHODE ISLAND	17,058	52,991	46,651	10,812	9,855	56,079	3,210	1,921	23,115	10,351	4,633
SOUTH CAROLINA	59,115	183,384	140,002	31,311	44,049	180,171	23,587	9,841	64,019	33,618	17,951
SOUTH DAKOTA	13,035	42,325	28,705	6,169	12,021	49,077	7,671	3,084	6,396	4,614	1,484
TENNESSEE	89,327	300,191	359,068	82,608	68,109	302,734	58,225	9,964	108,206	51,546	29,184
TEXAS	331,224	929,757	326,379	64,336	264,999	1,181,458	183,323	82,981	432,597	147,028	57,735
UTAH	37,864	118,725	63,807	13,991	33,696	138,278	39,184	5,673	26,468	14,402	3,815
VERMONT	8,290	36,728	99,704	23,279	5,764	32,114	2,662	1,263	11,020	5,649	3,819
VIRGINIA	96,647	329,609	387,017	89,141	70,463	345,554	48,774	11,741	97,893	52,788	23,202
WASHINGTON	82,147	278,087	235,926	52,819	65,171	324,739	37,994	16,447	60,091	42,589	22,176
WEST VIRGINIA	25,684	100,400	158,901	37,125	22,982	104,891	23,116	3,345	12,591	12,410	4,424
WISCONSIN	84,981	309,194	360,169	82,794	64,283	290,730	38,561	7,886	77,557	64,533	50,073
WYOMING	17,298	57,270	35,236	7,728	24,215	92,403	47,772	1,651	4,356	4,484	635
CONTIG U.S.	4,269,998	13,608,223	11,858,021	2,687,709	3,203,622	14,661,391	2,171,814	764,170	4,646,372	2,282,149	1,128,174

For conversion of hydrocarbon classes to tons/year, see discussion in Appendix E.

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS, AREA SOURCES

TONS/YEAR

EPA REGION	SO2	SO4	NO	NO2	PB	CO	HCL	HF	NH3	TSP	CA	MG	NA	K	VOC	THC
REGION 1	134,520	23,562	404,880	39,761	1,170	4,625,738	231	4	2,470	606,816	0	0	0	0	1,020,013	1,080,788
REGION 2	186,507	33,755	668,495	65,560	1,963	6,855,228	193	31	14,026	860,832	0	0	0	0	1,662,642	1,755,258
REGION 3	260,590	35,271	1,053,352	104,110	2,528	8,469,592	1,069	151	27,558	2,162,310	0	0	0	0	1,900,234	1,987,708
REGION 4	423,203	38,015	1,880,752	189,820	4,590	15,103,303	1,119	715	72,957	4,340,465	0	0	0	0	3,363,893	3,529,412
REGION 5	424,252	46,450	2,029,969	204,479	4,884	17,103,112	2,325	958	134,448	4,236,611	0	0	0	0	3,728,034	3,982,016
REGION 6	499,063	28,184	2,640,196	214,604	3,141	11,811,499	495	194	85,962	9,084,482	0	0	0	0	2,364,260	2,482,493
REGION 7	137,696	9,203	785,558	76,068	1,335	4,787,301	339	35	156,830	6,498,978	0	0	0	0	1,011,400	1,085,758
REGION 8	127,157	8,339	544,200	55,745	774	5,658,682	195	34	43,688	4,960,088	0	0	0	0	945,319	998,377
REGION 9	156,195	15,235	1,145,121	118,154	2,821	10,923,825	586	32	34,976	3,105,694	0	0	0	0	2,250,925	2,415,267
REGION 10	100,212	12,245	439,953	48,361	831	4,842,549	320	97	20,282	2,396,847	0	0	0	0	954,569	1,003,339
CONTIG U.S.	2,449,395	250,259	11,592,476	1,116,662	24,037	90,180,829	6,872	2,251	593,197	38,253,123	NR	NR	NR	NR	19,201,289	20,320,417

METRIC TONS/YEAR

EPA REGION	SO2	SO4	NO	NO2	PB	CO	HCL	HF	NH3	TSP	CA	MG	NA	K	VOC	THC
REGION 1	122,034	21,375	367,301	36,071	1,061	4,196,399	210	4	2,241	550,494	0	0	0	0	925,340	980,475
REGION 2	169,196	30,622	606,449	59,475	1,781	6,218,958	175	28	12,725	780,934	0	0	0	0	1,508,324	1,592,344
REGION 3	236,403	31,997	955,585	94,447	2,293	7,683,485	970	137	25,000	1,961,615	0	0	0	0	1,723,864	1,803,219
REGION 4	383,923	34,487	1,706,190	172,202	4,164	13,701,486	1,015	649	66,185	3,937,604	0	0	0	0	3,051,672	3,201,828
REGION 5	384,875	42,139	1,841,557	185,500	4,431	15,515,682	2,109	869	121,969	3,843,389	0	0	0	0	3,382,015	3,612,424
REGION 6	452,742	25,568	2,395,145	194,685	2,849	10,715,212	449	176	77,984	8,241,304	0	0	0	0	2,144,821	2,252,080
REGION 7	124,916	8,349	712,647	69,008	1,211	4,342,966	308	32	142,274	5,895,774	0	0	0	0	917,527	984,983
REGION 8	115,355	7,565	493,690	50,571	702	5,133,470	177	31	39,633	4,499,716	0	0	0	0	857,579	905,713
REGION 9	141,698	13,821	1,038,836	107,188	2,559	9,909,927	532	29	31,730	2,817,438	0	0	0	0	2,042,005	2,191,093
REGION 10	90,911	11,108	399,118	43,873	754	4,393,087	290	88	18,400	2,174,383	0	0	0	0	865,970	910,214
CONTIG U.S.	2,222,054	227,031	10,516,517	1,013,019	21,806	81,810,673	6,234	2,042	538,140	34,702,650	NR	NR	NR	NR	17,419,117	18,434,372

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS OF HYDROCARBON SPECIES, AREA SOURCES

EPA REGION	THOUSAND MOLES/YEAR METHANE	ETHANE	PROPANE	BUTANE	ISO-BUTANE	PENTANE	ISO-PENT	ALKANES	ETHYLENE	PROPYLENE	ISO-BUTENE	ALKENES
REGION 1	2,991,475	288,604	104,788	683,067	118,929	77,282	30,308	6,020,002	1,386,017	667,040	2,332	1,202,514
REGION 2	4,615,669	417,684	144,468	1,127,562	218,108	132,616	37,743	10,354,587	2,311,640	1,081,121	4,020	1,906,241
REGION 3	4,152,923	523,059	192,430	1,275,631	234,601	159,812	52,453	11,173,216	2,815,546	1,282,050	9,897	2,265,753
REGION 4	8,180,765	808,562	338,917	2,356,735	470,159	345,350	54,609	20,032,714	6,462,573	2,367,210	18,138	4,635,102
REGION 5	12,947,366	969,243	331,834	2,540,891	445,442	306,369	78,878	22,589,803	5,718,876	2,666,020	21,432	4,393,024
REGION 6	6,034,071	491,917	225,657	1,692,118	346,662	271,083	15,298	14,357,402	5,408,350	1,772,759	15,376	3,551,523
REGION 7	3,867,942	245,896	89,256	748,183	128,388	96,848	15,241	6,149,400	1,879,279	761,171	7,961	1,291,221
REGION 8	2,767,015	179,879	128,779	640,915	135,597	105,704	8,237	5,352,845	2,773,540	612,537	9,109	1,777,501
REGION 9	8,620,807	500,633	167,054	1,686,255	288,039	197,908	17,017	14,054,038	4,510,904	1,731,671	10,240	3,059,779
REGION 10	2,479,190	191,072	164,365	581,121	158,389	119,143	14,216	5,277,001	2,847,838	544,320	4,737	1,906,404
CONTIG U.S.	56,657,225	4,616,552	1,887,549	13,332,479	2,544,314	1,812,116	324,000	115,361,007	36,114,563	13,485,899	103,241	25,989,063

EPA REGION	THOUSAND MOLES/YEAR BENZENE	TOLUENE	XYLENE	ETH BENZ	AROMATIC	FORMALDEH	ACETALDEH	ALDEH	ACETONE	KETONES	ORG. ACID
REGION 1	213,247	758,896	970,891	225,132	138,625	786,012	49,479	28,865	224,261	139,669	83,774
REGION 2	357,770	1,220,271	1,276,932	298,497	225,173	1,342,754	86,421	42,595	472,650	251,505	153,706
REGION 3	395,218	1,383,077	1,701,521	393,408	301,633	1,451,952	208,246	57,973	396,705	233,407	122,087
REGION 4	756,136	2,363,102	2,041,904	454,784	597,223	2,514,860	380,752	191,521	817,082	402,465	187,556
REGION 5	825,356	2,737,321	2,719,902	626,890	605,661	2,686,951	450,676	87,276	885,316	497,471	263,101
REGION 6	536,274	1,587,478	822,683	174,120	445,085	1,960,240	324,460	126,780	621,023	243,326	99,939
REGION 7	229,299	745,486	580,236	131,459	185,306	825,919	166,632	31,689	183,459	114,151	55,949
REGION 8	181,687	582,543	360,735	78,640	170,096	704,827	190,439	38,428	107,515	64,874	19,091
REGION 9	619,673	1,701,504	882,523	191,830	404,985	1,794,288	215,452	130,495	817,727	254,572	101,515
REGION 10	155,339	528,545	500,695	112,950	129,835	593,589	99,256	28,549	120,635	80,709	41,457
CONTIG U.S.	4,269,998	13,608,223	11,858,021	2,687,709	3,203,622	14,661,391	2,171,814	764,170	4,646,372	2,282,149	1,128,174

For conversion of hydrocarbon classes to tons/year, see discussion in Appendix E.

6-DIGIT SCC	SO2	SO4	NO	NO2	Pb	CO	HCl	HF	NH3	TSP	Ca	Mg	Na	K	VOC	THC
	TONS/YEAR															
101002	15,793,408	338,017	4,829,659	149,371	30	160,708	474,292	57,413	133	521,611	8,450	8,920	4,277	2,295	25,827	26,382
101003	279,553	36,021	195,246	6,039	5	13,569	158	158	7	52,263	847	894	429	230	2,022	2,065
101004	1,385,537	41,110	385,608	7,870	0	39,829	0	0	0	54,266	0	0	0	0	12,677	14,244
101005	8,359	1,035	5,142	105	0	1,105	0	0	0	94	0	0	0	0	45	45
101006	968	0	707,302	37,226	0	68,311	0	0	0	4,620	0	0	0	0	1,362	3,096
102001	3,590	277	1,915	93	0	116	374	16	0	252	4	4	2	1	10	18
102002	1,187,896	43,699	379,322	11,732	28	35,225	31,492	12,210	10	347,169	5,623	5,935	2,846	1,527	6,455	6,594
102003	52,631	3,039	11,450	354	0	3,691	258	44	1	24,348	394	416	200	107	132	135
102004	1,045,988	22,414	275,820	5,629	0	53,251	0	0	0	79,592	0	0	0	0	50,266	56,481
102005	95,558	4,104	38,473	785	0	7,814	0	0	0	6,362	0	0	0	0	16,029	16,029
102006	41,503	204	489,234	25,749	0	107,103	0	0	0	17,099	0	0	0	0	12,809	29,109
102007	301,546	1,114	97,170	4,789	0	14,157	0	0	0	11,388	0	0	0	0	7,567	11,254
102008	4,471	16	1,170	36	0	19,147	0	0	0	2,060	0	0	0	0	296	302
102009	15,464	70,815	94,354	2,918	0	103,091	0	0	0	91,961	46	37	37	1,793	62,442	63,785
102010	54	0	169	9	0	23	0	0	0	58	0	0	0	0	10	22
102011	616	0	1,791	94	0	1,443	0	0	0	8,872	0	0	0	0	4,053	4,053
102012	3,448	0	1,804	56	0	15	0	0	0	1,813	0	0	0	0	22	22
102013	17,505	0	2,751	56	366	114	0	0	0	650	0	0	0	0	64	64
103001	309	17	107	3	0	4	21	0	0	403	7	7	3	2	3	3
103002	83,411	3,087	18,525	573	1	4,435	1,730	185	1	29,094	471	498	239	128	950	970
103003	1,804	119	329	10	0	341	18	1	0	2,060	33	35	17	9	29	30
103004	81,373	10,099	31,843	650	0	2,352	0	0	0	33,884	0	0	0	0	1,353	1,521
103005	20,061	990	3,421	70	0	1,010	0	0	0	10,236	0	0	0	0	877	877
103006	619	0	37,561	1,977	0	4,936	0	0	0	1,300	0	0	0	0	1,174	2,668
103009	265	1,418	2,657	82	0	1,711	0	0	0	1,059	1	0	0	21	926	946
103012	0	0	0	0	0	0	0	0	0	31	0	0	0	0	0	0
103013	0	0	0	0	4	0	0	0	0	1	0	0	0	0	6	6
103900	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0
105001	31,800	165	10,568	527	0	43,506	0	0	0	3,102	0	0	0	0	3,470	5,210
105002	955	615	889	18	0	222	0	0	0	131	0	0	0	0	218	218
199999	8,675	0	2,392	126	0	498	0	0	0	1,219	0	0	0	0	1,230	1,230
201001	9,741	17	28,270	3,141	0	6,994	0	0	0	2,187	0	0	0	0	1,984	2,318
201002	26	0	76,836	4,904	0	16,567	0	0	0	1,420	0	0	0	0	2,018	7,627
202001	3,215	13	12,216	1,357	0	3,656	0	0	0	817	0	0	0	0	1,517	1,772
202002	4,917	0	604,240	38,568	0	112,937	0	0	0	3,158	0	0	0	0	12,183	83,323
202003	9	0	149	17	0	6,440	0	0	0	187	0	0	0	0	274	320
202004	10	0	632	70	0	183	0	0	0	47	0	0	0	0	17	20
203001	10	0	455	51	0	80	0	0	0	14	0	0	0	0	19	22
203002	3	0	769	49	0	1,366	0	0	0	9	0	0	0	0	10	73
204001	195	0	637	41	0	474	0	0	0	156	0	0	0	0	76	545
204004	58	0	796	88	0	1,200	0	0	0	210	0	0	0	0	370	432
299999	0	0	508	27	0	118	0	0	0	0	0	0	0	0	1	1
301001	1,465	0	4,355	229	0	28,485	0	0	0	97	0	0	0	0	9,119	9,119
301003	1,415	4	6,619	348	0	62,182	0	0	3,108	518	0	0	0	0	15,468	15,468
301005	19,919	0	1,199	63	0	1,841,589	0	0	0	2,848	0	0	0	0	189,542	189,542
301006	1,820	0	19,551	1,029	0	70,711	0	0	0	76,161	0	0	0	0	94,612	94,612
301007	0	0	0	0	0	0	0	0	0	0	0	0	0	0	727	733
301008	0	0	0	0	0	100	0	0	0	54	0	0	0	0	370	370
301009	751	0	112	6	0	23	0	0	0	1,034	0	0	0	0	599	599
301010	80	0	2,245	118	0	0	0	0	0	998	0	0	0	0	714	714
301011	0	0	0	0	0	160	731	0	0	51	0	0	0	0	42	96
301012	125	0	0	0	0	0	0	0	0	1,020	0	0	0	0	0	0
301013	7,325	0	45,534	2,397	0	5,558	0	0	0	1,331	0	0	0	0	1,491	1,491
301014	4,558	0	0	0	0	0	0	0	0	1,862	0	0	0	0	16,010	16,010

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS, POINT SOURCES

6-DIGIT SCC	SO2	SO4	NO	NO2	Pb	CO	HCl	HF	NH3	TSP	Ca	Mg	Na	K	VOC	THC
	TONS/YEAR															
301015	0	0	0	0	0	0	0	0	0	10	0	0	0	0	5,955	5,955
301016	11,975	0	0	0	0	12	0	1,650	0	1,067	0	0	0	0	0	0
301017	1	0	80	4	0	0	0	0	0	376	0	0	0	0	11	11
301018	1,808	0	289	15	0	223	0	0	0	58,550	0	0	0	0	105,497	106,322
301019	366	5	0	0	0	22,015	0	0	0	7,193	0	0	0	0	567	2,042
301020	0	0	0	0	0	0	0	0	0	6	0	0	0	0	1,769	1,769
301021	243	0	448	24	0	4,972	0	0	0	4,872	0	0	0	0	218	218
301022	7,705	0	0	0	0	0	0	0	0	360	0	0	0	0	0	0
301023	288,797	1,430	358	19	0	1,215	0	0	0	15,830	0	0	0	0	61	63
301024	7,466	0	2	0	0	4,165	0	0	0	1,206	0	0	0	0	17,219	17,219
301025	604	0	0	0	0	0	0	0	0	42	0	0	0	0	21,830	22,219
301026	5,054	0	282	15	0	19,004	0	0	0	1,440	0	0	0	0	90,128	90,128
301027	1,002	0	1,847	97	0	8,122	0	0	224,793	11,234	0	0	0	0	45	45
301028	1,049	0	0	0	0	0	0	0	0	3,410	0	0	0	0	0	0
301029	5,976	0	14	1	0	4	0	29,824	0	616	0	0	0	0	3	3
301030	8,681	0	7,758	408	0	4	0	1,933	766	8,205	0	0	0	0	32	32
301031	0	0	0	0	0	35,858	0	0	0	289	0	0	0	0	58,475	58,475
301032	251,892	3,078	640	34	0	2,343	0	0	0	982	0	0	0	0	1,404	1,404
301033	790	0	643	34	0	0	0	0	0	27	0	0	0	0	2,739	2,739
301034	1,084	0	3,425	180	0	113	0	0	0	415	0	0	0	0	2,677	2,711
301035	11,244	4	1,361	72	0	27,421	0	0	0	1,645	0	0	0	0	5	6
301036	0	0	0	0	0	0	0	0	0	315	0	0	0	0	0	0
301040	0	0	0	0	0	0	0	0	0	4,807	0	0	0	0	0	0
301041	1,909	6	0	0	0	112	0	0	0	334	0	0	0	0	3,256	3,314
301042	0	0	11	1	0	0	0	0	0	20	0	0	0	0	1,929	1,929
301050	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,189	1,210
301060	226	0	11	1	0	174	0	0	0	3,947	0	0	0	0	1,509	1,535
301091	38	0	42	2	0	0	0	0	0	0	0	0	0	0	797	797
301100	0	0	0	0	0	13,238	0	0	0	0	0	0	0	0	248	248
301111	0	0	0	0	0	0	0	0	0	87	0	0	0	0	0	0
301120	0	0	8	0	0	2	0	0	0	378	0	0	0	0	1,349	1,349
301125	250	0	50	3	0	0	0	0	0	16	0	0	0	0	2,107	2,107
301130	0	0	0	0	0	0	0	0	0	63	0	0	0	0	151	250
301132	69	0	636	33	0	175	0	0	0	271	0	0	0	0	4,572	4,648
301137	480	0	7	0	0	45	0	0	0	0	0	0	0	0	324	330
301156	0	0	0	0	0	0	0	0	0	0	0	0	0	0	130	130
301167	0	0	0	0	0	0	0	0	0	0	0	0	0	0	137	137
301169	0	0	0	0	0	0	0	0	0	0	0	0	0	0	380	380
301174	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,662	1,692
301181	0	0	0	0	0	10	0	0	0	0	0	0	0	0	99	99
301197	2,964	0	351	18	0	1,462	0	0	0	61	0	0	0	0	23,003	23,003
301202	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,020	1,020
301206	0	0	0	0	0	0	0	0	0	0	0	0	0	0	520	520
301250	1	0	2,533	133	0	3,964	0	0	0	5	0	0	0	0	1,371	1,371
301251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	999	999
301253	0	0	0	0	0	0	0	0	0	0	0	0	0	0	106	106
301254	24	0	214	11	0	5,927	0	0	0	0	0	0	0	0	8,354	8,354
301258	0	0	0	0	0	50	0	0	0	3	0	0	0	0	7,406	7,449
301820	243	0	0	0	0	67	0	0	0	30	0	0	0	0	1,855	1,855
301830	0	0	0	0	0	0	0	0	0	182	0	0	0	0	0	0
301888	247	0	5	0	0	36	0	0	0	12,570	0	0	0	0	467	475
301900	182,612	0	485	26	0	24	0	0	0	411	0	0	0	0	651	651
301999	57,725	0	31,126	1,638	0	241,373	0	0	0	52,092	0	0	0	0	211,348	211,348
302001	1	0	187	10	0	15	0	0	0	18,573	0	0	0	0	4	4

6-DIGIT SCC	SO2	SO4	NO	NO2	Pb	CO	HCl	HF	NH3	TSP	Ca	Mg	Na	K	VOC	THC
	TONS/YEAR															
302002	0	0	59	3	0	48	0	0	0	1,977	0	0	0	0	48	48
302004	0	0	0	0	0	0	0	0	0	618	0	0	0	0	0	0
302005	18	0	1	0	0	0	0	0	0	45,098	0	0	0	0	0	0
302006	6	0	84	4	0	53	0	0	0	200,334	0	0	0	0	0	0
302007	198	0	26	1	0	3	0	0	0	43,120	0	0	0	0	761	7,045
302008	512	0	5	0	0	17	0	0	0	9,680	0	0	0	0	2	2
302009	1,264	0	121	6	0	14	0	0	0	1,615	0	0	0	0	405	2,171
302010	0	0	0	0	0	0	0	0	0	614	0	0	0	0	24,034	24,034
302012	0	0	0	0	0	0	0	0	0	3	0	0	0	0	26	336
302013	0	0	1	0	0	72	0	0	0	28	0	0	0	0	840	858
302014	106	0	0	0	0	0	0	0	0	1,586	0	0	0	0	0	0
302015	1,674	0	0	0	0	18	0	0	0	1,684	0	0	0	0	0	0
302016	699	0	337	18	0	25	0	0	0	7,834	0	0	0	0	7	7
302017	0	0	0	0	0	0	0	0	0	535	0	0	0	0	0	0
302018	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	237
302019	0	0	0	0	0	0	0	0	0	109	0	0	0	0	780	10,183
302020	0	0	0	0	0	0	0	0	762	2,550	0	0	0	0	0	0
302026	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
302030	0	0	1	0	0	0	0	0	0	147	0	0	0	0	0	0
302031	0	0	0	0	0	0	0	0	0	487	0	0	0	0	0	0
302032	1,196	0	0	0	0	0	0	0	0	19	0	0	0	0	4	57
302033	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,913	1,913
302888	0	0	2	0	0	26	0	0	0	382	0	0	0	0	15	162
302999	1,241	0	405	21	0	16	0	0	0	5,116	0	0	0	0	371	4,840
303000	0	0	0	0	0	0	0	0	0	5,698	0	0	0	0	0	0
303001	87,605	561	124,733	6,565	0	678,962	0	9,749	0	46,980	0	0	0	0	15,458	33,098
303002	1,403	0	935	49	0	163	0	0	0	21,303	0	0	0	0	9	9
303003	75,716	12,742	4,057	214	0	37,997	0	0	7,373	58,581	0	0	0	0	32,629	69,863
303004	30	0	4	0	0	11	0	0	0	2,168	0	0	0	0	40	86
303005	1,099,046	35,393	986	52	160	7,211	0	0	0	20,562	0	0	0	0	17	20
303006	387	0	105	6	59	282	0	0	0	28,206	299	409	381	0	19	22
303007	92	0	0	0	0	363	0	0	0	1,230	0	0	0	0	0	0
303008	63,405	738	16,486	1,189	1,246	1,115,635	0	0	0	163,355	6,502	2,712	2,842	9,197	4,327	17,794
303009	53,762	0	27,603	2,368	1,679	369,322	0	0	0	64,061	0	0	0	0	4,270	4,451
303010	57,902	1,532	3	0	887	43,930	0	0	0	7,129	0	0	0	0	0	0
303011	1,939	0	0	0	0	0	0	0	0	3,969	0	0	0	0	73	73
303012	0	0	156	8	0	4,993	0	0	0	1	0	0	0	0	0	0
303013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
303014	2,203	0	196	10	0	5,941	0	0	0	2,636	0	0	0	0	427	427
303023	10,609	34	0	0	0	0	0	0	0	68,416	335	164	0	0	0	0
303030	37,793	11,227	95	5	385	17	0	0	0	8,857	0	0	0	0	3	6
303888	3	0	1	0	0	0	0	0	0	1,849	0	0	0	0	0	0
303999	2,758	0	102	18	0	552	0	0	0	1,052	0	0	0	0	84	205
304001	1,086	0	8,409	443	0	983	0	0	0	11,579	0	0	0	0	3,652	5,769
304002	6	0	885	47	228	3,732	0	0	0	4,850	0	0	0	0	177	280
304003	7,305	9	1,085	191	497	491,060	0	0	0	36,836	0	0	0	0	1,822	4,468
304004	26,595	98	340	18	276	160	0	0	0	8,690	0	0	0	0	3,292	5,201
304005	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
304006	32	0	3	0	0	6,390	0	0	0	149	35	21	0	0	0	0
304007	6,809	0	3,171	560	0	5,332	0	0	0	6,419	0	0	0	0	104	254
304008	1,714	0	585	31	0	17	0	0	0	3,046	0	0	0	0	4	6
304009	0	0	0	0	0	0	0	0	0	139	0	0	0	0	0	0
304010	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
304020	767	0	31	2	0	3	0	0	0	786	0	0	0	0	166	166

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS, POINT SOURCES

6-DIGIT SCC	SO2	SO4	NO	NO2	Pb	CO	HCl	HF	NH3	TSP	Ca	Mg	Na	K	VOC	THC
	TONS/YEAR															
304022	1	0	841	44	0	27	0	0	0	128	0	0	0	0	206	325
304034	67	0	162	9	0	0	0	0	0	0	0	0	0	0	0	0
304050	0	0	0	0	0	554	0	0	0	25	0	0	0	0	477	753
304888	0	0	0	0	0	0	0	0	0	77	0	0	0	0	1	1
304999	2,677	0	259	14	0	252	0	0	0	3,190	0	0	0	0	563	890
305001	10	0	3	0	0	2,330	0	0	0	4,647	0	0	0	0	2,875	2,881
305002	42,343	0	9,120	480	0	5,992	0	0	0	73,020	0	0	0	0	619	1,408
305003	6,288	26	3,526	149	0	1,981	0	0	0	128,969	0	0	0	0	819	1,708
305004	166	1	0	0	0	45	0	0	0	474	0	0	0	0	306	306
305005	829	0	856	45	0	64	0	0	0	8,044	0	0	0	0	19	45
305006	187,090	2,266	52,172	1,140	302	1,296	0	0	0	135,301	38,561	1,055	0	0	433	486
305007	158,859	7,611	57,468	1,259	207	2,227	0	0	0	214,451	0	0	0	0	452	512
305008	457	0	122	4	0	1	0	0	0	20,986	178	189	0	0	35	95
305009	472	0	178	9	0	4	0	0	0	9,518	0	0	0	0	10	28
305010	11,673	36	3,533	110	0	137	0	0	0	54,260	0	0	0	0	2,267	2,316
305011	0	0	4,167	219	0	86	0	0	0	3,526	1,622	53	0	0	6	16
305012	5,532	15	5,439	286	0	1,030	0	0	0	19,030	0	0	0	0	1,480	4,229
305013	0	0	0	0	0	0	0	0	0	96	0	0	0	0	74	211
305014	28,602	87	40,669	2,140	991	10,815	0	0	0	14,784	0	0	0	0	1,950	5,319
305015	259	13,205	65	3	0	16	0	0	0	21,655	0	0	0	0	8	11
305016	15,937	0	26,666	825	0	29,711	0	0	0	86,894	29,448	4,353	434	0	1,009	1,031
305017	1,278	0	122	6	0	10,806	0	0	0	3,109	0	0	0	0	49	78
305018	0	0	0	0	0	0	0	0	0	1,078	0	0	0	0	49	141
305019	26,487	0	616	32	0	3	0	0	0	17,411	0	0	0	0	0	1
305020	2,003	0	619	33	0	33	0	0	0	354,666	20,464	5,994	0	0	60	171
305021	440	0	590	31	0	0	0	0	0	827	0	0	0	0	0	0
305022	0	0	0	0	0	0	0	0	0	2,530	0	0	0	0	0	0
305024	0	0	61	3	0	43	0	0	0	13,609	0	0	0	0	0	0
305025	78	0	61	3	0	3	0	0	0	21,164	138	148	0	0	1	2
305026	3	0	10	1	0	6	0	0	0	617	0	0	0	0	0	0
305031	0	0	0	0	0	0	0	0	0	292	0	0	0	0	0	0
305032	0	0	0	0	0	1	0	0	0	83	0	0	0	0	946	2,702
305040	5,514	0	2,345	123	0	382	0	0	0	32,457	0	0	0	0	41	116
305100	120	0	0	0	0	0	0	0	0	1,233	0	0	0	0	0	0
305103	0	0	0	0	0	0	0	0	0	634	0	0	0	0	0	0
305888	292	0	0	0	0	258	0	0	0	3,216	0	0	0	0	174	174
305999	6,910	0	1,684	89	0	8,282	0	0	0	36,960	0	0	0	0	2,158	6,167
306001	296,609	747	186,190	7,919	0	18,384	0	0	0	18,730	0	0	0	0	6,278	11,405
306002	263,612	8,594	38,763	6,841	0	1,363,517	0	0	8,427	45,761	0	0	0	0	63,337	98,954
306003	9,474	11	383	68	0	102,795	0	0	87	3,097	0	0	0	0	2,294	3,584
306004	12,150	56	8,125	428	0	1,910	0	0	0	17	0	0	0	0	15,632	18,317
306005	1,344	0	13	1	0	34	0	0	0	240	0	0	0	0	107,178	112,366
306006	1,229	0	103	15	0	9	0	0	0	5	0	0	0	0	34,549	42,465
306007	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6,851	6,851
306008	1,984	0	2,362	124	0	132	0	0	0	163	0	0	0	0	81,570	93,104
306009	16,083	0	1,714	90	0	104	0	0	0	391	0	0	0	0	5,809	11,620
306010	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,419	1,419
306011	84	0	49	3	0	388	0	0	0	36	0	0	0	0	50,007	60,326
306012	19,455	0	1,777	314	0	6	0	0	0	51,386	0	0	0	0	1,928	3,012
306014	4,021	0	1,150	61	0	47	0	0	0	1,786	0	0	0	0	236	536
306100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,796	2,796
306888	469	0	229	12	0	0	0	0	0	174	0	0	0	0	20,992	30,153
306999	61,103	0	5,373	283	0	57,420	0	0	0	3,376	0	0	0	0	35,893	54,718
307001	106,094	41,572	45,078	2,373	0	713,756	0	0	0	78,608	94	0	1,085	0	11,513	11,682

6-DIGIT SCC	SO2	SO4	NO	NO2	Pb	CO	HCl	HF	NH3	TSP	Ca	Mg	Na	K	VOC	THC
	TONS/YEAR															
307002	30,417	5,444	1,754	92	0	276	0	0	0	2,767	0	0	0	0	237	237
307003	10	0	0	0	0	0	0	0	0	89	0	0	0	0	176	176
307004	0	0	52	3	0	0	0	0	0	1,242	0	0	0	0	2,157	2,157
307005	0	0	0	0	0	0	0	0	0	1	0	0	0	0	244	244
307007	372	0	4,560	240	0	1,471	0	0	0	45,723	0	0	0	0	6,559	6,559
307008	3,073	0	3,485	183	0	763	0	0	0	13,221	0	0	0	0	1,923	1,923
307011	5	0	0	0	0	0	0	0	0	0	0	0	0	0	8,488	8,488
307013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	157	157
307020	2	0	0	0	0	0	0	0	0	13,270	0	0	0	0	4,579	4,579
307030	7	0	46	2	0	148	0	0	0	2,739	0	0	0	0	189	189
307888	0	0	0	0	0	0	0	0	0	843	0	0	0	0	714	714
307999	919	0	649	34	0	9,561	0	0	0	5,243	0	0	0	0	1,617	1,617
308001	0	0	0	0	0	0	0	0	0	182	0	0	0	0	11,073	11,073
308006	0	0	116	6	0	34	0	0	0	254	0	0	0	0	1,033	1,033
308007	0	0	0	0	0	0	0	0	0	124	0	0	0	0	6,813	6,813
309001	0	0	0	0	0	0	0	0	0	93	0	0	0	0	467	737
309002	0	0	0	0	0	0	0	0	0	765	0	0	0	0	0	0
309010	0	0	0	0	0	0	0	0	0	77	0	0	0	0	1,992	2,758
309011	0	0	0	0	0	0	0	0	0	0	0	0	0	0	49	67
309020	0	0	4	0	0	1	0	0	0	61	0	0	0	0	4,450	7,031
309030	0	0	0	0	0	0	0	0	0	2,669	0	0	0	0	754	1,045
309060	0	0	0	0	0	0	0	0	0	135	0	0	0	0	0	0
309888	0	0	0	0	0	0	0	0	0	90,275	0	0	0	0	69	96
309999	140	0	371	20	0	3	0	0	0	2,022	0	0	0	0	3,198	3,198
310001	1,038	0	0	0	0	0	0	0	0	720	0	0	0	0	13,139	13,139
310002	1,075	5	2,759	145	0	1,593	0	0	0	502	0	0	0	0	804	862
312999	0	0	7	0	0	2	0	0	0	240	0	0	0	0	0	0
320999	0	0	0	0	0	0	0	0	0	4	0	0	0	0	419	419
330001	43	0	18	1	0	3	0	0	0	1,223	0	0	0	0	22,377	22,377
330002	0	0	0	0	0	0	0	0	0	98	0	0	0	0	3,766	3,766
330003	1	0	1	0	0	1	0	0	0	85	0	0	0	0	82	82
330004	0	0	0	0	0	0	0	0	0	14	0	0	0	0	94	94
390001	903	0	1,968	61	0	120	0	0	0	428	7	7	4	2	6	6
390002	71,893	192	2,680	83	0	29,478	0	0	0	8,569	139	147	70	38	664	678
390004	46,919	64	6,549	138	0	1,005	0	0	0	3,057	0	0	0	0	1,719	1,931
390005	4,029	9	3,479	71	0	1,785	0	0	0	4,251	0	0	0	0	860	860
390006	38,151	109	26,811	1,411	0	52,259	0	0	0	11,429	0	0	0	0	11,261	25,493
390007	13,403	0	2,260	119	0	22,220	0	0	0	2,515	0	0	0	0	234	404
390008	5,601	2	1,055	56	0	34,160	0	0	0	426	0	0	0	0	46	46
390009	0	0	325	17	0	0	0	0	0	1,612	1	1	1	31	130	130
390010	0	0	10	1	0	1	0	0	0	846	0	0	0	0	756	1,718
390012	62	0	0	0	0	0	0	0	0	10	0	0	0	0	0	0
390013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
399999	29,212	0	13,870	730	0	77,163	0	0	0	48,893	0	0	0	0	90,446	205,538
401001	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7,633	7,633
401002	327	0	2	0	0	3	0	0	0	205	0	0	0	0	100,419	100,419
401003	0	0	1	0	0	0	0	0	0	0	0	0	0	0	921	921
401888	0	0	0	0	0	0	0	0	0	0	0	0	0	0	407	407
401913	0	0	0	0	0	0	0	0	0	0	0	0	0	0	66	66
402001	2	0	302	16	0	84	0	0	0	1,093	0	0	0	0	245,536	245,536
402002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,015	2,015
402003	0	0	0	0	0	0	0	0	0	103	0	0	0	0	34,008	34,008
402004	0	0	8	0	0	1	0	0	0	455	0	0	0	0	140,729	140,729
402005	0	0	282	15	0	183	0	0	0	486	0	0	0	0	122,551	122,551

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS, POINT SOURCES

6-DIGIT SCC	SO2	SO4	NO	NO2	Pb	CO	HCl	HF	NH3	TSP	Ca	Mg	Na	K	VOC	THC
	TONS/YEAR															
402006	0	0	7	0	0	1	0	0	0	1,129	0	0	0	0	78,612	78,612
402007	2	0	16	2	0	2,048	0	0	0	69	0	0	0	0	22,573	22,573
402008	193	0	162	18	0	575	0	0	0	1,504	0	0	0	0	21,367	61,451
402009	1	0	588	31	0	42	0	0	0	818	0	0	0	0	221,147	221,147
402010	0	0	48	3	0	13	0	0	0	11	0	0	0	0	3,858	3,858
402011	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,928	1,928
402013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16,518	16,518
402014	0	0	0	0	0	0	0	0	0	0	0	0	0	0	103	103
402016	0	0	0	0	0	0	0	0	0	3	0	0	0	0	923	923
402017	0	0	471	25	0	83	0	0	0	0	0	0	0	0	31,769	32,037
402018	0	0	2	0	0	0	0	0	0	0	0	0	0	0	314	314
402019	0	0	0	0	0	0	0	0	0	0	0	0	0	0	337	337
402020	0	0	0	0	0	0	0	0	0	0	0	0	0	0	475	519
402021	0	0	0	0	0	0	0	0	0	0	0	0	0	0	140	140
402022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5,060	5,060
402023	0	0	0	0	0	0	0	0	0	49	0	0	0	0	245	245
402024	0	0	0	0	0	0	0	0	0	2	0	0	0	0	18	18
402025	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,655	1,655
402888	6	0	0	0	0	0	0	0	0	0	0	0	0	0	29,090	29,090
402901	0	0	0	0	0	0	0	0	0	0	0	0	0	0	64	64
402999	0	0	651	34	0	557	0	0	0	8,724	0	0	0	0	88,798	88,798
403001	425	0	4	0	0	1	0	0	0	1,720	0	0	0	0	161,522	170,891
403002	0	0	0	0	0	0	0	0	0	134	0	0	0	0	66,658	67,330
403003	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3,839	3,868
403010	0	0	95	5	0	66,886	0	0	0	357	0	0	0	0	41,475	42,274
403011	4,350	0	923	49	0	33,443	0	0	0	1,110	0	0	0	0	34,742	34,984
403012	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23,430	23,430
403888	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4,627	4,736
403999	223	0	0	0	0	88	0	0	0	359	0	0	0	0	29,774	29,774
404001	0	0	76	4	0	0	0	0	0	2,982	0	0	0	0	113,930	113,930
404002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,205	2,205
405001	0	0	10	1	0	14	0	0	0	53	0	0	0	0	24,311	101,339
405002	0	0	10	1	0	0	0	0	0	0	0	0	0	0	3,664	15,157
405003	0	0	276	15	0	38	0	0	0	45	0	0	0	0	15,344	15,344
405004	0	0	6	0	0	0	0	0	0	0	0	0	0	0	27,533	27,533
405005	0	0	29	2	0	17	0	0	0	423	0	0	0	0	66,633	66,633
405006	0	0	0	0	0	0	0	0	0	0	0	0	0	0	420	420
405888	3	0	0	0	0	0	0	0	0	0	0	0	0	0	561	1,055
406001	0	0	0	0	0	100,329	0	0	0	1,737	0	0	0	0	90,703	91,457
406002	0	0	0	0	0	0	0	0	0	2	0	0	0	0	21,748	22,615
406003	0	0	0	0	0	0	0	0	0	32	0	0	0	0	5,748	5,748
406004	0	0	0	0	0	0	0	0	0	16	0	0	0	0	8,866	8,866
406888	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3,147	3,147
490001	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,116	2,902
490999	0	0	3	0	0	0	0	0	0	445	0	0	0	0	95,261	130,632
501001	5,322	9	4,743	837	143	58,001	5,357	0	0	12,541	71	18	71	60	1,311	6,682
501002	281	0	1,485	262	0	25,938	0	0	0	4,905	26	6	26	22	12,612	12,612
501005	381	0	1,362	240	2	1,988	26	0	0	5,968	1	0	1	0	72	406
501900	1,139	0	0	0	0	20	0	0	0	287	0	0	0	0	0	2
501999	6	0	0	0	0	34	0	0	0	30	0	0	0	0	6	6
502001	2,101	4	1,690	298	79	14,550	2,104	0	0	1,837	10	3	10	9	1,228	2,646
502002	0	0	14	2	0	577	0	0	0	70	0	0	0	1	35	177
502003	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
502005	1,881	12	10,025	1,769	23	0	0	0	0	1,924	0	0	0	0	382	2,262

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS, POINT SOURCES

6-DIGIT SCC	SO2	SO4	NO	NO2	Pb	CO	HCl	HF	NH3	TSP	Ca	Mg	Na	K	VOC	THC
	TONS/YEAR															
502900	535	0	10	1	0	1	0	0	0	125	0	0	0	0	82	187
503001	17,600	4	6,670	1,177	93	218,560	3,091	0	0	19,264	0	0	0	0	5,500	28,037
503002	63	0	566	100	0	22,412	0	0	0	1,765	0	0	0	0	4,243	7,369
503005	875	2	2,287	404	4	351	0	0	0	16,130	0	0	0	0	80	476
503007	0	0	0	0	0	0	0	0	0	95	0	0	0	0	0	0
503900	2,081	0	685	121	0	2,293	0	0	0	589	0	0	0	0	181	925
599999	156	0	0	0	0	0	0	0	0	0	0	0	0	0	19	98
U.S. TOTAL	24,504,741	725,349	9,284,610	358,489	7,695	9,128,108	519,652	113,183	245,467	4,364,247	113,808	32,025	12,975	15,474	3,963,258	4,657,042

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS, POINT SOURCES

6-DIGIT SCC	SO2	SO4	NO	NO2	Pb	CO	HCl	HF	NH3	TSP	Ca	Mg	Na	K	VOC	THC
	METRIC TONS/YEAR															
101002	14,327,814	306,650	4,381,477	135,510	27	145,795	430,279	52,085	121	473,207	7,666	8,092	3,880	2,082	23,430	23,934
101003	253,611	32,678	177,128	5,478	5	12,310	143	143	6	47,413	768	811	389	209	1,834	1,873
101004	1,256,962	37,295	349,825	7,139	0	36,133	0	0	0	49,230	0	0	0	0	11,500	12,922
101005	7,583	939	4,665	95	0	1,002	0	0	0	85	0	0	0	0	41	41
101006	878	0	641,666	33,772	0	61,972	0	0	0	4,191	0	0	0	0	1,236	2,809
102001	3,257	251	1,738	84	0	105	339	15	0	229	4	4	2	1	9	17
102002	1,077,662	39,644	344,122	10,643	25	31,956	28,570	11,077	9	314,953	5,101	5,385	2,582	1,385	5,856	5,982
102003	47,747	2,757	10,387	321	0	3,348	234	40	1	22,089	358	378	181	97	120	122
102004	948,923	20,334	250,225	5,107	0	48,309	0	0	0	72,206	0	0	0	0	45,601	51,239
102005	86,690	3,723	34,903	712	0	7,089	0	0	0	5,772	0	0	0	0	14,541	14,541
102006	37,652	185	443,834	23,360	0	97,164	0	0	0	15,512	0	0	0	0	11,621	26,408
102007	273,564	1,011	88,153	4,344	0	12,843	0	0	0	10,331	0	0	0	0	6,865	10,210
102008	4,056	15	1,061	33	0	17,370	0	0	0	1,869	0	0	0	0	268	274
102009	14,029	64,244	85,598	2,647	0	93,524	0	0	0	83,427	42	33	33	1,627	56,648	57,866
102010	49	0	153	8	0	21	0	0	0	53	0	0	0	0	9	20
102011	559	0	1,625	86	0	1,309	0	0	0	8,049	0	0	0	0	3,677	3,677
102012	3,128	0	1,637	51	0	14	0	0	0	1,645	0	0	0	0	20	20
102013	15,881	0	2,496	51	332	103	0	0	0	590	0	0	0	0	58	58
103001	280	15	97	3	0	4	19	0	0	366	6	6	3	2	3	3
103002	75,671	2,801	16,806	520	1	4,023	1,569	168	1	26,394	428	451	216	116	861	880
103003	1,637	108	298	9	0	309	16	1	0	1,869	30	32	15	8	27	27
103004	73,821	9,162	28,888	590	0	2,134	0	0	0	30,740	0	0	0	0	1,228	1,379
103005	18,199	898	3,104	63	0	916	0	0	0	9,286	0	0	0	0	796	796
103006	562	0	34,076	1,793	0	4,478	0	0	0	1,179	0	0	0	0	1,065	2,420
103009	240	1,286	2,410	75	0	1,552	0	0	0	961	0	0	0	19	840	858
103012	0	0	0	0	0	0	0	0	0	28	0	0	0	0	0	0
103013	0	0	0	0	4	0	0	0	0	1	0	0	0	0	5	5
103900	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0
105001	28,849	150	9,588	478	0	39,469	0	0	0	2,814	0	0	0	0	3,148	4,727
105002	866	558	806	16	0	201	0	0	0	119	0	0	0	0	198	198
199999	7,870	0	2,170	114	0	452	0	0	0	1,106	0	0	0	0	1,116	1,116
201001	8,837	15	25,647	2,850	0	6,345	0	0	0	1,984	0	0	0	0	1,800	2,103
201002	24	0	69,705	4,449	0	15,030	0	0	0	1,288	0	0	0	0	1,831	6,919
202001	2,917	12	11,082	1,231	0	3,317	0	0	0	741	0	0	0	0	1,376	1,608
202002	4,461	0	548,167	34,989	0	102,457	0	0	0	2,865	0	0	0	0	11,052	75,591
202003	8	0	135	15	0	5,842	0	0	0	170	0	0	0	0	249	290
202004	9	0	573	64	0	166	0	0	0	43	0	0	0	0	16	18
203001	9	0	413	46	0	73	0	0	0	13	0	0	0	0	17	20
203002	3	0	698	45	0	1,239	0	0	0	8	0	0	0	0	9	66
204001	177	0	578	37	0	430	0	0	0	142	0	0	0	0	69	494
204004	53	0	722	80	0	1,089	0	0	0	191	0	0	0	0	336	392
299999	0	0	461	24	0	107	0	0	0	0	0	0	0	0	1	1
301001	1,329	0	3,951	208	0	25,842	0	0	0	88	0	0	0	0	8,272	8,272
301003	1,284	4	6,004	316	0	56,412	0	0	2,820	470	0	0	0	0	14,033	14,033
301005	18,071	0	1,088	57	0	1,670,694	0	0	0	2,584	0	0	0	0	171,953	171,953
301006	1,651	0	17,737	934	0	64,149	0	0	0	69,093	0	0	0	0	85,832	85,832
301007	0	0	0	0	0	0	0	0	0	0	0	0	0	0	660	665
301008	0	0	0	0	0	91	0	0	0	49	0	0	0	0	336	336
301009	681	0	102	5	0	21	0	0	0	938	0	0	0	0	543	543
301010	73	0	2,037	107	0	0	0	0	0	905	0	0	0	0	648	648
301011	0	0	0	0	0	145	663	0	0	46	0	0	0	0	38	87
301012	113	0	0	0	0	0	0	0	0	925	0	0	0	0	0	0
301013	6,645	0	41,309	2,174	0	5,042	0	0	0	1,207	0	0	0	0	1,352	1,352
301014	4,135	0	0	0	0	0	0	0	0	1,689	0	0	0	0	14,524	14,524

	METRIC TONS/YEAR															
6-DIGIT SCC	SO2	SO4	NO	NO2	Pb	CO	HCl	HF	NH3	TSP	Ca	Mg	Na	K	VOC	THC
301015	0	0	0	0	0	0	0	0	0	9	0	0	0	0	5,402	5,402
301016	10,864	0	0	0	0	11	0	1,497	0	968	0	0	0	0	0	0
301017	1	0	72	4	0	0	0	0	0	341	0	0	0	0	10	10
301018	1,640	0	262	14	0	202	0	0	0	53,117	0	0	0	0	95,707	96,456
301019	332	5	0	0	0	19,972	0	0	0	6,526	0	0	0	0	514	1,853
301020	0	0	0	0	0	0	0	0	0	5	0	0	0	0	1,605	1,605
301021	220	0	407	21	0	4,511	0	0	0	4,420	0	0	0	0	198	198
301022	6,990	0	0	0	0	0	0	0	0	327	0	0	0	0	0	0
301023	261,997	1,297	325	17	0	1,102	0	0	0	14,361	0	0	0	0	56	57
301024	6,773	0	2	0	0	3,778	0	0	0	1,094	0	0	0	0	15,621	15,621
301025	548	0	0	0	0	0	0	0	0	38	0	0	0	0	19,804	20,157
301026	4,585	0	256	13	0	17,240	0	0	0	1,306	0	0	0	0	81,764	81,764
301027	909	0	1,675	88	0	7,368	0	0	203,933	10,192	0	0	0	0	41	41
301028	952	0	0	0	0	0	0	0	0	3,094	0	0	0	0	0	0
301029	5,421	0	13	1	0	4	0	27,056	0	559	0	0	0	0	3	3
301030	7,875	0	7,038	370	0	4	0	1,754	695	7,444	0	0	0	0	29	29
301031	0	0	0	0	0	32,530	0	0	0	262	0	0	0	0	53,049	53,049
301032	228,517	2,792	581	31	0	2,126	0	0	0	891	0	0	0	0	1,274	1,274
301033	717	0	583	31	0	0	0	0	0	24	0	0	0	0	2,485	2,485
301034	983	0	3,107	164	0	103	0	0	0	376	0	0	0	0	2,428	2,460
301035	10,201	4	1,235	65	0	24,876	0	0	0	1,492	0	0	0	0	4	6
301036	0	0	0	0	0	0	0	0	0	286	0	0	0	0	0	0
301040	0	0	0	0	0	0	0	0	0	4,361	0	0	0	0	0	0
301041	1,732	5	0	0	0	102	0	0	0	303	0	0	0	0	2,954	3,006
301042	0	0	10	1	0	0	0	0	0	18	0	0	0	0	1,750	1,750
301050	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,079	1,098
301060	205	0	10	1	0	158	0	0	0	3,581	0	0	0	0	1,369	1,392
301091	34	0	38	2	0	0	0	0	0	0	0	0	0	0	723	723
301100	0	0	0	0	0	12,010	0	0	0	0	0	0	0	0	225	225
301111	0	0	0	0	0	0	0	0	0	79	0	0	0	0	0	0
301120	0	0	7	0	0	2	0	0	0	343	0	0	0	0	1,224	1,224
301125	227	0	46	2	0	0	0	0	0	15	0	0	0	0	1,911	1,911
301130	0	0	0	0	0	0	0	0	0	57	0	0	0	0	137	227
301132	63	0	577	30	0	159	0	0	0	246	0	0	0	0	4,147	4,217
301137	435	0	6	0	0	41	0	0	0	0	0	0	0	0	294	299
301156	0	0	0	0	0	0	0	0	0	0	0	0	0	0	118	118
301167	0	0	0	0	0	0	0	0	0	0	0	0	0	0	124	124
301169	0	0	0	0	0	0	0	0	0	0	0	0	0	0	345	345
301174	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,508	1,535
301181	0	0	0	0	0	9	0	0	0	0	0	0	0	0	90	90
301197	2,689	0	318	17	0	1,326	0	0	0	55	0	0	0	0	20,868	20,868
301202	0	0	0	0	0	0	0	0	0	0	0	0	0	0	925	925
301206	0	0	0	0	0	0	0	0	0	0	0	0	0	0	472	472
301250	1	0	2,298	121	0	3,596	0	0	0	5	0	0	0	0	1,244	1,244
301251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	906	906
301253	0	0	0	0	0	0	0	0	0	0	0	0	0	0	96	96
301254	22	0	194	10	0	5,377	0	0	0	0	0	0	0	0	7,579	7,579
301258	0	0	0	0	0	45	0	0	0	3	0	0	0	0	6,719	6,758
301820	220	0	0	0	0	61	0	0	0	27	0	0	0	0	1,683	1,683
301830	0	0	0	0	0	0	0	0	0	165	0	0	0	0	0	0
301888	224	0	4	0	0	33	0	0	0	11,404	0	0	0	0	424	431
301900	165,666	0	440	23	0	22	0	0	0	373	0	0	0	0	591	591
301999	52,368	0	28,237	1,486	0	218,974	0	0	0	47,258	0	0	0	0	191,735	191,735
302001	1	0	170	9	0	14	0	0	0	16,849	0	0	0	0	4	4

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS, POINT SOURCES

6-DIGIT SCC	SO2	SO4	NO	NO2	Pb	CO	HCl	HF	NH3	TSP	Ca	Mg	Na	K	VOC	THC
	METRIC TONS/YEAR															
302002	0	0	53	3	0	44	0	0	0	1,794	0	0	0	0	44	44
302004	0	0	0	0	0	0	0	0	0	561	0	0	0	0	0	0
302005	16	0	1	0	0	0	0	0	0	40,913	0	0	0	0	0	0
302006	5	0	76	4	0	48	0	0	0	181,743	0	0	0	0	0	0
302007	180	0	23	1	0	3	0	0	0	39,119	0	0	0	0	690	6,391
302008	464	0	4	0	0	15	0	0	0	8,782	0	0	0	0	2	2
302009	1,147	0	109	6	0	13	0	0	0	1,465	0	0	0	0	367	1,970
302010	0	0	0	0	0	0	0	0	0	557	0	0	0	0	21,804	21,804
302012	0	0	0	0	0	0	0	0	0	3	0	0	0	0	23	305
302013	0	0	1	0	0	65	0	0	0	25	0	0	0	0	762	778
302014	96	0	0	0	0	0	0	0	0	1,439	0	0	0	0	0	0
302015	1,519	0	0	0	0	16	0	0	0	1,528	0	0	0	0	0	0
302016	634	0	306	16	0	23	0	0	0	7,107	0	0	0	0	6	6
302017	0	0	0	0	0	0	0	0	0	485	0	0	0	0	0	0
302018	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	215
302019	0	0	0	0	0	0	0	0	0	99	0	0	0	0	707	9,238
302020	0	0	0	0	0	0	0	0	691	2,313	0	0	0	0	0	0
302026	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
302030	0	0	1	0	0	0	0	0	0	133	0	0	0	0	0	0
302031	0	0	0	0	0	0	0	0	0	442	0	0	0	0	0	0
302032	1,085	0	0	0	0	0	0	0	0	17	0	0	0	0	4	52
302033	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,735	1,735
302888	0	0	2	0	0	24	0	0	0	347	0	0	0	0	14	147
302999	1,126	0	367	19	0	15	0	0	0	4,641	0	0	0	0	336	4,391
303000	0	0	0	0	0	0	0	0	0	5,169	0	0	0	0	0	0
303001	79,475	509	113,158	5,956	0	615,956	0	8,844	0	42,620	0	0	0	0	14,024	30,027
303002	1,273	0	848	45	0	148	0	0	0	19,326	0	0	0	0	8	8
303003	68,690	11,560	3,681	194	0	34,471	0	0	6,689	53,145	0	0	0	0	29,601	63,380
303004	27	0	3	0	0	10	0	0	0	1,967	0	0	0	0	36	78
303005	997,057	32,109	895	47	145	6,542	0	0	0	18,654	0	0	0	0	15	18
303006	351	0	95	5	54	256	0	0	0	25,589	271	371	345	0	17	20
303007	83	0	0	0	0	329	0	0	0	1,116	0	0	0	0	0	0
303008	57,521	670	14,956	1,079	1,130	1,012,107	0	0	0	148,196	5,898	2,460	2,579	8,343	3,925	16,143
303009	48,773	0	25,042	2,148	1,523	335,050	0	0	0	58,116	0	0	0	0	3,873	4,038
303010	52,529	1,390	2	0	805	39,853	0	0	0	6,467	0	0	0	0	0	0
303011	1,759	0	0	0	0	0	0	0	0	3,601	0	0	0	0	66	66
303012	0	0	141	7	0	4,530	0	0	0	1	0	0	0	0	0	0
303013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
303014	1,999	0	178	9	0	5,390	0	0	0	2,391	0	0	0	0	387	387
303023	9,625	31	0	0	0	0	0	0	0	62,067	304	149	0	0	0	0
303030	34,286	10,185	86	5	349	15	0	0	0	8,035	0	0	0	0	3	5
303888	3	0	1	0	0	0	0	0	0	1,677	0	0	0	0	0	0
303999	2,502	0	93	16	0	501	0	0	0	954	0	0	0	0	76	186
304001	985	0	7,629	402	0	892	0	0	0	10,504	0	0	0	0	3,313	5,234
304002	5	0	803	42	207	3,386	0	0	0	4,400	0	0	0	0	161	254
304003	6,627	8	984	174	451	445,491	0	0	0	33,418	0	0	0	0	1,653	4,053
304004	24,127	89	309	16	250	145	0	0	0	7,884	0	0	0	0	2,987	4,718
304005	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
304006	29	0	3	0	0	5,797	0	0	0	135	32	19	0	0	0	0
304007	6,177	0	2,877	508	0	4,837	0	0	0	5,823	0	0	0	0	94	231
304008	1,555	0	531	28	0	15	0	0	0	2,763	0	0	0	0	3	6
304009	0	0	0	0	0	0	0	0	0	126	0	0	0	0	0	0
304010	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
304020	696	0	2	1	0	3	0	0	0	713	0	0	0	0	151	151

6-DIGIT SCC	SO2	SO4	NO	NO2	Pb	CO	HCl	HF	NH3	TSP	Ca	Mg	Na	K	VOC	THC
	METRIC TONS/YEAR															
304022	1	0	763	40	0	24	0	0	0	116	0	0	0	0	187	295
304034	61	0	147	8	0	0	0	0	0	0	0	0	0	0	0	0
304050	0	0	0	0	0	503	0	0	0	23	0	0	0	0	433	683
304888	0	0	0	0	0	0	0	0	0	70	0	0	0	0	1	1
304999	2,429	0	235	12	0	229	0	0	0	2,894	0	0	0	0	511	807
305001	9	0	3	0	0	2,114	0	0	0	4,216	0	0	0	0	2,608	2,614
305002	38,414	0	8,274	435	0	5,436	0	0	0	66,244	0	0	0	0	562	1,277
305003	5,704	24	3,199	135	0	1,797	0	0	0	117,001	0	0	0	0	743	1,549
305004	151	1	0	0	0	41	0	0	0	430	0	0	0	0	278	278
305005	752	0	777	41	0	58	0	0	0	7,298	0	0	0	0	17	41
305006	169,728	2,056	47,330	1,035	274	1,176	0	0	0	122,745	34,982	957	0	0	393	441
305007	144,117	6,905	52,135	1,142	188	2,020	0	0	0	194,550	0	0	0	0	410	465
305008	415	0	111	4	0	1	0	0	0	19,039	162	171	0	0	32	86
305009	428	0	161	8	0	4	0	0	0	8,635	0	0	0	0	9	26
305010	10,590	33	3,205	100	0	124	0	0	0	49,225	0	0	0	0	2,057	2,101
305011	0	0	3,780	199	0	78	0	0	0	3,199	1,471	48	0	0	5	15
305012	5,019	14	4,934	260	0	934	0	0	0	17,264	0	0	0	0	1,343	3,836
305013	0	0	0	0	0	0	0	0	0	87	0	0	0	0	67	191
305014	25,948	79	36,895	1,942	899	9,811	0	0	0	13,412	0	0	0	0	1,769	4,825
305015	235	11,980	59	2	0	15	0	0	0	19,645	0	0	0	0	7	10
305016	14,458	0	24,192	748	0	26,954	0	0	0	78,830	26,716	3,949	394	0	916	935
305017	1,159	0	110	6	0	9,803	0	0	0	2,820	0	0	0	0	45	71
305018	0	0	0	0	0	0	0	0	0	978	0	0	0	0	45	128
305019	24,029	0	558	29	0	3	0	0	0	15,795	0	0	0	0	0	1
305020	1,817	0	562	30	0	30	0	0	0	321,754	18,565	5,438	0	0	54	155
305021	399	0	535	28	0	0	0	0	0	750	0	0	0	0	0	0
305022	0	0	0	0	0	0	0	0	0	2,295	0	0	0	0	0	0
305024	0	0	55	3	0	39	0	0	0	12,346	0	0	0	0	0	0
305025	71	0	55	3	0	3	0	0	0	19,200	125	134	0	0	1	2
305026	3	0	9	0	0	5	0	0	0	560	0	0	0	0	0	0
305031	0	0	0	0	0	0	0	0	0	265	0	0	0	0	0	0
305032	0	0	0	0	0	1	0	0	0	75	0	0	0	0	858	2,452
305040	5,002	0	2,127	112	0	347	0	0	0	29,445	0	0	0	0	37	105
305100	109	0	0	0	0	0	0	0	0	1,119	0	0	0	0	0	0
305103	0	0	0	0	0	0	0	0	0	575	0	0	0	0	0	0
305888	265	0	0	0	0	234	0	0	0	2,918	0	0	0	0	158	158
305999	6,269	0	1,528	80	0	7,513	0	0	0	33,530	0	0	0	0	1,958	5,595
306001	269,085	678	168,912	7,184	0	16,678	0	0	0	16,992	0	0	0	0	5,696	10,347
306002	239,149	7,796	35,166	6,206	0	1,236,986	0	0	7,645	41,514	0	0	0	0	57,459	89,771
306003	8,595	10	348	61	0	93,256	0	0	79	2,810	0	0	0	0	2,081	3,251
306004	11,023	51	7,371	388	0	1,733	0	0	0	15	0	0	0	0	14,182	16,617
306005	1,219	0	12	1	0	31	0	0	0	218	0	0	0	0	97,232	101,939
306006	1,115	0	94	14	0	8	0	0	0	5	0	0	0	0	31,343	38,524
306007	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6,215	6,215
306008	1,800	0	2,143	113	0	120	0	0	0	148	0	0	0	0	74,000	84,464
306009	14,591	0	1,555	82	0	94	0	0	0	355	0	0	0	0	5,270	10,542
306010	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,287	1,287
306011	76	0	45	2	0	352	0	0	0	33	0	0	0	0	45,366	54,728
306012	17,650	0	1,612	284	0	5	0	0	0	46,617	0	0	0	0	1,749	2,733
306014	3,648	0	1,044	55	0	43	0	0	0	1,620	0	0	0	0	214	486
306100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,537	2,537
306888	425	0	206	11	0	0	0	0	0	158	0	0	0	0	19,044	27,355
306999	55,433	0	4,875	257	0	52,092	0	0	0	3,063	0	0	0	0	32,563	49,640
307001	96,249	37,714	40,894	2,152	0	647,521	0	0	0	71,313	86	0	984	0	10,445	10,598

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS, POINT SOURCES

6-DIGIT SCC	SO2	SO4	NO	NO2	Pb	CO	HCl	HF	NH3	TSP	Ca	Mg	Na	K	VOC	THC
	METRIC TONS/YEAR															
307002	27,594	4,939	1,591	84	0	250	0	0	0	2,510	0	0	0	0	215	215
307003	9	0	0	0	0	0	0	0	0	81	0	0	0	0	160	160
307004	0	0	47	2	0	0	0	0	0	1,127	0	0	0	0	1,957	1,957
307005	0	0	0	0	0	0	0	0	0	1	0	0	0	0	221	221
307007	337	0	4,137	218	0	1,334	0	0	0	41,480	0	0	0	0	5,950	5,950
307008	2,788	0	3,161	166	0	692	0	0	0	11,994	0	0	0	0	1,745	1,745
307011	5	0	0	0	0	0	0	0	0	0	0	0	0	0	7,700	7,700
307013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	142	142
307020	2	0	0	0	0	0	0	0	0	12,039	0	0	0	0	4,154	4,154
307030	6	0	41	2	0	134	0	0	0	2,485	0	0	0	0	171	171
307888	0	0	0	0	0	0	0	0	0	765	0	0	0	0	648	648
307999	834	0	589	31	0	8,674	0	0	0	4,756	0	0	0	0	1,467	1,467
308001	0	0	0	0	0	0	0	0	0	165	0	0	0	0	10,046	10,046
308006	0	0	105	6	0	31	0	0	0	230	0	0	0	0	937	937
308007	0	0	0	0	0	0	0	0	0	112	0	0	0	0	6,181	6,181
309001	0	0	0	0	0	0	0	0	0	84	0	0	0	0	423	669
309002	0	0	0	0	0	0	0	0	0	694	0	0	.0	0	0	0
309010	0	0	0	0	0	0	0	0	0	70	0	0	0	0	1,807	2,502
309011	0	0	0	0	0	0	0	0	0	0	0	0	0	0	44	61
309020	0	0	3	0	0	1	0	0	0	55	0	0	0	0	4,037	6,378
309030	0	0	0	0	0	0	0	0	0	2,421	0	0	0	0	684	948
309060	0	0	0	0	0	0	0	0	0	122	0	0	0	0	0	0
309888	0	0	0	0	0	0	0	0	0	81,898	0	0	0	0	63	87
309999	127	0	336	18	0	3	0	0	0	1,834	0	0	0	0	2,901	2,901
310001	942	0	0	0	0	0	0	0	0	653	0	0	0	0	11,920	11,920
310002	975	5	2,503	132	0	1,445	0	0	0	455	0	0	0	0	730	782
312999	0	0	6	0	0	2	0	0	0	218	0	0	0	0	0	0
320999	0	0	0	0	0	0	0	0	0	4	0	0	0	0	380	380
330001	39	0	16	1	0	3	0	0	0	1,110	0	0	0	0	20,300	20,300
330002	0	0	0	0	0	0	0	0	0	89	0	0	0	0	3,417	3,417
330003	1	0	1	0	0	1	0	0	0	77	0	0	0	0	74	74
330004	0	0	0	0	0	0	0	0	0	13	0	0	0	0	85	85
390001	819	0	1,785	55	0	109	0	0	0	388	6	7	3	2	5	5
390002	65,221	174	2,431	75	0	26,743	0	0	0	7,774	126	133	64	34	602	615
390004	42,565	58	5,942	125	0	912	0	0	0	2,773	0	0	0	0	1,559	1,752
390005	3,655	8	3,156	64	0	1,619	0	0	0	3,857	0	0	0	0	780	780
390006	34,611	99	24,323	1,280	0	47,409	0	0	0	10,368	0	0	0	0	10,216	23,127
390007	12,159	0	2,050	108	0	20,158	0	0	0	2,282	0	0	0	0	212	367
390008	5,081	2	958	50	0	30,990	0	0	0	386	0	0	0	0	42	42
390009	0	0	295	16	0	0	0	0	0	1,462	1	1	1	29	118	118
390010	0	0	9	0	0	1	0	0	0	767	0	0	0	0	686	1,558
390012	56	0	0	0	0	0	0	0	0	9	0	0	0	0	0	0
390013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
399999	26,501	0	12,583	662	0	70,002	0	0	0	44,356	0	0	0	0	82,052	186,464
401001	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6,925	6,925
401002	297	0	2	0	0	3	0	0	0	186	0	0	0	0	91,100	91,100
401003	0	0	1	0	0	0	0	0	0	0	0	0	0	0	836	836
401888	0	0	0	0	0	0	0	0	0	0	0	0	0	0	369	369
401913	0	0	0	0	0	0	0	0	0	0	0	0	0	0	60	60
402001	2	0	274	14	0	76	0	0	0	992	0	0	0	0	222,751	222,751
402002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,828	1,828
402003	0	0	0	0	0	0	0	0	0	93	0	0	0	0	30,852	30,852
402004	0	0	7	0	0	1	0	0	0	413	0	0	0	0	127,670	127,670
402005	0	0	256	13	0	166	0	0	0	441	0	0	0	0	111,179	111,179

6-DIGIT SCC	SO2	SO4	NO	NO2	Pb	CO	HCl	HF	NH3	TSP	Ca	Mg	Na	K	VOC	THC
	METRIC TONS/YEAR															
402006	0	0	6	0	0	1	0	0	0	1,024	0	0	0	0	71,317	71,317
402007	2	0	15	2	0	1,858	0	0	0	63	0	0	0	0	20,478	20,478
402008	175	0	147	16	0	522	0	0	0	1,364	0	0	0	0	19,384	55,748
402009	1	0	533	28	0	38	0	0	0	742	0	0	0	0	200,625	200,625
402010	0	0	43	2	0	12	0	0	0	10	0	0	0	0	3,500	3,500
402011	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,749	1,749
402013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14,985	14,985
402014	0	0	0	0	0	0	0	0	0	0	0	0	0	0	93	93
402016	0	0	0	0	0	0	0	0	0	3	0	0	0	0	837	837
402017	0	0	427	22	0	75	0	0	0	0	0	0	0	0	28,821	29,064
402018	0	0	2	0	0	0	0	0	0	0	0	0	0	0	285	285
402019	0	0	0	0	0	0	0	0	0	0	0	0	0	0	306	306
402020	0	0	0	0	0	0	0	0	0	0	0	0	0	0	431	471
402021	0	0	0	0	0	0	0	0	0	0	0	0	0	0	127	127
402022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4,590	4,590
402023	0	0	0	0	0	0	0	0	0	44	0	0	0	0	222	222
402024	0	0	0	0	0	0	0	0	0	2	0	0	0	0	16	16
402025	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,501	1,501
402888	5	0	0	0	0	0	0	0	0	0	0	0	0	0	26,391	26,391
402901	0	0	0	0	0	0	0	0	0	0	0	0	0	0	58	58
402999	0	0	590	31	0	505	0	0	0	7,914	0	0	0	0	80,558	80,558
403001	386	0	3	0	0	1	0	0	0	1,560	0	0	0	0	146,533	155,033
403002	0	0	0	0	0	0	0	0	0	122	0	0	0	0	60,472	61,082
403003	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3,482	3,509
403010	0	0	86	5	0	60,679	0	0	0	324	0	0	0	0	37,626	38,351
403011	3,946	0	838	44	0	30,340	0	0	0	1,007	0	0	0	0	31,518	31,738
403012	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21,256	21,256
403888	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4,198	4,296
403999	202	0	0	0	0	80	0	0	0	326	0	0	0	0	27,011	27,011
404001	0	0	69	4	0	0	0	0	0	2,705	0	0	0	0	103,358	103,358
404002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,000	2,000
405001	0	0	9	0	0	13	0	0	0	48	0	0	0	0	22,055	91,935
405002	0	0	9	0	0	0	0	0	0	0	0	0	0	0	3,324	13,750
405003	0	0	250	13	0	34	0	0	0	41	0	0	0	0	13,920	13,920
405004	0	0	5	0	0	0	0	0	0	0	0	0	0	0	24,978	24,978
405005	0	0	26	1	0	15	0	0	0	384	0	0	0	0	60,450	60,450
405006	0	0	0	0	0	0	0	0	0	0	0	0	0	0	381	381
405888	3	0	0	0	0	0	0	0	0	0	0	0	0	0	509	957
406001	0	0	0	0	0	91,019	0	0	0	1,576	0	0	0	0	82,286	82,970
406002	0	0	0	0	0	0	0	0	0	2	0	0	0	0	19,730	20,516
406003	0	0	0	0	0	0	0	0	0	29	0	0	0	0	5,215	5,215
406004	0	0	0	0	0	0	0	0	0	15	0	0	0	0	8,043	8,043
406888	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,855	2,855
490001	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,920	2,633
490999	0	0	3	0	0	0	0	0	0	404	0	0	0	0	86,421	118,510
501001	4,828	8	4,303	759	130	52,619	4,860	0	0	11,377	65	16	65	55	1,189	6,062
501002	255	0	1,347	238	0	23,531	0	0	0	4,450	23	6	23	20	11,442	11,442
501005	346	0	1,235	218	2	1,804	24	0	0	5,414	1	0	1	0	66	368
501900	1,033	0	0	0	0	18	0	0	0	260	0	0	0	0	0	2
501999	5	0	0	0	0	31	0	0	0	27	0	0	0	0	5	5
502001	1,906	4	1,533	271	72	13,200	1,909	0	0	1,667	9	2	9	8	1,114	2,400
502002	0	0	12	2	0	523	0	0	0	64	0	0	0	1	31	161
502003	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
502005	1,706	11	9,09[illegible]	1,605	21	0	0	0	0	1,745	0	0	0	0	347	2,052

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS, POINT SOURCES

6-DIGIT SCC	SO2	SO4	NO	NO2	Pb	CO	HCl	HF	NH3	TSP	Ca	Mg	Na	K	VOC	THC
	METRIC TONS/YEAR															
502900	485	0	9	0	0	1	0	0	0	113	0	0	0	0	75	170
503001	15,967	4	6,051	1,068	84	198,278	2,804	0	0	17,476	0	0	0	0	4,989	25,435
503002	57	0	514	91	0	20,332	0	0	0	1,601	0	0	0	0	3,849	6,685
503005	794	2	2,074	366	4	318	0	0	0	14,633	0	0	0	0	73	432
503007	0	0	0	0	0	0	0	0	0	86	0	0	0	0	0	0
503900	1,888	0	622	110	0	2,080	0	0	0	534	0	0	0	0	165	839
599999	142	0	0	0	0	0	0	0	0	0	0	0	0	0	17	89
U.S. TOTAL	22,230,755	658,038	8,423,019	325,222	6,981	8,281,040	471,429	102,680	222,688	3,959,255	103,247	29,053	11,771	14,038	3,595,476	4,224,879

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS OF HYDROCARBON SPECIES, POINT SOURCES

	THOUSAND MOLES/YEAR											
6-DIGIT SCC	Methane	Ethane	Propane	Butane	Iso-Butane	Pentane	Iso-Pentane	Alkanes	Ethylene	Propylene	Iso-Butene	Alkenes
101002	0	16,754	9,574	4,069	0	0	4,069	44,995	0	0	0	32,789
101003	0	1,311	749	318	0	0	318	3,522	0	0	0	2,567
101004	88,645	0	0	31,142	0	0	0	7,495	0	0	0	0
101005	0	0	11	85	29	26	0	135	0	0	0	0
101006	98,052	0	2,556	4,354	0	2,331	0	4,157	0	0	0	0
102001	482	2	14	22	0	11	0	26	0	0	0	4
102002	0	4,187	2,393	1,017	0	0	1,017	11,246	0	0	0	8,195
102003	0	86	49	21	0	0	21	230	0	0	0	168
102004	351,502	0	0	123,487	0	0	0	29,719	0	0	0	0
102005	0	0	3,926	30,537	10,324	9,452	0	48,277	0	0	0	0
102006	921,908	0	24,031	40,933	0	21,919	0	39,084	0	0	0	0
102007	84,333	66,268	40,512	37,490	7,177	0	0	238	3,197	39,338	0	0
102008	0	192	110	47	0	0	47	515	0	0	0	375
102009	0	40,506	23,146	9,837	0	0	9,837	108,788	0	0	0	79,276
102010	689	0	18	31	0	16	0	29	0	0	0	0
102011	0	0	0	0	0	0	0	42,762	0	0	0	0
102012	0	14	8	3	0	0	3	38	0	0	0	27
102013	0	0	16	123	41	38	0	194	0	0	0	0
103001	0	2	1	0	0	0	0	5	0	0	0	4
103002	0	616	352	150	0	0	150	1,654	0	0	0	1,206
103003	0	19	11	5	0	0	5	51	0	0	0	37
103004	9,463	0	0	3,325	0	0	0	800	0	0	0	0
103005	0	0	215	1,671	565	517	0	2,642	0	0	0	0
103006	84,487	0	2,202	3,751	0	2,009	0	3,582	0	0	0	0
103009	0	601	343	146	0	0	146	1,613	0	0	0	1,176
103012	0	0	0	0	0	0	0	0	0	0	0	0
103013	0	0	1	11	4	3	0	18	0	0	0	0
103900	0	0	0	0	0	0	0	0	0	0	0	0
105001	98,396	0	3,080	8,376	1,355	3,580	0	10,506	0	0	0	0
105002	0	0	53	416	141	129	0	658	0	0	0	0
199999	0	0	0	0	0	0	0	12,977	0	0	0	0
201001	15,204	1,956	0	0	0	0	0	9,127	21,513	8,643	0	7,739
201002	307,687	5,093	3,472	260	260	0	0	0	551	0	0	0
202001	11,623	1,495	0	0	0	0	0	6,977	16,445	6,607	0	5,916
202002	3,570,313	241,777	164,815	12,343	12,343	0	0	0	26,138	0	0	0
202003	2,099	270	0	0	0	0	0	1,260	2,970	1,193	0	1,068
202004	131	17	0	0	0	0	0	79	186	75	0	67
203001	144	19	0	0	0	0	0	87	204	82	0	73
203002	3,126	220	150	11	11	0	0	0	24	0	0	0
204001	23,404	1,645	1,121	84	84	0	0	0	178	0	0	0
204004	2,834	364	0	0	0	0	0	1,701	4,009	1,611	0	1,442
299999	7	1	0	0	0	0	0	4	9	4	0	3
301001	0	0	14,214	33,823	0	0	0	54,339	19,025	5,287	0	7,511
301003	0	0	0	0	0	0	0	161,350	2,384	662	0	941
301005	0	0	0	0	0	0	0	1,018,211	1,263,935	351,275	0	499,008
301006	0	0	0	0	0	0	0	484,949	660,904	183,680	0	260,928
301007	234	47	0	0	0	0	0	3,751	3,486	1,054	0	1,460
301008	0	0	0	0	0	0	0	3,904	0	0	0	0
301009	0	0	0	0	0	0	0	3,070	4,184	1,163	0	1,652
301010	0	0	0	0	0	0	0	7,533	0	0	0	0
301011	3,030	0	79	135	0	72	0	128	0	0	0	0
301012	0	0	[illegible]	0	0	0	0	0	0	0	0	0
301013	0	0	[illegible]	0	0	0	0	7,640	10,413	2,894	0	4,111
301014	0	0	[illegible]	0	0	0	0	6,972	0	0	0	0

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS OF HYDROCARBON SPECIES, POINT SOURCES

	THOUSAND MOLES/YEAR											
6-DIGIT SCC	Methane	Ethane	Propane	Butane	Iso-Butane	Pentane	Iso-Pentane	Alkanes	Ethylene	Propylene	Iso-Butene	Alkenes
301015	0	0	0	0	0	0	0	2,593	0	0	0	0
301016	0	0	0	0	0	0	0	0	0	0	0	0
301017	0	0	0	0	0	0	0	116	0	0	0	0
301018	33,822	6,850	0	0	0	0	0	266,770	92,904	697,171	0	427,871
301019	83,036	216	333	633	117	0	0	4,997	0	1,232	0	0
301020	0	0	0	0	0	0	0	18,712	0	0	0	0
301021	0	0	0	0	0	0	0	2,300	0	0	0	0
301022	0	0	0	0	0	0	0	0	0	0	0	0
301023	45	9	0	0	0	0	0	319	123	50	0	65
301024	0	0	0	0	0	0	0	81,089	0	0	0	122,799
301025	15,924	3,225	0	0	0	0	0	113,483	43,740	17,940	0	22,979
301026	0	0	0	0	0	0	0	860,875	0	0	0	0
301027	0	0	0	0	0	0	0	475	0	0	0	0
301028	0	0	0	0	0	0	0	0	0	0	0	0
301029	0	0	0	0	0	0	0	32	0	0	0	0
301030	0	0	0	0	0	0	0	338	0	0	0	0
301031	0	0	0	0	0	0	0	616,954	0	0	0	0
301032	0	0	0	0	0	0	0	14,813	0	0	0	0
301033	0	0	1,019	1,888	596	1,093	0	13,418	0	0	0	0
301034	1,412	286	0	0	0	0	0	17,880	3,878	1,591	0	2,037
301035	103	0	3	5	0	2	0	20	22	6	0	9
301036	0	0	0	0	0	0	0	0	0	0	0	0
301040	0	0	0	0	0	0	0	0	0	0	0	0
301041	2,375	481	0	0	0	0	0	16,925	6,524	2,676	0	3,427
301042	0	0	0	0	0	0	0	20,352	0	0	0	0
301050	868	176	0	0	0	0	0	6,183	2,383	977	0	1,252
301060	1,064	216	0	0	0	0	0	8,112	2,923	1,199	0	1,536
301091	0	0	0	0	0	0	0	8,409	0	0	0	0
301100	0	0	0	0	0	0	0	2,617	0	0	0	0
301111	0	0	0	0	0	0	0	0	0	0	0	0
301120	0	0	109	850	288	263	0	10,872	0	0	0	0
301125	0	0	0	0	0	0	0	19,679	0	0	0	0
301130	5,577	0	145	248	0	133	0	1,017	0	0	0	0
301132	3,128	633	0	0	0	0	0	25,285	8,591	3,523	0	4,513
301137	236	48	0	0	0	0	0	1,685	649	266	0	341
301156	0	0	0	0	0	0	0	1,372	0	0	0	0
301167	0	0	0	0	0	0	0	1,445	0	0	0	0
301169	0	0	0	0	0	0	0	4,009	0	0	0	0
301174	1,212	246	0	0	0	0	0	8,640	3,330	1,366	0	1,750
301181	0	0	0	0	0	0	0	1,045	0	0	0	0
301197	0	0	0	0	0	0	0	242,699	0	0	0	0
301202	0	0	0	0	0	0	0	10,762	0	0	0	0
301206	0	0	0	0	0	0	0	5,486	0	0	0	0
301250	0	0	0	0	0	0	0	26,052	1,231	342	0	486
301251	0	0	0	0	0	0	0	10,540	0	0	0	0
301253	0	0	0	0	0	0	0	1,118	0	0	0	0
301254	0	0	0	0	0	0	0	88,141	0	0	0	0
301258	1,773	359	0	0	0	0	0	22,535	4,871	1,998	0	2,559
301820	0	0	0	0	0	0	0	19,572	0	0	0	0
301830	0	0	0	0	0	0	0	0	0	0	0	0
301888	340	69	0	0	0	0	0	2,432	933	383	0	490
301900	0	0	0	0	0	0	0	3,339	4,551	1,265	0	1,797
301999	0	0	0	0	0	0	0	1,083,300	1,476,356	410,312	0	582,873
302001	0	0	0	0	0	0	0	42	0	0	0	0

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS OF HYDROCARBON SPECIES, POINT SOURCES

	THOUSAND MOLES/YEAR											
6-DIGIT SCC	Methane	Ethane	Propane	Butane	Iso-Butane	Pentane	Iso-Pentane	Alkanes	Ethylene	Propylene	Iso-Butene	Alkenes
302002	0	0	0	0	0	0	0	945	0	0	0	0
302004	0	0	0	0	0	0	0	0	0	0	0	0
302005	0	0	0	0	0	0	0	0	0	0	0	0
302006	0	0	0	0	0	0	0	0	0	0	0	0
302007	355,417	0	247	247	123	185	0	7,011	3,025	617	0	1,543
302008	0	0	0	0	0	0	0	21	0	0	0	0
302009	99,927	0	69	69	35	52	0	5,724	851	174	0	434
302010	0	0	0	0	0	0	0	473,357	0	0	0	0
302012	17,570	0	12	12	6	9	0	113	150	31	0	76
302013	0	545	311	132	0	0	132	1,463	0	0	0	1,066
302014	0	0	0	0	0	0	0	0	0	0	0	0
302015	0	0	0	0	0	0	0	0	0	0	0	0
302016	0	0	0	0	0	0	0	138	0	0	0	0
302017	0	0	0	0	0	0	0	0	0	0	0	0
302018	12,393	0	9	9	4	6	0	80	105	22	0	54
302019	531,844	0	370	370	185	277	0	3,418	4,527	924	0	2,310
302020	0	0	0	0	0	0	0	0	0	0	0	0
302026	0	0	0	0	0	0	0	0	0	0	0	0
302030	0	0	0	0	0	0	0	0	0	0	0	0
302031	0	0	0	0	0	0	0	0	0	0	0	0
302032	2,981	0	2	2	1	2	0	19	25	5	0	13
302033	0	0	0	0	0	0	0	20,184	0	0	0	0
302888	8,314	0	6	6	3	4	0	85	71	14	0	36
302999	252,771	0	176	176	88	132	0	1,625	2,151	439	0	1,098
303000	0	0	0	0	0	0	0	0	0	0	0	0
303001	847,949	79,871	3,303	0	0	0	0	13,812	296,662	13,512	0	3,303
303002	0	0	0	0	0	0	0	95	0	0	0	0
303003	1,789,843	168,590	6,972	0	0	0	0	29,155	626,192	28,521	0	6,972
303004	2,203	208	9	0	0	0	0	36	771	35	0	9
303005	179	0	0	0	0	0	0	164	0	0	0	0
303006	197	0	0	0	0	0	0	180	0	0	0	0
303007	0	0	0	0	0	0	0	0	0	0	0	0
303008	731,590	16,053	10	1	0	1	0	91,835	33,915	11,337	0	13
303009	9,438	445	1,182	3	0	3	0	37,057	1,632	109	0	43
303010	0	0	0	0	0	0	0	0	0	0	0	0
303011	0	0	0	0	0	0	0	770	0	0	0	0
303012	0	0	0	0	0	0	0	0	0	0	0	0
303013	0	0	0	0	0	0	0	0	0	0	0	0
303014	0	0	0	0	0	0	0	4,505	0	0	0	0
303023	0	0	0	0	0	0	0	0	0	0	0	0
303030	154	14	1	0	0	0	0	3	54	2	0	1
303888	0	0	0	0	0	0	0	0	0	0	0	0
303999	6,260	326	24	2	0	2	0	190	1,195	80	0	32
304001	119,749	0	2,512	6,856	1,099	2,983	0	16,120	0	0	0	0
304002	5,819	0	122	333	53	145	0	783	0	0	0	0
304003	136,346	7,093	527	41	0	41	0	4,134	26,021	1,743	0	689
304004	107,958	0	2,265	6,181	991	2,690	0	14,533	0	0	0	0
304005	0	0	0	0	0	0	0	0	0	0	0	0
304006	0	0	0	0	0	0	0	0	0	0	0	0
304007	7,756	403	30	2	0	2	0	235	1,480	99	0	39
304008	127	0	3	7	1	3	0	17	0	0	0	0
304009	0	0	0	0	0	0	0	0	0	0	0	0
304010	0	0	0	0	0	0	0	0	0	0	0	0
304020	0	0	0	0	0	0	0	851	1,159	322	0	458

