REVISION TO THE NEW MEXICO

STATE IMPLEMENTATION PLAN

FOR OZONE

Emissions Inventory of the Sunland Park Ozone Nonattainment Area

Regulatory Component

and Requests for Waivers

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Prepared by staff of the:

Air Quality Bureau
New Mexico Environment Department
1190 St. Francis Dr.
Santa Fe, New Mexico 87502

Approved
Jimi Gadzia, Chair
Environmental Improvement Board

Date **[Please see a hard copy for signature]**

SUNLAND PARK OZONE NONATTAINMENT AREA SIP REPORT

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SECTION ONE

INTRODUCTION AND BACKGROUND

SECTION ONE - INTRODUCTION AND BACKGROUND

This section is intended to briefly describe the Sunland Park area and to present certain data that will be used throughout this report. The Sunland Park ozone nonattainment area lies within Doña Ana County, New Mexico. Doña Ana County has a total area of 3804 square miles and a population of 158,849 (1995). Much of this population is located within the city of Las Cruces.

Monitoring for several air pollutants, especially particulates and sulfur dioxide, has been conducted in the Sunland Park area since the mid 1970's. Some monitoring for ozone was conducted in La Union in the mid to late 1970's. Continuous monitoring for ozone has been conducted in La Union since 1984. Monitoring for ozone in Sunland Park did not begin until 1992. The first recorded exceedance of the current ozone standard occurred on September 18, 1992 in Sunland Park. Since then a total of 12 exceedances have been documented. The area was officially designated as nonattainment for ozone on July 12, 1995 in a Federal Register announcement published June 12, 1995. Sunland Park was designated as a marginal nonattainment area, which is the lowest or least "serious" classification. Its design value (the figure used to assign a classification) was 0.136 ppm. This figure represented the third highest of the ozone readings that had exceeded the ozone standard. The federal ozone standard is set at 0.12 ppm for a 1-hour exposure (not to be exceeded more than once per year, averaged over 3 years). The nonattainment area extends from the Mexico border north to the 32 degree north latitude line and from the Texas border west to the Range 3E-2E line (see Figure 1).

[Insert Figure 1 here - only available in hard copy]

The Sunland Park nonattainment area is approximately 42 square miles in area. To determine this it was divided into two segments: 1) the northern (narrower) portion, and 2) the southern (wider) portion. The northern portion extends from the north boundary at latitude 32° 00' south to about latitude 31° 49'. This area is roughly 3.5 miles wide by 6.25 miles high for a total of 21.9 square miles. The southern portion extends from 31° 49' south to the Mexico border and is about 8 miles wide by 2.5 miles high for a total of 20.0 square miles). This 42 square mile area represents only 1.10% of the county-wide area (3804 square miles). The nonattainment area includes the communities, from south to north, of Sunland Park, Santa Teresa, and La Union. With both a small population and agricultural activities along the Rio Grande the area is largely rural, especially north of Santa Teresa.

<u>Population and Employment</u>

The Delphi Group, a subcommittee of the greater El Paso, Texas Metropolitan Planning Organization (MPO), has gathered and summarized population data for communities in the Sunland Park nonattainment area. The Sunland Park area has been included within the El Paso MPO. For population and employment determinations they divided the area into four segments: 1) Sunland Park, 2) Santa Teresa, 3) La Union, and 4) Gadsden (the area north of La Union). Combined population figures for all 4 segments for 1990 (census year) and 1994 (estimated) were 10,705 and 12,295, respectively. Refer to the Appendix for the source of these data. The 1994 figure was adjusted for purposes of the 1995 base year inventory. The population increase from 1990 to 1994 is 14.85% or 3.71% per year. Assuming a similar increase of 3.71% from 1994-1995, the 1995 estimated population of the nonattainment area is 12,752. This small area represents only 8.0% of the total county population (158,849).

Las Cruces, the largest city in the county, has never recorded an exceedance of the ozone standard. The close proximity of this small area to the much larger cities of El Paso, Texas (1994 estimated population of 655,591 people, and classified as a "serious" ozone nonattainment area) and Juarez, Mexico (estimated at over 1,000,000 million people in 1993) is suspected to be the primary cause for Sunland Park's violation of the federal ozone standard. In this inventory Sunland Park's emissions will be compared to those from El Paso, TX. Data are not available for Juarez, Mexico, but its much larger size and more lenient or nonexisting air pollution controls is certainly expected to be a big factor.

Employment figures are sometimes used as rough factors in various source category emissions calculations. Statewide employment for 1995 has been estimated at 738,448. Doña Ana County employment for 1995 has been estimated at 57,655. Using a ratio of total employed to total population to estimate employment within the nonattainment area:

$$\frac{57{,}655}{158{,}849} = \frac{X}{12{,}752} \qquad X = 4628$$

where X is the total number of employed people within the nonattainment area. Again, the Delphi Group of the El Paso MPO conducted an actual survey of the Sunland Park nonattainment area to determine employment and arrived at a figure of 2143 for the 1990 census year. Growth projections put the year 2000 employment figure at 2437. Estimating uniform growth over that time period would give an estimated employment of 2290 for 1995. This figure seems more realistic considering the generally poor and economically depressed conditions of the area, and since this figure is based on local data rather than a gross estimate based on statewide figures, the 2290 figure will be used rather than the 4628 figure.

Ozone Season

U.S. EPA guidance was followed in selecting the three months with both the highest and the greatest number of exceedances. The ozone season was determined by examining all of the exceedances recorded for the area, of which there have been 12 since continuous monitoring began in 1984. Eleven of these exceedances have occurred at the Sunland Park monitoring site while only one has occurred at the La Union site. The following is a list (from highest to lowest) of the 12 exceedances:

OZONE (ppm)	YEAR	MONTH and DAY
0.140	1993	September 7
0.137	1994	August 2
0.137	1995	September 6
0.136	1994	June 24
0.135	1995	October 28
0.131	1993	August 24

0.131	1995	August 30
0.131	1996	October 12
0.129	1993	August 12
0.127	1993	November 30
0.126	1992	September 18
0.125	1993	August 24

Distribution of exceedances by month:

June	July	August	September	October	November	Total
1	0	5	3	2	1	12

Ten of the 12 exceedances (83%) occurred during the months of August, September, and October. The three highest values occurred in August and September. The one exceedance in June is only the fourth highest. No exceedances have ever occurred in July. The one exceedance occurring in November is only the tenth highest. From these data it is very clear that a 3-month ozone season would be August, September and October. The Texas Natural Resource Conservation Commission (TNRCC) used June, July, and August as the ozone season for the El Paso 1990 base year emission inventory. This would make the Sunland Park ozone season somewhat different (offset) from El Paso's season. At this time, Sunland Park's data do not adequately support a selection of June, July, and

August. A six month ozone season (June through November) could possibly be selected as well. But due to the total absence of exceedances in July and the fact that the one exceedance in November was actually almost in December (Nov. 30) makes a six month season questionable as well. Until more data are collected to demonstrate otherwise, a three month ozone season of August, September, and October appears to be the most logical selection for this inventory year.

SECTION TWO

EMISSIONS INVENTORY

SECTION 2.1 - EMISSIONS INVENTORY SUMMARY

This section summarizes emissions from all source categories inventoried within the Sunland Park ozone nonattainment area in New Mexico (see Table 2.1-A). These categories are:

1) point (large) sources
2) area (small) sources
3) on-road mobile sources
4) non-road mobile sources
5) biogenic (natural) sources.

Point sources within the Sunland Park nonattainment area are those that emit more than 100 tons of CO (carbon monoxide), or 25 tons of NOx (nitrogen oxides), or 10 tons of VOC (volatile organic compounds) annually. Point sources within a 25 mile radius of the nonattainment area are those emitting 100 or more tons annually of either CO, NOx, or VOC. Within the Sunland Park nonattainment area, point sources annually account for 68% of total CO, 62% of total NOx, and 4% or 8% of total VOC under "worst" and "best" cases, respectively. Worst versus best case definitions are based on methods used to determine VOC (NMOC, nonmethane organic compound) emissions from a municipal solid waste landfill site (see Section 2.5.2 of this report regarding the landfill). All point sources combined, i.e. both those within the nonattainment area and those within a 25 mile radius, annually account for 76% of total CO, 89% of total NOx, and 58% or 73% of total VOC. From these results, it would appear that point sources account for much of the air pollution within the Sunland Park area. This is especially true for CO and NOx. This can be deceiving though, because on-road mobile sources can account for 50-75% of all CO, NOx, and VOC emissions in the El Paso area (see Section 2.2). The Sunland Park landfill, the largest source of evaporative VOC from area sources within Sunland Park, does appear to be a big local factor in VOC emissions. In the worst case situation the landfill (508.6 tons VOC/year) accounts for 50% of VOC emitted within the Sunland Park nonattainment area. This worst case percentage drops to 22% when point sources within 25 miles are included. Emissions presented in Table 2.1-A are expressed in both tons per year and in tons per day. Tons per year is based on a full calendar year. Tons per day is used during the ozone season. The ozone season is often defined as the three month period during which most of the exceedances of the standard occur. For many ozone nonattainment areas the ozone season occurs during the warmest months of the year, typically June, July, and August. For the Sunland Park area most of the exceedances have occurred within August, September, and October as was discussed within the introduction. To arrive at daily emission rates the annual emissions are not necessarily divided by 365 days. This is because some sources tend to be seasonal in their activity and hence the amount of emissions may vary slightly from season to season. Also, temperature is an important factor as volatile compounds tend to vaporize more readily at higher temperatures. The U.S. EPA has derived seasonal activity factors for certain source categories. For example, an even distribution of emissions through the four seasons would mean 25% in each of the seasons. These seasonal percentages can be factored up or down depending on whether a source emits more or less of a pollutant during any particular season. Seasonal activity can also be determined through survey questionnaires. Since Sunland Park's ozone season has been determined to be late summer and fall (August through October), which is generally cooler than summer, but warmer than winter, seasonal adjustment factors were only used if a source reported some particular seasonality in its operation or it made sense to use such a factor. Certainly with the more moderate temperatures of fall, a seasonal factor of 25% seemed logical and was frequently used.

Table 2.1-A. Summary of CO, NOx, and VOC emissions for the Sunland Park ozone nonattainment area.

TPY = tons/year; TPD = ton/day for the ozone season (August through October).

SOURCE CATEGORY		CO		NOx		VOC	
		TPY	TPD	TPY	TPD	TPY	TPD
Point Sources within the Nonattainment Area (NA)		4357.41	11.965	1131.05	3.109	45.98	0.165
Point Sources within a 25 mile Radius of the NA		2355.84	7.403	4759.54	14.597	1334.10	3.889
Area Sources - Combustion		157.94	0.586	30.40	0.0896	37.26	0.124
Area Sources - Evaporative (VOC only)		-----	-----	-----	-----	604.13 (worst); 140.83 (best)[a]	1.663 (worst); 0.390 (best)[a]
On-Road Mobile Sources		1102.67	3.021[b]	232.50	0.637[b]	109.50	0.300[b]
Non-Road Mobile Sources		830.60	2.275	416.47	1.141	86.42	0.237
Biogenic Sources		-----	-----	26.40	0.110	138.72	0.578
TOTALS	Within Sunland Park NA	6448.62	17.847	1836.82	5.087	1022.01 (worst); 558.71 (best)	3.067 (worst); 1.794 (best)
	Plus Point Sources Within 25 miles	8804.46	25.250	6596.36	19.684	2356.11 (worst); 1892.81 (best)	6.956 (worst); 5.683 (best)

a Worst and best figures are based on the method used to estimate emissions from a municipal landfill (see Section 2.5.2 of this report for an explanation).

b These figures are based on an ozone season of June through August (see Section 2.6 of this report for an explanation).

SECTION 2.2 - COMPARISON OF SUNLAND PARK'S EMISSIONS

TO EL PASO, TEXAS

The purpose of this section is to make a gross overall comparison of total emissions from the Sunland Park ozone nonattainment area to those from the El Paso, TX ozone nonattainment area (see Table 2.2-A). The Sunland Park area is classified as a "marginal" ozone nonattainment area, while El Paso County is classified as "serious." Definitive data for El Paso were only available for 1990 (their base year inventory). The 1995 estimated figures for El Paso are not intended to be exact or definitive. They have been estimated for comparative purposes. Since definitive grand total emissions from El Paso for 1995 were not available, Sunland Park grand totals were only compared to 1990 El Paso emissions. As Table 2.2-A shows, Sunland Park emits only 4.08% of the CO, 6.91% of the NOx, and only 1.69% or 3.09% of the VOC that El Paso emits. These differences are clearly understandable considering the population differences between the two nonattainment areas. For most source categories, Sunland Park emissions represent only about 1-10% of El Paso emissions (for both 1990 and 1995). The one source category for which Sunland Park is significant are point sources. Point source emissions of CO in Sunland Park are 165-188% of those in El Paso and the NOx emissions are 16-24% of El Paso emissions. This is due to the very large point source of El Paso Electric Company located in Sunland Park. Hence, with the exception of the El Paso Electric facility, emissions from Sunland Park are small compared to those of El Paso, Texas.

Table 2.2-A. Summary and comparison of emissions of CO, NOx, and VOC, from Sunland Park, New Mexico, and El Paso, Texas. TPY = tons/year. See Notes at the end of this section for an interpretation of some of these figures.

SOURCE CATEGORY	AREA	CO TPY	NOx TPY	VOC TPY
POINT	Sunland Park (SP)	4357.41	1131.05	45.98
	El Paso (EP) - 1990	2634.00	7092.00	3101.00
	El Paso (EP) - 1995	2319.26	4802.97	1613.25
	SP as % of EP	165.4% (1990) 187.9% (1995)	15.95% (1990) 23.55% (1995)	1.48% (1990) 2.85% (1995)
AREA	SP	157.94	30.40	641.39 (worst) 178.09 (best)*
	EP - 1990	1201.97	1422.14	9234.96
	EP - 1995	none available	none available	none available
	SP as % of EP	13.14% (1990)	2.14% (1990)	6.94% (worst) 1.93% (best)
ON-ROAD MOBILE	SP	≥ 1102.67	≤ 232.50	≥ 109.50
	EP - 1990	≥ 119,391.50	≤ 13,468.50	≥ 14,235.00
	EP - 1995	≥ 93,039.85	≤ 14,223.80	≥ 9955.64
	SP as % of EP	0.92% (1990) 1.18% (1995)	1.73% (1990) 1.63% (1995)	0.77% (1990) 1.10% (1995)
NON-ROAD MOBILE	SP	830.60	416.47	86.42
	EP - 1990	34,927.64	4611.18	3458.38
	EP - 1995	39,747.65	5247.52	3935.64

	SP as % of EP	2.38% (1990) 2.09% (1995)	9.03% (1990) 7.94% (1995)	2.50% (1990) 2.20% (1995)
BIOGENIC	SP	-----	26.40	138.72
	EP - 1990	-----	-----	3028.80
	EP - 1995	-----	649.20	2816.64
	SP as % of EP	-----	4.07% (1995)	4.58% (1990) 4.92% (1995)
GRAND TOTALS	SP	6448.62	1836.82	1022.01 (worst) 558.71 (best)
	EP - 1990	≥ 158,155.11	≤ 26,593.82	≥ 33,058.14
	EP - 1995	incomplete	incomplete	incomplete
	SP as % of EP	4.08% (1990)	6.91% (1990)	3.09% (worst) 1.69% (best)

* "Worst" and "best" figures are based on the method used to estimate emissions from a municipal landfill (see Section 2.5.2 of this report).