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6-DIGIT SCC	Methane	Ethane	Propane	Butane	Iso-Butane	Pentane	Iso-Pentane	Alkanes	Ethylene	Propylene	Iso-Butene	Alkenes
	THOUSAND MOLES/YEAR											
304022	6,755	0	142	387	62	168	0	909	0	0	0	0
304034	0	0	0	0	0	0	0	0	0	0	0	0
304050	15,636	0	328	895	144	390	0	2,105	0	0	0	0
304888	0	0	0	0	0	0	0	11	0	0	0	0
304999	18,470	0	387	1,057	170	460	0	2,486	0	0	0	0
305001	0	190	1,694	1,780	792	1,430	0	20,507	408	0	0	0
305002	44,585	0	1,162	1,980	0	1,060	0	1,890	0	0	0	0
305003	49,586	375	1,098	2,004	537	968	7	2,545	313	194	0	270
305004	0	0	0	0	0	0	0	3,229	0	0	0	0
305005	1,459	5	34	57	6	30	0	59	5	3	0	3
305006	2,993	0	0	1,052	0	0	0	306	0	0	0	0
305007	3,395	4	4	1,109	5	2	0	275	4	2	0	2
305008	3,286	51	48	73	61	32	0	115	46	28	0	32
305009	1,005	16	15	20	19	10	0	35	14	9	0	10
305010	0	1,471	840	357	0	0	357	3,950	0	0	0	2,878
305011	574	9	8	12	11	6	0	20	8	5	0	6
305012	151,073	2,340	2,225	3,031	2,839	1,458	0	5,256	2,110	1,304	0	1,458
305013	7,534	117	111	151	142	73	0	262	105	65	0	73
305014	186,039	2,401	3,092	4,487	2,913	2,233	0	6,708	2,165	1,338	0	1,496
305015	179	7	5	5	3	2	1	16	3	2	0	9
305016	0	655	374	159	0	0	159	1,758	0	0	0	1,281
305017	1,619	0	34	93	15	40	0	218	0	0	0	0
305018	5,023	78	74	101	94	48	0	175	70	43	0	48
305019	34	0	1	2	0	1	0	1	0	0	0	0
305020	6,099	94	90	122	115	59	0	212	85	53	0	59
305021	0	0	0	0	0	0	0	0	0	0	0	0
305022	0	0	0	0	0	0	0	0	0	0	0	0
305024	0	0	0	0	0	0	0	0	0	0	0	0
305025	36	1	1	1	1	0	0	12	1	0	0	0
305026	0	0	0	0	0	0	0	0	0	0	0	0
305031	0	0	0	0	0	0	0	0	0	0	0	0
305032	96,542	1,495	1,422	1,937	1,814	932	0	3,359	1,348	834	0	932
305040	4,124	63	61	84	77	40	0	144	57	35	0	39
305100	0	0	0	0	0	0	0	0	0	0	0	0
305103	0	0	0	0	0	0	0	0	0	0	0	0
305888	0	0	0	0	0	0	0	1,836	0	0	0	0
305999	220,313	3,413	3,245	4,420	4,140	2,126	0	7,665	3,077	1,902	0	2,126
306001	289,960	0	7,104	18,222	0	6,480	0	13,027	0	0	0	0
306002	2,014,467	0	0	0	0	0	0	135,555	0	0	0	0
306003	72,956	0	0	0	0	0	0	4,909	0	0	0	0
306004	7,972	76,726	86,263	55,374	50,676	427	0	27,408	18,341	5,097	0	7,241
306005	184,509	58,105	136,598	250,769	78,493	169,218	0	650,367	0	0	0	0
306006	424,946	12,144	28,549	52,412	16,405	35,367	0	161,930	0	0	0	0
306007	0	0	0	0	0	0	0	86,143	0	0	0	0
306008	493,389	84,802	267,529	204,879	70,901	111,250	0	386,277	0	27,257	0	1,952
306009	131,456	105,207	71,790	0	0	0	0	0	0	0	0	0
306010	0	0	0	0	0	0	0	14,971	0	0	0	0
306011	30,648	294,983	331,650	212,891	194,831	1,642	0	53,633	0	0	0	0
306012	61,323	0	0	0	0	0	0	4,126	0	0	0	0
306014	16,973	0	44[illegible]	754	0	404	0	720	0	0	0	0
306100	0	0	[illegible]	0	0	0	0	29,500	0	0	0	0
306888	430,702	46,621	63,04[illegible]	76,091	30,678	25,847	0	91,761	662	667	0	262
306999	885,084	95,806	129,5[illegible]	156,367	63,043	53,115	0	113,180	0	993	0	0
307001	9,571	0	2[illegible]	425	0	228	0	120,473	0	0	0	0

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS OF HYDROCARBON SPECIES, POINT SOURCES

6-DIGIT SCC	Methane	Ethane	Propane	Butane	Iso-Butane	Pentane	Iso-Pentane	Alkanes	Ethylene	Propylene	Iso-Butene	Alkenes
	THOUSAND MOLES/YEAR											
307002	0	0	0	0	0	0	0	2,501	0	0	0	0
307003	0	0	0	0	0	0	0	1,857	0	0	0	0
307004	0	0	0	0	0	0	0	22,758	0	0	0	0
307005	0	0	0	0	0	0	0	2,574	0	0	0	0
307007	0	0	0	0	0	0	0	69,202	0	0	0	0
307008	0	0	0	0	0	0	0	20,289	0	0	0	0
307011	0	0	0	0	0	0	0	52,439	0	0	0	4,620
307013	0	0	0	0	0	0	0	1,656	0	0	0	0
307020	0	0	0	0	0	0	0	48,312	0	0	0	0
307030	0	0	0	0	0	0	0	1,994	0	0	0	0
307888	0	0	0	0	0	0	0	7,533	0	0	0	0
307999	0	0	0	0	0	0	0	17,061	0	0	0	0
308001	0	0	0	0	0	0	0	101,220	3,096	861	0	1,222
308006	0	0	0	0	0	0	0	9,756	0	0	0	0
308007	0	0	0	0	0	0	0	71,882	0	0	0	0
309001	15,307	0	321	876	140	381	0	2,061	0	0	0	0
309002	0	0	0	0	0	0	0	0	0	0	0	0
309010	43,315	25	751	1,101	100	851	0	5,930	0	2,352	0	2,077
309011	1,057	1	18	27	2	21	0	145	0	57	0	51
309020	145,935	0	3,062	8,356	1,339	3,636	0	19,645	0	0	0	0
309030	16,408	9	284	417	38	322	0	2,246	0	891	0	787
309060	0	0	0	0	0	0	0	0	0	0	0	0
309888	1,507	1	26	38	3	30	0	206	0	82	0	72
309999	0	0	0	0	0	0	0	25,009	0	0	0	0
310001	0	0	0	0	0	0	0	138,626	0	0	0	0
310002	870	1,276	788	729	140	0	0	3,382	4,609	2,045	0	1,820
312999	0	0	0	0	0	0	0	0	0	0	0	0
320999	0	0	0	0	0	0	0	3,277	0	0	0	0
330001	0	0	0	0	0	0	0	174,990	0	0	0	0
330002	0	0	0	0	0	0	0	23,266	0	0	0	2,050
330003	0	0	0	0	0	0	0	641	0	0	0	0
330004	0	0	0	0	0	0	0	992	0	0	0	0
390001	0	4	2	1	0	0	1	10	0	0	0	7
390002	0	431	246	105	0	0	105	1,156	0	0	0	843
390004	11,985	0	0	4,210	0	0	0	1,066	0	0	0	0
390005	0	0	211	1,638	554	507	0	2,589	0	0	0	0
390006	804,971	0	20,983	35,741	0	19,139	0	34,928	0	0	0	0
390007	9,300	171	0	0	0	0	0	21	365	478	0	416
390008	0	0	0	0	0	0	0	485	0	0	0	0
390009	0	0	0	0	0	0	0	1,372	0	0	0	0
390010	54,397	0	1,418	2,415	0	1,293	0	2,306	0	0	0	0
390012	0	0	0	0	0	0	0	0	0	0	0	0
390013	0	0	0	0	0	0	0	0	0	0	0	0
399999	6,509,452	0	169,682	289,019	0	154,765	0	275,966	0	0	0	0
401001	0	0	0	0	0	0	0	24,026	0	0	0	21,745
401002	0	0	0	0	0	0	0	444,264	0	0	0	182,616
401003	0	0	0	0	0	0	0	8,652	0	0	0	697
401888	0	0	0	0	0	0	0	3,181	0	0	0	0
401913	0	0	0	0	27	0	0	499	0	0	0	181
402001	0	0	0	0	0	0	0	0	0	0	0	0
402002	0	0	0	0	0	0	0	18,446	0	0	0	0
402003	0	0	0	0	0	0	0	14,809	0	0	0	0
402004	0	0	0	0	0	0	0	633,899	0	0	0	0
402005	0	0	0	0	0	0	0	776,024	0	0	0	0

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS OF HYDROCARBON SPECIES, POINT SOURCES

	THOUSAND MOLES/YEAR											
6-DIGIT SCC	Methane	Ethane	Propane	Butane	Iso-Butane	Pentane	Iso-Pentane	Alkanes	Ethylene	Propylene	Iso-Butene	Alkenes
402006	0	0	0	0	0	0	0	507,062	0	0	0	0
402007	0	0	0	0	0	0	0	0	0	0	0	0
402008	2,110,984	83,266	35,503	202,257	0	503	0	26,544	35,614	3,185	0	2,794
402009	0	0	0	0	0	0	0	1,420,862	0	0	0	65,089
402010	0	0	0	0	0	0	0	0	0	0	0	0
402011	0	0	0	0	0	0	0	11,911	0	0	0	1,049
402013	0	0	0	0	0	0	0	101,923	0	0	0	8,953
402014	0	0	0	0	0	0	0	1,087	0	0	0	0
402016	0	0	0	0	0	0	0	6,179	0	0	0	41
402017	11,992	1,696	383	1,011	158	0	0	191,840	0	0	0	16,679
402018	0	0	0	0	0	0	0	2,025	0	0	0	0
402019	0	0	0	0	0	0	0	2,546	0	0	0	0
402020	2,327	79	36	199	0	44	0	2,713	32	28	0	24
402021	0	0	0	0	0	0	0	865	0	0	0	76
402022	0	0	0	0	0	0	0	53,387	0	0	0	0
402023	0	0	0	0	0	0	0	1,514	0	0	0	133
402024	0	0	0	0	0	0	0	153	0	0	0	0
402025	0	0	0	0	0	0	0	10,225	0	0	0	901
402888	0	0	0	0	0	0	0	179,719	0	0	0	15,834
402901	0	0	0	0	0	0	0	395	0	0	0	35
402999	0	0	0	0	0	0	0	730,657	0	0	0	0
403001	369,250	85,681	268,896	299,232	96,006	227,088	0	603,329	0	0	0	29,858
403002	29,086	4,768	20,447	40,042	13,468	101,146	0	243,284	0	0	0	23,848
403003	0	888	13,470	896	232	3,986	0	9,506	0	790	0	1,014
403010	34,555	5,665	23,413	30,887	12,049	45,965	0	171,062	0	0	0	9,453
403011	10,478	1,718	7,500	18,076	5,716	52,617	0	127,376	1	0	0	12,751
403012	0	0	420	7,985	1,891	35,513	0	86,150	0	0	0	9,036
403888	4,683	773	1,246	3,695	1,504	2,105	0	25,306	43	0	0	1,633
403999	0	0	0	0	0	0	0	163,416	0	0	0	0
404001	0	0	2,067	39,276	9,302	174,674	0	416,530	0	0	0	44,444
404002	0	0	40	760	180	3,381	0	8,062	0	0	0	860
405001	3,955,033	214,208	62,516	47,806	15,629	0	0	0	425,658	65,274	0	16,548
405002	590,099	31,960	9,327	7,133	2,332	0	0	294	63,509	9,739	0	2,469
405003	0	0	0	0	0	0	0	222,941	0	0	0	0
405004	0	0	0	0	0	0	0	290,493	0	0	0	0
405005	0	0	0	0	0	0	0	485,486	0	0	0	921
405006	0	0	0	0	0	0	0	0	0	0	0	0
405888	23,059	2,602	622	1,387	230	0	0	565	431	3,244	0	1,665
406001	36,371	3,350	7,617	33,196	9,065	124,717	0	348,213	5	0	0	31,174
406002	32,211	8,985	31,242	40,962	8,531	34,435	0	78,243	0	0	0	4,573
406003	0	0	104	1,982	469	8,813	0	21,015	0	0	0	2,242
406004	0	0	161	3,056	724	13,593	0	32,414	0	0	0	3,459
406888	0	0	57	1,085	257	4,825	0	11,505	0	0	0	1,228
490001	37,779	3,554	869	1,685	316	0	0	17,007	2,185	342	0	79
490999	1,700,609	159,988	39,108	75,846	14,221	0	0	765,570	98,363	15,406	0	3,555
501001	300,610	1,697	1,031	1,879	364	0	0	8,365	3,880	3,758	0	121
501002	0	0	4,920	3,776	3,776	2,975	0	56,522	79,176	0	0	50,572
501005	18,397	257	20	37	7	0	0	165	847	104	0	2
501900	90	1	0	1	0	0	0	3	1	1	0	0
501999	0	0	0	0	0	0	0	63	0	0	0	0
502001	78,314	1,006	469	477	314	216	0	5,009	9,005	516	0	3,686
502002	7,963	45	2[illegible]	50	10	0	0	222	103	100	0	3
502003	0	0	[illegible]	0	0	0	0	0	0	0	0	0
502005	102,851	1,847	[illegible]	0	0	0	0	0	6,361	246	0	0

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS OF HYDROCARBON SPECIES, POINT SOURCES

	THOUSAND MOLES/YEAR											
6-DIGIT SCC	Methane	Ethane	Propane	Butane	Iso-Butane	Pentane	Iso-Pentane	Alkanes	Ethylene	Propylene	Iso-Butene	Alkenes
502900	5,922	0	154	263	0	141	0	251	0	0	0	0
503001	1,261,330	7,122	4,324	7,885	1,526	0	0	35,101	16,279	15,770	0	509
503002	174,959	988	1,957	2,136	1,254	821	0	20,465	24,105	2,187	0	14,025
503005	21,643	389	0	0	0	0	0	0	1,339	52	0	0
503007	0	0	0	0	0	0	0	0	0	0	0	0
503900	41,614	235	143	260	50	0	0	1,158	537	520	0	17
599999	4,409	25	15	28	5	0	0	123	57	55	0	2
U.S. TOTAL	35,336,921	2,081,710	2,192,169	2,639,566	756,840	1,482,177	16,375	19,086,558	5,497,167	1,971,765	0	2,733,450

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS OF HYDROCARBON SPECIES, POINT SOURCES

	THOUSAND MOLES/YEAR										
6-DIGIT SCC	Benzene	Toluene	Xylene	Eth Benz	Aromatics	Formaldeh	Acetaldeh	Aldeh	Acetone	Ketones	Org Acid
101002	0	14,600	107,941	25,370	0	0	0	0	0	0	0
101003	0	1,143	8,449	1,986	0	0	0	0	0	0	0
101004	0	0	0	0	0	180,650	0	0	62,284	0	0
101005	0	0	0	0	0	660	0	0	0	0	0
101006	1,461	618	0	0	0	7,499	0	0	0	0	0
102001	7	5	12	3	0	37	0	0	0	0	0
102002	0	3,649	26,979	6,341	0	0	0	0	0	0	0
102003	0	75	552	130	0	0	0	0	0	0	0
102004	0	0	0	0	0	716,326	0	0	246,974	0	0
102005	0	0	0	0	0	235,858	0	0	0	0	0
102006	13,732	5,810	0	0	0	70,510	0	0	0	0	0
102007	184	0	0	0	0	23,892	0	0	0	0	0
102008	0	167	1,236	290	0	0	0	0	0	0	0
102009	0	35,298	260,975	61,338	0	0	0	0	0	0	0
102010	10	4	0	0	0	53	0	0	0	0	0
102011	0	0	0	0	0	0	0	0	0	0	0
102012	0	12	90	21	0	0	0	0	0	0	0
102013	0	0	0	0	0	947	0	0	0	0	0
103001	0	2	12	3	0	0	0	0	0	0	0
103002	0	537	3,969	933	0	0	0	0	0	0	0
103003	0	17	123	29	0	0	0	0	0	0	0
103004	0	0	0	0	0	19,285	0	0	6,649	0	0
103005	0	0	0	0	0	12,907	0	0	0	0	0
103006	1,258	532	0	0	0	6,462	0	0	0	0	0
103009	0	524	3,871	910	0	0	0	0	0	0	0
103012	0	0	0	0	0	0	0	0	0	0	0
103013	0	0	0	0	0	86	0	0	0	0	0
103900	0	0	0	0	0	0	0	0	0	0	0
105001	1,466	620	0	0	0	38,474	0	0	0	0	0
105002	0	0	0	0	0	3,212	0	0	0	0	0
199999	0	0	0	0	0	0	0	0	0	0	0
201001	2,124	0	0	0	0	0	0	0	0	0	0
201002	0	0	0	0	0	54,365	0	0	0	0	0
202001	1,624	0	0	0	0	0	0	0	0	0	0
202002	0	0	0	0	0	54,502	0	0	0	0	0
202003	293	0	0	0	0	0	0	0	0	0	0
202004	18	0	0	0	0	0	0	0	0	0	0
203001	20	0	0	0	0	0	0	0	0	0	0
203002	0	0	0	0	0	22	0	0	0	0	0
204001	0	0	0	0	0	168	0	0	0	0	0
204004	396	0	0	0	0	0	0	0	0	0	0
299999	1	0	0	0	0	0	0	0	0	0	0
301001	3,163	1,087	296	0	1,334	1,408	395	272	0	0	148
301003	396	136	37	0	167	176	50	34	0	0	19
301005	210,109	72,225	19,698	0	88,640	93,564	26,264	18,056	0	0	9,849
301006	109,865	37,766	10,300	0	46,349	48,924	13,733	9,441	0	0	5,150
301007	594	236	68	0	244	258	74	50	1,091	53	49
301008	0	0	0	0	0	0	0	0	0	0	0
301009	695	239	65	0	293	310	87	60	0	0	33
301010	0	0	0	0	0	0	0	0	0	0	0
301011	45	19	0	0	0	232	0	0	0	0	0
301012	0	0	0	0	0	0	0	0	0	0	0
301013	1,731	595	162	0	730	771	216	149	0	0	81
301014	0	0	0	0	0	0	0	0	96,732	108,061	0

6-DIGIT SCC	Benzene	Toluene	Xylene	Eth Benz	Aromatics	Formaldeh	Acetaldeh	Aldeh	Acetone	Ketones	Org Acid
	THOUSAND MOLES/YEAR										
301015	0	0	0	0	0	0	0	0	35,980	40,194	0
301016	0	0	0	0	0	0	0	0	0	0	0
301017	0	0	0	0	0	0	0	0	0	0	0
301018	17,553	10,703	3,425	0	6,422	6,850	2,141	1,284	157,980	7,706	3,853
301019	0	0	0	0	0	0	0	0	2,464	0	0
301020	0	0	0	449	417	0	0	0	1,525	1,107	546
301021	0	0	0	0	0	0	0	0	0	0	0
301022	0	0	0	0	0	0	0	0	0	0	0
301023	23	14	5	0	9	9	3	2	209	10	5
301024	0	0	0	0	0	0	0	0	0	0	0
301025	8,264	5,039	1,613	0	3,024	3,225	1,008	605	74,379	3,628	1,814
301026	26,570	2,952	0	0	0	0	0	0	0	0	0
301027	0	0	0	0	0	0	0	0	0	0	0
301028	0	0	0	0	0	0	0	0	0	0	0
301029	0	0	0	0	0	0	0	0	0	0	0
301030	0	0	0	0	0	0	0	0	0	0	0
301031	0	0	0	0	0	0	0	0	0	0	0
301032	0	0	0	0	0	0	0	0	0	0	0
301033	3,901	1,342	3,504	0	0	0	0	0	0	0	0
301034	733	447	143	0	268	286	89	54	6,595	322	161
301035	5	2	0	0	2	9	0	0	0	0	0
301036	0	0	0	0	0	0	0	0	0	0	0
301040	0	0	0	0	0	0	0	0	0	0	0
301041	1,233	752	240	0	451	481	150	90	11,093	541	271
301042	0	0	0	0	0	0	0	0	0	0	0
301050	450	275	88	0	165	176	55	33	4,052	198	99
301060	552	337	108	0	202	216	67	40	4,971	242	121
301091	0	0	0	0	0	0	0	0	0	0	0
301100	0	0	0	0	0	0	0	0	0	0	0
301111	0	0	0	0	0	0	0	0	0	0	0
301120	0	0	0	0	0	6,568	0	0	0	0	0
301125	0	0	0	0	0	0	0	0	0	0	0
301130	83	35	0	0	0	427	0	0	0	0	0
301132	1,623	990	317	0	594	633	198	119	14,608	713	356
301137	123	75	24	0	45	48	15	9	1,104	54	27
301156	0	0	0	0	0	0	0	0	0	0	0
301167	0	0	0	0	0	0	0	0	0	0	0
301169	0	0	0	0	0	0	0	0	0	0	0
301174	629	384	123	0	230	246	77	46	5,663	276	138
301181	0	0	0	0	0	0	0	0	0	0	0
301197	0	0	0	0	0	0	0	0	0	0	0
301202	0	0	0	0	0	0	0	0	0	0	0
301206	0	0	0	0	0	0	0	0	0	0	0
301250	205	70	19	0	86	91	26	18	0	0	10
301251	0	0	0	0	0	0	0	0	0	0	0
301253	0	0	0	0	0	0	0	0	0	0	0
301254	0	0	0	0	0	0	0	0	0	0	0
301258	26,409	561	15,921	0	337	359	112	67	8,283	404	202
301820	0	0	0	0	0	0	0	0	0	0	0
301830	0	0	0	0	0	0	0	0	0	0	0
301888	176	108	34	0	65	69	22	13	1,587	77	39
301900	757	260	71	0	319	337	95	65	0	0	35
301999	245,420	84,363	23,0[illegible]8	0	103,537	109,289	30,678	21,091	0	0	11,504
302001	0	0	0	0	0	0	0	0	0	0	0

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS OF HYDROCARBON SPECIES, POINT SOURCES

	THOUSAND MOLES/YEAR										
6-DIGIT SCC	Benzene	Toluene	Xylene	Eth Benz	Aromatics	Formaldeh	Acetaldeh	Aldeh	Acetone	Ketones	Org Acid
302002	0	0	0	0	0	0	0	0	0	0	0
302004	0	0	0	0	0	0	0	0	0	0	0
302005	0	0	0	0	0	0	0	0	0	0	0
302006	0	0	0	0	0	0	0	0	0	0	0
302007	62	0	0	0	0	247	0	0	0	0	0
302008	0	0	0	0	0	0	0	0	0	0	0
302009	17	0	0	0	0	69	0	0	0	0	0
302010	0	0	0	0	0	0	0	0	0	0	0
302012	3	0	0	0	0	12	0	0	0	0	0
302013	0	475	3,510	825	0	0	0	0	0	0	0
302014	0	0	0	0	0	0	0	0	0	0	0
302015	0	0	0	0	0	0	0	0	0	0	0
302016	0	0	0	0	0	0	0	0	0	0	0
302017	0	0	0	0	0	0	0	0	0	0	0
302018	2	0	0	0	0	9	0	0	0	0	0
302019	92	0	0	0	0	370	0	0	0	0	0
302020	0	0	0	0	0	0	0	0	0	0	0
302026	0	0	0	0	0	0	0	0	0	0	0
302030	0	0	0	0	0	0	0	0	0	0	0
302031	0	0	0	0	0	0	0	0	0	0	0
302032	1	0	0	0	0	2	0	0	0	0	0
302033	0	0	0	0	0	0	0	0	0	0	0
302888	1	0	0	0	0	6	0	0	0	0	0
302999	44	0	0	0	0	176	0	0	0	0	0
303000	0	0	0	0	0	0	0	0	0	0	0
303001	54,048	2,402	0	0	0	0	0	0	0	0	0
303002	0	0	0	0	0	0	0	0	0	0	0
303003	114,083	5,070	0	0	0	0	0	0	0	0	0
303004	140	6	0	0	0	0	0	0	0	0	0
303005	0	0	0	0	0	0	0	0	0	0	0
303006	0	0	0	0	0	0	0	0	0	0	0
303007	0	0	0	0	0	0	0	0	0	0	0
303008	124	4	0	0	0	1	0	0	0	0	0
303009	1,848	1,807	0	0	0	5	0	0	0	0	0
303010	0	0	0	0	0	0	0	0	0	0	0
303011	0	0	0	0	0	0	0	0	0	0	0
303012	0	0	0	0	0	0	0	0	0	0	0
303013	0	0	0	0	0	0	0	0	0	0	0
303014	0	0	0	0	0	0	0	0	0	0	0
303023	0	0	0	0	0	0	0	0	0	0	0
303030	10	0	0	0	0	0	0	0	0	0	0
303888	0	0	0	0	0	0	0	0	0	0	0
303999	309	11	0	0	0	4	0	0	0	0	0
304001	1,204	523	0	0	0	31,298	0	0	0	0	0
304002	58	25	0	0	0	1,521	0	0	0	0	0
304003	6,728	243	0	0	0	81	0	0	0	0	0
304004	1,085	472	0	0	0	28,216	0	0	0	0	0
304005	0	0	0	0	0	0	0	0	0	0	0
304006	0	0	0	0	0	0	0	0	0	0	0
304007	383	14	0	0	0	5	0	0	0	0	0
304008	1	1	0	0	0	33	0	0	0	0	0
304009	0	0	0	0	0	0	0	0	0	0	0
304010	0	0	0	0	0	0	0	0	0	0	0
304020	193	66	1	0	81	86	24	17	0	0	9

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS OF HYDROCARBON SPECIES, POINT SOURCES

	THOUSAND MOLES/YEAR										
6-DIGIT SCC	Benzene	Toluene	Xylene	Eth Benz	Aromatics	Formaldeh	Acetaldeh	Aldeh	Acetone	Ketones	Org Acid
304022	68	30	0	0	0	1,766	0	0	0	0	0
304034	0	0	0	0	0	0	0	0	0	0	0
304050	157	68	0	0	0	4,087	0	0	0	0	0
304888	0	0	0	0	0	0	0	0	0	0	0
304999	186	81	0	0	0	4,827	0	0	0	0	0
305001	0	0	0	0	0	1,693	0	0	0	0	0
305002	664	281	0	0	0	3,410	0	0	0	0	0
305003	667	201	176	41	0	4,796	0	0	0	0	0
305004	0	0	0	0	0	0	0	0	0	0	0
305005	21	7	0	0	0	88	0	0	0	0	0
305006	0	0	0	0	0	6,100	0	0	2,103	0	0
305007	3	0	0	0	0	6,407	0	0	2,209	0	0
305008	38	1	0	0	0	55	0	0	15	0	0
305009	12	0	0	0	0	4	0	0	0	0	0
305010	0	1,282	9,476	2,227	0	0	0	0	0	0	0
305011	7	0	0	0	0	2	0	0	0	0	0
305012	1,765	38	0	0	0	537	0	0	0	0	0
305013	88	2	0	0	0	27	0	0	0	0	0
305014	2,273	235	0	0	0	2,924	0	0	0	0	0
305015	2	3	25	6	0	1	0	0	0	0	0
305016	0	571	4,218	991	0	0	0	0	0	0	0
305017	16	7	0	0	0	423	0	0	0	0	0
305018	59	1	0	0	0	18	0	0	0	0	0
305019	1	0	0	0	0	3	0	0	0	0	0
305020	71	2	0	0	0	22	0	0	0	0	0
305021	0	0	0	0	0	0	0	0	0	0	0
305022	0	0	0	0	0	0	0	0	0	0	0
305024	0	0	0	0	0	0	0	0	0	0	0
305025	0	0	0	0	0	0	0	0	0	0	0
305026	0	0	0	0	0	0	0	0	0	0	0
305031	0	0	0	0	0	0	0	0	0	0	0
305032	1,128	25	0	0	0	343	0	0	0	0	0
305040	48	1	0	0	0	17	0	0	0	0	0
305100	0	0	0	0	0	0	0	0	0	0	0
305103	0	0	0	0	0	0	0	0	0	0	0
305888	0	0	0	0	0	0	0	0	0	0	0
305999	2,573	56	0	0	0	783	0	0	0	0	0
306001	4,060	1,717	0	0	0	56,353	0	0	12,243	0	0
306002	0	0	0	0	0	1,524,316	0	0	0	0	0
306003	0	0	0	0	0	55,204	0	0	0	0	0
306004	3,618	2,329	1,425	0	1,286	1,358	381	262	0	0	143
306005	31,601	0	0	0	0	0	0	0	0	0	0
306006	6,605	0	0	0	0	292,370	0	0	0	0	0
306007	0	0	0	0	0	0	0	0	0	0	0
306008	13,820	3,783	1,405	0	0	23,830	0	0	0	0	0
306009	0	0	0	0	0	70,208	0	0	0	0	0
306010	0	0	0	0	0	0	0	0	0	0	0
306011	2,189	4,925	4,378	0	0	0	0	0	0	0	0
306012	0	0	0	0	0	46,402	0	0	0	0	0
306014	253	107	0	0	0	1,298	0	0	0	0	0
306100	0	0	0	0	0	0	0	0	0	0	0
306888	352	1,246	493	0	46	49	14	9	0	0	5
306999	496	2,482	953	0	0	0	0	0	0	0	0
307001	143	60	0	0	0	732	0	0	0	0	0

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS OF HYDROCARBON SPECIES, POINT SOURCES

	THOUSAND MOLES/YEAR										
6-DIGIT SCC	Benzene	Toluene	Xylene	Eth Benz	Aromatics	Formaldeh	Acetaldeh	Aldeh	Acetone	Ketones	Org Acid
307002	0	0	0	0	0	0	0	0	0	0	0
307003	0	0	0	0	0	0	0	0	0	0	0
307004	0	0	0	0	0	0	0	0	0	0	0
307005	0	0	0	0	0	0	0	0	0	0	0
307007	0	0	0	0	0	0	0	0	0	0	0
307008	0	0	0	0	0	0	0	0	0	0	0
307011	0	3,311	2,926	0	0	0	0	0	13,245	14,554	0
307013	0	0	0	0	0	0	0	0	0	0	0
307020	0	0	0	0	0	0	0	0	0	0	0
307030	0	0	0	0	0	0	0	0	0	0	0
307888	0	0	0	0	0	0	0	0	0	0	0
307999	0	0	0	0	0	0	0	0	0	0	0
308001	1,733	228	48	0	217	229	64	44	0	0	24
308006	337	37	0	0	0	0	0	0	0	0	0
308007	0	0	0	0	0	0	0	0	0	0	0
309001	154	67	0	0	0	4,001	0	0	0	0	0
309002	0	0	0	0	0	0	0	0	0	0	0
309010	250	125	0	0	0	7,807	0	0	5,680	5,805	0
309011	6	3	0	0	0	190	0	0	139	142	0
309020	1,467	638	0	0	0	38,142	0	0	0	0	0
309030	95	47	0	0	0	2,957	0	0	2,152	2,199	0
309060	0	0	0	0	0	0	0	0	0	0	0
309888	9	4	0	0	0	272	0	0	198	202	0
309999	0	0	0	0	0	0	0	0	9,980	11,112	0
310001	0	0	0	0	0	0	0	0	0	0	0
310002	766	263	72	0	323	806	96	66	0	0	36
312999	0	0	0	0	0	0	0	0	0	0	0
320999	0	0	0	0	0	0	0	0	1,308	1,456	0
330001	0	0	0	0	0	0	0	0	69,833	77,751	0
330002	0	1,469	1,298	0	0	0	0	0	5,876	6,457	0
330003	0	0	0	0	0	0	0	0	256	285	0
330004	0	0	0	0	0	0	0	0	0	0	0
390001	0	3	25	6	0	0	0	0	0	0	0
390002	0	375	2,774	652	0	0	0	0	0	0	0
390004	0	0	0	0	0	24,423	0	0	8,421	0	0
390005	0	0	0	0	0	12,649	0	0	0	0	0
390006	11,990	5,073	0	0	0	61,566	0	0	0	0	0
390007	2,006	0	0	0	0	0	0	0	0	0	0
390008	0	0	0	0	0	0	0	0	0	0	0
390009	0	0	0	0	0	0	0	0	0	0	0
390010	810	343	0	0	0	4,160	0	0	0	0	0
390012	0	0	0	0	0	0	0	0	0	0	0
390013	0	0	0	0	0	0	0	0	0	0	0
399999	96,961	41,022	0	0	0	497,858	0	0	0	0	0
401001	0	0	0	0	0	0	0	0	0	0	0
401002	0	83,066	0	0	0	0	0	0	0	0	0
401003	0	0	0	0	0	0	0	0	0	0	0
401888	0	0	0	0	0	0	0	0	0	0	0
401913	0	0	0	0	0	6	0	0	7	0	3
402001	0	1,332,047	467,776	0	0	0	0	0	467,776	320,760	0
402002	0	1,024	439	750	0	0	0	128	1,005	1,664	402
402003	0	0	0	0	0	0	0	0	205,475	229,539	0
402004	0	140,086	82,80[illegible]	0	0	0	0	0	281,037	420,357	5,847
402005	0	38,912	42,24[illegible]	0	0	0	0	0	120,073	134,526	31,130

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS OF HYDROCARBON SPECIES, POINT SOURCES

6-DIGIT SCC	Benzene	Toluene	Xylene	Eth Benz	Aromatics	Formaldeh	Acetaldeh	Aldeh	Acetone	Ketones	Org Acid
	THOUSAND MOLES/YEAR										
402006	0	29,953	32,806	0	0	0	0	0	87,007	98,417	65,611
402007	0	120,002	42,390	0	0	0	0	0	45,871	31,332	0
402008	0	1,285	0	0	0	6,147	0	0	615	0	16,597
402009	0	119,663	116,905	0	0	0	0	0	325,545	315,879	18,561
402010	0	0	0	0	0	0	0	0	0	0	39,725
402011	0	752	665	0	0	0	0	0	3,008	3,306	0
402013	0	6,481	5,670	0	0	0	0	0	25,665	28,327	204
402014	0	0	0	0	0	0	0	0	0	0	0
402016	0	330	355	0	0	0	0	0	990	1,116	657
402017	0	11,953	10,563	0	0	0	0	0	52,840	58,155	0
402018	0	120	131	0	0	0	0	0	348	393	262
402019	0	194	0	0	0	0	0	0	0	501	156
402020	0	123	95	0	0	52	0	0	326	397	743
402021	0	55	48	0	0	0	0	0	218	240	0
402022	0	0	0	0	0	0	0	0	0	0	0
402023	0	96	84	0	0	0	0	0	382	420	0
402024	0	3	4	0	0	0	0	0	10	11	8
402025	0	646	571	0	0	0	0	0	2,582	2,838	0
402888	0	11,348	10,028	0	0	0	0	0	45,392	49,878	0
402901	0	25	22	0	0	0	0	0	100	110	0
402999	0	66,057	49,946	66,057	0	0	0	0	0	0	0
403001	40,586	86,498	88,186	0	92,353	0	0	0	0	0	0
403002	19,149	59,294	70,435	0	73,763	0	0	0	0	0	0
403003	7,095	2,477	2,996	0	3,137	0	0	0	0	0	0
403010	8,766	24,028	27,920	0	29,239	0	0	0	0	0	0
403011	9,768	31,383	37,512	0	39,332	3	0	0	162	167	8
403012	6,514	22,064	26,687	0	27,948	0	0	0	0	0	0
403888	902	2,836	0	0	1,590	86	0	0	5,285	5,456	258
403999	0	0	0	0	0	0	0	0	0	0	0
404001	32,041	108,525	131,264	0	137,465	0	0	0	0	0	0
404002	620	2,100	2,540	0	2,661	0	0	0	0	0	0
405001	0	0	0	0	0	0	0	0	0	0	0
405002	0	0	0	0	0	0	0	0	0	0	0
405003	0	0	0	0	0	0	0	0	0	0	11,231
405004	0	0	0	0	0	0	0	0	0	0	0
405005	0	43,088	583	13,753	12,547	0	0	0	7,209	54,041	99,511
405006	0	0	0	0	0	0	0	0	0	0	5,144
405888	0	0	0	0	0	2,918	0	0	0	0	0
406001	22,959	76,357	92,072	0	96,422	5	0	0	0	0	0
406002	4,765	11,878	13,508	0	14,146	0	0	0	0	0	0
406003	1,617	5,475	6,623	0	6,935	0	0	0	0	0	0
406004	2,493	8,445	10,215	0	10,698	0	0	0	0	0	0
406888	885	2,998	3,626	0	3,797	0	0	0	0	0	0
490001	0	1,395	0	0	0	0	0	0	158	1,158	2,949
490999	0	62,810	0	0	0	0	0	0	7,111	52,144	132,730
501001	1,152	0	0	0	0	0	0	0	7,153	0	0
501002	0	0	0	0	0	0	0	0	0	0	0
501005	269	0	0	0	0	0	0	0	141	0	0
501900	0	0	0	0	0	0	0	0	2	0	0
501999	0	0	0	0	0	0	0	0	0	0	0
502001	1,030	0	0	0	0	0	0	0	773	0	0
502002	31	0	0	0	0	0	0	0	189	0	0
502003	0	0	0	0	0	0	0	0	0	0	0
502005	2,032	0	0	0	0	0	0	0	0	0	0

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS OF HYDROCARBON SPECIES, POINT SOURCES

	THOUSAND MOLES/YEAR										
6-DIGIT SCC	Benzene	Toluene	Xylene	Eth Benz	Aromatics	Formaldeh	Acetaldeh	Aldeh	Acetone	Ketones	Org Acid
502900	88	37	0	0	0	453	0	0	0	0	0
503001	4,833	0	0	0	0	0	0	0	30,013	0	0
503002	670	0	0	0	0	0	0	0	4,163	0	0
503005	428	0	0	0	0	0	0	0	0	0	0
503007	0	0	0	0	0	0	0	0	0	0	0
503900	159	0	0	0	0	0	0	0	990	0	0
599999	17	0	0	0	0	0	0	0	105	0	0
U.S. TOTAL	1,222,772	2,884,205	1,904,454	183,111	807,915	4,538,201	76,133	52,123	2,607,605	2,094,680	466,463

For conversion of hydrocarbon classes to tons/year, see discussion in Appendix E.

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS, POINT SOURCES

State	SO2	SO4	NO	NO2	Pb	CO	HCl	HF	NH3	TSP	Ca	Mg	Na	K	VOC	THC
	TONS/YEAR															
Alabama	777,509	28,739	224,151	7,366	185	283,116	19,291	3,518	602	81,327	1,604	488	356	280	52,531	66,836
Arizona	824,136	29,305	102,999	3,765	73	64,834	8,862	1,071	5,009	27,451	1,175	334	111	57	13,246	13,948
Arkansas	55,654	8,336	41,818	1,707	1	135,410	1,761	1,413	12,324	33,610	307	95	23	48	15,425	16,385
California	390,765	22,801	310,207	15,693	216	354,357	0	131	4,653	135,939	1,777	375	48	235	296,959	353,118
Colorado	117,379	7,626	134,392	5,125	442	110,700	9,054	1,186	7,795	53,026	2,320	445	177	119	16,536	22,616
Connecticut	34,524	2,228	21,935	571	78	11,759	386	0	0	8,160	28	8	3	3	24,045	24,771
Delaware	96,889	1,965	25,220	750	1	8,526	1,106	184	1	16,575	167	176	84	45	25,868	27,329
Dist. of Colum.	7,164	399	2,504	113	2	4,109	589	7	0	863	7	7	4	2	451	1,169
Florida	1,018,759	25,261	307,361	11,013	23	145,583	8,670	29,030	21,887	100,437	6,269	931	201	84	48,306	51,735
Georgia	862,393	27,802	270,803	8,714	45	162,451	20,392	2,486	19,889	41,780	299	263	201	222	27,300	28,379
Idaho	36,610	6,598	8,485	335	449	41,789	314	173	121	12,020	87	23	10	37	2,608	4,649
Illinois	1,350,414	33,150	450,340	16,607	1,518	312,428	33,310	7,890	39,976	197,188	5,892	1,899	708	899	153,055	200,212
Indiana	1,826,567	28,766	443,844	15,485	462	296,070	33,163	4,487	11,695	201,252	5,026	2,324	1,694	4,565	87,406	116,818
Iowa	307,348	9,629	121,336	3,972	71	54,874	11,434	1,701	19,260	151,474	3,038	685	386	54	17,782	20,263
Kansas	193,588	6,128	203,999	10,231	1	61,361	6,552	792	96	43,258	354	103	42	22	40,304	73,307
Kentucky	1,098,360	18,018	303,448	9,995	107	117,028	22,400	3,768	116	127,561	1,734	970	349	183	102,788	116,606
Louisiana	236,911	14,000	413,667	21,573	49	998,666	736	1,663	21,860	118,871	407	58	133	219	295,753	322,789
Maine	114,789	7,242	20,237	504	1	44,700	26	3	0	18,217	72	21	75	36	17,888	18,945
Maryland	275,263	6,203	88,288	3,058	5	33,723	6,546	1,260	2	36,069	442	217	101	79	59,894	76,098
Massachusetts	297,037	5,977	75,448	2,177	162	14,048	2,155	84	0	17,624	193	142	65	35	94,270	117,747
Michigan	797,627	24,456	323,480	12,192	176	271,202	22,683	3,139	228	143,924	9,496	1,217	482	565	195,994	216,766
Minnesota	210,481	9,566	130,327	4,499	10	33,932	8,659	1,113	16,428	130,576	2,218	624	160	79	65,852	68,438
Mississippi	251,012	7,051	92,686	3,803	0	82,975	2,587	314	358	24,231	125	68	86	41	52,561	57,773
Missouri	1,270,841	16,895	278,522	9,515	288	80,142	22,038	2,663	6	311,839	18,356	3,228	685	347	170,834	183,961
Montana	146,533	6,039	36,399	1,601	213	139,579	1,994	243	185	19,205	129	56	23	26	12,081	15,086
Nebraska	64,214	3,388	50,811	1,892	30	10,148	4,577	577	354	43,613	326	87	12	6	45,451	46,423
Nevada	140,938	6,114	46,094	1,543	6	13,032	3,515	442	1	28,465	407	91	21	12	3,398	3,562
New Hampshire	96,421	2,619	26,166	741	0	4,914	1,026	124	0	4,000	15	9	23	3	16,682	17,636
New Jersey	233,574	6,520	127,777	4,623	0	83,692	2,442	302	12	98,206	37	24	11	6	104,827	119,935
New Mexico	250,262	7,939	150,081	7,112	4	26,933	8,295	977	150	34,495	923	409	178	105	37,202	51,033
New York	760,082	23,645	279,527	8,372	16	113,978	9,200	1,875	3	245,892	1,367	1,144	548	310	90,149	141,636
North Carolina	605,426	22,669	249,186	7,773	21	126,370	23,513	3,070	8,664	115,851	2,247	943	303	165	82,978	100,142
North Dakota	95,891	10,188	70,089	2,258	5	55,560	71	47	200	48,845	777	786	371	199	2,616	3,423
Ohio	2,615,591	42,357	632,950	21,023	976	690,969	50,337	7,179	1,802	277,919	7,714	3,538	1,500	1,131	120,764	150,742
Oklahoma	83,987	7,332	150,842	7,423	4	338,386	5,740	763	1,405	67,489	5,438	648	34	29	63,340	73,889
Oregon	24,497	13,985	43,349	1,545	20	30,413	544	92	0	33,286	1,103	54	54	310	29,815	36,281
Pennsylvania	1,783,153	43,985	479,812	15,867	763	470,810	41,375	5,504	8,552	187,784	6,383	2,006	826	1,400	132,321	162,706
Rhode Island	7,102	288	3,752	119	4	2,014	14	0	0	1,065	1	0	1	1	9,836	11,124
South Carolina	316,336	14,823	121,077	3,843	85	79,221	8,973	1,596	1,020	142,530	486	337	178	122	210,703	221,994
South Dakota	33,897	3,252	24,565	775	5	15,218	220	37	1	33,423	2,168	475	89	9	2,044	3,023
Tennessee	1,120,219	23,980	276,449	9,843	143	153,761	23,266	4,243	10,293	114,674	1,002	665	375	209	134,184	143,795
Texas	1,053,679	47,897	1,244,129	64,174	374	2,126,155	18,937	5,841	11,535	388,434	6,686	2,056	329	351	761,649	900,425
Utah	88,412	7,179	55,550	2,060	43	33,766	3,547	495	52	61,873	2,831	892	658	1,844	7,961	9,248
Vermont	1,543	37	278	9	0	39	9	0	0	1,544	3	3	1	2	2,804	3,047
Virginia	304,930	13,159	119,309	4,003	34	386,565	7,047	1,318	4,539	109,050	2,422	1,090	402	223	86,880	99,831
Washington	268,669	14,207	68,722	2,537	87	221,531	4,942	1,488	10,076	86,100	494	319	188	280	40,651	43,628
West Virginia	1,130,784	25,524	328,057	10,283	415	153,195	29,055	4,861	8	60,484	946	666	296	240	4,861	5,487
Wisconsin	642,486	18,129	176,179	5,844	79	45,510	15,215	2,310	651	98,764	8,395	927	324	213	63,719	70,106
Wyoming	184,096	11,953	127,965	4,464	3	82,566	13,084	1,723	3,660	27,984	116	103	44	25	18,685	22,183
Contig. U.S.	24,504,741	725,349	9,284,610	358,489	7,695	9,128,108	519,652	113,183	245,467	4,364,247	113,808	32,025	12,975	15,474	3,963,258	4,657,042

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS, POINT SOURCES

State	SO2	SO4	NO	NO2	Pb	CO	HCl	HF	NH3	TSP	Ca	Mg	Na	K	VOC	THC
	METRIC TONS/YEAR															
Alabama	705,358	26,072	203,350	6,683	168	256,843	17,501	3,192	546	73,780	1,455	443	323	254	47,657	60,634
Arizona	747,658	26,586	93,441	3,416	66	58,818	8,040	972	4,544	24,904	1,066	303	101	52	12,017	12,654
Arkansas	50,489	7,562	37,937	1,549	1	122,844	1,598	1,282	11,180	30,491	278	86	21	44	13,994	14,865
California	35[illegible],503	20,685	281,420	14,237	196	321,473	0	119	4,221	123,324	1,612	340	44	213	269,401	320,350
Colorado	106,486	6,918	121,921	4,649	401	100,427	8,214	1,076	7,072	48,106	2,104	404	160	108	15,002	20,517
Connecticut	31,320	2,021	19,899	518	71	10,668	350	0	0	7,403	26	7	3	3	21,814	22,472
Delaware	87,898	1,783	22,880	680	1	7,735	1,003	167	1	15,037	151	160	77	41	23,468	24,793
Dist. of Colum.	6,499	362	2,271	102	2	3,728	534	6	0	783	6	6	3	2	409	1,060
Florida	924,220	22,917	278,839	9,991	21	132,073	7,865	26,336	19,856	91,117	5,687	844	183	76	43,824	46,934
Georgia	782,365	25,222	245,673	7,905	41	147,376	18,500	2,255	18,043	37,903	271	239	182	202	24,766	25,746
Idaho	33,213	5,986	7,697	304	407	37,911	285	157	110	10,905	79	21	9	33	2,366	4,217
Illinois	1,225,099	30,074	408,549	15,066	1,377	283,435	30,219	7,158	36,266	178,889	5,345	1,723	642	816	138,852	181,633
Indiana	1,657,066	26,097	402,656	14,048	419	268,595	30,086	4,071	10,610	182,576	4,559	2,108	1,537	4,142	79,295	105,977
Iowa	278,827	8,735	110,076	3,604	64	49,782	10,373	1,543	17,473	137,417	2,756	621	350	49	16,132	18,383
Kansas	175,623	5,559	185,068	9,282	1	55,667	5,944	719	87	39,244	321	94	38	20	36,564	66,504
Kentucky	996,435	16,346	275,289	9,067	97	106,168	20,321	3,418	105	115,724	1,573	880	317	166	93,249	105,785
Louisiana	214,926	12,701	375,280	19,571	44	905,992	668	1,509	19,831	107,840	369	52	120	199	268,308	292,835
Maine	104,137	6,570	18,359	457	1	40,552	24	3	0	16,527	65	19	68	33	16,228	17,187
Maryland	249,719	5,627	80,095	2,774	5	30,594	5,939	1,143	2	32,722	401	197	92	72	54,336	69,036
Massachusetts	269,473	5,422	68,447	1,975	147	12,744	1,955	76	0	15,989	175	129	59	32	85,522	106,820
Michigan	723,609	22,187	293,462	11,061	160	246,035	20,578	2,848	207	130,568	8,615	1,104	438	512	177,806	196,651
Minnesota	190,949	8,678	118,233	4,082	9	30,783	7,855	1,010	14,903	118,459	2,012	566	145	71	59,741	62,087
Mississippi	227,719	6,397	84,085	3,450	0	75,275	2,347	285	324	21,982	113	61	78	37	47,683	52,411
Missouri	1,152,910	15,327	252,676	8,632	261	72,705	19,993	2,416	6	282,901	16,652	2,928	621	315	154,981	166,890
Montana	132,935	5,479	33,021	1,453	193	126,626	1,809	220	168	17,423	117	51	21	24	10,960	13,686
Nebraska	58,255	3,074	46,096	1,716	27	9,206	4,152	523	322	39,566	296	79	11	6	41,233	42,115
Nevada	127,859	5,547	41,817	1,399	5	11,823	3,189	401	1	25,824	369	83	19	11	3,083	3,231
New Hampshire	87,473	2,376	23,738	672	0	4,458	931	112	0	3,629	13	8	21	3	15,134	15,999
New Jersey	211,899	5,915	115,919	4,194	0	75,926	2,215	274	11	89,093	34	22	10	5	95,099	108,806
New Mexico	227,038	7,202	136,154	6,452	4	24,434	7,525	886	136	31,294	838	371	161	95	33,750	46,297
New York	689,548	21,451	253,587	7,595	15	103,401	8,346	1,701	2	223,074	1,240	1,038	497	281	81,784	128,493
North Carolina	549,244	20,565	226,062	7,052	19	114,643	21,331	2,785	7,860	105,100	2,038	855	275	150	75,278	90,849
North Dakota	86,993	9,243	63,585	2,049	5	50,404	64	43	182	44,312	705	713	336	180	2,374	3,106
Ohio	2,372,870	38,426	574,214	19,072	885	626,849	45,666	6,513	1,635	252,129	6,998	3,209	1,361	1,026	109,557	136,754
Oklahoma	76,193	6,652	136,844	6,734	4	306,985	5,207	692	1,274	61,226	4,933	588	31	26	57,462	67,032
Oregon	22,224	12,687	39,326	1,402	18	27,591	494	83	0	30,197	1,001	49	49	281	27,048	32,915
Pennsylvania	1,617,680	39,903	435,287	14,394	692	427,120	37,535	4,993	7,758	170,358	5,791	1,820	749	1,270	120,042	147,607
Rhode Island	6,443	261	3,404	108	4	1,827	13	0	0	966	1	0	1	1	8,924	10,092
South Carolina	286,981	13,447	109,841	3,486	77	71,869	8,140	1,448	925	129,304	441	305	161	110	191,151	201,394
South Dakota	30,751	2,950	22,286	703	5	13,806	200	34	1	30,321	1,967	431	80	8	1,854	2,743
Tennessee	1,016,265	21,755	250,795	8,930	130	139,492	21,107	3,849	9,338	104,033	909	603	340	190	121,732	130,451
Texas	955,900	43,452	1,128,677	58,219	339	1,928,852	17,180	5,299	10,464	352,388	6,066	1,865	298	318	690,969	816,867
Utah	80,207	6,513	50,396	1,868	39	30,633	3,218	449	47	56,131	2,568	810	597	1,672	7,222	8,390
Vermont	1,400	34	252	8	.0	35	8	0	0	1,401	2	2	1	2	2,544	2,764
Virginia	276,633	11,938	108,238	3,631	31	350,693	6,393	1,196	4,118	98,930	2,197	989	365	203	78,818	90,567
Washington	243,737	12,889	62,344	2,302	79	200,973	4,483	1,350	9,141	78,110	448	289	171	254	36,878	39,580
West Virginia	1,025,850	23,155	297,614	9,328	376	138,979	26,359	4,410	8	54,871	858	604	268	218	4,410	4,978
Wisconsin	582,865	16,447	159,830	5,302	72	41,287	13,803	2,096	591	89,599	7,616	841	294	193	57,806	63,600
Wyoming	167,012	10,844	116,090	4,050	3	74,904	11,870	1,563	3,320	25,387	105	93	40	22	16,951	20,125
Contig. U.S.	22,230,755	658,038	8,4[illegible]3,019	325,222	6,981	8,281,040	471,429	102,680	222,688	3,959,255	103,247	29,053	11,771	14,038	3,595,476	4,224,879

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS OF HYDROCARBON SPECIES, POINT SOURCES

State	Methane	Ethane	Propane	Butane	Iso-Butane	Pentane	Iso-Pentane	Alkanes	Ethylene	Propylene	Iso-Butene	Alkenes
	THOUSAND MOLES/YEAR											
Alabama	567,049	129,082	123,104	84,044	70,370	1,695	537	281,333	90,158	12,789	0	14,737
Arizona	37,023	1,443	3,579	3,242	2,233	3,062	92	64,988	42,964	241	0	28,523
Arkansas	51,129	1,682	2,637	4,390	987	2,379	194	68,483	70,975	20,213	0	29,876
California	2,789,315	206,432	345,672	393,744	130,179	196,819	1,316	1,314,786	231,632	60,674	0	153,351
Colorado	311,144	17,448	8,800	7,908	3,730	1,870	130	78,161	22,945	3,001	0	3,469
Connecticut	38,703	1,253	426	3,483	63	7	0	53,515	2,092	707	0	3,777
Delaware	75,445	3,834	7,964	14,669	4,467	9,511	9	70,913	20,040	5,702	0	21,782
Dist. of Colum.	37,499	1,654	494	570	126	0	0	288	3,372	618	0	1,032
Florida	176,335	9,379	6,868	18,383	1,427	10,743	601	218,771	74,426	21,445	0	73,301
Georgia	49,813	5,996	4,295	4,573	994	3,517	1,087	35,819	4,111	1,426	0	11,238
Idaho	112,601	1,497	900	1,134	179	826	210	10,005	1,446	1,401	0	1,944
Illinois	2,424,888	129,218	71,756	87,450	26,058	47,002	377	616,811	205,937	34,665	0	136,395
Indiana	1,532,962	69,604	27,093	21,130	6,551	17,074	393	442,080	159,689	13,295	0	37,050
Iowa	132,336	4,277	1,743	1,329	284	173	177	137,196	7,104	6,812	0	2,375
Kansas	1,654,723	113,025	89,726	32,525	14,867	37,026	79	148,307	38,311	8,023	0	20,270
Kentucky	699,206	43,903	32,708	53,016	10,202	23,573	265	747,829	201,326	61,659	0	175,868
Louisiana	1,209,209	170,663	168,092	122,850	39,630	84,386	346	1,437,125	1,093,302	553,154	0	474,206
Maine	54,106	3,048	3,306	8,058	1,933	16,100	174	83,156	1,611	580	0	6,846
Maryland	662,307	135,583	157,592	131,482	84,446	21,844	129	186,048	8,392	1,426	0	21,933
Massachusetts	1,273,859	28,793	22,945	146,153	6,237	23,590	32	265,892	32,383	4,959	0	35,110
Michigan	1,049,034	67,097	27,214	50,901	12,549	48,367	427	1,171,835	137,230	11,664	0	69,657
Minnesota	136,787	5,054	7,354	15,871	5,081	30,265	138	407,680	18,459	5,430	0	27,384
Mississippi	285,072	5,169	7,402	21,758	1,719	15,692	1,243	274,722	642	202	0	21,749
Missouri	685,726	30,251	20,364	21,375	5,098	15,498	190	919,587	415,498	113,648	0	175,610
Montana	156,200	7,327	10,952	15,168	5,961	8,843	161	51,790	3,022	1,608	0	2,385
Nebraska	50,970	2,131	1,337	3,052	451	4,936	48	53,555	4,420	433	0	3,247
Nevada	8,530	383	1,247	1,773	633	2,363	32	7,765	1,758	0	0	1,859
New Hampshire	48,711	2,812	1,980	5,984	967	2,207	9	83,404	2,117	510	0	6,776
New Jersey	817,987	19,480	61,550	91,290	20,957	85,650	22	416,205	96,267	30,328	0	61,942
New Mexico	689,571	49,417	42,258	23,059	8,732	48,066	549	121,330	5,179	372	0	15,639
New York	2,809,552	54,662	118,289	196,102	29,241	75,756	207	339,294	6,723	5,252	0	20,393
North Carolina	880,476	48,158	16,875	24,436	4,298	11,560	415	559,651	102,693	19,345	0	25,022
North Dakota	42,915	1,453	3,636	1,982	597	1,250	84	6,996	75	241	0	811
Ohio	1,528,261	89,220	28,042	43,438	7,913	19,626	596	501,595	217,683	30,782	0	81,783
Oklahoma	462,091	71,772	119,643	107,581	52,481	55,869	81	229,349	17,196	10,052	0	14,831
Oregon	318,559	25,156	8,507	9,805	2,092	956	902	179,359	40,055	7,106	0	14,203
Pennsylvania	1,557,948	85,656	72,196	78,042	14,272	55,657	544	570,439	227,284	28,165	0	65,688
Rhode Island	67,705	2,734	1,163	7,065	231	3,877	0	49,385	4,510	924	0	3,327
South Carolina	594,917	23,294	10,788	35,262	2,521	5,127	264	1,164,997	160,557	42,625	0	91,834
South Dakota	54,229	636	910	1,603	256	2,457	22	7,811	1,577	646	0	1,311
Tennessee	489,758	28,699	14,980	17,446	3,342	11,588	1,861	765,133	160,081	53,642	0	131,235
Texas	7,314,138	285,300	449,942	611,532	143,396	397,000	541	3,684,590	1,389,390	754,977	0	530,426
Utah	63,988	4,695	7,388	11,798	3,658	9,213	59	39,824	728	1,176	0	1,485
Vermont	13,703	1	361	655	11	517	0	15,223	0	0	0	155
Virginia	647,728	45,224	20,618	26,432	3,305	14,481	296	523,613	106,730	26,720	0	63,655
Washington	143,256	13,427	14,162	19,237	6,843	13,282	507	261,539	27,149	5,971	0	13,915
West Virginia	30,758	2,466	2,037	2,151	45	78	521	11,441	5,713	1,421	0	5,960
Wisconsin	324,624	19,542	8,008	18,579	2,564	17,087	366	321,092	29,645	4,279	0	25,659
Wyoming	174,075	12,681	33,268	36,057	12,662	23,712	145	85,851	2,573	1,456	0	2,427
Contig. U.S.	35,336,921	2,081,710	2,192,169	2,639,566	756,840	1,482,177	16,375	19,086,558	5,497,167	1,971,765	0	2,733,450

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS OF HYDROCARBON SPECIES, POINT SOURCES

State	Benzene	Toluene	Xylene	Eth Benz	Aromatics	Formaldeh	Acetaldeh	Aldeh	Acetone	Ketones	Org Acid
	THOUSAND MOLES/YEAR										
Alabama	16,314	6,678	17,552	3,417	1,936	7,980	436	300	9,971	4,079	1,066
Arizona	518	4,525	4,589	571	1,010	6,116	0	0	1,905	1,512	716
Arkansas	12,300	10,968	8,886	1,208	5,495	17,261	1,459	1,003	3,998	2,314	800
California	63,471	119,728	95,862	14,129	41,886	620,007	3,064	2,095	129,559	95,483	18,332
Colorado	4,406	24,103	12,206	812	959	27,362	0	0	11,687	9,223	4,704
Connecticut	361	85,200	30,248	263	91	11,333	30	18	41,647	28,057	2,822
Delaware	5,130	65,825	23,989	953	1,959	45,833	418	285	25,076	15,297	187
Dist. of Colum.	37	1	8	2	0	962	0	0	507	0	0
Florida	13,548	31,629	32,480	4,536	12,969	53,035	1,313	903	34,226	19,632	4,659
Georgia	1,533	89,261	60,271	6,775	2,404	8,856	70	46	33,950	20,503	477
Idaho	586	1,262	6,180	1,309	641	146	0	0	2,704	0	0
Illinois	14,815	155,927	87,814	10,039	34,594	34,010	413	281	108,166	99,055	21,891
Indiana	29,513	91,055	52,611	4,984	8,950	52,720	159	107	106,575	100,731	4,171
Iowa	4,250	8,376	7,262	1,101	0	618	0	0	4,655	4,151	51
Kansas	12,034	25,303	24,818	504	22,709	35,534	511	352	6,338	6,968	5,737
Kentucky	36,623	45,974	25,391	2,889	19,795	42,158	3,537	2,429	20,442	25,468	21,275
Louisiana	200,123	110,317	56,449	2,158	93,517	224,368	21,425	14,706	74,797	52,235	12,719
Maine	3,103	12,090	17,142	1,126	11,990	7,851	0	7	8,167	5,864	1,263
Maryland	11,170	41,571	23,050	802	8,267	44,153	35	23	27,129	35,224	16,185
Massachusetts	9,372	42,503	20,370	623	7,135	589,487	11	14	211,063	59,628	30,301
Michigan	32,246	107,396	82,963	30,887	24,646	77,330	0	0	140,812	171,805	44,431
Minnesota	8,938	36,020	34,115	1,123	20,594	40,653	355	287	39,630	42,629	3,574
Mississippi	5,270	38,229	52,373	7,839	8,801	120,868	3	18	40,283	20,864	950
Missouri	64,445	110,870	111,112	4,222	32,691	51,235	7,560	5,193	113,993	124,222	22,052
Montana	2,113	1,102	4,866	1,001	585	69,251	0	0	2,037	884	0
Nebraska	1,022	174,553	66,127	298	3,637	9,745	0	0	91,437	73,992	1,067
Nevada	443	7,648	4,480	198	1,487	2,529	0	0	2,617	1,521	0
New Hampshire	379	17,855	9,612	2,579	1,143	13,839	0	0	16,020	18,889	476
New Jersey	42,779	62,460	49,732	1,437	50,991	253,467	1,916	1,311	34,635	26,311	10,755
New Mexico	9,037	29,731	47,650	3,422	34,652	7,707	0	0	731	0	0
New York	32,540	54,271	26,146	1,293	971	241,231	34	21	80,644	56,067	535
North Carolina	7,939	41,833	31,690	3,789	9,035	28,057	580	441	61,667	76,076	11,753
North Dakota	146	626	2,562	523	329	26,405	1	1	347	0	0
Ohio	32,218	96,735	61,227	9,669	15,507	111,125	744	491	194,304	109,469	22,518
Oklahoma	14,084	38,964	29,547	1,030	22,020	149,986	332	228	8,333	6,749	751
Oregon	1,857	15,271	26,732	6,119	1,073	2,192	214	147	2,950	5,612	10,662
Pennsylvania	48,375	135,452	77,008	5,199	29,161	142,169	655	440	103,069	83,415	35,760
Rhode Island	1,204	11,232	6,078	1,209	3,255	1,504	60	41	3,810	6,279	2,941
South Carolina	25,851	279,857	97,426	3,018	11,430	48,301	2,926	2,008	204,996	249,991	37,430
South Dakota	614	1,393	2,152	136	1,649	256	0	0	1,244	0	0
Tennessee	31,804	64,040	80,845	14,729	16,233	44,846	2,857	1,902	114,246	62,209	15,653
Texas	382,661	446,086	267,881	4,191	197,742	1,121,469	23,155	15,781	345,397	262,027	39,003
Utah	1,775	2,313	4,016	369	2,494	8,740	6	4	1,190	293	16
Vermont	239	3,455	1,874	689	150	1,077	0	0	2,731	3,385	189
Virginia	16,422	45,510	31,955	8,252	15,623	51,993	1,334	885	67,706	43,748	24,541
Washington	7,344	11,574	21,626	3,314	8,376	33,695	372	256	11,338	3,257	1,140
West Virginia	948	2,162	13,902	3,251	310	9,113	92	63	3,038	0	34
Wisconsin	6,046	71,231	44,246	4,215	13,457	11,347	52	35	53,830	59,562	32,876
Wyoming	4,828	4,039	7,334	907	3,565	28,278	3	2	2,006	0	1
Contig. U.S.	1,222,772	2,884,205	1,904,454	183,111	807,915	4,538,201	76,133	52,123	2,607,605	2,094,680	466,463

For conversion of hydrocarbon classes to tons/year, see discussion in Appendix E.

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL U S. EMISSIONS, POINT SOURCES

TONS/YEAR

EPA REGION	SO2	SO4	NO	NO2	Pb	CO	HCl	HF	NH3	TSP	Ca	Mg	Na	K	VOC	THC
REGION 1	551,416	18,391	147,817	4,120	245	77,474	3,616	211	1	50,610	312	183	169	80	165,525	193,270
REGION 2	993,656	30,165	407,303	12,995	16	197,670	11,642	2,177	15	344,098	1,404	1,168	559	315	194,976	261,572
REGION 3	3,598,182	91,235	1,043,191	34,072	1,220	1,056,928	85,718	13,134	13,102	410,825	10,367	4,162	1,713	1,991	310,275	372,620
REGION 4	6,050,014	168,343	1,845,161	62,350	609	1,150,505	129,092	48,025	62,827	748,391	13,766	4,664	2,049	1,306	711,351	787,258
REGION 5	7,443,167	156,424	2,157,119	75,651	3,221	1,650,111	163,367	26,118	70,781	1,049,623	38,742	10,528	4,869	7,451	686,791	823,082
REGION 6	1,680,493	85,504	2,000,537	101,988	432	3,625,550	35,469	10,657	47,272	642,899	13,762	3,265	696	751	1,173,369	1,364,521
REGION 7	1,835,991	36,040	654,668	25,610	390	206,525	44,601	5,733	19,717	550,184	22,074	4,103	1,124	429	274,370	323,954
REGION 8	666,208	46,237	448,960	16,283	711	437,389	27,970	3,731	11,893	244,356	8,339	2,758	1,362	2,220	59,924	75,580
REGION 9	1,355,839	58,220	459,300	21,001	295	432,223	12,377	1,644	9,663	191,855	3,359	800	181	304	313,603	370,628
REGION 10	329,776	34,790	120,555	4,418	556	293,733	5,800	1,753	10,197	131,406	1,684	396	253	627	73,074	84,559
Contig. U.S.	24,504,741	725,349	9,284,610	358,489	7,695	9,128,108	519,652	113,183	245,467	4,364,247	113,808	32,025	12,975	15,474	3,963,258	4,657,042

METRIC TONS/YEAR

EPA REGION	SO2	SO4	NO	NO2	Pb	CO	HCl	HF	NH3	TSP	Ca	Mg	Na	K	VOC	THC
REGION 1	500,245	16,684	134,100	3,738	222	70,285	3,280	191	0	45,914	283	166	153	72	150,164	175,335
REGION 2	901,447	27,366	369,506	11,789	15	179,327	10,562	1,975	14	312,166	1,274	1,059	507	286	176,883	237,298
REGION 3	3,264,279	82,769	946,385	30,910	1,107	958,847	77,764	11,915	11,886	372,701	9,405	3,775	1,554	1,806	281,482	338,042
REGION 4	5,488,586	152,721	1,673,934	56,564	552	1,043,741	117,113	43,568	56,997	678,942	12,489	4,231	1,859	1,185	645,340	714,202
REGION 5	6,752,457	141,908	1,956,943	68,631	2,922	1,496,984	148,207	23,694	64,213	952,220	35,147	9,551	4,417	6,760	623,058	746,702
REGION 6	1,524,547	77,569	1,814,892	92,524	392	3,289,107	32,178	9,668	42,885	583,239	12,485	2,962	632	682	1,064,483	1,237,896
REGION 7	1,665,615	32,696	593,916	23,234	354	187,360	40,462	5,201	17,887	499,128	20,026	3,722	1,020	389	248,909	293,891
REGION 8	604,385	41,946	407,298	14,772	645	396,800	25,374	3,385	10,789	221,681	7,565	2,502	1,236	2,014	54,363	68,566
REGION 9	1,230,020	52,817	416,678	19,052	268	392,114	11,228	1,491	8,766	174,051	3,047	726	164	275	284,501	336,235
REGION 10	299,174	31,562	109,367	4,008	504	266,475	5,262	1,590	9,251	119,212	1,527	359	229	569	66,293	76,712
Contig. U.S.	22,230,755	658,038	8,423,019	325,222	6,981	8,281,040	471,429	102,680	222,688	3,959,255	103,247	29,053	11,771	14,038	3,595,476	4,224,879

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS OF HYDROCARBON SPECIES, POINT SOURCES

EPA REGION	Methane	Ethane	Propane	Butane	Iso-Butane	Pentane	Iso-Pentane	Alkanes	Ethylene	Propylene	Iso-Butene	Alkenes
	THOUSAND MOLES/YEAR											
REGION 1	1,496,786	38,641	30,180	171,399	9,442	46,297	215	550,574	42,713	7,679	0	55,990
REGION 2	3,627,539	74,142	179,839	287,392	50,198	161,406	229	755,498	102,990	35,580	0	82,336
REGION 3	3,011,685	274,416	260,901	253,346	106,661	101,572	1,500	1,362,742	371,530	64,053	0	180,050
REGION 4	3,742,627	293,680	217,021	258,919	94,873	83,495	6,272	4,048,255	793,994	213,133	0	544,985
REGION 5	6,996,555	379,735	169,467	237,369	60,717	179,422	2,297	3,461,093	768,644	100,114	0	377,927
REGION 6	9,726,139	578,834	782,573	869,411	245,226	587,699	1,711	5,540,877	2,576,042	1,338,768	0	1,064,978
REGION 7	2,523,755	149,684	113,169	58,280	20,699	57,633	493	1,258,645	465,332	128,917	0	201,502
REGION 8	802,551	44,240	64,954	74,516	26,864	47,345	601	270,432	30,920	8,127	0	11,888
REGION 9	2,834,868	208,259	350,497	398,759	133,045	202,244	1,439	1,387,539	276,353	60,915	0	183,733
REGION 10	574,416	40,080	23,569	30,175	9,114	15,064	1,619	450,904	68,649	14,478	0	30,061
Contig. U.S.	35,336,921	2,081,710	2,192,169	2,639,566	756,840	1,482,177	16,375	19,086,558	5,497,167	1,971,765	0	2,733,450

EPA REGION	Benzene	Toluene	Xylene	Eth Benz	Aromatics	Formaldeh	Acetaldeh	Aldeh	Acetone	Ketones	Org Acid
	THOUSAND MOLES/YEAR										
REGION 1	14,658	172,335	85,323	6,490	23,763	625,091	101	81	283,438	122,102	37,992
REGION 2	75,319	116,731	75,878	2,730	51,962	494,697	1,950	1,332	115,279	82,378	11,289
REGION 3	82,083	290,522	169,912	18,460	55,320	294,224	2,534	1,697	226,526	177,684	76,708
REGION 4	138,881	597,501	398,030	46,993	82,603	354,101	11,723	8,047	519,781	478,821	93,263
REGION 5	123,776	558,363	362,975	60,918	117,748	327,185	1,723	1,201	643,317	583,250	129,461
REGION 6	618,203	636,065	410,413	12,009	353,426	1,520,791	46,371	31,718	433,257	323,325	53,272
REGION 7	81,751	319,103	209,319	6,125	59,037	97,133	8,071	5,544	216,423	209,334	28,907
REGION 8	13,883	33,577	33,136	3,747	9,582	160,293	10	7	18,511	10,401	4,722
REGION 9	64,431	131,902	104,931	14,898	44,383	628,653	3,064	2,095	134,081	98,515	19,048
REGION 10	9,787	28,107	54,538	10,742	10,090	36,033	586	402	16,992	8,869	11,802
Contig. U.S.	1,222,772	2,884,205	1,904,454	183,111	807,915	4,538,201	76,133	52,123	2,607,605	2,094,680	466,463

For conversion of hydrocarbon classes to tons/year, see discussion in Appendix E.