NOTES: Figures for Sunland Park in Table 2.2-A were taken from Table 2.1-A. Figures for El Paso, Texas for 1990 came from TNRCC's (Texas Natural Resource Conservation Commission) 1990 base year emissions inventory report. Annual figures for on-road mobile sources were calculated by multiplying the ozone season daily figures by 365 and presented as either maximum or minimum emission figures (e.g. CO emissions would be less during the summer ozone season and greater in winter, while NOx emissions would be the opposite). Annual biogenic figures from the 1990 El Paso inventory were determined by multiplying the daily figures by 240 days (spring, summer, and fall active growing season for plants).

Figures for El Paso for 1995 were estimated for a few of the source categories. Point source data for 1995 were based on what is currently available within the AIRS database or from TNRCC. On-road mobile source data were from a Mobile 5 run for 1994 then factored-up to 1995 based on population increase (2.7%) from 1994 to 1995. No 1995 figures were available for area sources. Non-road mobile sources for 1995 were estimated from 1990-1995 population growth (see Appendix). Biogenic emissions for El Paso for 1995 are based on the same weather data (August 8, 1995) used for the Sunland Park determination.

SECTION 2.3 - INVENTORY AND QUALITY ASSURANCE PROCEDURES

Introduction

The emissions inventory process includes quality assurance procedures as a means to verify that data have been reviewed and examined for their source or origin, methods of compilation, accuracy, occurrence of errors, and clarity. This is to assure a good product and that such procedures can easily be applied to future inventories. EPA's Example Documentation Report For 1990 Base Year Ozone and Carbon Monoxide State Implementation Plan Emission Inventories contains a section on quality assurance implementation which was used as a guide.

Resource Allocation, Tasks and Responsibilities

Although several staff members worked on this emission inventory during the initial field collection of data, the lead staff person has compiled most of this inventory. Sunland Park's small size did not require many staff members to work on the project, but nevertheless it was a large project. In the initial phases, six staff members were involved in gathering business lists for the area and detailed Highway and Transportation Department maps. They also wrote and sent out an informational flyer, devised and wrote up a field questionnaire, and finally spent one full week within the area scouting for sources and visiting businesses in order to implement the field questionnaire. Contacts regarding this inventory are:

Jim Nellessen:	(505) 827-0048	Lead staff person for the inventory
Lany Weaver:	(505) 827-0043	Control Strategy Program Manager
Cecilia Williams:	(505) 827-0042	Air Quality Bureau Chief

Throughout the compilation process the lead staff person received advice, consultation, and assistance in obtaining additional pieces of data from a variety of other staff (such as assistance from staff within the Stationary Source/New Source Review (NSR) Permitting Section). Secretaries and other staff have assisted in data compilation and proofing.

Personnel Training

Although staff used EPA emissions inventory guidance documents, staff were also trained directly by a representative from EPA Region 6 in Dallas, Texas. A two-day ozone emissions inventory class was held in Santa Fe, New Mexico during the initial phase of this work, prior to field data collection.

The Field Survey and Identification of Emission Sources

Both SIP (State Implementation Plan) and SBAP (Small Business Assistance Program) staff assisted in planning the initial field survey and data collection process. Point sources were identified through EPA AIRS data. Identifying area sources began by obtaining phone book listings and business listings for the area. A questionnaire was designed by staff to take into the field and to be filled out during actual site visits. Since this area was relatively small, both in size and population, such site visits were planned as the best way to determine actual source emissions. Assistance was also received from permitting staff in devising some of the questions as an additional means to assure that the most useful information would be obtained. An informational flyer was assembled and mailed out to all identified businesses within the nonattainment area prior to the actual site visits. A copy of the field survey questionnaire can be found within the Appendix. Although the area is relatively small, six staff members participated in the field survey by dividing the nonattainment area into 3 sections with 2 staff members assigned to each section. The area was thoroughly scouted for all possible sources of air pollution. Considerable time was spent in direct site visits.

Data Handling, Emission Estimation Methods, Calculations, and Validation

All data collected were turned into the lead staff person who then began to evaluate, organize and assemble collected information into various source categories according to EPA guidance. Most emission estimation procedures follow those within AP-42. Other sources included several EPA emissions inventory guidance documents listed as references to this report. As much as possible, all calculations are described within the various sections of this report. Calculations have been checked by other staff members. It should be emphasized that in many cases, especially for area sources, emissions are rough estimates. This is because the data on which they are based are often rough estimates of materials usage. Many AP-42 emission factors are themselves inexact approximations. In any case, data and calculations have been validated and quality-assured for correctness.

SECTION 2.4 - POINT SOURCES

This section presents data on point sources: 1) within the Sunland Park ozone nonattainment area, and 2) within a 25 mile radius of the nonattainment area. According to U.S. EPA guidance on ozone nonattainment area SIP inventories, sources located within the nonattainment area and emitting 100 or more tons of carbon monoxide (CO), 100 or more tons of nitrogen oxides (NOx), or 10 or more tons of volatile organic compounds (VOC) should be inventoried individually as point sources. In addition, the 1990 Clean Air Act Amendments specify that NOx sources greater than 25 tons must submit emission statements within three years of designation as a nonattainment area. Such sources must submit reports annually thereafter. Hence, this SIP inventory will include 25 ton NOx sources as point sources as well. Within a 25 mile radius of the nonattainment area, the inventory includes sources emitting 100 tons or more of carbon monoxide, nitrogen oxides or volatile organic compounds. The 25 mile radius was measured from the periphery of the nonattainment area and includes most of El Paso County, Texas and much of Las Cruces, New Mexico. This radius would also encompass much of Juarez, Mexico, however due to lack of data, sources in Mexico are not included in this discussion.

2.4.1 - Sources Within the Nonattainment Area

Under the above definitions, there are two sources considered as point sources within the nonattainment area: El Paso Electric Co. and Foamex International Inc. El Paso Electric is a power generation facility and a point source for CO and NOx. Foamex manufactures foam products such as automobile seats and is a point source for VOC.

El Paso Electric emissions data from the EPA AIRS database for 1995 are summarized below :

Table 2.4-A. Emissions from El Paso Electric Co. TPY = tons/year; TPD = tons/day; CEM = continuous emission monitors.

POLLUTANT	AIRS EMISSIONS DATA (TPY)		ACTUAL EMISSIONS (TPY) WITH RULE EFFECTIVENESS	DAILY EMISSIONS (TPD)
	ESTIMATED (prior to CEM)	ACTUALS (after CEM installed)		
CO	393.2	3610.83	4333.00	11.871
NOx	3683.8	935.00	1122.00	3.074
VOC	13.7	9.30	11.16	0.0306

El Paso Electric had been a grand-fathered (unpermitted) source for many years (it is currently going through a permit process). Continuous emission monitors (CEM) were only just installed in 1995, giving a much better estimate of actual emissions. EPA's rule effectiveness procedure was applied to the actual emissions data. Rule effectiveness procedures adjust emissions to account for times of rule non-compliance. El Paso Electric, being a major point source, has a few rules which apply to it. EPA's default rule effectiveness of 80% compliance was applied to the actual emissions data. For the ozone season daily emissions calculation, 365 days per year operation and 25% of annual activity within the ozone season were used (e.g. 4333.00 ton/yr of CO ÷ 365 = 11.871 tons/day).