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS, AREA & POINT SOURCES

State	SO2	SO4	NO	NO2	Pb	CO	HCl	HF	NH3	TSP	Ca	Mg	Na	K	VOC	THC
	TONS/YEAR															
Alabama	857,549	32,991	457,653	29,603	681	1,811,119	19,542	3,539	11,964	439,271	1,604	488	356	280	391,455	425,591
Arizona	844,078	30,871	245,625	18,269	366	1,310,433	8,937	1,087	11,921	841,489	1,175	334	111	57	254,096	271,243
Arkansas	87,127	10,478	194,532	16,611	264	1,045,560	1,786	1,445	25,418	874,245	307	95	23	48	223,135	234,377
California	519,799	35,917	1,268,139	114,625	2,643	9,524,250	472	145	32,013	1,536,414	1,777	375	48	235	2,216,485	2,414,927
Colorado	140,138	9,347	284,405	20,372	756	2,302,185	9,110	1,186	24,987	1,134,995	2,320	445	177	119	356,946	385,554
Connecticut	63,665	8,110	128,656	11,094	381	1,192,328	491	0	1,946	120,226	28	8	3	3	284,183	299,090
Delaware	124,669	4,645	58,416	3,850	71	242,885	1,152	184	2,051	49,382	167	176	84	45	77,101	81,188
Dist. of Colum.	15,325	1,121	23,194	2,158	39	338,780	655	23	59	15,099	7	7	4	2	44,081	48,400
Florida	1,102,994	30,793	663,745	48,464	1,087	4,071,755	8,834	29,228	28,793	919,841	6,269	931	201	84	828,561	868,694
Georgia	900,080	30,684	553,085	37,565	697	2,335,826	20,453	2,503	35,359	882,031	299	263	201	222	508,361	530,222
Idaho	56,210	8,676	82,313	9,561	548	1,280,507	329	242	8,133	330,728	87	23	10	37	222,050	230,398
Illinois	1,464,520	42,270	909,708	63,279	2,635	4,246,797	34,318	7,937	68,633	932,702	5,892	1,899	708	899	988,586	1,092,842
Indiana	1,970,870	38,111	741,610	45,233	1,101	2,374,627	33,494	4,607	29,361	496,649	5,026	2,324	1,694	4,565	562,647	623,821
Iowa	334,278	11,010	284,792	20,962	427	1,105,666	11,505	1,706	80,410	1,237,845	3,038	685	386	54	237,157	258,603
Kansas	228,074	7,409	479,624	33,690	250	1,072,560	6,614	799	34,189	1,852,371	354	103	42	22	250,269	298,662
Kentucky	1,150,036	23,108	519,674	31,680	519	1,594,516	22,635	3,841	8,185	452,395	1,734	970	349	183	441,688	469,555
Louisiana	401,333	24,581	664,196	44,770	554	2,541,546	857	1,761	26,314	559,071	407	58.	133	219	625,559	669,847
Maine	133,369	11,223	62,433	4,635	124	506,637	40	5	417	127,174	72	21	75	36	141,991	149,051
Maryland	303,471	10,727	242,626	18,477	456	1,459,780	6,559	1,307	2,992	227,611	442	217	101	79	363,270	394,420
Massachusetts	358,065	14,498	251,390	19,380	666	2,133,002	2,241	86	104	210,504	193	142	65	35	515,765	568,190
Michigan	841,399	32,609	668,942	46,435	1,148	3,613,069	22,871	3,150	10,433	880,263	9,496	1,217	482	565	916,363	987,380
Minnesota	238,705	14,535	340,540	26,090	469	1,928,665	8,820	1,120	48,624	1,199,026	2,218	624	160	79	469,214	496,094
Mississippi	303,846	11,281	274,714	19,797	297	991,881	2,599	314	7,809	587,204	125	68	86	41	261,800	278,672
Missouri	1,333,218	22,746	515,805	33,992	849	2,206,090	22,184	2,681	17,264	2,877,954	18,356	3,228	685	347	629,726	673,526
Montana	169,224	7,583	127,844	12,455	310	1,422,156	2,003	243	3,890	880,654	129	56	23	26	236,467	245,600
Nebraska	78,117	4,078	160,005	13,034	199	609,510	4,637	582	44,683	1,080,992	326	87	12	6	168,618	178,920
Nevada	148,157	6,667	90,658	6,260	107	521,365	3,554	444	705	919,646	407	91	21	12	93,948	99,725
New Hampshire	108,484	4,867	55,291	3,666	100	352,582	1,036	124	1	66,310	15	9	23	3	103,987	109,401
New Jersey	309,856	20,690	387,707	29,802	706	2,294,053	2,566	328	80	402,215	37	24	11	6	696,758	749,784
New Mexico	262,555	9,202	237,643	16,473	174	932,466	8,299	977	4,523	1,249,009	923	409	178	105	191,042	213,500
New York	870,307	43,230	688,092	48,752	1,273	4,758,845	9,269	1,880	13,961	802,715	1,367	1,144	548	310	1,160,860	1,267,046
North Carolina	655,591	31,046	499,064	33,611	727	2,289,334	23,667	3,310	21,118	700,462	2,247	943	303	165	614,002	655,149
North Dakota	115,391	11,574	128,008	8,083	72	282,219	119	60	6,642	1,295,268	777	786	371	199	53,274	58,166
Ohio	2,681,314	51,554	1,145,357	72,251	2,160	4,697,200	50,783	7,934	16,124	1,070,910	7,714	3,538	1,500	1,131	1,001,059	1,092,677
Oklahoma	104,168	9,558	422,056	31,010	412	1,854,007	5,765	768	15,266	1,107,180	5,438	648	34	29	324,988	347,352
Oregon	55,987	18,601	207,286	19,481	334	1,454,001	729	92	4,249	1,849,960	1,103	54	54	310	340,267	363,147
Pennsylvania	1,899,006	60,532	976,345	65,211	1,918	4,377,701	42,015	5,525	24,309	1,432,694	6,383	2,006	826	1,400	1,043,563	1,113,027
Rhode Island	14,168	1,491	33,295	2,958	82	316,586	27	0	0	32,323	1	0	1	1	81,042	86,846
South Carolina	344,968	17,550	259,758	18,334	459	1,207,907	9,045	1,648	4,440	451,493	486	337	178	122	474,791	501,073
South Dakota	40,863	3,798	73,063	6,293	70	509,495	235	38	12,941	715,996	2,168	475	89	9	95,639	101,160
Tennessee	1,158,153	28,905	498,219	33,117	732	1,951,470	23,436	4,357	18,117	656,159	1,002	665	375	209	554,586	587,715
Texas	1,324,373	59,869	3,122,306	207,728	2,169	9,063,470	19,257	5,900	61,713	5,937,876	6,686	2,056	329	351	2,172,905	2,381,939
Utah	116,615	8,886	145,205	10,552	191	990,051	3,588	511	1,961	690,811	2,831	892	658	1,844	160,449	172,386
Vermont	8,185	1,764	21,631	2,149	62	202,077	12	0	3	100,889	3	3	1	2	58,570	61,481
Virginia	370,780	21,579	355,772	27,662	646	2,322,403	7,328	1,385	10,913	466,354	2,422	1,090	402	223	527,715	561,508
Washington	317,791	19,758	270,908	23,738	505	2,401,774	5,062	1,516	18,097	347,565	494	319	188	280	465,326	494,352
West Virginia	1,145,522	27,902	440,190	20,824	618	784,971	29,078	4,861	335	381,995	946	666	296	240	154,780	161,785
Wisconsin	670,610	23,795	380,932	26,842	592	1,892,865	15,406	2,328	32,054	706,684	8,395	927	324	213	476,956	512,284
Wyoming	211,134	13,388	234,634	14,273	86	589,965	13,110	1,727	5,159	486,720	116	103	44	25	102,467	111,091
Contig. U.S.	26,954,136	975,608	20,877,086	1,475,151	31,732	99,308,937	526,524	115,434	838,664	42,617,370	113,808	32,025	12,975	15,474	23,164,547	24,977,459

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS, AREA & POINT SOURCES

State	SO2	SO4	NO	NO2	Pb	CO	HCl	HF	NH3	TSP	Ca	Mg	Na	K	VOC	THC
	METRIC TONS/YEAR															
Alabama	777,969	29,929	415,180	26,855	618	1,643,024	17,729	3,211	10,854	398,501	1,455	443	323	254	355,123	386,090
Arizona	765,749	28,006	222,829	16,574	332	1,188,806	8,108	986	10,815	763,386	1,066	303	101	52	230,512	246,068
Arkansas	79,041	9,506	176,477	15,069	239	948,518	1,620	1,311	23,059	793,102	278	86	21	44	202,425	212,624
California	471,560	32,584	1,150,441	103,987	2,398	8,640,261	428	132	29,042	1,393,814	1,612	340	44	213	2,010,766	2,190,791
Colorado	127,133	8,480	258,011	18,481	686	2,088,509	8,265	1,076	22,668	1,029,652	2,104	404	160	108	323,817	349,769
Connecticut	57,756	7,357	116,715	10,064	346	1,081,662	445	0	1,765	109,067	26	7	3	3	257,807	271,330
Delaware	113,099	4,214	52,994	3,493	64	220,342	1,045	167	1,861	44,799	151	160	77	41	69,945	73,653
Dist. of Colum.	13,903	1,017	21,041	1,958	35	307,336	594	21	54	13,698	6	6	3	2	39,990	43,907
Florida	1,000,637	27,935	602,144	43,966	986	3,693,837	8,014	26,516	26,121	834,467	5,687	844	183	76	751,659	788,067
Georgia	816,554	27,837	501,755	34,079	632	2,119,029	18,555	2,271	32,077	800,166	271	239	182	202	461,178	481,010
Idaho	50,993	7,871	74,674	8,673	497	1,161,657	298	220	7,378	300,032	79	21	9	33	201,440	209,014
Illinois	1,328,614	38,347	825,281	57,406	2,390	3,852,635	31,133	7,200	62,263	846,136	5,345	1,723	642	816	896,833	991,413
Indiana	1,787,975	34,574	672,785	41,035	999	2,154,231	30,386	4,179	26,636	450,556	4,559	2,108	1,537	4,142	510,426	565,923
Iowa	303,258	9,988	258,361	19,017	387	1,003,044	10,437	1,548	72,947	1,122,956	2,756	621	350	49	215,146	234,601
Kansas	206,909	6,721	435,111	30,563	227	973,011	6,000	725	31,016	1,680,443	321	94	38	20	227,041	270,943
Kentucky	1,043,314	20,964	471,446	28,739	471	1,446,523	20,535	3,485	7,425	410,408	1,573	880	317	166	400,695	425,975
Louisiana	364,088	22,300	602,556	40,615	503	2,305,669	777	1,598	23,872	507,183	369	52	120	199	567,503	607,681
Maine	120,992	10,181	56,638	4,205	112	459,614	36	5	379	115,371	65	19	68	33	128,812	135,217
Maryland	275,309	9,731	220,108	16,762	414	1,324,291	5,950	1,186	2,715	206,486	401	197	92	72	329,554	357,813
Massachusetts	324,836	13,152	228,058	17,581	604	1,935,027	2,033	78	94	190,966	175	129	59	32	467,896	515,456
Michigan	763,319	29,583	606,860	42,125	1,041	3,277,726	20,749	2,858	9,465	798,564	8,615	1,104	438	512	831,314	895,740
Minnesota	216,554	13,186	308,935	23,668	425	1,749,656	8,002	1,016	44,111	1,087,740	2,012	566	145	71	425,665	450,050
Mississippi	275,649	10,234	249,218	17,959	269	899,821	2,358	285	7,084	532,703	113	61	78	37	237,502	252,808
Missouri	1,209,497	20,635	467,935	30,837	770	2,001,333	20,125	2,432	15,662	2,610,841	16,652	2,928	621	315	571,281	611,016
Montana	153,520	6,879	115,979	11,299	281	1,290,161	1,817	220	3,529	798,916	117	51	21	24	214,520	222,805
Nebraska	70,868	3,700	145,155	11,824	181	552,938	4,207	528	40,536	980,660	296	79	11	6	152,968	162,315
Nevada	134,408	6,048	82,244	5,679	97	472,975	3,224	403	640	834,289	369	83	19	11	85,228	90,469
New Hampshire	98,417	4,415	50,160	3,326	91	319,857	940	112	1	60,155	13	8	21	3	94,335	99,247
New Jersey	281,101	18,770	351,724	27,036	640	2,081,131	2,328	298	73	364,885	34	22	10	5	632,090	680,194
New Mexico	238,190	8,348	215,589	14,944	158	845,919	7,529	886	4,103	1,133,083	838	371	161	95	173,311	193,684
New York	789,543	39,218	624,231	44,227	1,155	4,317,154	8,409	1,706	12,665	728,215	1,240	1,038	497	281	1,053,116	1,149,447
North Carolina	594,752	28,165	452,748	30,491	660	2,076,851	21,471	3,003	19,158	635,450	2,038	855	275	150	557,015	594,343
North Dakota	104,683	10,500	116,128	7,333	65	256,026	108	54	6,025	1,175,048	705	713	336	180	48,330	52,767
Ohio	2,432,493	46,770	1,039,061	65,545	1,960	4,261,240	46,070	7,198	14,627	971,518	6,998	3,209	1,361	1,026	908,147	991,263
Oklahoma	94,501	8,671	382,885	28,132	374	1,681,933	5,230	697	13,849	1,004,418	4,933	588	31	26	294,825	315,114
Oregon	50,791	16,875	188,047	17,673	303	1,319,048	661	83	3,855	1,678,256	1,001	49	49	281	308,686	329,442
Pennsylvania	1,722,780	54,914	885,733	59,159	1,740	3,971,392	38,116	5,012	22,053	1,299,721	5,791	1,820	749	1,270	946,707	1,009,724
Rhode Island	12,853	1,353	30,205	2,683	74	287,202	24	0	0	29,323	1	0	1	1	73,520	78,786
South Carolina	312,955	15,921	235,651	16,632	416	1,095,796	8,206	1,495	4,028	409,590	441	305	161	110	430,726	454,570
South Dakota	37,071	3,446	66,282	5,709	64	462,206	213	34	11,740	649,541	1,967	431	80	8	86,762	91,771
Tennessee	1,050,678	26,223	451,981	30,043	664	1,770,347	21,261	3,953	16,435	595,260	909	603	340	190	503,114	533,168
Texas	1,201,469	54,313	2,832,530	188,449	1,968	8,222,279	17,470	5,352	55,986	5,386,757	6,066	1,865	298	318	1,971,239	2,160,874
Utah	105,793	8,061	131,729	9,572	173	898,160	3,255	464	1,779	626,694	2,568	810	597	1,672	145,557	156,386
Vermont	7,425	1,600	19,624	1,949	56	183,321	11	0	2	91,525	2	2	1	2	53,134	55,775
Virginia	336,371	19,576	322,753	25,095	586	2,106,855	6,648	1,256	9,900	423,071	2,197	989	365	203	478,736	509,394
Washington	288,300	17,924	245,765	21,535	458	2,178,857	4,592	1,375	16,418	315,307	448	289	171	254	422,137	448,470
West Virginia	1,039,220	25,313	399,340	18,891	561	712,116	26,380	4,410	304	346,541	858	604	268	218	140,414	146,769
Wisconsin	608,378	21,587	345,578	24,351	537	1,717,179	13,976	2,112	29,079	641,095	7,616	841	294	193	432,688	464,738
Wyoming	191,541	12,146	212,859	12,948	78	535,209	11,893	1,567	4,681	441,545	105	93	40	22	92,956	100,780
Contig. U.S.	24,452,809	885,069	18,939,536	1,338,240	28,787	90,091,713	477,664	104,722	760,828	38,661,905	103,247	29,053	11,771	14,038	21,014,593	22,659,252

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS OF HYDROCARBON SPECIES, AREA & POINT SOURCES

State	Methane	Ethane	Propane	Butane	Iso-Butane	Pentane	Iso-Penta	Alkanes	Ethylene	Propylene	Iso-Buten	Alkenes
	THOUSAND MOLES/YEAR											
Alabama	1,573,771	209,627	155,998	320,528	116,617	35,204	5,329	2,319,833	756,285	257,270	2,385	482,416
Arizona	896,985	53,822	24,755	150,781	26,862	14,227	1,646	1,520,405	656,653	181,695	1,725	422,069
Arkansas	558,234	52,601	25,129	140,577	30,055	24,437	3,369	1,305,146	503,046	177,029	1,458	321,801
California	10,260,471	633,765	484,114	1,862,844	382,842	375,136	16,040	13,384,252	3,927,557	1,541,610	7,648	2,684,126
Colorado	1,485,865	93,589	36,497	271,698	40,933	29,784	3,191	2,127,989	794,754	263,880	2,383	517,496
Connecticut	732,077	72,370	25,185	181,076	29,891	19,613	7,270	1,606,122	353,013	170,873	558	309,577
Delaware	205,177	17,314	11,797	52,016	10,594	13,841	922	381,500	100,872	46,113	321	80,139
Dist. of Colum.	204,402	23,401	1,196	18,458	3,051	385	105	290,630	72,146	82,772	131	32,585
Florida	1,996,490	190,339	64,620	603,312	111,848	90,327	4,996	5,048,220	1,667,630	660,287	3,215	1,153,037
Georgia	1,085,897	106,257	51,751	360,837	76,178	62,646	6,224	2,946,840	981,268	325,575	2,947	700,443
Idaho	430,560	28,034	59,608	105,347	48,168	38,322	2,387	1,109,709	971,704	73,974	768	629,825
Illinois	5,380,945	325,420	129,931	666,352	127,598	113,602	12,821	5,880,990	1,480,249	633,184	5,548	1,087,219
Indiana	3,147,863	193,805	71,539	339,975	61,311	55,777	11,583	3,242,282	883,593	341,907	4,005	594,963
Iowa	1,139,796	54,180	15,863	174,794	30,326	22,480	1,305	1,560,840	427,234	194,612	1,667	268,958
Kansas	2,474,816	155,411	105,469	189,434	42,278	58,562	1,112	1,446,173	480,608	170,076	2,744	298,532
Kentucky	1,374,175	124,553	76,867	282,557	60,201	61,642	7,962	2,670,051	914,457	270,926	2,320	681,889
Louisiana	2,084,408	245,672	197,016	372,151	91,413	123,265	2,452	3,488,418	1,800,977	827,238	2,032	931,941
Maine	309,467	51,938	26,038	70,755	13,461	23,856	8,232	661,775	129,826	63,819	270	152,992
Maryland	1,393,384	213,749	182,598	363,460	125,305	50,603	5,860	2,062,491	489,473	226,538	1,069	387,379
Massachusetts	2,766,519	130,616	51,565	461,183	59,912	57,754	5,858	2,978,536	683,158	320,678	1,101	530,006
Michigan	3,599,190	262,855	94,209	549,635	103,574	110,405	16,521	5,584,447	1,202,002	540,016	2,214	922,305
Minnesota	1,332,039	121,895	51,657	281,453	51,668	64,524	10,332	2,733,721	723,385	315,331	1,813	548,556
Mississippi	875,921	53,722	33,106	160,996	33,654	39,125	4,703	1,507,955	450,615	137,992	1,196	337,040
Missouri	2,230,248	157,675	71,577	341,325	59,661	55,707	12,647	3,568,453	1,179,046	425,759	2,317	765,362
Montana	468,310	32,253	71,890	120,748	54,709	47,323	2,290	1,149,951	1,017,435	70,750	1,429	655,280
Nebraska	546,837	28,316	9,516	100,912	16,823	17,732	670	832,578	257,722	99,641	1,233	159,891
Nevada	298,220	21,304	8,682	71,389	11,379	10,789	770	536,920	203,047	69,281	866	137,317
New Hampshire	253,471	31,403	15,062	55,770	10,431	8,508	4,357	546,596	98,438	43,540	127	111,563
New Jersey	2,757,208	161,291	106,216	506,219	93,946	134,033	10,574	4,093,330	973,665	442,308	1,914	736,594
New Mexico	1,124,795	88,358	54,137	142,060	23,652	60,161	3,063	1,007,218	312,587	121,450	1,856	221,475
New York	5,486,000	330,535	218,091	908,735	174,360	159,989	27,398	7,016,755	1,440,965	674,394	2,106	1,251,982
North Carolina	2,017,901	190,226	76,421	369,005	71,208	58,440	14,924	3,623,809	956,294	353,734	2,193	711,531
North Dakota	260,510	12,471	7,131	41,316	7,710	7,032	291	318,645	109,770	42,115	768	64,435
Ohio	4,705,255	305,838	103,317	650,221	112,347	91,706	18,485	5,867,268	1,546,811	627,042	6,018	1,110,201
Oklahoma	1,043,501	131,690	152,523	284,130	93,091	87,690	4,775	1,757,806	569,149	176,897	1,373	413,355
Oregon	1,146,557	92,788	57,838	198,968	49,745	36,867	6,562	1,886,315	873,792	192,263	2,155	578,528
Pennsylvania	3,390,799	332,268	170,193	656,095	124,571	128,805	29,232	5,860,445	1,477,528	570,729	4,951	1,134,168
Rhode Island	297,983	19,886	6,513	56,233	9,077	9,398	1,284	499,415	104,316	49,250	150	85,884
South Carolina	1,350,544	86,039	37,137	216,852	40,853	32,610	3,829	2,783,383	681,306	238,179	1,120	455,019
South Dakota	288,618	16,303	20,223	55,791	19,018	17,209	693	522,694	349,198	53,037	367	222,061
Tennessee	1,648,692	141,478	60,037	301,568	54,473	48,850	12,913	3,180,878	848,711	336,381	2,761	658,712
Texas	10,949,271	552,430	579,425	1,622,612	353,678	563,229	3,349	12,339,690	4,798,633	1,808,913	8,657	2,727,929
Utah	622,059	39,437	17,872	128,881	19,625	20,713	1,387	961,298	323,377	124,809	1,875	209,609
Vermont	128,745	21,031	10,607	29,449	5,599	4,452	3,521	278,131	59,980	26,560	126	68,482
Virginia	1,643,629	166,156	64,313	338,089	57,062	52,722	12,118	3,097,842	777,212	330,061	2,319	598,216
Washington	1,476,488	110,331	70,487	306,982	69,590	59,018	6,886	2,731,880	1,070,991	292,561	1,814	728,113
West Virginia	327,217	44,587	23,232	100,858	20,680	15,028	5,716	843,050	269,844	89,889	1,106	213,316
Wisconsin	1,778,628	139,165	50,648	290,622	49,660	49,776	11,432	2,742,188	651,480	308,655	1,832	507,707
Wyoming	444,205	30,067	40,121	96,998	20,467	30,988	986	542,700	209,926	66,074	2,287	120,507
Contig. U.S.	91,994,146	6,698,261	4,079,718	15,972,045	3,301,153	3,294,293	340,374	134,447,565	41,611,730	15,457,664	103,241	28,722,513

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS OF HYDROCARBON SPECIES, AREA & POINT SOURCES

State	Benzene	Toluene	Xylene	Eth Benz	Aromatics	Formaldeh	Acetaldeh	Aldeh	Acetone	Ketones	Org Acid
	THOUSAND MOLES/YEAR										
Alabama	89,501	243,603	205,961	45,062	67,071	249,170	50,371	21,887	72,265	45,057	19,763
Arizona	59,304	174,565	90,847	18,922	49,833	190,691	36,076	21,823	62,885	23,869	8,026
Arkansas	52,999	151,319	127,830	27,638	43,493	159,273	31,923	8,380	28,718	28,515	13,611
California	601,833	1,584,475	853,308	179,397	375,576	2,156,076	164,316	98,469	868,194	321,086	110,828
Colorado	86,940	286,203	158,408	32,321	66,789	314,604	49,907	19,947	64,785	39,890	14,501
Connecticut	57,234	281,066	266,244	55,178	34,433	215,616	11,899	5,370	105,038	62,707	19,773
Delaware	17,754	104,644	57,451	8,471	11,509	94,179	7,169	2,186	41,253	21,433	3,504
Dist. of Colum.	11,251	38,583	15,058	1,978	16,965	25,185	2,737	6,187	4,636	4,675	4,195
Florida	229,249	617,922	312,838	60,615	177,855	687,059	68,558	80,150	291,242	102,741	39,105
Georgia	109,761	423,006	280,901	55,337	87,188	346,609	61,687	24,059	136,169	82,615	36,945
Idaho	20,278	70,819	80,110	17,959	19,006	76,609	16,064	4,698	12,527	8,714	3,994
Illinois	204,777	772,740	566,170	119,973	179,184	654,043	117,253	28,759	324,306	221,031	90,195
Indiana	133,299	432,474	426,143	91,273	90,543	402,404	84,240	8,726	227,464	160,694	29,901
Iowa	58,579	176,389	78,445	16,790	42,367	194,161	34,862	4,958	45,902	30,748	11,986
Kansas	61,218	174,385	88,969	14,440	68,225	217,084	57,995	7,101	50,294	29,807	17,188
Kentucky	101,038	262,336	278,477	61,032	73,033	365,889	52,507	12,834	91,699	55,738	34,538
Louisiana	276,075	341,397	172,142	26,884	158,281	560,405	64,275	29,712	160,493	86,379	30,115
Maine	20,448	96,607	245,155	54,220	25,794	77,004	5,730	3,557	26,388	21,949	17,005
Maryland	83,079	277,321	230,376	48,135	58,151	309,082	22,435	11,559	87,166	70,755	34,690
Massachusetts	108,988	371,886	253,931	53,991	72,912	961,810	23,316	14,552	305,718	121,552	66,391
Michigan	194,116	643,102	634,751	157,943	132,620	571,711	46,636	15,765	309,737	264,206	82,420
Minnesota	96,152	330,655	370,252	77,633	86,113	330,437	38,445	9,118	120,696	86,368	26,848
Mississippi	44,746	172,776	179,149	36,189	44,256	267,383	24,991	11,733	74,158	47,226	9,718
Missouri	159,348	447,560	516,632	97,448	104,642	386,118	56,082	20,155	188,836	176,818	49,833
Montana	21,505	68,376	76,475	17,169	21,816	152,828	29,867	3,776	12,484	7,597	2,136
Nebraska	31,904	266,253	105,508	8,906	29,109	125,688	25,764	5,019	114,850	86,111	5,849
Nevada	22,968	74,367	43,300	7,910	23,959	76,174	18,123	12,298	20,730	8,132	1,709
New Hampshire	14,444	77,267	136,578	32,243	10,227	65,899	2,705	2,241	29,880	29,900	7,013
New Jersey	183,820	495,186	428,671	88,890	136,296	781,319	43,853	13,557	290,770	114,213	62,114
New Mexico	45,818	149,511	143,272	24,461	69,805	145,756	38,933	9,236	27,194	11,532	2,586
New York	249,269	841,816	924,138	212,538	140,839	1,056,132	44,518	30,370	297,159	219,671	102,881
North Carolina	114,625	413,488	505,266	111,876	90,602	376,800	46,766	25,189	179,863	150,545	40,532
North Dakota	11,712	35,477	17,738	3,598	13,433	80,657	16,040	4,299	7,096	3,995	1,224
Ohio	229,760	736,290	681,147	153,976	157,209	753,465	127,213	18,187	415,042	224,326	80,248
Oklahoma	65,700	205,473	195,591	38,620	64,190	312,669	29,221	12,408	59,881	31,171	10,160
Oregon	55,358	196,172	217,570	49,540	47,373	194,580	45,412	7,551	53,671	35,018	25,949
Pennsylvania	225,515	775,370	976,773	215,513	160,949	806,177	105,124	23,703	308,948	205,283	104,205
Rhode Island	18,262	64,222	52,729	12,022	13,110	57,583	3,270	1,962	26,925	16,629	7,575
South Carolina	84,966	463,241	237,428	34,329	55,479	228,471	26,512	11,849	269,015	283,609	55,381
South Dakota	13,649	43,718	30,857	6,305	13,670	49,333	7,671	3,084	7,640	4,614	1,484
Tennessee	121,130	364,231	439,913	97,337	84,342	347,580	61,082	11,866	222,452	113,755	44,837
Texas	713,885	1,375,843	594,260	68,527	462,742	2,302,927	206,478	98,762	777,994	409,054	96,738
Utah	39,639	121,038	67,823	14,360	36,190	147,018	39,190	5,677	27,658	14,695	3,831
Vermont	8,529	40,183	101,578	23,967	5,913	33,191	2,662	1,263	13,751	9,035	4,008
Virginia	113,069	375,119	418,972	97,394	86,086	397,547	50,108	12,626	165,600	96,536	47,743
Washington	89,491	289,661	257,552	56,192	73,547	358,434	38,367	16,703	71,429	45,846	23,316
West Virginia	26,632	102,562	172,803	40,376	23,292	114,005	23,208	3,408	15,629	12,410	4,458
Wisconsin	91,027	380,425	404,415	87,009	77,741	302,076	38,612	7,921	131,387	124,095	82,950
Wyoming	22,126	61,308	42,571	8,635	27,780	120,680	47,775	1,653	6,362	4,484	636
Contig. U S.	5,492,770	16,492,428	13,762,475	2,870,820	4,011,537	19,199,592	2,247,947	816,293	7,253,977	4,376,829	1,594,637

For conversion of hydrocarbon classes to tons/year, see discussion in Appendix E.

1980 NAPAP 5 2 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS, AREA & POINT SOURCES

TONS/YEAR

EPA REGION	SO2	SO4	NO	NO2	Pb	CO	HCl	HF	NH3	TSP	Ca	Mg	Na	K	VOC	THC
REGION 1	685,936	41,953	552,696	43,882	1,415	4,703,212	3,847	215	2,470	657,426	312	183	169	80	1,185,538	1,274,058
REGION 2	1,180,163	63,920	1,075,799	78,555	1,979	7,052,898	11,835	2,208	14,042	1,204,930	1,404	1,168	559	315	1,857,619	2,016,830
REGION 3	3,858,772	126,506	2,096,543	138,182	3,748	9,526,520	86,787	13,285	40,660	2,573,135	10,367	4,162	1,713	1,991	2,210,510	2,360,328
REGION 4	6,473,217	206,358	3,725,913	252,170	5,199	16,253,808	130,211	48,740	135,784	5,088,856	13,766	4,664	2,049	1,306	4,075,244	4,316,670
REGION 5	7,867,419	202,874	4,187,088	280,130	8,105	18,753,223	165,692	27,076	205,228	5,286,234	38,742	10,528	4,869	7,451	4,414,825	4,805,098
REGION 6	2,179,556	113,688	4,640,733	316,592	3,573	15,437,049	35,964	10,851	133,234	9,727,381	13,762	3,265	696	751	3,537,629	3,847,014
REGION 7	1,973,687	45,243	1,440,226	101,678	1,725	4,993,826	44,940	5,768	176,547	7,049,162	22,074	4,103	1,124	429	1,285,770	1,409,712
REGION 8	793,365	54,576	993,160	72,028	1,485	6,096,071	28,165	3,765	55,581	5,204,444	8,339	2,758	1,362	2,220	1,005,242	1,073,957
REGION 9	1,512,034	73,455	1,604,421	139,155	3,116	11,356,048	12,963	1,676	44,639	3,297,549	3,359	800	181	304	2,564,528	2,785,895
REGION 10	429,988	47,035	560,507	52,780	1,387	5,136,282	6,120	1,850	30,479	2,528,253	1,684	396	253	627	1,027,643	1,087,898
Contig. U.S.	26,954,136	975,608	20,877,086	1,475,151	31,732	99,308,937	526,524	115,434	838,664	42,617,370	113,808	32,025	12,975	15,474	23,164,547	24,977,459

METRIC TONS/YEAR

EPA REGION	SO2	SO4	NO	NO2	Pb	CO	HCl	HF	NH3	TSP	Ca	Mg	Na	K	VOC	THC
REGION 1	622,280	38,059	501,400	39,809	1,284	4,266,684	3,490	195	2,241	596,408	283	166	153	72	1,075,505	1,155,810
REGION 2	1,070,643	57,988	975,955	71,264	1,795	6,398,285	10,737	2,003	12,738	1,093,100	1,274	1,059	507	286	1,685,207	1,829,642
REGION 3	3,500,682	114,766	1,901,970	125,357	3,400	8,642,332	78,733	12,052	36,886	2,334,316	9,405	3,775	1,554	1,806	2,005,346	2,141,260
REGION 4	5,872,509	187,208	3,380,124	228,766	4,716	14,745,227	118,128	44,217	123,182	4,616,546	12,489	4,231	1,859	1,185	3,697,012	3,916,031
REGION 5	7,137,332	184,047	3,798,500	254,131	7,353	17,012,667	150,316	24,563	186,181	4,795,609	35,147	9,551	4,417	6,760	4,005,073	4,359,126
REGION 6	1,977,289	103,138	4,210,037	287,210	3,241	14,004,319	32,627	9,844	120,869	8,824,543	12,485	2,962	632	682	3,209,303	3,489,976
REGION 7	1,790,531	41,044	1,306,563	92,241	1,565	4,530,326	40,770	5,233	160,161	6,394,901	20,026	3,722	1,020	389	1,166,436	1,278,875
REGION 8	719,740	49,511	900,988	65,342	1,347	5,530,270	25,551	3,416	50,423	4,721,397	7,565	2,502	1,236	2,014	911,942	974,279
REGION 9	1,371,718	66,638	1,455,514	126,240	2,827	10,302,041	11,760	1,520	40,496	2,991,490	3,047	726	164	275	2,326,506	2,527,328
REGION 10	390,084	42,670	508,486	47,881	1,258	4,659,562	5,552	1,678	27,651	2,293,595	1,527	359	229	569	932,263	986,926
Contig. U.S.	24,452,809	885,069	18,939,536	1,338,240	28,787	90,091,713	477,664	104,722	760,828	38,661,905	103,247	29,053	11,771	14,038	21,014,593	22,659,252

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL U.S. EMISSIONS OF HYDROCARBON SPECIES, AREA & POINT SOURCES

EPA REGION	Methane	Ethane	Propane	Butane	Iso-Butane	Pentane	Iso-Pent	Alkanes	Ethylene	Propylene	Iso-Buten	Alkenes
	THOUSAND MOLES/YEAR											
REGION 1	4,488,261	327,245	134,969	854,466	128,371	123,580	30,523	6,570,576	1,428,731	674,720	2,332	1,258,505
REGION 2	8,243,208	491,826	324,307	1,414,954	268,306	294,022	37,972	11,110,085	2,414,630	1,116,702	4,020	1,988,577
REGION 3	7,164,608	797,476	453,331	1,528,977	341,262	261,384	53,953	12,535,958	3,187,076	1,346,102	9,897	2,445,803
REGION 4	11,923,392	1,102,242	555,938	2,615,654	565,032	428,845	60,880	24,080,968	7,256,567	2,580,343	18,138	5,180,087
REGION 5	19,943,921	1,348,978	501,301	2,778,259	506,159	485,791	81,174	26,050,896	6,487,520	2,766,134	21,432	4,770,952
REGION 6	15,760,210	1,070,750	1,008,229	2,561,530	591,888	858,782	17,009	19,898,278	7,984,392	3,111,527	15,376	4,616,501
REGION 7	6,391,697	395,581	202,425	806,464	149,087	154,481	15,734	7,408,045	2,344,611	890,088	7,961	1,492,723
REGION 8	3,569,567	224,119	193,733	715,431	162,461	153,049	8,838	5,623,277	2,804,459	620,664	9,109	1,789,389
REGION 9	11,455,675	708,892	517,552	2,085,014	421,084	400,152	18,456	15,441,577	4,787,257	1,792,586	10,240	3,243,512
REGION 10	3,053,606	231,153	187,933	611,297	167,503	134,208	15,835	5,727,904	2,916,488	558,798	4,737	1,936,466
Contig. U.S.	91,994,146	6,698,261	4,079,718	15,972,045	3,301,153	3,294,293	340,374	134,447,565	41,611,730	15,457,664	103,241	28,722,513

EPA REGION	Benzene	Toluene	Xylene	Eth Benz	Aromatics	Formaldeh	Acetaldeh	Aldeh	Acetone	Ketones	Org. Acid
	THOUSAND MOLES/YEAR										
REGION 1	227,905	931,231	1,056,215	231,621	162,388	1,411,102	49,580	28,945	507,699	261,771	121,765
REGION 2	433,089	1,337,002	1,352,810	301,227	277,135	1,837,451	88,371	43,927	587,929	333,884	164,995
REGION 3	477,301	1,673,599	1,871,433	411,867	356,953	1,746,176	210,780	59,670	623,232	411,091	198,794
REGION 4	895,017	2,960,603	2,439,933	501,777	679,826	2,868,961	392,474	199,568	1,336,863	881,286	280,819
REGION 5	949,131	3,295,684	3,082,877	687,808	723,409	3,014,136	452,399	88,477	1,528,633	1,080,721	392,563
REGION 6	1,154,477	2,223,543	1,233,095	186,129	798,511	3,481,031	370,831	158,497	1,054,279	566,651	153,211
REGION 7	311,050	1,064,588	789,555	137,583	244,343	923,051	174,703	37,233	399,882	323,485	84,856
REGION 8	195,570	616,120	393,871	82,388	179,678	865,120	190,449	38,435	126,026	75,275	23,812
REGION 9	684,105	1,833,406	987,454	206,728	449,368	2,422,941	218,516	132,590	951,808	353,087	120,563
REGION 10	165,126	556,652	555,232	123,692	139,926	629,623	99,842	28,951	137,627	89,578	53,259
Contig. U.S.	5,492,770	16,492,428	13,762,475	2,870,820	4,011,537	19,199,592	2,247,947	816,293	7,253,977	4,376,829	1,594,637

For conversion of hydrocarbon classes to tons/year, see discussion in Appendix E.

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL CANADIAN EMISSIONS, AREA SOURCES

SCC	SO2	SO4	NO	NO2	PB	CO	HCl	HF	NH3	TSP	CA	MG	NA	K	VOC	THC
	TONS/YEAR															
10101	3,524	151	67,580	7,509	0	1,100,692	0	0	0	6,089	0	0	0	0	76,543	82,528
10102	1,926	20	46,451	5,161	0	1,035,780	0	0	0	4,904	0	0	0	0	65,662	70,796
10103	2,130	49	46,634	5,182	0	782,189	0	0	0	3,680	0	0	0	0	63,894	68,890
10104	14,150	969	284,366	31,596	0	4,087,204	0	0	0	33,616	0	0	0	0	410,708	442,819
10105	49	0	294	33	0	51,875	0	0	0	272	0	0	0	0	14,012	15,108
10106	30	0	312	35	0	33,909	0	0	0	963	0	0	0	0	21,025	22,669
10201	28	0	45	1	0	460	0	0	0	21	0	0	0	0	53	54
10202	47	0	150	5	0	1,550	0	0	0	66	0	0	0	0	172	174
10203	562	0	5,806	180	0	11,978	0	0	0	330	0	0	0	0	7,266	7,378
10204	1,676	0	35,515	1,098	0	1,536	0	0	0	762	0	0	0	0	350	356
10206	47	0	285	9	0	68,717	0	0	0	110	0	0	0	0	6,187	6,283
10207	29	0	37	1	0	12,674	0	0	0	21	0	0	0	0	754	766
10208	57	0	82	3	0	61,680	0	0	0	113	0	0	0	0	9,996	10,150
10210	88	0	674	21	0	373	0	0	0	93	0	0	0	0	17	17
10211	42	0	51	2	0	16,498	0	0	0	29	0	0	0	0	651	661
10213	48	0	332	10	0	770	0	0	0	125	0	0	0	0	341	346
10214	4,664	201	106,195	11,799	0	42,910	0	0	0	8,030	0	0	0	0	35,115	35,724
10215	202	0	195	10	0	102,292	0	0	0	0	0	0	0	0	32,236	34,796
10217	3,780	0	4,311	88	0	4,045	0	0	0	1,452	0	0	0	0	5,659	5,659
10218	2,164	0	16,108	329	0	3,295	0	0	0	862	0	0	0	0	12,407	12,407
10220	5,576	0	1,658	34	0	0	0	0	0	127	0	0	0	0	117	131
10221	60,657	0	11,405	233	0	718	0	0	0	4,169	0	0	0	0	218	245
10301	1,357	0	26,112	2,901	0	967,453	0	0	0	1,803	0	0	0	0	47,632	51,415
10501	0	0	143,302	25,289	0	6,743,663	0	0	12,646	6,322,187	0	0	0	0	1,011,551	1,011,551
10601	0	0	17,015	3,003	0	1,145,919	0	0	0	225,073	0	0	0	0	21,643	21,643
10701	0	0	0	0	0	11,111	0	0	0	5,556	0	0	0	0	5,556	5,556
10801	0	145	0	0	0	0	0	0	147,983	7,852	0	0	0	0	0	0
11201	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18,243	18,243
11301	0	0	0	0	0	0	0	0	0	11,245	0	0	0	0	0	0
11401	0	0	0	0	0	0	0	0	0	1,820	0	0	0	0	0	0
11402	0	0	0	0	0	0	0	0	0	526	0	0	0	0	165,936	169,495
11403	0	0	0	0	0	0	0	0	0	6,931	0	0	0	0	0	0
11404	0	0	0	0	0	0	0	0	0	100,888	0	0	0	0	0	0
11501	0	0	0	0	0	0	0	0	0	60,835	0	0	0	0	0	0
11502	0	0	0	0	0	0	0	0	0	7,025	0	0	0	0	250	250
11503	0	0	0	0	0	0	0	0	0	110	0	0	0	0	9	9
11504	0	0	0	0	0	0	0	0	0	1,483	0	0	0	0	119	119
11702	72	3	114	2	0	6	0	0	0	9	0	0	0	0	2	2
11703	19	0	28	3	0	2	0	0	0	2	0	0	0	0	0	0
11704	3,391	201	549	11	0	44	0	0	0	250	0	0	0	0	14	16
11705	1,460	20	9,065	1,007	0	3,143	0	0	0	904	0	0	0	0	831	970
11706	272	0	3,852	203	0	139	0	0	0	23	0	0	0	0	6	14
11711	4,266	82	257	8	0	7,457	0	0	169	1,477	0	0	0	0	1,462	1,493
11712	59,117	3,855	24,089	492	0	6,719	0	0	1,310	3,328	0	0	0	0	6,374	6,374
11713	2,793	301	2,756	56	0	770	0	0	144	378	0	0	0	0	715	715
11714	2	0	1,042	55	0	232	0	0	0	29	0	0	0	0	44	99
11715	115	1	18,273	962	0	6,731	0	0	0	576	0	0	0	0	733	1,660
11716	7,959	859	1,269	26	0	124	0	0	22	687	0	0	0	0	60	67
11721	1,098	19	189	6	0	668	0	0	0	904	0	0	0	0	631	645
11722	21,561	2,888	6,[illegible]21	135	0	1,742	0	0	0	703	0	0	0	0	357	357
11723	676	90	[illegible]42	15	0	199	0	0	0	82	0	0	0	0	39	39
11724	2	0	[illegible]85	41	0	147	0	0	0	139	0	0	0	0	25	58

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL CANADIAN EMISSIONS, AREA SOURCES

SCC	SO2	SO4	NO	NO2	PB	CO	HCl	HF	NH3	TSP	CA	MG	NA	K	VOC	THC
	TONS/YEAR															
11725	115	8	17,858	940	0	6,580	0	0	0	562	0	0	0	0	716	1,623
11726	69,506	6,249	12,100	247	0	1,177	0	0	0	6,546	0	0	0	0	574	645
11731	72,651	1,166	10,729	332	0	5,556	0	0	0	28,024	0	0	0	0	304	311
11732	6,569	704	2,914	59	0	762	0	0	0	312	0	0	0	0	158	158
11733	172	17	216	4	0	55	0	0	0	23	0	0	0	0	8	8
11734	2	0	858	45	0	228	0	0	0	81	0	0	0	0	16	36
11735	178	13	39,772	2,093	0	10,467	0	0	0	897	0	0	0	0	826	1,871
11736	320,833	26,967	54,760	1,118	0	5,334	0	0	0	29,673	0	0	0	0	2,597	2,917
11740	2,790	0	5,562	172	0	428,957	0	0	0	96,093	0	0	0	0	3,550	3,626
11801	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,934	4,382
12001	0	0	0	0	0	0	0	0	0	43,307	0	0	0	0	0	0
12002	0	0	0	0	0	0	0	0	0	6,019	0	0	0	0	0	0
12101	0	0	0	0	0	0	0	0	0	970	0	0	0	0	0	0
12102	0	0	0	0	0	0	0	0	0	23,289	0	0	0	0	0	0
12103	0	0	0	0	0	0	0	0	0	466	0	0	0	0	0	0
12104	0	0	0	0	0	0	0	0	0	9,317	0	0	0	0	0	0
12111	0	0	0	0	0	0	0	0	0	13	0	0	0	0	0	0
12112	0	0	0	0	0	0	0	0	0	123	0	0	0	0	0	0
12113	0	0	0	0	0	0	0	0	0	300	0	0	0	0	0	0
12114	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0
12115	0	0	0	0	0	0	0	0	0	240	0	0	0	0	0	0
12116	0	0	0	0	0	0	0	0	0	149	0	0	0	0	0	0
12117	0	0	0	0	0	0	0	0	0	160	0	0	0	0	0	0
12121	0	0	0	0	0	0	0	0	0	30	0	0	0	0	0	0
12501	0	0	0	0	0	0	0	0	0	9,370	0	0	0	0	0	0
12502	0	0	0	0	0	0	0	0	0	3,318	0	0	0	0	0	0
12601	0	0	0	0	0	0	0	0	0	9,778	0	0	0	0	0	0
2602	0	0	0	0	0	0	0	0	0	248	0	0	0	0	0	0
12603	0	0	0	0	0	0	0	0	0	8,043	0	0	0	0	0	0
12604	0	0	0	0	0	0	0	0	0	1,737	0	0	0	0	0	0
12605	0	0	0	0	0	0	0	0	0	3,802	0	0	0	0	0	0
12606	0	0	0	0	0	0	0	0	0	2,308	0	0	0	0	0	0
12613	0	0	0	0	0	0	0	0	0	17,199	0	0	0	0	0	0
12614	0	0	0	0	0	0	0	0	0	3,425	0	0	0	0	0	0
12615	0	0	0	0	0	0	0	0	0	10,946	0	0	0	0	0	0
12623	0	0	0	0	0	0	0	0	0	3,027	0	0	0	0	0	0
12624	0	0	0	0	0	0	0	0	0	1,836	0	0	0	0	0	0
12625	0	0	0	0	0	0	0	0	0	1,541	0	0	0	0	0	0
12626	0	0	0	0	0	0	0	0	0	1,009	0	0	0	0	0	0
12641	0	0	0	0	0	0	0	0	0	919	0	0	0	0	0	0
12642	0	0	0	0	0	0	0	0	0	2,896	0	0	0	0	0	0
12643	0	0	0	0	0	0	0	0	0	1,147	0	0	0	0	0	0
12644	0	0	0	0	0	0	0	0	0	227	0	0	0	0	0	0
12701	0	0	72,524	3,817	0	9,673	0	0	0	0	0	0	0	0	14,416	32,657
12702	0	0	2,086	110	0	906	0	0	0	0	0	0	0	0	63	142
12703	0	0	7,302	384	0	974	0	0	0	0	0	0	0	0	1,451	3,287
12704	0	0	542	29	0	0	0	0	0	24	0	0	0	0	4	9
12705	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,880	4,258
12801	302	0	2,575	454	0	393,658	0	0	0	33,311	0	0	0	0	6,601	33,311
12802	104	0	192	34	0	0	0	0	28	125	0	0	0	0	0	0
12803	526	0	596	70	0	759	0	0	83	929	0	0	0	0	42	212
12901	0	0	0	0	0	0	0	0	0	0	0	0	0	0	55,130	55,130

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL CANADIAN EMISSIONS, AREA SOURCES

SCC	SO2	SO4	NO	NO2	PB	CO	HCl	HF	NH3	TSP	CA	MG	NA	K	VOC	THC
	TONS/YEAR															
12902	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26,538	26,538
12903	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3,317	3,317
12904	0	0	0	0	0	0	0	0	0	0	0	0	0	0	35,068	35,068
12905	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5,055	5,055
12906	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30,013	30,013
12907	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,843	2,843
13001	0	0	0	0	0	0	0	0	0	0	0	0	0	0	81,760	81,760
13002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	74,060	74,060
13101	0	0	0	0	0	0	0	0	0	0	0	0	0	0	31,456	2,019,013
13201	0	0	0	0	0	1,045	0	0	0	2,749	0	0	0	0	0	0
13202	0	0	0	0	0	4,682	0	0	0	2,945	0	0	0	0	0	0
13203	0	0	0	0	0	0	0	0	0	2,276	0	0	0	0	0	0
13204	0	0	0	0	0	0	0	0	0	1,120	0	0	0	0	0	0
13205	0	0	0	0	0	2	0	0	0	4	0	0	0	0	0	0
13701	0	0	0	0	0	0	0	0	0	1,294,970	0	0	0	0	0	0
13702	0	0	0	0	0	0	0	0	0	71,945	0	0	0	0	0	0
13703	0	0	0	0	0	0	0	0	0	3,270,672	0	0	0	0	0	0
13704	0	0	0	0	0	0	0	0	0	3,866,796	0	0	0	0	0	0
13705	0	0	0	0	0	0	0	0	0	311,669	0	0	0	0	0	0
13706	0	0	0	0	0	0	0	0	0	13,284,702	0	0	0	0	0	0
13901	0	0	0	0	0	0	0	0	0	486	0	0	0	0	0	0
13902	0	0	0	0	0	0	0	0	0	1,935	0	0	0	0	0	0
14001	0	0	0	0	0	2,132	0	0	0	5,329	0	0	0	0	0	0
14101	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5,047	5,720
14102	36,201	181	0	0	0	0	0	0	0	0	0	0	0	0	22,296	25,271
14201	657	0	0	0	0	0	0	0	0	1,609	0	0	0	0	0	0
14202	0	0	0	0	0	0	0	0	0	7,382	0	0	0	0	0	0
14203	0	0	0	0	0	0	0	0	0	143,020	0	0	0	0	0	0
14204	0	0	0	0	0	0	0	0	0	61,615	0	0	0	0	0	0
14205	0	0	0	0	0	0	0	0	0	4,381	0	0	0	0	0	0
14401	0	0	0	0	0	0	0	0	0	3,762	0	0	0	0	267	758
14501	0	0	0	0	0	0	0	0	0	29,441	0	0	0	0	0	0
14601	6,144	565	60,077	6,675	0	23,746	0	0	0	9,133	0	0	0	0	14,424	14,674
14602	3,990	365	60,943	6,771	0	11,862	0	0	0	2,264	0	0	0	0	4,620	4,700
14603	24,640	1,322	113,657	12,629	0	60,210	0	0	0	11,439	0	0	0	0	22,901	23,298
14604	12,359	1,136	168,960	18,773	0	40,756	0	0	0	13,364	0	0	0	0	17,889	18,200
14701	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21,166	21,539
14901	0	0	0	0	0	0	0	0	0	63,786	0	0	0	0	0	0
15101	0	0	0	0	0	0	0	0	0	0	0	0	0	0	83,641	84,390
15201	0	0	0	0	0	0	0	0	0	157,366	0	0	0	0	0	0
15202	0	0	0	0	0	0	0	0	0	822,512	0	0	0	0	0	0
CANADA	763,375	48,547	1,518,567	152,309	NR	17,326,935	NR	NR	162,384	30,641,093	NR	NR	NR	NR	2,618,250	4,729,547

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL CANADIAN EMISSIONS, AREA SOURCES

SCC	SO2	SO4	NO	NO2	PB	CO	HCl	HF	NH3	TSP	CA	MG	NA	K	VOC	THC
	METRIC TONS/YEAR															
10101	3,197	137	61,308	6,812	0	998,531	0	0	0	5,524	0	0	0	0	69,439	74,868
10102	1,747	18	42,139	4,682	0	939,644	0	0	0	4,449	0	0	0	0	59,568	64,225
10103	1,932	44	42,306	4,701	0	709,590	0	0	0	3,338	0	0	0	0	57,964	62,496
10104	12,837	879	257,972	28,664	0	3,707,849	0	0	0	30,496	0	0	0	0	372,588	401,718
10105	44	0	267	30	0	47,060	0	0	0	247	0	0	0	0	12,712	13,706
10106	27	0	283	31	0	30,762	0	0	0	874	0	0	0	0	19,074	20,565
10201	25	0	40	1	0	417	0	0	0	19	0	0	0	0	48	49
10202	43	0	136	4	0	1,406	0	0	0	60	0	0	0	0	156	158
10203	510	0	5,267	163	0	10,866	0	0	0	299	0	0	0	0	6,592	6,693
10204	1,520	0	32,218	996	0	1,393	0	0	0	691	0	0	0	0	318	323
10206	43	0	259	8	0	62,339	0	0	0	100	0	0	0	0	5,613	5,699
10207	26	0	33	1	0	11,498	0	0	0	19	0	0	0	0	684	695
10208	52	0	75	2	0	55,955	0	0	0	103	0	0	0	0	9,069	9,208
10210	80	0	612	19	0	338	0	0	0	84	0	0	0	0	15	16
10211	38	0	47	1	0	14,967	0	0	0	26	0	0	0	0	591	600
10213	44	0	301	9	0	699	0	0	0	113	0	0	0	0	309	314
10214	4,231	182	96,338	10,704	0	38,927	0	0	0	7,285	0	0	0	0	31,856	32,408
10215	183	0	177	9	0	92,798	0	0	0	0	0	0	0	0	29,244	31,566
10217	3,429	0	3,911	80	0	3,670	0	0	0	1,317	0	0	0	0	5,133	5,133
10218	1,963	0	14,613	298	0	2,989	0	0	0	782	0	0	0	0	11,255	11,255
10220	5,058	0	1,504	31	0	0	0	0	0	115	0	0	0	0	106	119
10221	55,027	0	10,347	211	0	651	0	0	0	3,782	0	0	0	0	198	222
10301	1,231	0	23,688	2,632	0	877,659	0	0	0	1,636	0	0	0	0	43,211	46,643
10501	0	0	130,001	22,941	0	6,117,748	0	0	11,472	5,735,392	0	0	0	0	917,664	917,664
10601	0	0	15,436	2,724	0	1,039,560	0	0	0	204,183	0	0	0	0	19,634	19,634
10701	0	0	0	0	0	10,080	0	0	0	5,040	0	0	0	0	5,040	5,040
10801	0	132	0	0	0	0	0	0	134,248	7,123	0	0	0	0	0	0
11201	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16,550	16,550
11301	0	0	0	0	0	0	0	0	0	10,201	0	0	0	0	0	0
11401	0	0	0	0	0	0	0	0	0	1,651	0	0	0	0	0	0
11402	0	0	0	0	0	0	0	0	0	477	0	0	0	0	150,534	153,763
11403	0	0	0	0	0	0	0	0	0	6,288	0	0	0	0	0	0
11404	0	0	0	0	0	0	0	0	0	91,524	0	0	0	0	0	0
11501	0	0	0	0	0	0	0	0	0	55,189	0	0	0	0	0	0
11502	0	0	0	0	0	0	0	0	0	6,373	0	0	0	0	227	227
11503	0	0	0	0	0	0	0	0	0	100	0	0	0	0	8	8
11504	0	0	0	0	0	0	0	0	0	1,345	0	0	0	0	108	108
11702	65	3	103	2	0	5	0	0	0	8	0	0	0	0	2	2
11703	17	0	25	3	0	2	0	0	0	2	0	0	0	0	0	0
11704	3,076	182	498	10	0	40	0	0	0	227	0	0	0	0	13	14
11705	1,324	18	8,223	914	0	2,851	0	0	0	820	0	0	0	0	754	880
11706	247	0	3,495	184	0	126	0	0	0	21	0	0	0	0	6	13
11711	3,870	74	233	7	0	6,765	0	0	153	1,340	0	0	0	0	1,326	1,354
11712	53,630	3,497	21,854	446	0	6,095	0	0	1,188	3,019	0	0	0	0	5,782	5,782
11713	2,534	273	2,500	51	0	699	0	0	131	343	0	0	0	0	649	649
11714	2	0	945	50	0	210	0	0	0	26	0	0	0	0	40	90
11715	104	1	16,577	872	0	6,106	0	0	0	523	0	0	0	0	665	1,506
11716	7,220	779	1,151	23	0	112	0	0	20	623	0	0	0	0	54	61
11721	996	17	172	5	0	606	0	0	0	820	0	0	0	0	573	585
11722	19,560	2,620	6,006	123	0	1,580	0	0	0	638	0	0	0	0	324	324
11723	613	82	673	14	0	181	0	0	0	74	0	0	0	0	35	35
11724	2	0	712	37	0	133	0	0	0	126	0	0	0	0	23	52

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL CANADIAN EMISSIONS, AREA SOURCES

SLC	SO2	SO4	NO	NO2	PB	CO	HCL	HF	NH3	TSP	CA	MG	NA	K	VOC	THC
	METRIC TONS/YEAR															
11725	104	7	16,201	853	0	5,969	0	0	0	510	0	0	0	0	650	1,472
11726	63,055	5,669	10,977	224	0	1,068	0	0	0	5,938	0	0	0	0	521	585
11731	65,908	1,058	9,733	301	0	5,040	0	0	0	25,423	0	0	0	0	276	282
11732	5,959	639	2,643	54	0	691	0	0	0	283	0	0	0	0	143	143
11733	156	15	196	4	0	50	0	0	0	21	0	0	0	0	7	7
11734	2	0	778	41	0	207	0	0	0	73	0	0	0	0	14	33
11735	161	12	36,080	1,899	0	9,496	0	0	0	814	0	0	0	0	749	1,697
11736	291,055	24,464	49,678	1,014	0	4,839	0	0	0	26,919	0	0	0	0	2,356	2,646
11740	2,531	0	5,046	156	0	389,143	0	0	0	87,174	0	0	0	0	3,220	3,289
11801	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,755	3,975
12001	0	0	0	0	0	0	0	0	0	39,287	0	0	0	0	0	0
12002	0	0	0	0	0	0	0	0	0	5,460	0	0	0	0	0	0
12101	0	0	0	0	0	0	0	0	0	880	0	0	0	0	0	0
12102	0	0	0	0	0	0	0	0	0	21,127	0	0	0	0	0	0
12103	0	0	0	0	0	0	0	0	0	423	0	0	0	0	0	0
12104	0	0	0	0	0	0	0	0	0	8,452	0	0	0	0	0	0
12111	0	0	0	0	0	0	0	0	0	12	0	0	0	0	0	0
12112	0	0	0	0	0	0	0	0	0	112	0	0	0	0	0	0
12113	0	0	0	0	0	0	0	0	0	272	0	0	0	0	0	0
12114	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0
12115	0	0	0	0	0	0	0	0	0	218	0	0	0	0	0	0
12116	0	0	0	0	0	0	0	0	0	135	0	0	0	0	0	0
12117	0	0	0	0	0	0	0	0	0	145	0	0	0	0	0	0
12121	0	0	0	0	0	0	0	0	0	27	0	0	0	0	0	0
12501	0	0	0	0	0	0	0	0	0	8,500	0	0	0	0	0	0
12502	0	0	0	0	0	0	0	0	0	3,010	0	0	0	0	0	0
12601	0	0	0	0	0	0	0	0	0	8,870	0	0	0	0	0	0
12602	0	0	0	0	0	0	0	0	0	225	0	0	0	0	0	0
12603	0	0	0	0	0	0	0	0	0	7,296	0	0	0	0	0	0
12604	0	0	0	0	0	0	0	0	0	1,576	0	0	0	0	0	0
12605	0	0	0	0	0	0	0	0	0	3,449	0	0	0	0	0	0
12606	0	0	0	0	0	0	0	0	0	2,094	0	0	0	0	0	0
12613	0	0	0	0	0	0	0	0	0	15,603	0	0	0	0	0	0
12614	0	0	0	0	0	0	0	0	0	3,107	0	0	0	0	0	0
12615	0	0	0	0	0	0	0	0	0	9,930	0	0	0	0	0	0
12623	0	0	0	0	0	0	0	0	0	2,746	0	0	0	0	0	0
12624	0	0	0	0	0	0	0	0	0	1,666	0	0	0	0	0	0
12625	0	0	0	0	0	0	0	0	0	1,398	0	0	0	0	0	0
12626	0	0	0	0	0	0	0	0	0	915	0	0	0	0	0	0
12641	0	0	0	0	0	0	0	0	0	834	0	0	0	0	0	0
12642	0	0	0	0	0	0	0	0	0	2,627	0	0	0	0	0	0
12643	0	0	0	0	0	0	0	0	0	1,041	0	0	0	0	0	0
12644	0	0	0	0	0	0	0	0	0	206	0	0	0	0	0	0
12701	0	0	65,793	3,463	0	8,775	0	0	0	0	0	0	0	0	13,078	29,626
12702	0	0	1,893	100	0	822	0	0	0	0	0	0	0	0	57	129
12703	0	0	6,624	349	0	884	0	0	0	0	0	0	0	0	1,316	2,982
12704	0	0	491	26	0	0	0	0	0	22	0	0	0	0	3	8
12705	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,705	3,863
12801	274	0	2,336	412	0	357,121	0	0	0	30,219	0	0	0	0	5,988	30,219
12802	94	0	174	31	0	0	0	0	25	113	0	0	0	0	0	0
12803	477	0	339	63	0	689	0	0	75	843	0	0	0	0	38	192
12901	0	0	0	0	0	0	0	0	0	0	0	0	0	0	50,013	50,013

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL CANADIAN EMISSIONS, AREA SOURCES

SCC	SO2	SO4	NO	NO2	PB	CO	HCl	HF	NH3	TSP	CA	MG	NA	K	VOC	THC
	METRIC TONS/YEAR															
12902	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24,075	24,075
12903	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3,009	3,009
12904	0	0	0	0	0	0	0	0	0	0	0	0	0	0	31,813	31,813
12905	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4,586	4,586
12906	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27,228	27,228
12907	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,579	2,579
13001	0	0	0	0	0	0	0	0	0	0	0	0	0	0	74,171	74,171
13002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	67,186	67,186
13101	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28,537	1,831,618
13201	0	0	0	0	0	948	0	0	0	2,494	0	0	0	0	0	0
13202	0	0	0	0	0	4,247	0	0	0	2,672	0	0	0	0	0	0
13203	0	0	0	0	0	0	0	0	0	2,065	0	0	0	0	0	0
13204	0	0	0	0	0	0	0	0	0	1,016	0	0	0	0	0	0
13205	0	0	0	0	0	2	0	0	0	4	0	0	0	0	0	0
13701	0	0	0	0	0	0	0	0	0	1,174,777	0	0	0	0	0	0
13702	0	0	0	0	0	0	0	0	0	65,267	0	0	0	0	0	0
13703	0	0	0	0	0	0	0	0	0	2,967,104	0	0	0	0	0	0
13704	0	0	0	0	0	0	0	0	0	3,507,898	0	0	0	0	0	0
13705	0	0	0	0	0	0	0	0	0	282,741	0	0	0	0	0	0
13706	0	0	0	0	0	0	0	0	0	12,051,679	0	0	0	0	0	0
13901	0	0	0	0	0	0	0	0	0	441	0	0	0	0	0	0
13902	0	0	0	0	0	0	0	0	0	1,755	0	0	0	0	0	0
14001	0	0	0	0	0	1,934	0	0	0	4,834	0	0	0	0	0	0
14101	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4,578	5,189
14102	32,841	164	0	0	0	0	0	0	0	0	0	0	0	0	20,227	22,925
14201	596	0	0	0	0	0	0	0	0	1,460	0	0	0	0	0	0
14202	0	0	0	0	0	0	0	0	0	6,697	0	0	0	0	0	0
14203	0	0	0	0	0	0	0	0	0	129,746	0	0	0	0	0	0
14204	0	0	0	0	0	0	0	0	0	55,896	0	0	0	0	0	0
14205	0	0	0	0	0	0	0	0	0	3,974	0	0	0	0	0	0
14401	0	0	0	0	0	0	0	0	0	3,413	0	0	0	0	242	688
14501	0	0	0	0	0	0	0	0	0	26,708	0	0	0	0	0	0
14601	5,574	513	54,501	6,056	0	21,542	0	0	0	8,285	0	0	0	0	13,085	13,312
14602	3,620	331	55,286	6,143	0	10,761	0	0	0	2,054	0	0	0	0	4,191	4,264
14603	22,353	1,199	103,107	11,456	0	54,622	0	0	0	10,377	0	0	0	0	20,775	21,136
14604	11,212	1,031	153,278	17,031	0	36,973	0	0	0	12,124	0	0	0	0	16,229	16,511
14701	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19,202	19,540
14901	0	0	0	0	0	0	0	0	0	57,866	0	0	0	0	0	0
15101	0	0	0	0	0	0	0	0	0	0	0	0	0	0	75,878	76,557
15201	0	0	0	0	0	0	0	0	0	142,760	0	0	0	0	0	0
15202	0	0	0	0	0	0	0	0	0	746,170	0	0	0	0	0	0
CANADA	692,522	44,041	1,377,621	138,172	NR	15,718,731	NR	NR	147,312	27,797,132	NR	NR	NR	NR	2,375,236	4,290,573

NR => Not Reported

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL CANADIAN EMISSIONS OF HYDROCARBON SPECIES, AREA SOURCES

SCC	METHANE	ETHANE	PROPANE	BUTANE	ISO-BUTANE	PENTANE	ISO-PENTANE	ALKANES	ETHYLENE	PROPYLENE	ISO-BUTENE	ALKENES
	THOUSAND MOLES/YEAR											
10101	312,947	20,963	0	80,108	0	0	0	492,629	190,912	89,841	0	113,799
10102	268,459	17,983	0	68,720	0	0	0	422,598	163,773	77,069	0	97,621
10103	261,231	17,499	0	66,870	0	0	0	411,220	159,363	74,995	0	94,993
10104	1,679,175	112,481	0	429,837	0	0	0	2,643,294	1,024,377	482,060	0	610,609
10105	57,290	3,838	0	14,665	0	0	0	90,183	34,950	16,447	0	20,833
10106	85,960	5,758	0	22,004	0	0	0	135,316	52,440	24,678	0	31,258
10201	0	30	0	0	0	0	0	100	0	0	0	86
10202	0	98	0	0	0	0	0	322	0	0	0	277
10203	0	4,150	0	0	0	0	0	13,655	0	0	0	11,713
10204	0	200	0	0	0	0	0	659	0	0	0	565
10206	0	3,534	0	0	0	0	0	11,627	0	0	0	9,974
10207	0	431	0	0	0	0	0	1,417	0	0	0	1,216
10208	0	5,709	0	0	0	0	0	18,784	0	0	0	16,114
10210	0	10	0	0	0	0	0	32	0	0	0	27
10211	0	372	0	0	0	0	0	1,224	0	0	0	1,050
10213	0	195	0	0	0	0	0	640	0	0	0	549
10214	41,807	0	0	0	0	0	0	99,494	75,187	13,936	5,509	18,473
10215	83,019	33,145	0	0	0	0	0	198,236	53,347	132,263	0	0
10217	0	0	2,721	20,996	7,084	6,519	0	33,213	0	0	0	0
10218	0	0	5,965	46,034	15,532	14,294	0	72,822	0	0	0	0
10220	1,405	0	0	493	0	0	0	119	0	0	0	0
10221	2,625	0	0	922	0	0	0	222	0	0	0	0
10301	122,670	48,975	0	0	0	0	0	292,916	78,826	195,433	0	0
10501	0	0	394,593	302,827	302,827	238,591	0	4,533,235	6,350,199	0	0	4,056,052
10601	0	0	8,443	6,479	6,479	5,105	0	96,992	135,868	0	0	86,783
10701	0	0	2,167	1,663	1,663	1,310	0	24,899	34,879	0	0	22,278
10801	0	0	0	0	0	0	0	0	0	0	0	0
11201	0	0	0	0	0	0	0	86,886	0	0	0	27,307
11301	0	0	0	0	0	0	0	0	0	0	0	0
11401	0	0	0	0	0	0	0	0	0	0	0	0
11402	0	107,634	61,505	26,140	0	0	26,140	289,073	0	0	0	210,655
11403	0	0	0	0	0	0	0	0	0	0	0	0
11404	0	0	0	0	0	0	0	0	0	0	0	0
11501	0	0	0	0	0	0	0	0	0	0	0	0
11502	0	0	0	0	0	0	0	2,638	0	0	0	0
11503	0	0	0	0	0	0	0	95	0	0	0	0
11504	0	0	0	0	0	0	0	1,256	0	0	0	0
11702	0	0	1	7	2	2	0	11	0	0	0	0
11703	0	0	0	0	0	0	0	0	0	0	0	0
11704	166	0	0	58	0	0	0	14	0	0	0	0
11705	6,362	818	0	0	0	0	0	3,819	9,002	3,617	0	3,238
11706	487	0	13	22	0	12	0	21	0	0	0	0
11711	0	948	542	230	0	0	230	2,546	0	0	0	1,856
11712	0	0	3,065	23,650	7,980	7,344	0	37,412	0	0	0	0
11713	0	0	344	2,654	896	824	0	4,199	0	0	0	0
11714	3,406	0	89	151	0	81	0	144	0	0	0	0
11715	57,149	0	1,491	2,530	0	1,355	0	2,425	0	0	0	0
11716	721	0	0	253	0	0	0	61	0	0	0	0
11721	0	410	234	99	0	0	99	1,100	0	0	0	802
11722	0	0	172	1,324	447	411	0	2,094	0	0	0	0
11723	0	0	19	145	49	45	0	229	0	0	0	0
11724	1,984	0	52	88	0	47	0	84	0	0	0	0

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL CANADIAN EMISSIONS OF HYDROCARBON SPECIES, AREA SOURCES

SCC	METHANE	ETHANE	PROPANE	BUTANE	ISO-BUTANE	PENTANE	ISO-PENTANE	ALKANES	ETHYLENE	PROPYLENE	ISO-BUTENE	ALKENES
	THOUSAND MOLES/YEAR											
11725	55,877	0	1,458	2,474	0	1,325	0	2,371	0	0	0	0
11726	6,914	0	0	2,427	0	0	0	585	0	0	0	0
11731	0	197	113	48	0	0	48	530	0	0	0	387
11732	0	0	76	586	198	182	0	927	0	0	0	0
11733	0	0	4	29	10	9	0	46	0	0	0	0
11734	1,235	0	32	55	0	29	0	52	0	0	0	0
11735	64,410	0	1,680	2,851	0	1,528	0	2,733	0	0	0	0
11736	31,279	0	0	10,982	0	0	0	2,646	0	0	0	0
11740	0	2,303	1,316	559	0	0	559	6,184	0	0	0	4,507
11801	150,863	0	3,936	6,679	0	3,578	0	6,400	0	0	0	0
12001	0	0	0	0	0	0	0	0	0	0	0	0
12002	0	0	0	0	0	0	0	0	0	0	0	0
12101	0	0	0	0	0	0	0	0	0	0	0	0
12102	0	0	0	0	0	0	0	0	0	0	0	0
12103	0	0	0	0	0	0	0	0	0	0	0	0
12104	0	0	0	0	0	0	0	0	0	0	0	0
12111	0	0	0	0	0	0	0	0	0	0	0	0
12112	0	0	0	0	0	0	0	0	0	0	0	0
12113	0	0	0	0	0	0	0	0	0	0	0	0
12114	0	0	0	0	0	0	0	0	0	0	0	0
12115	0	0	0	0	0	0	0	0	0	0	0	0
12116	0	0	0	0	0	0	0	0	0	0	0	0
12117	0	0	0	0	0	0	0	0	0	0	0	0
12121	0	0	0	0	0	0	0	0	0	0	0	0
12501	0	0	0	0	0	0	0	0	0	0	0	0
12502	0	0	0	0	0	0	0	0	0	0	0	0
12601	0	0	0	0	0	0	0	0	0	0	0	0
12602	0	0	0	0	0	0	0	0	0	0	0	0
12603	0	0	0	0	0	0	0	0	0	0	0	0
12604	0	0	0	0	0	0	0	0	0	0	0	0
12605	0	0	0	0	0	0	0	0	0	0	0	0
12606	0	0	0	0	0	0	0	0	0	0	0	0
12613	0	0	0	0	0	0	0	0	0	0	0	0
12614	0	0	0	0	0	0	0	0	0	0	0	0
12615	0	0	0	0	0	0	0	0	0	0	0	0
12623	0	0	0	0	0	0	0	0	0	0	0	0
12624	0	0	0	0	0	0	0	0	0	0	0	0
12625	0	0	0	0	0	0	0	0	0	0	0	0
12626	0	0	0	0	0	0	0	0	0	0	0	0
12641	0	0	0	0	0	0	0	0	0	0	0	0
12642	0	0	0	0	0	0	0	0	0	0	0	0
12643	0	0	0	0	0	0	0	0	0	0	0	0
12644	0	0	0	0	0	0	0	0	0	0	0	0
12701	1,124,304	0	29,330	49,772	0	26,663	0	47,698	0	0	0	0
12702	4,903	0	128	217	0	116	0	208	0	0	0	0
12703	113,175	0	2,952	5,010	0	2,684	0	4,801	0	0	0	0
12704	299	0	8	13	0	7	0	13	0	0	0	0
12705	146,596	0	3,624	6,490	0	3,477	0	6,219	0	0	0	0
12801	1,498,564	8,461	5,137	9,368	1,813	0	0	41,702	19,340	18,736	0	604
12802	0	0	0	0	0	0	0	0	0	0	0	0
12803	9,537	54	33	60	12	0	0	265	123	119	0	4
12901	0	0	19,595	163,542	54,514	71,518	0	299,577	0	0	0	58,515

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL CANADIAN EMISSIONS OF HYDROCARBON SPECIES, AREA SOURCES

	THOUSAND MOLES/YEAR											
SCC	METHANE	ETHANE	PROPANE	BUTANE	ISO-BUTANE	PENTANE	ISO-PENTANE	ALKANES	ETHYLENE	PROPYLENE	ISO-BUTENE	ALKENES
12902	0	0	9,389	78,725	26,242	34,427	0	144,209	0	0	0	28,168
12903	0	0	1,174	9,841	3,280	4,303	0	18,026	0	0	0	3,521
12904	0	0	12,407	104,030	34,677	45,493	0	190,562	0	0	0	37,222
12905	0	0	1,788	14,995	4,998	6,558	0	27,468	0	0	0	5,365
12906	0	0	10,619	89,034	29,678	38,935	0	163,093	0	0	0	31,856
12907	0	0	1,006	8,435	2,812	3,689	0	15,451	0	0	0	3,018
13001	0	0	0	0	0	0	0	505,105	0	0	0	44,503
13002	0	0	0	0	0	0	0	680,592	0	0	0	0
13101	112,588,969	54,948	36,632	54,948	36,632	18,316	0	54,948	0	0	0	54,948
13201	0	0	0	0	0	0	0	0	0	0	0	0
13202	0	0	0	0	0	0	0	0	0	0	0	0
13203	0	0	0	0	0	0	0	0	0	0	0	0
13204	0	0	0	0	0	0	0	0	0	0	0	0
13205	0	0	0	0	0	0	0	0	0	0	0	0
13701	0	0	0	0	0	0	0	0	0	0	0	0
13702	0	0	0	0	0	0	0	0	0	0	0	0
13703	0	0	0	0	0	0	0	0	0	0	0	0
13704	0	0	0	0	0	0	0	0	0	0	0	0
13705	0	0	0	0	0	0	0	0	0	0	0	0
13706	0	0	0	0	0	0	0	0	0	0	0	0
13901	0	0	0	0	0	0	0	0	0	0	0	0
13902	0	0	0	0	0	0	0	0	0	0	0	0
14001	0	0	0	0	0	0	0	0	0	0	0	0
14101	20,082	9,652	20,704	24,181	1,349	10,482	0	14,633	0	0	0	0
14102	88,721	42,641	91,472	106,832	5,961	46,309	0	64,649	0	0	0	0
14201	0	0	0	0	0	0	0	0	0	0	0	0
14202	0	0	0	0	0	0	0	0	0	0	0	0
14203	0	0	0	0	0	0	0	0	0	0	0	0
14204	0	0	0	0	0	0	0	0	0	0	0	0
14205	0	0	0	0	0	0	0	0	0	0	0	0
14401	27,203	420	399	543	509	261	0	949	378	234	0	261
14501	0	0	0	0	0	0	0	0	0	0	0	0
14601	17,173	0	0	0	0	0	0	40,868	30,751	5,724	2,263	7,588
14602	5,500	0	0	0	0	0	0	13,090	9,849	1,833	725	2,430
14603	27,265	0	0	0	0	0	0	64,886	48,823	9,088	3,593	12,047
14604	21,298	0	0	0	0	0	0	50,687	38,139	7,099	2,807	9,411
14701	15,436	3,126	0	0	0	0	0	110,594	42,596	17,390	0	22,471
14901	0	0	0	0	0	0	0	0	0	0	0	0
15101	36,747	3,062	2,297	3,828	18,374	4,593	0	730,349	2,297	0	0	34,450
15201	0	0	0	0	0	0	0	0	0	0	0	0
15202	0	0	0	0	0	0	0	0	0	0	0	0
CANADA	119,043,212	510,042	738,833	1,875,523	564,017	600,425	27,077	13,343,071	8,555,420	1,170,561	14,897	5,799,402

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL CANADIAN EMISSIONS OF HYDROCARBON SPECIES, AREA SOURCES

	--- THOUSAND MOLES/YEAR ---										
SCC	BENZENE	TOLUENE	XYLENE	ETH BENZ	AROMATICS	FORMALDEH	ACETALDEH	ALDEHYDES	ACETONE	KETONES	ORG ACIDS
10101	26,952	89,841	19,466	3,743	14,225	95,082	0	0	0	5,989	0
10102	23,121	77,069	16,698	3,211	12,203	81,565	0	0	0	5,138	0
10103	22,498	74,995	16,249	3,125	11,874	79,369	0	0	0	5,000	0
10104	144,618	482,060	104,446	20,086	76,326	510,180	0	0	0	32,137	0
10105	4,934	16,447	3,563	685	2,604	17,406	0	0	0	1,096	0
10106	7,403	24,678	5,347	1,028	3,907	26,117	0	0	0	1,645	0
10201	4	0	70	0	94	0	0	192	0	0	0
10202	14	0	224	0	303	0	0	618	0	0	0
10203	602	0	9,505	0	12,851	0	0	26,171	0	0	0
10204	29	0	458	0	620	0	0	1,262	0	0	0
10206	513	0	8,093	0	10,943	0	0	22,285	0	0	0
10207	63	0	986	0	1,334	0	0	2,716	0	0	0
10208	829	0	13,075	0	17,679	0	0	36,003	0	0	0
10210	1	0	22	0	30	0	0	61	0	0	0
10211	54	0	852	0	1,152	0	0	2,346	0	0	0
10213	28	0	446	0	603	0	0	1,227	0	0	0
10214	0	648	0	0	34,029	58,983	115,050	0	0	0	0
10215	10,733	35,039	11,680	0	21,465	0	0	0	0	0	0
10217	0	0	0	0	0	162,268	0	0	0	0	0
10218	0	0	0	0	0	355,782	0	0	0	0	0
10220	0	0	0	0	0	2,866	0	0	988	0	0
10221	0	0	0	0	0	5,355	0	0	1,846	0	0
10301	15,859	51,773	17,258	0	31,717	0	0	0	0	0	0
10501	0	0	0	0	0	0	0	0	0	0	0
10601	0	0	0	0	0	0	0	0	0	0	0
10701	0	0	0	0	0	0	0	0	0	0	0
10801	0	0	0	0	0	0	0	0	0	0	0
11201	0	0	0	0	0	0	0	0	0	0	0
11301	0	0	0	0	0	0	0	0	0	0	0
11401	0	0	0	0	0	0	0	0	0	0	0
11402	0	93,795	693,469	162,988	0	0	0	0	0	0	0
11403	0	0	0	0	0	0	0	0	0	0	0
11404	0	0	0	0	0	0	0	0	0	0	0
11501	0	0	0	0	0	0	0	0	0	0	0
11502	0	0	0	0	0	0	0	0	0	0	0
11503	0	0	0	0	0	0	0	0	0	0	0
11504	0	0	0	0	0	0	0	0	0	0	0
11702	0	0	0	0	0	56	0	0	0	0	0
11703	0	0	0	0	0	0	0	0	0	0	0
11704	0	0	0	0	0	339	0	0	117	0	0
11705	889	0	0	0	0	0	0	0	0	0	0
11706	7	3	0	0	0	37	0	0	0	0	0
11711	0	826	6,108	1,436	0	0	0	0	0	0	0
11712	0	0	0	0	0	182,782	0	0	0	0	0
11713	0	0	0	0	0	20,514	0	0	0	0	0
11714	50	22	0	0	0	260	0	0	0	0	0
11715	843	361	0	0	0	4,367	0	0	0	0	0
11716	0	0	0	0	0	1,471	0	0	507	0	0
11721	0	357	2,039	620	0	0	0	0	0	0	0
11722	0	0	0	0	0	10,229	0	0	0	0	0
11723	0	0	0	0	0	1,118	0	0	0	0	0
11724	29	13	0	0	0	152	0	0	0	0	0

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL CANADIAN EMISSIONS OF HYDROCARBON SPECIES, AREA SOURCES

	THOUSAND MOLES/YEAR										
SCC	BENZENE	TOLUENE	XYLENE	ETH BENZ	AROMATICS	FORMALDEH	ACETALDEH	ALDEHYDES	ACETONE	KETONES	ORG ACIDS
11725	825	353	0	0	0	4,270	0	0	0	0	0
11726	0	0	0	0	0	14,103	0	0	4,861	0	0
11731	0	172	1,272	299	0	0	0	0	0	0	0
11732	0	0	0	0	0	4,528	0	0	0	0	0
11733	0	0	0	0	0	224	0	0	0	0	0
11734	18	8	0	0	0	94	0	0	0	0	0
11735	950	407	0	0	0	4,922	0	0	0	0	0
11736	0	0	0	0	0	63,802	0	0	21,991	0	0
11740	0	2,007	14,835	3,487	0	0	0	0	0	0	0
11801	2,226	954	0	0	0	11,528	0	0	0	0	0
12001	0	0	0	0	0	0	0	0	0	0	0
12002	0	0	0	0	0	0	0	0	0	0	0
12101	0	0	0	0	0	0	0	0	0	0	0
12102	0	0	0	0	0	0	0	0	0	0	0
12103	0	0	0	0	0	0	0	0	0	0	0
12104	0	0	0	0	0	0	0	0	0	0	0
12111	0	0	0	0	0	0	0	0	0	0	0
12112	0	0	0	0	0	0	0	0	0	0	0
12113	0	0	0	0	0	0	0	0	0	0	0
12114	0	0	0	0	0	0	0	0	0	0	0
12115	0	0	0	0	0	0	0	0	0	0	0
12116	0	0	0	0	0	0	0	0	0	0	0
12117	0	0	0	0	0	0	0	0	0	0	0
12121	0	0	0	0	0	0	0	0	0	0	0
12501	0	0	0	0	0	0	0	0	0	0	0
12502	0	0	0	0	0	0	0	0	0	0	0
12601	0	0	0	0	0	0	0	0	0	0	0
12602	0	0	0	0	0	0	0	0	0	0	0
12603	0	0	0	0	0	0	0	0	0	0	0
12604	0	0	0	0	0	0	0	0	0	0	0
12605	0	0	0	0	0	0	0	0	0	0	0
12606	0	0	0	0	0	0	0	0	0	0	0
12613	0	0	0	0	0	0	0	0	0	0	0
12614	0	0	0	0	0	0	0	0	0	0	0
12615	0	0	0	0	0	0	0	0	0	0	0
12623	0	0	0	0	0	0	0	0	0	0	0
12624	0	0	0	0	0	0	0	0	0	0	0
12625	0	0	0	0	0	0	0	0	0	0	0
12626	0	0	0	0	0	0	0	0	0	0	0
12641	0	0	0	0	0	0	0	0	0	0	0
12642	0	0	0	0	0	0	0	0	0	0	0
12643	0	0	0	0	0	0	0	0	0	0	0
12644	0	0	0	0	0	0	0	0	0	0	0
12701	16,591	7,110	0	0	0	85,915	0	0	0	0	0
12702	72	31	0	0	0	375	0	0	0	0	0
12703	1,670	716	0	0	0	8,648	0	0	0	0	0
12704	4	2	0	0	0	23	0	0	0	0	0
12705	2,163	927	0	0	0	11,202	0	0	0	0	0
12801	5,742	0	0	0	0	0	0	0	35,659	0	0
12802	0	0	0	0	0	0	0	0	0	0	0
12803	37	0	0	0	0	0	0	0	227	0	0
12901	7,502	13,503	10,503	0	7,002	0	0	0	0	0	0

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL CANADIAN EMISSIONS OF HYDROCARBON SPECIES, AREA SOURCES

	THOUSAND MOLES/YEAR										
SCC	BENZENE	TOLUENE	XYLENE	ETH BENZ	AROMATICS	FORMALDEH	ACETALDEH	ALDEHYDES	ACETONE	KETONES	ORG ACIDS
12902	3,611	6,500	5,056	0	3,370	0	0	0	0	0	0
12903	451	813	632	0	421	0	0	0	0	0	0
12904	4,772	8,590	6,681	0	4,454	0	0	0	0	0	0
12905	688	1,238	963	0	642	0	0	0	0	0	0
12906	4,084	7,351	5,718	0	3,812	0	0	0	0	0	0
12907	387	696	542	0	361	0	0	0	0	0	0
13001	0	31,894	28,185	0	0	0	0	0	127,574	140,183	0
13002	0	38,968	16,125	27,546	0	0	0	0	36,952	61,811	14,781
13101	0	18,316	18,316	0	0	0	0	0	0	0	0
13201	0	0	0	0	0	0	0	0	0	0	0
13202	0	0	0	0	0	0	0	0	0	0	0
13203	0	0	0	0	0	0	0	0	0	0	0
13204	0	0	0	0	0	0	0	0	0	0	0
13205	0	0	0	0	0	0	0	0	0	0	0
13701	0	0	0	0	0	0	0	0	0	0	0
13702	0	0	0	0	0	0	0	0	0	0	0
13703	0	0	0	0	0	0	0	0	0	0	0
13704	0	0	0	0	0	0	0	0	0	0	0
13705	0	0	0	0	0	0	0	0	0	0	0
13706	0	0	0	0	0	0	0	0	0	0	0
13901	0	0	0	0	0	0	0	0	0	0	0
13902	0	0	0	0	0	0	0	0	0	0	0
14001	0	0	0	0	0	0	0	0	0	0	0
14101	52	0	0	0	0	0	0	0	0	0	0
14102	229	0	0	0	0	0	0	0	0	0	0
14201	0	0	0	0	0	0	0	0	0	0	0
14202	0	0	0	0	0	0	0	0	0	0	0
14203	0	0	0	0	0	0	0	0	0	0	0
14204	0	0	0	0	0	0	0	0	0	0	0
14205	0	0	0	0	0	0	0	0	0	0	0
14401	316	7	0	0	0	96	0	0	0	0	0
14501	0	0	0	0	0	0	0	0	0	0	0
14601	0	266	0	0	14,111	24,095	47,258	0	0	0	0
14602	0	85	0	0	4,520	7,717	15,136	0	0	0	0
14603	0	423	0	0	22,404	38,255	75,031	0	0	0	0
14604	0	330	0	0	17,501	29,884	58,612	0	0	0	0
14701	8,011	4,885	1,563	0	2,931	3,126	977	586	72,492	3,517	1,759
14901	0	0	0	0	0	0	0	0	0	0	0
15101	4,593	22,201	17,608	5,359	2,297	3,828	0	0	45,168	49,762	8,421
15201	0	0	0	0	0	0	0	0	0	0	0
15202	0	0	0	0	0	0	0	0	0	0	0
CANADA	325,070	1,116,680	1,058,653	233,614	337,784	1,932,933	312,064	93,467	348,381	306,279	24,961

For conversion of hydrocarbon classes to tons/year, see discussion in Appendix E.

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL CANADIAN EMISSIONS, AREA SOURCES

TONS/YEAR

Province	SO2	SO4	NO	NO2	PB	CO	HCL	HF	NH3	TSP	CA	MG	NA	K	VOC	THC
Alberta	51,910	1,291	329,384	32,408	0	3,005,269	0	0	53,080	8,767,433	0	0	0	0	537,586	741,839
British Columb.	42,554	3,123	183,224	19,285	0	2,035,935	0	0	6,518	1,932,312	0	0	0	0	260,165	502,632
Manitoba	9,944	531	88,718	10,693	0	1,599,921	0	0	19,455	3,113,425	0	0	0	0	225,491	316,540
New Brunswick	53,511	4,302	33,795	3,038	0	341,763	0	0	939	386,395	0	0	0	0	42,010	103,832
Newfoundland	40,452	3,217	31,087	2,665	0	197,060	0	0	123	192,773	0	0	0	0	26,981	76,696
Nova Scotia	41,146	3,230	43,042	4,043	0	378,427	0	0	1,276	708,372	0	0	0	0	63,195	137,842
Ontario	162,161	8,702	387,719	37,554	0	4,108,803	0	0	32,758	6,401,794	0	0	0	0	637,371	1,378,759
Prince Edward	2,782	214	5,146	496	0	57,909	0	0	832	41,462	0	0	0	0	6,492	17,192
Quebec	345,737	23,244	275,049	23,563	0	2,236,111	0	0	15,650	2,242,053	0	0	0	0	322,901	872,031
Saskatchewan	13,178	693	141,404	18,564	0	3,365,737	0	0	31,752	6,855,074	0	0	0	0	496,059	582,184
Canada	763,375	48,547	1,518,567	152,309	NR	17,326,935	NR	NR	162,384	30,641,093	NR	NR	NR	NR	2,618,250	4,729,547

METRIC TONS/YEAR

Province	SO2	SO4	NO	NO2	PB	CO	HCL	HF	NH3	TSP	CA	MG	NA	K	VOC	THC
Alberta	47,092	1,171	298,812	29,400	0	2,726,334	0	0	48,153	7,953,682	0	0	0	0	487,690	672,985
British Columb.	38,604	2,833	166,218	17,495	0	1,846,969	0	0	5,913	1,752,964	0	0	0	0	236,018	455,980
Manitoba	9,021	482	80,483	9,701	0	1,451,424	0	0	17,649	2,824,452	0	0	0	0	204,562	287,160
New Brunswick	48,544	3,903	30,659	2,756	0	310,042	0	0	852	350,532	0	0	0	0	38,111	94,195
Newfoundland	36,697	2,918	28,201	2,418	0	178,770	0	0	112	174,881	0	0	0	0	24,477	69,577
Nova Scotia	37,327	2,930	39,047	3,667	0	343,303	0	0	1,158	642,624	0	0	0	0	57,329	125,049
Ontario	147,110	7,894	351,732	34,069	0	3,727,443	0	0	29,718	5,807,610	0	0	0	0	578,213	1,250,789
Prince Edward	2,524	194	4,668	450	0	52,534	0	0	755	37,614	0	0	0	0	5,889	15,596
Quebec	313,647	21,087	249,520	21,376	0	2,028,566	0	0	14,197	2,033,956	0	0	0	0	292,930	791,093
Saskatchewan	11,955	629	128,279	16,841	0	3,053,345	0	0	28,805	6,218,819	0	0	0	0	450,017	528,148
Canada	692,522	44,041	1,377,621	138,172	NR	15,718,731	NR	NR	147,312	27,797,132	NR	NR	NR	NR	2,375,236	4,290,573

NR => Not Reported

1980 NAPAP S 2 EMISSIONS INVENTORY - ANNUAL CANADIAN EMISSIONS OF HYDROCARBON SPECIES, AREA SOURCES

Province	METHANE	ETHANE	PROPANE	BUTANE	ISO-BUTANE	PENTANE	ISO-PENT	ALKANES	ETHYLENE	PROPYLENE	ISO-BUTENE	ALKENES	BENZENE	TOLUENE	XYLENE	ETH BENZ	AROMATIC	FORMALDEH	ACETALDEH	ALDEH	ACETONE	KETONES	ORG	ACI
	THOUSAND MOLES/YEAR																							
Alberta	11,489,078	121,271	257,014	392,120	109,219	163,149	11,367	2,365,672	1,966,254	140,614	3,606	1,347,453	57,075	167,838	339,491	77,893	52,867	252,821	75,355	14,442	16,534	20,379	2,245	
Brit.Col.	13,608,791	85,768	51,618	189,119	38,813	39,608	8,916	1,268,775	455,380	156,334	2,105	370,995	40,868	157,447	281,081	63,336	47,613	222,541	44,046	19,892	56,212	35,850	2,796	
Manitoba	5,131,680	20,986	67,036	104,871	56,023	47,061	93	1,106,019	1,107,275	73,814	1,122	703,885	15,945	53,239	18,971	3,593	21,103	59,227	23,473	4,052	8,514	9,589	1,046	
New Brun.	3,481,796	15,270	15,089	52,030	8,918	13,871	257	235,484	65,434	30,142	305	49,050	8,075	27,531	16,280	3,403	9,310	49,909	6,381	4,249	7,234	5,738	693	
Newfound.	2,809,355	7,039	3,696	29,666	6,047	6,370	48	160,549	42,847	20,811	273	30,369	5,518	18,777	7,577	1,672	6,262	57,082	5,697	2,107	4,526	4,344	543	
Nova Scot	4,194,542	23,557	16,76[illegible]	61,304	9,565	13,147	2,292	317,359	80,954	37,289	440	74,844	10,808	44,774	71,677	16,708	10,030	67,152	9,207	1,578	6,900	7,445	831	
Ontario	41,884,678	111,814	108,479	510,048	137,337	134,651	163	3,627,363	1,705,607	370,022	3,528	1,157,829	100,810	343,631	123,157	23,301	100,300	602,966	74,190	26,972	148,457	135,421	9,158	
Prince Ed	604,043	1,756	669	6,853	1,302	1,382	28	39,327	10,093	5,517	46	7,379	1,449	5,074	2,302	504	1,414	8,195	967	300	675	1,034	117	
Quebec	31,035,854	74,960	40,628	332,541	69,163	72,394	248	1,956,759	520,891	233,036	2,126	378,410	65,440	221,808	81,390	17,256	61,611	546,117	44,642	15,814	92,755	77,223	6,591	
Saskatch.	4,803,395	47,622	177,840	196,972	127,630	108,791	3,664	2,265,764	2,600,684	102,982	1,345	1,679,188	19,082	76,561	116,728	25,948	27,275	66,923	28,105	4,061	6,574	9,256	951	
Canada	119,043,212	510,042	738,833	1,875,523	564,017	600,425	27,077	13,343,071	8,555,420	1,170,561	14,897	5,799,402	325,070	1,116,680	1,058,653	233,614	337,784	1,932,933	312,064	93,467	348,381	306,279	24,961	

For conversion of hydrocarbon classes to tons/year, see discussion in Appendix E.

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL CANADIAN EMISSIONS, POINT SOURCES

6-DIGIT SCC	SO2	SO4	NO	NO2	Pb	CO	HCl	HF	NH3	TSP	Ca	Mg	Na	K	VOC	THC
	TONS/YEAR															
101002	447,467	8,485	132,194	4,088	0	15,061	0	0	0	116,032	1,880	1,984	951	511	4,498	4,595
101003	3,320	46	844	26	0	251	0	0	0	12,215	198	209	100	54	71	73
101004	145,392	8,077	22,660	462	0	1,709	0	0	0	11,744	0	0	0	0	499	560
101005	27,358	1,086	5,010	102	0	317	0	0	0	62	0	0	0	0	146	146
101006	5,991	0	11,956	629	0	420	0	0	0	428	0	0	0	0	12	27
102002	1,234	99	0	0	0	0	0	0	0	0	0	0	0	0	0	0
102004	146,057	4,531	17,212	351	0	1,050	0	0	0	13,968	0	0	0	0	212	238
102006	3,032	258	11,506	606	0	496	0	0	0	853	0	0	0	0	119	271
102008	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
102014	59,271	190	2,569	453	0	0	0	0	0	13,826	0	0	0	0	0	0
105001	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0
201001	214,533	33	49,249	5,472	0	23	0	0	0	8,483	0	0	0	0	2	2
201002	5	0	1,576	101	0	93	0	0	0	75	0	0	0	0	3	10
301003	0	0	0	0	0	0	0	0	29,636	0	0	0	0	0	115,309	115,309
301005	1,842	0	0	0	0	123,494	0	0	0	17	0	0	0	0	66	66
301013	0	0	7,209	379	0	0	0	0	0	0	0	0	0	0	0	0
301014	284	2	0	0	0	0	0	0	0	78	0	0	0	0	0	0
301017	0	0	0	0	0	0	0	0	0	409	0	0	0	0	0	0
301018	0	0	0	0	0	0	0	0	0	0	0	0	0	0	50,439	50,708
301019	0	0	0	0	0	0	0	0	0	0	0	0	0	0	81	413
301021	0	0	0	0	0	0	0	0	1,482	1,058	0	0	0	0	0	0
301023	17,520	862	0	0	0	0	0	0	0	0	0	0	0	0	0	0
301026	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9,042	9,042
301027	0	0	178	9	0	0	0	0	499	1,636	0	0	0	0	0	0
301028	0	0	0	0	0	0	0	0	0	320	0	0	0	0	0	0
301029	0	0	0	0	0	0	0	0	0	255	0	0	0	0	0	0
301030	0	0	0	0	0	0	0	0	0	1,791	0	0	0	0	0	0
301035	2,920	14	0	0	0	0	0	0	0	84	0	0	0	0	0	0
301040	0	0	0	0	0	0	0	0	10,795	5,446	0	0	0	0	0	0
301130	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0
301132	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,458	1,484
301157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,655	1,685
301174	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,470	2,514
301250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7,078	7,078
301258	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8,504	8,504
301830	0	0	0	0	0	0	0	0	0	41	0	0	0	0	0	0
303000	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0
303001	14,052	71	8,068	425	0	0	0	0	0	10,328	0	0	0	0	0	0
303002	0	0	0	0	0	0	0	0	0	3,668	0	0	0	0	0	0
303003	10,140	830	5	0	0	775	0	0	560	22,145	0	0	0	0	672	1,438
303004	0	0	0	0	0	28	0	0	0	512	0	0	0	0	21	46
303005	1,680,647	31,882	0	0	0	0	0	0	0	33,957	0	0	0	0	0	0
303006	13,440	2,359	0	0	0	25,453	0	0	0	28,413	301	412	384	0	0	0
303008	190,845	528	0	0	0	27,713	0	0	0	35,954	1,431	597	626	2,024	0	0
303009	3,010	26	19	1	0	43,587	0	0	72	44,043	0	0	0	0	381	429
303010	33,359	1,195	0	0	0	0	0	0	0	3,351	0	0	0	0	0	0
303013	16,696	0	0	0	0	0	0	0	0	229	0	0	0	0	0	0
303023	221	0	0	0	0	37,547	0	0	0	167,296	820	402	0	0	0	0
303024	0	0	0	0	0	0	0	0	0	247	0	0	0	0	0	0
303030	4,577	176	0	0	0	0	0	0	0	4,490	0	0	0	0	0	0
303888	0	0	0	0	0	0	0	0	0	31,948	0	0	0	0	0	0
303999	9,120	45	0	0	0	0	0	0	0	3,833	0	0	0	0	0	0

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL CANADIAN EMISSIONS, POINT SOURCES

6-DIGIT SCC	SO2	SO4	NO	NO2	Pb	CO	HCl	HF	NH3	TSP	Ca	Mg	Na	K	VOC	THC
	TONS/YEAR															
304001	29,650	232	0	0	0	106,787	0	0	0	19,738	0	0	0	0	882	1,393
304006	0	0	0	0	0	0	0	0	0	77	18	11	0	0	0	0
304010	571,740	7,889	0	0	0	0	0	0	0	16,933	0	0	0	0	0	0
305005	0	0	0	0	0	0	0	0	0	625	0	0	0	0	0	0
305006	0	496	0	0	0	0	0	0	0	15,325	4,368	120	0	0	0	0
305007	0	4	0	0	0	0	0	0	0	131	0	0	0	0	0	0
305010	0	0	0	0	0	0	0	0	0	5,536	0	0	0	0	0	0
305014	0	0	0	0	0	0	0	0	0	1,102	0	0	0	0	0	0
305015	0	5,594	0	0	0	0	0	0	0	8,771	0	0	0	0	0	0
305016	0	6	0	0	0	0	0	0	0	22,090	7,486	1,107	110	0	0	0
305019	1,288	0	0	0	0	0	0	0	0	15,896	0	0	0	0	0	0
305020	0	0	0	0	0	0	0	0	0	1,059	61	18	0	0	0	0
305021	0	0	0	0	0	0	0	0	0	8,734	0	0	0	0	0	0
305022	0	0	0	0	0	0	0	0	0	16,177	0	0	0	0	0	0
305025	0	0	0	0	0	0	0	0	0	1,254	8	9	0	0	0	0
305031	0	0	0	0	0	0	0	0	0	29,948	0	0	0	0	0	0
305032	0	0	0	0	0	0	0	0	0	15,257	0	0	0	0	0	0
305040	0	0	0	0	0	0	0	0	0	10,841	0	0	0	0	0	0
306001	51,645	5,760	21,434	782	0	1,627	0	0	0	4,222	0	0	0	0	291	384
306002	35,655	461	5,482	967	0	191,381	0	0	4,021	9,593	0	0	0	0	23,221	36,280
306006	68	6	88	15	0	8	0	0	0	30	0	0	0	0	1	2
306008	0	0	0	0	0	0	0	0	0	0	0	0	0	0	75,374	79,023
306012	33	2	43	8	0	3	0	0	0	294	0	0	0	0	1	2
306014	704	3	52	3	0	58	0	0	6	919	0	0	0	0	46	104
306888	10,785	54	0	0	0	0	0	0	0	0	0	0	0	0	0	0
307001	29,755	34,263	14,524	764	0	57,965	0	0	0	80,065	96	0	1,105	0	10,879	11,962
307002	73,097	923	0	0	0	0	0	0	0	1,008	0	0	0	0	0	0
310002	446,224	2,135	43,411	2,285	0	5,784	0	0	0	2	0	0	0	0	15,368	20,455
310004	277	0	3,391	178	0	7	0	0	0	112	0	0	0	0	62	87
310888	1,851	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0
403001	0	0	0	0	0	0	0	0	0	0	0	0	0	0	44,626	50,597
501001	1,201	0	1,181	208	0	16,477	0	0	188	1,869	11	3	11	9	136	693
501002	98	0	7	1	0	674	0	0	17	326	2	0	2	2	8	8
501005	7	0	8	1	0	0	0	0	0	34	0	0	0	0	0	2
503001	11,757	34	0	0	0	0	0	0	0	0	0	0	0	0	0	0
503005	1,077	0	275	48	0	0	0	0	15	286	0	0	0	0	14	81
503007	12,552	57	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CANADA	4,331,797	118,723	360,149	18,368	NR	658,788	NR	NR	47,290	867,499	16,680	4,870	3,289	2,599	373,649	405,710

NR = NOT REPORTED

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL CANADIAN EMISSIONS, POINT SOURCES

6-DIGIT SCC	SO2	SO4	NO	NO2	Pb	CO	HCl	HF	NH3	TSP	Ca	Mg	Na	K	VOC	THC
	METRIC TONS/YEAR															
101002	405,943	7,698	119,926	3,709	0	13,663	0	0	0	105,264	1,705	1,800	863	463	4,081	4,169
101003	3,012	42	766	24	0	228	0	0	0	11,081	180	189	91	49	65	66
101004	131,900	7,327	20,557	420	0	1,550	0	0	0	10,654	0	0	0	0	452	508
101005	24,819	985	4,545	93	0	288	0	0	0	56	0	0	0	0	133	133
101006	5,435	0	10,846	571	0	381	0	0	0	388	0	0	0	0	11	25
102002	1,119	90	0	0	0	0	0	0	0	0	0	0	0	0	0	0
102004	132,503	4,111	15,615	319	0	953	0	0	0	12,672	0	0	0	0	192	216
102006	2,751	234	10,439	549	0	450	0	0	0	774	0	0	0	0	108	246
102008	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
102014	53,771	172	2,330	411	0	0	0	0	0	12,543	0	0	0	0	0	0
105001	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0
201001	194,625	30	44,679	4,964	0	21	0	0	0	7,696	0	0	0	0	2	2
201002	5	0	1,430	91	0	84	0	0	0	68	0	0	0	0	3	9
301003	0	0	0	0	0	0	0	0	26,886	0	0	0	0	0	104,608	104,608
301005	1,671	0	0	0	0	112,034	0	0	0	15	0	0	0	0	60	60
301013	0	0	6,540	344	0	0	0	0	0	0	0	0	0	0	0	0
301014	258	2	0	0	0	0	0	0	0	71	0	0	0	0	0	0
301017	0	0	0	0	0	0	0	0	0	371	0	0	0	0	0	0
301018	0	0	0	0	0	0	0	0	0	0	0	0	0	0	45,759	46,002
301019	0	0	0	0	0	0	0	0	0	0	0	0	0	0	73	375
301021	0	0	0	0	0	0	0	0	1,344	960	0	0	0	0	0	0
301023	15,894	782	0	0	0	0	0	0	0	0	0	0	0	0	0	0
301026	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8,203	8,203
301027	0	0	161	8	0	0	0	0	453	1,484	0	0	0	0	0	0
301028	0	0	0	0	0	0	0	0	0	290	0	0	0	0	0	0
301029	0	0	0	0	0	0	0	0	0	231	0	0	0	0	0	0
301030	0	0	0	0	0	0	0	0	0	1,625	0	0	0	0	0	0
301035	2,649	13	0	0	0	0	0	0	0	76	0	0	0	0	0	0
301040	0	0	0	0	0	0	0	0	9,793	4,941	0	0	0	0	0	0
301130	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0
301132	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,323	1,346
301157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,502	1,528
301174	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,241	2,281
301250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6,421	6,421
301258	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7,715	7,715
301830	0	0	0	0	0	0	0	0	0	37	0	0	0	0	0	0
303000	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0
303001	12,748	64	7,320	385	0	0	0	0	0	9,370	0	0	0	0	0	0
303002	0	0	0	0	0	0	0	0	0	3,328	0	0	0	0	0	0
303003	9,199	753	4	0	0	703	0	0	508	20,090	0	0	0	0	609	1,305
303004	0	0	0	0	0	25	0	0	0	464	0	0	0	0	19	42
303005	1,524,687	28,923	0	0	0	0	0	0	0	30,806	0	0	0	0	0	0
303006	12,193	2,140	0	0	0	23,091	0	0	0	25,776	273	374	348	0	0	0
303008	173,135	479	0	0	0	25,141	0	0	0	32,618	1,298	541	568	1,836	0	0
303009	2,731	24	17	1	0	39,542	0	0	65	39,956	0	0	0	0	346	389
303010	30,263	1,084	0	0	0	0	0	0	0	3,040	0	0	0	0	0	0
303013	15,147	0	0	0	0	0	0	0	0	208	0	0	0	0	0	0
303023	200	0	0	0	0	34,063	0	0	0	151,771	744	364	0	0	0	0
303024	0	0	0	0	0	0	0	0	0	224	0	0	0	0	0	0
303030	4,152	160	0	0	0	0	0	0	0	4,073	0	0	0	0	0	0
303888	0	0	0	0	0	0	0	0	0	28,983	0	0	0	0	0	0
303999	8,274	41	0	0	0	0	0	0	0	3,477	0	0	0	0	0	0

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL CANADIAN EMISSIONS, POINT SOURCES

	METRIC TONS/YEAR															
6-DIGIT SCC	SO2	SO4	NO	NO2	Pb	CO	HCl	HF	NH3	TSP	Ca	Mg	Na	K	VOC	THC
304001	26,899	210	0	0	0	96,877	0	0	0	17,906	0	0	0	0	800	1,264
304006	0	0	0	0	0	0	0	0	0	70	17	10	0	0	0	0
304010	518,684	7,157	0	0	0	0	0	0	0	15,362	0	0	0	0	0	0
305005	0	0	0	0	0	0	0	0	0	567	0	0	0	0	0	0
305006	0	450	0	0	0	0	0	0	0	13,903	3,962	108	0	0	0	0
305007	0	4	0	0	0	0	0	0	0	119	0	0	0	0	0	0
305010	0	0	0	0	0	0	0	0	0	5,022	0	0	0	0	0	0
305014	0	0	0	0	0	0	0	0	0	1,000	0	0	0	0	0	0
305015	0	5,075	0	0	0	0	0	0	0	7,957	0	0	0	0	0	0
305016	0	5	0	0	0	0	0	0	0	20,040	6,792	1,004	100	0	0	0
305019	1,168	0	0	0	0	0	0	0	0	14,421	0	0	0	0	0	0
305020	0	0	0	0	0	0	0	0	0	961	55	16	0	0	0	0
305021	0	0	0	0	0	0	0	0	0	7,924	0	0	0	0	0	0
305022	0	0	0	0	0	0	0	0	0	14,676	0	0	0	0	0	0
305025	0	0	0	0	0	0	0	0	0	1,138	7	8	0	0	0	0
305031	0	0	0	0	0	0	0	0	0	27,169	0	0	0	0	0	0
305032	0	0	0	0	0	0	0	0	0	13,841	0	0	0	0	0	0
305040	0	0	0	0	0	0	0	0	0	9,835	0	0	0	0	0	0
306001	46,852	5,225	19,445	709	0	1,476	0	0	0	3,830	0	0	0	0	264	348
306002	32,346	418	4,973	878	0	173,621	0	0	3,648	8,703	0	0	0	0	21,067	32,913
306006	62	5	79	14	0	7	0	0	0	27	0	0	0	0	1	2
306008	0	0	0	0	0	0	0	0	0	0	0	0	0	0	68,380	71,690
306012	30	2	39	7	0	3	0	0	0	267	0	0	0	0	1	2
306014	639	3	47	2	0	53	0	0	5	834	0	0	0	0	42	95
306888	9,784	49	0	0	0	0	0	0	0	0	0	0	0	0	0	0
307001	26,994	31,083	13,176	693	0	52,586	0	0	0	72,635	87	0	1,002	0	9,869	10,852
307002	66,314	837	0	0	0	0	0	0	0	914	0	0	0	0	0	0
310002	404,815	1,937	39,383	2,073	0	5,247	0	0	0	2	0	0	0	0	13,942	18,557
310004	251	0	3,076	162	0	6	0	0	0	102	0	0	0	0	56	79
310888	1,679	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
403001	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40,485	45,902
501001	1,090	0	1,071	189	0	14,948	0	0	171	1,696	10	2	10	8	123	629
501002	89	0	6	1	0	611	0	0	15	296	2	0	2	1	7	7
501005	6	0	7	1	0	0	0	0	0	31	0	0	0	0	0	2
503001	10,666	31	0	0	0	0	0	0	0	0	0	0	0	0	0	0
503005	977	0	249	44	0	0	0	0	14	259	0	0	0	0	12	73
503007	11,387	52	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CANADA	3,929,816	107,706	326,728	16,663	NR	597,654	NR	NR	42,902	786,997	15,132	4,418	2,983	2,358	338,975	368,061

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL CANADIAN EMISSIONS OF HYDROCARBON SPECIES, POINT SOURCES

	THOUSAND MOLES/YEAR											
6-DIGIT SCC	METHANE	ETHANE	PROPANE	BUTANE	ISO-BUTANE	PENTANE	ISO-PENTANE	ALKANES	ETHYLENE	PROPYLENE	ISO-BUTENE	ALKENES
101002	0	2,918	1,667	709	0	0	709	7,837	0	0	0	5,711
101003	0	46	26	11	0	0	11	125	0	0	0	91
101004	3,487	0	0	1,225	0	0	0	295	0	0	0	0
101005	0	0	36	279	94	86	0	440	0	0	0	0
101006	861	0	22	38	0	20	0	36	0	0	0	0
102002	0	0	0	0	0	0	0	0	0	0	0	0
102004	1,481	0	0	520	0	0	0	125	0	0	0	0
102006	8,573	0	223	381	0	204	0	363	0	0	0	0
102008	0	0	0	0	0	0	0	0	0	0	0	0
102014	0	0	0	0	0	0	0	0	0	0	0	0
105001	0	0	0	0	0	0	0	0	0	0	0	0
201001	13	2	0	0	0	0	0	8	19	7	0	7
201002	396	0	0	0	0	0	0	0	0	0	0	0
301003	0	0	0	0	0	0	0	591,036	805,482	223,861	0	318,009
301005	0	0	0	0	0	0	0	338	461	128	0	182
301013	0	0	0	0	0	0	0	0	0	0	0	0
301014	0	0	0	0	0	0	0	0	0	0	0	0
301017	0	0	0	0	0	0	0	0	0	0	0	0
301018	11,004	2,229	0	0	0	0	0	78,419	30,226	528,813	0	181,294
301019	18,689	49	75	142	26	0	0	633	0	277	0	0
301021	0	0	0	0	0	0	0	0	0	0	0	0
301023	0	0	0	0	0	0	0	0	0	0	0	0
301026	0	0	0	0	0	0	0	85,392	0	0	0	0
301027	0	0	0	0	0	0	0	0	0	0	0	0
301028	0	0	0	0	0	0	0	0	0	0	0	0
301029	0	0	0	0	0	0	0	0	0	0	0	0
301030	0	0	0	0	0	0	0	0	0	0	0	0
301035	0	0	0	0	0	0	0	0	0	0	0	0
301040	0	0	0	0	0	0	0	0	0	0	0	0
301130	0	0	0	0	0	0	0	0	0	0	0	0
301132	1,063	215	0	0	0	0	0	7,579	2,921	1,198	0	1,535
301157	1,207	245	0	0	0	0	0	8,604	3,316	1,360	0	1,742
301174	1,802	365	0	0	0	0	0	12,839	4,949	2,030	0	2,600
301250	0	0	0	0	0	0	0	200,404	0	0	0	0
301258	0	0	0	0	0	0	0	0	0	0	0	0
301830	0	0	0	0	0	0	0	0	0	0	0	0
303000	0	0	0	0	0	0	0	0	0	0	0	0
303001	0	0	0	0	0	0	0	0	0	0	0	0
303002	0	0	0	0	0	0	0	0	0	0	0	0
303003	36,841	3,470	144	0	0	0	0	600	12,889	587	0	144
303004	1,178	111	5	0	0	0	0	19	412	19	0	5
303005	0	0	0	0	0	0	0	0	0	0	0	0
303006	0	0	0	0	0	0	0	0	0	0	0	0
303008	0	0	0	0	0	0	0	0	0	0	0	0
303009	2,693	0	3,522	0	0	0	0	2,047	0	0	0	0
303010	0	0	0	0	0	0	0	0	0	0	0	0
303013	0	0	0	0	0	0	0	0	0	0	0	0
303023	0	0	0	0	0	0	0	0	0	0	0	0
303024	0	0	0	0	0	0	0	0	0	0	0	0
303030	0	0	0	0	0	0	0	0	0	0	0	0
303888	0	0	0	0	0	0	0	0	0	0	0	0
303999	0	0	0	0	0	0	0	0	0	0	0	0
304001	28,919	0	607	1,656	265	720	0	3,893	0	0	0	0
304006	0	0	0	0	0	0	0	0	0	0	0	0

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL CANADIAN EMISSIONS OF HYDROCARBON SPECIES, POINT SOURCES

	THOUSAND MOLES/YEAR											
6-DIGIT SCC	METHANE	ETHANE	PROPANE	BUTANE	ISO-BUTANE	PENTANE	ISO-PENTANE	ALKANES	ETHYLENE	PROPYLENE	ISO-BUTENE	ALKENES
304010	0	0	0	0	0	0	0	0	0	0	0	0
305005	0	0	0	0	0	0	0	0	0	0	0	0
305006	0	0	0	0	0	0	0	0	0	0	0	0
305007	0	0	0	0	0	0	0	0	0	0	0	0
305010	0	0	0	0	0	0	0	0	0	0	0	0
305014	0	0	0	0	0	0	0	0	0	0	0	0
305015	0	0	0	0	0	0	0	0	0	0	0	0
305016	0	0	0	0	0	0	0	0	0	0	0	0
305019	0	0	0	0	0	0	0	0	0	0	0	0
305020	0	0	0	0	0	0	0	0	0	0	0	0
305021	0	0	0	0	0	0	0	0	0	0	0	0
305022	0	0	0	0	0	0	0	0	0	0	0	0
305025	0	0	0	0	0	0	0	0	0	0	0	0
305031	0	0	0	0	0	0	0	0	0	0	0	0
305032	0	0	0	0	0	0	0	0	0	0	0	0
305040	0	0	0	0	0	0	0	0	0	0	0	0
306001	5,265	0	93	751	0	85	0	294	0	0	0	0
306002	738,573	0	0	0	0	0	0	49,699	0	0	0	0
306006	42	0	0	0	0	0	0	3	0	0	0	0
306008	129,758	40,863	96,064	176,357	55,201	119,005	0	457,380	0	0	0	0
306012	42	0	0	0	0	0	0	3	0	0	0	0
306014	3,305	0	86	147	0	79	0	140	0	0	0	0
306888	0	0	0	0	0	0	0	0	0	0	0	0
307001	61,248	0	1,597	2,719	0	1,456	0	108,399	0	0	0	0
307002	0	0	0	0	0	0	0	0	0	0	0	0
310002	76,748	112,532	69,462	64,281	12,306	0	0	13,363	18,211	72,418	0	7,190
310004	372	546	337	312	60	0	0	0	0	327	0	0
310888	0	0	0	0	0	0	0	0	0	0	0	0
403001	177,639	85,377	183,147	213,901	11,934	92,721	0	129,443	0	0	0	0
501001	31,177	176	107	195	38	0	0	868	402	390	0	13
501002	0	0	3	2	2	2	0	36	50	0	0	32
501005	91	2	0	0	0	0	0	0	6	0	0	0
503001	0	0	0	0	0	0	0	0	0	0	0	0
503005	3,683	66	0	0	0	0	0	0	228	9	0	0
503007	0	0	0	0	0	0	0	0	0	0	0	0
CANADA	1,346,149	249,211	357,224	463,625	79,927	214,379	720	1,760,662	879,572	831,425	NR	518,552

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL CANADIAN EMISSIONS OF HYDROCARBON SPECIES, POINT SOURCES

	THOUSAND MOLES/YEAR										
6-DIGIT SCC	BENZENE	TOLUENE	XYLENE	ETH BENZ	AROMATICS	FORMALDEH	ACETALDEH	ALDEHYDES	ACETONE	KETONES	ORG ACIDS
101002	0	2,543	18,800	4,419	0	0	0	0	0	0	0
101003	0	40	299	70	0	0	0	0	0	0	0
101004	0	0	0	0	0	7,106	0	0	2,450	0	0
101005	0	0	0	0	0	2,151	0	0	0	0	0
101006	13	5	0	0	0	66	0	0	0	0	0
102002	0	0	0	0	0	0	0	0	0	0	0
102004	0	0	0	0	0	3,017	0	0	1,040	0	0
102006	128	54	0	0	0	656	0	0	0	0	0
102008	0	0	0	0	0	0	0	0	0	0	0
102014	0	0	0	0	0	0	0	0	0	0	0
105001	0	0	0	0	0	0	0	0	0	0	0
201001	2	0	0	0	0	0	0	0	0	0	0
201002	0	0	0	0	0	91	0	0	0	0	0
301003	133,898	46,028	12,553	0	56,488	59,627	16,737	11,507	0	0	6,276
301005	77	26	7	0	32	34	10	7	0	0	4
301013	0	0	0	0	0	0	0	0	0	0	0
301014	0	0	0	0	0	0	0	0	0	0	0
301017	0	0	0	0	0	0	0	0	0	0	0
301018	5,711	3,482	1,114	0	2,089	2,229	696	418	51,397	2,507	1,254
301019	0	0	0	0	0	0	0	0	555	0	0
301021	0	0	0	0	0	0	0	0	0	0	0
301023	0	0	0	0	0	0	0	0	0	0	0
301026	2,953	328	0	0	0	0	0	0	0	0	0
301027	0	0	0	0	0	0	0	0	0	0	0
301028	0	0	0	0	0	0	0	0	0	0	0
301029	0	0	0	0	0	0	0	0	0	0	0
301030	0	0	0	0	0	0	0	0	0	0	0
301035	0	0	0	0	0	0	0	0	0	0	0
301040	0	0	0	0	0	0	0	0	0	0	0
301130	0	0	0	0	0	0	0	0	0	0	0
301132	552	337	108	0	202	215	67	40	4,967	242	121
301157	627	382	122	0	229	245	76	46	5,639	275	138
301174	935	570	182	0	342	365	114	68	8,415	410	205
301250	0	0	0	0	0	0	0	0	0	0	0
301258	48,051	0	37,311	0	0	0	0	0	0	0	0
301830	0	0	0	0	0	0	0	0	0	0	0
303000	0	0	0	0	0	0	0	0	0	0	0
303001	0	0	0	0	0	0	0	0	0	0	0
303002	0	0	0	0	0	0	0	0	0	0	0
303003	2,348	104	0	0	0	0	0	0	0	0	0
303004	75	3	0	0	0	0	0	0	0	0	0
303005	0	0	0	0	0	0	0	0	0	0	0
303006	0	0	0	0	0	0	0	0	0	0	0
303008	0	0	0	0	0	0	0	0	0	0	0
303009	0	0	0	0	0	0	0	0	0	0	0
303010	0	0	0	0	0	0	0	0	0	0	0
303013	0	0	0	0	0	0	0	0	0	0	0
303023	0	0	0	0	0	0	0	0	0	0	0
303024	0	0	0	0	0	0	0	0	0	0	0
303030	0	0	0	0	0	0	0	0	0	0	0
303888	0	0	0	0	0	0	0	0	0	0	0
303999	0	0	0	0	0	0	0	0	0	0	0
304001	291	126	0	0	0	7,558	0	0	0	0	0
304006	0	0	0	0	0	0	0	0	0	0	0

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL CANADIAN EMISSIONS OF HYDROCARBON SPECIES, POINT SOURCES

	THOUSAND MOLES/YEAR										
6-DIGIT SCC	BENZENE	TOLUENE	XYLENE	ETH BENZ	AROMATICS	FORMALDEH	ACETALDEH	ALDEHYDES	ACETONE	KETONES	ORG ACIDS
304010	0	0	0	0	0	0	0	0	0	0	0
305005	0	0	0	0	0	0	0	0	0	0	0
305006	0	0	0	0	0	0	0	0	0	0	0
305007	0	0	0	0	0	0	0	0	0	0	0
305010	0	0	0	0	0	0	0	0	0	0	0
305014	0	0	0	0	0	0	0	0	0	0	0
305015	0	0	0	0	0	0	0	0	0	0	0
305016	0	0	0	0	0	0	0	0	0	0	0
305019	0	0	0	0	0	0	0	0	0	0	0
305020	0	0	0	0	0	0	0	0	0	0	0
305021	0	0	0	0	0	0	0	0	0	0	0
305022	0	0	0	0	0	0	0	0	0	0	0
305025	0	0	0	0	0	0	0	0	0	0	0
305031	0	0	0	0	0	0	0	0	0	0	0
305032	0	0	0	0	0	0	0	0	0	0	0
305040	0	0	0	0	0	0	0	0	0	0	0
306001	53	23	0	0	0	3,707	0	0	1,184	0	0
306002	0	0	0	0	0	558,867	0	0	0	0	0
306006	0	0	0	0	0	31	0	0	0	0	0
306008	22,224	0	0	0	0	0	0	0	0	0	0
306012	0	0	0	0	0	31	0	0	0	0	0
306014	49	21	0	0	0	253	0	0	0	0	0
306888	0	0	0	0	0	0	0	0	0	0	0
307001	912	386	0	0	0	4,684	0	0	0	0	0
307002	0	0	0	0	0	0	0	0	0	0	0
310002	3,027	1,041	284	0	1,277	42,313	378	260	0	0	142
310004	0	0	0	0	0	199	0	0	0	0	0
310888	0	0	0	0	0	0	0	0	0	0	0
403001	459	0	0	0	0	0	0	0	0	0	0
501001	119	0	0	0	0	0	0	0	742	0	0
501002	0	0	0	0	0	0	0	0	0	0	0
501005	2	0	0	0	0	0	0	0	0	0	0
503001	0	0	0	0	0	0	0	0	0	0	0
503005	73	0	0	0	0	0	0	0	0	0	0
503007	0	0	0	0	0	0	0	0	0	0	0
CANADA	222,579	55,500	70,781	4,489	60,660	693,444	18,079	12,346	76,390	3,435	8,140

For conversion of hydrocarbon classes to tons/year, see discussion in Appendix E.

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL CANADIAN EMISSIONS, POINT SOURCES

TONS/YEAR

Province	SO2	SO4	NO	NO2	Pb	CO	HCl	HF	NH3	TSP	Ca	Mg	Na	K	VOC	THC
Alberta	608,878	6,386	118,267	5,505	0	18,417	0	0	30,243	60,708	709	249	152	66	148,126	157,123
British Columbia	128,086	10,780	13,892	775	0	117,778	0	0	494	34,777	1,354	159	266	19	22,902	25,792
Manitoba	523,255	13,259	2,864	117	0	3,589	0	0	1,556	28,794	602	153	55	28	8,190	8,551
New Brunswick	169,542	10,661	21,325	602	0	6,202	0	0	85	29,354	743	233	232	53	9,001	10,177
Newfoundland	25,183	1,387	2,134	44	0	263	0	0	0	87,892	508	178	1	0	1,967	2,196
Nova Scotia	171,197	7,864	35,332	1,059	0	15,358	0	0	369	54,647	483	250	238	389	10,470	12,102
Ontario	1,791,964	37,245	130,014	8,462	0	315,383	0	0	13,501	202,588	6,461	1,265	838	1,350	95,879	103,998
Prince Edward	2,191	129	478	10	0	38	0	0	0	167	0	0	0	0	9	10
Quebec	864,554	27,455	22,166	1,222	0	173,600	0	0	915	242,884	3,883	761	687	282	67,207	74,462
Saskatchewan	46,947	3,557	13,678	571	0	8,160	0	0	127	125,688	1,936	1,623	821	412	9,898	11,299
Canada	4,331,797	118,723	360,149	18,368	NR	658,788	NR	NR	47,290	867,499	16,680	4,870	3,289	2,599	373,648	405,710

METRIC TONS/YEAR

Province	SO2	SO4	NO	NO2	Pb	CO	HCl	HF	NH3	TSP	Ca	Mg	Na	K	VOC	THC
Alberta	552,375	5,793	107,292	4,994	0	16,708	0	0	27,437	55,074	643	226	138	60	134,380	142,542
British Columbia	116,200	9,780	12,603	703	0	106,848	0	0	448	31,550	1,228	145	241	17	20,776	23,398
Manitoba	474,698	12,029	2,598	107	0	3,256	0	0	1,412	26,122	547	139	50	25	7,430	7,757
New Brunswick	153,809	9,672	19,346	546	0	5,626	0	0	77	26,630	674	211	211	48	8,165	9,232
Newfoundland	22,846	1,258	1,936	40	0	239	0	0	0	79,736	460	161	1	0	1,784	1,992
Nova Scotia	155,310	7,134	32,053	961	0	13,933	0	0	335	49,576	438	227	216	353	9,498	10,979
Ontario	1,625,674	33,789	117,949	7,677	0	286,116	0	0	12,248	183,788	5,861	1,147	760	1,225	86,982	94,347
Prince Edward	1,988	117	434	9	0	34	0	0	0	152	0	0	0	0	8	9
Quebec	784,325	24,907	20,109	1,109	0	157,490	0	0	830	220,345	3,523	690	623	255	60,971	67,552
Saskatchewan	42,590	3,227	12,409	518	0	7,403	0	0	115	114,024	1,757	1,472	745	374	8,979	10,250
Canada	3,929,816	107,706	326,728	16,663	NR	597,654	NR	NR	42,902	786,997	15,132	4,418	2,983	2,358	338,975	368,061

NR = NOT REPORTED

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL CANADIAN EMISSIONS OF HYDROCARBON SPECIES, POINT SOURCES

Province	Methane	Ethane	Propane	Butane	Iso-Butane	Pentane	Iso-Pent	Alkanes	Ethylene	Propylene	Iso-Butene	Alkenes	Benzene	Toluene	Xylene	Eth Benz	Aromatic	Formaldeh	Acetaldeh	Aldeh	Acetone	Ketones	Org Acid
	THOUSAND MOLES/YEAR																						
Alberta	278,610	122,828	96,447	105,390	20,516	25,163	266	787,472	645,732	273,317	0	353,366	111,192	39,218	17,587	1,657	45,263	202,801	13,468	9,214	37,898	1,849	5,282
Brit.Col.	135,346	14,996	26,671	35,829	5,872	17,887	0	124,507	40,292	13,831	0	15,832	8,880	2,453	1,189	0	2,812	67,570	833	573	104	0	312
Manitoba	11,626	4,667	10,148	13,023	1,540	6,409	7	39,424	31,864	8,856	0	12,636	5,735	1,853	681	43	2,235	2,511	662	455	23	0	248
New Brun.	59,116	3,943	9,228	16,801	4,572	10,444	9	50,561	0	0	0	71	1,893	66	233	55	0	34,812	0	0	1,485	0	0
Newfound.	7,182	3,077	6,645	8,286	687	3,729	0	6,763	0	0	0	0	131	0	0	0	0	1,115	0	0	384	0	[illegible]
Nova Scot	76,375	8,524	18,654	25,273	4,086	13,234	38	44,682	1,004	8,107	0	316	1,630	166	1,002	236	0	42,694	0	0	633	0	0
Ontario	403,452	29,735	57,364	82,695	17,802	47,290	275	408,362	144,366	361,419	0	117,323	64,880	9,309	31,355	1,717	9,288	205,320	2,763	1,891	9,322	346	1,173
Prince Ed	64	0	0	23	0	0	0	5	0	0	0	0	0	0	0	0	0	131	0	0	45	0	0
Quebec	321,193	47,550	102,926	141,208	21,877	74,086	0	264,299	15,224	165,741	0	17,828	27,400	1,926	15,404	0	1,034	122,475	345	207	26,418	1,241	620
Saskatch.	53,186	13,891	29,141	35,099	2,976	16,136	125	34,585	1,090	155	0	1,182	838	509	3,329	781	29	14,016	9	6	75	0	5
Canada	1,346,149	249,211	357,224	463,625	79,927	214,379	720	1,760,662	879,572	831,425	NR	518,552	222,579	55,500	70,781	4,489	60,660	693,444	18,079	12,546	76,390	3,435	8,1[illegible]

For conversion of hydrocarbon classes to tons/year, see discussion in Appendix E.

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL CANADIAN EMISSIONS, AREA & POINT SOURCES

TONS/YEAR

Province	SO2	SO4	NO	NO2	Pb	CO	HCl	HF	NH3	TSP	Ca	Mg	Na	K	VOC	THC
Alberta	660,788	7,677	447,652	37,913	0	3,023,686	0	0	83,323	8,828,141	709	249	152	66	685,711	898,962
British Columbia	170,640	13,903	197,116	20,060	0	2,153,713	0	0	7,012	1,967,089	1,354	159	266	19	283,067	528,424
Manitoba	533,199	13,790	91,581	10,811	0	1,603,510	0	0	21,011	3,142,219	602	153	55	28	233,681	325,091
New Brunswick	223,053	14,963	55,120	3,640	0	347,965	0	0	1,024	415,749	743	233	232	53	51,010	114,009
Newfoundland	65,635	4,604	33,220	2,710	0	197,323	0	0	123	280,665	508	178	1	0	28,948	78,892
Nova Scotia	212,343	11,094	78,375	5,101	0	393,785	0	0	1,646	763,019	483	250	238	389	73,664	149,945
Ontario	1,954,125	45,947	517,732	46,017	0	4,424,186	0	0	46,260	6,604,382	6,461	1,265	838	1,350	733,251	1,482,757
Prince Edward	4,973	343	5,624	506	0	57,947	0	0	832	41,629	0	0	0	0	6,501	17,202
Quebec	1,210,291	50,699	297,214	24,785	0	2,409,711	0	0	16,564	2,484,937	3,883	761	687	282	390,108	946,493
Saskatchewan	60,125	4,250	155,082	19,135	0	3,373,897	0	0	31,879	6,980,762	1,936	1,623	821	412	505,957	593,482
Canada	5,095,172	167,270	1,878,716	170,677	NR	17,985,723	NR	NR	209,674	31,508,592	16,680	4,870	3,289	2,599	2,991,898	5,135,257

METRIC TONS/YEAR

Province	SO2	SO4	NO	NO2	Pb	CO	HCl	HF	NH3	TSP	Ca	Mg	Na	K	VOC	THC
Alberta	599,467	6,965	406,105	34,394	0	2,743,042	0	0	75,590	8,008,756	643	226	138	60	622,070	815,527
British Columbia	154,804	12,613	178,821	18,198	0	1,953,818	0	0	6,361	1,784,514	1,228	145	241	17	256,794	479,378
Manitoba	483,719	12,510	83,081	9,807	0	1,454,680	0	0	19,061	2,850,574	547	139	50	25	211,992	294,917
New Brunswick	202,353	13,574	50,004	3,302	0	315,669	0	0	929	377,162	674	211	211	48	46,276	103,427
Newfoundland	59,544	4,177	30,137	2,458	0	179,008	0	0	112	254,617	460	161	1	0	26,261	71,570
Nova Scotia	192,637	10,064	71,101	4,628	0	357,236	0	0	1,493	692,200	438	227	216	353	66,827	136,028
Ontario	1,772,784	41,683	469,681	41,746	0	4,013,560	0	0	41,966	5,991,398	5,861	1,147	760	1,225	665,195	1,345,137
Prince Edward	4,511	311	5,102	459	0	52,569	0	0	755	37,765	0	0	0	0	5,898	15,605
Quebec	1,097,972	45,994	269,629	22,484	0	2,186,056	0	0	15,027	2,254,301	3,523	690	623	255	353,901	858,645
Saskatchewan	54,545	3,856	140,688	17,359	0	3,060,748	0	0	28,920	6,332,843	1,757	1,472	745	374	458,996	538,398
Canada	4,622,338	151,747	1,704,349	154,836	NR	16,316,385	NR	NR	190,214	28,584,129	15,132	4,418	2,983	2,358	2,714,211	4,658,634

NR = NOT REPORTED

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL CANADIAN EMISSIONS OF HYDROCARBON SPECIES, AREA & POINT SOURCES

THOUSAND MOLES/YEAR

Province	Methane	Ethane	Propane	Butane	Iso-Butane	Pentane	Iso-Pen	Alkanes	Ethylene	Propylene	Iso-Buten	Alkenes	Benzene	Toluene	Xylene	Eth Benz	Aromatics	Formaldeh	Acetaldeh	Aldeh	Acetone	Ketones	Org Acid
Alberta	11,767,688	244,099	353,461	497,510	129,735	188,312	11,632	3,153,143	2,611,986	413,931	3,606	1,700,819	168,267	207,056	357,078	79,550	98,130	455,622	88,824	23,656	54,432	22,228	8,027
Brit.Col.	13,744,136	100,764	78,290	224,948	44,684	57,496	8,916	1,393,282	495,673	170,165	2,105	386,827	49,748	159,900	282,269	63,336	50,425	290,111	44,880	20,464	56,317	35,850	3,108
Manitoba	5,143,306	25,654	77,185	117,894	57,563	53,469	100	1,145,443	1,139,139	82,670	1,122	716,521	21,680	55,092	19,652	3,637	23,338	61,738	24,135	4,507	8,537	9,589	1,29[illegible]
New Brun.	3,540,911	19,213	24,317	68,831	13,490	24,315	266	286,046	65,434	30,142	305	49,121	9,968	27,597	16,514	3,458	9,310	84,721	6,381	4,249	8,719	5,738	683
Newfound	2,816,537	10,116	10,341	37,951	6,734	10,099	48	167,312	42,847	20,811	273	30,369	5,649	18,777	7,577	1,672	6,262	58,197	5,697	2,107	4,911	4,344	543
Nova Scot	4,270,917	32,081	35,417	86,577	13,651	26,381	2,329	362,041	81,958	45,396	440	75,160	12,438	44,940	72,679	16,943	10,030	109,845	9,207	1,578	7,533	7,445	831
Ontario	42,288,130	141,549	165,843	592,743	155,139	181,941	439	4,035,725	1,849,973	731,441	3,528	1,275,151	165,690	352,940	154,512	25,018	109,588	808,285	76,953	28,863	157,779	135,767	10,331
Prince Ed	604,107	1,756	669	6,875	1,302	1,382	28	39,333	10,093	5,517	46	7,379	1,449	5,074	2,302	504	1,414	8,326	967	300	720	1,034	117
Quebec	31,357,047	122,510	143,555	473,749	91,040	146,480	248	2,221,058	536,115	398,776	2,126	396,238	92,840	223,733	96,794	17,256	62,645	668,593	44,986	16,021	119,173	78,463	7,211
Saskatch.	4,856,581	61,512	206,981	232,071	130,606	124,927	3,789	2,300,349	2,601,774	103,137	1,345	1,680,370	19,920	77,070	120,057	26,729	27,304	80,939	28,114	4,067	6,649	9,256	95[illegible]
Canada	120,389,361	759,253	1,096,057	2,339,149	643,943	814,803	27,796	15,103,733	9,434,992	2,001,986	14,897	6,317,955	547,649	1,172,180	1,129,434	238,103	398,445	2,626,378	330,143	105,814	424,770	309,714	33,16[illegible]

For conversion of hydrocarbon classes to tons/year, see discussion in Appendix E.

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL CANADIAN & U.S. EMISSIONS, AREA & POINT SOURCES

TONS/YEAR

Country	SO2	SO4	NO	NO2	Pb	CO	HCl	HF	NH3	TSP	Ca	Mg	Na	K	VOC	THC
Canada	5,095,172	167,270	1,878,716	170,677	NR	17,985,723	NR	NR	209,674	31,508,592	16,680	4,870	3,289	2,599	2,991,898	5,135,257
Contig. U.S.	26,954,136	975,608	20,877,086	1,475,151	31,732	99,308,937	526,524	115,434	838,664	42,617,370	113,808	32,025	12,975	15,474	23,164,547	24,977,459
Total	32,049,308	1,142,878	22,755,802	1,645,828	31,732	117,294,660	526,524	115,434	1,048,338	74,125,962	130,487	36,895	16,263	18,073	26,156,446	30,112,716

METRIC TONS/YEAR

Country	SO2	SO4	NO	NO2	Pb	CO	HCl	HF	NH3	TSP	Ca	Mg	Na	K	VOC	THC
Canada	4,622,338	151,747	1,704,349	154,836	NR	16,316,385	NR	NR	190,214	28,584,129	15,132	4,418	2,983	2,358	2,714,211	4,658,634
Contig. U.S.	24,452,809	885,069	18,939,536	1,338,240	28,787	90,091,713	477,664	104,722	760,828	38,661,905	103,247	29,053	11,771	14,038	21,014,593	22,659,252
Total	29,075,147	1,036,816	20,643,885	1,493,076	28,787	106,408,098	477,664	104,722	951,042	67,246,034	118,378	33,471	14,754	16,396	23,728,804	27,317,885

NR = NOT REPORTED

1980 NAPAP 5.2 EMISSIONS INVENTORY - ANNUAL CANADIAN & U.S. EMISSIONS OF HYDROCARBON SPECIES, AREA & POINT SOURCES

Country	Methane	Ethane	Propane	Butane	Iso-Butane	Pentane	Iso-Pentane	Alkanes	Ethylene	Propylene	Iso-Butene	Alkenes
	THOUSAND MOLES/YEAR											
Canada	120,389,361	759,253	1,096,057	2,339,149	643,943	814,803	27,796	15,103,733	9,434,992	2,001,986	14,897	6,317,955
Contig. U.S.	91,994,146	6,698,261	4,079,718	15,972,045	3,301,153	3,294,293	340,374	134,447,565	41,611,730	15,457,664	103,241	28,722,513
Total	212,383,507	7,457,514	5,175,775	18,311,194	3,945,097	4,109,096	368,171	149,551,298	51,046,722	17,459,650	118,138	35,040,468

Country	Benzene	Toluene	Xylene	Eth Benz	Aromatics	Formaldeh	Acetaldeh	Aldeh	Acetone	Ketones	Org Acid
	THOUSAND MOLES/YEAR										
Canada	547,649	1,172,180	1,129,434	238,103	398,445	2,626,378	330,143	105,814	424,770	309,714	33,100
Contig. U.S.	5,492,770	16,492,428	13,762,475	2,870,820	4,011,537	19,199,592	2,247,947	816,293	7,253,977	4,376,829	1,594,637
Total	6,040,419	17,664,608	14,891,909	3,108,923	4,409,982	21,825,970	2,578,090	922,107	7,678,747	4,686,543	1,627,737

For conversion of hydrocarbon classes to tons/year, see discussion in Appendix E.

APPENDIX B

DEFAULT PARAMETER TABLES AND SAROAD LISTINGS

Tables B-1 through B-5 list default values for control efficiencies, ash and sulfur contents, and heat values utilized in the generation of the Version 5.0 NAPAP Emissions Inventory. A detailed description of the circumstances under which these values were applied can be found in Section 3. Table B-6 is a listing of the SAROAD codes for pollutants in the Version 5.0 and 5.2 inventories.

TABLE B-1. ASSUMED CONTROL EFFICIENCIES[a]

AMMONIA

Control equipment code	Removal efficiency (%)
001, 002, 003, 053 (wet scrubbers) (for coal combustion only)	30.0
019, 020, 021, 022, 023 (afterburners)	99.9
034-040 and 067-071 (FGD)	90.0

SULFATE

Control equipment code	Removal efficiency (%)
001, 002, 003, 053	20.0
010, 011, 012 (ESPs)	20.0
016, 017, 018 (fabric filters)	30.0
034-040 and 067-071 (FGD)	35.0

[a]For control devices in series, credit was given for the most efficient device only. Removal efficiencies for all other control devices assumed to be zero.

TABLE B-2. ASSUMED CONTROL EFFICIENCIES FOR HCl AND HF[a]

HCl AND HF - COAL COMBUSTION

Control equipment code	Removal efficiency (%)
001 (wet scrubber-high efficiency)	80
002 (wet scrubber-medium efficiency)	75
003 (wet scrubber-low efficiency)	70
013, 028, 034, 035, 036, 052, 067, 068, 069, 070 (other types of scrubbers, steam or water injection, or spray tower)	50
042 (wet lime injection)	40

HCl - INDUSTRIAL PROCESSES

Control equipment code	Removal efficiency (%)
013 (gas scrubber)	93
001 (wet scrubber-high efficiency	90
002 (wet scrubber-medium efficiency)	85
003 (wet scrubber-low efficiency)	80

HF - INDUSTRIAL PROCESSES

Process	Control equipment code	Removal efficiency (%)
HF Manufacturing	013	99
Phosphoric Acid Manufacturing	001, 002, 003, 013	98
Triple Super Phosphate Manufacturing	001	99
	002	95
	003	90
	013	95
	052 (spray tower)	95
	053 (venturi scrubber)	95
Diammonium Phosphate Mfg.-- Dryer/cooler	013, 052, 053	90
	050 (packed gas absorption column)	90
Ammoniator/granulator	013, 050, 052, 053	83
Primary Aluminum Producton-- Prebake reduction cell	040 (alkalized alumina)	99
	071 (fluid bed dry scrubber)	99
	052	94
	050	71
Horizontal soderberg stud Cell	040, 071	96
	001	99
	002	95
	003	90
	052	62
Primary Aluminum Production-- Vertical soderberg stud Cell and HSS and VSS Fugitive emissions	040, 052, 053, 071	99
	001	97
	002	95
	003	93
Anode baking furnace	040, 071	99
	052	96
Prebake fugitive emissions	040, 071	99
	052	94
	050	71

[a]For control devices in series, credit was given for the most efficient device only. Removal efficiencies for all other control devices assumed to be zero.

TABLE B-3. DEFAULT ASH AND SULFUR CONTENTS

SCC	Ash content	Sulfur content
10X001XX	10.0	0.70
10X002XX	10.0	2.00
10X003XX	10.0	1.00
10X004XX	NR	1.50
10X005XX	NR	0.30
10X007XX	NR	0.15
10X008XX	10.0	0.80
10X010XX	NR	0.15
10500110	NR	0.15
20X001XX	NR	0.30
20X004XX	NR	0.30
30500312	NR	0.30
30500313	10.0	0.70
30500315	NR	0.30
30500316	10.0	0.70
30600101	NR	0.30
30600102	NR	0.15
30600103	NR	0.30
30600104	NR	0.15
30600106	NR	0.15
30600107	NR	0.15
390001XX	10.0	0.70
39000201	10.0	2.00
390003XX	10.0	1.00
39000402	NR	1.50
39000502	NR	0.30
390007XX	NR	0.15
390008XX	10.0	0.80
390010XX	NR	0.15

NR = Not required for emission calculation.

TABLE B-4. DEFAULT CONTROL EFFICIENCIES

Control equipment code	Particulates	Lead	SO_x	NO_x	VOC	CO
001	97.5	97.5	90.0	--	--	--
002	87.5	87.5	70.0	--	--	--
003	60.0	60.0	40.0	--	--	--
006	50.0	50.0	--	--	--	--
006	50.0	50.0	--	--	--	--
007	97.5	97.5	--	--	--	--
008	87.5	87.5	--	--	--	--
009	55.0	55.0	--	--	--	--
010	97.5	97.5	--	--	--	--
011	87.5	87.5	--	--	--	--
012	65.0	65.0	--	--	--	--
013	80.0	80.0	25.0	80.0	70.0	--
014	80.0	80.0	--	--	--	--
015	70.0	70.0	--	--	--	--
016	99.0	99.0	--	--	--	--
017	99.0	99.0	--	--	--	--
018	99.0	99.0	--	--	--	--
019	90.0	90.0	--	--	95.0	--
020	90.0	90.0	--	--	95.0	--
021	60.0	60.0	--	--	99.0	--
022	60.0	60.0	--	--	99.0	--
023	85.0	85.0	--	--	90.0	--
039	--	--	80.0	--	--	--
040	--	--	80.0	--	--	--
043	--	--	80.0	--	--	--
045	--	--	90.0	--	--	--
046	50.0	50.0	50.0	50.0	50.0	50.0
047	--	--	--	--	80.0	--
050	90.0	90.0	81.0	80.0	50.0	--
052	80.0	80.0	80.0	80.0	80.0	--
053	95.0	95.0	80.0	80.0	80.0	--
060	--	--	--	--	95.0	--

TABLE B-5. VALID HEAT VALUE RANGES FOR THE NAPAP EMISSIONS INVENTORY

Fuel	Acceptable range	Default
Anthracite coal	20-30 MMBtu/ton	25 MMBtu/ton
Bituminous coal	20-30 MMBtu/ton	25 MMBtu/ton
Lignite	10-20 MMBtu/ton	16 MMBtu/ton
Residual oil	130-155 x 10^3 Btu/gal	150 x 10^3 Btu/gal
Distillate oil	120-155 x 10^3 Btu/gal	140 x 10^3 Btu/gal
Natural gas	800-1,200 Btu/ft^3	1,000 Btu/ft^3

TABLE B-6. 1980 NAPAP EMISSIONS INVENTORY VERSION 5.0 AND 5.2 POLLUTANT SAROAD CODE LISTING

POLLUTANT	SAROAD CODE
SO2	42401
SO4	12403
TSP:	11101
- Ca	12111
- Mg	12140
- K	12180
- Na	12184
Pb	12128
CO	42101
HCl (Hydrogen Chloride)	42302
HF (Hydrogen Fluoride)	42303
NOX:	42602
- NO	42601
- NO2	42602
NH3	42604
VOC	43104
THC (Total Hydrocarbons):	43101
- Methane	43201
- Ethane	43202
- Ethylene	43203
- Propane	43204
- Propylene	43205
- N-butane	43212
- Isobutane	43214
- Isobutene	43215
- Trans-2-butene	43216
- Pentane	43220
- Isopentane	43221
- 2,3-dimethylbutane	43244
- Other alkenes	43298
- Other alkanes	43299
- Formic acid	43403
- Acetic acid	43404
- Other organic acids	43499
- Formaldehyde	43502
- Acetaldehyde	43503
- Propionaldehyde	43504
- Acetone	43551
- Other ketones	43598
- Other aldehydes	43599
- Xylene	45102
- Benzene	45201
- Toluene	45202
- Ethylbenzene	45203
- Other aromatics	45999

APPENDIX C

FIGURES DEPICTING UNITED STATES AREA SOURCE TEMPORAL ALLOCATION FACTORS

The following pages illustrate temporal allocation patterns by U.S. area source SCC. Where allocation patterns vary from state to state, these figures represent national mean allocation values. A complete description of the application of these factors is presented in Section 6.

Figure C-1 depicts relative values of seasonal/daily temporal allocation factors for the 12 temporal scenarios available under Version 5.2. Vertical bars are comprised of asterisks, where each asterisk corresponds to roughly 1/20 percent of apportioned annual emissions for the respective SCC. Factors sum to 100 percent via the equation:

$$\sum_{\text{season}=1}^{4} \left(\begin{matrix}65 \text{ x} \\ \text{weekday factor}\end{matrix}\right) + \left(\begin{matrix}13 \text{ x} \\ \text{Saturday factor}\end{matrix}\right) + \left(\begin{matrix}13 \text{ x} \\ \text{Sunday factor}\end{matrix}\right) = 1.0$$

That is, weekday emissions are weighted by a factor of 5, since there are five times as many weekdays in a season as Saturdays or Sundays.

Figures C-2 through C-4 represent average hourly emissions allocations over the four seasons for weekdays, Saturdays, and Sundays, respectively. Each asterisk along the vertical axis represents approximately 1/2 percent of apportioned emissions for the specified day type. The x-axis represents hours from 1 to 24, adjusted to local time.

The real value of these temporal allocation patterns is not, however, in the absolute amount of emissions represented; the patterns serve as valuable qualitative quality assurance checks of the temporal allocation factors.

SEASONAL/DAILY MEANS

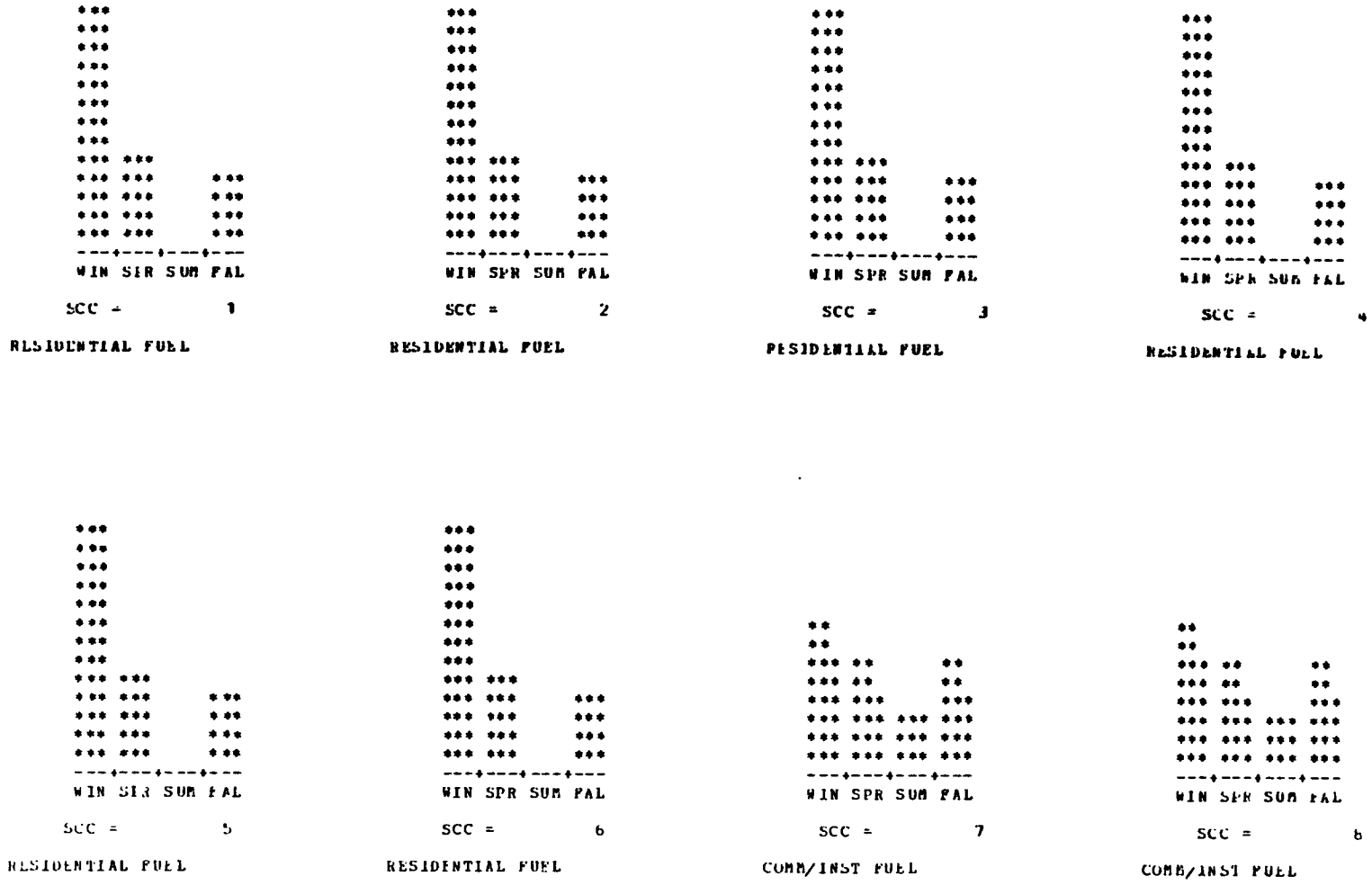
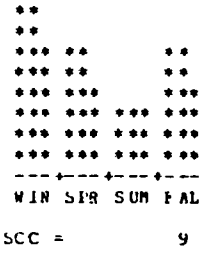


Figure C-1. Seasonal/daily emissions allocation patterns by area source category.

SEASONAL/DAILY MEANS



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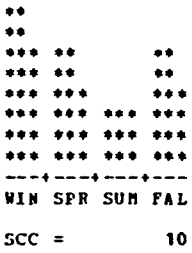
COMM/INST FUEL



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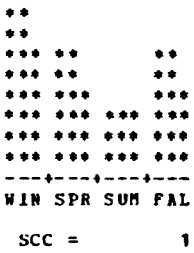
COMM/INST FUEL



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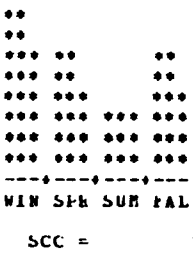
COMM/INST FUEL



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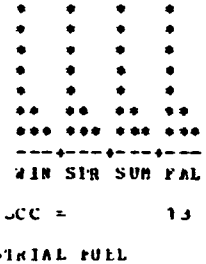
COMM/INST FUEL



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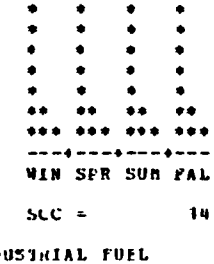
INDUSTRIAL FUEL



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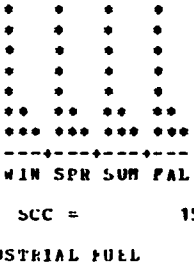
INDUSTRIAL FUEL



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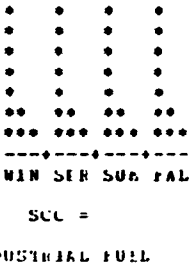
INDUSTRIAL FUEL



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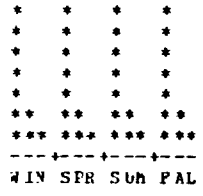
INDUSTRIAL FUEL

Figure C-1. (continued)

SEASONAL/DAILY MEANS



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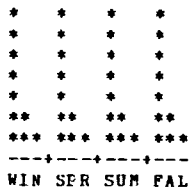
INDUSTRIAL FUEL



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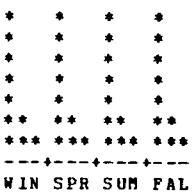
INDUSTRIAL FUEL

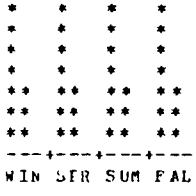


SCC = 19

INDUSTRIAL FUEL

SCC = 20

INDUSTRIAL FUEL



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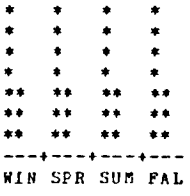
ON-SITE INCINERATION



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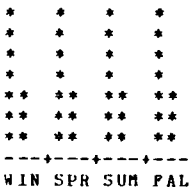
ON-SITE INCINERATION



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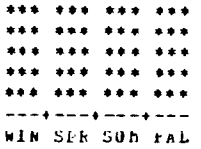
ON-SITE INCINERATION



SCC = 24

OPEN BURNING

Figure C-1. (continued)

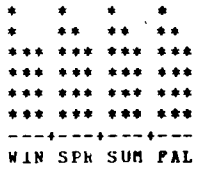
SEASONAL/DAILY MEANS

SCC = 25

OPEN BURNING

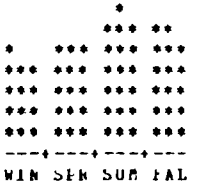
SCC = 26

OPEN BURNING



SCC = 27

LD GAS VHCLS



SCC = 28

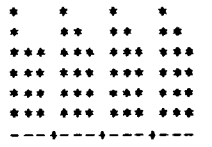
LD GAS VHCLS

SCC = 29

LD GAS VHCLS

SCC = 30

LD GAS VHCLS



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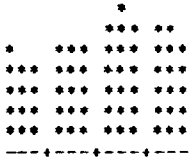

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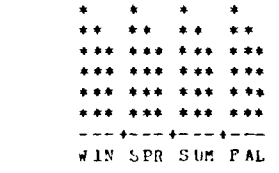
MD GAS VHCLS

Figure C-1. (continued)

SEASONAL/DAILY MEANS



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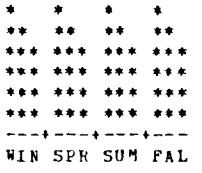
MD GAS VHCLS



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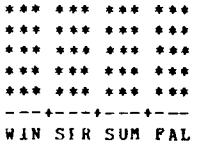
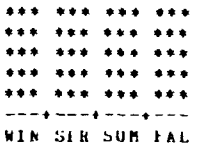
MD GAS VHCLS



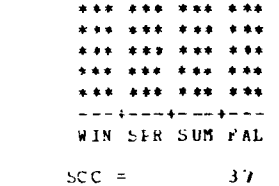
SCC = 35

HD GAS VHCLS



SCC = 36

HD GAS VHCLS



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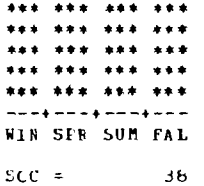

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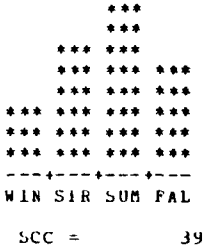
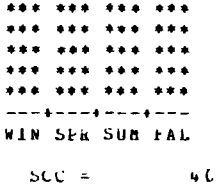
HD GAS VHCLS



SCC = 39

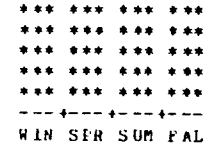
OFF HIGHWAY GAS VHCLS



SCC = 40

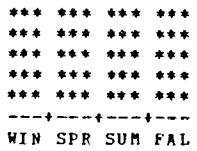
HD DIESEL VHCLS

Figure C-1. (continued)



SCC = 41

HD DIESEL VHCLS

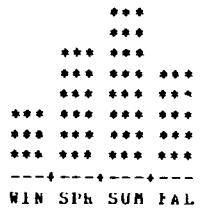


SCC = 42

HD DIESEL VHCLS

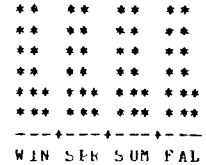
SCC = 43

HD DIESEL VHCLS



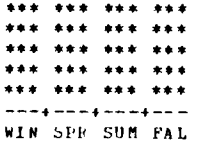
SCC = 44

OFF HIGHWAY DIESEL VHCLS



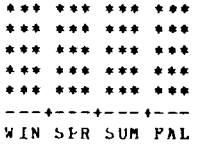
SCC = 45

RAILROAD LOCOMOTIVES



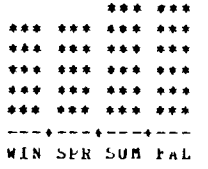
SCC = 46

LTO'S - MILITARY



SCC = 47

LTO'S - CIVIL

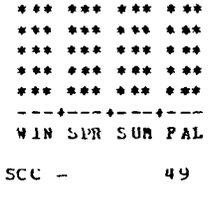


SCC = 48

LTO'S - COMMERCIAL

Figure C-1. (continued)

SEASONAL/DAILY MEANS



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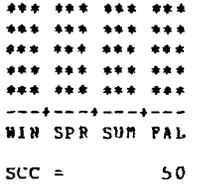
VESSELS



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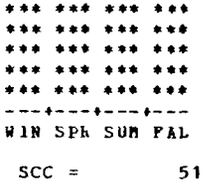
VESSELS



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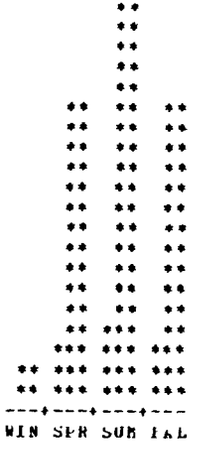
VESSELS



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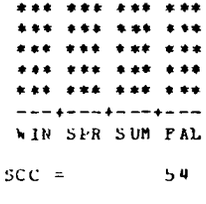
VESSELS



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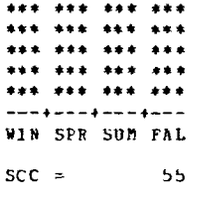
GAS MARKETED



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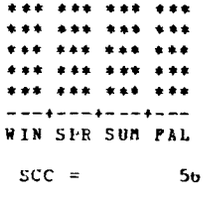
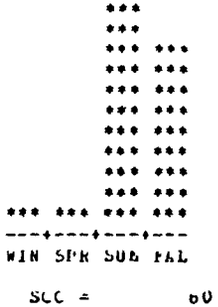
UNPAVED ROAD TRAVEL



SCC = 56

UNPAVED AIRSTRIP LTO'S

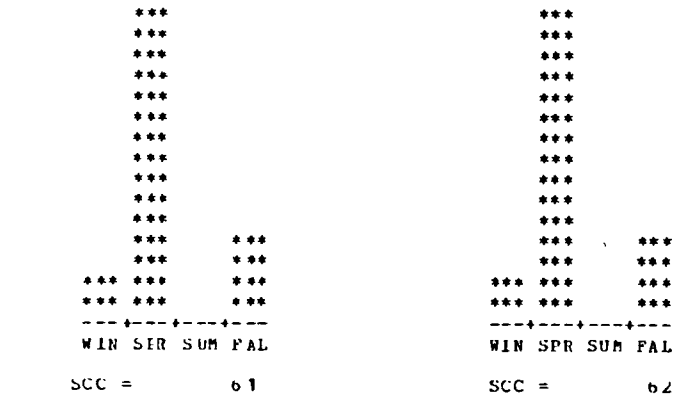


SCC = 60

FOREST WILD FIRES

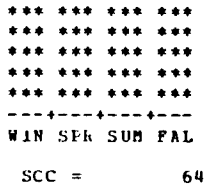
Figure C-1. (continued)

SEASONAL/DAILY MEANS

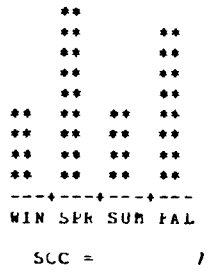


MANAGED BURNING

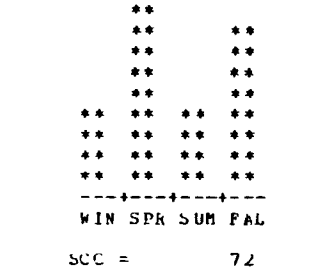
AGR FIELD BURNING



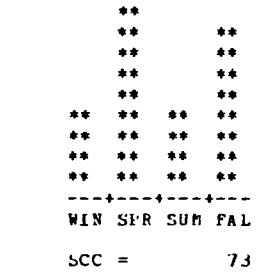
STRUCTURAL FIRES



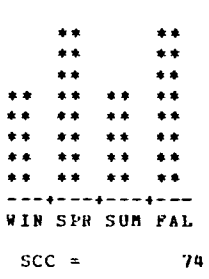
MANURE FIELD APPLICATION



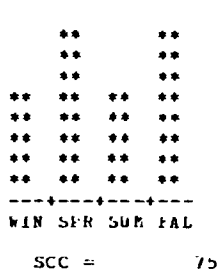
MANURE FIELD APPLICATION



MANURE FIELD APPLICATION



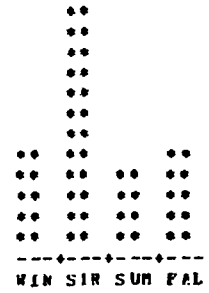
MANURE FIELD APPLICATION



MANURE FIELD APPLICATION

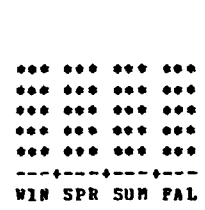
Figure C-1. (continued)

SEASONAL/DAILY MEANS



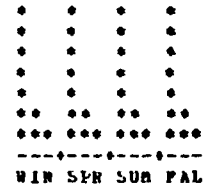
SCC = 76

ANHDRS NH3FERT APPL



SCC = 77

BEEF CATTLE FEED LOTS

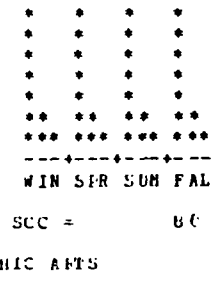


SCC = 78

DEGREASING

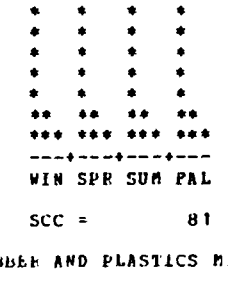
SCC = 79

DRYCLEANING



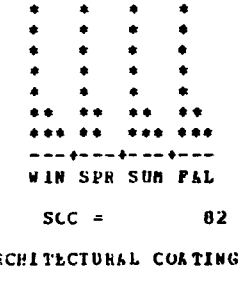
SCC = 80

GRAPHIC ARTS



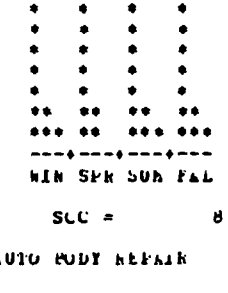
SCC = 81

RUBBER AND PLASTICS MFG



SCC = 82

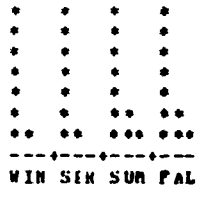
ARCHITECTURAL COATING



SCC = 83

AUTO BODY REPAIR

Figure C-1. (continued)

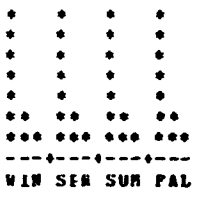


SCC = 84

MOTOR VEHICLE MFG

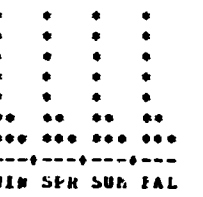
SCC = 85

PAPER COATING



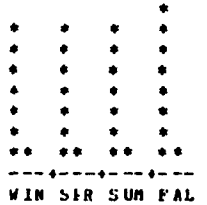
SCC = 86

FABRICATED METALS



SCC = 87

MACHINERY MFG



SCC = 88

FURNITURE MFG

SCC = 89

FLAT WOOD PRODUCTS

SCC = 90

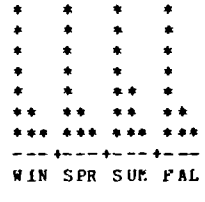
OTHER TRANS EQUIP MFG

SCC = 91

ELECTRICAL EQUIPMENT MFG

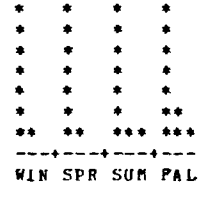
Figure C-1. (continued)

SEASONAL/DAILY MEANS



SCC = 92

SHIP BLDG AND REPAIR

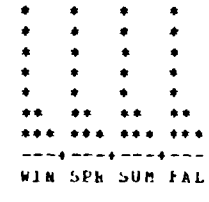


SCC = 93

MISC INDUSTRIAL MFG

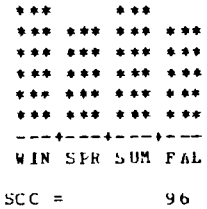
SCC = 94

MISC INDUST SOLVENT USE



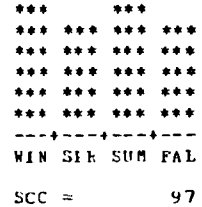
SCC = 95

MISC NONIND SOLVENT USE



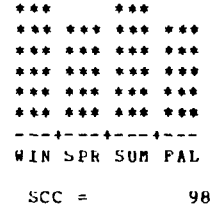
SCC = 96

MINOR UTILITIES - COAL



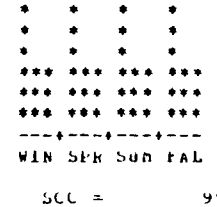
SCC = 97

MINOR UTILITIES - OIL



SCC = 98

MINOR UTILITIES - GAS



SCC = 99

MINOR POINT SOURCES

Figure C-1. (continued)

WEEKDAY HOURLY MEANS

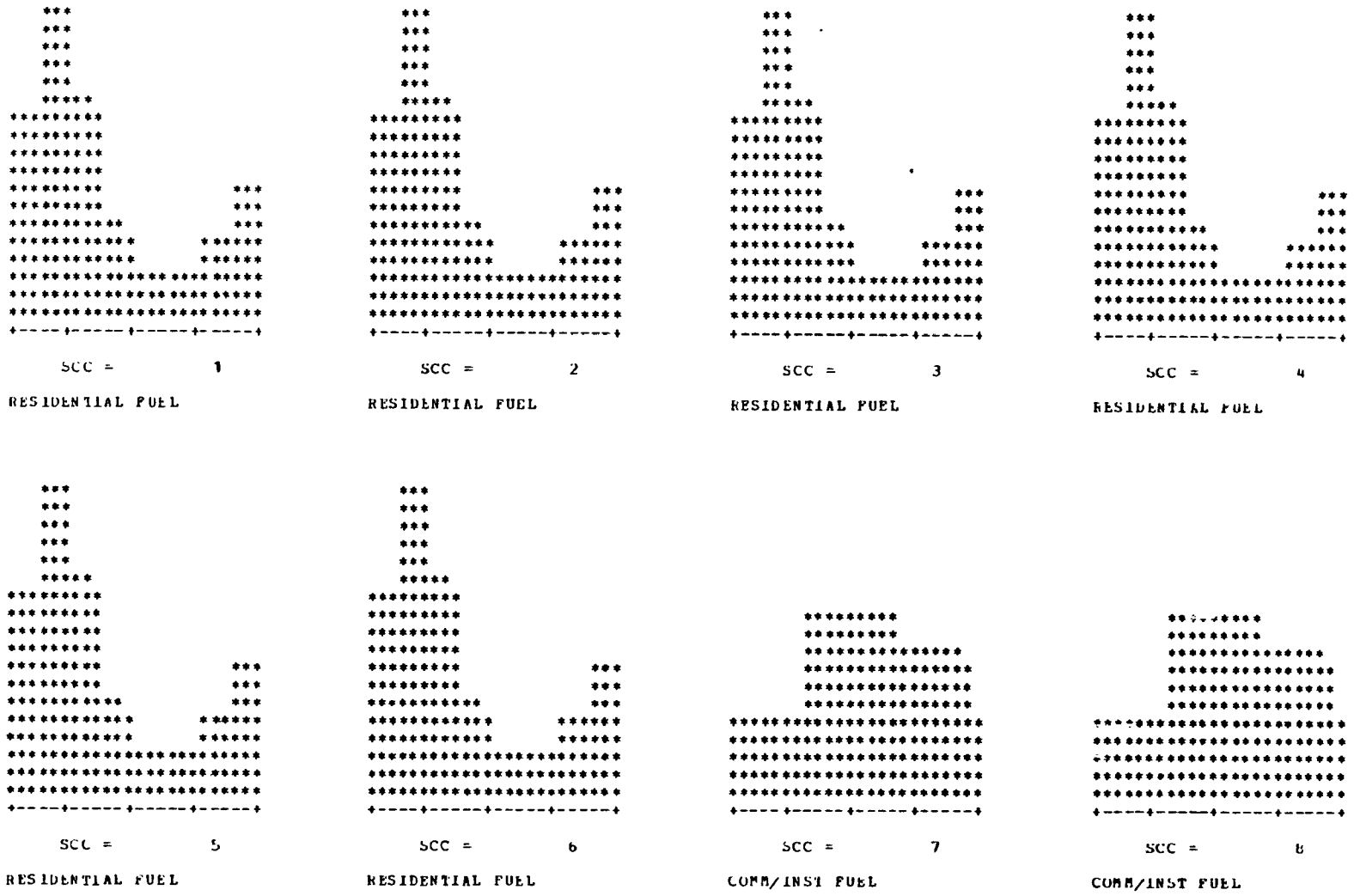
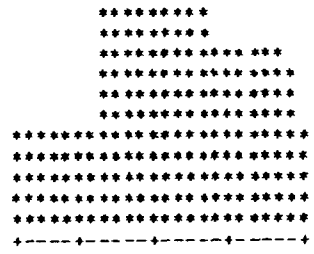


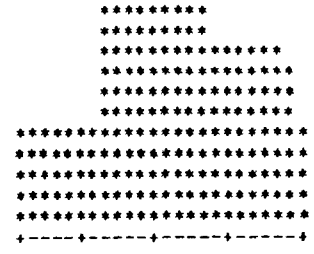
Figure C-2. Hourly emissions allocation patterns by area source category, average weekday.