Foamex International Inc was a minor source prior to 1996. Because they were minor they had never been thoroughly inventoried. They went through a permit modification in 1996 by increasing the number of laminating units from one to three. They were much more thoroughly inventoried at this time. Hence, reasonable emission estimates for 1995 will be taken as 1/3 (33.3%) of 1996 figures. These emissions are summarized below:

Table 2.4-B. Emissions from Foamex International Inc. TPY = tons/year; TPD = tons/day.

POLLUTANT	AIRS EMISSIONS DATA (TPY)			1995 ACTUAL EMISSIONS (TPY) WITH RULE EFFECTIVENESS	DAILY EMISSIONS (TPD)
	ALLOWABLES	1996 ACTUALS	1995 ACTUALS (1/3 of 1996)		
CO	61.0	61.03	20.34	24.41	0.094
NOx	22.6	22.63	7.54	9.05	0.035
VOC	87.4	87.06	29.02	34.82	0.134

Again, EPA's default rule effectiveness of 80% was used. The ozone season day determination was based on 25% of annual activity within the 3 month ozone season and 5 days/week operation (e.g. 24.41 tons/year CO $\times$ 0.25 $\div$ 5 $\div$ 13 = 0.094 tons/day).

Copies of computer printouts from AIRS for both sources can be found in the Appendix.

2.4.2 - <u>Sources Within a 25 Mile Radius of the Nonattainment Area</u>

A. Sources within New Mexico: Based on estimated actual emissions data in AIRS, only one source was over 100 tons per year for any of the three inventoried pollutants. This source was the City of Las

Cruces Waste Water Treatment Plant. Emissions data from AIRS are as follows:

Table 2.4-C. Emissions from the Las Cruces Waste Water Treatment Plant. TPY = tons/year; TPD = tons/day.

POLLUTANT	AIRS EMISSIONS DATA (TPY)		ACTUAL EMISSIONS (TPY) WITH RULE EFFECTIVENESS	DAILY EMISSIONS (TPD)
	ALLOWABLES	ACTUALS (ESTIMATED)		
CO	58.2	73.70	88.56	0.243
NOx	95.0	105.50	126.60	0.347
VOC	12.8	14.90	17.88	0.049

These data are from 1996 permitted figures. This source was never inventoried prior to 1996 because it was never considered a significant air emitter. In addition, since it is not in the nonattainment area, and it was never in AIRS prior to 1996 it was overlooked or not considered for inventory purposes until recently. It did operate in 1995. Hence, 1996 figures were used as reasonable approximations for 1995. Default rule effectiveness procedures of 80% were applied to this source. Ozone season day determinations were based on 365 days/year operation and 25% of annual activity in the 3 month ozone season.

It may be pertinent to note that two other sources have permitted allowables over 100 tons per year but their actual emissions for 1995 were less. These are: the El Paso Natural Gas - Afton Compressor Station and the New Mexico State University (NMSU) Physical Plant Boilers. From AIRS:

Table 2.4-D. Emissions from the El Paso Natural Gas - Afton Compressor Station and the NMSU

Physical Plant Boilers. TPY = tons/year.

SOURCE	POLLUTANT	AIRS EMISSIONS DATA (TPY)		ACTUAL EMISSIONS (TPY) WITH RULE EFFECTIVENESS
		ALLOWABLES	ACTUALS (ESTIMATED)	
Afton Compressor Station	CO	75.30	0.00	0.00
	NOx	198.50	0.00	0.00
	VOC	1.50	0.00	0.00
NMSU Physical Plant Boilers	CO	59.00	2.30	2.76
	NOx	291.90	16.40	19.68
	VOC	-----	0.00	0.00

The reason for zero emissions for the Afton Compressor Station is that it was not in operation during 1995. Although these sources were well below 100 ton thresholds in 1995, both have permitted allowables well above this threshold and could potentially emit more in the future. But because actuals are less than 100 tons per year, these two sources were not be included in the summary.

B. Sources within El Paso County, Texas: Data on El Paso sources were also extracted from AIRS or directly from the Texas Natural Resource Conservation Commission (TNRCC) (specific data are available in the Appendix) and summarized below (Table 2.4-E). Some of the data obtained from TNRCC were more recent than what is currently available in AIRS. All of these figures for El Paso, Texas are based on rule effectiveness as presented in AIRS.

Table 2.4-E. Point sources in El Paso, TX emitting 100 or more tons per year of either CO, NOx, or VOC: Annual emissions.

SOURCE	ANNUAL EMISSIONS (TPY = tons per year)			YEAR OF MOST RECENT INVENTORY*
	CO TPY	NOx TPY	VOC TPY	
Border Steel Mills	203.43	104.88	2.58	1995
Chevron U.S.A. Products	306.46	939.18	436.55	1995
Chevron USA Inc.	128.03	773.03	515.75	1995
El Paso Electric Co.	1432.33	2342.17	19.18	1995
El Paso Natural Gas Co.	13.88	165.19	11.72	1995
Phelps Dodge Copper Products	8.14	32.57	194.16	1995
Phelps Dodge Magnet Wire Co.	0.02	0.09	115.90	1995
Phelps Dodge Refining Corp.	15.74	113.53	5.00	1995
Providence Memorial Hospital	159.25	162.30	15.38	1995
TOTALS	2267.28	4632.94	1316.22	

* Data obtained either from AIRS or directly from TNRCC.

The following table (2.4-F) presents ozone season daily emissions (in pounds per day = PPD). All data were extracted from AIRS and all figures are with rule effectiveness applied.

Table 2.4-F. Point sources in El Paso, TX emitting 100 or more tons per year of either CO, NOx, or VOC: Daily emissions for the ozone season.

SOURCE	DAILY EMISSIONS - OZONE SEASON (PPD = pounds per day)			YEAR OF MOST RECENT INVENTORY
	CO PPD	NOx PPD	VOC PPD	
Border Steel Mills	1518.26	885.51	15.22	1995
Chevron U.S.A. Products	1681.03	5146.0 (est.)*	2392.05 (est.)	1995
Chevron USA Inc.	798.37	6055.02	2826.03 (est.)	1995
El Paso Electric Co.	9218.18	13,743.87	105.10 (est.)	1995
El Paso Natural Gas Co.	76.05 (est.)	905.2 (est.)	64.2 (est.)	1995
Phelps Dodge Copper Products	60.80	253.20	1540.16	1995
Phelps Dodge Magnet Wire Co.	0.11	0.49	635.07 (est.)	1995
Phelps Dodge Refining Corp.	86.25	622.07	27.40	1995
Providence Memorial Hospital	872.63	889.30	84.26	1995
TOTALS	14,311.71 (7.16 tons)	28,500.7 (14.25 tons)	7674.27 (3.84 tons)	

* est. = Estimated figure based on 365 days per year of operation. Actual figures were not available in AIRS (or data received directly from TNRCC was different than what is in AIRS) so these were estimated in order to fill in missing data and arrive at a summary figure.

Summary of Point Source Emissions

Table 2.4-G, below, summarizes emissions based on rule effectiveness. Large point sources in Texas account for 79% of the NOx emissions in the region extending to 25 miles of the Sunland Park nonattainment area. All large point sources outside of the nonattainment area (both TX and NM) account for 81% of NOx emissions. Texas accounts for 95% of point source VOC emissions and all sources outside of the nonattainment area account for 97% of VOC emissions. This is not the trend for CO though, as El Paso Electric in New Mexico emits 64% of the point source CO in this region. Texas sources account for 34% of area-wide CO emissions.