WEEKDAY HOURLY MEANS



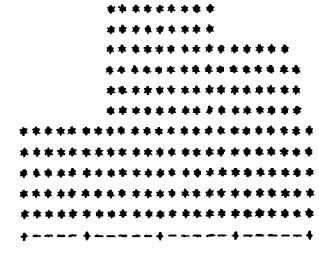
SCC = 9

COMM/INST FUEL



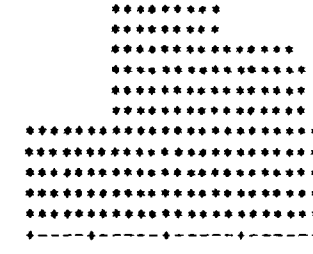
SCC = 10

COMM/INST FUEL



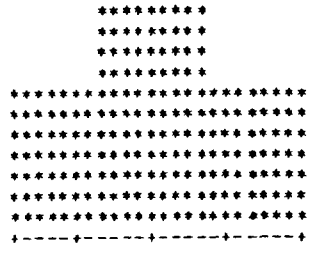
SCC = 11

COMM/INST FUEL



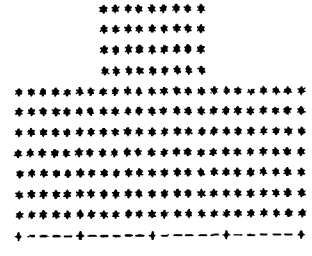
SCC = 12

COMM/INST FUEL



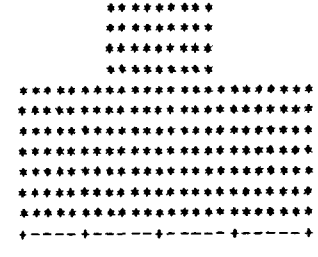
SCC = 13

INDUSTRIAL FUEL



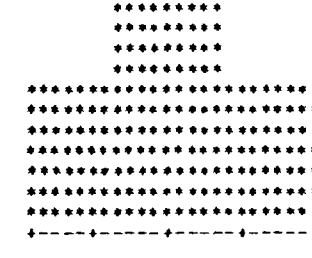
SCC = 14

INDUSTRIAL FUEL



SCC = 15

INDUSTRIAL FUEL



SCC = 16

INDUSTRIAL FUEL

Figure C-2. (continued)

WEEKDAY HOURLY MEANS

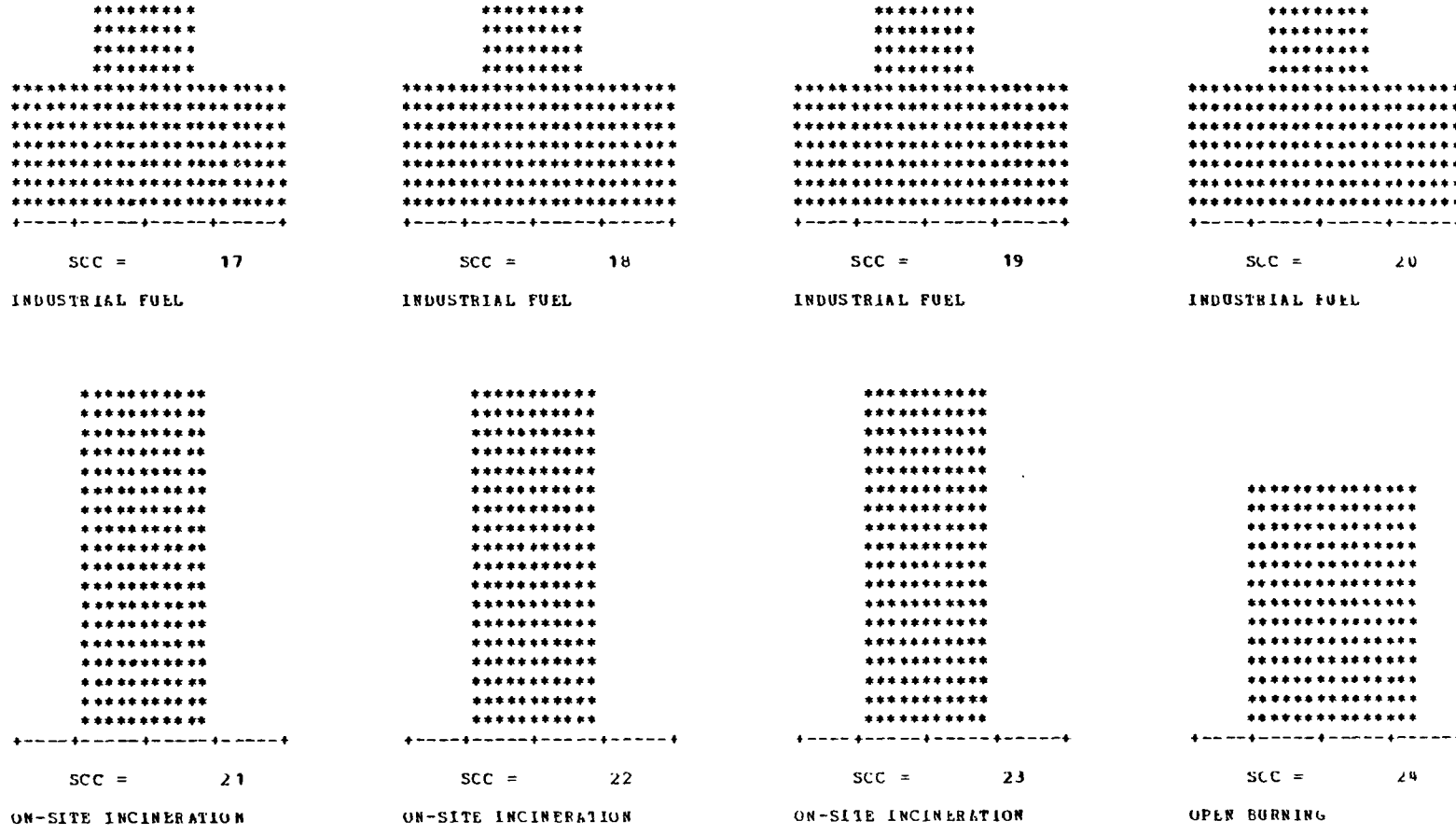
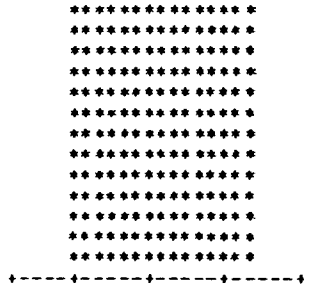


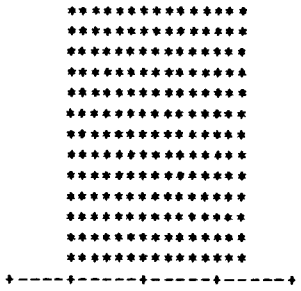
Figure C-2. (continued)

WEEKDAY HOURLY MEANS



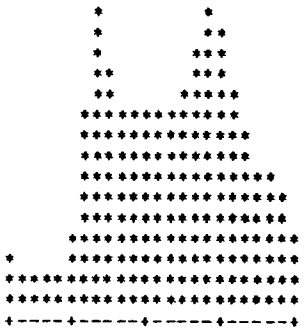
SCC = 25

OPEN BURNING



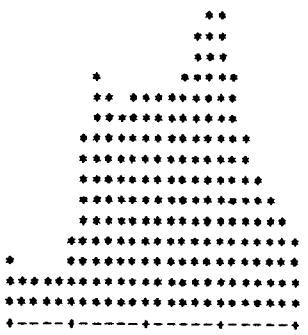
SCC = 26

OPEN BURNING



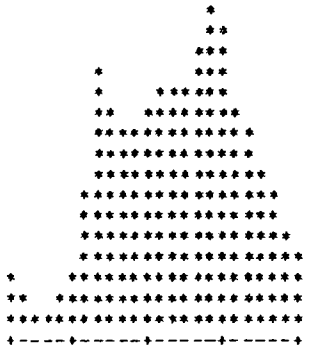
SCC = 27

LD GAS VHCLS



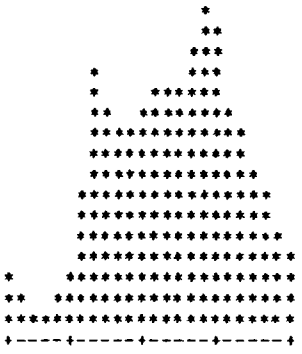
SCC = 28

LD GAS VHCLS



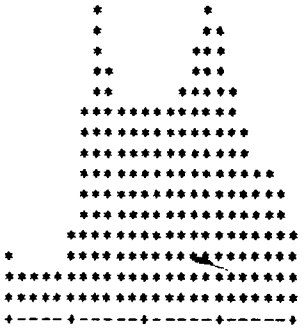
SCC = 29

LD GAS VHCLS



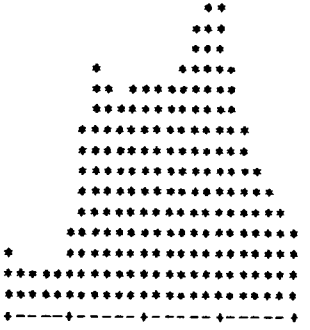
SCC = 30

LD GAS VHCLS



SCC = 31

MD GAS VHCLS

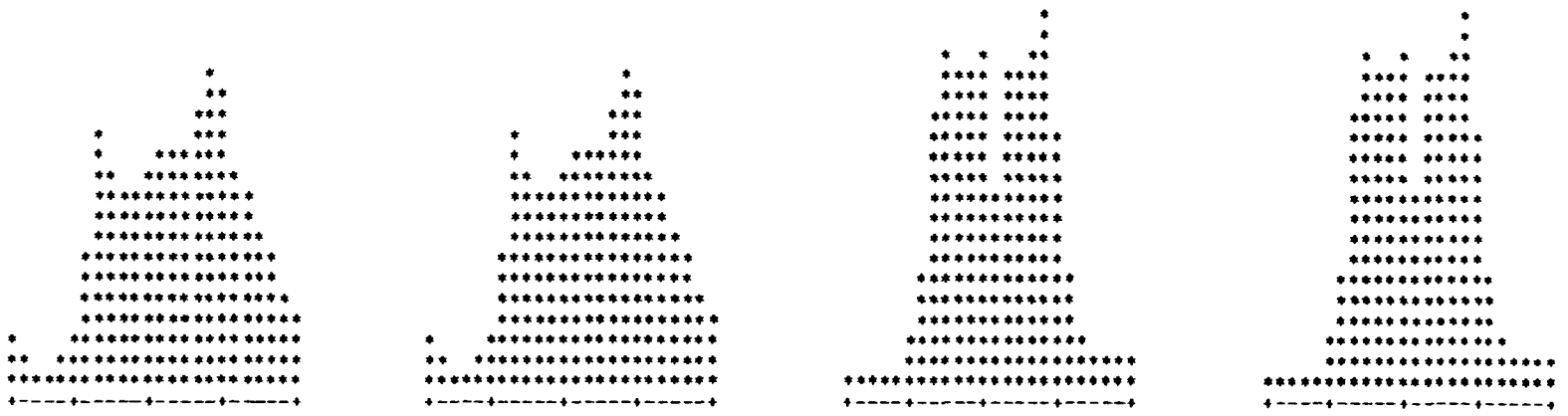


SCC = 32

MD GAS VHCLS

Figure C-2. (continued)

WEEKDAY HOURLY MEANS



SCC = 33

MD GAS VHCLS

SCC = 34

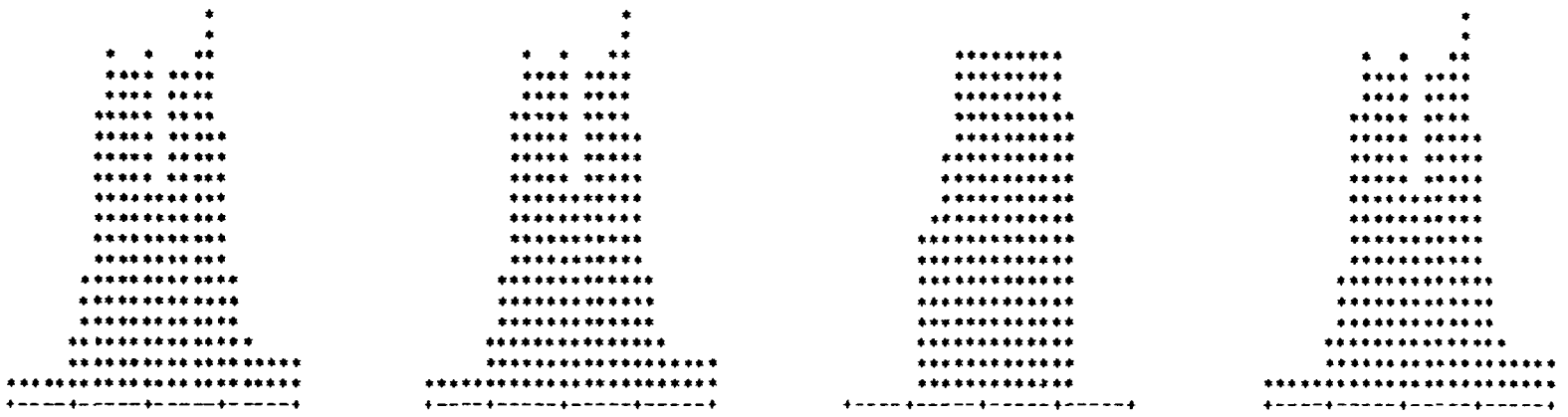
MD GAS VHCLS

SCC = 35

HD GAS VHCLS

SCC = 36

HD GAS VHCLS



SCC = 37

HD GAS VHCLS

SCC = 38

HD GAS VHCLS

SCC = 39

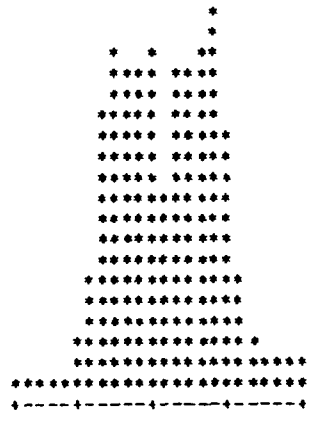
OFF HIGHWAY GAS VHCLS

SCC = 40

HD DIESEL VHCLS

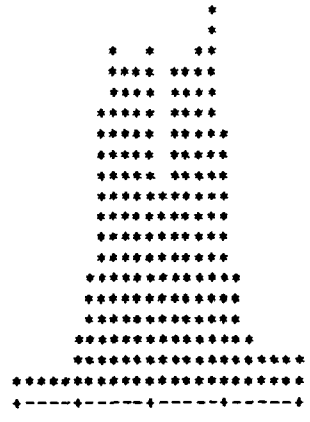
Figure C-2. (continued)

WEEKDAY HOURLY MEANS



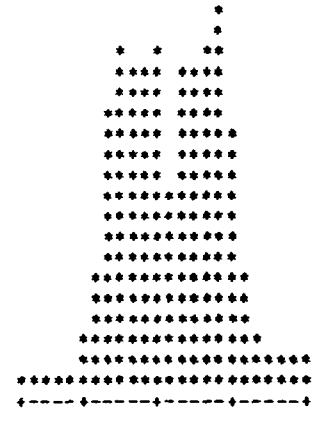
SCC = 41

HD DIESEL VHCLS



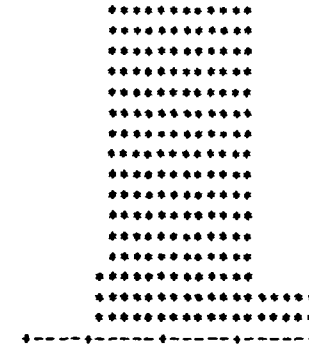
SCC = 42

HD DIESEL VHCLS



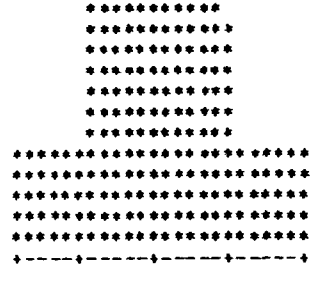
SCC = 43

HD DIESEL VHCLS



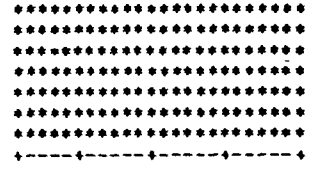
SCC = 44

OFF HIGHWAY DIESEL VHCLS



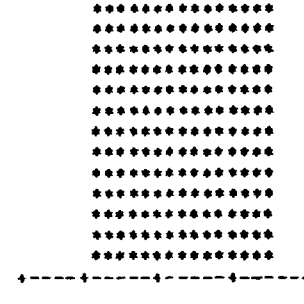
SCC = 45

RAILROAD LOCOMOTIVES



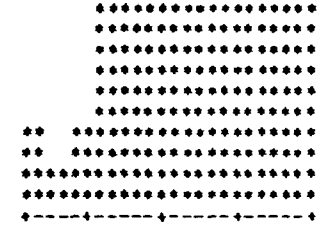
SCC = 46

LTO'S - MILITARY



SCC = 47

LTO'S - CIVIL

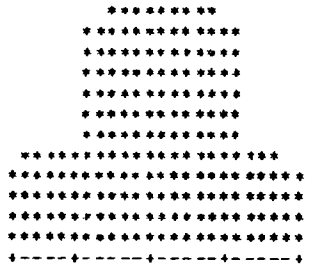


SCC = 48

LTO'S - COMMERCIAL

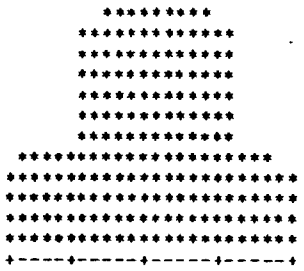
Figure C-2. (continued)

WEEKDAY HOURLY MEANS



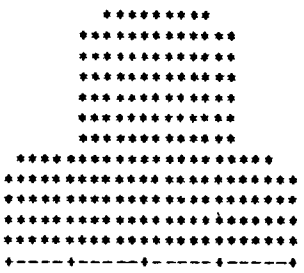
SCC = 49

VESSELS



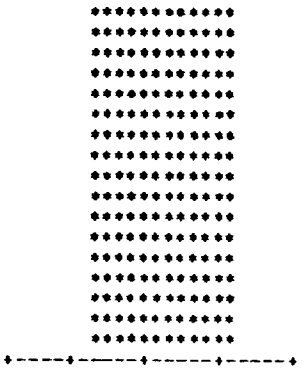
SCC = 50

VESSELS



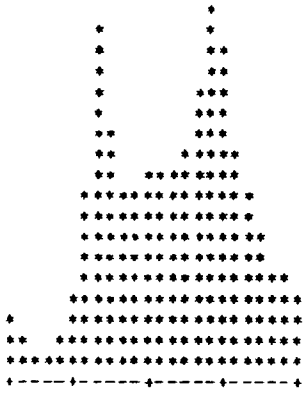
SCC = 51

VESSELS



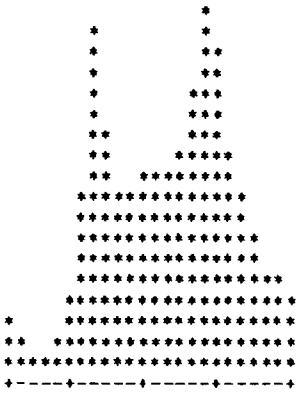
SCC = 52

VESSELS



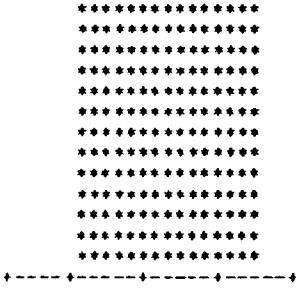
SCC = 54

GAS MARKETED



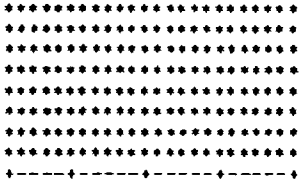
SCC = 55

UNPAVED ROAD TRAVEL



SCC = 56

UNPAVED AIRSTRIP LTO'S

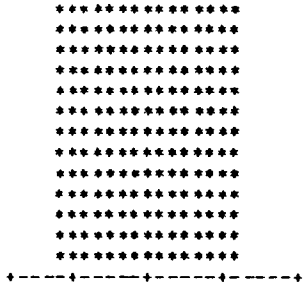


SCC = 60

FOREST WILD FIRES

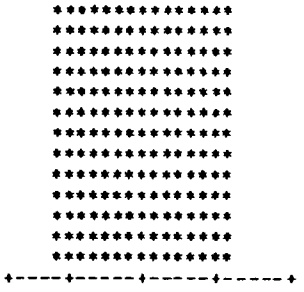
Figure C-2. (continued)

WEEKDAY HOURLY MEANS



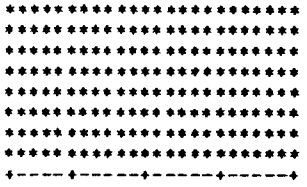
SCC = 61

MANAGED BURNING



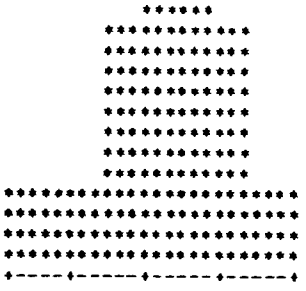
SCC = 62

AGR FIELD BURNING



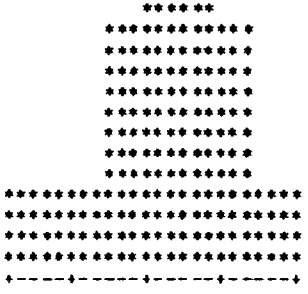
SCC = 64

STRUCTURAL FIRES



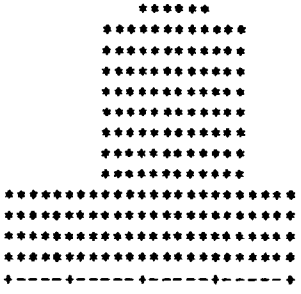
SCC = 71

MANURE FIELD APPLICATION



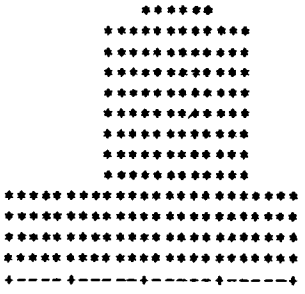
SCC = 72

MANURE FIELD APPLICATION



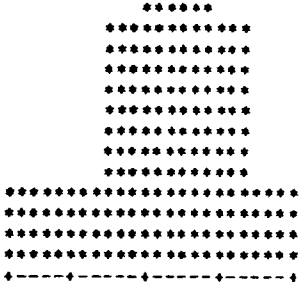
SCC = 73

MANURE FIELD APPLICATION



SCC = 74

MANURE FIELD APPLICATION



SCC = 75

MANURE FIELD APPLICATION

Figure C-2. (continued)

WEEKDAY HOURLY MEANS

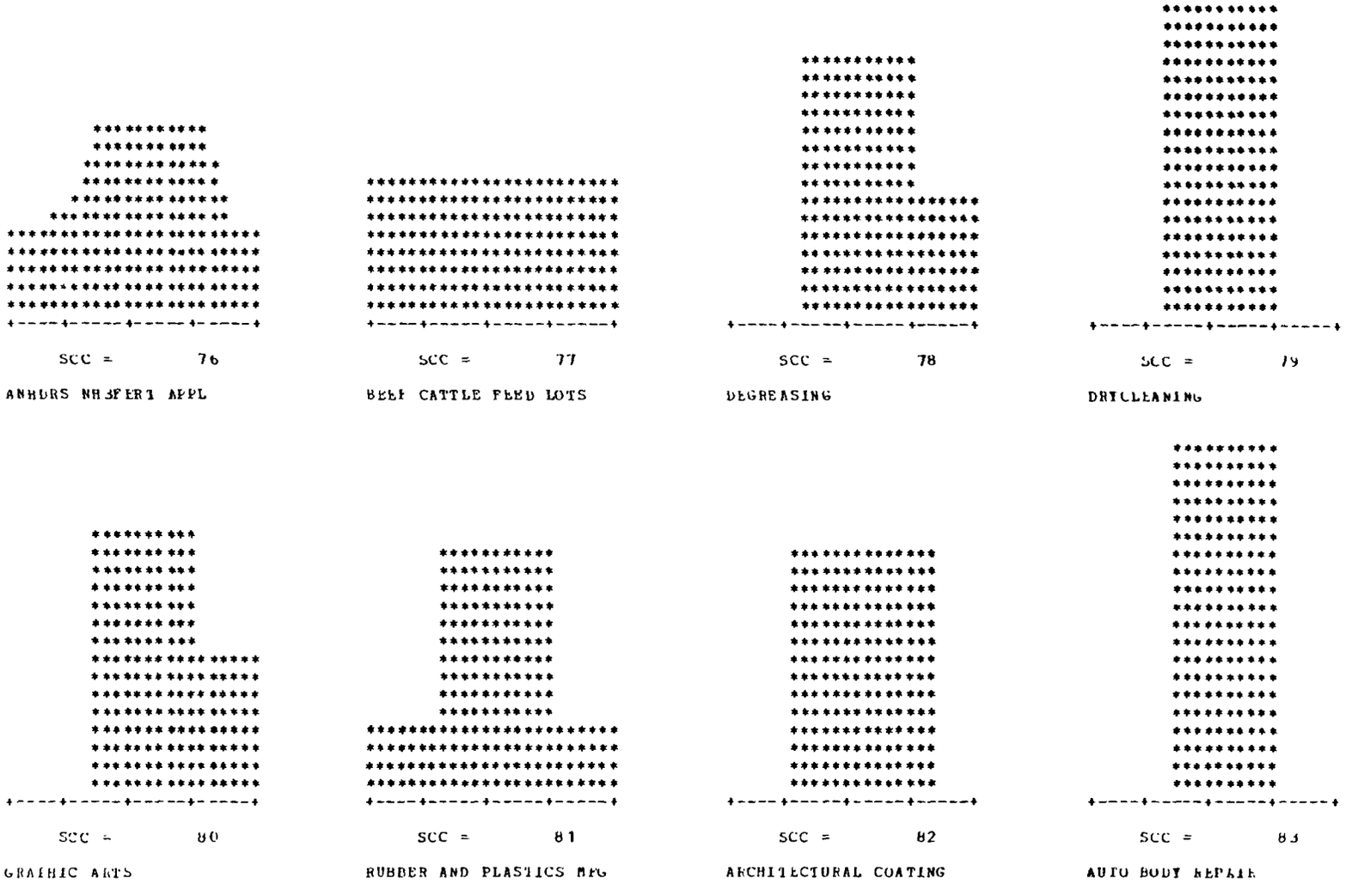


Figure C-2. (continued)

WEEKDAY HOURLY MEANS

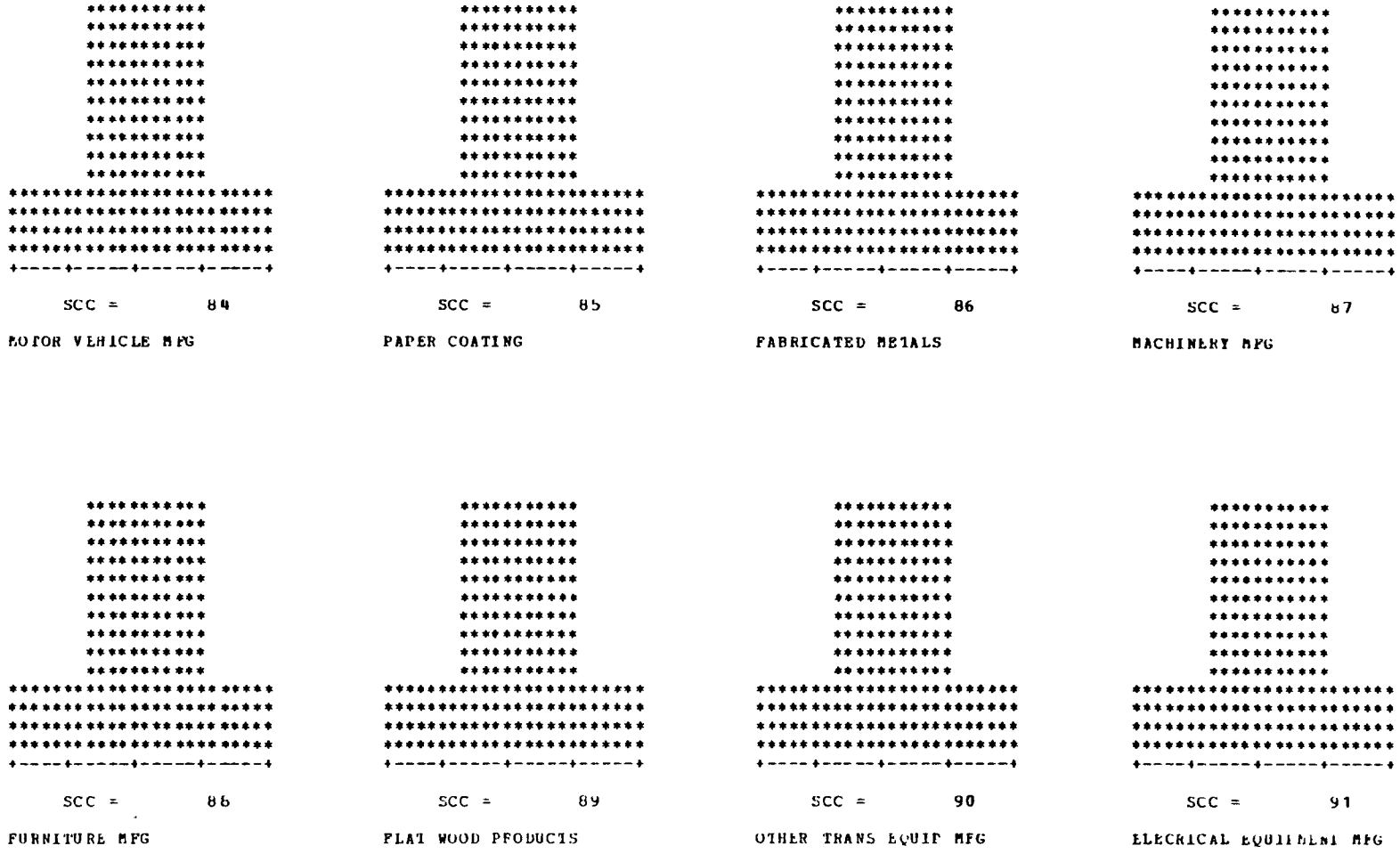
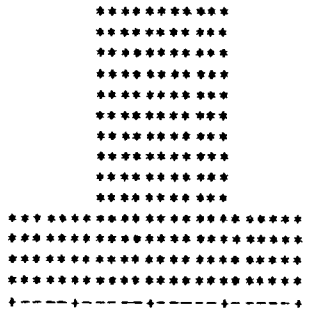


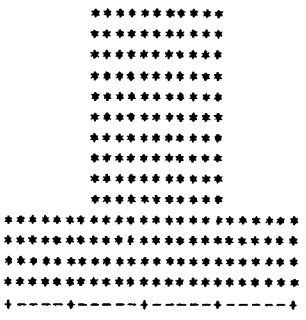
Figure C-2. (continued)

WEEKDAY HOURLY MEANS



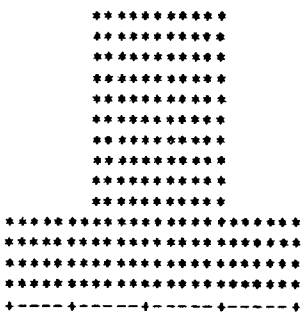
SCC = 92

SHIP BLDG AND REPAIR



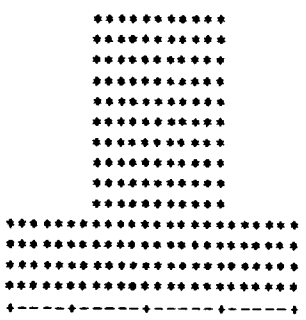
SCC = 93

MISC INDUSTRIAL MFG



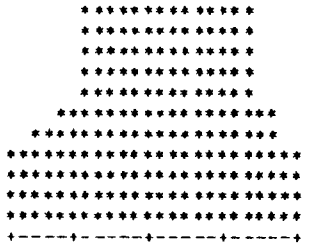
SCC = 94

MISC INDUST SOLVENT USE



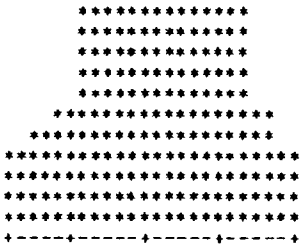
SCC = 95

MISC NONIND SOLVENT USE



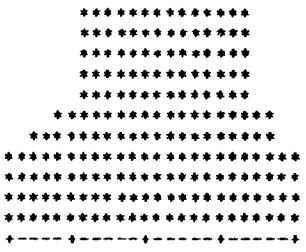
SCC = 96

MINOR UTILITIES - COAL



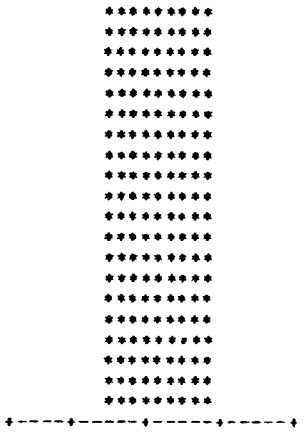
SCC = 97

MINOR UTILITIES - OIL



SCC = 98

MINOR UTILITIES - GAS



SCC = 99

MINOR POINT SOURCES

Figure C-2. (continued)

SATURDAY HOURLY MEANS

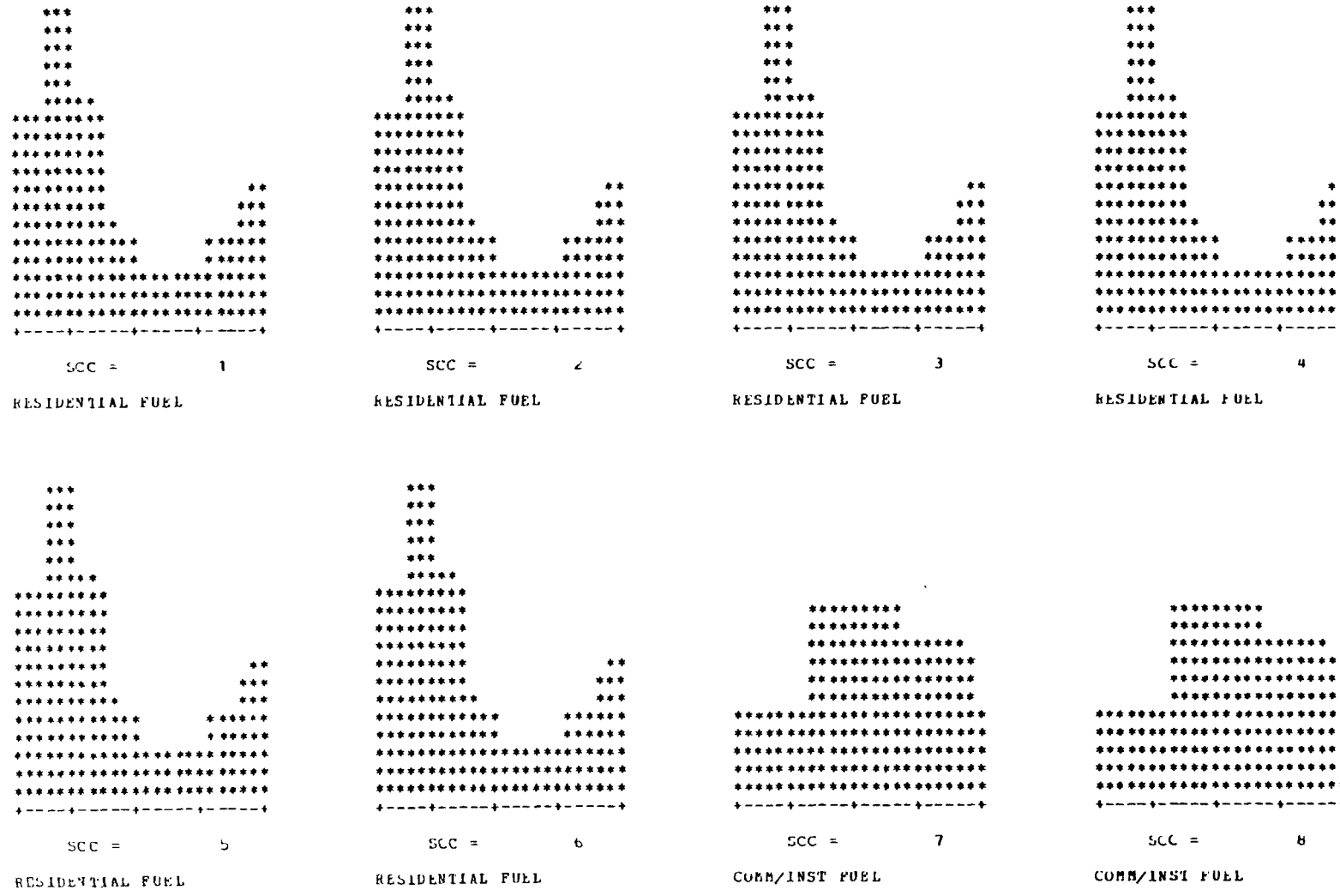
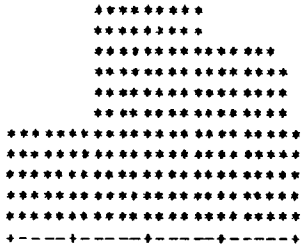


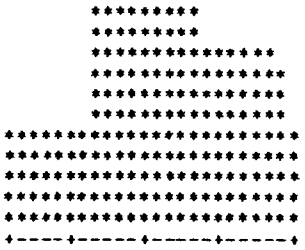
Figure C-3. Hourly emissions allocation patterns by area source category, average Saturday.

SATURDAY HOURLY MEANS



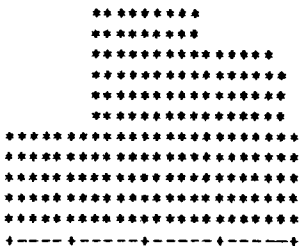
SCC = 9

COMM/INST FUEL



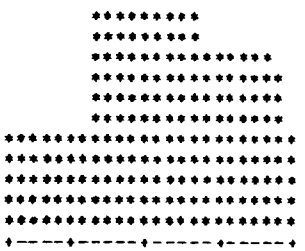
SCC = 10

COMM/INST FUEL



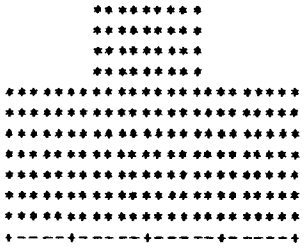
SCC = 11

COMM/INST FUEL



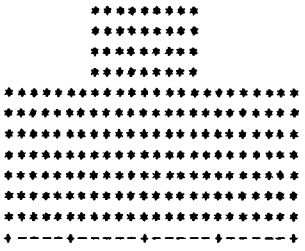
SCC = 12

COMM/INST FUEL



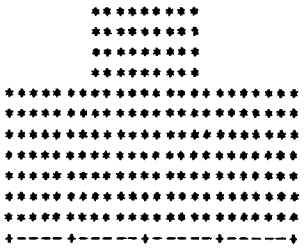
SCC = 13

INDUSTRIAL FUEL



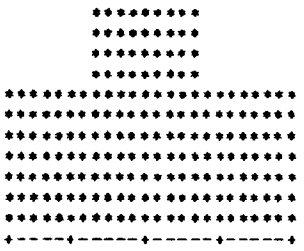
SCC = 14

INDUSTRIAL FUEL



SCC = 15

INDUSTRIAL FUEL

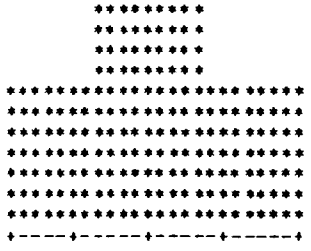


SCC = 16

INDUSTRIAL FUEL

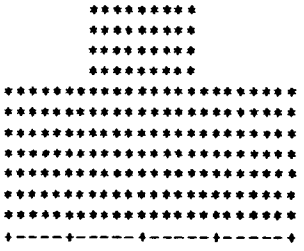
Figure C-3. (continued)

SATURDAY HOURLY MEANS



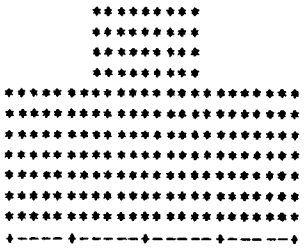
SCC = 17

INDUSTRIAL FUEL



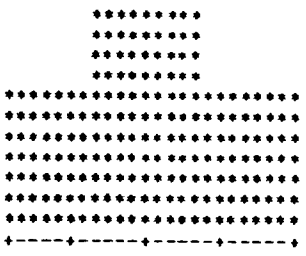
SCC = 18

INDUSTRIAL FUEL



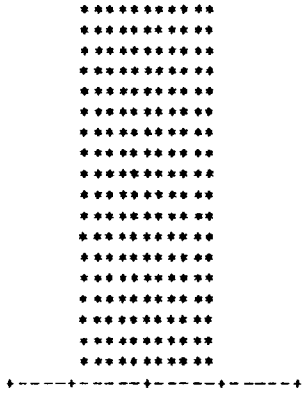
SCC = 19

INDUSTRIAL FUEL



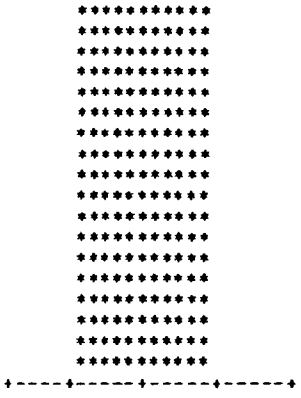
SCC = 20

INDUSTRIAL FUEL



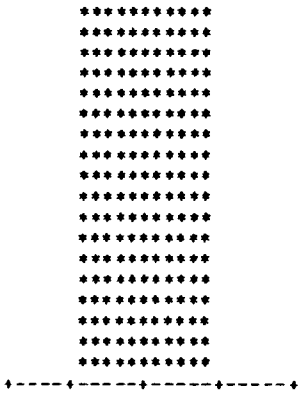
SCC = 21

ON-SITE INCINERATION



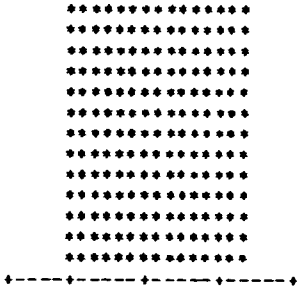
SCC = 22

ON-SITE INCINERATION



SCC = 23

ON-SITE INCINERATION



SCC = 24

OPEN BURNING

Figure C-3. (continued)

SATURDAY HOURLY MEANS

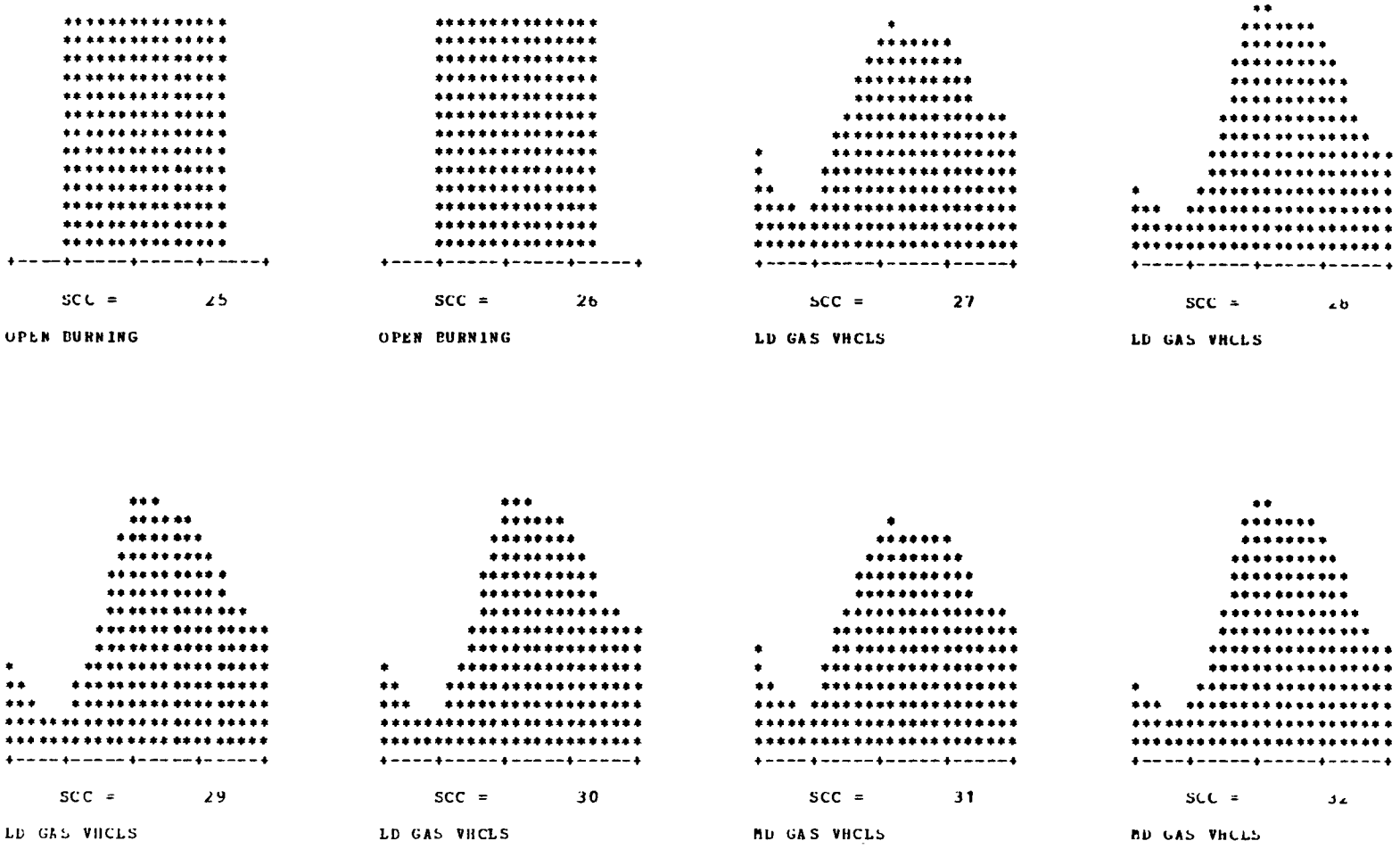


Figure C-3. (continued)

SATURDAY HOURLY MEANS

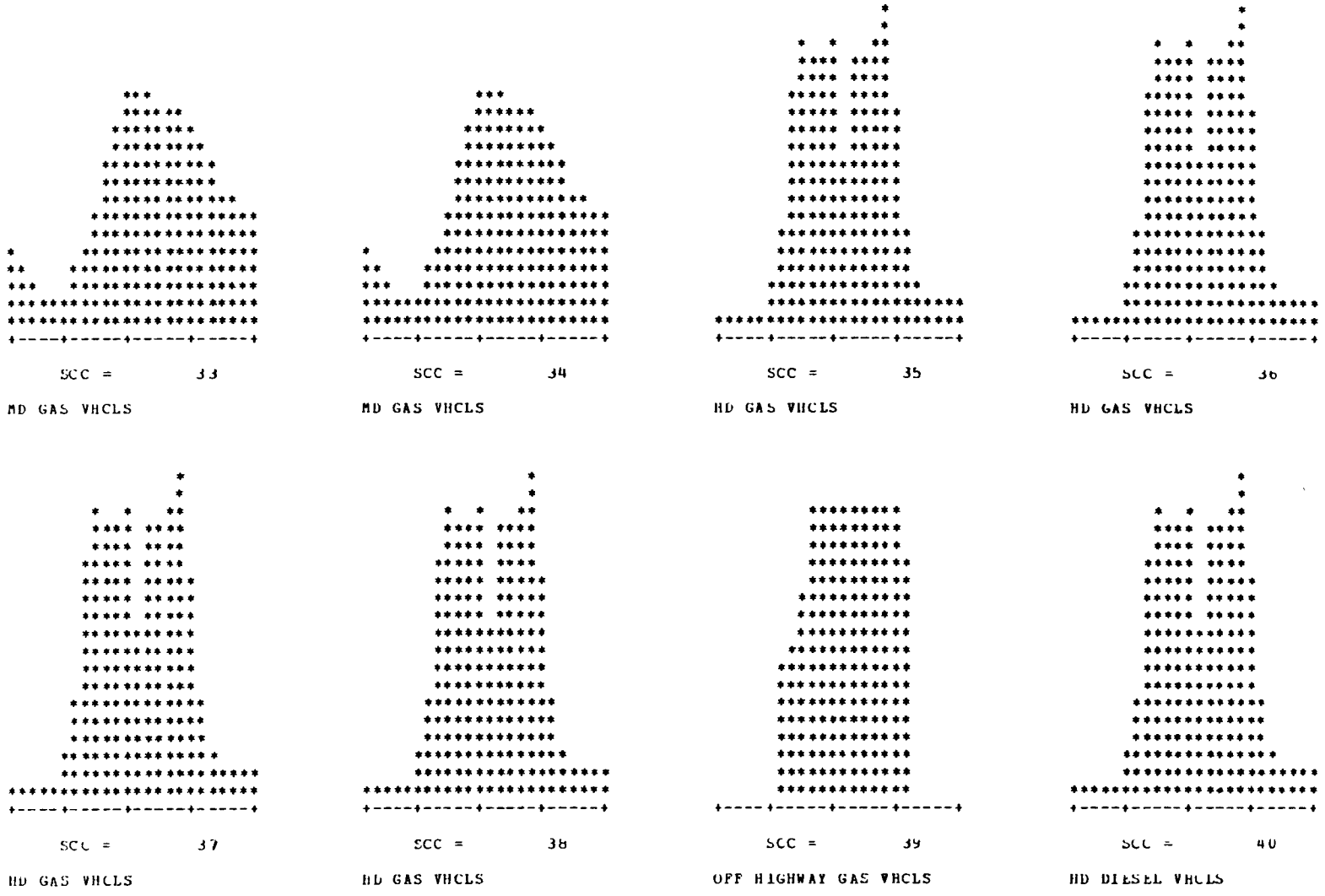
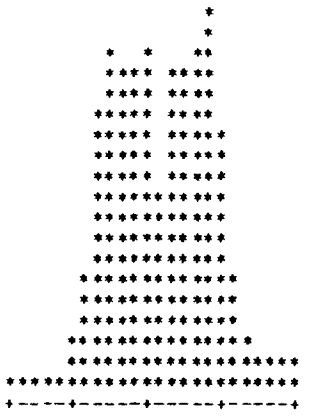


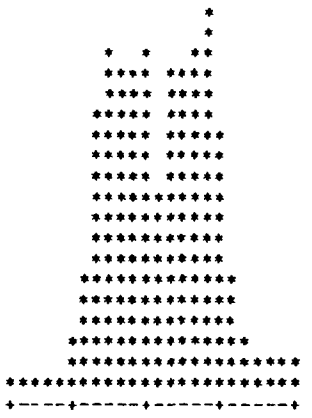
Figure C-3. (continued)

SATURDAY HOURLY MEANS



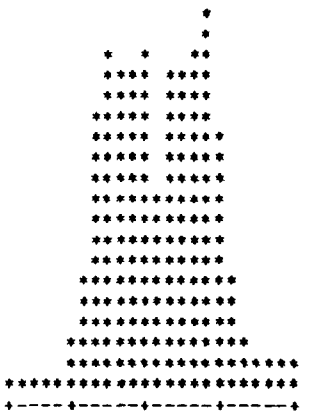
SCC = 41

HD DIESEL VHCLS



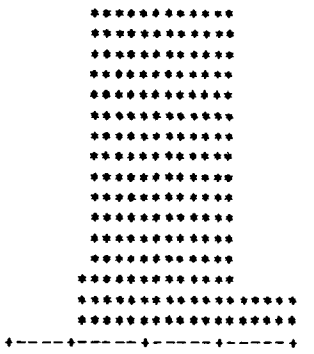
SCC = 42

HD DIESEL VHCLS



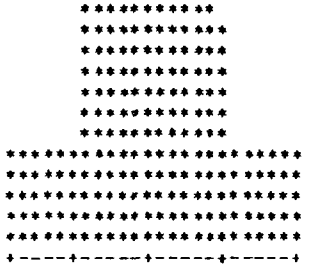
SCC = 43

HD DIESEL VHCLS



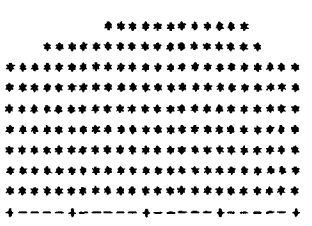
SCC = 44

OFF HIGHWAY DIESEL VHCLS



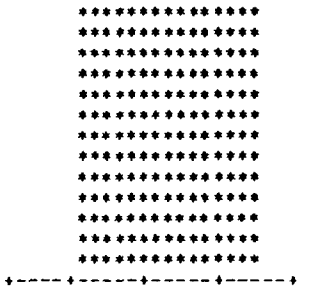
SCC = 45

RAILROAD LOCOMOTIVES



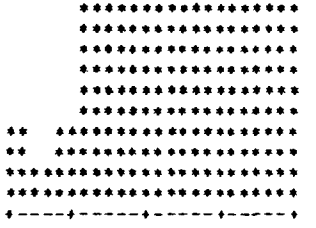
SCC = 46

LTO'S - MILITARY



SCC = 47

LTO'S - CIVIL

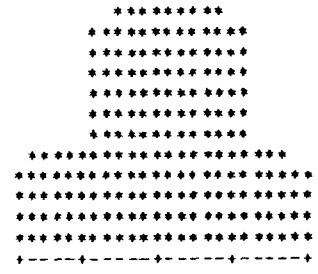


SCC = 48

LTO'S - COMMERCIAL

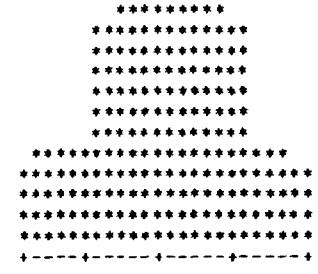
Figure C-3. (continued)

SATURDAY HOURLY MEANS



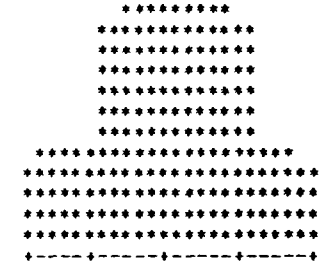
SCC = 49

VESSELS



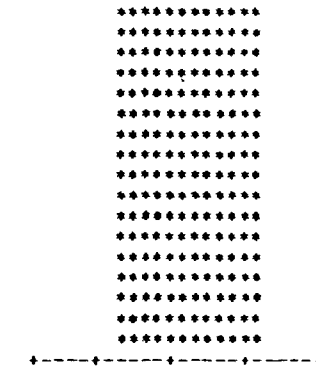
SCC = 50

VESSELS



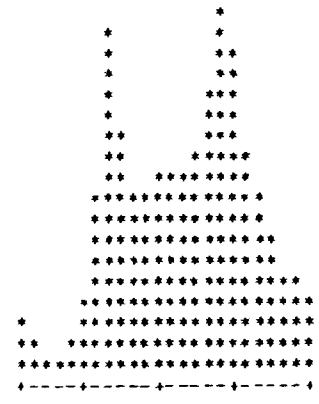
SCC = 51

VESSELS



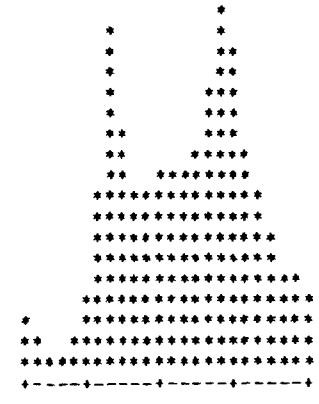
SCC = 52

VESSELS



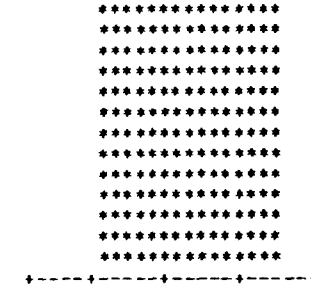
SCC = 54

GAS MARKETED



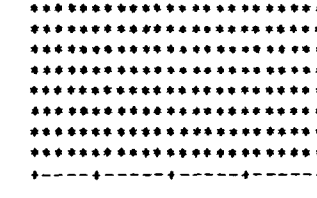
SCC = 55

UNPAVED ROAD TRAVEL



SCC = 56

UNPAVED AIRSTRIP LTO'S

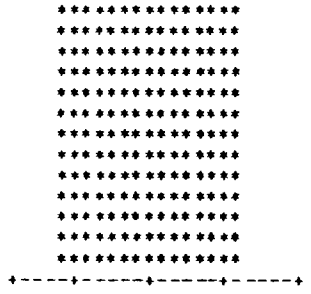


SCC = 60

FOREST WILD FIRES

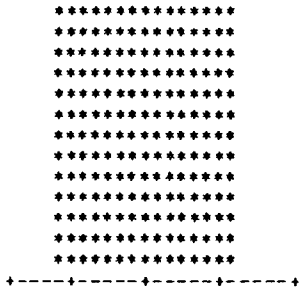
Figure C-3. (continued)

SATURDAY HOURLY MEANS



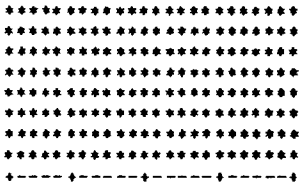
SCC = 61

MANAGED BURNING



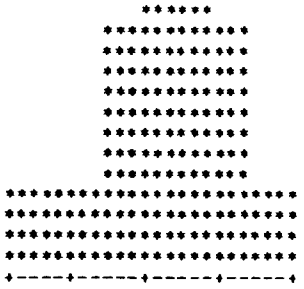
SCC = 62

AGR FIELD BURNING



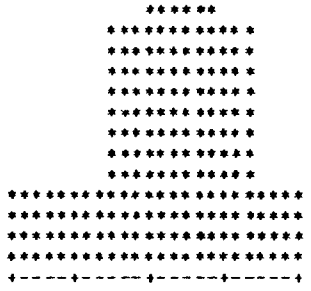
SCC = 64

STRUCTURAL FIRES



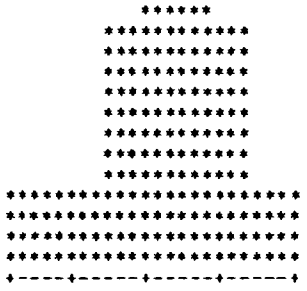
SCC = 71

MANURE FIELD APPLICATION



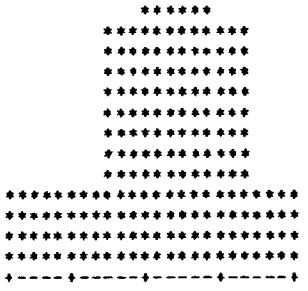
SCC = 72

MANURE FIELD APPLICATION



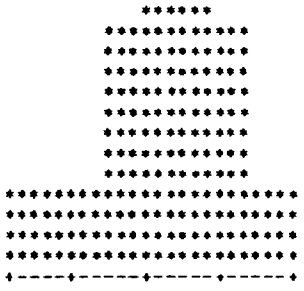
SCC = 73

MANURE FIELD APPLICATION



SCC = 74

MANURE FIELD APPLICATION



SCC = 75

MANURE FIELD APPLICATION

Figure C-3. (continued)

SATURDAY HOURLY MEANS

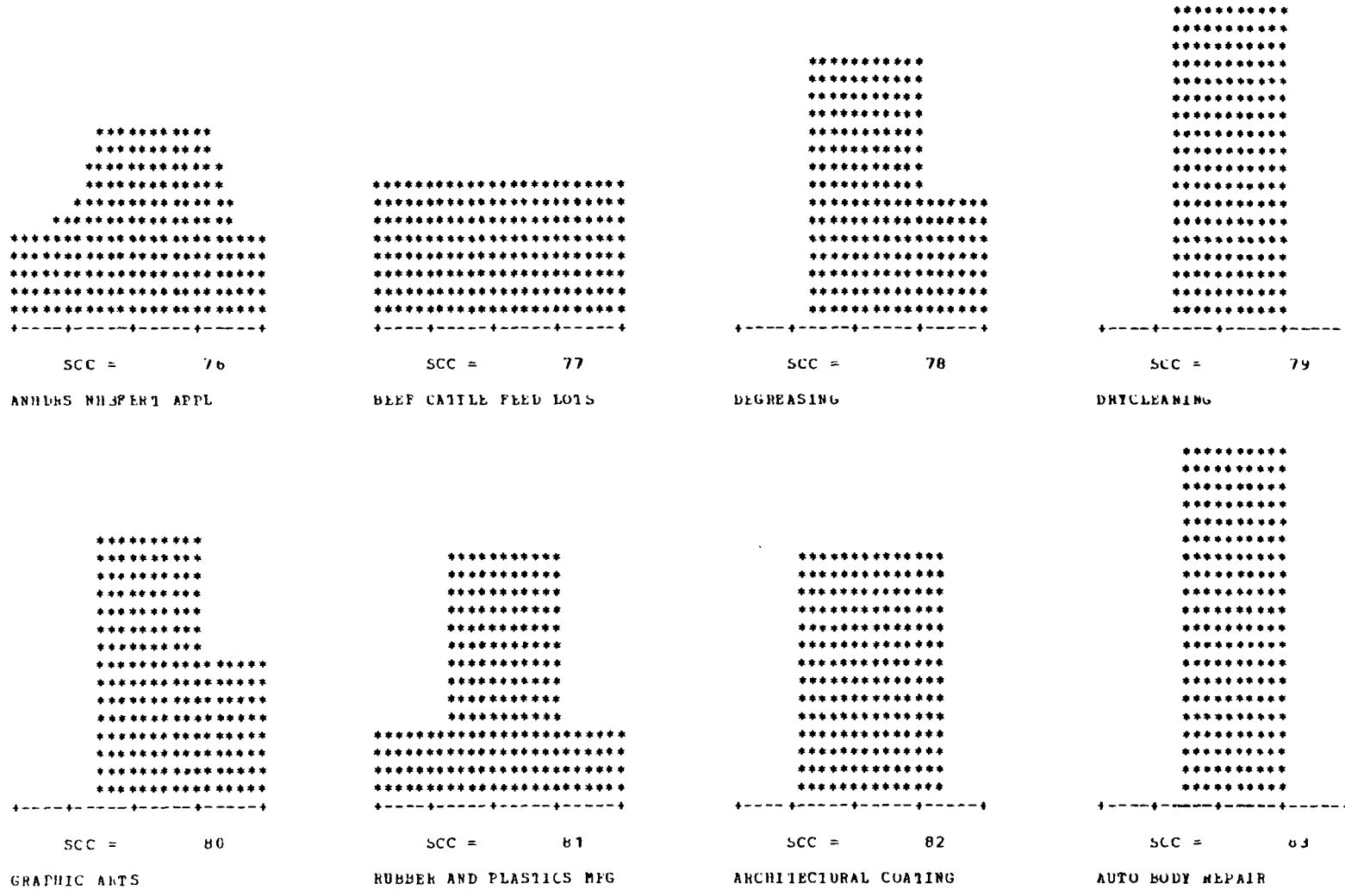
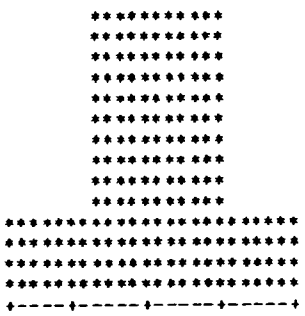


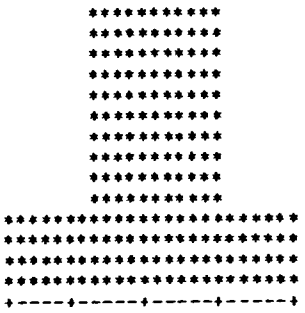
Figure C-3. (continued)

SATURDAY HOURLY MEANS



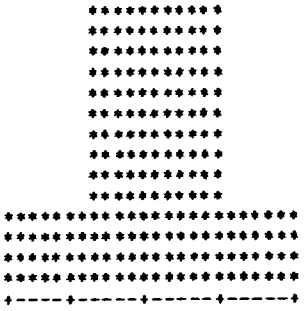
SCC = 84

MOTOR VEHICLE MFG



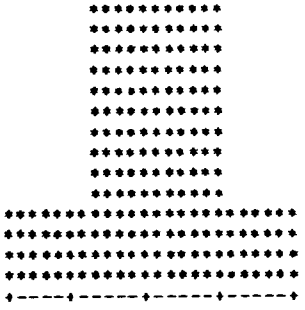
SCC = 85

PAPER COATING



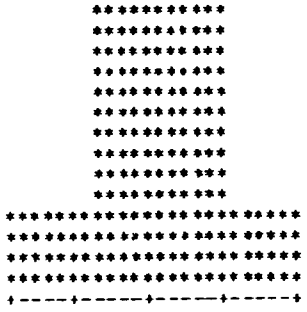
SCC = 86

FABRICATED METALS



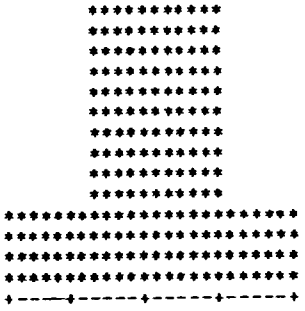
SCC = 87

MACHINERY MFG



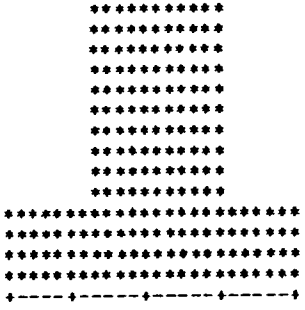
SCC = 88

FURNITURE MFG



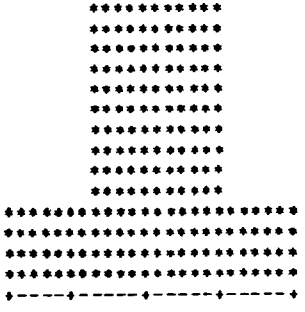
SCC = 89

FLAT WOOD PRODUCTS



SCC = 90

OTHER TRANS EQUIP MFG

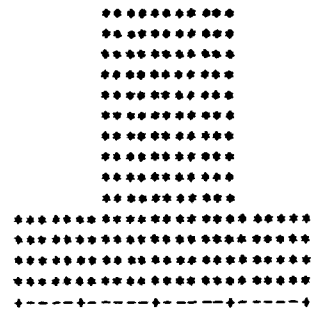


SCC = 91

ELECTRICAL EQUIPMENT MFG

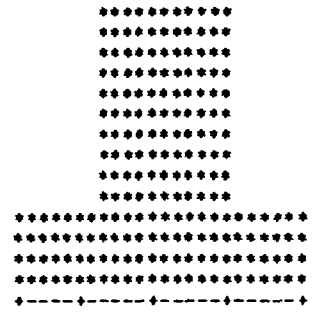
Figure C-3. (continued)

SATURDAY HOURLY MEANS



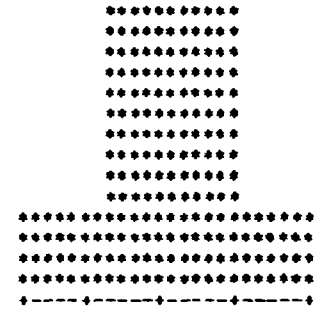
SCC = 92

SHIP BLDG AND REPAIR



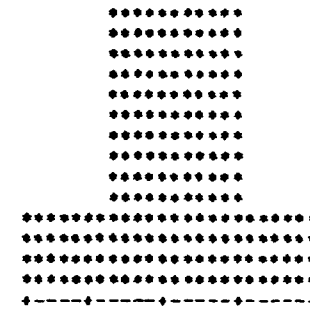
SCC = 93

MISC INDUSTRIAL MFG



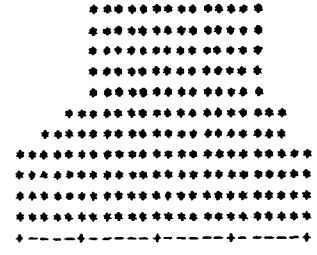
SCC = 94

MISC INDUST SOLVENT USE



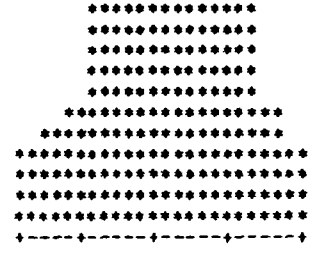
SCC = 95

MISC NONIND SOLVENT USE



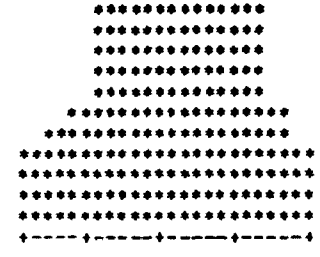
SCC = 96

MINOR UTILITIES - COAL



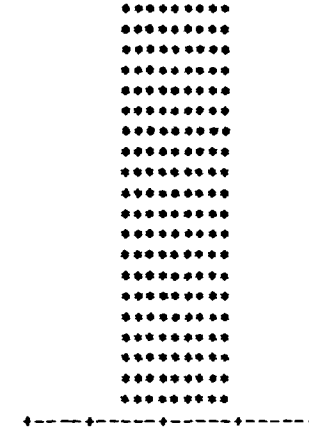
SCC = 97

MINOR UTILITIES - OIL



SCC = 98

MINOR UTILITIES - GAS



SCC = 99

MINOR POINT SOURCES

Figure C-3. (continued)

SUNDAY HOURLY MEANS

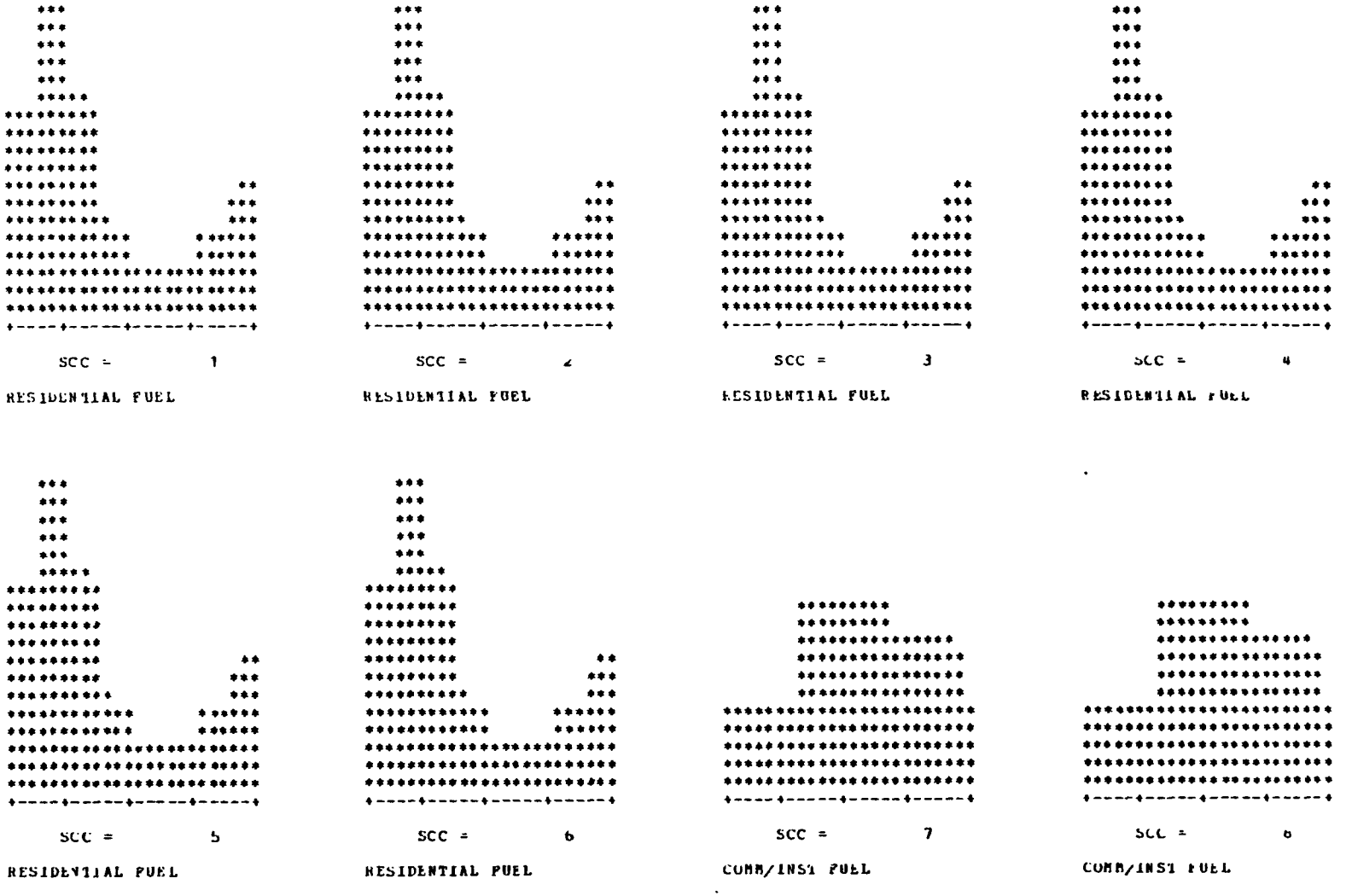
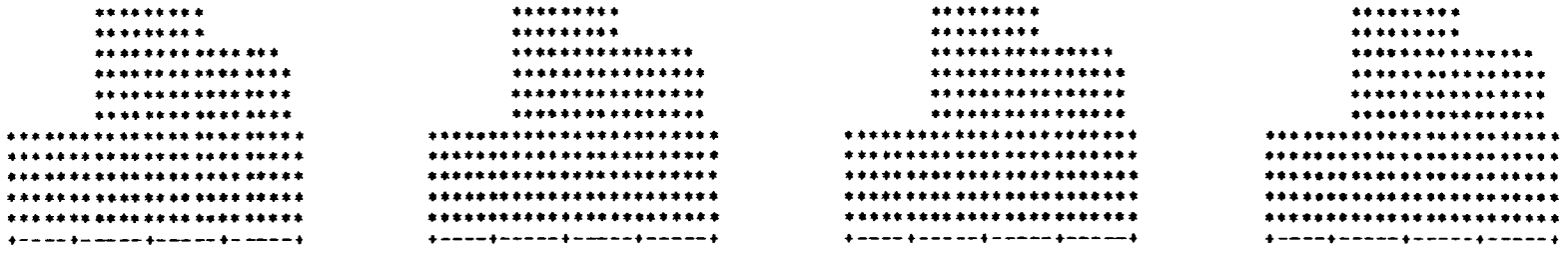


Figure C-4. Hourly emissions allocation patterns by area source category, average Sunday.

SUNDAY HOURLY MEANS



SCC = 9

COMM/INST FUEL

SCC = 10

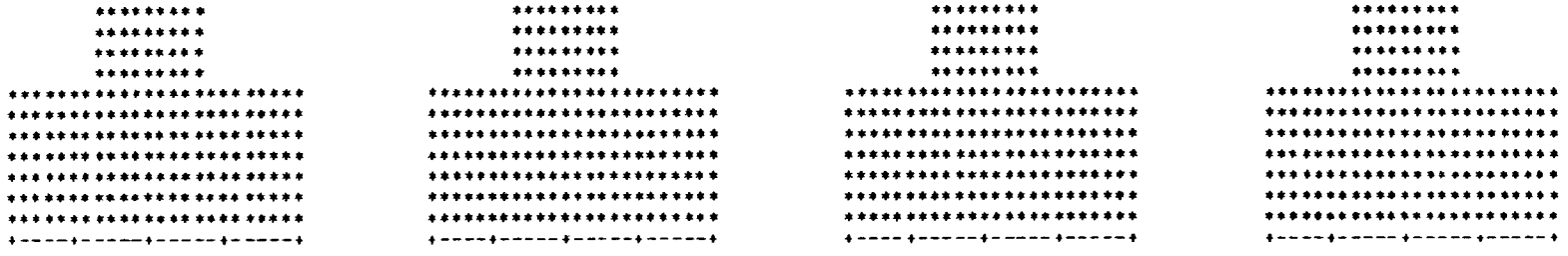
COMM/INST FUEL

SCC = 11

COMM/INST FUEL

SCC = 12

COMM/INST FUEL



SCC = 13

INDUSTRIAL FUEL

SCC = 14

INDUSTRIAL FUEL

SCC = 15

INDUSTRIAL FUEL

SCC = 16

INDUSTRIAL FUEL

Figure C-4. (continued)

SUNDAY HOURLY MEANS

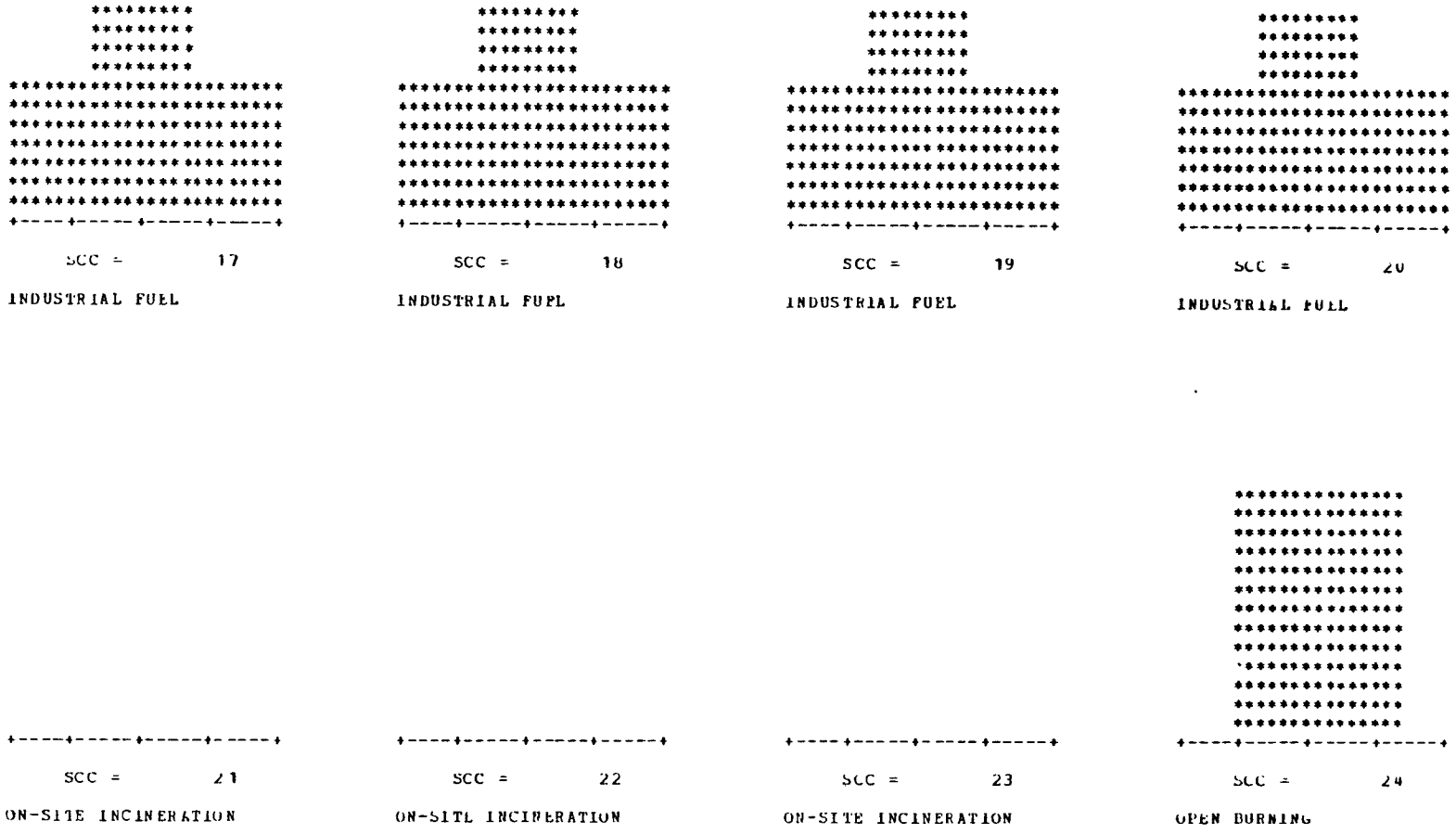
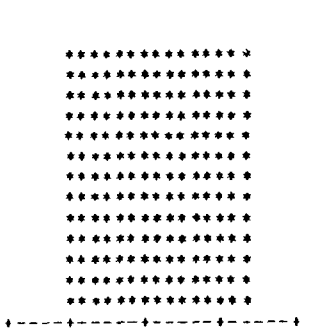


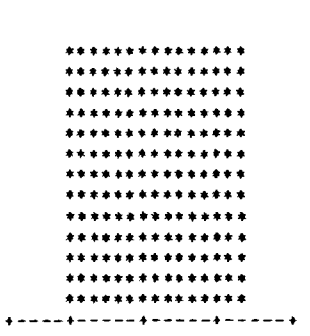
Figure C-4. (continued)

SUNDAY HOURLY MEANS



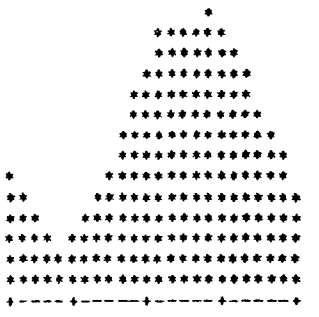
SCC = 25

OPEN BURNING



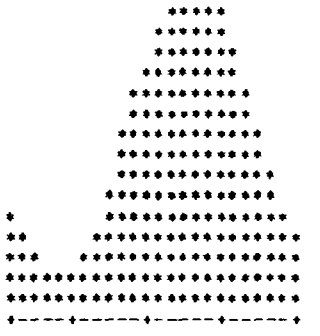
SCC = 26

OPEN BURNING



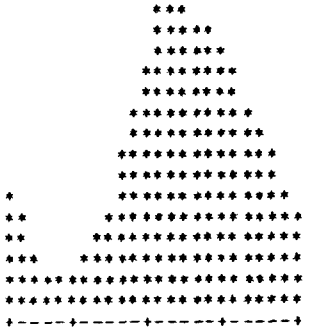
SCC = 27

LD GAS VHCLS



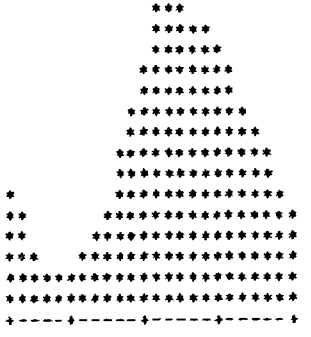
SCC = 28

LD GAS VHCLS



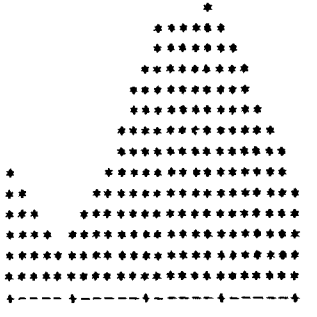
SCC = 29

LD GAS VHCLS



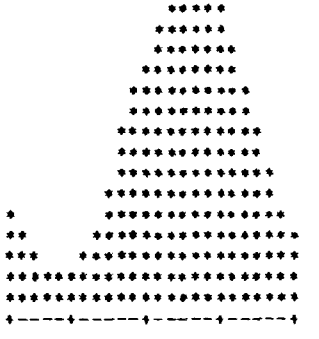
SCC = 30

LD GAS VHCLS



SCC = 31

MD GAS VHCLS

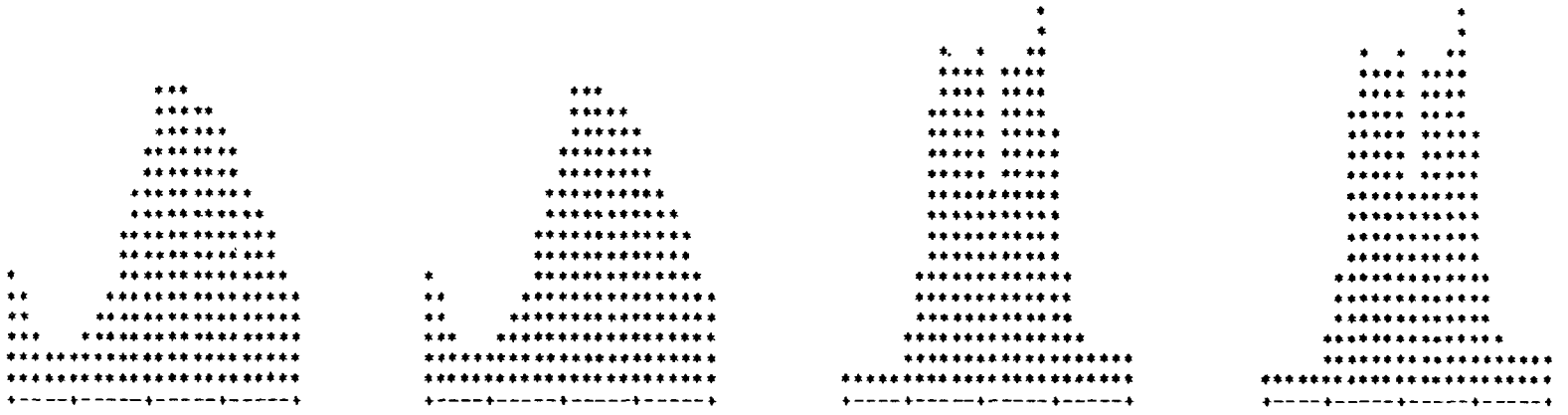


SCC = 32

MD GAS VHCLS

Figure C-4. (continued)

SUNDAY HOURLY MEANS



SCC = 33

MD GAS VHCLS

SCC = 34

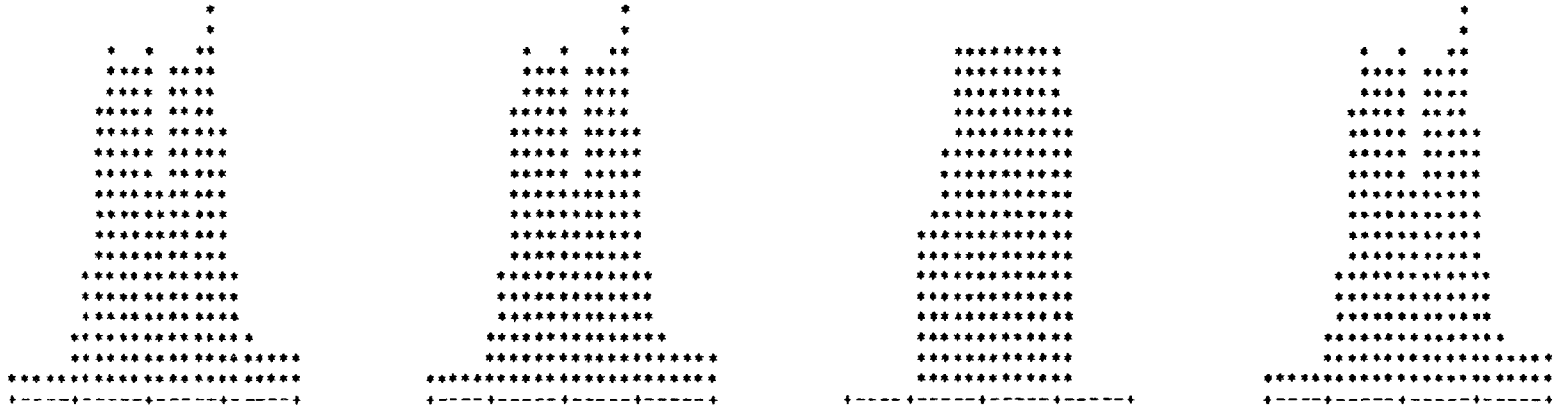
MD GAS VHCLS

SCC = 35

HD GAS VHCLS

SCC = 36

HD GAS VHCLS



SCC = 37

HD GAS VHCLS

SCC = 38

HD GAS VHCLS

SCC = 39

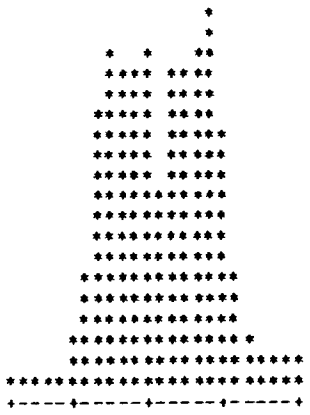
OFF HIGHWAY GAS VHCLS

SCC = 40

HD DIESEL VHCLS

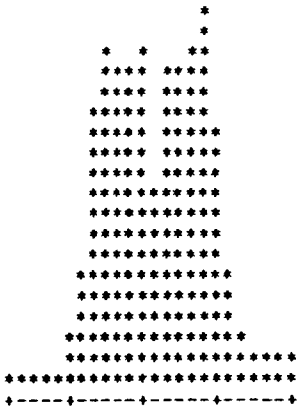
Figure C-4. (continued)

SUNDAY HOURLY MEANS



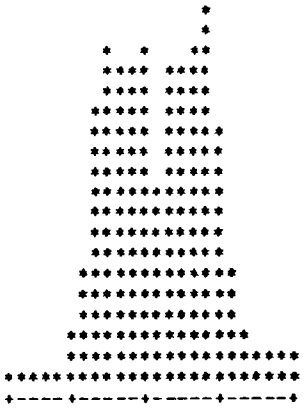
SCC = 41

HD DIESEL VHCLS



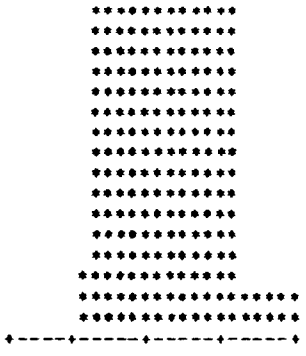
SCC = 42

HD DIESEL VHCLS



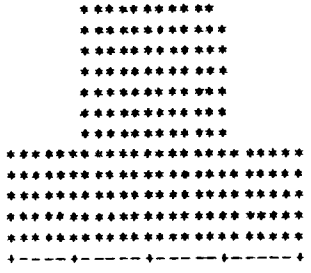
SCC = 43

HD DIESEL VHCLS



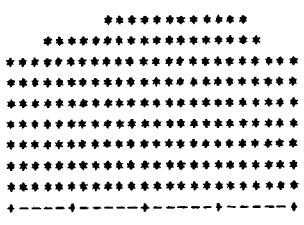
SCC = 44

OFF HIGHWAY DIESEL VHCLS



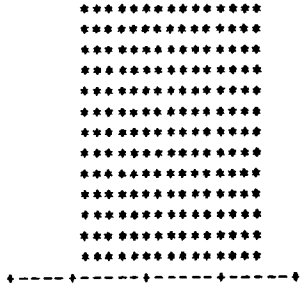
SCC = 45

RAILROAD LOCOMOTIVES



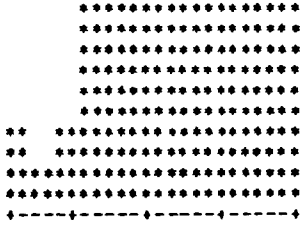
SCC = 46

LTO'S - MILITARY



SCC = 47

LTO'S - CIVIL

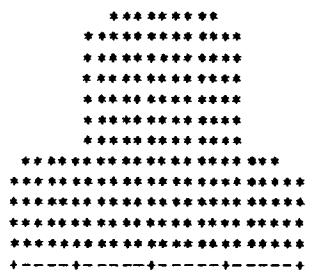


SCC = 48

LTO'S - COMMERCIAL

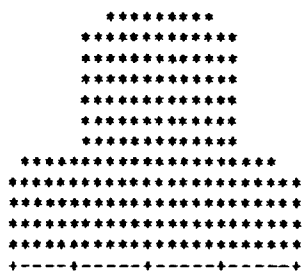
Figure C-4. (continued)

SUNDAY HOURLY MEANS



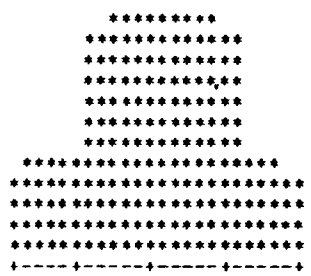
SCC = 49

VESSELS



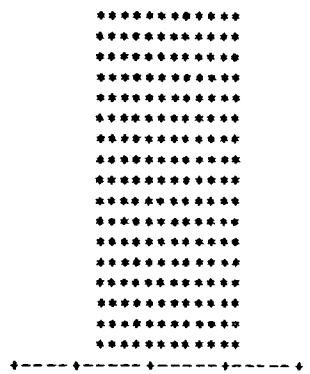
SCC = 50

VESSELS



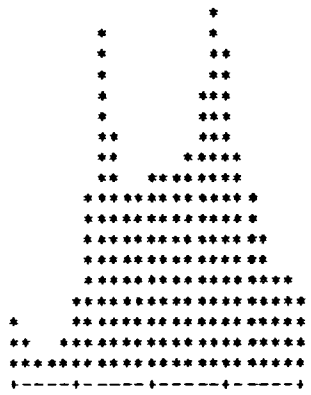
SCC = 51

VESSELS



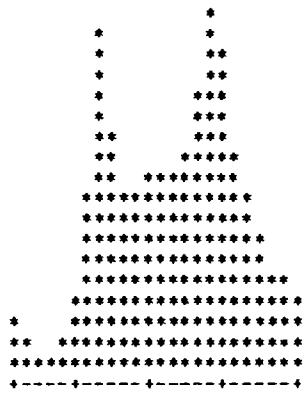
SCC = 52

VESSELS



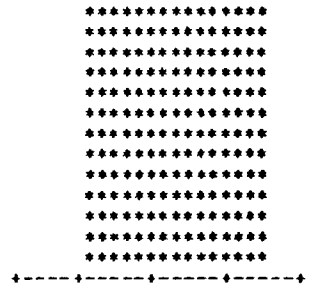
SCC = 54

GAS MARKETED



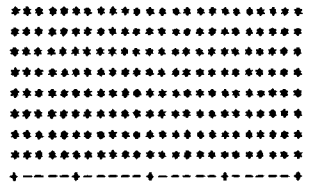
SCC = 55

UNPAVED ROAD TRAVEL



SCC = 56

UNPAVED AIRSTRIP LTO'S

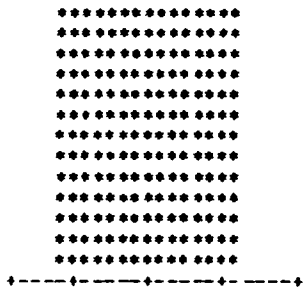


SCC = 60

FOREST WILD FIRES

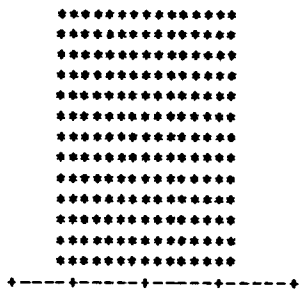
Figure C-4. (continued)

SUNDAY HOURLY MEANS



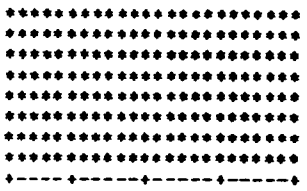
SCC = 61

MANAGED BURNING



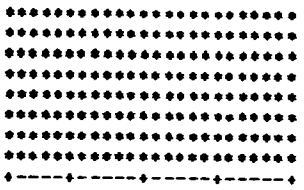
SCC = 62

AGE FIELD BURNING



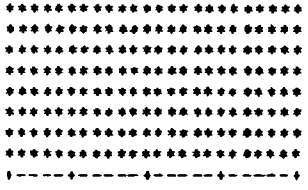
SCC = 64

STRUCTURAL FIRES



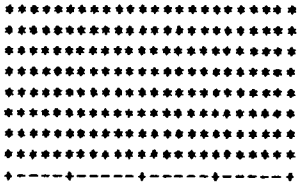
SCC = 71

MANURE FIELD APPLICATION



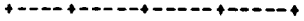
SCC = 72

MANURE FIELD APPLICATION



SCC = 73

MANURE FIELD APPLICATION



SCC = 74

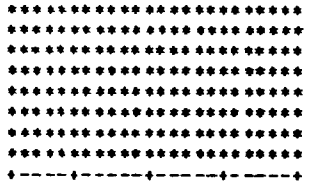
MANURE FIELD APPLICATION

SCC = 75

MANURE FIELD APPLICATION

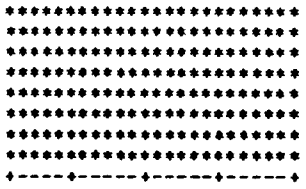
Figure C-4. (continued)

SUNDAY HOURLY MEANS



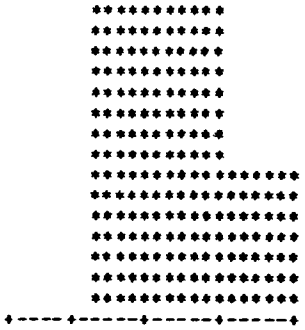
SCC = 76

ANHDRS NH3FERT APPL



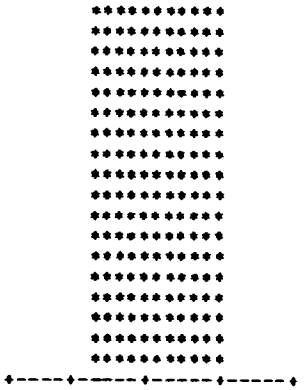
SCC = 77

BEEF CATTLE FEED LOTS



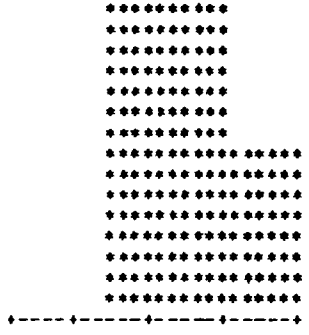
SCC = 78

DEGREASING



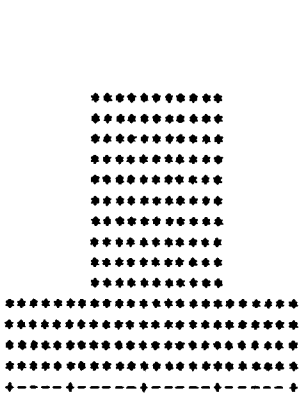
SCC = 79

DRYCLEANING



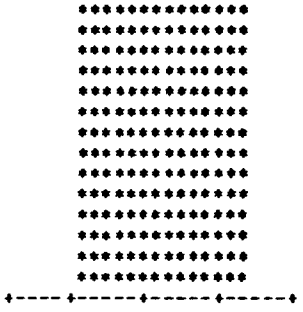
SCC = 80

GRAPHIC ARTS



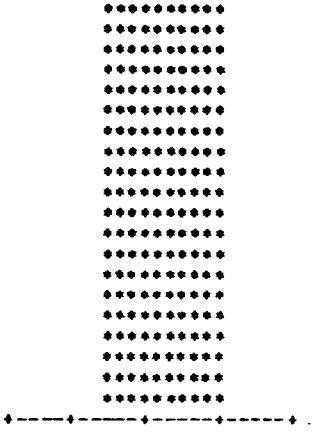
SCC = 81

RUBBER AND PLASTICS MFG



SCC = 82

ARCHITECTURAL COATING

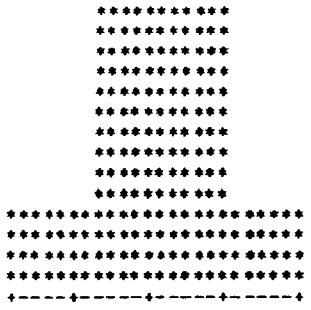


SCC = 83

AUTO BODY REPAIR

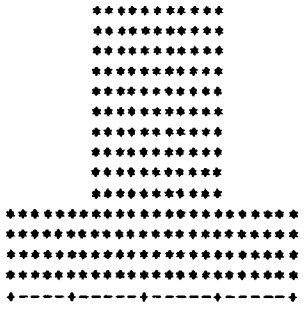
Figure C-4. (continued)

SUNDAY HOURLY MEANS



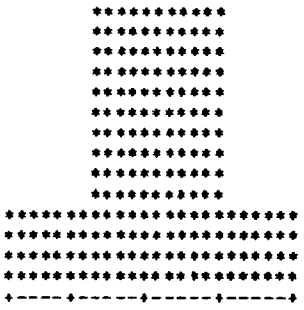
SCC = 84

MOTOR VEHICLE MFG



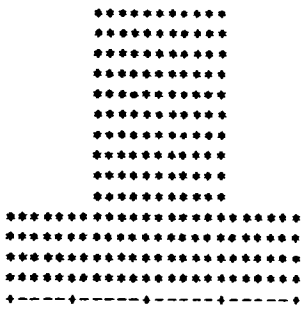
SCC = 85

PAPER COATING



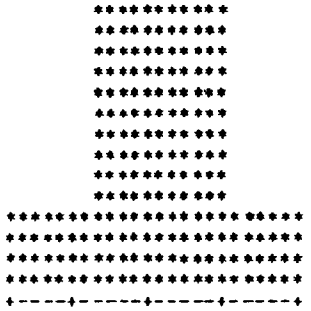
SCC = 86

FABRICATED METALS



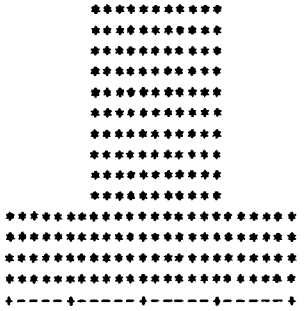
SCC = 87

MACHINERY MFG



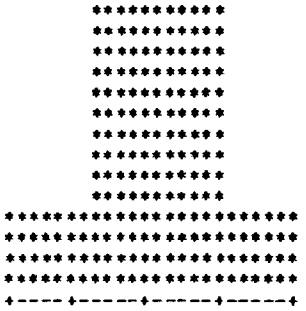
SCC = 88

FURNITURE MFG



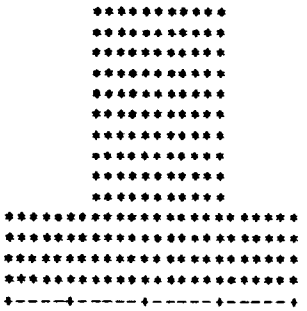
SCC = 89

FLAT WOOD PRODUCTS



SCC = 90

OTHER TRANS EQUIP MFG

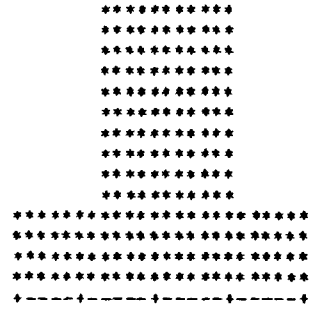


SCC = 91

ELECTRICAL EQUIPMENT MFG

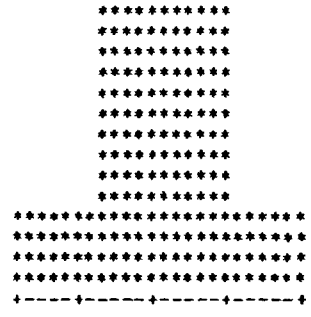
Figure C-4. (continued)

SUNDAY HOURLY MEANS



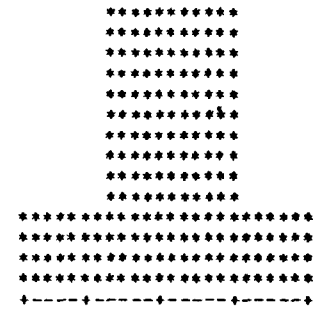
SCC = 92

SHIP BLDG AND REPAIR



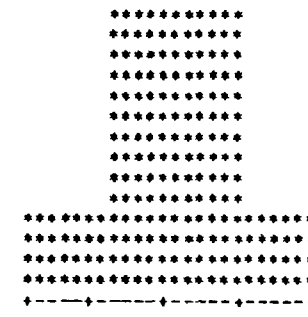
SCC = 93

MISC INDUSTRIAL MFG



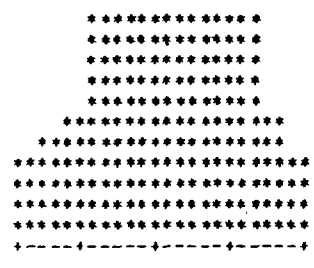
SCC = 94

MISC INDUST SOLVENT USE



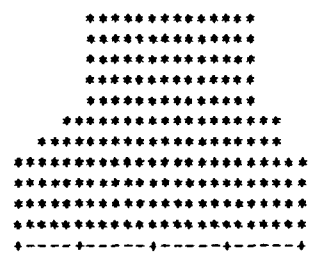
SCC = 95

MISC NONIND SOLVENT USE



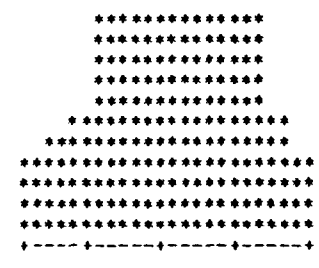
SCC = 96

MINOR UTILITIES - COAL



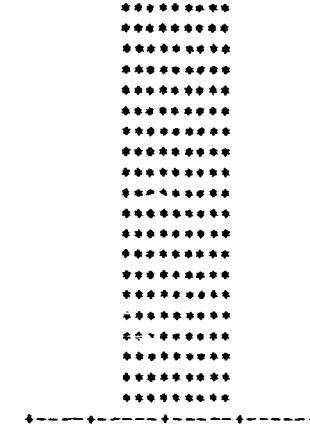
SCC = 97

MINOR UTILITIES - OIL



SCC = 98

MINOR UTILITIES - GAS



SCC = 99

MINOR POINT SOURCES

Figure C-4. (continued)

APPENDIX D

LISTING OF SOURCE CLASSIFICATION CODES FOR U.S. AND CANADIAN POINT AND AREA SOURCES

TABLE D-1. NEDS SOURCE CLASSIFICATION CODES FOR U.S. AND CANADIAN POINT SOURCES (SIX-DIGIT LEVEL)

SCC	SOURCE DESCRIPTION/PROCESS		
101001	EXTCOMB BOILER	ELECTRIC GENERATN	ANTHRACITE COAL
101002	EXTCOMB BOILER	ELECTRIC GENERATN	BITUMINOUS COAL
101003	EXTCOMB BOILER	ELECTRIC GENERATN	LIGNITE
101004	EXTCOMB BOILER	ELECTRIC GENERATN	RESIDUAL OIL
101005	EXTCOMB BOILER	ELECTRIC GENERATN	DISTILLATE OIL
101006	EXTCOMB BOILER	ELECTRIC GENERATN	NATURAL GAS
101007	EXTCOMB BOILER	ELECTRIC GENERATN	PROCESS GAS
101008	EXTCOMB BOILER	ELECTRIC GENERATN	COKE
101009	EXTCOMB BOILER	ELECTRIC GENERATN	WOOD/BARK WASTE
101010	EXTCOMB BOILER	ELECTRIC GENERATN	LIQ PETROLEUM GAS
101011	EXTCOMB BOILER	ELECTRIC GENERATN	BAGASSE
101012	EXTCOMB BOILER	ELECTRIC GENERATN	SLD WASTE-SPECIFY
101013	EXTCOMB BOILER	ELECTRIC GENERATN	LIQ WASTE-SPECIFY
102001	EXTCOMB BOILER	INDUSTRIAL	ANTHRACITE COAL
102002	EXTCOMB BOILER	INDUSTRIAL	BITUMINOUS COAL
102003	EXTCOMB BOILER	INDUSTRIAL	LIGNITE
102004	EXTCOMB BOILER	INDUSTRIAL	RESIDUAL OIL
102005	EXTCOMB BOILER	INDUSTRIAL	DISTILLATE OIL
102006	EXTCOMB BOILER	INDUSTRIAL	NATURAL GAS
102007	EXTCOMB BOILER	INDUSTRIAL	PROCESS GAS
102008	EXTCOMB BOILER	INDUSTRIAL	COKE
102009	EXTCOMB BOILER	INDUSTRIAL	WOOD/BARK WASTE
102010	EXTCOMB BOILER	INDUSTRIAL	LIQ PETROLEUM GAS
102011	EXTCOMB BOILER	INDUSTRIAL	BAGASSE
102012	EXTCOMB BOILER	INDUSTRIAL	SLD WASTE-SPECIFY
102013	EXTCOMB BOILER	INDUSTRIAL	LIQ WASTE-SPECIFY
102014	EXTCOMB BOILER	INDUSTRIAL	CO BOILER
103001	EXTCOMB BOILER	COMMERCL-INSTUTNL	ANTHRACITE COAL
103002	EXTCOMB BOILER	COMMERCL-INSTUTNL	BITUMINOUS COAL
103003	EXTCOMB BOILER	COMMERCL-INSTUTNL	LIGNITE
103004	EXTCOMB BOILER	COMMERCL-INSTUTNL	RESIDUAL OIL
103005	EXTCOMB BOILER	COMMERCL-INSTUTNL	DISTILLATE OIL
103006	EXTCOMB BOILER	COMMERCL-INSTUTNL	NATURAL GAS
103007	EXTCOMB BOILER	COMMERCL-INSTUTNL	PROCESS GAS
103009	EXTCOMB BOILER	COMMERCL-INSTUTNL	WOOD/BARK WASTE
103010	EXTCOMB BOILER	COMMERCL-INSTUTNL	LIQ PETROLEUM GAS
103012	EXTCOMB BOILER	COMMERCL-INSTUTNL	SLD WASTE-SPECIFY
103013	EXTCOMB BOILER	COMMERCL-INSTUTNL	LIQ WASTE-SPECIFY
105001	EXTCOMB BOILER	SPACE HEATER	INDUSTRIAL
105002	EXTCOMB BOILER	SPACE HEATER	COMMERCL-INSTUTNL
201001	INTERNLCOMBUSTION	ELECTRIC GENERATN	DIST.OIL/DIESEL
201002	INTERNLCOMBUSTION	ELECTRIC GENERATN	NATURAL GAS
201009	INTERNLCOMBUSTION	ELECTRIC GENERATN	KERONAPTHA JET FL
201010	INTERNLCOMBUSTION	ELECTRIC GENERATN	GEYSERS/GEOTHERML
202001	INTERNLCOMBUSTION	INDUSTRIAL	DIST.OIL/DIESEL
202002	INTERNLCOMBUSTION	INDUSTRIAL	NATURAL GAS
202003	INTERNLCOMBUSTION	INDUSTRIAL	GASOLINE
202004	INTERNLCOMBUSTION	INDUSTRIAL	LARGE BORE ENGINE
202005	INTERNLCOMBUSTION	INDUSTRIAL	RESIDUAL/CRUDEOIL
202009	INTERNLCOMBUSTION	INDUSTRIAL	KERONAPTHA JET FL

TABLE D-1 (continued)

SCC	SOURCE DESCRIPTION/PROCESS		
202010	INTERNLCOMBUSTION	INDUSTRIAL	PROPANE
203001	INTERNLCOMBUSTION	COMMERCL-INSTUTNL	DIST.OIL/DIESEL
203002	INTERNLCOMBUSTION	COMMERCL-INSTUTNL	NATURAL GAS
203003	INTERNLCOMBUSTION	COMMERCL-INSTUTNL	GASOLINE
203010	INTERNLCOMBUSTION	COMMERCL-INSTUTNL	PROPANE
204001	INTERNLCOMBUSTION	ENGINE TESTING	AIRCRAFT
204002	INTERNLCOMBUSTION	ENGINE TESTING	ROCKET MOTOR
204003	INTERNLCOMBUSTION	ENGINE TESTING	TURBINE
204004	INTERNLCOMBUSTION	ENGINE TESTING	RECIPROCATING
288888	INTERNLCOMBUSTION	FUGITIVE EMISSION	NOT CLASSIFIED
301001	CHEMICAL MFG	ORGANIC CHEMICALS	ADIPIC ACID PROD
301003	CHEMICAL MFG	AGRICULTURAL CHEM	AMMONIA
301005	CHEMICAL MFG	CARBON BLACK	CHANNEL PROCESS
301006	CHEMICAL MFG	ORGANIC CHEMICALS	CHARCOAL
301007	CHEMICAL MFG	INORGANIC CHEMCLS	CHLORINE
301008	CHEMICAL MFG	INORGANIC CHEMCLS	CHLORO-ALKALI
301009	CHEMICAL MFG	SOAP/DETERGENTS	SOAP/DETERGENTS
301010	CHEMICAL MFG	EXPLOSIVES	TRINITROTOLUENE
301011	CHEMICAL MFG	INORGANIC CHEMCLS	HYDROCHLORIC ACID
301012	CHEMICAL MFG	INORGANIC CHEMCLS	HYDROFLUORIC ACID
301013	CHEMICAL MFG	AGRICULTURAL CHEM	NITRIC ACID
301014	CHEMICAL MFG	PAINT MFG	MIXING/BLENDING
301015	CHEMICAL MFG	VARNISH MFG	BODYING OIL
301016	CHEMICAL MFG	AGRICULTURAL CHEM	PHOS ACD/WET PROC
301017	CHEMICAL MFG	AGRICULTURAL CHEM	PHOS ACID THERMAL
301018	CHEMICAL MFG	PLASTICS PRODN	POLYVINYL CHLORID
301019	CHEMICAL MFG	ORGANIC CHEMICALS	PHTHALIC ANHYDRID
301020	CHEMICAL MFG	PRINTING INK MFG	VEHICLE COOKING
301021	CHEMICAL MFG	INORGANIC CHEMCLS	SODIUM CARBONATE
301022	CHEMICAL MFG	INORGANIC CHEMCLS	H2S04-CHAMBER
301023	CHEMICAL MFG	INORGANIC CHEMCLS	H2S04-CONTACT
301024	CHEMICAL MFG	PLASTICS PRODN	SYNTHC ORGNC FIBR
301025	CHEMICAL MFG	PLASTICS PRODN	CELLULOSIC FIBER
301026	CHEMICAL MFG	PLASTICS PRODN	SYNTHETIC RUBBER
301027	CHEMICAL MFG	AGRICULTURAL CHEM	FERTILIZ AMONNITR
301028	CHEMICAL MFG	AGRICULTURAL CHEM	NRM SPRPHSPHATE
301029	CHEMICAL MFG	AGRICULTURAL CHEM	TRPL SPRPHSPHATE
301030	CHEMICAL MFG	AGRICULTURAL CHEM	AMMONM PHOSPHATES
301031	CHEMICAL MFG	ORGANIC CHEMICALS	TEREPHTHALIC ACID
301032	CHEMICAL MFG	INORGANIC CHEMCLS	SULFUR(ELEMENTAL)
301033	CHEMICAL MFG	AGRICULTURAL CHEM	PESTICIDES
301034	CHEMICAL MFG	ORGANIC CHEMICALS	ANILINE
301035	CHEMICAL MFG	INORGANIC CHEMCLS	TI02 PIGMENT
301038	CHEMICAL MFG	INORGANIC CHEMCLS	SODIUM BICARBNATE
301039	CHEMICAL MFG	INORGANIC CHEMCLS	HYDROGEN CYANIDE
301040	CHEMICAL MFG	AGRICULTURAL CHEM	UREA
301041	CHEMICAL MFG	EXPLOSIVES	NITROCELLULOSE
301042	CHEMICAL MFG	ORGANIC CHEMICALS	LEAD ALKYL-NA/PB
301043	CHEMICAL MFG	ORGANIC CHEMICALS	LEAD ALKYLS
301045	CHEMICAL MFG	AGRICULTURAL CHEM	ORGANIC FERTILIZR

TABLE D-1 (continued)

SCC	SOURCE DESCRIPTION/PROCESS		
301050	CHEMICAL MFG	ORGANIC CHEMICALS	ADHESIVES
301060	CHEMICAL MFG	PHARMACEUTICALS	GENERAL PROCESSES
301070	CHEMICAL MFG	INORGANIC CHEMCLS	GENERAL PROCESSES
301091	CHEMICAL MFG	ORGANIC CHEMICALS	KETONE PRODUCTION
301100	CHEMICAL MFG	ORGANIC CHEMICALS	MALEIC ANHYDRIDE
301111	CHEMICAL MFG	INORGANIC CHEMCLS	ASBESTOS CHEMICAL
301120	CHEMICAL MFG	ORGANIC CHEMICALS	FORMALDEHYDE
301121	CHEMICAL MFG	ORGANIC CHEMICALS	ORGNC DYE/PIGMENT
301124	CHEMICAL MFG	ORGANIC CHEMICALS	CHLOROPRENE
301125	CHEMICAL MFG	ORGANIC CHEMICALS	ETHYLENE DICHLORD
301126	CHEMICAL MFG	ORGANIC CHEMICALS	ORGANOHALOGENS
301127	CHEMICAL MFG	ORGANIC CHEMICALS	FLUOROCARBONS
301130	CHEMICAL MFG	AGRICULTURAL CHEM	AMMONIUM SULFATE
301132	CHEMICAL MFG	ORGANIC CHEMICALS	ORGANIC ACIDS PRD
301133	CHEMICAL MFG	ORGANIC CHEMICALS	ACETIC ANHYDRIDE
301137	CHEMICAL MFG	ORGANIC CHEMICALS	ESTERS PRODUCTN
301140	CHEMICAL MFG	ORGANIC CHEMICALS	ACETYLENE PRODN
301152	CHEMICAL MFG	ORGANIC CHEMICALS	BISPHENOL A
301153	CHEMICAL MFG	ORGANIC CHEMICALS	BUTADIENE
301156	CHEMICAL MFG	ORGANIC CHEMICALS	CUMENE
301157	CHEMICAL MFG	ORGANIC CHEMICALS	CYCLOHEXANE
301158	CHEMICAL MFG	ORGANIC CHEMICALS	CYCLOHEXANONE/CYC
301167	CHEMICAL MFG	ORGANIC CHEMICALS	VINYL ACETATE
301169	CHEMICAL MFG	ORGANIC CHEMICALS	ETHYLBENZENE
301174	CHEMICAL MFG	ORGANIC CHEMICALS	ETHYLENE OXIDE
301176	CHEMICAL MFG	ORGANIC CHEMICALS	GLYCERIN(GLYCERL)
301181	CHEMICAL MFG	ORGANIC CHEMICALS	TOLUENE DIISOCYNT
301190	CHEMICAL MFG	ORGANIC CHEMICALS	METHYL METHACRYLT
301195	CHEMICAL MFG	ORGANIC CHEMICALS	NITROBENZENE
301197	CHEMICAL MFG	ORGANIC CHEMICALS	ETHYLENE PRODCTN
301202	CHEMICAL MFG	ORGANIC CHEMICALS	PHENOL
301205	CHEMICAL MFG	ORGANIC CHEMICALS	PROPYLENE OXIDE
301206	CHEMICAL MFG	ORGANIC CHEMICALS	STYRENE
301210	CHEMICAL MFG	ORGANIC CHEMICALS	CAPROLACTUM
301211	CHEMICAL MFG	ORGANIC CHEMICALS	LINEAR ALKYLBENZE
301250	CHEMICAL MFG	ORGANIC CHEMICALS	METHANOL PRODCTN
301251	CHEMICAL MFG	ORGANIC CHEMICALS	ETHYLENE GLYCOL
301252	CHEMICAL MFG	ORGANIC CHEMICALS	ETHERS
301253	CHEMICAL MFG	ORGANIC CHEMICALS	GLYCOL ETHERS
301254	CHEMICAL MFG	ORGANIC CHEMICALS	NITRILES PROD
301258	CHEMICAL MFG	ORGANIC CHEMICALS	BENZENE
301301	CHEMICAL MFG	ORGANIC CHEMICALS	CHLOROBENZENE
301302	CHEMICAL MFG	ORGANIC CHEMICALS	CARBON TETRACHLOR
301303	CHEMICAL MFG	ORGANIC CHEMICALS	ALLYL CHLORIDE
301304	CHEMICAL MFG	ORGANIC CHEMICALS	ALLYL ALCOHOL
301305	CHEMICAL MFG	ORGANIC CHEMICALS	EPICHLOROHYDRIN
301800	CHEMICAL MFG	ORGANIC CHEMICALS	GENERAL PROCESSES
301810	CHEMICAL MFG	ORGANIC CHEMICALS	GENERAL PROCESSES
301820	CHEMICAL MFG	ORGANIC CHEMICALS	GENERAL PROCESSES
301830	CHEMICAL MFG	ORGANIC CHEMICALS	GENERAL PROCESSES

TABLE D-1 (continued)

SCC	SOURCE DESCRIPTION/PROCESS		
301840	CHEMICAL MFG	ORGANIC CHEMICALS	GENERAL PROCESSES
301870	INORGNC CHEM STRG	FIXED ROOF TANKS	HYDROCHLORIC ACID
301875	INORGNC CHEM STRG	FLOAT ROOF TANKS	CARBON DISULFIDE
301885	INORGNC CHEM STRG	PRESSURE TANKS	AMMONIA
301888	CHEMICAL MFG	FUGITIVE EMISSION	NOT CLASSIFIED
301900	CHEMICAL MFG	FUEL-FIRED EQPMNT	PROCESS HEATERS
301999	CHEMICAL MFG	MISCELLANEOUS	NOT CLASSIFIED
302001	FOOD/AGRICULTURE	ALFALFA DEHYDRATI	GENERAL
302002	FOOD/AGRICULTURE	COFFEE ROASTING	ROASTER
302003	FOOD/AGRICULTURE	COFFEE PRODUCTS	INSTANT COFFEE
302004	FOOD/AGRICULTURE	AGRIC. SERVICES	COTTON GINNING
302005	FOOD/AGRICULTURE	GRAIN ELEVATORS	TERMINAL ELEVATOR
302006	FOOD/AGRICULTURE	GRAIN ELEVATORS	COUNTRY ELEVATORS
302007	FOOD/AGRICULTURE	GRAIN MILLING	CORN MEAL
302008	FOOD/AGRICULTURE	FEED MANUFACTURE	BARLEY FEED
302009	FOOD/AGRICULTURE	FERMENTATION	BEER PRODUCTION
302010	FOOD/AGRICULTURE	FERMENTATION	WHISKEY PRODUCTN
302011	FOOD/AGRICULTURE	FERMENTATION	WINE PRODUCTION
302012	FOOD/AGRICULTURE	FISH PROCESSING	FISH MEAL
302013	FOOD/AGRICULTURE	MEAT SMOKING	COMBINED OPERATNS
302014	FOOD/AGRICULTURE	STARCH MFG	COMBINED OPERATNS
302015	FOOD/AGRICULTURE	SUGAR CANE PROCES	GENERAL
302016	FOOD/AGRICULTURE	SUGAR BEET PROCES	DRYER
302017	FOOD/AGRICULTURE	PEANUT PROCESSING	NOT CLASSIFIED
302018	FOOD/AGRICULTURE	CANDY MANUFACTURE	NOT CLASSIFIED
302019	FOOD/AGRICULTURE	VEG OIL PROCESSNG	CORN OIL
302020	FOOD/AGRICULTURE	AGRIC.PRODUCTION	BEEF CATTLE
302021	FOOD/AGRICULTURE	POULTRY/EGG PROD	MANURE HANDLING
302022	FOOD/AGRICULTURE	AGRIC.PRODUCTION	COTTON-ACID DELIN
302026	FOOD/AGRICULTURE	AGRIC.PRODUCTION	SEED PROCESSING
302028	FOOD/AGRICULTURE	AGRIC.PRODUCTION	MUSHROOM GROWING
302030	FOOD/AGRICULTURE	DAIRY PRODUCTS	MILK
302031	FOOD/AGRICULTURE	GRAIN ELEVATORS	EXPORT GRAIN ELEV
302032	FOOD/AGRICULTURE	BAKERIES	BREAD BAKING
302033	FOOD/AGRICULTURE	TOBACCO PRODUCTS	NOT CLASSIFIED
302036	FOOD/AGRICULTURE	DEEP FAT FRYING	COOKING VATS
302038	FOOD/AGRICULTURE	ANIMAL/POLTRY RND	RENDERING
302888	FOOD/AGRICULTURE	FUGITIVE EMISSION	NOT CLASSIFIED
302900	FOOD/AGRICULTURE	FUEL-FIRED EQPMNT	PROCESS HEATERS
302999	FOOD/AGRICULTURE	MISCELLANEOUS	NOT CLASSIFIED
303000	MINING OPERATIONS	METAL ORE MINING	BAUXITE
303001	PRIMARY METALS	ALUMINUM	ELECTRO-REDUCTION
303002	PRIMARY METALS	ALUMINUM	HYDROXIDE CALCING
303003	PRIMARY METALS	IRON & STEEL	BY-PRODUCT COKE
303004	PRIMARY METALS	IRON & STEEL	BEEHIVE COKE
303005	PRIMARY METALS	COPPER SMELTING	MULTIPLE HEARTH
303006	PRIMARY METALS	FERROALLOY	OPEN FURNACE
303007	PRIMARY METALS	FERROALLOY	SEMICOVERED FURNC
303008	PRIMARY METALS	IRON & STEEL	BLAST FURNACE
303009	PRIMARY METALS	IRON & STEEL	STEEL FURNACES

TABLE D-1 (continued)

SCC	SOURCE DESCRIPTION/PROCESS		
303010	PRIMARY METALS	LEAD SMELTING	SINTERING
303011	MINING OPERATIONS	METAL ORE MINING	MOLYBEDENUM
303012	MINING OPERATIONS	METAL ORE MINING	TITANIUM ORE
303013	MINING OPERATIONS	METAL ORE MINING	GOLD MINING
303014	MINING OPERATIONS	METAL ORE MINING	BARIUM ORE
303023	MINING OPERATIONS	METAL ORE MINING	TACONITE IRON ORE
303024	MINING OPERATIONS	METAL ORE MINING	LOW MOISTURE ORE
303030	PRIMARY METALS	ZINC SMELTING	ROASTING
303888	PRIMARY METALS	FUGITIVE EMISSION	NOT CLASSIFIED
303900	PRIMARY METALS	FUEL-FIRED EQPMNT	PROCESS HEATERS
303999	PRIMARY METALS	MISCELLANEOUS	NOT CLASSIFIED
304001	SECONDARY METALS	SEC. ALUMINUM	SWEATING FURNACE
304002	SECONDARY METALS	SEC. COPPER	ELEC INDUCTION FN
304003	PRIMARY METALS	IRON/STEEL FOUNDY	GRAY IRON FOUNDRY
304004	SECONDARY METALS	SEC. LEAD	KETTLE REFINING
304005	ELECTRICAL EQPMNT	LEAD BATTERY MFG	OVERALL PROCESS
304006	PRIMARY METALS	MAGNESIUM	POT FURNACE
304007	PRIMARY METALS	IRON/STEEL FOUNDY	STEEL FOUNDRY
304008	SECONDARY METALS	SECONDARY ZINC	RETORT FURNACE
304009	PRIMARY METALS	IRON/STEEL FOUNDY	MALLEABLE IRON
304010	PRIMARY METALS	NICKEL	FLUX FURNACE
304020	ELECTRICAL EQPMNT	FURNACE ELECTRODE	CALCINATION
304022	SECONDARY METALS	METAL HEAT TREATG	FURNACE
304040	SECONDARY METALS	METALLIC COATING	LEAD CABLE COATNG
304049	SECONDARY METALS	MISC CAST/FABRCTN	WAX BURNOUT OVEN
304050	SECONDARY METALS	MISC CAST/FABRCTN	NOT CLASSIFIED
304888	SECONDARY METALS	FUGITIVE EMISSION	NOT CLASSIFIED
304900	SECONDARY METALS	FUEL-FIRED EQPMNT	PROCESS HEATERS
304999	SECONDARY METALS	MISCELLNNEOUS	NOT CLASSIFIED
305001	PETROLEUM INDRY	ASPHALT ROOFING	ASPHALT BLOWING
305002	PETROLEUM INDRY	ASPHALT CONCRETE	ROTARY DRYER
305003	MINERAL PRODUCTS	BRICK MFG	RAW MATERIAL
305004	MINERAL PRODUCTS	CALCIUM CARBIDE	ELECTRIC FURNACE
305005	MINERAL PRODUCTS	CASTABLE REFRACTY	RAW MATERIAL
305006	MINERAL PRODUCTS	CEMENT MFG	DRY PROCESS
305007	MINERAL PRODUCTS	CEMENT MFG	WET PROCESS
305008	MINERAL PRODUCTS	CERAMIC CLAY MFG	DRYING
305009	MINERAL PRODUCTS	CLAY/FLYASH SINTR	FLYASH
305010	MINING OPERATIONS	COAL CLEANING	THERMAL DRYER
305011	MINERAL PRODUCTS	CONCRETE BATCHING	GENERAL
305012	MINERAL PRODUCTS	FIBERGLASS	WOOL-TYPE FIBER
305013	MINERAL PRODUCTS	FRIT MFG	ROTARY FURNACE
305014	MINERAL PRODUCTS	GLASS MFG	SODA LIME
305015	MINERAL PRODUCTS	GYPSUM MFG	ROTARY ORE DRYER
305016	MINERAL PRODUCTS	LIME MFG	PRIMARY CRUSHING
305017	MINERAL PRODUCTS	MINERAL WOOL	CUPOLA
305018	MINERAL PRODUCTS	PERLITE MFG	VERTICAL FURNACE
305019	MINING OPERATIONS	NONMETALLIC MINRL	PHOSPHATE ROCK
305020	MINING OPERATIONS	NONMETALLIC MINRL	STONE QUARRYING
305021	MINING OPERATIONS	NONMETALLIC MINRL	SALT MINING

TABLE D-1 (continued)

SCC	SOURCE DESCRIPTION/PROCESS		
305022	MINING OPERATIONS	NONMETALLIC MINRL	POTASH PRODUCTION
305024	MINING OPERATIONS	NONMETALLIC MINRL	MAGNESIUM CRBNATE
305025	MINING OPERATIONS	NONMETALLIC MINRL	SAND/GRAVEL
305026	MINING OPERATIONS	NONMETALLIC MINRL	DIATOMACOUS EARTH
305030	MINERAL PRODUCTS	CERAMIC ELEC PRTS	NOT CLASSIFIED
305031	MINING OPERATIONS	NONMETALLIC MINRL	ASBESTOS MINING
305032	MINING OPERATIONS	NONMETALLIC MINRL	ASBESTOS MILLING
305033	MINING OPERATIONS	NONMETALLIC MINRL	VERMICULITE
305040	MINING OPERATIONS	UNSPECIFIED ORE	SEE COMMENT
305100	MINERAL PRODUCTS	BULK MATERIALS	ELEVATORS
305101	MINERAL PRODUCTS	BULK MATERIALS	CONVEYORS
305102	MINERAL PRODUCTS	BULK MATERIALS	STOAGE BINS
305103	MINERAL PRODUCTS	BULK MATERIALS	OPEN STOCKPILES
305104	MINERAL PRODUCTS	BULK MATERIALS	UNLOADING OPERATN
305105	MINERAL PRODUCTS	BULK MATERIALS	LOADING OPERATION
305150	MINERAL PRODUCTS	NONMETALLIC MINRL	CALCINING-GENERAL
305888	MINERAL PRODUCTS	FUGITIVE EMISSION	NOT CLASSIFIED
305900	MINERAL PRODUCTS	FUEL-FIRED EQPMNT	PROCESS HEATERS
305999	MINERAL PRODUCTS	MISCELLANEOUS	NOT CLASSIFIED
306001	PETROLEUM INDRY	PETROLEUM REFNG	PROCESS HEATERS
306002	PETROLEUM INDRY	PETROLEUM REFNG	CATALYTIC CRACKNG
306003	PETROLEUM INDRY	PETROLEUM REFNG	CATALYTIC CRACKNG
306004	PETROLEUM INDRY	PETROLEUM REFNG	BLOWDOWN SYSTEM
306005	PETROLEUM INDRY	FUGITIVE HC EMIS	PROCESS DRAINS
306006	PETROLEUM INDRY	PETROLEUM REFNG	VACUUM DISTILATN
306007	PETROLEUM INDRY	PETROLEUM REFNG	COOLING TOWERS
306008	PETROLEUM INDRY	FUGITIVE HC EMIS	PIPELINE
306009	PETROLEUM INDRY	PETROLEUM REFNG	FLARES
306010	PETROLEUM INDRY	PETROLEUM REFNG	SLUDGE CONVERTER
306011	PETROLEUM INDRY	PETROLEUM REFNG	ASPHALT BLOWING
306012	PETROLEUM INDRY	PETROLEUM REFNG	FLUID COKING
306014	PETROLEUM INDRY	PETROLEUM REFNG	PETROLEUM COKE
306015	PETROLEUM INDRY	PETROLEUM REFNG	BAUXITE BURNING
306099	PETROLEUM INDRY	PETROLEUM REFNG	INCINERATORS
306100	PETROLEUM INDRY	LUBE OIL MFG	GENERAL
306888	PETROLEUM INDRY	FUGITIVE EMISSION	NOT CLASSIFIED
306999	PETROLEUM INDRY	MISCELLANEOUS	NOT CLASSIFIED
307001	PULP & PAPER	KRAFT PULPING	DIGESTOR/BLOW TNK
307002	PULP & PAPER	SULFITE PULPING	DIGESTER/BLOW PIT
307003	PULP & PAPER	SEMICHEMICAL PULP	DIGESTER/BLOW PIT
307004	PULP & PAPER	PULPBOARD	PAPERBOARD
307005	WOOD PRODUCTS	WOOD PRESS TREAT	CREOSOTE
307007	WOOD PRODUCTS	PLYWOOD/PARTBOARD	VENEER DRYERS
307008	WOOD PRODUCTS	SAWMILL OPERATION	LOG DEBARKING
307011	PULP & PAPER	PAPER COATING	EXTRUSION COATING
307013	PULP & PAPER	MISC. PAPER PROD	INSULATION FROM
307020	WOOD PRODUCTS	FURNITURE MFG	NOT CLASSIFIED
307030	WOOD PRODUCTS	MISCELLANEOUS	WOODWASTE STORAGE
307888	WOOD PRODUCTS	FUGITIVE EMISSION	NOT CLASSIFIED
307900	WOOD PRODUCTS	FUEL FIRED EQPMNT	PROCESS HEATERS

TABLE D-1 (continued)

SCC	SOURCE DESCRIPTION/PROCESS		
307999	WOOD PRODUCTS	MISCELLANEOUS	NOT CLASSIFIED
308001	RUBBER/PLASTICS	TIRE MFG	UNDERTREAD & SIDE
308005	RUBBER/PLASTICS	TIRE RETREADING	TIRE BUFFING
308006	RUBBER/PLASTICS	MISC.RUBBER PROD	NOT CLASSIFIED
308007	RUBBER/PLASTICS	FAB. PLASTIC PROD	PLASTICS MACHINNG
308900	RUBBER/PLASTICS	FUEL FIRED EQPMNT	PROCESS HEATERS
308999	RUBBER/PLASTICS	MISCELLANEOUS	NOT CLASSIFIED
309001	FABRICATED METALS	IRON/STEEL	NOT CLASSIFIED
309002	FABRICATED METALS	ABRASIVE BLASTING	OF METAL PARTS
309003	FABRICATED METALS	ABRASIVE CLEANING	OF METAL PARTS
309010	FABRICATED METALS	ELECTROPLATING	ENTIRE PROCESS
309011	FABRICATED METALS	CONVERSION COATNG	ALKALINE CLEANING
309015	FABRICATED METALS	CHEMICAL MILLING	OF METAL PARTS
309016	FABRICATED METALS	PIPE COATING	ASPHALT DIPPING
309020	FABRICATED METALS	CAN MAKING OPRNS	NOT CLASSIFIED
309025	FABRICATED METALS	DRUMS/BARRELS	DRUM CLEANING
309030	FABRICATED METALS	MACHINING OPRNS	GRINDING
309040	FABRICATED METALS	METAL DEPOSITION	METALLIZING(WIRE
309060	FABRICATED METALS	PORCELAIN ENAMEL/	CERAMIC GLAZE
309888	FABRICATED METALS	FUGITIVE EMISSION	NOT CLASSIFIED
309900	FABRICATED METALS	FUEL FIRED EQPMNT	PROCESS HEATERS
309999	FABRICATED METALS	MISCELLANEOUS	NOT CLASSIFIED
310001	OIL & GAS PRODN	CRUDE OIL PRODN	COMPLETE WELL
310002	OIL & GAS PRODN	NATURAL GAS PRODN	GAS SWEETENING
310004	OIL & GAS PRODN	FUEL-FIRED EQPMNT	PROCESS HEATERS
310888	OIL & GAS PRODN	FUGITIVE EMISSION	NOT CLASSIFIED
311001	CONSTRUCTION	BLDG CONTRACTORS	NOT CLASSIFIED
311002	CONSTRUCTION	SPL TRADE CONTRCT	NOT CLASSIFIED
312999	MACHINERY	MISCELLANEOUS	NOT CLASSIFIED
313070	ELECTRICAL EQPMNT	WINDINGS RECLAMTN	INCINERATOR OVEN
313900	ELECTRICAL EQPMNT	FUEL FIRED EQPMNT	PROCESS HEATERS
313999	ELECTRICAL EQPMNT	MISCELLANEOUS	NOT CLASSIFIED
314009	TRANSPORTN EQPMNT	GENERAL PROCESSES	SOLDER JOINT
314010	TRANSPORTN EQPMNT	BRAKE SHOE DEBOND	INCINERATOR OVEN
314011	TRANSPORTN EQPMNT	AUTO BODY SALVAGE	BODY SHREDDING
314999	TRANSPORTN EQPMNT	MISCELLANEOUS	NOT CLASSIFIED
315010	MISC. INDUSTRIES	PHOTOGRAPHIC EQPT	PHOTOCOPY MACHINE
315020	MISC. INDUSTRIES	HOSPITALS	STERILIZATION
320999	LEATHER PRODUCTS	MISCELLANEOUS	NOT CLASSIFIED
330001	TEXTILE PRODUCTS	GENERAL FABRICS	NOT CLASSIFIED
330002	RUBBER/PLASTICS	RUBBERIZED FABRIC	IMPREGNATION
330003	TEXTILE PRODUCTS	CARPET OPERATNS	NOT CLASSIFIED
330004	TEXTILE PRODUCTS	FABRIC FINISHING	NOT CLASSIFIED
330005	TEXTILE PRODUCTS	APPAREL	NOT CLASSIFIED
330888	TEXTILE PRODUCTS	FUGITIVE EMISSION	NOT CLASSIFIED
360001	PRINTING/PUBLISH	TYPESETTING	LEAD REMELTING
390001	INDUSTRIAL PROCES	INPROCESS FUEL	ANTHRACITE COAL
390002	INDUSTRIAL PROCES	INPROCESS FUEL	BITUMINOUS COAL
390003	INDUSTRIAL PROCES	INPROCESS FUEL	LIGNITE
390004	INDUSTRIAL PROCES	INPROCESS FUEL	RESIDUAL OIL

TABLE D-1 (continued)

SCC	SOURCE DESCRIPTION/PROCESS		
390005	INDUSTRIAL PROCES	INPROCESS FUEL	DISTILLATE OIL
390006	INDUSTRIAL PROCES	INPROCESS FUEL	NATURAL GAS
390007	INDUSTRIAL PROCES	INPROCESS FUEL	PROCESS GAS
390008	INDUSTRIAL PROCES	INPROCESS FUEL	COKE
390009	INDUSTRIAL PROCES	INPROCESS FUEL	WOOD
390010	INDUSTRIAL PROCES	INPROCESS FUEL	LPG
390012	INDUSTRIAL PROCES	INPROCESS FUEL	SOLID WASTE FUEL
390013	INDUSTRIAL PROCES	INPROCESS FUEL	LIQUID WASTE FUEL
399900	INDUSTRIAL PROCES	MIS IND-FUEL EQPT	PROCESS HEATERS
399999	INDUSTRIAL PROCES	MISCELLANEOUS	NOT CLASSIFIED
401001	ORGANIC SOLVENT	DRY CLEANING	PERCHLOROETHYLENE
401002	ORGANIC SOLVENT	VAPOR DEGREASING	OPEN-TOP
401003	ORGANIC SOLVENT	COLD CLEANING	METHANOL
401004	ORGANIC SOLVENT	TEXTILE MFG	FABRIC SCOURING
401888	ORGANIC SOLVENT	FUGITIVE EMISSION	NOT CLASSIFIED
402001	ORGANIC SOLVENT	SURFACE COATING	PAINT-GENERAL
402002	ORGANIC SOLVENT	SURFACE COATING	PAINT-GENERAL
402003	ORGANIC SOLVENT	SURFACE COATING	VARNISH/SHELLAC
402004	ORGANIC SOLVENT	SURFACE COATING	LACQUER
402005	ORGANIC SOLVENT	SURFACE COATING	ENAMEL
402006	ORGANIC SOLVENT	SURFACE COATING	PRIMER
402007	ORGANIC SOLVENT	SURFACE COATING	ADHESIVE
402008	ORGANIC SOLVENT	SURFACE COATING	COATING OVEN
402009	ORGANIC SOLVENT	SURFACE COATING	THINNING SOLVENT
402010	ORGANIC SOLVENT	SURFACE COATING	OVEN HEATER
402011	ORGANIC SOLVENT	SURFACE COATING	FABRIC COATING
402012	ORGANIC SOLVENT	SURFACE COATING	FABRIC DYEING
402013	ORGANIC SOLVENT	SURFACE COATING	PAPER COATING
402014	ORGANIC SOLVENT	SURFACE COATING	LARGE APPLIANCES
402015	ORGANIC SOLVENT	SURFACE COATING	MAGNET WIRE
402016	ORGANIC SOLVENT	SURFACE COATING	AUTOS/LIGHT TRUCK
402017	ORGANIC SOLVENT	SURFACE COATING	CAN COATING
402018	ORGANIC SOLVENT	SURFACE COATING	COIL COATING
402019	ORGANIC SOLVENT	SURFACE COATING	WOOD FURNITURE
402020	ORGANIC SOLVENT	SURFACE COATING	METAL FURNITURE
402021	ORGANIC SOLVENT	SURFACE COATING	FLATWOOD PRODUCTS
402022	ORGANIC SOLVENT	SURFACE COATING	PLASTIC PARTS
402023	ORGANIC SOLVENT	SURFACE COATING	LARGE SHIPS
402024	ORGANIC SOLVENT	SURFACE COATING	LARGE AIRCRAFT
402025	ORGANIC SOLVENT	SURFACE COATING	MISC.METAL PARTS
402026	ORGANIC SOLVENT	SURFACE COATING	STEEL DRUMS
402888	ORGANIC SOLVENT	SURFACE COATING	FUGITIVE EMISSION
402900	ORGANIC SOLVENT	SURFACE COATING	FLARES
402999	ORGANIC SOLVENT	SURFACE COATING	MISCELLANEOUS
403001	PETROLEUM STORAGE	FIXED ROOF TANKS	BREATHING LOSS
403002	PETROLEUM STORAGE	FLOAT ROOF TANKS	STAND STG LOSS
403003	PETROLEUM STORAGE	VAR.VAPOR SP.TNKS	WORKING LOSS
403010	PETROLEUM STORAGE	FIXED ROOF TANKS	GASOLINE-RVP 13
403011	PETROLEUM STORAGE	FLOAT ROOF TANKS	GASOLINE-RVP 13
403012	PETROLEUM STORAGE	VAR.VAPOR SP.TNKS	GASOLINE-RVP 13

TABLE D-1 (continued)

SCC	SOURCE DESCRIPTION/PROCESS		
403888	PETROLEUM STORAGE	FUGITIVE EMISSION	NOT CLASSIFIED
403999	PETROLEUM STORAGE	MISCELLANEOUS	NOT CLASSIFIED
404001	BULK TERMINALS	FIXED ROOF TANKS	GASOLINE-RVP 13
404002	BULK PLANTS	FIXED ROOF TANKS	GASOLINE-RVP 13
404003	OIL & GAS PRODN	CRUDE OIL STORAGE	FIXED ROOF TANK
404004	PETROLEUM STORAGE	UNDERGROUND TANKS	GASOLINE-RVP 13
405001	PRINTING/PUBLISH	PRINTING PROCESS	DRYER
405002	PRINTING/PUBLISH	PRINTING PROCESS	LETTER PRESS
405003	PRINTING/PUBLISH	PRINTING PROCESS	FLEXOGRAPHIC
405004	PRINTING/PUBLISH	PRINTING PROCESS	LITHOGRAPHIC
405005	PRINTING/PUBLISH	PRINTING PROCESS	ROTOGRAVURE
405006	PRINTING/PUBLISH	PRINTING PROCESS	INK MIXING
405007	PRINTING/PUBLISH	PRINTING PROCESS	SOLVENT STORAGE
405888	PRINTING/PUBLISH	FUGITIVE EMISSION	NOT CLASSIFIED
406001	PETROLEUM MARKTNG	TANK CARS/TRUCKS	GASOLINE-SPLASH
406002	PETROLEUM MARKTNG	MARINE VESSELS	GASOLINE SHIP
406003	PETROLEUM MARKTNG	SERVICE STATIONS	STAGE I
406004	PETROLEUM MARKTNG	SERVICE STATIONS	STAGE II
406888	PETROLEUM MARKTNG	FUGITIVE EMISSION	NOT CLASSIFIED
407004	ORGANIC CHEM STRG	FIXED ROOF TANKS	ACETIC ANHYDRIDE
407008	ORGANIC CHEM STRG	FIXED ROOF TANKS	N-BUTYL ALCOHOL
407016	ORGANIC CHEM STRG	FIXED ROOF TANKS	N-DECANE
407020	ORGANIC CHEM STRG	FIXED ROOF TANKS	DODECENE
407032	ORGANIC CHEM STRG	FIXED ROOF TANKS	ANILINE
407036	ORGANIC CHEM STRG	FIXED ROOF TANKS	BENZENE
407040	ORGANIC CHEM STRG	FIXED ROOF TANKS	ACETIC ACID
407044	ORGANIC CHEM STRG	FIXED ROOF TANKS	BUTYL ACETATE
407048	ORGANIC CHEM STRG	FIXED ROOF TANKS	MTHL-TRT-BTYL ETH
407052	ORGANIC CHEM STRG	FIXED ROOF TANKS	BUTYL CARBITOL
407056	ORGANIC CHEM STRG	FIXED ROOF TANKS	1,4-BUTANEDIOL
407060	ORGANIC CHEM STRG	FIXED ROOF TANKS	BENZYL CHLORIDE
407064	ORGANIC CHEM STRG	FIXED ROOF TANKS	MDI
407068	ORGANIC CHEM STRG	FIXED ROOF TANKS	CYCLOHEXANONE
407076	ORGANIC CHEM STRG	FIXED ROOF TANKS	ACRYLONITRILE
407080	ORGANIC CHEM STRG	FIXED ROOF TANKS	NITROBENZENE
407084	ORGANIC CHEM STRG	FIXED ROOF TANKS	NONYPHENOL
407172	ORGANIC CHEM STRG	FLOAT ROOF TANKS	ACETALDEHYDE
407176	ORGANIC CHEM STRG	FLOAT ROOF TANKS	CYCLOHEXANE
407180	ORGANIC CHEM STRG	FLOAT ROOF TANKS	ISOPRENE
407208	ORGANIC CHEM STRG	FLOAT ROOF TANKS	ETHYL ETHER
407220	ORGANIC CHEM STRG	FLOAT ROOF TANKS	CARBON TETRACHLRD
407228	ORGANIC CHEM STRG	FLOAT ROOF TANKS	ACETONE
407232	ORGANIC CHEM STRG	FLOAT ROOF TANKS	ETHYL MERCAPTAN
407816	ORGANIC CHEM STRG	PRESSURE TANKS	ETHANE
407820	ORGANIC CHEM STRG	PRESSURE TANKS	1,3-BUTADIENE
407824	ORGANIC CHEM STRG	PRESSURE TANKS	ACETYLENE
407832	ORGANIC CHEM STRG	PRESSURE TANKS	METHYLAMINE
407848	ORGANIC CHEM STRG	PRESSURE TANKS	ETHYLENE OXIDE
407860	ORGANIC CHEM STRG	PRESSURE TANKS	ETHYL CHLORIDE
407864	ORGANIC CHEM STRG	PRESSURE TANKS	METHYL ISOCYANATE

TABLE D-1 (continued)

SCC	SOURCE DESCRIPTION/PROCESS		
407872	ORGANIC CHEM STRG	PRESSURE TANKS	METHYL MERCAPTAN
407999	ORGANIC CHEM STRG	MISCELLANEOUS	SPECIFY IN COMMTS
408999	ORGNC CHEM TRNSPT	TANK CARS/TRUCKS	SPECIFY LIQUID
490001	ORGANIC SOLVENT	MISCELLANEOUS	SOLVENT EXTRACTN
490002	ORGANIC SOLVENT	MISCELLANEOUS	SOLVENT RECOVERY
490003	ORGANIC SOLVENT	MISCELLANEOUS	RAILCAR CLEANING
490004	ORGANIC SOLVENT	MISCELLANEOUS	TANK TRUCK CLEANG
490900	ORGANIC SOLVENT	MISCELLANEOUS	INCINERATORS
490999	ORGANIC SOLVENT	MISCELLANEOUS	NOT CLASSIFIED
501001	SOLID WASTE DISPL	GOVERNMENT	MUNICIPAL INCIN
501002	SOLID WASTE DISPL	GOVERNMENT	OPEN BURNING DUMP
501005	SOLID WASTE DISPL	GOVERNMENT	OTHER INCINERATOR
501006	SOLID WASTE	GOVERNMENT	FIRE FIGHTING
501007	SOLID WASTE DISPL	GOVERNMENT	SEWAGE TREATMENT
501900	SOLID WASTE DISPL	GOVERNMENT	AUX.FUEL/NO EMSNS
502001	SOLID WASTE DISPL	COMMERCL/INSTITNL	INCINERATION-GENL
502002	SOLID WASTE DISPL	COMMERCL/INSTITNL	OPEN BURNING
502003	SOLID WASTE DISPL	COMMERCL/INSTITNL	APARTMENT INCIN
502005	SOLID WASTE DISPL	COMMERCL/INSTITNL	INCINERATION-SPCL
502006	SOLID WASTE DISPL	COMMERCL/INSTITNL	LANDFILL DUMP
502900	SOLID WASTE DISPL	COMMERCL/INSTITNL	AUX.FUEL/NO EMSNS
503001	SOLID WASTE DISPL	INDUSTRIAL	INCINERATION
503002	SOLID WASTE DISPL	INDUSTRIAL	OPEN BURNING
503005	SOLID WASTE DISPL	INDUSTRIAL	INCINERATOR
503006	SOLID WASTE DISPL	INDUSTRIAL	LANDFILL DUMP
503007	SOLID WASTE DISPL	INDUSTRIAL	LIQUID WASTE
503008	SOLID WASTE DISPL	INDUSTRIAL	SURFACE IMPOUNDMT
503900	SOLID WASTE DISPL	INDUSTRIAL	AUX.FUEL/NO EMSNS

TABLE D-2. SOURCE CATEGORY CODES, U.S. AREA SOURCES

SCC	Category Description
001	Residential Fuel - Anthracite Coal
002	Residential Fuel - Bituminous Coal
003	Residential Fuel - Distillate Oil
004	Residential Fuel - Residual Oil
005	Residential Fuel - Natural Gas
006	Residential Fuel - Wood
007	Commercial/Institutional Fuel - Anthracite Coal
008	Commercial/Institutional Fuel - Bituminous Coal
009	Commercial/Institutional Fuel - Distillate Oil
010	Commercial/Institutional Fuel - Residual Oil
011	Commercial/Institutional Fuel - Natural Gas
012	Commercial/Institutional Fuel - Wood
013	Industrial Fuel - Anthracite Coal
014	Industrial Fuel - Bituminous Coal
015	Industrial Fuel - Coke
016	Industrial Fuel - Distillate Oil
017	Industrial Fuel - Residual Oil
018	Industrial Fuel - Natural Gas
019	Industrial Fuel - Wood
020	Industrial Fuel - Process Gas
021	On-Site Incineration - Residential
022	On-Site Incineration - Industrial
023	On-Site Incineration - Commercial/Institutional
024	Open Burning - Residential
025	Open Burning - Industrial
026	Open Burning - Commercial/Institutional
027	Light Duty Gasoline Vehicles - Limited Access Roads
028	Light Duty Gasoline Vehicles - Rural Roads
029	Light Duty Gasoline Vehicles - Suburban Roads
030	Light Duty Gasoline Vehicles - Urban Roads
031	Medium Duty Gasoline Vehicles - Limited Access Roads
032	Medium Duty Gasoline Vehicles - Rural Roads
033	Medium Duty Gasoline Vehicles - Suburban Roads
034	Medium Duty Gasoline Vehicles - Urban Roads
035	Heavy Duty Gasoline Vehicles - Limited Access Roads
036	Heavy Duty Gasoline Vehicles - Rural Roads
037	Heavy Duty Gasoline Vehicles - Suburban Roads
038	Heavy Duty Gasoline Vehicles - Urban Roads
039	Off Highway Gasoline Vehicles
040	Heavy Duty Diesel Vehicles - Limited Access Roads
041	Heavy Duty Diesel Vehicles - Rural Roads
042	Heavy Duty Diesel Vehicles - Suburban Roads
043	Heavy Duty Diesel Vehicles - Urban Roads
044	Off Highway Diesel Vehicles
045	Railroad Locomotives
046	Aircraft LTOs - Military
047	Aircraft LTOs - Civil
048	Aircraft LTOs - Commercial
049	Vessels - Coal

TABLE D-2 (continued)

SCC	Category Description
050	Vessels - Diesel Oil
051	Vessels - Residual Oil
052	Vessels - Gasoline
054	Gasoline Marketed
055	Unpaved Road Travel
056	Unpaved Airstrip LTOs
057	Construction
058	Miscellaneous Wind Erosion
059	Land Tilling
060	Forest Wild Fires
061	Managed Burning - Prescribed
062	Agricultural Field Burning
063	Frost Control - Orchard Heaters
064	Structural Fires
071	Beef Cattle Manure Field Application
072	Dairy Cattle Manure Field Application
073	Hog and Pig Manure Field Application
074	Broiler Chicken Manure Field Application
075	Other Chicken Manure Field Application
076	Anhydrous Ammonia Fertilizer Application
077	Beef Cattle Feed Lots
078	Degreasing
079	Drycleaning
080	Graphic Arts (Printing)
081	Rubber and Plastics Manufacturing
082	Architectural Coating
083	Auto Body Repair
084	Motor Vehicle Manufacturing
085	Paper Coating
086	Fabricated Metals
087	Machinery Manufacturing
088	Furniture Manufacturing
089	Flat Wood Products
090	Other Transportation Equipment Manufacturing
091	Electrical Equipment Manufacturing
092	Ship Building and Repairing
093	Miscellaneous Industrial Manufacturing
094	Miscellaneous Industrial Solvent Use
095	Miscellaneous Nonindustrial Solvent Use
096	Minor Utility Sources - Coal
097	Minor Utility Sources - Oil
098	Minor Utility Sources - Gas
099	Minor Point Sources

TABLE D-3. SOURCE CATEGORY CODES, CANADIAN AREA SOURCES

SCC	Category Description
10101	Gasoline Powered Motor Ve - Light Duty Trucks
10102	Gasoline Powered Motor Ve - Heavy Duty Trucks
10103	Gasoline Powered Motor Ve - Medium Duty Vehicles
10104	Gasoline Powered Motor Ve - Automobiles
10105	Gasoline Powered Motor Ve - Motorcycles
10106	Gasoline Powered Motor Ve - Snowmobiles
10201	Off-Highway Mobile Source - Helicopters
10202	Off-Highway Mobile Source - Helicopter Flight Em
10203	Off-Highway Mobile Source - Jet Aircraft
10204	Off-Highway Mobile Source - Jet Aircraft Flight
10206	Off-Highway Mobile Source - Local Aircraft Fligh
10207	Off-Highway Mobile Source - Piston Engine Aircra
10208	Off-Highway Mobile Source - Piston Engine Inflig
10210	Off-Highway Mobile Source - Piston Transport Inf
10211	Off-Highway Mobile Source - Small Piston Aircraf
10213	Off-Highway Mobile Source - Turboprop Aircraft
10214	Off-Highway Mobile Source - Diesel Oil - Railroa
10215	Off-Highway Mobile Source - Gasoline Outboards
10217	Off-Highway Mobile Source - Motorships Dockside
10218	Off-Highway Mobile Source - Motorships Underway
10220	Off-Highway Mobile Source - Steamship Dockside
10221	Off-Highway Mobile Source - Steamships Underway
10301	Non-Highway Use of Gasoline
10501	Forest Fires
10601	Slash Burning
10701	Structural Fires
10801	Fertilizer Application
11201	Dry Cleaning
11301	Sand and Gravel Processing
11401	Coal Industry - Coal Handling
11402	Coal Industry - Coal Mining
11403	Coal Industry - Overburden Removal F
11404	Coal Industry - Coal Transportation
11501	Wood Industry - Sawmill Production
11502	Wood Industry - Plywood and Veneer Pro
11503	Wood Industry - Hardwood Production
11504	Wood Industry - Pulpboard Production
11702	Fuel Comb - Stationary So - Elec Pwr - Dist. Oil
11703	Fuel Comb - Stationary So - Elec Pwr - Diesel Tu
11704	Fuel Comb - Stationary So - Elec Pwr - Heavy Oil
11705	Fuel Comb - Stationary So - Elec Pwr - Misc. Dsl
11706	Fuel Comb - Stationary So - Elec Pwr - Natural G
11711	Fuel Comb - Stationary So - Residential Coal
11712	Fuel Comb - Stationary So - Residential Dist. Oil
11713	Fuel Comb - Stationary So - Residential Kerosene
11714	Fuel Comb - Stationary So - Residential Liq. Pet
11715	Fuel Comb - Stationary So - Residential Residual
11721	Fuel Comb - Stationary So - Commercial Coal

TABLE D-3 (continued)

SCC	Category Description
11722	Fuel Comb - Stationary So - Commercial Dist. Oil
11723	Fuel Comb - Stationary So - Commercial Kerosene
11724	Fuel Comb - Stationary So - Commercial Liq. Pet.
11725	Fuel Comb - Stationary So - Commercial Natural G
11726	Fuel Comb - Stationary So - Commercial Residual
11731	Fuel Comb - Stationary So - Industrial Coal
11732	Fuel Comb - Stationary So - Industrial Dist. Oil
11733	Fuel Comb - Stationary So - Industrial Kerosene
11734	Fuel Comb - Stationary So - Industrial Liq. Pet.
11735	Fuel Comb - Stationary So - Industrial Natural G
11736	Fuel Comb - Stationary So - Industrial Residual
11740	Fuel Comb - Stationary So - Fuelwood Combustor
11801	Bakeries
12001	Asphalt Production - Asphalt Drying
12002	Asphalt Production - Asphalt Fugitive
12101	Stone Processing - Crush.Stn - Pri.Crushi
12102	Stone Processing - Crush.Stn - Scrn,Cnvy
12103	Stone Processing - Crush.Stn - Sec.Crush&
12104	Stone Processing - Crush.Stn - Sec.Crush.
12111	Stone Processing - Pulv.Stn - Pri.Crushin
12112	Stone Processing - Pulv.Stn - Recrush&Scr
12113	Stone Processing - Pulv.Stn - Scrn,Cnvy&H
12114	Stone Processing - Pulv.Stn - Sec.Crush&S
12115	Stone Processing - Pulv.Stn - Sec.Crush.F
12116	Stone Processing - Pulv.Stn - Fines Mills
12117	Stone Processing - Pulv.Stn - Storage Pil
12121	Stone Processing - Building Stone - Cutt
12501	Clay Products Manufacture - Clay Prod. - Dryer - Gri
12502	Clay Products Manufacture - Clay Prod. - Storage
12601	Grain Handling and Milling - Term.Elev - Cleaning
12602	Grain Handling and Milling - Term.Elev - Drying
12603	Grain Handling and Milling - Term.Elev - Headhouse
12604	Grain Handling and Milling - Term.Elev - Ship & Rec
12605	Grain Handling and Milling - Term.Elev - Transfer C
12606	Grain Handling and Milling - Term.Elev - Tripper(Ga
12613	Grain Handling and Milling - Prim.Elev - Headhouse
12614	Grain Handling and Milling - Prim.Elev - Ship & Rec
12615	Grain Handling and Milling - Prim.Elev - Transfer C
12623	Grain Handling and Milling - Xfer.Elev - Headhouse
12624	Grain Handling and Milling - Xfer.Elev - Ship & Rec
12625	Grain Handling and Milling - Xfer.Elev - Transfer C
12626	Grain Handling and Milling - Xfer.Elev - Tripper(Ga
12641	Grain Handling and Milling - Proc.Elev - Cleaning H
12642	Grain Handling and Milling - Proc.Elev - Millhouse
12643	Grain Handling and Milling - Proc.Elev - Preclean &
12644	Grain Handling and Milling - Proc.Elev - Receiving
12701	Natural Gas Processing - Compressor Engin. Non
12702	Natural Gas Processing - Compressor Turb. Non

TABLE D-3 (continued)

SCC	Category Description
12703	Natural Gas Processing - Compressors In-Plant
12704	Natural Gas Processing - Heaters Boilers In-P
12705	Natural Gas Processing
12801	Solid Waste Incineration - Wood Waste Disposal
12802	Solid Waste Incineration - Controlled Air
12803	Solid Waste Incineration - Multiple Chamber
12901	Diesel and Gasoline Marketi - Filling Vehicle Tank
12902	Diesel and Gasoline Marketi - Refinery Storage Tra
12903	Diesel and Gasoline Marketi - Spillage at Station
12904	Diesel and Gasoline Marketi - Station Storage Tran
12905	Diesel and Gasoline Marketi - Transfer to Cars
12906	Diesel and Gasoline Marketi - Vapor Loss at Statio
12907	Diesel and Gasoline Marketi - Diesel Evaporation
13001	Application of Surface Co - Industrial Use
13002	Application of Surface Co - Trade, Sales Use
13101	Landfill Sites
13201	Ferrous Foundries - Cupola Furnace (Hot
13202	Ferrous Foundries - Cupola(+1 Reverb.) Fu
13203	Ferrous Foundries - Electric Arc Furnace
13204	Ferrous Foundries - Induction Furnace (H
13205	Ferrous Foundries - Rotary Oil Furnace (H
13701	Dust from Unpaved Roads - Trucks Earth Roads
13702	Dust from Unpaved Roads - Trucks Treated Grave
13703	Dust from Unpaved Roads - Trucks Untreated Gra
13704	Dust from Unpaved Roads - Vehicles Earth Roads
13705	Dust from Unpaved Roads - Vehicles Treated Gra
13706	Dust from Unpaved Roads - Vehicles Untreated G
13901	Concrete Batching
13902	Concrete Batching - Fugitive (Material H
14001	Cigarette Smoking
14101	Crude Oil Production - Evaporation from Shi
14102	Crude Oil Production - Evaporation
14201	Mining and Rock Quarrying - Concentrate Dryers
14202	Mining and Rock Quarrying - Concentrate Transpor
14203	Mining and Rock Quarrying - Open Pit Mining
14204	Mining and Rock Quarrying - Overburden Removal F
14205	Mining and Rock Quarrying - Under Ground Mining
14401	Tire Wear
14501	Pesticide Application
14601	Diesel Powered Engines - Agriculture Diesel V
14602	Diesel Powered Engines - Construction Vehicle
14603	Diesel Powered Engines - Heavy Duty Vehicles
14604	Diesel Powered Engines - Other Industrial Eng
14701	Plastics Fabrication
14801	Agriculture - Wind Erosion of Crop
14802	Agriculture - Fugitive Tilling Emi
14901	Tailing Piles Erosion
15001	Construction Sites - Bridges, Tunnels, Roads

TABLE D-3 (continued)

SCC	Category Description
15002	Construction Sites - Heavy Construction
15003	Construction Sites - Non-Residential Cons
15004	Construction Sites - Residential Construc
15005	Construction Sites - Water,Sewer,Utility
15101	General Solvent Use
15201	Dust from Paved Roads - Trucks
15202	Dust from Paved Roads - Vehicles

APPENDIX E

SPECIATION FILES AND DISCUSSION OF CONVERSION OF EMISSION RATES FROM MOLES/YEAR TO TONS/YEAR

SPECIATION FILES

Tables E-1 through E-5 contain the SCC/Profile, Species/Profile, and Species/Class assignments used to speciate hydrocarbons and NOx in the 1980 NAPAP inventory. These files are provided as input to the program PSPLIT, which calculates speciation factors at the class level for each SCC in the SCC/Profile file.

In the Species/Profile file (Table E-4), the first card for each profile contains weight percentages for NO, NO2, and formaldehyde. Subsequent cards, 1 per species, contain the species SAROAD code, percent contribution by weight, molecular weight and species name. In the Species Class file (Table E-5), data are presented for each hydrocarbon species, 1 card per species; each card contains the species class, molecular weight and compound name.

CONVERSION OF EMISSION RATES FROM MOLES/YEAR TO TONS/YEAR

In the 1980 inventory output tables contained in this report, VOC and THC emission rates for the 5.0 inventory are listed in units of tons/year. Speciation factors from PSPLIT are expressed as moles of hydrocarbon class per unit mass of total hydrocarbons. Hence, the output of the FREDS Speciation Module for hydrocarbon classes is in moles/year. The conversion from a mass basis to a mole basis is made so that data on the tape files will be in the units preferred by modelers, i.e., moles. The data are aggregated into 23 hydrocarbon classes (17 compounds and 6 groups of compounds) to save computer storage space and decrease computational time relative to that which would be required if no aggregation were performed.

All of the hydrocarbon data presented in this report for the 5.0 inventory are presented as VOC and THC in units of tons/year. All of the speciated hydrocarbon data presented in this report for the 5.2 inventory are presented in terms of the 23 hydrocarbon classes in units of moles/year. It is possible to convert the 5.2 inventory data for 17 of the 23 hydrocarbon classes from moles/year to tons/year. Data for the 17 classes which are 17 identified compounds can be converted to tons/year using the compound molecular weights listed in Table E-5. In most cases however, data for the six hydrocarbon classes which are groups of compounds (alkanes, alkenes, aromatics, aldehydes, ketones and organic acids) cannot be converted directly to tons/year because the individual species makeup of the class may vary from one profile to the next (see Table E-4). Therefore, the average molecular weights for these six classes vary from SCC code to SCC code, from state to state, from province to province, etc. This point is illustrated below for a particular 6-digit SCC code.

Hydrocarbon class emission data were reviewed to find a 6-digit SCC code with high emissions of alkanes, alkenes, aromatics, aldehydes, ketones and organic acids. SCC code 301999 showed high emissions for a broad range of organic compounds including the following classes: alkanes, alkenes, aromatics, aldehydes and organic acids. Additionally, SCC code 301999 had a single speciation profile, K0079. Using speciation profile data from Table E-4, it was possible to calculate the emission rate for each hydrocarbon species in tons/year, convert to 1000-mole/year, aggregate to the 23 hydrocarbon classes, and assess the feasibility of recalculating the original 5.0 values for VOC and THC.

SCC code 301999 data are shown in Table E-6. From the 5.0 inventory, it is known that the annual THC emissions are 211,348 tons. Speciation information (weight percent, molecular weight, compound and class) is available from Table E-5 and is listed in columns 1 through 4 of Table E-6. Column 5 is a conversion from weight percent to weight fraction. Column 6 lists the calculated emission rate for each compound in tons/year, equal to (THC) * (weight fraction). Column 7 lists the calculated emission rate in 1000-mole/year. The emission rate in 1000-mole/year is equal to (the emission rate in tons/year) * (conversion factor, i.e., 907.2 kg/ton) / (molecular weight in kg/1000-mole). The last four lines of data in Table E-6 show the weighted average molecular weights for the three multi-component classes (alkanes, alkenes and aromatics). Table E-6 provides details of the calculations which lead to species emission rates before aggregation into the standard 23 hydrocarbon classes used for the 5.2 inventory.

Aggregated data for SCC code 301999 are presented in Table E-7. In total, 12 of the standard 23 classes have hydrocarbon emissions. Class names are listed in column 1 and emission rates in 1000-mole/year are provided in column 2. These first two columns contain all of the data that is provided in the 5.2 inventory tables in Appendix A and in the body of the 1980 inventory report. The remaining columns illustrate the types of errors which can arise when one attempts to convert aggregated hydrocarbon data back from units of 1000-mole/year to units of tons/year. Molecular weights are listed in column 3. All of the molecular weight values were obtained from Table E-5. This would normally be the only source of information for molecular weights. For a great many of the six-digit SCC codes and for all of the other types of listings (e.g., by state, province, region or country) the multiple species profiles prevent one from back-calculating the weight percentage contributions to each of the six multi-component classes. Thus, for aldehydes, alkanes, alkenes, aromatics and organic acids, we have selected Table E-5 average molecular weight values of 72.61, 121.79, 80.41, 126.14 and 122.09. From Table E-6, it is clear that the actual values for SCC code 301999 were not equal to the average values from Table E-5. Column 4 of Table E-7 provides the known emission rates (in tons/year) from Table E-6. Column 5 of Table E-7 lists the calculated emission rates in tons per year. The values were calculated as (1000-mole/year, column 2) * (molecular weight, column 3) / (conversion factor, i.e., 907.2 kg/1000-mole). The final column in Table E-7 shows the errors which occur when average molecular weights for multi-component classes are used to convert from 5.2 inventory emission rates in 1000-moles/year to emission rates in tons/year.

Table E-7 shows that for single-component hydrocarbon classes, no calculation error is introduced when the 5.2 inventory emission rates are converted from units of 1000-moles/year to units of tons/year. Note however that for the multicomponent hydrocarbon classes, errors can range from insignificant to quite large:

Class	Error
aldehydes	1 %
alkanes	158 %
alkenes	40 %
aromatics	26 %
organic acids	-47 %
calculated THC	50 %

The sources of these calculation errors can be assessed for each class. For example, the (weighted) average molecular weight of alkanes in SCC code 301999 was 47.26, i.e., the number of tons/year (56,430) divided by the number of moles/year (1,083,337,000) yields a molecular weight of 0.000052089 tons/mole which is equal to 47.26 kg/1000-mole or 47.26 g/mole. On the other hand, the grand average of all the alkane molecular weights in Table 3-5 is 121.79. The ratio of these two molecular weight values (121.79/47.26) is 2.58 which leads to the 158 % calculation error. For certain 6-digit SCC aggregations (such as 301999) which use only a single speciation profile, it is possible to calculate the correct weighted molecular weight values and perform a proper conversion between sets of units for emission rates. However, for 6-digit SCC codes using more than one profile this is not possible; similarly for other groupings (by state, by province, by region and by country) it is not possible to back-calculate the required data.

It is possible to calculate the maximum potential errors which can be introduced by converting from 1000-moles/year to tons/year. The maximum possible errors can be determined by comparing the smallest and largest molecular weight values to the average value for each multi-component class:

class	maximum error			SCC 301999 error
aldehydes	- 1 %	to	+ 1 %	+ 1 %
alkanes	- 79 %	to	+ 368 %	+ 158 %
alkenes	- 51 %	to	+ 106 %	+ 40 %
aromatics	- 45 %	to	+ 81 %	+ 26 %
ketones	- 26 %	to	+ 35 %	
organic acids	- 47 %	to	+ 88 %	- 47 %

For a particular SCC code these errors are possible. For aldehydes and organic acids, the SCC 301999 observed errors were equal to the maximum possible errors. For alkanes, alkenes and aromatics, the SCC 301999 observed errors were approximately equal to one-third of the maximum possible error. For THC calculated from the aggregated 5.2 inventory parameters in Table E-7, the net error was + 50 % relative to the 5.0 inventory value.

In summary, it is advised that readers not attempt to convert 5.2 inventory multi-component hydrocarbon class data from units of 1000-moles/year to tons/year using molecular weight averages, as large errors can result. The original intent of the 1980 inventory was to provide basic data to modelers and their preferred units are moles of hydrocarbons, not tons. For economic reasons, it was determined that many of the more than 150 hydrocarbon species would have to be aggregated into multi-component classes. This aggregation process has resulted in a loss of information which prevents direct interconversion of emission rates between various sets of units.