Table 2.4-G. Summary of point source emissions in the Sunland Park area. TPY = tons/year; TPD = tons/day.

POINT SOURCE LOCATIONS	CO		NOx		VOC	
	TPY	TPD	TPY	TPD	TPY	TPD
Within the Sunland Park Nonattainment Area (NA) - 2 sources	4357.41	11.965	1131.05	3.109	45.98	0.165
Outside NA - NM - 1 source	88.56	0.243	126.60	0.347	17.88	0.049
Outside NA - TX - 9 sources	2267.28	7.16	4632.94	14.25	1316.22	3.84
TOTALS	6713.25	19.368	5890.59	17.706	1380.08	4.054

SECTION 2.5 - AREA SOURCES

Area source emissions can be broadly divided into two groups: 1) combustion sources and 2) evaporative sources. Combustion sources include industrial, commercial and residential use of natural gas, oil, LPG, and coal. Open burning such as in agriculture, forestry, and trash burning also fall into this category. Evaporative emissions include many different sources such as solvent use, coating and painting operations, dry cleaning, and pesticide use.

2.5.1 - COMBUSTION SOURCES

Combustion emission sources include industrial, commercial and residential combustion of fuels such as natural gas, oil, and coal. Agricultural burning and forest fires are also included in this category. For this emissions inventory the following list of source types were surveyed for both their presence and emissions within the Sunland Park ozone nonattainment area. This list was recommended by the US EPA and is the same list used by the TNRCC in conducting the El Paso, TX 1990 base year inventory. This list is as follows:

COAL - COMMERCIAL
COAL - INDUSTRIAL
COAL - RESIDENTIAL
FUEL OIL - COMMERCIAL DISTILLATE
FUEL OIL - COMMERCIAL RESIDUAL
FUEL OIL - INDUSTRIAL DISTILLATE
FUEL OIL - INDUSTRIAL RESIDUAL
FUEL OIL - RESIDENTIAL
LPG - COMMERCIAL
LPG - INDUSTRIAL
LPG - RESIDENTIAL
NATURAL GAS - COMMERCIAL

AGRICULTURAL BURNING
FOREST FIRES
OPEN BURNING
ON - SITE INCINERATION
ORCHARD HEATERS
PRESCRIBED BURNING
SLASH BURNING
STATIONARY SOURCES (OTHER)
STRUCTURE FIRES
WOOD - RESIDENTIAL

NATURAL GAS - INDUSTRIAL
NATURAL GAS - RESIDENTIAL

Some of these source types, by definition, overlap and not all of these were identified as occurring within the Sunland Park nonattainment area. In any case, this list was used as a guide. In broad terms, these source types could easily be grouped and summarized into four source categories: 1) industrial combustion sources, 2) commercial combustion sources, 3) residential combustion sources, and 4) open burning. This is how they will be presented and summarized in this report.

Industrial Combustion Sources

These sources include the combustion of fuel-oil (distillate and/or residual), coal, natural gas, and LPG. This category may also include miscellaneous on-site incineration processes. Sources placed into this category were considered to be larger manufacturing facilities or processing facilities that were not large enough to be classified as point sources or to require a state air permit, but deemed large enough for purposes of this inventory to examine individually. Three sources were included in this group: a brick manufacturing facility (36 employees), a food preparation facility (280 employees), and a facility that sterilizes medical supplies (28 employees). All three operate natural gas furnaces and each consumed more than 30×10^6 ft^3 (> 1 million BTU) of natural gas over a one year period and each was calculated to be emitting more than 1 ton of either CO, NOx, or VOC. Regarding rule effectiveness determinations, the state does have a rule (20 NMAC 2.33) on nitrogen oxide emissions from gas-burning equipment. It does apply to sources using more than 1 million BTU per year. EPA's standard default rule effectiveness of 80% was used.

A. The brick manufacturer. From survey information this facility operates a natural gas kiln that consumes 4100 x 10^6 BTU/month while a total of 4600 x 10^6 BTU/month are delivered to the plant. This facility closes for one month for maintenance, so multiplying 4600 by 11 months yields 50.6 x 10^9 BTU/year consumed. Converting this to cubic feet of gas (1050 BTU/ft^3) yields 4.819 x 10^7 ft^3. Emission factors from AP-42 are (small industrial boiler assumed):

	Lbs/10^6 ft^3	
CO:	35	
NOx:	140	
VOC:	2.784	(5.8 x 0.48 to factor out methane)

Annual and daily (ozone season) emissions are:

	Annual (tons)	Daily (tons)
CO:	0.843	0.00259
NOx:	3.37 (4.04 with rule effectiveness)	0.0124
VOC:	0.067	0.000206

For ozone season day calculations this facility reported operating 7 days/week and was shut down for one month in the winter for maintenance so the seasonal activity was divided as 17% winter, 28% spring, 27% summer, and 28% fall.

B. The food preparation company. Survey information indicated that this facility has 3 boilers and 12 ovens using natural gas. Average gross gas consumption for a 10 day period is 2936.6 x 10^6 BTU. Multiplying this by 36.5 (number of 10 day periods in a year) gives 107,184 x 10^6 BTU per year and converting to cubic feet results in 102.08 x 10^6 ft^3. With one boiler classified as small industrial and the rest as commercial size, the following emission factors from AP-42 were used:

	BTU Classification	Emission Factor (lbs/10^6 ft^3)	
CO:	10	35	
	6	21	
NOx:	10	140	
	6	100	
VOC:	10	2.784	(5.8 x 0.48 to factor out methane)
	6	5.28	(8.0 x 0.66 to factor out methane)

Annual and daily emissions are calculated as follows:

		Annual		Daily
	BTU Classification	Emissions (lbs)	Emissions (tons)	(tons)
CO:	10	1179.2		
	6	1436.2		
		2615.4	1.308	0.00419
NOx:	10	4716.6		
	6	6839.0		
		11,555.6	5.778 (6.93 with rule effectiveness)	0.0222
VOC:	10	93.79		
	6	361.10		
		454.89	0.227	0.000728

Ozone season day calculations were based on 6 days/week operation and 25% of their activity in the fall season (25% for each season).

C. The supplier of sterilized medical equipment. This facility reported having 2 gas-fired boilers each rated at 1.5 x 10^6 BTU. They reported consuming 63,320 therms over the 3 month period of May, June and July and 108,437 therms over the 3 month period of December, January, and February. Summing these 2 figures and dividing by 6 yields a monthly average of 28,626 therms. Multiplying by

12 yields a yearly figure of 343,512 therms. Converting to cubic feet (100,000 BTU/therm, and 1050 BTU/ft^3) results in 32.72 x 10^6 ft^3 consumed per year. Emission factors for commercial size boilers from AP-42 are:

	Lbs/10^6 ft^3	
CO:	21	
NOx:	100	
VOC:	5.28	(8.0 x 0.66 to factor out methane)

Calculated annual and daily emissions are:

	Annual (tons)	Daily (tons)
CO:	0.344	0.000945
NOX:	1.636 (1.96 with rule effectiveness)	0.00538
VOC:	0.086	0.000236

Ozone season day calculations were based on 7 days/week operation and 25% of their activity in the fall season (30% winter, 26% spring, 19% summer).

D. Summary of Industrial Combustion Sources. In the summary table below (2.5-A), rule effectiveness numbers for NOx have been used.

Table 2.5-A. Summary of industrial combustion sources. TPY = tons/year; TPD = tons/day.

SOURCE	CO		NOx		VOC	
	TPY	TPD	TPY	TPD	TPY	TPD
Brick manufacturer	0.843	0.00259	4.04	0.0124	0.067	0.000206
Food preparation facility	1.308	0.00419	6.93	0.0222	0.227	0.000728
Medical supply	0.344	0.000945	1.96	0.00538	0.086	0.000236

sterilization facility						
TOTALS	2.495	0.00772	12.93	0.0400	0.380	0.00117

Commercial Combustion Sources

These sources include combustion of fuel-oil (distillate and/or residual), coal, natural gas, and LPG. Examples of sources in this category are small manufacturing operations, restaurants, retail, service, groceries, schools, and government buildings. Rule effectiveness was not applied here because emissions calculations are based on population figures and not individual facilities.

A. Commercial Natural Gas Use. Commercial gas use was estimated from statistics on commercial gas usage in New Mexico and employment figures for Dona Ana County. Commercial natural gas use in New Mexico for 1994 (the most recent data available) was 24,964 x 10^6 ft^3. Statewide employment for 1995 has been estimated at 738,448. Dona Ana County employment for 1995 has been estimated at 57,655. The 1995 estimated population of the nonattainment area is 12,752. Using a ratio to estimate employment in the nonattainment area yields the following:

$$\frac{57,655}{158,849} = \frac{X}{12,752}$$

X = 4628 people employed in the nonattainment area

The Delphi Group of the greater El Paso, TX - Sunland Park, NM Metropolitan Planning Organization (MPO) conducted an actual survey of the Sunland Park nonattainment area to determine employment and arrived at a figure of 2143 for the 1990 census year. Growth projections put the year 2000 employment figure at 2437. Estimating uniform growth over that time period would give an estimated employment of 2290 for 1995. This figure is most likely more in line with the generally poor and economically depressed conditions of the area and since this figure is based on survey data rather than a gross estimate based on statewide figures, the 2290 figure will be used rather than the 4628 figure. Next, five facilities that could be classified as commercial (a power generation plant, a brick manufacturer, an automobile foam seat manufacturer , a food preparation facility, and a facility that sterilizes medical supplies) were determined separately, elsewhere in this report, as either point sources or industrial combustion sources. Employment figures for these facilities will need to be subtracted from the 2290 figure. These facilities reported employment figures of 50, 36, 110, 280, and 28 people respectively. So, 2290 - 504 = 1786. Using another ratio to apportion down the commercial gas usage to the nonattainment area:

$$\frac{24{,}964 \times 10^6 \text{ ft}^3}{738{,}448} = \frac{X}{1786} \qquad X = 60.38 \times 10^6 \text{ ft}^3$$

The following are AP-42 emission factors for commercial gas use:

	$lbs/10^6$ ft^3	
CO:	21	
NOx:	100	
VOC:	5.28	(with methane factored out; 8.0 x 0.66 = 5.28)

Next, multiplying the natural gas consumed within the nonattainment area by these factors yields the following annual emissions converted to tons (using CO as an example to show the full calculation):

$$(60.38 \times 10^6 \text{ ft}^3) \times (21 \text{ lbs}/10^6 \text{ ft}^3) \times (1 \text{ ton}/ 2000 \text{ lbs}) = 0.63 \text{ tons/year CO}$$

	Tons/year
CO:	0.63
NOX:	3.02
VOC:	0.16

B. Commercial LPG Use. Liquid petroleum gas (LPG) is most often propane or butane.

Emissions from LPG combustion are determined in a similar procedure as for natural gas above. Total statewide use of LPG in 1994 was 0.5 x 10^{12} BTU. Apportioning this down to the employed population size of the nonattainment area yields 1.24 x 10^{9} BTU. Since AP-42 emission factors are in lbs/1000 gal., BTU were converted to gallons. Since it is not known how much propane vs. butane is used in the area, a 50/50 split was assumed, so a conversion factor of 96,750 BTU/gal was used (average of 91,500 BTU/gal for propane and 102,000 BTU/gal for butane). This results in 12,849 gal of LPG consumed in the nonattainment area. AP-42 emission factors were also figured as an average of propane and butane:

CO:	(2.1 + 1.9)/2 = 2.0 lbs/1000 gal
NOx:	(15 + 14)/2 = 14.5 lbs/1000 gal
VOC:	(0.6 + 0.5)/2 = 0.55 lbs/1000 gal

Annual emissions are then (using CO as an example):

12,849 gal x 2 lbs/1000 gal x 1 ton/2000 lbs = 0.013 tons/year of CO

CO:	0.013 tons
NOx:	0.093 tons
VOC:	0.004 tons

C. Commercial Distillate Use. Statewide use of commercial distillate fuel was 1.2 x 10^{12} BTU in 1994. Apportioning this down to the nonattainment area yields 2.98 x 10^{9} BTU. Distillate fuel at 140,000 BTU/gal. results in 21,311 gal. consumed in the nonattainment area. AP-42 emission factors are:

CO: 5 lbs/1000 gal

NOx: 20 lbs/1000 gal

VOC: 0.34 lbs/1000 gal

Annual emissions are then (using CO as an example):

21,311 gal x 5 lbs/1000 gal x 1 ton/2000 lbs = 0.053 tons/year of CO

CO: 0.053 tons

NOx: 0.213 tons

VOC: 0.004 tons

D. Commercial Coal Use. Statewide use of commercial coal was 0.1×10^{12} BTU in 1994. Proportioning this down to the size of the nonattainment area yields 2.49×10^{8} BTU. Using a round, typical heat content figure for coal at 10,000 BTU/lb results in 2.49×10^{4} lbs (12.45 tons) consumed in the nonattainment area. AP-42 emission factors are (assuming a worst case conservative estimate):

CO: 18 lbs/ton

NOx: 34 lbs/ton

VOC: 1.3 lbs/ton

Annual emissions are then (using CO as an example):

12.45 tons x 18 lbs/ton x 1 ton/2000 lbs = 0.112 tons/year of CO

CO: 0.112 tons

NOx: 0.212 tons

VOC: 0.008 tons

E. Summary of all Commercial Combustion Sources

Ozone season day calculations for all source categories are based on 6 days/week operation and 25% of activity in the fall (35% winter, 25% spring, and 15% summer).

Table 2.5-B. Summary of commercial combustion sources. TPY = tons/year; PPD = lbs/day.

FUEL	CO		NOx		VOC	
	TPY	PPD	TPY	PPD	TPY	PPD
Natural gas	0.63	4.04	3.02	19.36	0.16	1.02
LPG	0.013	0.083	0.093	0.60	0.004	0.026
Distillate oil	0.053	0.34	0.213	1.36	0.004	0.026
Coal	0.112	0.72	0.212	1.36	0.008	0.051
TOTALS	0.808	5.18 (0.00259 tons)	3.538	22.68 (0.0113 tons)	0.176	1.12 (0.00056 tons)

Residential Combustion Sources

These include combustion of fuel-oil, coal, natural gas, LPG, and wood. Energy usage in residences was obtained from The New Mexico Energy, Minerals and Natural Resources Department. The most recent data available were for 1994 and included use of natural gas, LPG, coal, and electricity:

ENERGY SOURCE	TRILLION BTU	PERCENT OF TOTAL
Coal	0.1	0.21
Electricity	13.9	29.1
LPG	2.8	5.9
Natural gas	30.9 (30,868 x 10^6 ft^3)	64.8
TOTALS	47.7	100

The number of households within the nonattainment area needed to be determined in order to estimate emissions (e.g. 5.9% of households were assumed to consume LPG, according to the table above). The 1990 U.S. Census data for Tract 17 indicated 13,231 people and 3519 households. Tract 17 includes Sunland Park, Santa Teresa, La Union and all areas in the county from slightly to the north and then due west (an area which is largely unpopulated) of the nonattainment area (see Figure 2). Since this census tract covers a much larger area than the nonattainment area, households must be apportioned down to the nonattainment area. The 1995 estimated population for the actual nonattainment area (from Delphi Group data) was 12,752. Using a ratio to estimate households currently in the nonattainment area:

$$\frac{12{,}752}{13{,}231} = \frac{X}{3519} \qquad X = 3392$$

[Insert Figure 2 here - only available in hard copy]

This resulted in an estimated figure of 3392 households for the nonattainment area. An estimated 1995 household figure for the entire state will also be needed for the following emission calculations:

1990 Census Data   1995 Economic Review Report (see references)

$$\frac{543{,}825}{1{,}515{,}069} = \frac{X}{1{,}685{,}401} \qquad X = 604{,}965$$

or an estimated 604,965 households statewide.