TABLE E-1. SCC/PROFILE ASSIGNMENTS FOR U.S. AREA SOURCES, 1980 NAPAP INVENTORY VERSION 5.2

001	R0001
002	R0001
003	K0002
004	K0001
005	K0003
006	R0001
007	R0001
008	R0001
009	K0002
010	K0001
011	K0003
012	R0001
013	R0001
014	R0001
015	R0001
016	K0002
017	K0001
018	K0003
019	R0001
020	K0004
021	C0051
022	C0051
023	C0051
024	K0121
025	K0121
026	K0121
027	X0002
028	X0002
029	X0002
030	X0002
031	X0002
032	X0002
033	X0002
034	X0002
035	X0002
036	X0002
037	X0002
038	X0002
039	C0038
040	C0034
041	C0034
042	C0034
043	C0034
044	K0330
045	C0004
046	C0020
047	C0020
048	C0020
049	R0001
050	K0002
051	K0001
052	C0121
053	X0007
054	X0006
055	C0038
056	C0020
057	C0049
058	C0049
059	C0049
060	K0121
061	K0121
062	K0121
063	K0121
064	K0121
071	K0203
072	K0203
073	K0203
074	K0203
075	K0203
076	K0203
077	K0203
078	X0013
079	C0043
080	K0181
081	K0272
082	K0196
083	K0280
084	K0196
085	K0149
086	K0196
087	K0196
088	K0148
089	K0157
090	K0196
091	K0196
092	K0196
093	X0007
094	X0007
095	K0197
096	R0001
097	K0001
098	K0003
099	C0015

TABLE E-2. SCC/PROFILE ASSIGNMENTS FOR CANADIAN AREA SOURCES, 1980 NAPAP INVENTORY VERSION 5.2

10101	X0002
10102	X0002
10103	X0002
10104	X0002
10105	X0002
10106	X0002
10201	C0020
10202	C0020
10203	C0020
10204	C0020
10206	C0020
10207	C0020
10208	C0020
10210	C0020
10211	C0020
10213	C0020
10214	C0004
10215	C0121
10217	K0002
10218	K0002
10220	K0001
10221	K0001
10301	C0038
10501	K0121
10601	K0121
10701	K0121
10801	K0203
11201	C0043
11301	C0031
11401	R0001
11402	R0001
11403	R0001
11404	X0002
11501	C0025
11502	C0025
11503	C0025
11504	C0025
11702	K0002
11703	K0009
11704	K0001
11705	K0009
11706	K0003
11711	R0001
11711	R0001
11712	K0002
11713	K0002
11714	K0003
11715	K0003
11716	K0001
11721	R0001
11722	K0002
11723	K0002
11724	K0003
11725	K0003
11726	K0001
11731	R0001
11732	K0002
11733	K0002
11734	K0003
11735	K0003
11736	K0001
11740	R0001
11801	K0003
12001	K0025
12002	K0024
12101	C0031
12102	C0031
12103	C0031
12104	C0031
12111	C0031
12112	C0031
12113	C0031
12114	C0031
12115	C0031
12116	C0031
12117	C0031
12121	C0031
12501	C0031
12502	C0031
12601	C0032
12602	C0032
12603	C0032
12604	C0032
12605	C0032
12606	C0032
12613	C0032
12614	C0032
12615	C0032
12623	C0032
12624	C0032
12625	C0032
12626	C0032
12641	C0032
12642	C0032
12643	C0032
12644	C0032
12701	K0003
12702	K0003
12703	K0003
12704	K0003
12705	K0003
12801	C0051
12802	C0051
12803	C0051
12901	X0006
12902	X0006
12903	X0006
12904	X0006
12905	X0006
12906	X0006
12907	X0006
13001	K0096
13002	K0196
13101	C0117
13201	C0085
13202	C0085
13203	C0085
13204	C0085
13204	C0085
13205	C0085
13701	C0038
13702	C0038
13702	C0038
13703	C0038
13704	C0038
13705	C0038
13705	C0038
13706	C0038
13901	K0025
13902	K0025
14001	C0025
14101	K0296
14102	K0296
14201	C0031
14201	C0031
14202	C0031
14202	C0031
14203	C0031
14204	C0031
14205	C0031
14401	C0031
14501	K0076
14601	C0034
14602	C0034
14603	C0034
14604	C0034
14701	C0015
14801	C0049
14802	C0049
14901	C0049
15001	C0049
15002	C0049
15003	C0049
15004	C0049
15005	C0049
15101	X0007
15201	X0002
15202	X0002

TABLE E-3. SCC/PROFILE ASSIGNMENTS FOR U.S. AND CANADIAN POINT SOURCES, 1980 NAPAP INVENTORY VERSION 5.2

10100101	R0001	10200503	K0002	10500102	K0002
10100102	R0001	10200504	K0002	10500105	K0002
10100201	R0001	10200601	K0003	10500106	K0003
10100202	R0001	10200602	K0003	10500110	K0003
10100203	R0001	10200603	K0003	10500202	K0002
10100204	R0001	10200701	K0004	10500205	K0002
10100205	R0001	10200702	K0004	10500501	K0002
10100209	R0001	10200704	K0004	10500601	K0003
10100212	R0001	10200705	K0004	19999999	C0049
10100221	R0001	10200707	K0005	20100101	K0009
10100222	R0001	10200708	K0005	20100102	K0009
10100223	R0001	10200799	K0004	20100201	K0007
10100224	R0001	10200802	R0001	20100202	K0010
10100226	R0001	10200804	R0001	20100301	K0008
10100299	R0001	10200901	R0001	20100302	K0008
10100301	R0001	10200902	R0001	20100501	K0008
10100302	R0001	10200903	R0001	20100901	K0008
10100303	R0001	10201002	K0003	20100902	K0008
10100306	R0001	10201101	C0035	20200101	K0009
10100401	K0001	10201201	R0001	20200102	K0009
10100402	K0001	10201301	K0002	20200201	K0007
10100404	K0001	10201302	K0002	20200202	K0010
10100501	K0002	10201404	K0029	20200301	K0009
10100504	K0002	10299997	K0003	20200401	K0009
10100505	K0002	10299998	K0003	20300101	K0009
10100601	K0003	10300101	R0001	20300201	K0010
10100602	K0003	10300102	R0001	20400101	K0010
10100604	K0003	10300205	R0001	20400401	K0009
10100702	K0004	10300206	R0001	20400402	K0008
10100801	R0001	10300207	R0001	20400499	C0081
10100901	K0001	10300208	R0001	29999999	K0008
10100902	K0001	10300209	R0001	30100101	K0071
10100903	K0003	10300210	R0001	30100103	K0079
10200101	K0003	10300211	R0001	30100104	C0035
10200104	R0001	10300212	R0001	30100106	C0015
10200107	R0001	10300213	R0001	30100305	C0035
10200201	R0001	10300214	R0001	30100306	C0035
10200202	R0001	10300224	R0001	30100307	C0035
10200203	R0001	10300225	R0001	30100308	C0035
10200204	R0001	10300299	R0001	30100309	C0035
10200205	R0001	10300305	R0001	30100399	K0079
10200206	R0001	10300307	R0001	30100502	C0035
10200208	R0001	10300309	R0001	30100503	K0079
10200209	R0001	10300401	K0001	30100504	K0079
10200210	R0001	10300402	K0001	30100505	C0015
10200211	R0001	10300403	K0001	30100507	C0035
10200212	R0001	10300404	K0001	30100509	C0035
10200213	R0001	10300501	K0002	30100599	K0079
10200214	R0001	10300502	K0002	30100601	K0079
10200225	R0001	10300503	K0002	30100699	K0079
10200299	R0001	10300504	K0002	30100701	C0015
10200301	R0001	10300601	K0003	30100799	K0079
10200302	R0001	10300602	K0003	30100801	C0035
10200304	R0001	10300603	K0003	30100802	C0035
10200306	R0001	10300901	R0001	30100899	C0035
10200401	K0001	10300902	R0001	30100901	K0079
10200402	K0001	10300903	R0001	30100902	K0079
10200403	K0001	10301201	K0003	30100910	K0079
10200404	K0001	10301302	K0002	30100999	K0079
10200501	K0002	10301303	K0002	30101011	C0035
10200502	K0002	10390006	C0035	30101013	C0035
		10399997	C0049	30101015	C0035

TABLE E-3 (continued)

30101099	C0035
30101101	K0025
30101199	C0015
30101202	C0035
30101203	C0035
30101301	K0079
30101302	K0079
30101303	C0035
30101304	C0035
30101399	K0079
30101401	K0066
30101402	K0066
30101499	K0066
30101501	K0066
30101502	K0066
30101503	K0066
30101505	K0066
30101599	K0066
30101601	C0035
30101602	C0035
30101612	C0015
30101699	C0035
30101702	K0079
30101704	C0035
30101722	C0049
30101799	C0049
30101800	K0067
30101801	K0067
30101802	K0068
30101803	C0015
30101805	C0015
30101807	C0015
30101812	C0015
30101817	C0035
30101822	C0035
30101827	C0015
30101838	C0015
30101839	C0015
30101840	C0015
30101847	C0035
30101891	C0015
30101892	C0035
30101893	C0035
30101899	C0015
30101901	K0276
30101902	K0276
30101903	K0071
30101904	K0276
30101905	C0035
30101906	C0035
30101907	C0035
30102005	K0072
30102099	K0072
30102102	C0035
30102110	C0035
30102111	C0035
30102113	K0025
30102199	C0049
30102201	C0035
30102301	C0015
30102306	C0049
30102308	C0035
30102310	C0035
30102312	C0035
30102314	C0035
30102318	C0035
30102321	C0035
30102399	C0015
30102401	K0067
30102402	K0068
30102406	K0079
30102410	K0274
30102414	K0068
30102415	C0035
30102499	K0274
30102501	C0015
30102505	C0015
30102599	C0015
30102601	K0272
30102602	K0272
30102608	K0272
30102615	C0035
30102620	K0272
30102624	C0035
30102625	C0035
30102630	C0035
30102699	K0272
30102701	C0049
30102704	C0035
30102705	C0035
30102706	C0049
30102709	C0035
30102711	C0035
30102712	C0035
30102713	C0035
30102717	C0035
30102718	C0035
30102721	C0035
30102722	C0035
30102723	C0035
30102727	C0035
30102728	C0035
30102801	C0049
30102905	C0035
30102906	K0025
30102908	C0035
30103001	C0035
30103002	C0049
30103003	C0035
30103099	C0049
30103101	C0035
30103199	C0035
30103201	C0017
30103202	C0017
30103203	C0035
30103204	C0035
30103299	C0035
30103301	C0024
30103399	C0024
30103401	C0015
30103402	C0035
30103410	C0015
30103415	C0035
30103499	C0015
30103501	K0025
30103550	C0049
30103599	K0079
30103601	C0017
30103999	C0017
30104001	C0049
30104002	C0049
30104003	C0049
30104004	C0049
30104006	C0035
30104101	C0015
30104102	C0035
30104104	C0015
30104199	C0015
30104201	C0035
30104202	C0035
30104203	C0035
30104204	C0035
30105001	C0015
30106001	C0015
30106002	C0015
30106003	C0035
30106004	C0015
30106005	C0015
30106006	C0015
30106007	C0015
30106009	C0015
30106010	C0015
30106099	C0015
30109099	C0015
30109101	C0035
30109199	C0035
30110001	C0017
30110002	C0035
30110099	C0017
30111001	C0017
30111102	K0079
30111199	K0079
30112001	K0002
30112002	K0002
30112011	C0035
30112021	C0035
30112099	C0035
30112501	K0078
30112502	K0078
30112520	C0035
30112530	C0035
30112599	K0078
30113001	C0017
30113004	K0025
30113210	C0035
30113299	C0015
30113799	C0015
30115601	C0035
30115701	C0015
30116799	C0035
30116901	C0035
30117401	C0015
30118101	C0035
30119701	C0035
30119705	C0035
30119710	C0035

TABLE E-3 (continued)

30119799	C0035
30120201	C0035
30120601	C0035
30125001	K0291
30125005	C0035
30125015	C0035
30125020	C0035
30125099	K0079
30125101	C0035
30125301	C0035
30125405	C0035
30125801	K0287
30125810	K0223
30125815	C0035
30125899	C0015
30128501	C0015
30130001	C0015
30181001	C0015
30182001	C0035
30183001	C0049
30188801	C0015
30188802	C0035
30188803	C0035
30188804	C0035
30188805	C0035
30190099	K0079
30199999	K0079
30200101	C0035
30200102	K0211
30200103	K0211
30200104	K0211
30200199	K0211
30200201	K0211
30200202	K0211
30200203	K0211
30200299	K0211
30200301	K0211
30200401	K0211
30200402	K0211
30200403	K0211
30200404	K0211
30200410	K0211
30200499	C0035
30200501	C0032
30200502	C0035
30200503	K0211
30200504	C0032
30200505	C0032
30200506	C0032
30200507	K0211
30200508	K0211
30200509	K0211
30200601	C0035
30200602	C0035
30200603	C0032
30200604	C0032
30200605	K0211
30200606	C0032
30200607	K0211
30200608	K0211
30200699	C0035
30200701	C0032
30200702	C0032
30200703	K0211
30200704	K0211
30200705	C0032
30200711	K0211
30200713	K0211
30200730	C0035
30200731	K0211
30200732	C0032
30200733	K0211
30200734	C0032
30200742	K0211
30200743	C0032
30200744	C0032
30200745	K0211
30200752	K0211
30200754	C0032
30200755	C0032
30200756	K0211
30200760	C0032
30200781	K0211
30200782	K0211
30200784	K0211
30200789	K0211
30200790	K0211
30200799	C0035
30200801	C0035
30200802	C0032
30200803	C0032
30200804	C0032
30200805	C0032
30200806	C0032
30200899	C0035
30200901	C0032
30200902	C0032
30200903	K0211
30200998	K0211
30200999	K0211
30201001	C0032
30201002	K0211
30201003	K0211
30201201	C0032
30201203	K0211
30201299	C0032
30201301	R0001
30201401	K0211
30201501	K0211
30201599	K0211
30201601	K0211
30201799	K0211
30201899	C0032
30201901	C0032
30201902	C0032
30201903	C0032
30201999	C0032
30202001	C0035
30202002	C0035
30202601	K0211
30203001	K0211
30203099	C0032
30203103	K0211
30203104	C0032
30203105	C0032
30203106	C0032
30203109	K0211
30203299	C0032
30203399	C0035
30203601	C0032
30288801	C0032
30288804	C0035
30299998	C0032
30299999	C0032
30300001	C0085
30300101	K0011
30300102	K0011
30300103	K0011
30300104	C0049
30300105	K0011
30300107	K0011
30300199	K0011
30300201	C0049
30300301	K0011
30300302	K0011
30300303	K0011
30300304	K0011
30300305	K0011
30300306	K0011
30300307	K0011
30300308	K0011
30300309	K0011
30300310	K0011
30300311	C0049
30300312	K0011
30300313	K0011
30300316	K0011
30300399	K0011
30300401	K0011
30300502	K0012
30300503	K0012
30300504	K0012
30300505	K0012
30300506	K0012
30300507	K0012
30300508	K0012
30300509	K0012
30300510	K0012
30300512	K0012
30300513	K0012
30300515	K0012
30300521	K0012
30300523	K0012
30300599	K0012
30300601	K0012
30300602	K0012
30300603	K0012
30300604	K0012
30300605	K0012
30300610	K0012
30300611	K0012
30300614	K0012
30300616	K0012
30300699	K0012
30300701	K0012
30300702	K0012

TABLE E-3 (continued)

30300801	K0012	30302402	C0031	30400503	K0079
30300802	K0012	30302404	C0031	30400506	K0079
30300803	K0013	30302411	C0031	30400507	K0079
30300805	K0012	30303002	C0085	30400509	K0079
30300807	K0012	30303003	K0011	30400699	K0025
30300808	K0012	30303005	K0011	30400701	C0085
30300809	K0012	30303009	C0085	30400702	C0085
30300811	K0012	30303012	K0011	30400703	C0085
30300812	K0012	30303051	C0031	30400704	C0085
30300813	K0013	30303099	C0035	30400705	C0085
30300814	K0012	30388801	K0012	30400706	C0085
30300815	K0012	30388802	C0035	30400707	C0085
30300817	K0012	30399999	C0085	30400708	C0085
30300823	K0012	30400101	C0086	30400709	C0085
30300824	K0012	30400102	C0086	30400710	C0085
30300825	K0012	30400103	C0086	30400715	C0085
30300899	C0085	30400104	C0086	30400799	C0085
30300901	K0306	30400106	C0086	30400802	C0086
30300903	K0016	30400107	C0086	30400805	C0086
30300904	K0016	30400108	C0086	30400806	C0086
30300906	K0016	30400109	C0086	30400824	C0086
30300908	K0012	30400110	C0086	30400899	C0086
30300910	K0016	30400111	C0086	30400999	C0035
30300911	K0016	30400120	C0086	30401001	C0086
30300912	K0016	30400150	C0086	30401099	C0086
30300913	K0016	30400199	C0086	30402002	K0079
30300914	K0016	30400204	C0035	30402004	K0079
30300915	K0016	30400212	C0086	30402099	K0079
30300916	K0016	30400215	C0086	30402201	C0086
30300917	K0016	30400217	C0086	30403499	C0035
30300918	K0306	30400219	C0086	30405001	C0086
30300919	K0306	30400223	C0086	30488801	C0035
30300920	K0306	30400224	C0086	30499999	C0086
30300922	C0085	30400230	C0086	30500101	K0021
30300923	K0306	30400238	C0086	30500102	K0022
30300924	K0306	30400299	C0086	30500104	K0022
30300931	K0306	30400301	C0085	30500105	K0022
30300932	K0306	30400302	C0085	30500199	K0024
30300933	K0306	30400303	C0085	30500201	K0025
30300934	C0085	30400304	C0085	30500202	K0025
30300935	C0085	30400315	C0085	30500203	K0025
30300999	C0085	30400320	C0085	30500204	K0025
30301001	K0013	30400325	C0085	30500205	K0025
30301002	C0085	30400330	C0085	30500206	K0025
30301004	K0016	30400331	C0085	30500207	K0025
30301005	C0085	30400340	C0085	30500208	K0025
30301016	K0013	30400350	C0085	30500299	K0025
30301017	K0013	30400351	C0085	30500301	C0031
30301024	K0013	30400352	C0085	30500302	C0031
30301099	C0035	30400353	C0085	30500303	C0031
30301199	C0035	30400360	C0085	30500304	K0025
30301201	C0035	30400399	C0085	30500305	K0025
30301301	C0031	30400401	C0086	30500308	C0031
30301401	C0035	30400402	C0086	30500309	C0031
30301403	C0035	30400403	C0086	30500311	K0025
30301499	C0035	30400404	C0086	30500312	K0002
30302301	C0031	30400407	C0086	30500313	R0001
30302302	C0031	30400408	C0086	30500314	K0025
30302304	C0031	30400409	C0086	30500315	K0002
30302310	C0031	30400499	C0086	30500316	R0001
30302312	C0031	30400501	K0079	30500399	C0031
30302314	C0031	30400502	K0079	30500401	C0035

TABLE E-3 (continued)

30500403	C0035
30500501	K0025
30500502	C0031
30500503	C0031
30500504	C0031
30500505	C0031
30500599	C0031
30500606	K0001
30500607	C0031
30500608	C0031
30500609	C0031
30500610	C0031
30500611	C0031
30500612	C0031
30500613	C0031
30500614	C0031
30500615	C0031
30500616	C0031
30500617	C0031
30500618	C0031
30500619	C0031
30500699	C0035
30500705	C0031
30500706	K0001
30500707	C0031
30500708	C0031
30500709	C0031
30500710	C0031
30500711	C0031
30500712	C0031
30500714	C0031
30500715	C0031
30500716	C0031
30500717	C0031
30500718	C0031
30500719	C0031
30500799	C0035
30500801	K0001
30500802	C0031
30500803	C0031
30500899	C0031
30500901	K0025
30500902	C0031
30500903	C0031
30500904	C0031
30500905	C0031
30500906	C0031
30500907	C0031
30500999	C0031
30501001	R0001
30501002	R0001
30501003	R0001
30501004	R0001
30501007	K0025
30501008	R0001
30501009	R0001
30501010	R0001
30501011	R0001
30501012	R0001
30501013	R0001
30501014	R0001
30501015	R0001
30501021	R0001
30501023	R0001
30501024	R0001
30501099	R0001
30501101	C0031
30501107	C0031
30501108	C0031
30501110	C0031
30501111	C0031
30501120	C0031
30501199	C0031
30501201	C0031
30501202	C0031
30501203	C0031
30501204	C0031
30501205	C0031
30501206	C0031
30501215	C0031
30501299	C0031
30501399	C0031
30501401	K0025
30501402	K0025
30501403	K0025
30501404	C0031
30501406	C0031
30501407	C0031
30501408	C0031
30501410	C0031
30501411	C0031
30501412	C0031
30501499	K0025
30501501	C0031
30501502	C0031
30501503	R0001
30501504	C0031
30501505	C0031
30501508	C0031
30501520	C0031
30501599	C0031
30501601	C0031
30501602	C0031
30501603	R0001
30501604	R0001
30501605	R0001
30501606	R0001
30501607	C0031
30501608	C0031
30501610	C0031
30501611	C0031
30501612	C0031
30501613	C0031
30501614	C0031
30501615	C0031
30501616	C0031
30501699	C0031
30501701	C0086
30501703	C0086
30501704	C0086
30501705	C0086
30501799	C0086
30501801	C0031
30501899	C0031
30501901	K0025
30501902	C0031
30501903	C0031
30501905	C0031
30501999	C0031
30502001	C0031
30502002	C0031
30502003	C0031
30502004	C0031
30502005	C0031
30502006	C0031
30502007	C0031
30502008	C0031
30502009	C0031
30502010	C0031
30502011	C0031
30502012	C0031
30502099	C0031
30502101	C0031
30502201	C0031
30502299	K0025
30502401	C0031
30502501	C0031
30502502	C0031
30502503	C0031
30502504	C0031
30502508	K0025
30502599	C0035
30502601	C0031
30502699	C0031
30503099	C0031
30503101	C0031
30503104	C0031
30503105	C0031
30503106	C0031
30503107	C0031
30503110	C0031
30503111	C0031
30503201	C0031
30503202	C0031
30503203	C0031
30503204	C0031
30503205	C0031
30503206	C0031
30503299	C0031
30504020	C0031
30504021	C0031
30504022	C0031
30504023	C0031
30504025	C0031
30504030	C0031
30504031	C0031
30504032	C0031
30504033	K0025
30504034	C0031
30504099	C0031
30510002	C0031
30510003	C0031
30510004	C0031
30510399	C0035
30588801	C0035
30599999	C0031

TABLE E-3 (continued)

30600101	K0001
30600102	K0003
30600103	K0001
30600104	K0003
30600105	K0003
30600201	K0029
30600301	K0029
30600401	K0079
30600402	K0053
30600501	K0031
30600502	K0031
30600503	K0031
30600504	K0031
30600505	K0031
30600506	K0031
30600602	K0031
30600603	K0029
30600701	K0035
30600702	K0035
30600801	K0316
30600802	K0047
30600803	K0321
30600804	K0039
30600805	K0031
30600806	K0029
30600807	K0029
30600901	K0051
30600999	K0051
30601001	C0035
30601101	K0053
30601201	K0029
30601401	K0025
30601613	K0029
30610001	C0035
30688801	K0316
30688802	K0079
30688803	C0035
30699898	K0316
30699998	K0316
30699999	K0316
30700101	C0025
30700103	C0025
30700104	C0025
30700105	C0025
30700106	K0025
30700107	C0025
30700108	C0025
30700110	C0025
30700199	C0025
30700203	C0025
30700211	C0025
30700212	C0025
30700221	C0025
30700222	C0025
30700223	C0025
30700232	C0025
30700233	C0025
30700234	C0025
30700299	C0025
30700301	C0025
30700302	C0025
30700401	C0025
30700402	C0025
30700499	C0025
30700501	C0025
30700599	C0025
30700701	C0025
30700702	C0025
30700703	C0025
30700799	C0025
30700804	C0025
30700806	C0025
30700898	C0025
30700899	C0025
30701199	K0096
30701399	C0025
30702099	C0025
30703001	C0025
30703002	C0025
30703099	C0025
30788801	C0025
30788802	C0025
30788803	C0025
30788804	C0025
30788805	C0025
30799999	C0025
30800101	K0272
30800102	K0274
30800105	K0274
30800106	K0273
30800107	K0274
30800108	K0272
30800197	K0079
30800198	K0272
30800199	K0274
30800699	K0272
30800799	C0025
30890246	K0274
30900001	C0005
30900199	C0086
30900201	C0005
30900202	C0005
30900205	C0005
30900299	C0005
30901001	C0005
30901099	C0005
30901102	C0005
30901103	C0005
30902099	C0086
30903001	C0005
30903002	C0005
30903003	C0005
30903004	C0035
30903005	C0005
30903099	C0005
30906001	C0035
30988801	C0005
30999999	K0060
31000199	C0035
31000201	K0004
31000202	K0004
31000203	K0004
31000205	K0079
31000299	K0079
31000404	K0004
31000414	K0004
31088805	K0079
32099199	K0060
32099998	C0090
32099999	K0060
33000101	K0060
33000102	K0060
33000103	K0060
33000104	K0060
33000199	K0060
33000201	K0096
33000202	K0096
33000203	K0096
33000298	K0096
33000299	K0096
33000399	K0060
33000499	C0035
39000199	R0001
39000201	R0001
39000203	R0001
39000299	R0001
39000402	K0001
39000403	K0001
39000408	K0001
39000489	C0035
39000499	K0001
39000501	K0002
39000502	K0002
39000503	K0002
39000589	C0035
39000599	K0002
39000602	K0003
39000603	K0003
39000605	C0035
39000608	K0003
39000689	C0035
39000690	K0003
39000699	K0003
39000701	K0217
39000702	K0217
39000789	C0035
39000797	K0217
39000798	K0217
39000799	K0217
39000801	R0001
39000899	C0035
39000999	C0035
39001099	K0003
39001299	C0035
39001399	C0035
39099997	K0003
39099999	K0003
39999998	C0035
39999999	K0003
40100101	K0085
40100102	K0086
40100103	K0085
40100104	K0086
40100105	K0088
40100199	K0085
40100201	K0086

TABLE E-3 (continued)

40100202	K0087
40100203	K0085
40100204	K0275
40100205	K0271
40100206	K0090
40100207	K0088
40100225	K0271
40100299	K0087
40100303	K0271
40100306	K0271
40100399	C0035
40188801	K0088
40188802	C0035
40188898	K0085
40191302	C0026
40191303	K0085
40191304	C0026
40199999	K0090
40200101	K0125
40200102	K0125
40200103	K0125
40200110	K0125
40200199	K0125
40200201	C0111
40200205	C0111
40200210	C0110
40200299	C0111
40200301	K0127
40200310	K0127
40200399	K0127
40200401	K0148
40200402	K0147
40200403	K0148
40200406	K0148
40200410	K0147
40200499	K0147
40200501	K0156
40200502	K0156
40200503	K0156
40200504	K0156
40200505	K0156
40200510	K0156
40200599	K0156
40200601	K0134
40200603	K0134
40200604	K0134
40200610	K0134
40200699	K0134
40200701	K0141
40200705	K0141
40200706	K0141
40200710	K0141
40200799	K0141
40200801	K0092
40200802	K0092
40200803	K0092
40200810	K0092
40200821	K0092
40200898	K0092
40200899	K0162
40200901	K0096
40200902	K0219
40200903	K0288
40200904	K0289
40200905	K0096
40200906	K0290
40200907	K0222
40200908	K0292
40200909	K0220
40200910	K0226
40200911	K0038
40200912	K0227
40200913	K0228
40200914	C0035
40200915	K0229
40200916	X0012
40200917	K0291
40200918	K0221
40200919	X0005
40200920	K0283
40200921	K0282
40200922	K0090
40200923	C0035
40200924	K0223
40200925	K0287
40200998	K0096
40201001	K0220
40201004	C0035
40201101	K0096
40201103	K0096
40201301	K0096
40201399	K0149
40201437	C0035
40201601	K0134
40201606	K0096
40201632	C0035
40201702	K0096
40201705	K0096
40201721	K0096
40201722	K0096
40201723	K0096
40201725	K0096
40201726	K0333
40201727	K0127
40201728	K0127
40201799	K0096
40201801	K0134
40201806	K0096
40201901	K0157
40201999	C0035
40202001	X0010
40202031	C0035
40202101	K0096
40202103	K0096
40202106	K0096
40202107	K0096
40202108	K0096
40202109	K0096
40202199	K0096
40202201	C0035
40202205	C0035
40202301	K0134
40202306	K0096
40202401	K0134
40202406	K0096
40202499	C0035
40202501	K0096
40202502	K0096
40202532	K0096
40202535	K0096
40202599	K0096
40288801	K0096
40290101	K0096
40290104	K0096
40290106	K0096
40290302	C0044
40290304	K0096
40290305	C0044
40290306	C0044
40290404	C0044
40290601	K0096
40290603	C0044
40290604	K0096
40290701	K0096
40290702	C0044
40290703	C0044
40290806	C0044
40290809	C0044
40299998	K0294
40299999	K0293
40300002	K0098
40300101	K0098
40300102	K0296
40300103	K0098
40300104	K0297
40300105	K0100
40300106	K0100
40300107	K0100
40300108	K0298
40300109	C0035
40300111	K0301
40300112	K0230
40300115	C0035
40300116	K0185
40300150	K0100
40300151	K0100
40300152	K0100
40300153	K0298
40300154	C0035
40300156	C0035
40300157	K0230
40300160	K0303
40300161	K0185
40300198	K0188
40300199	K0100
40300201	K0098
40300202	K0098
40300203	K0297
40300204	K0297
40300205	K0100
40300206	K0100
40300207	K0100
40300208	K0298
40300211	K0301
40300212	K0230
40300216	K0185

TABLE E-3 (continued)

40300299	K0100
40300302	K0098
40300304	K0100
40300305	C0091
40300306	K0298
40300310	C0094
40300312	K0231
40300398	C0091
40300399	K0232
40301001	K0098
40301002	K0098
40301003	K0098
40301004	K0098
40301007	K0098
40301008	K0098
40301009	K0098
40301010	K0297
40301011	K0297
40301012	K0297
40301013	K0098
40301014	K0303
40301015	K0100
40301016	K0100
40301017	K0100
40301018	K0100
40301019	K0100
40301020	K0100
40301021	K0100
40301097	K0098
40301099	K0098
40301101	K0098
40301102	K0098
40301103	K0098
40301104	K0098
40301105	K0098
40301106	K0098
40301107	K0098
40301108	K0098
40301109	K0098
40301110	K0098
40301111	K0100
40301112	K0100
40301113	K0100
40301115	C0091
40301117	K0297
40301120	C0091
40301151	K0098
40301197	K0098
40301198	K0098
40301199	K0098
40301201	K0098
40301202	K0098
40301203	K0098
40301204	K0100
40301206	K0100
40301299	K0098
40302001	C0091
40309103	K0098
40388801	C0091
40399999	K0100
40400101	K0098
40400102	K0098
40400103	K0098
40400104	K0098
40400105	K0098
40400107	K0098
40400108	K0098
40400109	K0098
40400110	K0098
40400111	K0098
40400112	K0098
40400113	K0098
40400114	K0098
40400115	K0098
40400116	K0098
40400118	K0098
40400119	K0098
40400120	K0098
40400153	K0098
40400156	K0098
40400161	K0098
40400199	K0098
40400201	K0098
40400202	K0098
40400204	K0098
40400205	K0098
40400207	K0098
40400209	K0098
40400210	K0098
40400212	K0098
40400250	K0098
40401199	K0098
40401999	K0098
40499999	K0098
40500101	K0334
40500199	K0334
40500201	K0334
40500202	K0100
40500203	K0283
40500299	K0166
40500301	K0172
40500303	K0290
40500304	K0226
40500305	K0227
40500306	K0172
40500307	K0282
40500311	K0172
40500401	C0035
40500411	C0035
40500499	K0333
40500501	K0181
40500503	K0220
40500506	K0221
40500507	K0221
40500510	K0096
40500511	K0181
40500598	K0182
40500599	K0182
40500601	X0012
40560101	C0113
40588801	C0113
40600101	K0100
40600104	K0098
40600105	K0098
40600126	K0098
40600127	K0098
40600129	K0098
40600130	K0098
40600131	K0098
40600132	K0297
40600133	K0100
40600134	K0100
40600135	K0100
40600136	K0098
40600137	K0297
40600138	K0100
40600139	K0100
40600140	K0100
40600141	K0098
40600143	K0100
40600144	K0098
40600146	K0100
40600147	K0098
40600148	K0297
40600149	K0100
40600151	K0098
40600197	C0010
40600198	C0010
40600199	C0010
40600231	K0098
40600232	K0098
40600233	K0098
40600234	K0098
40600236	K0098
40600238	K0098
40600239	K0098
40600240	K0098
40600241	K0098
40600242	K0098
40600243	K0297
40600244	K0100
40600245	K0098
40600246	K0100
40600248	K0297
40600249	K0100
40600250	K0098
40600251	K0100
40600253	K0305
40600255	K0100
40600298	C0035
40600299	C0035
40600301	K0098
40600302	K0098
40600303	K0098
40600305	K0098
40600306	K0098
40600307	K0098
40600399	K0098
40600401	K0098
40600402	K0098
40600403	K0098
40600499	K0098
40688801	K0098
40999999	K0098
49000105	X0003
49000199	X0003

TABLE E-3 (continued)

49000299	X0003
49099998	C0035
49099999	X0003
50100101	C0051
50100102	C0051
50100199	C0051
50100201	K0121
50100202	K0121
50100506	K0122
50100507	C0051
50100508	C0051
50100599	C0051
50190005	C0051
50190006	C0051
50190010	C0051
50199999	C0035
50200101	K0122
50200102	K0121
50200103	K0121
50200104	C0051
50200105	C0051
50200106	C0051
50200201	C0051
50200301	C0051
50200399	K0121
50200505	C0051
50200506	K0122
50200599	C0051
50290005	C0051
50290006	K0003
50290010	C0051
50300101	C0051
50300102	C0051
50300103	C0051
50300104	C0051
50300105	C0051
50300106	K0121
50300108	C0051
50300199	C0035
50300201	K0121
50300202	K0121
50300203	C0051
50300506	K0122
50300599	K0122
50300701	K0079
50390005	C0051
50390006	C0051
50390010	C0051
59999999	C0051
60199998	K0195

TABLE E-4. SPECIES/PROFILE ASSIGNMENTS, 1980 NAPAP INVENTORY VERSION 5.2

1:C0004	90.00	10.00	5.16	C0004	2
2:C0004	43201	1.96	16.04	METHANE-	13
3:C0004	43203	6.15	28.05	ETHYLENE	23
4:C0004	43205	1.71	42.08	PROPYLENE	33
5:C0004	43206	0.65	26.04	ACETYLENE	43
6:C0004	43215	0.89	56.12	ISOBUTYLENE	53
7:C0004	43224	3.79	70.14	1-PENTENE	63
8:C0004	43232	0.23	100.21	N-HEPTANE	73
9:C0004	43235	1.30	128.26	N-NONANE	83
10:C0004	43238	1.93	142.29	N-DECANE	93
11:C0004	43241	4.06	156.32	N-UNDECANE	103
12:C0004	43255	7.32	170.34	N-DODECANE	113
13:C0004	43258	6.04	184.37	N-TRIDECANE	123
14:C0004	43259	6.50	198.40	N-TETRADECANE	133
15:C0004	43260	6.00	212.42	N-PENTADECANE	143
16:C0004	43281	5.37	226.45	N-HEXADECANE	153
17:C0004	43282	3.80	240.48	N-HEPTADECANE	163
18:C0004	43283	3.16	254.51	N-OCTADECANE	173
19:C0004	43284	2.43	268.53	N-NONADECANE	183
20:C0004	43285	2.55	282.56	N-EICOSANE	193
21:C0004	43286	1.34	296.59	N-HENEICOSANE	203
22:C0004	43287	0.70	310.61	N-DOCOSANE	213
23:C0004	43502	5.16	30.03	FORMALDEHYDE	223
24:C0004	43503	14.80	44.05	ACETALDEHYDE	233
25:C0004	45202	0.21	92.15	TOLUENE	243
26:C0004	45207	0.27	120.19	1,3,5-TRIMETHYLBENZENE	253
27:C0004	45221	11.42	118.15	A-METHYLSTYRENE	263
28:C0005	00.00	00.00	09.36	C0005	2
29:C0005	43105	.42	86.18	ISOMERS OF HEXANE	13
30:C0005	43106	.11	100.21	ISOMERS OF HEPTANE	23
31:C0005	43107	.20	114.23	ISOMERS OF OCTANE	33
32:C0005	43122	2.05	72.15	ISOMERS OF PENTANE	43
33:C0005	43201	27.77	16.04	METHANE	53
34:C0005	43202	.03	30.07	ETHANE	63
35:C0005	43204	1.30	44.09	PROPANE	73
36:C0005	43205	3.97	42.08	PROPYLENE	83
37:C0005	43206	.51	26.04	ACETYLENE	93
38:C0005	43212	2.59	58.12	N-BUTANE	103
39:C0005	43213	1.45	56.10	BUTENE	113
40:C0005	43214	.21	58.12	ISOBUTANE	123
41:C0005	43220	2.39	72.15	N-PENTANE	133
42:C0005	43224	4.04	70.14	1-PENTENE	143
43:C0005	43231	.47	86.18	N-HEXANE	153
44:C0005	43232	.01	100.21	N-HEPTANE	163
45:C0005	43248	.20	84.16	CYCLOHEXANE	173
46:C0005	43301	1.09	32.04	METHYL ALCOHOL	183
47:C0005	43302	.87	46.07	ETHYL ALCOHOL	193
48:C0005	43304	3.18	60.09	ISOPROPYL ALCOHOL	203
49:C0005	43305	4.56	74.12	N-BUTYL ALCOHOL	213
50:C0005	43502	9.36	30.03	FORMALDEHYDE	223
51:C0005	43551	13.14	58.08	ACETONE	233
52:C0005	43552	13.02	72.10	METHYL ETHYL KETONE	243
53:C0005	43560	5.17	100.16	METHYL ISOBUTYL KETONE	253
54:C0005	45101	.69	114.00	NAPHTHA	263
55:C0005	45201	.81	78.12	BENZENE	273
56:C0005	45202	.40	92.15	TOLUENE	283
57:C0010		00.03	C0010		2
58:C0010	43201	83.53	16.04	METHANE	13
59:C0010	43202	10.94	30.07	ETHANE	23

TABLE E-4 (continued)

60:C0010	43203	.03	28.05	ETHYLENE	33
61:C0010	43204	3.81	44.09	PROPANE	43
62:C0010	43212	.52	58.12	N-BUTANE	53
63:C0010	43214	.42	58.12	ISOBUTANE	63
64:C0010	43220	.10	72.15	N-PENTANE	73
65:C0010	43231	.10	86.18	N-HEXANE	83
66:C0010	43232	.10	100.21	N-HEPTANE	93
67:C0010	43248	.10	84.16	CYCLOHEXANE	103
68:C0010	43108	.03	128.26	ISOMERS OF NONANE	113
69:C0010	43109	.07	142.29	ISOMERS OF DECANE	123
70:C0010	43122	.10	72.15	ISOMERS OF PENTANE	133
71:C0010	43301	.01	32.04	METHYL ALCOHOL	143
72:C0010	43302	.01	46.07	ETHYL ALCOHOL	153
73:C0010	43304	.01	60.09	ISOPROPYL ALCOHOL	163
74:C0010	43502	.03	30.03	FORMALDEHYDE	173
75:C0010	43551	.02	58.08	ACETONE	183
76:C0010	43552	.02	72.10	METHYL ETHYL KETONE	193
77:C0010	43560	.01	100.16	METHYL ISOBUTYL KETONE	203
78:C0010	43817	.02	165.83	PERCHLOROETHYLENE	213
79:C0010	45102	.01	106.17	ISOMERS OF XYLENE	223
80:C0010	45202	.01	92.15	TOLUENE	233
81:C0015		00.48	C0015		2
82:C0015	43201	1.26	16.04	METHANE	13
83:C0015	43202	.47	30.07	ETHANE	23
84:C0015	43203	6.10	28.05	ETHYLENE	33
85:C0015	43205	3.75	42.08	PROPYLENE	43
86:C0015	43206	.28	26.04	ACETYLENE	53
87:C0015	43213	1.16	56.10	BUTENE	63
88:C0015	43231	7.61	86.18	N-HEXANE	73
89:C0015	43232	.22	100.21	N-HEPTANE	83
90:C0015	43233	.04	114.23	N-OCTANE	93
91:C0015	43105	.01	86.18	ISOMERS OF HEXANE	103
92:C0015	43106	.63	100.21	ISOMERS OF HEPTANE	113
93:C0015	43107	.06	114.23	ISOMERS OF OCTANE	123
94:C0015	43248	3.89	84.16	CYCLOHEXANE	133
95:C0015	43115	5.66	98.19	C-7 CYCLOPARAFFINS	143
96:C0015	43116	.76	112.23	C-8 CYCLOPARAFFINS	153
97:C0015	43118	1.47	114.00	MINERAL SPIRITS	163
98:C0015	43120	2.52	56.10	ISOMERS OF BUTENE	173
99:C0015	43301	1.59	32.04	METHYL ALCOHOL	183
100:C0015	43302	.44	46.07	ETHYL ALCOHOL	193
101:C0015	43304	.92	60.09	ISOPROPYL ALCOHOL	203
102:C0015	43305	.37	74.12	N-BUTYL ALCOHOL	213
103:C0015	43367	.42	62.07	GLYCOL ETHER	223
104:C0015	43368	.34	62.07	GLYCOL	233
105:C0015	43433	.52	88.10	ETHYL ACETATE	243
106:C0015	43435	.18	116.16	N-BUTYL ACETATE	253
107:C0015	43438	.23	100.11	ETHYL ACRYLATE	263
108:C0015	43444	.02	104.00	ISOPRORYL ACETATE	273
109:C0015	43502	.48	30.03	FORMALDEHYDE	283
110:C0015	43503	.20	44.05	ACETALEHYDE	293
111:C0015	43510	.23	72.12	BUTYRALDEHYDE	303
112:C0015	43551	21.45	58.08	ACETONE	313
113:C0015	43552	1.03	72.10	METHYL ETHYL KETONE	323
114:C0015	43560	.41	100.16	METHYL ISOBUTYL KETONE	333
115:C0015	43601	1.30	44.05	ETHYLENE OXIDE	343
116:C0015	43602	.40	58.08	PROPYLENE OXIDE	353
117:C0015	43704	.85	55.06	ACRYLONITRILE	363
118:C0015	43801	.25	50.49	METHYL CHLORIDE	373
119:C0015	43812	2.04	64.52	ETHYL CHLORIDE	383

TABLE E-4 (continued)

120:C0015	43815	7.00	99.00	ETHYLENE DICHLORIDE	393
121:C0015	43817	3.65	165.83	PERCHLOROETHYLENE	403
122:C0015	43819	.01	173.85	METHYLENE BROMIDE	413
123:C0015	43860	.58	62.50	VINYL CHLORIDE	423
124:C0015	45101	10.99	114.00	NAPTHA	433
125:C0015	45102	.82	106.17	ISOMERS OF XYLENE	443
126:C0015	45201	3.21	78.12	BENZENE	453
127:C0015	45202	2.33	92.15	TOLUENE	463
128:C0015	45220	.96	104.16	STYRENE	473
129:C0015	45106	.01	134.22	ISOMERS OF DIETHYLBENZENE	483
130:C0015	45300	.57	94.11	PHENOLS	493
131:C0015	45401	.37	230.00	XYLENE BASE ACIDS	503
132:C0017				C0017	2
133:C0017	43000	100.00	86.00	UNIDENTIFIED HYDROCARBONS	13
134:C0020	97.00	3.00	00.00	C0020	2
135:C0020	43202	1.86	30.07	ETHANE	13
136:C0020	43206	0.23	26.04	ACETYLENE	23
137:C0020	43235	24.98	128.26	N-NONANE	33
138:C0020	43290	19.87	113.24	C8 OLEFIN UNK	43
139:C0020	43513	11.35	29.00	ALDEHYDE	53
140:C0020	45102	15.04	106.17	ISOMERS OF XYLENE	63
141:C0020	45201	0.69	78.12	BENZENE	73
142:C0020	45215	4.75	134.22	TERT-BUTYLBENZENE	83
143:C0020	45104	15.97	120.19	ISOMERS OF ETHYLTOLUENE	93
144:C0020	45233	5.25	219.50	TRI/TETRAALKYL BENZENE	103
145:C0024			00.00	C0024	2
146:C0024	43204	1.80	44.09	PROPANE	13
147:C0024	43212	4.40	58.12	N-BUTANE	23
148:C0024	43214	1.40	58.12	ISOBUTANE	33
149:C0024	43220	3.20	72.15	N-PENTANE	43
150:C0024	43231	3.70	86.18	N-HEXANE	53
151:C0024	43105	8.10	86.18	ISOMERS OF HEXANE	63
152:C0024	43115	15.40	98.19	C-7 CYCLOPARAFFINS	73
153:C0024	43116	1.60	112.23	C-8 CYCLOPARAFFINS	83
154:C0024	43118	15.00	114.00	MINERAL SPIRITS	93
155:C0024	43122	3.10	72.15	ISOMERS OF PENTANE	103
156:C0024	43819	10.00	173.85	METHYLENE BROMIDE	113
157:C0024	45102	15.00	106.17	ISOMERS OF XYLENE	123
158:C0024	45201	12.30	78.12	BENZENE	133
159:C0024	45202	5.00	92.15	TOLUENE	143
160:C0025				C0025	2
161:C0025	43000	100.00	86.00	UNIDENTIFIED HYDROCARBONS	13
162:C0026			00.60	C0026	2
163:C0026	43214	5.30	58.12	ISOBUTANE	13
164:C0026	43302	36.90	46.07	ETHYL ALCOHOL	23
165:C0026	43304	38.50	60.09	ISOPROPYL ALCOHOL	33
166:C0026	43367	8.30	62.07	GLYCOL ETHER	43
167:C0026	43369	3.20	76.00	PROPYLENE GLYCOL	53
168:C0026	43435	1.30	116.16	N-BUTYL ACETATE	63
169:C0026	43502	.60	30.03	FORMALDEHYDE	73
170:C0026	43551	1.40	58.08	ACETONE	83
171:C0026	45101	4.50	114.00	NAPHTHA	93
172:C0031	95.00	5.00	00.42	C0031	2
173:C0031	43201	63.19	16.04	METHANE	13
174:C0031	43202	1.84	30.07	ETHANE	23
175:C0031	43203	1.55	28.05	ETHYLENE	33
176:C0031	43204	2.56	44.09	PROPANE	43
177:C0031	43205	1.41	42.08	PROPYLENE	53
178:C0031	43206	.05	26.04	ACETYLENE	63
179:C0031	43212	4.57	58.12	N-BUTANE	73

TABLE E-4 (continued)

180:C0031	43213	2.10	56.10	BUTENE	83
181:C0031	43214	4.31	58.12	ISOBUTANE	93
182:C0031	43220	2.75	72.15	N-PENTANE	103
183:C0031	43231	3.25	86.18	N-HEXANE	113
184:C0031	43232	.53	100.21	N-HEPTANE	123
185:C0031	43105	3.39	86.18	ISOMERS OF HEXANE	133
186:C0031	43106	.43	100.21	ISOMERS OF HEPTANE	143
187:C0031	43107	.06	114.23	ISOMERS OF OCTANE	153
188:C0031	43248	.03	84.16	CYCLOHEXANE	163
189:C0031	43115	1.32	98.19	C-7 CYCLOFARAFFINS	173
190:C0031	43122	2.29	72.15	ISOMERS OF PENTANE	183
191:C0031	43502	.42	30.03	FORMALDEHYDE	193
192:C0031	43552	.02	72.10	METHYL ETHYL KETONE	203
193:C0031	45101	.30	114.00	NAPTHA	213
194:C0031	45201	3.61	78.12	BENZENE	223
195:C0031	45202	.05	92.15	TOLUENE	233
196:C0032		00.11	C0032		2
197:C0032	43201	92.36	16.04	METHANE	13
198:C0032	43203	1.37	28.05	ETHYLENE	23
199:C0032	43204	.19	44.09	PROPANE	33
200:C0032	43205	.42	42.08	PROPYLENE	43
201:C0032	43206	.13	26.04	ACETYLENE	53
202:C0032	43212	.26	58.12	N-BUTANE	63
203:C0032	43213	.42	56.10	BUTENE	73
204:C0032	43214	.13	58.12	ISOBUTANE	83
205:C0032	43220	.22	72.15	N-PENTANE	93
206:C0032	43224	.42	70.14	1-PENTENE	103
207:C0032	43231	.98	86.18	N-HEXANE	113
208:C0032	43232	.98	100.21	N-HEPTANE	123
209:C0032	43233	.97	114.23	N-OCTANE	133
210:C0032	43105	.01	86.18	ISOMERS OF HEXANE	143
211:C0032	43248	.01	84.16	CYCLOHEXANE	153
212:C0032	43121	.83	70.14	ISOMERS OF PENTENE	163
213:C0032	43122	.12	72.15	ISOMERS OF PENTANE	173
214:C0032	43502	.11	30.03	FORMALDEHYDE	183
215:C0032	45201	.06	78.12	BENZENE	193
216:C0032	45202	.03	92.15	TOLUENE	203
217:C0034	90.00	10.00	05.26	C0034	2
218:C0034	43201	1.96	16.04	METHANE	13
219:C0034	43203	6.15	28.05	ETHYLENE	23
220:C0034	43205	1.71	42.08	PROPYLENE	33
221:C0034	43206	0.65	26.04	ACETYLENE	43
222:C0034	43215	0.89	56.12	ISOBUTYLENE	53
223:C0034	43224	3.79	70.14	1-PENTENE	63
224:C0034	43232	0.23	100.21	N-HEPTANE	73
225:C0034	43235	1.33	128.26	N-NONANE	83
226:C0034	43238	1.93	142.29	N-DECANE	93
227:C0034	43241	4.06	156.32	N-UNDECANE	103
228:C0034	43255	7.32	170.34	N-DODECANE	113
229:C0034	43258	6.04	184.36	N-TRIDECANE	123
230:C0034	43259	6.50	198.40	N-TETRADECANE	133
231:C0034	43260	6.00	212.42	N-PENTADECANE	143
232:C0034	43281	5.37	226.45	N-HEXADECANE	153
233:C0034	43282	3.80	240.48	N-HEPTADECANE	163
234:C0034	43283	3.16	254.51	N-OCTADECANE	173
235:C0034	43284	2.43	268.53	N-NONADECANE	183
236:C0034	43285	2.55	282.56	N-EICOSANE	193
237:C0034	43286	1.34	296.59	N-HENEICOSANE	203
238:C0034	43287	0.70	310.61	N-DOCOSANE	213
239:C0034	43502	5.16	30.03	FORMALDEHYDE	223

TABLE E-4 (continued)

240:C0034	43503	14.80	44.05	ACETALDEHYDE	233
241:C0034	45202	0.21	92.15	TOLUENE	243
242:C0034	45207	0.27	120.19	1,3,5-TRIMETHYLBENZENE	253
243:C0034	45221	11.65	118.15	A-METHYLSTYRENE	263
244:C0035				C0035	2
245:C0035	43000	100.00	86.00	UNIDENTIFIED HYDROCARBONS	13
246:C0038	90.00	10.00		C0038	2
247:C0038	43201	4.22	16.04	METHANE	13
248:C0038	43202	3.16	30.07	ETHANE	23
249:C0038	43203	4.75	28.05	ETHYLENE	33
250:C0038	43205	17.61	42.08	PROPYLENE	43
251:C0038	43206	5.77	26.04	ACETYLENE	53
252:C0038	43231	7.49	86.18	N-HEXANE	63
253:C0038	43232	31.99	100.21	N-HEPTANE	73
254:C0038	45201	2.66	78.12	BENZENE	83
255:C0038	45202	10.21	92.15	TOLUENE	93
256:C0038	45205	3.92	106.17	1,3 DIMETHYLBENZENE	103
257:C0038	45207	3.48	120.19	1,3,5-TRIMETHYLBENZENE	113
258:C0038	45212	4.44	120.19	M-ETHYLTOLUENE	123
259:C0038	45232	0.28	132.00	TETRAMETHYLBENZENE	133
260:C0040				C0040	2
261:C0040	43204	1.69	44.09	PROPANE	13
262:C0040	43212	18.76	58.12	N-BUTANE	23
263:C0040	43213	1.72	56.10	BUTENE	33
264:C0040	43214	6.25	58.12	ISOBUTANE	43
265:C0040	43220	10.22	72.15	N-PENTANE	53
266:C0040	43224	5.98	70.14	1-PENTENE	63
267:C0040	43231	2.58	86.18	N-HEXANE	73
268:C0040	43232	0.71	100.21	N-HEPTANE	83
269:C0040	43233	0.17	114.23	N-OCTANE	93
270:C0040	43235	0.04	128.26	N-NONANE	103
271:C0040	43105	8.90	86.18	ISOMERS OF HEXANE	113
272:C0040	43106	2.22	100.21	ISOMERS OF HEPTANE	123
273:C0040	43238	0.15	142.29	N-DECANE	133
274:C0040	43107	2.31	114.23	ISOMERS OF OCTANE	143
275:C0040	43248	2.19	84.16	CYCLOHEXANE	153
276:C0040	43108	0.26	128.26	ISOMERS OF NONANE	163
277:C0040	43115	0.25	98.19	C-7 CYCLOPARAFFINS	173
278:C0040	43122	27.76	72.15	ISOMERS OF PENTANE	183
279:C0040	45102	2.30	106.17	ISOMERS OF XYLENE	193
280:C0040	45201	1.18	78.12	BENZENE	203
281:C0040	45202	2.55	92.15	TOLUENE	213
282:C0040	45103	0.25	134.22	DIMETHYL ETHEL BENZENE	223
283:C0040	45104	0.86	120.19	ISOMERS OF ETHYLTOLUENE	233
284:C0040	45105	0.10	134.22	ISOMERS OF BUTYLBENZENE	243
285:C0040	45107	0.59	120.19	ISOMERS OF TRIMETHYLBENZENE	253
286:C0040	45108	0.02	120.19	ISOMERS OF PROPYLBENZENE	263
287:C0043				C0043	2
288:C0043	43107	0.58	114.23	ISOMERS OF OCTANE	13
289:C0043	43108	19.82	128.26	ISOMERS OF NONANE	23
290:C0043	43109	50.32	142.29	ISOMERS OF DECANE	33
291:C0043	43110	1.89	156.32	ISOMERS OF UNDECANE	43
292:C0043	43817	27.40	165.83	PERCHLOROETHYLENE	53
293:C0044				C0044	2
294:C0044	43201	66.50	16.04	METHANE	13
295:C0044	43202	5.00	30.07	ETHANE	23
296:C0044	43203	2.00	28.05	ETHYLENE	33
297:C0044	43204	3.10	44.09	PROPANE	43
298:C0044	43212	23.40	58.12	N-BUTANE	53
299:C0045				C0045	2

TABLE E-4 (continued)

300:C0045	43204		1.69	44.09	PROPANE		13
301:C0045	43212		18.76	58.12	N-BUTANE		23
302:C0045	43213		1.72	56.10	BUTENE		33
303:C0045	43214		6.25	58.12	ISOBUTANE		43
304:C0045	43220		10.22	72.15	N-PENTANE		53
305:C0045	43224		5.98	70.14	1-PENTENE		63
306:C0045	43231		2.58	86.18	N-HEXANE		73
307:C0045	43232		0.71	100.21	N-HEPTANE		83
308:C0045	43233		0.17	114.23	N-OCTANE		93
309:C0045	43235		0.04	128.26	N-NONANE		103
310:C0045	43105		8.90	86.18	ISOMERS OF HEXANE		113
311:C0045	43106		2.22	100.21	ISOMERS OF HEPTANE		123
312:C0045	43238		0.15	142.29	N-DECANE		133
313:C0045	43107		2.31	114.23	ISOMERS OF OCTANE		143
314:C0045	43248		2.19	84.16	CYCLOHEXANE		153
315:C0045	43108		0.26	128.26	ISOMERS OF NONANE		163
316:C0045	43115		0.25	98.19	C-7 CYCLOPARAFFINS		173
317:C0045	43122		27.76	72.15	ISOMERS OF PENTANE		183
318:C0045	45102		2.30	106.17	ISOMERS OF XYLENE		193
319:C0045	45201		1.18	78.12	BENZENE		203
320:C0045	45202		2.55	92.15	TOLUENE		213
321:C0045	45103		0.25	134.22	DIMETHYL ETHYL BENZENE		223
322:C0045	45104		0.86	120.19	ISOMERS OF ETHYLTOLUENE		233
323:C0045	45105		0.10	134.22	ISOMERS OF BUTYLBENZENE		243
324:C0045	45107		0.59	120.19	ISOMERS OF TRIMETHYLBENZENE		253
325:C0045	45108		0.02	120.19	ISOMERS OF PROPYLBENZENE		263
326:C0047					C0047		2
327:C0047	43107		0.80	114.23	ISOMERS OF OCTANE		13
328:C0047	43108		27.30	128.26	ISOMERS OF NONANE		23
329:C0047	43109		69.30	142.29	ISOMERS OF DECANE		33
330:C0047	43110		2.60	156.32	ISOMERS OF UNDECANE		43
331:C0049		95.00	5.00		C0049		2
332:C0049	43000		100.00	86.00	UNIDENTIFIED HYDROCARBONS		13
333:C0051		85.00	15.00	0.01	C0051		2
334:C0051	43201		79.54	16.04	METHANE		13
335:C0051	43202		0.84	30.07	ETHANE		23
336:C0051	43203		1.80	28.05	ETHYLENE		33
337:C0051	43204		0.74	44.09	PROPANE		43
338:C0051	43205		2.61	42.08	PROPYLENE		53
339:C0051	43206		3.53	26.04	ACETYLENE		63
340:C0051	43212		1.78	58.12	N-BUTANE		73
341:C0051	43213		0.04	56.10	BUTENE		83
342:C0051	43214		0.33	58.12	ISOBUTANE		93
343:C0051	43220		0.02	72.15	N-PENTANE		103
344:C0051	43224		0.04	70.14	1-PENTENE		113
345:C0051	43231		0.09	86.18	N-HEXANE		123
346:C0051	43232		0.09	100.21	N-HEPTANE		133
347:C0051	43233		0.09	114.23	N-OCTANE		143
348:C0051	43121		0.08	70.14	ISOMERS OF PENTENE		153
349:C0051	43122		0.01	72.15	ISOMERS OF PENTANE		163
350:C0051	43502		0.01	30.03	FORMALDEHYDE		173
351:C0051	43551		6.87	58.08	ACETONE		183
352:C0051	45201		1.49	78.12	BENZENE		193
353:C0081		94.00	6.00	01.81	C0081		2
354:C0081	43201		75.40	16.04	METHANE		13
355:C0081	43202		9.91	30.07	ETHANE		23
356:C0081	43203		.99	28.05	ETHYLENE		33
357:C0081	43204		9.91	44.09	PROPANE		43
358:C0081	43212		.99	58.12	N-BUTANE		53
359:C0081	43214		.99	58.12	ISOBUTANE		63

TABLE E-4 (continued)

360:C0081	43502	1.81	30.03	FORMALDEHYDE	73
361:C0085	85.00	15.00	00.06	C0085	2
362:C0085	43201	53.97	16.04	METHANE	13
363:C0085	43202	5.25	30.07	ETHANE	23
364:C0085	43203	18.00	28.05	ETHYLENE	33
365:C0085	43204	.58	44.09	PROPANE	34
366:C0085	43205	1.79	42.08	PROPYLENE	43
367:C0085	43206	1.46	26.04	ACETYLENE	53
368:C0085	43212	.07	58.12	N-BUTANE	63
369:C0085	43213	.63	56.10	BUTENE	73
370:C0085	43218	.30	54.09	1,3-BUTADIENE	83
371:C0085	43220	.04	72.15	N-PENTANE	93
372:C0085	43231	.26	86.18	N-HEXANE	103
373:C0085	43232	1.33	100.21	N-HEPTANE	113
374:C0085	43233	.03	114.23	N-OCTANE	123
375:C0085	43235	.01	128.26	N-NONANE	133
376:C0085	43105	.01	86.18	ISOMERS OF HEXANE	143
377:C0085	43248	.01	84.16	CYCLOHEXANE	153
378:C0085	43108	.01	128.26	ISOMERS OF NONANE	163
379:C0085	43116	.02	112.23	C-8 CYCLOPARAFFINS	173
380:C0085	43122	.07	72.15	ISOMERS OF PENTANE	183
381:C0085	43502	.06	30.03	FORMALDEHYDE	193
382:C0085	43822	2.60	93.19	TRIMETHYLFLUOROSILANE	203
383:C0085	45201	12.96	78.12	BENZENE	213
384:C0085	45202	.57	92.15	TOLUENE	223
385:C0086		17.96		C0086	2
386:C0086	43201	36.70	16.04	METHANE	13
387:C0086	43204	2.13	44.09	PROPANE	23
388:C0086	43212	7.61	58.12	N-BUTANE	33
389:C0086	43214	1.21	58.12	ISOBUTANE	43
390:C0086	43220	4.06	72.15	N-PENTANE	53
391:C0086	43231	4.97	86.18	N-HEXANE	63
392:C0086	43232	12.48	100.21	N-HEPTANE	73
393:C0086	43105	1.98	86.18	ISOMERS OF HEXANE	83
394:C0086	43106	.77	100.21	ISOMERS OF HEPTANE	93
395:C0086	43107	1.39	114.23	ISOMERS OF OCTANE	103
396:C0086	43248	.44	84.16	CYCLOHEXANE	113
397:C0086	43122	5.63	72.15	ISOMERS OF PENTANE	123
398:C0086	43502	17.96	30.03	FORMALDEHYDE	133
399:C0086	45201	1.78	78.12	BENZENE	143
400:C0086	45202	.89	92.15	TOLUENE	153
401:C0090		11.29		C0090	2
402:C0090	43105	1.03	86.18	ISOMERS OF HEXANE	13
403:C0090	43106	.48	100.21	ISOMERS OF HEPTANE	23
404:C0090	43107	.18	114.23	ISOMERS OF OCTANE	33
405:C0090	43108	.13	128.26	ISOMERS OF NONANE	43
406:C0090	43109	.09	142.29	ISOMERS OF DECANE	53
407:C0090	43115	.23	98.19	C-7 CYCLOPARAFFINS	63
408:C0090	43116	.06	112.23	C-8 CYCLOPARAFFINS	73
409:C0090	43117	.03	126.26	C-9 CYCLOPARAFFINS	83
410:C0090	43122	1.40	72.15	ISOMERS OF PENTANE	93
411:C0090	43201	9.05	16.04	METHANE	103
412:C0090	43202	14.96	30.07	ETHANE	113
413:C0090	43203	.13	28.05	ETHYLENE	123
414:C0090	43204	15.29	44.09	PROPANE	133
415:C0090	43205	11.90	42.08	PROPYLENE	143
416:C0090	43206	.01	26.04	ACETYLENE	153
417:C0090	43212	21.11	58.12	N-BUTANE	163
418:C0090	43213	.06	56.10	BUTENE	173
419:C0090	43214	4.73	58.12	ISOBUTANE	183

TABLE E-4 (continued)

420:C0090	43220	1.23	72.15	N-PENTANE	193
421:C0090	43231	1.73	86.18	N-HEXANE	203
422:C0090	43232	.23	100.21	N-HEPTANE	213
423:C0090	43233	.48	114.23	N-OCTANE	223
424:C0090	43235	.08	128.26	N-NONANE	233
425:C0090	43238	.06	142.29	N-DECANE	243
426:C0090	43248	.02	84.16	CYCLOHEXANE	253
427:C0090	43502	11.29	30.03	FORMALDEHYDE	263
428:C0090	43551	3.61	58.08	ACETONE	273
429:C0090	45102	.10	106.17	ISOMERS OF XYLENE	283
430:C0090	45201	.11	78.12	BENZENE	293
431:C0090	45202	.18	92.15	TOLUENE	303
432:C0091		00.05	C0091		2
433:C0091	43105	.83	86.18	ISOMERS OF HEXANE	13
434:C0091	43106	.39	100.21	ISOMERS OF HEPTANE	23
435:C0091	43107	1.08	114.23	ISOMERS OF OCTANE	33
436:C0091	43108	6.85	128.26	ISOMERS OF NONANE	43
437:C0091	43109	17.31	142.29	ISOMERS OF DECANE	53
438:C0091	43110	.64	156.32	ISOMERS OF UNDECANE	63
439:C0091	43115	.48	98.19	C-7 CYCLOPARAFFINS	73
440:C0091	43122	6.70	72.15	ISOMERS OF PENTANE	83
441:C0091	43201	1.74	16.04	METHANE	93
442:C0091	43202	.54	30.07	ETHANE	103
443:C0091	43203	.02	28.05	ETHYLENE	113
444:C0091	43204	1.27	44.09	PROPANE	123
445:C0091	43205	.01	42.08	PROPYLENE	133
446:C0091	43212	5.01	58.12	N-BUTANE	143
447:C0091	43213	.05	56.10	BUTENE	153
448:C0091	43214	2.02	58.12	ISOBUTANE	163
449:C0091	43220	3.52	72.15	N-PENTANE	173
450:C0091	43224	.17	70.14	1-PENTENE	183
451:C0091	43231	3.51	86.18	N-HEXANE	193
452:C0091	43232	.41	100.21	N-HEPTANE	203
453:C0091	43233	.18	114.23	N-OCTANE	213
454:C0091	43248	1.61	84.16	CYCLOHEXANE	223
455:C0091	43301	2.94	32.04	METHYL ALCOHOL	233
456:C0091	43302	3.24	46.07	ETHYL ALCOHOL	243
457:C0091	43304	3.38	60.09	ISOPROPYL ALCOHOL	253
458:C0091	43306	.30	74.12	ISOBUTYL ALCOHOL	263
459:C0091	43432	.04	74.08	METHYL ACETATE	273
460:C0091	43433	.49	88.10	ETHYL ACETATE	283
461:C0091	43502	.05	30.03	FORMALDEHYDE	293
462:C0091	43551	7.14	58.08	ACETONE	303
463:C0091	43552	6.68	72.10	METHYL ETHYL KETONE	313
464:C0091	43560	3.40	100.16	METHYL ISOBUTYL KETONE	323
465:C0091	43815	.05	99.00	ETHYLENE DICHLORIDE	333
466:C0091	43817	5.83	165.83	PERCHLOROETHYLENE	343
467:C0091	45104	.01	120.19	ISOMERS OF ETHYLTOLUENE	353
468:C0091	45201	1.67	78.12	BENZENE	363
469:C0091	45202	6.05	92.15	TOLUENE	373
470:C0091	45221	4.39	118.15	A-METHYLSTYRENE	383
471:C0091	45107	.01	120.19	ISOMERS OF TRIMETHYLBENZENE	393
472:C0094			C0094		2
473:C0094	43105	8.90	86.18	ISOMERS OF HEXANE	13
474:C0094	43106	2.00	100.21	ISOMERS OF HEPTANE	23
475:C0094	43107	1.90	114.23	ISOMERS OF OCTANE	33
476:C0094	43108	.20	128.26	ISOMERS OF NONANE	43
477:C0094	43115	.20	98.19	C-7 CYCLOPARAFFINS	53
478:C0094	43122	29.00	72.15	ISOMERS OF PENTANE	63
479:C0094	43204	1.80	44.09	PROPANE	73

TABLE E-4 (continued)

480:C0094	43212	19.80	58.12	N-BUTANE	83
481:C0094	43213	1.80	56.10	BUTENE	93
482:C0094	43214	6.60	58.12	ISOBUTANE	103
483:C0094	43220	10.60	72.15	N-PENTANE	113
484:C0094	43224	6.20	70.14	1-PENTENE	123
485:C0094	43231	2.50	86.18	N-HEXANE	133
486:C0094	43232	.60	100.21	N-HEPTANE	143
487:C0094	43233	.10	114.23	N-OCTANE	153
488:C0094	43248	2.10	84.16	CYCLOHEXANE	163
489:C0094	45102	1.60	106.17	ISOMERS OF XYLENE	173
490:C0094	45103	.40	134.22	DIMETHYLETHYLBENZENE	183
491:C0094	45104	.50	120.19	ISOMERS OF ETHYLTOLUENE	193
492:C0094	45201	1.10	78.12	BENZENE	203
493:C0094	45202	2.10	92.15	TOLUENE	213
494:C0101				C0101	2
495:C0101	43204	1.80	44.09	PROPANE	13
496:C0101	43212	19.80	58.12	N-BUTANE	23
497:C0101	43213	1.80	56.10	BUTENE	33
498:C0101	43214	6.60	58.12	ISOBUTANE	43
499:C0101	43220	10.60	72.15	N-PENTANE	53
500:C0101	43224	6.20	70.14	1-PENTENE	63
501:C0101	43231	2.50	86.18	N-HEXANE	73
502:C0101	43232	0.60	100.21	N-HEPTANE	83
503:C0101	43233	0.10	114.23	N-OCTANE	93
504:C0101	43105	8.90	86.18	ISOMERS OF HEXANE	103
505:C0101	43106	2.00	100.21	ISOMERS OF HEPTANE	113
506:C0101	43107	1.90	114.23	ISOMERS OF OCTANE	123
507:C0101	43248	2.10	84.16	CYCLOHEXANE	133
508:C0101	43108	0.20	128.26	ISOMERS OF NONANE	143
509:C0101	43115	0.20	98.19	C-7 CYCLOPARAFFINS	153
510:C0101	43122	29.00	72.15	ISOMERS OF PENTANE	163
511:C0101	45102	1.60	106.17	ISOMERS OF XYLENE	173
512:C0101	45201	1.10	78.12	BENZENE	183
513:C0101	45202	2.10	92.15	TOLUENE	193
514:C0101	45103	0.10	134.22	DIMETHYL ETHEL BENZENE	203
515:C0101	45104	0.50	120.19	ISOMERS OF ETHYLTOLUENE	213
516:C0101	45107	0.30	120.19	ISOMERS OF TRIMETHYLBENZENE	223
517:C0103				C0103	2
518:C0103	43201	2.54	16.04	METHANE	13
519:C0103	43202	0.63	30.07	ETHANE	23
520:C0103	43204	3.04	44.09	PROPANE	33
521:C0103	43212	8.52	58.12	N-BUTANE	43
522:C0103	43214	4.09	58.12	ISOBUTANE	53
523:C0103	43220	6.47	72.15	N-PENTANE	63
524:C0103	43231	3.74	86.18	N-HEXANE	73
525:C0103	43232	0.95	100.21	N-HEPTANE	83
526:C0103	43233	0.64	114.23	N-OCTANE	93
527:C0103	43105	1.90	86.18	ISOMERS OF HEXANE	103
528:C0103	43106	1.27	100.21	ISOMERS OF HEPTANE	113
529:C0103	43107	2.13	114.23	ISOMERS OF OCTANE	123
530:C0103	43248	0.63	84.16	CYCLOHEXANE	133
531:C0103	43108	6.62	128.26	ISOMERS OF NONANE	143
532:C0103	43109	16.06	142.29	ISOMERS OF DECANE	153
533:C0103	43110	0.58	156.32	ISOMERS OF UNDECANE	163
534:C0103	43122	5.59	72.15	ISOMERS OF PENTANE	173
535:C0103	43301	3.24	32.04	METHYL ALCOHOL	183
536:C0103	43302	3.24	46.07	ETHYL ALCOHOL	193
537:C0103	43304	3.29	60.09	ISOPROPYL ALCOHOL	203
538:C0103	43551	5.78	58.08	ACETONE	213
539:C0103	43552	5.78	72.10	METHYL ETHYL KETONE	223

TABLE E-4 (continued)

540:C0103	43560	2.98	100.16	METHYL ISOBUTYL KETONE	233
541:C0103	43817	5.78	165.83	PERCHLOROETHYLENE	243
542:C0103	45102	2.31	106.17	ISOMERS OF XYLENE	253
543:C0103	45202	2.31	92.15	TOLUENE	263
544:C0110				C0110	2
545:C0110	43231	20.70	86.18	N-HEXANE	13
546:C0110	43248	20.70	84.16	CYCLOHEXANE	23
547:C0110	43301	3.90	32.04	METHYL ALCOHOL	33
548:C0110	43302	.60	46.07	ETHYL ALCOHOL	43
549:C0110	43304	16.40	60.09	ISOPROPYL ALCOHOL	53
550:C0110	43305	1.60	74.12	N-BUTYL ALCOHOL	63
551:C0110	43306	.60	74.12	ISOBUTYL ALCOHOL	73
552:C0110	43369	.80	76.00	PROPYLENE GLYCOL	83
553:C0110	43370	.60	62.07	ETHYLENE GLYCOL	93
554:C0110	43435	2.50	116.16	N-BUTYL ACETATE	103
555:C0110	43443	1.30	90.00	CELLOSOLVE ACETATE	113
556:C0110	43446	1.50	116.16	ISOBUTYL ACETATE	123
557:C0110	43450	.50	73.09	DIMETHYLFORMAMIDE	133
558:C0110	43451	6.10	144.21	ISOBUTYL ISOBUTYRATE	143
559:C0110	43551	3.20	58.08	ACETONE	153
560:C0110	43552	5.60	72.10	METHYL ETHYL KETONE	163
561:C0110	43559	.70	100.16	METHYL N-BUTYL KETONE	173
562:C0110	43560	.60	100.16	METHYL ISOBUTYL KETONE	183
563:C0110	45102	2.60	106.17	ISOMERS OF XYLENE	193
564:C0110	45202	5.20	92.15	TOLUENE	203
565:C0110	45203	4.30	106.17	ETHYLBENZENE	213
566:C0111				C0111	2
567:C0111	43231	20.70	86.18	N-HEXANE	13
568:C0111	43248	20.70	84.16	CYCLOHEXANE	23
569:C0111	43301	3.90	32.04	METHYL ALCOHOL	33
570:C0111	43302	.60	46.07	ETHYL ALCOHOL	43
571:C0111	43304	16.40	60.09	ISOPROPYL ALCOHOL	53
572:C0111	43305	1.60	74.12	N-BUTYL ALCOHOL	63
573:C0111	43306	.60	74.12	ISOBUTYL ALCOHOL	73
574:C0111	43369	.80	76.00	PROPYLENE GLYCOL	83
575:C0111	43370	.60	62.07	ETHYLENE GLYCOL	93
576:C0111	43435	2.50	116.16	N-BUTYL ACETATE	103
577:C0111	43443	1.30	90.00	CELLOSOVE ACETATE	113
578:C0111	43446	1.50	116.16	ISOBUTYL ACETATE	123
579:C0111	43450	.50	73.09	DIMETHYLFORMAMIDE	133
580:C0111	43451	6.10	144.21	ISOBUTYLISOBUTYRATE	143
581:C0111	43551	3.20	58.08	ACETONE	153
582:C0111	43552	5.60	72.10	METHYL ETHYL KETONE	163
583:C0111	43559	.70	100.16	METHYL N-BUTYL KETONE	173
584:C0111	43560	.60	100.16	METHYL ISOBUTYL KETONE	183
585:C0111	45102	2.60	106.17	ISOMERS OF XYLENE	193
586:C0111	45202	5.20	92.15	TOLUENE	203
587:C0111	45203	4.30	106.17	ETHYLBENZENE	213
588:C0113			09.17	C0113	2
589:C0113	43201	38.66	16.04	METHANE	13
590:C0113	43202	8.20	30.07	ETHANE	23
591:C0113	43203	1.24	28.05	ETHYLENE	33
592:C0113	43204	2.87	44.09	PROPANE	43
593:C0113	43205	14.27	42.08	PROPYLENE	53
594:C0113	43212	8.45	58.12	N-BUTANE	63
595:C0113	43213	5.77	56.10	BUTENE	73
596:C0113	43214	1.37	58.12	ISOBUTANE	83
597:C0113	43224	5.01	70.14	1-PENTENE	93
598:C0113	43304	.11	60.09	ISOPROPYL ALCOHOL	103
599:C0113	43502	9.17	30.03	FORMALDEHYDE	113

TABLE E-4 (continued)

600:C0113	43802	4.89	84.94	DICHLOROMETHANE	123
601:C0116	85.00	15.00		C0116	2
602:C0116	43201	70.00	16.04	METHANE	13
603:C0116	43202	20.00	30.07	ETHANE	23
604:C0116	43302	2.00	46.07	ETHYL ALCOHOL	33
605:C0116	43304	2.00	60.09	ISOPROPYL ALCOHOL	43
606:C0116	43434	2.00	102.13	PROPYL ACETATE	53
607:C0116	43551	2.00	58.08	ACETONE	63
608:C0116	43721	1.00	45.09	ETHYLAMINE	73
609:C0116	43740	1.00	59.11	TRIMETHYLAMINE	83
610:C0117		00.00		C0117	2
611:C0117	43201	98.60	16.04	METHANE	13
612:C0117	43202	0.10	30.07	ETHANE	23
613:C0117	43204	0.10	44.09	PROPANE	33
614:C0117	43242	0.20	70.14	CYCLOPENTANE	43
615:C0117	43212	0.20	58.12	N-BUTANE	53
616:C0117	43214	0.10	58.12	ISO-BUTANE	63
617:C0117	43220	0.10	72.15	N-PENTANE	73
618:C0117	43123	0.10	136.23	TERPENES	83
619:C0117	43817	0.30	165.83	PERCHLOROETHYLENE	93
620:C0117	45102	0.10	106.17	ISOMERS OF XYLENE	103
621:C0117	45202	0.10	92.15	TOLUENE	113
622:C0120	97.00	3.00	00.12	C0120	2
623:C0120	43201	11.00	16.04	METHANE	13
624:C0120	43212	14.00	58.12	N-BUTANE	23
625:C0120	43231	5.00	86.18	N-HEXANE	33
626:C0120	43502	.12	30.03	FORMALDEHYDE	43
627:C0120	43551	28.00	58.08	ACETONE	53
628:C0121	95.00	5.00		C0121	2
629:C0121	43201	4.22	16.04	METHANE	13
630:C0121	43202	3.16	30.07	ETHANE	23
631:C0121	43203	4.75	28.05	ETHYLENE	33
632:C0121	43205	17.61	42.08	PROPYLENE	43
633:C0121	43206	5.77	26.04	ACETYLENE	53
634:C0121	43231	7.49	86.18	N-HEXANE	63
635:C0121	43232	31.99	100.21	N-HEPTANE	73
636:C0121	45201	2.66	78.12	BENZENE	83
637:C0121	45202	10.21	92.15	TOLUENE	93
638:C0121	45205	3.92	106.17	1,3 DIMETHYLBENZENE	103
639:C0121	45207	3.48	120.19	1,3,5-TRIMETHYLBENZENE	113
640:C0121	45212	4.44	120.19	M-ETHYLTOLUENE	123
641:C0121	45232	0.28	132.00	TETRAMETHYLBENZENE	133
642:K0001	98.00	2.00	42.00	101004	2
643:K0001	43212	14.00	58.12	N-BUTANE	13
644:K0001	43231	5.00	86.18	N-HEXANE	23
645:K0001	43502	42.00	30.03	FORMALDEHYDE	33
646:K0001	43551	28.00	58.08	ACETONE	43
647:K0001	43201	11.00	16.04	METHANE	53
648:K0002	98.00	2.00	48.70	101005	2
649:K0002	43105	5.20	86.18	ISOMERS OF HEXANE	13
650:K0002	43106	2.60	100.21	ISOMERS OF HEPTANE	23
651:K0002	43107	4.70	114.23	ISOMERS OF OCTANE	33
652:K0002	43122	5.50	72.15	ISOMERS OF PENTANE	43
653:K0002	43204	1.20	44.09	PROPANE	53
654:K0002	43212	12.20	58.12	N-BUTANE	63
655:K0002	43214	4.10	58.12	ISOBUTANE	73
656:K0002	43220	4.70	72.15	N-PENTANE	83
657:K0002	43231	10.80	86.18	N-HEXANE	93
658:K0002	43232	.30	100.21	N-HEPTANE	103
659:K0002	43502	48.70	30.03	FORMALDEHYDE	113

TABLE E-4 (continued)

660:K0003	95.00	5.00	8.00	101006		2
661:K0003	43105	1.00	86.18	ISOMERS OF HEXANE		13
662:K0003	43122	9.00	72.15	ISOMERS OF PENTANE		23
663:K0003	43204	4.00	44.09	PROPANE		33
664:K0003	43212	9.00	58.12	N-BUTANE		43
665:K0003	43220	6.00	72.15	N-PENTANE		53
666:K0003	43248	1.00	84.16	CYCLOHEXANE		63
667:K0003	45202	2.00	92.15	TOLUENE		73
668:K0003	43502	8.00	30.03	FORMALDEHYDE		83
669:K0003	43201	56.00	16.04	METHANE		93
670:K0003	45201	4.00	78.12	BENZENE		103
671:K0004	95.00	5.00	7.60	101007		2
672:K0004	43204	18.90	44.09	PROPANE		13
673:K0004	43212	23.10	58.12	N-BUTANE		23
674:K0004	43214	4.40	58.12	ISOBUTANE		33
675:K0004	43205	17.50	42.08	PROPYLENE		43
676:K0004	43502	7.60	30.03	FORMALDEHYDE		53
677:K0004	43201	7.60	16.04	METHANE		63
678:K0004	43202	20.90	30.07	ETHANE		73
679:K0005	97.00	3.00		102008		2
680:K0005	43203	11.70	28.05	ETHYLENE		13
681:K0005	43205	.30	42.08	PROPYLENE		23
682:K0005	43206	.80	26.04	ACETYLENE		33
683:K0005	43201	82.80	16.04	METHANE		43
684:K0005	43202	2.50	30.07	ETHANE		53
685:K0005	45201	1.90	78.12	BENZENE		63
686:K0007	94.00	6.00	30.00	201002		2
687:K0007	43502	30.00	30.03	FORMALDEHYDE		13
688:K0007	43201	70.00	16.04	METHANE		23
689:K0008	95.00	5.00	00.00	201003		2
690:K0008	43201	11.60	16.04	METHANE		13
691:K0008	43202	2.80	30.07	ETHANE		23
692:K0008	43203	28.70	28.05	ETHYLENE		33
693:K0008	43205	17.30	42.08	PROPYLENE		43
694:K0008	43206	11.30	26.04	ACETYLENE		53
695:K0008	43213	13.40	56.10	BUTENE		63
696:K0008	43218	7.00	54.09	1,3 BUTADIENE		73
697:K0008	45201	7.90	78.12	BENZENE		83
698:K0009	90.00	10.00		202001		2
699:K0009	43203	28.70	28.05	ETHYLENE		13
700:K0009	43205	17.30	42.08	PROPYLENE		23
701:K0009	43213	13.40	56.10	BUTENE		33
702:K0009	43218	7.00	54.09	1,3-BUTADIENE		43
703:K0009	43206	11.30	26.04	ACETYLENE		53
704:K0009	43201	11.60	16.04	METHANE		63
705:K0009	43202	2.80	30.07	ETHANE		73
706:K0009	45201	7.90	78.12	BENZENE		83
707:K0010	94.00	6.00	01.00	202002A		2
708:K0010	43204	10.00	44.09	PROPANE		13
709:K0010	43212	1.00	58.12	N-BUTANE		23
710:K0010	43214	1.00	58.12	ISOBUTANE		33
711:K0010	43203	1.00	28.05	ETHYLENE		43
712:K0010	43502	1.00	30.03	FORMALDEHYDE		53
713:K0010	43201	76.00	16.04	METHANE		63
714:K0010	43202	10.00	30.07	ETHANE		73
715:K0011	95.00	5.00	00.00	303003		2
716:K0011	43204	.50	44.09	PROPANE		13
717:K0011	43203	27.70	28.05	ETHYLENE		23
718:K0011	43205	1.90	42.08	PROPYLENE		33
719:K0011	43213	.10	56.10	BUTENE		43

TABLE E-4 (continued)

720:K0011	43218	.50	54.09	1,3-BUTADIENE	53
721:K0011	45202	.70	92.15	TOLUENE	63
722:K0011	43206	1.20	26.04	ACETYLENE	73
723:K0011	43201	45.30	16.04	METHANE	83
724:K0011	43202	8.00	30.07	ETHANE	93
725:K0011	45201	14.10	78.12	BENZENE	103
726:K0012	95.00	5.00	00.00	303008A	2
727:K0012	43822	84.20	93.19	TRIMETHYLFLUOROSILANE	13
728:K0012	43201	15.80	16.04	METHANE	23
729:K0013	95.00	5.00		303008B	2
730:K0013	43203	5.90	28.05	ETHYLENE	13
731:K0013	43205	3.00	42.08	PROPYLENE	23
732:K0013	43206	14.80	26.04	ACETYLENE	33
733:K0013	43201	73.30	16.04	METHANE	43
734:K0013	43202	3.00	30.07	ETHANE	53
735:K0016	95.00	5.00		303009C	2
736:K0016	43204	39.90	44.09	PROPANE	13
737:K0016	43822	49.00	93.19	TRIMETHYLFLUOROSILANE	23
738:K0016	43201	11.10	16.04	METHANE	33
739:K0021	00.00	00.00	02.50	305001A	2
740:K0021	43105	1.80	86.18	ISOMERS OF HEXANE	13
741:K0021	43106	3.60	100.21	ISOMERS OF HEPTANE	23
742:K0021	43231	1.80	86.18	N-HEXANE	33
743:K0021	43232	15.80	100.21	N-HEPTANE	43
744:K0021	43233	74.50	114.23	N-OCTANE	53
745:K0021	43502	2.50	30.03	FORMALDEHYDE	63
746:K0022	00.00	00.00	00.00	305001B	2
747:K0022	43105	12.00	86.18	ISOMERS OF HEXANE	13
748:K0022	43106	11.00	100.21	ISOMERS OF HEPTANE	23
749:K0022	43107	1.00	114.23	ISOMERS OF OCTANE	33
750:K0022	43204	13.00	44.09	PROPANE	43
751:K0022	43212	18.00	58.12	N-BUTANE	53
752:K0022	43214	8.00	58.12	ISOBUTANE	63
753:K0022	43220	18.00	72.15	N-PENTANE	73
754:K0022	43231	2.00	86.18	N-HEXANE	83
755:K0022	43232	14.00	100.21	N-HEPTANE	93
756:K0022	43203	2.00	28.05	ETHYLENE	103
757:K0022	43202	1.00	30.07	ETHANE	113
758:K0024	90.00	10.00	00.00	305001D	2
759:K0024	43105	3.40	86.18	ISOMERS OF HEXANE	13
760:K0024	43107	7.40	114.23	ISOMERS OF OCTANE	23
761:K0024	43115	2.90	98.19	C-7 CYCLOPARAFFINS	33
762:K0024	43116	.40	112.23	C-8 CYCLOPARAFFINS	43
763:K0024	43117	1.50	126.26	C-9 CYCLOPARAFFINS	53
764:K0024	43122	1.10	72.15	ISOMERS OF PENTANE	63
765:K0024	43204	10.20	44.09	PROPANE	73
766:K0024	43212	11.60	58.12	N-BUTANE	83
767:K0024	43214	.70	58.12	ISOBUTANE	93
768:K0024	43220	6.30	72.15	N-PENTANE	103
769:K0024	43231	4.90	86.18	N-HEXANE	113
770:K0024	43232	2.00	100.21	N-HEPTANE	123
771:K0024	43233	2.70	114.23	N-OCTANE	133
772:K0024	43242	2.50	70.14	CYCLOPENTANE	143
773:K0024	43121	.50	70.14	ISOMERS OF PENTENE	153
774:K0024	43203	.30	28.05	ETHYLENE	163
775:K0024	43205	2.00	42.08	PROPYLENE	173
776:K0024	43213	7.00	56.10	BUTENE	183
777:K0024	43224	3.20	70.14	1-PENTENE	193
778:K0024	45202	1.90	92.15	TOLUENE	203
779:K0024	43201	21.30	16.04	METHANE	213

TABLE E-4 (continued)

780:K0024	43202		5.40	30.07	ETHANE	223
781:K0024	45201		.80	78.12	BENZENE	233
782:K0025	95.00	5.00	8.00	305002A		2
783:K0025	43105		1.00	86.18	ISOMERS OF HEXANE	13
784:K0025	43122		9.00	72.15	ISOMERS OF PENTANE	23
785:K0025	43204		4.00	44.09	PROPANE	33
786:K0025	43212		9.00	58.12	N-BUTANE	43
787:K0025	43220		6.00	72.15	N-PENTANE	53
788:K0025	43248		1.00	84.16	CYCLOHEXANE	63
789:K0025	45202		2.00	92.15	TOLUENE	73
790:K0025	43502		8.00	30.03	FORMALDEHYDE	83
791:K0025	43201		56.00	16.04	METHANE	93
792:K0025	45201		4.00	78.12	BENZENE	103
793:K0026	95.00	5.00		305002B		2
794:K0026	43105		8.10	86.18	ISOMERS OF HEXANE	13
795:K0026	43115		3.70	98.19	C-7 CYCLOPARAFFINS	23
796:K0026	43122		5.70	72.15	ISOMERS OF PENTANE	33
797:K0026	43204		5.50	44.09	PROPANE	43
798:K0026	43212		10.10	58.12	N-BUTANE	53
799:K0026	43214		11.20	58.12	ISOBUTANE	63
800:K0026	43220		5.30	72.15	N-PENTANE	73
801:K0026	43203		2.00	28.05	ETHYLENE	93
802:K0026	43205		3.90	42.08	PROPYLENE	103
803:K0026	43213		5.90	56.10	BUTENE	113
804:K0026	43201		15.70	16.04	METHANE	123
805:K0026	43202		4.60	30.07	ETHANE	133
806:K0026	45201		9.50	78.12	BENZENE	143
807:K0029	85.00	15.00	51.00	306002		2
808:K0029	43105		13.00	86.18	ISOMERS OF HEXANE	13
809:K0029	43502		51.00	30.03	FORMALDEHYDE	23
810:K0029	43201		36.00	16.04	METHANE	33
811:K0031	00.00	00.00	00.00	306005		2
812:K0031	43105		12.20	86.18	ISOMERS OF HEXANE	13
813:K0031	43115		16.90	98.19	C-7 CYCLOPARAFFINS	23
814:K0031	43116		5.20	112.23	C-8 CYCLOPARAFFINS	33
815:K0031	43122		10.10	72.15	ISOMERS OF PENTANE	43
816:K0031	43204		5.90	44.09	PROPANE	53
817:K0031	43212		14.30	58.12	N-BUTANE	63
818:K0031	43214		4.50	58.12	ISOBUTANE	73
819:K0031	43220		12.00	72.15	N-PENTANE	83
820:K0031	43231		11.90	86.18	N-HEXANE	93
821:K0031	43201		2.90	16.04	METHANE	103
822:K0031	43202		1.70	30.07	ETHANE	113
823:K0031	45201		2.40	78.12	BENZENE	123
824:K0035	00.00	00.00	00.00	306007		2
825:K0035	43122		100.00	72.15	ISOMERS OF PENTANE	13
826:K0038				306008X		2
827:K0038	43105		5.50	86.18	ISOMERS OF HEXANE	13
828:K0038	43106		4.10	100.21	ISOMERS OF HEPTANE	23
829:K0038	43107		2.80	114.23	ISOMERS OF OCTANE	33
830:K0038	43108		3.10	128.26	ISOMERS OF NONANE	43
831:K0038	43109		1.90	142.29	ISOMERS OF DECANE	53
832:K0038	43115		1.10	98.19	C-7 CYCLOPARAFFINS	63
833:K0038	43116		.10	112.23	C-8 CYCLOPARAFFINS	73
834:K0038	43117		.80	126.26	C-9 CYCLOPARAFFINS	83
835:K0038	43122		6.60	72.15	ISOMERS OF PENTANE	93
836:K0038	43204		3.70	44.09	PROPANE	103
837:K0038	43212		7.90	58.12	N-BUTANE	113
838:K0038	43214		.80	58.12	ISOBUTANE	123
839:K0038	43220		11.10	72.15	N-PENTANE	133