A. Residential LPG Use. Assuming 5.9% of the households use LPG, then multiplying by the number of households (3392) yields 262 households in the nonattainment area using LPG. Converting 2.8×10^{12} BTUs of LPG consumed in residences statewide to gallons yields 2.89×10^{7} gal of LPG. Apportioning this down to the nonattainment area gives 162,040 gal consumed in the nonattainment area. AP-42 emission factors are:

CO:	1.32 lbs/1000 gal
NOx:	9.57 lbs/1000 gal
VOC:	0.363 lbs/1000 gal

Calculated emissions are then (using CO as an example):

162,040 gal x 1.32 lbs/1000 gal x 1 ton/2000 lbs = 0.107 tons/year of CO

CO:	0.107 tons/yr
NOx:	0.775 tons/yr
VOC:	0.029 tons/yr

B. Residential Natural Gas Use. Assuming 64.8% of the residences use natural gas and multiplying by the number of residences (3392) results in 2198 residences. With 30,868 x 10^6 ft^3 of natural gas consumed statewide by residences and apportioning down for the nonattainment area yields 173 x 10^6 ft^3 consumed in the nonattainment area. AP-42 emission factors are:

CO:	40 lbs/10^6 ft^3
NOx:	94 lbs/10^6 ft^3
VOC:	7.26 lbs/10^6 ft^3

Calculated annual emissions are:

CO:	3.46 tons
NOx:	8.131 tons
VOC:	0.628 tons

C. Residential Coal Use. Assuming 0.2% of residences are using coal then multiplying by the number of residences (3392) yields 6.78 residences within the nonattainment area using coal. Converting 0.1 x 10^{12} BTUs consumed statewide at residences into tons of coal, and factoring down to the nonattainment area yields 28 tons consumed annually within the nonattainment area. AP-42 emission factors are:

CO:	11 lbs/ton
NOx:	21.7 lbs/ton
VOC:	1.3 lbs/ton

Calculated annual emissions are:

CO: 0.154 tons

NOx: 0.304 tons

VOC: 0.018 tons

D. Residential Distillate Oil Use. No use of distillate oil at residences was reported for the most recent year in which data were available (1994).

E. Residential Electricity Use. These emissions are not calculated at this level, but rather at the point source level, since the combustion necessary to generate the electricity generally occurs at a large electrical generating facility.

F. Summary of Residential Combustion Sources.

Ozone season day calculations are based on 7 days/week operation and 25% activity in the fall (42% winter, 25% spring, and 8% summer).

Table 2.5-C. Summary of residential combustion sources. TPY = tons/year; PPD = pounds/day.

SOURCE	CO		NOx		VOC	
	TPY	PPD	TPY	PPD	TPY	PPD
LPG	0.107	0.59	0.775	4.26	0.029	0.16
Natural gas	3.46	19.01	8.131	44.68	0.628	3.45
Coal	0.154	0.85	0.304	1.67	0.018	0.099
TOTALS	3.721	20.45	9.21	50.61	0.675	3.71

		(0.0102 tons)		(0.0253 tons)		(0.00185 tons)

Open Burning Sources

This includes open burning of municipal (household) trash, structural fires, agricultural burning, orchard heaters, forest fires (wildfire, prescribed fire, or prescribed natural fire) and grass fires. Each of these will be summarized separately below.

A. Open Burning of Trash. Dona Ana County has an ordinance stating that household waste must be placed in landfills and not burned. Both the cities of Las Cruces and Sunland Park implement their own programs, but the county codes enforcement officer still works the Santa Teresa and La Union areas of the current ozone nonattainment area. Violations of the ordinance do occur but county staff do not keep an accurate log, nor do they have sufficient staff to fully monitor open burning. Emissions from open burning of trash in violation of the ordinance can be calculated as follows:

Population of the nonattainment area: 12,752

Per capita waste generation (lbs/day): 4.5 (US EPA national average for solid waste generation)

Total waste generation (lbs/day): 57,384

Total waste generation (tons/year): 10,476

It will be assumed that 80% of municipal solid waste is collected and sent to landfills in compliance with the county ordinance (this is in keeping with EPA's standard default for the rule effectiveness procedure). The remaining 20% is assumed to be burned at home. Also, approximately 75% of the available waste is assumed combustible.

Total waste available for combustion: 2095.20 tons

Percent of waste combustible: 75%

Waste actually combusted: 1571.40 tons

	AP-42 open burning emission factors (Lbs/ton)	Annual Emissions (Lbs/yr)	Annual Emissions (Tons/year)	Daily Emissions (Lbs/day)
CO	85	133,569	66.79	366.0
NOx	6	9428	4.72	26.0
NMOC (VOC)	30	47,142	23.58	129.4

Daily emissions are based on 7 days/week and 25% of the activity in the ozone season (25% for each of the four seasons).

B. Structure Fires. The Sunland Park fire department has indicated there were 124 fire incidences in 1995. This included both structural and grass fires, but numbers for each were unavailable. EPA's estimation method in the guidance documents uses a figure of 6 fires/1000 people. With an estimated nonattainment area population of 12,752, this yields 76.5 (or 76) structural fires in 1995. Using 6.8 tons of material per fire times 76.5 fires yields 520.2 tons of combustible material per year.

	AP-42 emission factors Lbs/1000 tons	Annual Emissions Lbs	Annual Emissions Tons	Daily emissions (Lbs/day)
CO:	60	31.21	0.0156	0.0857
NOx:	1.4	0.728	0.00036	0.00198
VOC:	11	5.72	0.00286	0.0157

Ozone season daily calculations are based on 7 days/week and 25% activity per season.

C. Grass Fires. Using the 124 fire incidences reported by the Sunland Park fire department and subtracting 76 structural fires (see B. above) yields an estimated 48 grass fires. Assuming an average size of one acre makes a total of 48 acres burned. AP-42 does not contain a fuel loading factor for grass, so wheat (being a species of grass) was used as a substitute. The wheat fuel loading factor is 1.9 tons/acre. Multiplying this by the 48 acres gives 91.2 tons of fuel consumed. Grass emission factors from AP-42 are:

CO:	101 lbs/ton
NMOC (VOC):	15 lbs/ton

Calculated annual and daily emissions are:

	Annual	Daily
CO:	4.60 tons (9211.2 lbs)	30.37 lbs.
NMOC (VOC):	0.684 tons (1368 lbs)	4.51 lbs.

Ozone season daily emissions are based on 7 days/week and 30% activity in the fall (25% winter, 30% spring, and 15% summer).

D. Orchard heaters. No orchard heaters are used in the area, according to staff at the New Mexico State Agriculture Department/Dona Ana County Agricultural Co-op and Extension Service. Pecans, the most abundant orchard crop, do not need heaters and the few apple orchards in the area do not use heaters either.