TABLE E-4 (continued)

840:K0038	43231	11.00	86.18	N-HEXANE	143
841:K0038	43232	8.50	100.21	N-HEPTANE	153
842:K0038	43233	12.00	114.23	N-OCTANE	163
843:K0038	43235	3.90	128.26	N-NONANE	173
844:K0038	43238	5.10	142.29	N-DECANE	183
845:K0038	43248	.50	84.16	CYCLOHEXANE	193
846:K0038	43213	.20	56.10	BUTENE	203
847:K0038	45102	1.30	106.17	ISOMERS OF XYLENE	213
848:K0038	45202	3.00	92.15	TOLUENE	223
849:K0038	43201	3.30	16.04	METHANE	233
850:K0038	43202	1.20	30.07	ETHANE	243
851:K0038	45201	.50	78.12	BENZENE	253
852:K0039	00.00	00.00	00.00	306008Z	2
853:K0039	43105	1.00	86.18	ISOMERS OF HEXANE	13
854:K0039	43106	.10	100.21	ISOMERS OF HEPTANE	23
855:K0039	43122	8.60	72.15	ISOMERS OF PENTANE	33
856:K0039	43204	16.00	44.09	PROPANE	43
857:K0039	43212	23.20	58.12	N-BUTANE	53
858:K0039	43214	10.00	58.12	ISOBUTANE	63
859:K0039	43220	7.60	72.15	N-PENTANE	73
860:K0039	43231	4.60	86.18	N-HEXANE	83
861:K0039	43205	8.80	42.08	PROPYLENE	93
862:K0039	43213	1.20	56.10	BUTENE	103
863:K0039	43201	13.30	16.04	METHANE	113
864:K0039	43202	5.60	30.07	ETHANE	123
865:K0047	00.00	00.00	00.00	306008N	2
866:K0047	43204	90.40	44.09	PROPANE	13
867:K0047	43214	.40	58.12	ISOBUTANE	23
868:K0047	43205	5.10	42.08	PROPYLENE	33
869:K0047	43202	4.10	30.07	ETHANE	43
870:K0051	95.00	5.00	20.00	306009	2
871:K0051	43204	30.00	44.09	PROPANE	13
872:K0051	43502	20.00	30.03	FORMALDEHYDE	23
873:K0051	43201	20.00	16.04	METHANE	33
874:K0051	43202	30.00	30.07	ETHANE	43
875:K0053			00.00	306013	2
876:K0053	43105	.80	86.18	ISOMERS OF HEXANE	13
877:K0053	43107	.70	114.23	ISOMERS OF OCTANE	23
878:K0053	43108	2.50	128.26	ISOMERS OF NONANE	33
879:K0053	43109	2.00	142.29	ISOMERS OF DECANE	43
880:K0053	43115	.30	98.19	C-7 CYCLOPARAFFINS	53
881:K0053	43117	.60	126.26	C-9 CYCLOPARAFFINS	63
882:K0053	43122	.90	72.15	ISOMERS OF PENTANE	73
883:K0053	43204	26.70	44.09	PROPANE	83
884:K0053	43212	22.60	58.12	N-BUTANE	93
885:K0053	43214	20.70	58.12	ISOBUTANE	103
886:K0053	43220	.20	72.15	N-PENTANE	113
887:K0053	43231	.80	86.18	N-HEXANE	123
888:K0053	43232	.20	100.21	N-HEPTANE	133
889:K0053	43233	.80	114.23	N-OCTANE	143
890:K0053	43235	1.00	128.26	N-NONANE	153
891:K0053	43248	.20	84.16	CYCLOHEXANE	163
892:K0053	45102	.80	106.17	ISOMERS OF XYLENE	173
893:K0053	45202	.80	92.15	TOLUENE	183
894:K0053	43201	.90	16.04	METHANE	193
895:K0053	43202	16.20	30.07	ETHANE	203
896:K0053	45201	.30	78.12	BENZENE	213
897:K0056	90.00	10.00		402008C	2
898:K0056	43106	.70	100.21	ISOMERS OF HEPTANE	13
899:K0056	43107	.60	114.23	ISOMERS OF OCTANE	23

TABLE E-4 (continued)

900:K0056	43108	10.10	128.26	ISOMERS OF NONANE	33
901:K0056	43115	1.40	98.19	C-7 CYCLOPARAFFINS	43
902:K0056	43116	25.60	112.23	C-8 CYCLOPARAFFINS	53
903:K0056	43117	5.00	126.26	C-9 CYCLOPARAFFINS	63
904:K0056	43231	.20	86.18	N-HEXANE	73
905:K0056	43232	1.40	100.21	N-HEPTANE	83
906:K0056	43233	46.50	114.23	N-OCTANE	93
907:K0056	43235	7.30	128.26	N-NONANE	103
908:K0056	45102	1.00	106.17	ISOMERS OF XYLENE	113
909:K0056	45202	.20	92.15	TOLUENE	123
910:K0060	00.00	00.00	00.00	330001	2
911:K0060	43551	20.00	58.08	ACETONE	13
912:K0060	43552	21.40	72.10	METHYL ETHYL KETONE	23
913:K0060	43560	8.60	100.16	METHYL ISOBUTYL KETONE	33
914:K0060	43301	5.60	32.04	METHYL ALCOHOL	43
915:K0060	43302	4.50	46.07	ETHYL ALCOHOL	53
916:K0060	43304	16.40	60.09	ISOPROPYL ALCOHOL	63
917:K0060	43305	23.50	74.12	N-BUTYL ALCOHOL	73
918:K0066	00.00	00.00	00.00	301015	2
919:K0066	43551	38.70	58.08	ACETONE	13
920:K0066	43552	41.60	72.10	METHYL ETHYL KETONE	23
921:K0066	43560	16.70	100.16	METHYL ISOBUTYL KETONE	33
922:K0066	43367	3.00	62.07	GLYCOL ETHER	43
923:K0067	00.00	00.00	00.00	301018A	2
924:K0067	43860	100.00	62.50	VINYL CHLORIDE	13
925:K0068	00.00	00.00	00.00	301018B	2
926:K0068	43205	100.00	42.08	PROPYLENE	13
927:K0071				301019A	2
928:K0071	43122	22.60	72.15	ISOMERS OF PENTANE	13
929:K0071	43204	10.80	44.09	PROPANE	23
930:K0071	43212	33.90	58.12	N-BUTANE	33
931:K0071	43231	21.40	86.18	N-HEXANE	43
932:K0071	43248	11.30	84.16	CYCLOHEXANE	53
933:K0072	00.00	00.00	00.00	301020	2
934:K0072	43118	25.50	114.00	MINERAL SPIRITS	13
935:K0072	43248	5.00	84.16	CYCLOHEXANE	23
936:K0072	45106	3.50	134.21	ISOMERS OF DIETHYLBENZENE	33
937:K0072	45203	3.00	106.17	ETHYLBENZENE	43
938:K0072	43551	5.50	58.08	ACETONE	53
939:K0072	43552	5.00	72.10	METHYL ETHYL KETONE	63
940:K0072	43301	5.00	32.04	METHYL ALCOHOL	73
941:K0072	43302	2.50	46.07	ETHYL ALCOHOL	83
942:K0072	43304	38.00	60.09	ISOPROPYL ALCOHOL	93
943:K0072	43305	3.00	74.12	N-BUTYL ALCOHOL	103
944:K0072	43435	4.00	116.16	N-BUTYL ACETATE	113
945:K0076			00.00	935705	2
946:K0076	43105	8.10	86.18	ISOMERS OF HEXANE	13
947:K0076	43115	15.40	98.19	C-7 CYCLOPARAFFINS	23
948:K0076	43116	1.60	112.23	C-8 CYCLOPARAFFINS	33
949:K0076	43118	15.00	114.00	MINERAL SPIRITS	43
950:K0076	43122	3.10	72.15	ISOMERS OF PENTANE	53
951:K0076	43204	1.80	44.09	PROPANE	63
952:K0076	43212	4.40	58.12	N-BUTANE	73
953:K0076	43214	1.40	58.12	ISOBUTANE	83
954:K0076	43220	3.20	72.15	N-PENTANE	93
955:K0076	43231	3.70	86.18	N-HEXANE	103
956:K0076	45102	15.00	106.17	ISOMERS OF XYLENE	113
957:K0076	45202	5.00	92.15	TOLUENE	123
958:K0076	43819	10.00	173.85	METHYLENE BROMIDE	133
959:K0076	45201	12.30	78.12	BENZENE	143

TABLE E-4 (continued)

960:K0078		00.00	00.00	00.00	301125	2
961:K0078	43815		100.00	99.00	ETHYLENE DICHLORIDE	13
962:K0079		95.00	5.00	1.70	301999	2
963:K0079	43248		1.80	84.16	CYCLOHEXANE	13
964:K0079	43120		8.90	56.10	ISOMERS OF BUTENE	23
965:K0079	43203		21.60	28.05	ETHYLENE	33
966:K0079	43205		9.00	42.08	PROPYLENE	43
967:K0079	43213		4.10	56.10	BUTENE	53
968:K0079	45102		1.30	106.17	ISOMERS OF XYLENE	63
969:K0079	45202		4.10	92.15	TOLUENE	73
970:K0079	45220		3.40	104.16	STYRENE	83
971:K0079	43502		1.70	30.03	FORMALDEHYDE	93
972:K0079	43503		.70	44.05	ACETALDEHYDE	103
973:K0079	43510		.80	72.12	BUTYRALDEHYDE	113
974:K0079	43206		1.00	26.04	ACETYLENE	123
975:K0079	43301		5.40	32.04	METHYL ALCOHOL	133
976:K0079	43302		1.40	46.07	ETHYL ALCOHOL	143
977:K0079	43304		2.50	60.09	ISOPROPYL ALCOHOL	153
978:K0079	43305		.50	74.12	N-BUTYL ALCOHOL	163
979:K0079	43438		.80	100.11	ETHYL ACRYLATE	173
980:K0079	43601		4.60	44.05	ETHYLENE OXIDE	183
981:K0079	43602		1.40	58.08	PROPYLENE OXIDE	193
982:K0079	43704		3.00	55.06	ACRYLONITRILE	203
983:K0079	43812		7.20	64.52	ETHYL CHLORIDE	213
984:K0079	43860		.60	62.50	VINYL CHLORIDE	223
985:K0079	45300		2.00	94.11	PHENOLS	233
986:K0079	45401		1.30	230.00	XYLENE BASE ACIDS	243
987:K0079	43801		.90	50.49	METHYL CHLORIDE	253
988:K0079	45201		10.00	78.12	BENZENE	263
989:K0085		00.00	00.00	00.00	401001C	2
990:K0085	43817		100.00	165.83	PERCHLOROETHYLENE	13
991:K0086		00.00	00.00	00.00	401001B	2
992:K0086	43107		.80	114.23	ISOMERS OF OCTANE	13
993:K0086	43108		27.30	128.26	ISOMERS OF NONANE	23
994:K0086	43109		69.30	142.29	ISOMERS OF DECANE	33
995:K0086	43110		2.60	156.32	ISOMERS OF UNDECANE	43
996:K0087		00.00	00.00	00.00	401001A	2
997:K0087	43814		100.00	133.42	1,1,1,-TRICHLOROETHANE	13
998:K0088					401002E	2
999:K0088	43811		100.00	137.37	TRICHLOROFLUOROMETHANE	13
1000:K0089		00.00	00.00	00.00	401002A	2
1001:K0089	43820		100.00	133.42	1,1,2-TRICHLOROETHANE	13
1002:K0090		00.00	00.00	00.00	401002D	2
1003:K0090	45202		100.00	92.15	TOLUENE	3
1004:K0092		90.00	10.00	00.00	402008A	2
1005:K0092	43204		3.10	44.09	PROPANE	13
1006:K0092	43212		23.40	58.12	N-BUTANE	23
1007:K0092	43203		2.00	28.05	ETHYLENE	33
1008:K0092	43201		66.50	16.04	METHANE	43
1009:K0092	43202		5.00	30.07	ETHANE	53
1010:K0096		00.00	00.00	00.00	402009A	2
1011:K0096	43107		.40	114.23	ISOMERS OF OCTANE	13
1012:K0096	43108		10.90	128.26	ISOMERS OF NONANE	23
1013:K0096	43109		27.80	142.29	ISOMERS OF DECANE	33
1014:K0096	43110		1.00	156.32	ISOMERS OF UNDECANE	43
1015:K0096	45102		4.00	106.17	ISOMERS OF XYLENE	53
1016:K0096	45202		4.00	92.15	TOLUENE	63
1017:K0096	43551		10.00	58.08	ACETONE	73
1018:K0096	43552		10.00	72.10	METHYL ETHYL KETONE	83
1019:K0096	43560		5.00	100.16	METHYL ISOBUTYL KETONE	93

TABLE E-4 (continued)

1020:K0096	43301		5.60	32.04	METHYL ALCOHOL	103
1021:K0096	43302		5.60	46.07	ETHYL ALCOHOL	113
1022:K0096	43304		5.70	60.09	ISOPROPYL ALCOHOL	123
1023:K0096	43817		10.00	165.83	PERCHLOROETHYLENE	133
1024:K0098					403001A	2
1025:K0098	43204		.10	44.09	PROPANE	13
1026:K0098	43212		2.20	58.12	N-BUTANE	23
1027:K0098	43214		.50	58.12	ISOBUTANE	33
1028:K0098	43220		12.20	72.15	N-PENTANE	43
1029:K0098	43231		16.30	86.18	N-HEXANE	53
1030:K0098	43232		9.30	100.21	N-HEPTANE	63
1031:K0098	43233		10.10	114.23	N-OCTANE	73
1032:K0098	43235		1.80	128.26	N-NONANE	83
1033:K0098	43238		2.60	142.29	N-DECANE	93
1034:K0098	43213		.40	56.10	BUTENE	103
1035:K0098	43224		2.50	70.14	1-PENTENE	113
1036:K0098	45102		13.50	106.17	ISOMERS OF XYLENE	123
1037:K0098	45104		6.50	120.19	ISOMERS OF ETHYLTOLUENE	133
1038:K0098	45105		4.40	134.22	ISOMERS OF BUTYLBENZENE	143
1039:K0098	45107		5.50	120.19	ISOMERS OF TRIMETHYLBENZENE	153
1040:K0098	45202		9.70	92.15	TOLUENE	163
1041:K0098	45201		2.40	78.12	BENZENE	173
1042:K0100			00.00		403001E	2
1043:K0100	43232		.10	100.21	N-HEPTANE	13
1044:K0100	43233		.50	114.23	N-OCTANE	23
1045:K0100	43235		4.70	128.26	N-NONANE	33
1046:K0100	43238		19.60	142.29	N-DECANE	43
1047:K0100	43241		20.30	156.32	N-UNDECANE	53
1048:K0100	43255		18.20	170.34	N-DODECANE	63
1049:K0100	43258		17.70	184.37	N-TRIDECANE	73
1050:K0100	43259		11.70	198.40	N-TETRADECANE	83
1051:K0100	43260		7.20	212.42	N-PENTADECANE	93
1052:K0121	85.00	15.00			501002	2
1053:K0121	43204		1.90	44.09	PROPANE	13
1054:K0121	43212		1.90	58.12	N-BUTANE	23
1055:K0121	43214		1.90	58.12	ISOBUTANE	33
1056:K0121	43220		1.90	72.15	N-PENTANE	43
1057:K0121	43231		13.90	86.18	N-HEXANE	53
1058:K0121	43232		13.90	100.21	N-HEPTANE	63
1059:K0121	43233		13.80	114.23	N-OCTANE	73
1060:K0121	43121		11.80	70.14	ISOMERS OF PENTENE	83
1061:K0121	43203		19.40	28.05	ETHYLENE	93
1062:K0121	43213		5.90	56.10	BUTENE	103
1063:K0121	43224		11.80	70.14	1-PENTENE	113
1064:K0121	43206		1.90	26.04	ACETYLENE	123
1065:K0122	85.00	15.00			501005	2
1066:K0122	43203		8.70	28.05	ETHYLENE	13
1067:K0122	43205		.50	42.08	PROPYLENE	23
1068:K0122	43201		80.40	16.04	METHANE	33
1069:K0122	43202		2.70	30.07	ETHANE	43
1070:K0122	45201		7.70	78.12	BENZENE	53
1071:K0125	00.00	00.00	00.00		402001A	2
1072:K0125	45102		22.30	106.17	ISOMERS OF XYLENE	13
1073:K0125	45202		55.10	92.15	TOLUENE	23
1074:K0125	43551		12.20	58.08	ACETONE	33
1075:K0125	43552		10.40	72.10	METHYL ETHYL KETONE	43
1076:K0127	00.00	00.00	00.00		402003A	2
1077:K0127	43551		38.70	58.08	ACETONE	13
1078:K0127	43552		41.60	72.10	METHYL ETHYL KETONE	23
1079:K0127	43560		16.70	100.16	METHYL ISOBUTYL KETONE	33

TABLE E-4 (continued)

1080:K0127	43367	3.00	62.07	GLYCOL ETHER	43
1081:K0134			402006A		2
1082:K0134	43118	41.00	114.00	MINERAL SPIRITS	13
1083:K0134	45101	1.00	114.00	NAPHTHA	23
1084:K0134	45102	4.90	106.17	ISOMERS OF XYLENE	33
1085:K0134	45202	3.90	92.15	TOLUENE	43
1086:K0134	43551	7.10	58.08	ACETONE	53
1087:K0134	43552	7.70	72.10	METHYL ETHYL KETONE	63
1088:K0134	43560	3.10	100.16	METHYL ISOBUTYL KETONE	73
1089:K0134	43301	1.00	32.04	METHYL ALCOHOL	83
1090:K0134	43302	.80	46.07	ETHYL ALCOHOL	93
1091:K0134	43304	2.80	60.09	ISOPROPYL ALCOHOL	103
1092:K0134	43305	4.00	74.12	N-BUTYL ALCOHOL	113
1093:K0134	43367	11.50	62.07	GLYCOL ETHER	123
1094:K0134	43433	.90	88.10	ETHYL ACETATE	133
1095:K0134	43435	9.50	116.16	N-BUTYL ACETATE	143
1096:K0134	43444	.80	104.00	ISOPROPYL ACETATE	153
1097:K0141	90.00	10.00	00.00	402007A	2
1098:K0141	45102	22.00	106.17	ISOMERS OF XYLENE	13
1099:K0141	45202	54.00	92.15	TOLUENE	23
1100:K0141	43551	13.00	58.08	ACETONE	33
1101:K0141	43552	11.00	72.10	METHYL ETHYL KETONE	43
1102:K0145			402007D		2
1103:K0145	43817	100.00	165.83	PERCHLOROETHYLENE	13
1104:K0147	00.00	00.00	00.00	402004C	2
1105:K0147	43118	6.40	114.00	MINERAL SPIRITS	13
1106:K0147	43233	4.60	114.23	N-OCTANE	23
1107:K0147	43248	6.40	84.16	CYCLOHEXANE	33
1108:K0147	45202	13.90	92.15	TOLUENE	43
1109:K0147	43552	16.60	72.10	METHYL ETHYL KETONE	53
1110:K0147	43304	11.70	60.09	ISOPROPYL ALCOHOL	63
1111:K0147	43305	4.00	74.12	N-BUTYL ALCOHOL	73
1112:K0147	43308	5.60	102.00	BUTYL CELLOSOLVE	83
1113:K0147	43435	30.80	116.16	N-BUTYL ACETATE	93
1114:K0148	00.00	00.00	00.00	402004B	2
1115:K0148	43118	25.00	114.00	MINERAL SPIRITS	13
1116:K0148	45102	7.00	106.17	ISOMERS OF XYLENE	23
1117:K0148	45202	10.00	92.15	TOLUENE	33
1118:K0148	43561	8.00	98.15	CYCLOHEXANONE	43
1119:K0148	43551	13.00	58.08	ACETONE	53
1120:K0148	43552	18.00	72.10	METHYL ETHYL KETONE	63
1121:K0148	43304	15.00	60.09	ISOPROPYL ALCOHOL	73
1122:K0148	43445	4.00	140.00	METHYL AMYL ACETATE	83
1123:K0149	00.00	00.00	00.00	402004A	2
1124:K0149	43118	21.40	114.00	MINERAL SPIRITS	13
1125:K0149	45202	9.40	92.15	TOLUENE	23
1126:K0149	43552	14.20	72.10	METHYL ETHYL KETONE	33
1127:K0149	43311	26.60	90.12	CELLOSOLVE	43
1128:K0149	43433	28.40	88.10	ETHYL ACETATE	53
1129:K0156	00.00	00.00	00.00	402005A	2
1130:K0156	43118	67.60	114.00	MINERAL SPIRITS	13
1131:K0156	45102	4.00	106.17	ISOMERS OF XYLENE	23
1132:K0156	45202	3.20	92.15	TOLUENE	33
1133:K0156	43551	6.30	58.08	ACETONE	43
1134:K0156	43552	6.80	72.10	METHYL ETHYL KETONE	53
1135:K0156	43560	2.70	100.16	METHYL ISOBUTYL KETONE	63
1136:K0156	43301	.70	32.04	METHYL ALCOHOL	73
1137:K0156	43302	.50	46.07	ETHYL ALCOHOL	83
1138:K0156	43304	1.90	60.09	ISOPROPYL ALCOHOL	93
1139:K0156	43305	2.80	74.12	N-BUTYL ALCOHOL	103

TABLE E-4 (continued)

1140:K0156	43433	.30	88.10	ETHYL ACETATE	113
1141:K0156	43435	2.90	116.16	N-BUTYL ACETATE	123
1142:K0156	43444	.30	104.00	ISOPROPYL ACETATE	133
1143:K0157	00.00	00.00	00.00	4020005C	2
1144:K0157	43118	13.20	114.00	MINERAL SPIRITS	13
1145:K0157	43233	5.30	114.23	N-OCTANE	23
1146:K0157	43248	13.20	84.16	CYCLOHEXANE	33
1147:K0157	43435	12.40	116.16	N-BUTYL ACETATE	43
1148:K0157	43452	5.00	132.00	2-ETHOXYETHYL ACETATE	53
1149:K0157	43552	24.70	72.10	METHYL ETHYL KETONE	63
1150:K0157	43823	13.90	120.91	DICHLORODIFLUOROMETHANE	73
1151:K0157	45202	12.30	92.15	TOLUENE	83
1152:K0162	95.00	05.00	3.30	402008E	2
1153:K0162	43118	25.80	114.00	MINERAL SPIRITS	13
1154:K0162	43204	.30	44.09	PROPANE	23
1155:K0162	43212	.10	58.12	N-BUTANE	33
1156:K0162	43220	.60	72.15	N-PENTANE	43
1157:K0162	43205	2.40	42.08	PROPYLENE	53
1158:K0162	43213	.90	56.10	BUTENE	63
1159:K0162	43224	2.40	70.14	1-PENTENE	73
1160:K0162	43502	3.30	30.03	FORMALDEHYDE	93
1161:K0162	43551	.60	58.08	ACETONE	103
1162:K0162	43206	.30	26.04	ACETYLENE	113
1163:K0162	43304	7.00	60.09	ISOPROPYL ALCOHOL	123
1164:K0162	43432	3.10	74.08	METHYL ACETATE	133
1165:K0162	43435	29.60	116.16	N-BUTYL ACETATE	143
1166:K0162	43444	12.50	104.00	ISOPROPYL ACETATE	153
1167:K0162	43201	9.00	16.04	METHANE	163
1168:K0162	45202	2.10	92.15	TOLUENE	83
1169:K0164				402005D	2
1170:K0164	43433	7.90	88.10	ETHYL ACETATE	13
1171:K0164	43435	84.50	116.16	N-BUTYL ACETATE	23
1172:K0164	43444	7.60	104.00	ISOPROPYL ACETATE	33
1173:K0166				405002	2
1174:K0166	43201	63.00	16.04	METHANE	13
1175:K0166	43202	24.00	30.07	ETHANE	23
1176:K0166	43204	12.00	44.09	PROPANE	33
1177:K0166	43212	1.00	58.12	N-BUTANE	43
1178:K0172	00.00	00.00	00.00	405003A	2
1179:K0172	43302	47.60	46.07	ETHYL ALCOHOL	13
1180:K0172	43303	24.30	60.09	N-PROPYL ALCOHOL	23
1181:K0172	43304	10.70	60.09	ISOPROPYL ALCOHOL	33
1182:K0172	43351	.90	74.12	ETHYL ETHER	43
1183:K0172	43433	15.10	88.10	ETHYL ACETATE	53
1184:K0172	43452	1.40	132.00	2-ETHOXYETHYL ACETATE	63
1185:K0181	00.00	00.00	00.00	405005A	2
1186:K0181	43118	5.40	114.00	MINERAL SPIRITS	13
1187:K0181	43231	6.20	86.18	N-HEXANE	23
1188:K0181	43232	6.60	100.21	N-HEPTANE	33
1189:K0181	45202	12.00	92.15	TOLUENE	43
1190:K0181	43551	.80	58.08	ACETONE	53
1191:K0181	43552	7.80	72.10	METHYL ETHYL KETONE	63
1192:K0181	43119	1.00	114.00	LACTOL SPIRITS	73
1193:K0181	43302	8.60	46.07	ETHYL ALCOHOL	83
1194:K0181	43303	.30	60.09	N-PROPYL ALCOHOL	93
1195:K0181	43304	10.80	60.09	ISOPROPYL ALCOHOL	103
1196:K0181	43433	18.20	88.10	ETHYL ACETATE	113
1197:K0181	43434	1.30	102.13	PROPYL ACETATE	123
1198:K0181	43444	20.10	104.00	ISOPROPYL ACETATE	133
1199:K0181	43452	.90	132.00	2-ETHOXYETHYL ACETATE	143

TABLE E-4 (continued)

1200:K0182	00.00	00.00	00.00	405005D	2
1201:K0182	43118	51.00	114.00	MINERAL SPIRITS	13
1202:K0182	43248	10.00	84.16	CYCLOHEXANE	23
1203:K0182	45106	7.00	134.21	ISOMERS OF DIETHYLBENZENE	33
1204:K0182	45203	6.00	106.17	ETHYLBENZENE	43
1205:K0182	43301	6.00	32.04	METHYL ALCOHOL	53
1206:K0182	43304	6.00	60.09	ISOPROPYL ALCOHOL	63
1207:K0182	43305	6.00	74.12	N-BUTYL ALCOHOL	73
1208:K0182	43435	8.00	116.16	N-BUTYL ACETATE	83
1209:K0183	00.00	00.00	00.00	405005B	2
1210:K0183	43118	83.00	114.00	MINERAL SPIRITS	13
1211:K0183	45102	4.00	106.17	ISOMERS OF XYLENE	23
1212:K0183	45202	13.00	92.15	TOLUENE	33
1213:K0185	00.00	00.00	00.00	403001P	2
1214:K0185	45202	100.00	92.15	TOLUENE	13
1215:K0188				403001Q	2
1216:K0188	43105	1.30	86.18	ISOMERS OF HEXANE	13
1217:K0188	43112	.30	170.33	ISOMERS OF DODECANE	23
1218:K0188	43115	4.50	98.19	C-7 CYCLOPARAFFINS	33
1219:K0188	43116	1.30	112.23	C-8 CYCLOPARAFFINS	43
1220:K0188	43122	7.10	72.15	ISOMERS OF PENTANE	53
1221:K0188	43204	21.30	44.09	PROPANE	63
1222:K0188	43212	16.60	58.12	N-BUTANE	73
1223:K0188	43214	8.30	58.12	ISOBUTANE	83
1224:K0188	43220	5.80	72.15	N-PENTANE	93
1225:K0188	43231	4.20	86.18	N-HEXANE	103
1226:K0188	43201	16.80	16.04	METHANE	113
1227:K0188	43202	11.90	30.07	ETHANE	123
1228:K0188	45201	.60	78.12	BENZENE	133
1229:K0195				901005	2
1230:K0195	43201	100.00	16.04	METHANE	13
1231:K0196				935103	2
1232:K0196	43231	20.80	86.18	N-HEXANE	13
1233:K0196	43248	20.80	84.16	CYCLOHEXANE	23
1234:K0196	45102	2.60	106.17	ISOMERS OF XYLENE	33
1235:K0196	45202	5.30	92.15	TOLUENE	43
1236:K0196	45203	4.30	106.17	ETHYLBENZENE	53
1237:K0196	43551	3.20	58.08	ACETONE	63
1238:K0196	43552	5.70	72.10	METHYL ETHYL KETONE	73
1239:K0196	43559	0.70	100.16	METHYL N-BUTYL KETONE	83
1240:K0196	43560	0.60	100.16	METHYL ISOBUTYL KETONE	93
1241:K0196	43301	3.90	32.04	METHYL ALCOHOL	103
1242:K0196	43302	0.60	46.07	ETHYL ALCOHOL	113
1243:K0196	43304	16.50	60.09	ISOPROPYL ALCOHOL	123
1244:K0196	43305	1.60	74.12	N-BUTYL ALCOHOL	133
1245:K0196	43306	0.60	74.12	ISOBUTYL ALCOHOL	143
1246:K0196	43369	0.80	76.00	PROPYLENE GLYCOL	153
1247:K0196	43370	0.60	62.07	ETHYLENE GLYCOL	163
1248:K0196	43435	2.50	116.16	N-BUTYL ACETATE	173
1249:K0196	43446	1.50	116.16	ISOBUTYL ACETATE	183
1250:K0196	43451	6.10	144.21	ISOBUTYL ISOBUTYRATE	203
1251:K0196	43452	1.30	132.00	2-ETHOXYETHYL ACETATE	213
1252:K0197		0.60	935702		2
1253:K0197	43214	5.30	58.12	ISOBUTANE	13
1254:K0197	45101	4.50	114.00	NAPHTHA	23
1255:K0197	43502	0.60	30.03	FORMALDEHYDE	33
1256:K0197	43551	1.40	58.08	ACETONE	43
1257:K0197	43302	36.90	46.07	ETHYL ALCOHOL	53
1258:K0197	43304	38.50	60.09	ISOPROPYL ALCOHOL	63
1259:K0197	43367	8.30	62.07	GLYCOL ETHER	73

TABLE E-4 (continued)

1260:K0197	43369	3.20	76.00	PROPYLENE GLYCOL	83
1261:K0197	43435	1.30	116.16	N-BUTYL ACETATE	93
1262:K0202			949999A	-	2
1263:K0202	43123	.10	136.23	TERPENES	33
1264:K0202	43201	98.60	16.04	METHANE	43
1265:K0202	43202	.10	30.07	ETHANE	53
1266:K0202	43204	.10	44.09	PROPANE	63
1267:K0202	43212	.20	58.12	N-BUTANE	73
1268:K0202	43214	.10	58.12	ISOBUTANE	83
1269:K0202	43220	.10	72.15	N-PENTANE	93
1270:K0202	43242	.10	70.14	CYCLOPENTANE	103
1271:K0202	43817	.30	165.83	PERCHLOROETHYLENE	113
1272:K0202	45102	.10	106.17	ISOMERS OF XYLENE	123
1273:K0202	45202	.10	92.15	TOLUENE	133
1274:K0203	00.00	00.00	00.00	9499998	2
1275:K0203	43201	70.00	16.04	METHANE	13
1276:K0203	43202	20.00	30.07	ETHANE	23
1277:K0203	43302	2.00	46.07	ETHYL ALCOHOL	33
1278:K0203	43304	2.00	60.09	ISOPROPYL ALCOHOL	43
1279:K0203	43434	2.00	102.13	PROPYL ACETATE	53
1280:K0203	43551	2.00	58.08	ACETONE	63
1281:K0203	43720	1.00	31.06	METHYLAMINE	73
1282:K0203	43740	1.00	59.11	TRIMETHYL AMINE	83
1283:K0211	00.00	00.00	00.00	302229	2
1284:K0211	43302	100.00	46.07	ETHYL ALCOHOL	13
1285:K0217			390007		2
1286:K0217	43203	2.80	28.05	ETHYLENE	13
1287:K0217	43205	5.50	42.08	PROPYLENE	23
1288:K0217	43213	6.40	56.10	BUTENE	33
1289:K0217	43201	40.90	16.04	METHANE	43
1290:K0217	43202	1.40	30.07	ETHANE	53
1291:K0217	45201	43.00	78.12	BENZENE	63
1292:K0219	00.00	00.00	00.00	402001B	2
1293:K0219	43551	100.00	58.08	ACETONE	13
1294:K0220	00.00	00.00	00.00	402001C	2
1295:K0220	43433	100.00	88.10	ETHYL ACETATE	13
1296:K0221	00.00	00.00	00.00	402001D	2
1297:K0221	43552	100.00	72.10	METHYL ETHYL KETONE	13
1298:K0222	00.00	00.00	00.00	402005E	2
1299:K0222	43452	100.00	132.00	2-ETHOXYETHEL ACETATE	13
1300:K0223			402003E		2
1301:K0223	45102	100.00	106.17	ISOMERS OF XYLENE	13
1302:K0226			402009F		2
1303:K0226	43302	100.00	46.07	ETHYL ALCOHOL	13
1304:K0227			402009G		2
1305:K0227	43304	100.00	60.09	ISOPROPYL ALCOHOL	13
1306:K0228	00.00	00.00	00.00	40200913	2
1307:K0228	43444	100.00	104.00	ISOPROPYL ACETATE	13
1308:K0229	00.00	00.00	00.00	40200915	2
1309:K0229	43119	100.00	114.00	LACTOL SPIRITS	13
1310:K0230	00.00	00.00	00.00	403001K	2
1311:K0230	43231	100.00	86.18	N-HEXANE	13
1312:K0231	00.00	00.00	00.00	403001M	2
1313:K0231	43122	100.00	72.15	ISOMERS OF PENTANE	13
1314:K0232			403003		2
1315:K0232	43204	90.60	44.09	PROPANE	13
1316:K0232	43214	.20	58.12	ISOBUTANE	23
1317:K0232	43205	5.10	42.08	PROPYLENE	33
1318:K0232	43202	4.10	30.07	ETHANE	43
1319:K0271	00.00	00.00	00.00	401002C	2

TABLE E-4 (continued)

1320:K0271	43824	100.00	131.40	TRICHLOROETHYLENE		13
1321:K0272	95.00	5.00	00.00	301026A		2
1322:K0272	43106	4.70	100.21	ISOMERS OF HEPTANE		13
1323:K0272	43107	.80	114.23	ISOMERS OF OCTANE		23
1324:K0272	43115	43.20	98.19	C-7 CYCLOPARAFFINS		33
1325:K0272	43116	6.00	112.23	C-8 CYCLOPARAFFINS		43
1326:K0272	43231	5.80	86.18	N-HEXANE		53
1327:K0272	43232	1.90	100.21	N-HEPTANE		63
1328:K0272	43233	.40	114.23	N-OCTANE		73
1329:K0272	43248	16.30	84.16	CYCLOHEXANE		83
1330:K0272	43262	17.70	84.16	METHYLCYCLOPENTANE		93
1331:K0272	45202	.40	92.15	TOLUENE		103
1332:K0272	45201	2.80	78.12	BENZENE		113
1333:K0273	00.00	00.00	00.00	3010268		2
1334:K0273	43105	24.20	86.18	ISOMERS OF HEXANE		13
1335:K0273	43106	.20	100.21	ISOMERS OF HEPTANE		23
1336:K0273	43231	33.60	86.18	N-HEXANE		33
1337:K0273	43242	.20	70.14	CYCLOPENTANE		43
1338:K0273	43248	.40	84.16	CYCLOHEXANE		53
1339:K0273	43262	33.70	84.16	METHYLCYCLOPENTANE		63
1340:K0273	45201	7.70	78.12	BENZENE		73
1341:K0274	00.00	00.00	00.00	301026C		2
1342:K0274	43115	99.84	98.19	C-7 CYCLOPARAFFINS		13
1343:K0274	43116	.08	112.23	C-8 CYCLOPARAFFINS		23
1344:K0274	43248	.04	84.16	CYCLOHEXANE		33
1345:K0274	43262	.04	84.16	METHYLCYCLOPENTANE		43
1346:K0275	00.00	00.00	00.00	401002B		2
1347:K0275	43802	100.00	84.94	DICHLOROMETHANE		13
1348:K0276	00.00	00.00	00.00	301019B		2
1349:K0276	43204	.90	44.09	PROPANE		13
1350:K0276	43212	2.20	58.12	N-BUTANE		23
1351:K0276	43214	.40	58.12	ISOBUTANE		33
1352:K0276	43205	3.10	42.08	PROPYLENE		43
1353:K0276	43551	8.60	58.08	ACETONE		53
1354:K0276	43206	4.40	26.04	ACETYLENE		63
1355:K0276	43201	80.00	16.04	METHANE		73
1356:K0276	43202	.40	30.07	ETHANE		83
1357:K0277	00.00	00.00	00.00	491992F		2
1358:K0277	43821	100.00	187.38	TRICHLOROTRIFLUOROETHANE		13
1359:K0279	90.00	10.00	00.00	4020088		2
1360:K0279	43203	2.40	28.05	ETHYLENE		13
1361:K0279	45202	10.60	92.15	TOLUENE		23
1362:K0279	43551	30.20	58.08	ACETONE		33
1363:K0279	43201	39.90	16.04	METHANE		43
1364:K0279	43202	2.40	30.07	ETHANE		53
1365:K0279	45201	14.50	78.12	BENZENE		63
1366:K0280	00.00	00.00	00.00	402006E		2
1367:K0280	45202	8.70	92.15	TOLUENE		13
1368:K0280	43551	68.90	58.08	ACETONE		23
1369:K0280	45201	22.40	78.12	BENZENE		33
1370:K0282	00.00	00.00	00.00	4020006G		2
1371:K0282	45101	100.00	114.00	NAPHTHA		13
1372:K0283	00.00	00.00	00.00	402006H		2
1373:K0283	43118	100.00	114.00	MINERAL SPIRITS		13
1374:K0287	00.00	00.00	00.00	402007E		2
1375:K0287	45201	100.00	78.12	BENZENE		13
1376:K0288				402009B		2
1377:K0288	43435	100.00	116.16	N-BUTYL ACETATE		13
1378:K0289				402009C		2
1379:K0289	43305	100.00	74.12	N-BUTYL ALCOHOL		13

TABLE E-4 (continued)

1380:K0290	00.00	00.00	00.00	40200906		2
1381:K0290	43311	100.00	90.12	CELLOSOLVE		13
1382:K0291	00.00	00.00	00.00	402009K		2
1383:K0291	43301	100.00	32.04	METHYL ALCOHOL		13
1384:K0292	00.00	00.00	00.00	49200908		2
1385:K0292	43450	100.00	73.09	DIMETHYLFORMAMIDE		13
1386:K0293				402999A		2
1387:K0293	43231	34.00	86.18	N-HEXANE		13
1388:K0293	43248	43.10	84.16	CYCLOHEXANE		23
1389:K0293	45102	6.60	106.17	ISOMERS OF XYLENE		33
1390:K0293	45202	7.60	92.15	TOLUENE		43
1391:K0293	45203	8.70	106.17	ETHYLBENZENE		53
1392:K0294	00.00	00.00	00.00	402999B		2
1393:K0294	45102	41.60	106.17	ISOMERS OF XYLENE		13
1394:K0294	45104	12.20	120.19	ISOMERS OF ETHYLTOLUENE		23
1395:K0294	45107	20.10	120.19	ISOMERS OF TRIMETHYLBENZENE		33
1396:K0294	45108	2.10	120.19	ISOMERS OF PROPYLBENZENE		43
1397:K0294	45202	13.70	92.13	TOLUENE		53
1398:K0294	45203	10.30	106.17	ETHYLBENZENE		63
1399:K0296	00.00	00.00	00.00	403001C		2
1400:K0296	43115	1.30	98.19	C-7 CYCLOPARAFFINS		13
1401:K0296	43116	.50	112.23	C-8 CYCLOPARAFFINS		23
1402:K0296	43122	1.50	72.15	ISOMERS OF PENTANE		33
1403:K0296	43204	17.60	44.09	PROPANE		43
1404:K0296	43212	27.10	58.12	N-BUTANE		53
1405:K0296	43214	1.50	58.12	ISOBUTANE		63
1406:K0296	43220	14.60	72.15	N-PENTANE		73
1407:K0296	43231	7.90	86.18	N-HEXANE		83
1408:K0296	43232	9.20	100.21	N-HEPTANE		93
1409:K0296	43233	6.90	114.23	N-OCTANE		103
1410:K0296	43201	6.20	16.04	METHANE		113
1411:K0296	43202	5.60	30.07	ETHANE		123
1412:K0296	45201	.10	78.12	BENZENE		133
1413:K0297	00.00	00.00	00.00	403001D		2
1414:K0297	43105	5.10	86.18	ISOMERS OF HEXANE		13
1415:K0297	43106	5.00	100.21	ISOMERS OF HEPTANE		23
1416:K0297	43107	.40	114.23	ISOMERS OF OCTANE		33
1417:K0297	43122	11.20	72.15	ISOMERS OF PENTANE		43
1418:K0297	43204	16.10	44.09	PROPANE		53
1419:K0297	43212	20.80	58.12	N-BUTANE		63
1420:K0297	43214	9.30	58.12	ISOBUTANE		73
1421:K0297	43220	10.10	72.15	N-PENTANE		83
1422:K0297	43231	4.70	86.18	N-HEXANE		93
1423:K0297	43232	2.00	100.21	N-HEPTANE		103
1424:K0297	45202	1.40	92.15	TOLUENE		113
1425:K0297	43201	8.80	16.04	METHANE		123
1426:K0297	43202	2.70	30.07	ETHANE		133
1427:K0297	45201	2.40	78.12	BENZENE		143
1428:K0298	00.00	00.00	00.00	403001F		2
1429:K0298	45201	100.00	78.12	BENZENE		13
1430:K0301	00.00	00.00	00.00	4030011		2
1431:K0301	43232	100.00	100.21	N-HEPTANE		13
1432:K0303	00.00	00.00	00.00	40300115		2
1433:K0303	43220	100.00	72.15	N-PENTANE		13
1434:K0305				406002		2
1435:K0305	43204	15.80	44.09	PROPANE		13
1436:K0305	43212	30.20	58.12	N-BUTANE		23
1437:K0305	43220	18.50	72.15	N-PENTANE		33
1438:K0305	43231	8.80	86.18	N-HEXANE		43
1439:K0305	43232	10.80	100.21	N-HEPTANE		53

TABLE E-4 (continued)

1440:K0305	43233	9.60	114.23	N-OCTANE	63
1441:K0305	43201	2.60	16.04	METHANE	73
1442:K0305	43202	3.70	30.07	ETHANE	83
1443:K0306	00.00	00.00	00.00	303009A	2
1444:K0306	43231	1.67	86.18	N-HEXANE	13
1445:K0306	43232	6.86	100.21	N-HEPTANE	23
1446:K0306	43822	83.86	93.19	TRIMETHYLFLUORISILANE	33
1447:K0306	45201	3.05	78.12	BENZENE	43
1448:K0306	45202	4.56	92.15	TOLUENE	53
1449:K0307	85.00	15.00	00.00	913081	2
1450:K0307	43122	0.15	72.15	ISOMERS OF PENTANE	13
1451:K0307	43204	0.35	44.09	PROPANE	23
1452:K0307	43212	0.24	58.12	N-BUTANE	33
1453:K0307	43214	0.11	58.12	ISOBUTANE	43
1454:K0307	43120	0.92	56.10	ISOMERS OF BUTENE	53
1455:K0307	43203	19.11	28.05	ETHYLENE	63
1456:K0307	43205	3.93	42.08	PROPYLENE	73
1457:K0307	43213	0.81	56.10	BUTENE	83
1458:K0307	43218	0.52	54.09	1,3-BUTADIENE	93
1459:K0307	43223	0.17	70.14	3-METHYL-1-BUTENE	103
1460:K0307	43000	44.59	86.00	UNIDENTIFIED HYDROCARBONS	113
1461:K0307	43206	8.40	26.04	ACETYLENE	123
1462:K0307	43209	0.41	40.06	METHYLACETYLENE	133
1463:K0307	43201	9.82	16.04	METHANE	143
1464:K0307	43202	10.47	30.07	ETHANE	153
1465:K0316	00.00	00.00	00.00	306008A	2
1466:K0316	43105	1.60	86.18	ISOMERS OF HEXANE	13
1467:K0316	43106	.80	100.21	ISOMERS OF HEPTANE	23
1468:K0316	43107	.40	114.23	ISOMERS OF OCTANE	33
1469:K0316	43108	.50	128.26	ISOMERS OF NONANE	43
1470:K0316	43109	.30	142.29	ISOMERS OF DECANE	53
1471:K0316	43115	.20	98.19	C-7 CYCLOPARAFFINS	63
1472:K0316	43117	.10	126.26	C-9 CYCLOPARAFFINS	73
1473:K0316	43122	7.80	72.15	ISOMERS OF PENTANE	83
1474:K0316	43204	11.50	44.09	PROPANE	93
1475:K0316	43212	18.30	58.12	N-BUTANE	103
1476:K0316	43214	7.40	58.12	ISOBUTANE	113
1477:K0316	43220	7.70	72.15	N-PENTANE	123
1478:K0316	43231	3.40	86.18	N-HEXANE	133
1479:K0316	43232	1.40	100.21	N-HEPTANE	143
1480:K0316	43233	1.80	114.23	N-OCTANE	153
1481:K0316	43235	.60	128.26	N-NONANE	163
1482:K0316	43238	.80	142.29	N-DECANE	173
1483:K0316	43248	.10	84.16	CYCLOHEXANE	183
1484:K0316	43205	.10	42.08	PROPYLENE	193
1485:K0316	45102	.20	106.17	ISOMERS OF XYLENE	203
1486:K0316	45202	.50	92.15	TOLUENE	213
1487:K0316	43201	28.60	16.04	METHANE	223
1488:K0316	43202	5.80	30.07	ETHANE	233
1489:K0316	45201	.10	78.12	BENZENE	243
1490:K0321	00.00	00.00	00.00	306008P	2
1491:K0321	43105	5.50	86.18	ISOMERS OF HEXANE	13
1492:K0321	43106	4.10	100.21	ISOMERS OF HEPTANE	23
1493:K0321	43107	2.80	114.23	ISOMERS OF OCTANE	33
1494:K0321	43108	3.10	128.26	ISOMERS OF NONANE	43
1495:K0321	43109	1.90	142.29	ISOMERS OF DECANE	53
1496:K0321	43115	1.10	98.19	C-7 CYCLOPARAFFINS	63
1497:K0321	43116	.10	112.23	C-8 CYCLOPARAFFINS	73
1498:K0321	43117	.80	126.26	C-9 CYCLOPARAFFINS	83
1499:K0321	43122	6.60	72.15	ISOMERS OF PENTANE	93

TABLE E-4 (continued)

1500:K0321	43204	3.70	44.09	PROPANE	103
1501:K0321	43212	8.10	58.12	N-BUTANE	123
1502:K0321	43214	.80	58.12	ISOBUTANE	133
1503:K0321	43220	11.10	72.15	N-PENTANE	143
1504:K0321	43231	11.00	86.18	N-HEXANE	153
1505:K0321	43232	8.50	100.21	N-HEPTANE	163
1506:K0321	43233	12.00	114.23	N-OCTANE	173
1507:K0321	43235	3.90	128.26	N-NONANE	183
1508:K0321	43238	5.10	142.29	N-DECANE	193
1509:K0321	43248	.50	84.16	CYCLOHEXANE	203
1510:K0321	45102	1.30	106.17	ISOMERS OF XYLENE	213
1511:K0321	45202	3.00	92.15	TOLUENE	223
1512:K0321	43201	3.30	16.04	METHANE	233
1513:K0321	43202	1.20	30.07	ETHANE	243
1514:K0321	45201	.50	78.12	BENZENE	253
1515:K0330	90.00	10.00	12.20	907021	2
1516:K0330	43212	3.20	58.12	N-BUTANE	13
1517:K0330	43220	1.80	72.15	N-PENTANE	23
1518:K0330	43231	1.40	86.18	N-HEXANE	33
1519:K0330	43232	0.40	100.21	N-HEPTANE	43
1520:K0330	43233	0.40	114.23	N-OCTANE	53
1521:K0330	43235	0.40	128.26	N-NONANE	63
1522:K0330	43260	35.10	212.42	N-PENTADECANE	73
1523:K0330	43203	10.70	28.05	ETHYLENE	83
1524:K0330	43205	4.00	42.08	PROPYLENE	93
1525:K0330	45101	17.60	114.00	NAPHTHA	103
1526:K0330	45102	0.30	106.17	ISOMERS OF XYLENE	113
1527:K0330	45107	0.20	120.19	ISOMERS OF TRIMETHYLBENZENE	123
1528:K0330	45202	1.80	92.15	TOLUENE	133
1529:K0330	43502	12.20	30.03	FORMALDEHYDE	143
1530:K0330	43206	3.80	26.04	ACETYLENE	153
1531:K0330	43201	4.40	16.04	METHANE	163
1532:K0330	43202	0.40	30.07	ETHANE	173
1533:K0330	45201	1.90	78.12	BENZENE	183
1534:K0333	00.00	00.00	00.00	405004A	2
1535:K0333	43204	3.30	44.09	PROPANE	13
1536:K0333	43212	11.50	58.12	N-BUTANE	23
1537:K0333	43214	1.80	58.12	ISOBUTANE	33
1538:K0333	43304	.90	60.09	ISOPROPYL ALCOHOL	43
1539:K0333	43802	34.90	84.94	DICHLOROMETHANE	53
1540:K0333	43201	37.70	16.04	METHANE	63
1541:K0333	43202	10.00	30.07	ETHANE	73
1542:K0334		00.00	405002A		2
1543:K0334	43204	3.00	44.09	PROPANE	13
1544:K0334	43212	3.00	58.12	N-BUTANE	23
1545:K0334	43214	1.00	58.12	ISOBUTANE	33
1546:K0334	43203	13.00	28.05	ETHYLENE	43
1547:K0334	43205	3.00	42.08	PROPYLENE	53
1548:K0334	43213	1.00	56.10	BUTENE	63
1549:K0334	43201	69.00	16.04	METHANE	73
1550:K0334	43202	7.00	30.07	ETHANE	83
1551:R0001	97.00	3.00	R0001	IP WOOD RIVER NO.4	2
1552:R0001	43202	2.09	30.07	ETHANE	13
1553:R0001	43204	1.78	44.09	PROPANE	23
1554:R0001	43213	.79	56.10	1-BUTENE	33
1555:R0001	43212	.98	58.12	N-BUTANE	43
1556:R0001	43221	1.22	72.15	ISOPENTANE	53
1557:R0001	43227	1.05	70.14	CIS,2-PENTENE	63
1558:R0001	43245	3.63	84.16	1-HEXENE	73
1559:R0001	43231	9.45	86.18	N-HEXANE	83

TABLE E-4 (continued)

1560:R0001	43268	2.67	98.19	3,3 DIMETHYL,1-PENTENE	93
1561:R0001	43247	6.39	100.21	2,4 DIMETHYLPENTANE	103
1562:R0001	43264	3.69	98.19	1-HEPTENE	113
1563:R0001	43232	1.50	100.21	N-HEPTANE	123
1564:R0001	45202	5.62	92.15	TOLUENE	133
1565:R0001	45203	11.25	106.17	ETHYL BENZENE	143
1566:R0001	45205	39.23	106.17	1,3 DIMETHYLBENZENE	153
1567:R0001	45204	8.66	106.17	ORTHOXYLENE	163
1568:R0003	96.00	4.00		TABLE A-3	2
1569:R0003	43800	77.00	35.00	C1-C3 PARAFFINS, NON-REACTIVES	13
1570:R0003	45201	6.00	78.12	BENZENE	23
1571:R0003	43200	1.00	35.00	C4+ PARAFFINS, OLEFINS	33
1572:R0003	43200	13.00	35.00	C4+ PARAFFINS, OLEFINS	43
1573:R0003	45100	3.00	95.64	PRIM. AND SEC-ALKYL BENZENES	53
1574:X0001				X0001 70% STODDARD/30% PERCHLOROETHYLENE	2
1575:X0001	43107	.20	114.23	ISOMERS OF OCTANE	13
1576:X0001	43108	8.20	128.26	ISOMERS OF NONANE	23
1577:X0001	43109	20.80	142.29	ISOMERS OF DECANE	33
1578:X0001	43110	.80	156.32	ISOMERS OF UNDECANE	43
1579:X0001	43817	70.00	165.83	PERCHLOROETHYLENE	53
1580:X0002	90.00	10.00	03.92	X0002 COM HGHWY VEH. PROFILE	2
1581:X0002	43212	5.99	58.12	N-BUTANE	13
1582:X0002	43122	16.55	72.15	ISOMERS OF PENTANE	23
1583:X0002	43105	6.19	86.18	ISOMERS OF HEXANE	33
1584:X0002	43106	5.50	100.21	ISOMERS OF HEPTANE	43
1585:X0002	43107	7.76	114.23	ISOMERS OF OCTANE	53
1586:X0002	43108	.98	128.26	ISOMERS OF NONANE	63
1587:X0002	43109	0.39	142.29	ISOMERS OF DECANE	73
1588:X0002	43203	6.87	28.05	ETHYLENE	83
1589:X0002	43205	4.84	42.08	PROPYLENE	93
1590:X0002	43120	4.15	56.10	ISOMERS OF BUTENE	103
1591:X0002	43121	3.95	70.14	ISOMERS OF PENTENE	113
1592:X0002	43245	1.26	84.16	1-HEXENE	123
1593:X0002	43561	0.76	98.15	CYCLOHEXANONE	133
1594:X0002	45102	2.64	106.17	ISOMERS OF XYLENE	143
1595:X0002	45105	0.06	134.22	ISOMERS OF BUTYLBENZENE	153
1596:X0002	45107	2.15	120.19	ISOMERS OF TRIMETHYLBENZENE	163
1597:X0002	45202	10.61	92.15	TOLUENE	173
1598:X0002	45203	0.56	106.17	ETHYLBENZENE	183
1599:X0002	43502	3.67	30.03	FORMALDEHYDE	193
1600:X0002	43206	5.16	26.04	ACETYLENE	203
1601:X0002	43201	6.45	16.04	METHANE	213
1602:X0002	43202	0.80	30.07	ETHANE	223
1603:X0002	45201	2.69	78.12	BENZENE	233
1604:X0002	43265	0.05	112.14	1-OCTENE	243
1605:X0003	00.00	00.00	00.00	K0334(18%),K0172(13%),D0333(28%),K0181(41%)	2
1606:X0003	43118	2.2	114.00	MINERAL SPIRITS	13
1607:X0003	43119	.41	114.00	LACTOL SPIRITS	23
1608:X0003	43201	23.02	16.04	METHANE	33
1609:X0003	43202	4.06	30.07	ETHANE	43
1610:X0003	43203	2.34	28.05	ETHYLENE	53
1611:X0003	43204	1.46	44.09	PROPANE	63
1612:X0003	43205	.54	42.08	PROPYLENE	73
1613:X0003	43212	3.74	58.12	N-BUTANE	83
1614:X0003	43213	.18	56.10	BUTENE	93
1615:X0003	43214	.68	58.12	ISOBUTANE	103
1616:X0003	43231	2.54	86.18	N-HEXANE	113
1617:X0003	43232	2.7	100.21	N-HEPTANE	123
1618:X0003	43302	9.73	46.07	ETHYL ALCOHOL	133
1619:X0003	43303	3.28	60.09	N-PROPYL ALCOHOL	143

TABLE E-4 (continued)

1620:X0003	43304	6.07	60.09	ISOPROPYL ALCOHOL	153
1621:X0003	43351	.12	74.12	ETHYL ETHER	163
1622:X0003	43433	9.42	88.10	ETHYL ACETATE	173
1623:X0003	43434	.53	102.13	PROPYL ACETATE	183
1624:X0003	43444	8.24	104.00	ISOPROPYL ACETATE	193
1625:X0003	43452	.55	132.00	2-ETHOXYETHYL ACETATE	203
1626:X0003	43551	.33	58.08	ACETONE	213
1627:X0003	43552	3.20	72.10	METHYL ETHYL KETONE	223
1628:X0003	43802	9.80	84.94	DICHLOROMETHANE	233
1629:X0003	45202	4.9	92.15	TOLUENE	243
1630:X0004	00.00	00.00	00.00	X0004 D0J01=33%,K0098=33%,K0315=33%	2
1631:X0004	43105	2.20	86.18	ISOMERS OF HEXANE	13
1632:X0004	43107	1.87	114.23	ISOMERS OF OCTANE	23
1633:X0004	43108	6.87	128.26	ISOMERS OF NONANE	33
1634:X0004	43109	5.53	142.29	ISOMERS OF DECANE	43
1635:X0004	43115	.80	98.19	C-7 CYCLOPARAFFINS	53
1636:X0004	43116	.20	112.23	C-8 CYCLOPARAFFINS	63
1637:X0004	43117	1.60	126.26	C-9 CYCLOPARAFFINS	73
1638:X0004	43122	.13	72.15	ISOMERS OF PENTANE	83
1639:X0004	43204	.23	44.09	PROPANE	93
1640:X0004	43212	.75	58.12	N-BUTANE	103
1641:X0004	43213	.13	56.10	BUTENE	113
1642:X0004	43214	.17	58.12	ISOBUTANE	123
1643:X0004	43220	4.49	72.15	N-PENTANE	133
1644:X0004	43224	.83	70.14	1-PENTENE	143
1645:X0004	43228	7.40	70.14	2-METHYL-2-BUTENE	153
1646:X0004	43231	7.50	86.18	N-HEXANE	163
1647:X0004	43232	3.73	100.21	N-HEPTANE	173
1648:X0004	43233	5.67	114.23	N-OCTANE	183
1649:X0004	43235	4.94	128.26	N-NONANE	193
1650:X0004	43241	6.77	156.32	N-UNDECANE	203
1651:X0004	43248	.50	84.16	CYCLOHEXANE	213
1652:X0004	43255	6.07	170.34	N-DODECANE	223
1653:X0004	43258	5.90	184.36	N-TRIDECANE	233
1654:X0004	43259	3.90	198.40	N-TETRADECANE	243
1655:X0004	43260	2.40	212.42	N-PENTADECANE	253
1656:X0004	45102	6.83	106.17	ISOMERS OF XYLENE	263
1657:X0004	45104	2.17	120.19	ISOMERS OF ETHYLTOLUENE	273
1658:X0004	45105	1.47	134.22	ISOMERS OF BUTYLBENZENE	283
1659:X0004	45107	1.83	120.19	ISOMERS OF TRIMETHYLBENZENE	293
1660:X0004	45201	1.63	78.12	BENZENE	303
1661:X0004	45202	5.30	92.15	TOLUENE	313
1662:X0005	00.00	00.00	00.00	X0005 METHYL ISOBUTYL KETONE	2
1663:X0005	43560	100.00	100.16	METHYL ISOBUTYL KETONE	13
1664:X0006				X0006	2
1665:X0006	43105	8.90	86.18	ISOMERS OF HEXANE	13
1666:X0006	43106	2.19	100.21	ISOMERS OF HEPTANE	23
1667:X0006	43107	2.24	114.23	ISOMERS OF OCTANE	33
1668:X0006	43108	.26	128.26	ISOMERS OF NONANE	43
1669:X0006	43115	.24	98.19	C-7CYCLOPARAFFINS	53
1670:X0006	43122	27.56	72.15	ISOMERS OF PENTANE	63
1671:X0006	43204	1.71	44.09	PROPANE	73
1672:X0006	43212	18.94	58.12	N-BUTANE	83
1673:X0006	43213	1.73	56.10	BUTENE	93
1674:X0006	43214	6.31	58.12	ISOBUTANE	103
1675:X0006	43220	10.28	72.15	N-PENTANE	113
1676:X0006	43224	6.02	70.14	1-PENTENE	123
1677:X0006	43231	2.56	86.18	N-HEXANE	133
1678:X0006	43232	.70	100.21	N-HEPTANE	143
1679:X0006	43233	.16	114.23	N-OCTANE	153

TABLE E-4 (continued)

1680:X0006	43235	.03	128.26	N-NONANE	163
1681:X0006	43238	.12	142.29	N-DECANE	173
1682:X0006	43248	2.20	84.16	CYCLOHEXANE	183
1683:X0006	45102	2.18	106.17	ISOMERS OF XYLENE	193
1684:X0006	45103	.23	134.22	DIMETHYLETHYLBENZENE	203
1685:X0006	45104	.80	120.19	ISOMERS OF ETHYLTOLUENE	213
1686:X0006	45105	.08	134.22	ISOMERS OF BUTYLBENZENE	223
1687:X0006	45107	.54	120.19	ISOMERS OF TRIMETHYLBENZENE	233
1688:X0006	45108	.02	120.19	ISOMERS OF PROPYLBENZENE	243
1689:X0006	45201	1.17	78.12	BENZENE	253
1690:X0006	45202	2.47	92.15	TOLUENE	263
1691:X0007	00.00	00.00	00.15	X0007	2
1692:X0007	43105	.40	86.18	ISOMERS OF HEXANE	13
1693:X0007	43107	.35	114.23	ISOMERS OF OCTANE	23
1694:X0007	43108	7.22	128.26	ISOMERS OF NONANE	33
1695:X0007	43109	17.54	142.29	ISOMERS OF DECANE	43
1696:X0007	43110	.63	156.32	ISOMERS OF UNDECANE	53
1697:X0007	43115	.52	98.19	C-7 CYCLOPARAFFINS	63
1698:X0007	43116	.06	112.23	C-8 CYCLOPARAFFINS	73
1699:X0007	43117	.11	126.26	C-9 CYCLOPARAFFINS	83
1700:X0007	43118	.53	114.00	MINERAL SPIRITS	93
1701:X0007	43119	.01	114.00	LACTOL SPIRITS	103
1702:X0007	43122	.10	72.15	ISOMERS OF PENTANE	113
1703:X0007	43201	.76	16.04	METHANE	123
1704:X0007	43202	.13	30.07	ETHANE	133
1705:X0007	43203	.08	28.05	ETHYLENE	143
1706:X0007	43204	.12	44.09	PROPANE	153
1707:X0007	43205	.02	42.08	PROPYLENE	163
1708:X0007	43212	.30	58.12	N-BUTANE	173
1709:X0007	43213	.02	56.10	BUTENE	183
1710:X0007	43214	1.41	58.12	ISOBUTANE	193
1711:X0007	43220	.41	72.15	N-PENTANE	203
1712:X0007	43224	.04	70.14	1 PENTENE	213
1713:X0007	43228	.51	70.14	2-METHYL 2-BUTENE	223
1714:X0007	43231	4.51	86.18	N-HEXANE	233
1715:X0007	43232	.35	100.21	N-HEPTANE	243
1716:X0007	43233	.39	114.23	N-OCTANE	253
1717:X0007	43235	.34	128.26	N-NONANE	263
1718:X0007	43241	.47	156.32	N-UNDECANE	273
1719:X0007	43248	3.84	84.16	CYCLOHEXANE	283
1720:X0007	43255	.42	170.34	N-DODECANE	293
1721:X0007	43258	.41	184.36	N-TRIDECANE	303
1722:X0007	43259	.27	198.40	N-TETRADECANE	313
1723:X0007	43260	.17	212.42	N-PENTADECANE	323
1724:X0007	43301	2.11	32.04	METHYL ALCOHOL	333
1725:X0007	43302	11.07	46.07	ETHYL ALCOHOL	343
1726:X0007	43303	.11	60.09	N-PROPYL ALCOHOL	353
1727:X0007	43304	14.29	60.09	ISOPROPYL ALCOHOL	363
1728:X0007	43305	.29	74.12	N-BUTYL ALCOHOL	373
1729:X0007	43306	.11	74.12	ISOBUTYL ALCOHOL	383
1730:X0007	43367	2.08	62.07	GLYCOL ETHER	393
1731:X0007	43369	.95	76.00	PROPYLENE GLYCOL	403
1732:X0007	43370	.11	62.07	ETHYLENE GLYCOL	413
1733:X0007	43433	.31	88.10	ETHYL ACETATE	423
1734:X0007	43434	.02	102.13	PROPYL ACETATE	433
1735:X0007	43435	.79	116.16	N-BUTYL ACETATE	443
1736:X0007	43444	.27	104.00	ISOPROPYL ACETATE	453
1737:X0007	43446	.28	116.16	ISOBUTYL ACETATE	463
1738:X0007	43451	1.12	144.21	ISOBUTYL ISOBUTYRATE	473
1739:X0007	43452	.26	132.00	2-ETHOXYETHYL ACETATE	483

TABLE E-4 (continued)

1740:X0007	43502	.15	30.03	FORMALDEHYDE	493
1741:X0007	43551	3.40	58.08	ACETONE	503
1742:X0007	43552	3.63	72.10	METHYL ETHYL KETONE	513
1743:X0007	43559	.13	100.16	METHYL N-BUTYL KETONE	523
1744:X0007	43560	1.35	100.16	METHYL ISOBUTYL KETONE	533
1745:X0007	43802	.32	84.94	DICHLORO METHANE	543
1746:X0007	43817	6.10	165.83	PERCHLOROETHYLENE	553
1747:X0007	43819	.30	173.85	METHYLENE BROMIDE	563
1748:X0007	45101	1.13	114.00	NAPHTHA	573
1749:X0007	45102	2.40	106.17	ISOMERS OF XYLENE	583
1750:X0007	45104	.15	120.19	ISOMERS OF ETHYLTOLUENE	593
1751:X0007	45105	.10	134.22	ISOMERS OF BUTYLBENZENE	603
1752:X0007	45107	.13	120.19	ISOMERS OF TRIMETHYLBENZENE	613
1753:X0007	45201	.48	78.12	BENZENE	623
1754:X0007	45202	2.63	92.15	TOLUENE	633
1755:X0007	45203	.79	106.17	ETHYLBENZENE	643
1756:X0008		00.00	K0272(33%),K0273(33%),K0274(33%)		2
1757:X0008	43105	8.10	86.18	ISOMERS OF HEXANE	13
1758:X0008	43106	1.60	100.21	ISOMERS OF HEPTANE	23
1759:X0008	43107	0.30	114.23	ISOMERS OF OCTANE	33
1760:X0008	43115	47.70	98.19	C-7 CYCLOPARAFFINS	43
1761:X0008	43116	2.10	112.23	C-8 CYCLOPARAFFINS	53
1762:X0008	43231	13.10	86.18	HEXANE	63
1763:X0008	43232	0.60	100.21	HEPTANE	73
1764:X0008	43233	0.10	114.23	OCTANE	83
1765:X0008	43242	0.10	70.14	CYCLOPENTANE	93
1766:X0008	43248	5.60	84.16	CYCLOHEXANE	103
1767:X0008	43262	17.10	84.16	METHYLCYCLOPENTANE	113
1768:X0008	45202	0.10	92.15	TOLUENE	123
1769:X0008	45201	3.50	78.12	BENZENE	133
1770:X0009		00.00	K0148(25%),K0156(25%),402006C(25%),402007B(25%)		2
1771:X0009	43118	38.08	114.00	MINERAL SPIRITS	13
1772:X0009	45102	2.75	106.16	XYLENE	23
1773:X0009	45202	12.00	92.13	TOLUENE	33
1774:X0009	43561	2.00	98.15	CYCLOHEXANONE	43
1775:X0009	43551	12.33	58.08	ACETONE	53
1776:X0009	43552	12.05	72.10	METHYL ETHLY KETONE	63
1777:X0009	43304	6.53	60.09	ISO-PROPYL ALCOHOL	73
1778:X0009	43445	1.00	140.00	METHYL AMYL ACETATE	83
1779:X0009	43560	0.68	100.16	METHYL ISOBUTYL KETONE	93
1780:X0009	43301	0.18	32.04	METHYL ALCOHOL	103
1781:X0009	43302	0.13	46.07	ETHYL ALCOHOL	113
1782:X0009	43305	1.78	74.12	N-BUTYL ALCOHOL	123
1783:X0009	43433	0.80	88.10	ETHYL ACETATE	133
1784:X0009	43435	3.58	116.16	N-BUTYL ACETATE	143
1785:X0009	43444	4.25	104.00	ISOPROPYL ACETATE	153
1786:X0009	43233	0.20	114.23	OCTANE	163
1787:X0009	43248	9.70	84.16	CYCLOHEXANE	173
1788:X0010		00.00	12.5% OF K0148;402004D&E;K0134,56;K0162,4;K0092		2
1789:X0010	43118	31.24	114.00	MINERAL SPIRITS	13
1790:X0010	45102	2.57	106.17	XYLENE	23
1791:X0010	45202	2.86	92.15	TOLUENE	33
1792:X0010	43561	1.00	98.19	CYCLOHEXANONE	43
1793:X0010	43551	4.76	58.08	ACETONE	53
1794:X0010	43552	5.54	72.10	METHYL ETHYL KETONE	63
1795:X0010	43304	3.88	60.09	ISOOPROPYL ALCOHOL	73
1796:X0010	43445	0.48	140.00	METHYL AMYL ACETATE	83
1797:X0010	43220	0.78	72.15	N-PENTANE	93
1798:X0010	45101	2.73	114.00	NAPTHA	110
1799:X0010	43205	0.28	42.08	PROPYLENE	113

TABLE E-4 (continued)

1800:X0010	43560	1.28	100.16	METHYL ISOBUTYL KETONE	123
1801:X0010	43213	0.09	56.10	BUTENE	133
1802:X0010	43301	0.39	32.04	METHYL ALCOHOL	143
1803:X0010	43224	0.28	70.14	1-PENTENE	153
1804:X0010	43302	0.29	46.07	ETHYL ALCOHOL	163
1805:X0010	43502	0.39	30.03	FORMALDEHYDE	173
1806:X0010	43305	1.64	74.12	N-BUTYL ALCOHOL	183
1807:X0010	43367	2.09	62.07	GLYCOL ETHER	203
1808:X0010	43432	0.37	74.08	METHYL ACETATE	213
1809:X0010	43433	1.44	88.10	ETHYL ACETATE	223
1810:X0010	43435	19.23	116.16	N-BUTYL ACETATE	233
1811:X0010	43444	2.96	104.00	ISOPROPYL ACETATE	243
1812:X0010	43204	0.41	44.09	PROPANE	253
1813:X0010	43212	2.92	58.12	N-BUTANE	263
1814:X0010	43203	0.23	28.05	ETHYLENE	273
1815:X0010	43201	9.42	16.04	METHANE	283
1816:X0010	43202	0.61	30.07	ETHANE	293
1817:X0011		03.11	14.3% OF K0164,6;K0172,K0183,405004B,405005C		2
1818:X0011	43204	1.71	44.09	PROPANE	13
1819:X0011	43212	0.14	58.12	N-BUTANE	23
1820:X0011	43201	11.44	16.04	METHANE	33
1821:X0011	43202	3.43	30.07	ETHANE	43
1822:X0011	43302	6.80	46.07	ETHYL ALCOHOL	53
1823:X0011	43303	17.76	60.09	N-PROPYL ALCOHOL	63
1824:X0011	43304	2.39	60.09	ISOPROPYL ALCOHOL	73
1825:X0011	43351	0.13	74.12	ETHYL ETHER	83
1826:X0011	43433	2.16	88.10	ETHYL ACETATE	93
1827:X0011	43452	0.20	132.00	ACETIC ACID 2-ETHOXYETHYL ESTER	103
1828:X0011	43203	0.29	28.05	ETHYLENE	113
1829:X0011	43205	4.80	42.08	PROPYLENE	123
1830:X0011	43213	1.94	56.10	N-BUTANE	133
1831:X0011	43224	1.70	70.13	1-PENTENE	143
1832:X0011	43502	3.11	30.03	FORMALDEHYDE	153
1833:X0011	43118	31.00	114.00	MINERAL SPIRITS	163
1834:X0011	45102	1.14	106.16	XYLENE	173
1835:X0011	45202	3.71	92.13	TOLUENE	183
1836:X0011	43248	1.43	84.16	CYLCOHEXANE	193
1837:X0011	45106	1.00	134.21	ISOMERS OF DIETHYLBENZENE	203
1838:X0011	45203	0.86	106.16	ETHYLBENZENE	213
1839:X0011	43301	0.86	32.04	METHYL ALCOHOL	223
1840:X0011	43305	0.86	74.12	N-BUTYL ALCOHOL	233
1841:X0011	43435	1.14	116.16	N-BUTYL ACETATE	243
1842:X0012		00.00	X0012 METHYL ACETATE		2
1843:X0012	43432	100.00	74.08	METHYL ACETATE	13
1844:X0013		00.00	X0013		2
1845:X0013	43824	21.07	131.40	TRICHLOROETHYLENE	13
1846:X0013	43814	22.31	133.42	1,1,1-TRICHLOROETHANE	23
1847:X0013	43817	7.44	165.83	PERCHLOROETHYLENE	33
1848:X0013	43802	4.13	84.94	METHYLENE CHLORIDE	43
1849:X0013	43821	4.13	187.30	TRICHLOROTRIFLUOROETHANE	53
1850:X0013	45201	0.96	78.12	BENZENE	63
1851:X0013	45202	3.58	92.15	TOLUENE	73
1852:X0013	45102	1.65	106.17	XYLENE	83
1853:X0013	43248	0.14	84.16	CYCLOHEXANE	93
1854:X0013	43551	1.38	58.08	ACETONE	103
1855:X0013	43552	1.11	72.10	METHYLETHYLKETONE	113
1856:X0013	43305	0.69	74.12	BUTANOL	123
1857:X0013	43367	0.83	62.07	GLYCOL ETHER	133
1858:X0013	43105	30.58	86.18	ISOMERS OF HEXANE	143
1859:					

TABLE E-5. SPECIES/CLASS ASSIGNMENTS, 1980 NAPAP INVENTORY VERSION 5.2

Class	M.W.	Compound (Species) Name
1	16.04	METHANE
2	30.07	ETHANE
3	44.09	PROPANE
4	58.12	N-BUTANE
5	58.12	ISOBUTANE
7	72.15	N-PENTANE
8	72.15	ISOPENTANE
9	133.42	1,1,1,-TRICHLOROETHANE
9	133.42	1,1,2-TRICHLOROETHANE
9	98.97	1,1,DICHLOROETHANE
9	88.12	1,4 DIOXANE
9	100.21	2,4, DIMETHYL PENTANE
9	132	2-ETHOXYETHYL ACETATE
9	26.04	ACETYLENE
9	118.17	BUTYL CELLOSOLVE
9	98.19	C-7 CYCLOPARAFFINS
9	112.23	C-8 CYCLOPARAFFINS
9	126.26	C-9 CYCLOPARAFFINS
9	331.67	CARBON TETRABROMIDE
9	90.12	CELLOSOLVE
9	132	CELLOSOLVE ACETATE
9	119.39	CHLOROFORM
9	84.16	CYCLOHEXANE
9	70.14	CYCLOPENTANE
9	42.08	CYCLOPROPANE
9	120.91	DICHLORODIFLUOROMETHANE
9	84.94	DICHLOROMETHANE
9	46.07	ETHYL ALCOHOL
9	64.52	ETHYL CHLORIDE
9	74.12	ETHYL ETHER
9	45.09	ETHYLAMINE
9	44.05	ETHYLENE OXIDE
9	99	ETHYLENE DICHLORIDE
9	62.07	ETHYLENE GLYCOL
9	62.07	GLYCOL
9	62.07	GLYCOL ETHER
9	116.16	ISOBUTYL ACETATE
9	74.12	ISOBUTYL ALCOHOL
9	144.21	ISOBUTYL ISOBUTYRATE
9	142.29	ISOMERS OF DECANE
9	170.33	ISOMERS OF DODECANE
9	100.21	ISOMERS OF HEPTANE
9	86.18	ISOMERS OF HEXANE
9	128.26	ISOMERS OF NONANE
9	114.23	ISOMERS OF OCTANE
9	212.41	ISOMERS OF PENTADECANE
9	72.15	ISOMERS OF PENTANE
9	198.38	ISOMERS OF TETRADECANE
9	184.36	ISOMERS OF TRIDECANE
9	156.32	ISOMERS OF UNDECANE

TABLE E-5 (continued)

Class	M.W.	Compound (Species) Name
9	104	ISOPROPYL ACETATE
9	60.09	ISOPROPYL ALCOHOL
9	114	LACTOL SPIRITS
9	32.04	METHYL ALCOHOL
9	140	METHYL AMYL ACETATE
9	76.11	METHYL CELLOSOLVE
9	50.49	METHYL CHLORIDE
9	31.06	METHYLAMINE
9	85	METHYLCYCLOHEXANE
9	84.16	METHYLCYCLOPENTANE
9	173.85	METHYLENE BROMIDE
9	114	MINERAL SPIRITS
9	74.12	N-BUTYL ALCOHOL
9	142.29	N-DECANE
9	310.61	N-DOCOSANE
9	170.34	N-DODECANE
9	282.56	N-EICOSANE
9	296.59	N-HENEICOSANE
9	240.48	N-HEPTADECANE
9	100.21	N-HEPTANE
9	226.45	N-HEXADECANE
9	86.18	N-HEXANE
9	268.53	N-NONADECANE
9	128.26	N-NONANE
9	254.51	N-OCTADECANE
9	114.23	N-OCTANE
9	212.42	N-PENTADECANE
9	60.09	N-PROPYL ALCOHOL
9	198.4	N-TETRADECANE
9	184.36	N-TRIDECANE
9	156.32	N-UNDECANE
9	114	NAPHTHA
9	76	PROPYLENE GLYCOL
9	58.08	PROPYLENE OXIDE
9	74.12	TERT-BUTYL ALCOHOL
9	72.1	TETRAHYDROFURAN
9	137.37	TRICHLORO-FLUOROMETHANE
9	187.38	TRICHLOROTRIFLUOROMETHANE
9	59.11	TRIMETHYLAMINE
9	93.19	TRIMETHYLFLUOROSILANE
9	86	UNIDENTIFIED HYDROCARBONS
10	28.05	ETHYLENE
11	42.08	PROPYLENE
13	56.12	ISOBUTYLENE
15	54.09	1,3-BUTADIENE
15	98.19	1-HEPTENE
15	84.16	1-HEXENE
15	112.22	1-OCTENE
15	70.14	1-PENTENE
15	70.14	2-METHYL,2-BUTENE

TABLE E-5 (continued)

Class	M.W.	Compound (Species) Name
15	98.19	3,3 DIMETHYL, 1-PENTENE
15	70.14	3-METHYL-1-BUTENE
15	41.05	ACETONITRILE
15	55.06	ACRYLONITRILE
15	56.1	BUTENE
15	113.24	C8 OLEFIN UNK
15	70.14	CIS, 2-PENTENE
15	100.11	ETHYL ACRYLATE
15	54.09	ETHYLACETYLENE
15	56.1	ISOMERS OF BUTENE
15	70.14	ISOMERS OF PENTENE
15	40.06	METHYLACETYLENE
15	165.83	PERCHLOROETHYLENE
15	40.06	PROPADIENE
15	136.23	TERPENES
15	131.4	TRICHLOROETHYLENE
15	62.5	VINYL CHLORIDE
16	78.12	BENZENE
17	92.15	TOLUENE
18	106.17	1,3 DIMETHYLBENZENE
18	106.17	ISOMERS OF XYLENE
18	106.17	ORTHO XYLENE
19	106.17	ETHYLBENZENE
20	120.2	1,2,3,-TRIMETHYLBENZENE
20	120.2	1,3,5-TRIMETHYLBENZENE
20	118.18	A-METHYLSTYRENE
20	112.56	CHLOROBENZENE
20	134.22	DIMETHYLETHYLBENZENE
20	134.22	ISOMERS OF BUTYLBENZENE
20	134.22	ISOMERS OF DIETHYLBENZENE
20	120.19	ISOMERS OF ETHYLTOLUENE
20	120.19	ISOMERS OF PROPYLBENZENE
20	120.2	ISOMERS OF TRIMETHYLBENZENE
20	120.19	ISOMERS OF TRIMETHYLBENZENE
20	120.2	M-ETHYLTOLUENE
20	134.21	N-BUTYLBENZENE
20	94.11	PHENOLS
20	95.64	PRIM. AND SEC-ALKYL BENZENES
20	134.21	SEC-BUTYLBENZENE
20	104.16	STYRENE
20	134.22	TERT-BUTYLBENZENE
20	132	TETRAMETHYLBENZENE
20	219.5	TRI/TETRAALKYL BENZENE
21	30.03	FORMALDEHYDE
22	44.05	ACETALDEHYDE
24	72.12	BUTYRALDEHYDE
24	73.09	DIMETHYLFORMAMIDE
25	58.08	ACETONE
26	98.15	CYCLOHEXANONE

TABLE E-5 (continued)

Class	M.W.	Compound (Species) Name
26	116.16	DIACETONE ALCOHOL
26	72.1	METHYL ETHYL KETONE
26	100.16	METHYL ISOBUTYL KETONE
26	100.16	METHYL N-BUTYL KETONE
28	60.05	ACETIC ACID
29	88.1	ETHYL ACETATE
29	74.08	METHYL ACETATE
29	116.16	N-BUTYL ACETATE
29	102.13	PROPYL ACETATE
29	230	XYLENE BASE ACIDS

TABLE E-6. SPECIES-LEVEL ANALYSIS OF UNIT CONVERSION, SCC 301999

6-Digit SCC	301999
Speciation Profile	K0079
THC (Tons/Year)	211348

Wt %	MW	Compound (Species)	Class	Weight Fraction	CALC TONS/YR	CALC 1000-MOLE/YR
0.7	44.05	Acetaldehyde	Acetalde	0.007	1,479	30,469
0.8	72.12	Butyraldehyde	Aldehyde	0.008	1,691	21,268
1	26.04	Acetylene	Alkane	0.010	2,113	73,631
1.8	84.16	Cyclohexane	Alkane	0.018	3,804	41,008
1.4	46.07	Ethyl Alcohol	Alkane	0.014	2,959	58,265
7.2	64.52	Ethyl chloride	Alkane	0.072	15,217	213,963
4.6	44.05	Ethylene oxide	Alkane	0.046	9,722	200,223
2.5	60.09	Isopropyl Alcohol	Alkane	0.025	5,284	79,770
5.4	32.04	Methyl Alcohol	Alkane	0.054	11,413	323,149
0.9	50.49	Methyl chloride	Alkane	0.009	1,902	34,177
1.4	58.08	Propylene oxide	Alkane	0.014	2,959	46,217
0.5	74.12	n-Butyl Alcohol	Alkane	0.005	1,057	12,934
3	55.06	Acrylonitrile	Alkene	0.030	6,340	104,469
4.1	56.1	Butene	Alkene	0.041	8,665	140,127
0.8	100.11	Ethyl acrylate	Alkene	0.008	1,691	15,322
8.9	56.1	Isomers of Butene	Alkene	0.089	18,810	304,178
0.6	62.5	Vinyl chloride	Alkene	0.006	1,268	18,407
2	94.11	Phenols	Aromatic	0.020	4,227	40,747
3.4	104.16	Styrene	Aromatic	0.034	7,186	62,586
10	78.12	Benzene	Benzene	0.100	21,135	245,436
21.6	28.05	Ethylene	Ethylene	0.216	45,651	1,476,461
1.7	30.03	Formaldehyde	Formalde	0.017	3,593	108,541
1.3	230	Xylene base acids	Org Acid	0.013	2,748	10,837
9	42.08	Propylene	Propylen	0.090	19,021	410,079
4.1	92.15	Toluene	Toluene	0.041	8,665	85,308
1.3	106.17	Isomers of Xylene	Xylene	0.013	2,748	23,477

Weighted average molecular weights for multicomponent classes:

26.7	47.26		Alkane	0.267	56,430	1,083,337
17.4	57.27		Alkene	0.174	36,775	582,503
5.4	100.20		Aromatic	0.054	11,413	103,333

TABLE E-7. CLASS-LEVEL ANALYSIS OF UNIT CONVERSION, SCC 301999

6-Digit SCC	301999
Speciation Profile	K0079
THC (Tons/Year)	211348

Class	1000-MOL /YR	AVG MOL WT	KNOWN TONS/YR	CALC TONS/YR	ERROR (%)
Acetaldehyde	30,469	44.05	1,479	1,479	0%
Aldehyde	21,268	72.61	1,691	1,702	1%
Alkane	1,083,337	121.79	56,430	145,436	158%
Alkene	582,503	80.41	36,775	51,630	40%
Aromatic	103,333	126.14	11,413	14,368	26%
Benzene	245,436	78.12	21,135	21,135	0%
Ethylene	1,476,461	28.05	45,651	45,651	0%
Formaldehyde	108,541	30.03	3,593	3,593	0%
Org Acids	10,837	122.09	2,748	1,458	-47%
Propylene	410,079	42.08	19,021	19,021	0%
Toluene	85,308	92.15	8,665	8,665	0%
Xylene	23,477	106.17	2,748	2,748	0%
Calculated THC	4,181,051		211,349	316,887	50%

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