F. Forest fires. There are no forests to speak of in the nonattainment area to generate such a fire.

G. Agricultural burning. According to staff at the New Mexico State Agriculture Department/Dona Ana County Agricultural Co-op and Extension office in Las Cruces, there is not significant agricultural burning in the area. Burning is not a standard practice for crops in the area. The principle burning that does take place involves trimmings from the pecan orchards and burning of weeds (especially tumbleweeds) in ditches. The Agriculture Department does not keep records, but some records were available through the local Environment Department (NMED) Office in Las Cruces. Although the state does not require open burn permits for agricultural purposes, they do issue burn permits as a courtesy to county residents for agricultural and weed control purposes. The reason for this is to avoid any conflict or confusion with the county ordinance against open burning of household trash. It was these burn permits on file at the NMED office in Las Cruces that were examined to arrive at an estimation of emissions for agricultural burning. Permit files available for examination were for the one year time period running from July 1995 to June 1996.

A total of 29 permits were issued for locations within the nonattainment area. Material being burned was divided into the following 4 categories: 1) weeds (some specified as tumbleweeds, but mostly unspecified weeds), 2) grass, 3) leaves, and 4) woody vegetation. Very little information was available on the quantity of material or size of areas being burned so these were estimated as best as possible. Table 2.5-D lists and summarizes available information for all 29 burns. The 29 burns are summarized as follows:

TABLE 2.5-D. Summary Of Information Obtained From Agricultural Burn Permits Issued By The New Mexico Environment Department, Las Cruces Area Office From July, 1995 to June, 1996

Approximate Location	Dates of Permit	Material Burned				Area	Quantity
		Weeds	Grass	Leaves	Woody		
Santa Teresa	March 1996 - June 1996	_					
Near Anthony	March 1996 - June 1996				Pecan Branches		
Near Anthony	March 1996 - June 1996	_	_	_	Brush	Clear Land	
Santa Teresa	March 1996 - June 1996	Tumbleweeds					
La Union	March 1996 - June 1996			_	Branches		
Near Anthony	February 1996- May 1996	_	_				
La Union	January 1996- April 1996				Tree Limbs		
Sunland Park	January 1996- April 1996	_				Around House	
La Union	January 1996- April 1996	_					
La Union	January 1996- April 1996	_				Plowed Field	
Sunland Park	January 1996 - June 1996	_				Irrigation Ditch	
Santa Teresa	December 1995- March 1996		_				
Near Anthony	December 1995 - March 1996				Pecan Branches		
Near Anthony	December 1995 - March 1996	_		_			
La Union	December 1995 - March 1996	_		_		In Yard	
	November 1995 -						

TABLE 2.5-D. Summary Of Information Obtained From Agricultural Burn Permits Issued By The New Mexico Environment Department, Las Cruces Area Office From July, 1995 to June, 1996

Approximate Location	Dates of Permit	Material Burned				Area	Quantity
		Weeds	Grass	Leaves	Woody		
La Union	February 1996	–					
La Union	November 1995 - February 1996	Tumbleweeds					
Near Anthony	October 1995 - January 1996				Tree Limbs		
La Union	October 1995 - January 1996				Branches		
La Union	October 1995 - January 1996	–					
La Union	October 1995 - January 1996	–					Small Piles
La Union	October 1995 - January 1996	–					Small Piles
La Union	October 1995 - January 1996	–					Small Piles
La Union	October 1995 - January 1996	–					
Santa Teresa	October 1995 - January 1996	–					
Santa Teresa	September 1995 - December 1995	–			Salt Cedar Trees	Vacant Lot	
La Union	August 1995 - November 1995	–					Small Amount
Santa Teresa	August 1995 - November 1995	–			Salt Cedar Trees	Clear Lot	
Santa Teresa	July 1995 - October 1995		Johnson Grass			Before Plowing Field	

TOTALS: 29 Permits

WEEDS	**GRASS**	**LEAVES**	**WOODY**
21 Burns	**4 Burns**	**4 Burns**	**9 Burns**
(All appeared to be lot or yard except three)	**2 Fields**	**1 Lot**	**2 Pecans**
	2 Not Specified	**1 Field**	**2 Salt Cedar**
		2 Not Specified	**5 Not Specified**

Weeds - 21 burns - all appear to be lots or yards except 3

Grass - 4 burns - 2 fields and 2 not specified

Leaves - 4 burns - 1 lot, 1 field, and 2 unspecified

Woody - 9 burns - 2 pecans, 2 salt cedar, and 5 not specified

(note that the sum of all burns here is greater than 29, this is because several of the permits covered combinations of material).

Twelve of the 29 burns (42%) fell wholly or partially within the determined ozone season (August-October), whereas only 9 of 29 (31%) fell within what is often considered a more typical ozone season (June-August). Calculations for each of the 4 types of vegetative material follows:

G.1. Weeds

Assumptions: 1) Even though most were unspecified weeds, assume 75% were for tumbleweeds; 2) For lot or yard burning, assume one acre for the calculations; 3) For fields use 76 acres (96,030 cultivated acres in Dona Ana County divided by 1271 farms = 75.5 acres/farm); and 4) Of the 21 burns: 16 for tumbleweeds (all 1 acre lots), 5 for miscellaneous mixed weeds (2 one acre lots + 3 fields at 76 acres each). No NOx emissions are given for vegetative burning in AP-42, so only CO and VOC will be reported.

Tumbleweeds:

16 acres x 0.1 ton/acre = 1.6 tons of fuel

CO: 309 lbs/ton x 1.6 tons = 494.4 lbs of CO (0.25 tons)

VOC: 1.5 lbs/ton x 1.6 tons = 2.4 lbs of VOC (0.0012 tons)

Unspecified weeds:

(76 x 3) + 2 = 230 acres

230 acres x 3.2 tons/acre = 736 tons of fuel

CO: 85 lbs/ton x 736 tons = 62,560 lbs of CO (31.28 tons)

VOC: 9 lbs/ton x 736 tons = 6624 lbs of VOC (3.31 tons)

G.2. Grass

Assumptions: 1) Two of the 4 burns appear to be fields, so use 76 acres per field; and 2) The other two burns were assumed to be 1 acre lots. Since AP-42 has no fuel loading factors for grass, fuel loading factors for wheat (a species of grass) were used instead.

(76 x 2) + 2 = 154 acres

154 acres x 1.9 tons/acre = 292.6 tons of fuel

Now use grass emission factors:

CO: 292.6 tons x 101 lbs/ton = 29,552.6 lbs of CO (14.78 tons)

VOC: 292.6 tons x 15 lbs/ton = 4389 lbs of VOC (2.19 tons)

G.3. Leaves

Assumptions: 1) One of the 4 burns was identified as a field (i.e. 76 acres), while another was identified as a yard (i.e. 1 acre), while the last 2 were not specified. So split the last 2 into 1 field and 1 yard giving a total of 2 fields and 2 yards. Since the type of leaves were never specified in the permits, factors for unspecified leaves from AP-42 were used. There are also no fuel loading factors for leaf burning in AP-42, so fuel loading factors for unspecified orchard crops (as tree leaves) were used instead.

(76 x 2) + 2 = 154 acres

154 acres x 1.6 tons/acre = 246.4 tons of fuel

CO: 246.4 tons x 112 lbs/ton = 27,596.8 lbs of CO (13.80 tons)

VOC: 246.4 tons x 28 lbs/ton = 6899.2 lbs of VOC (3.45 tons)

G.4. Woody vegetation

Assumptions: 1) Assume 7 of the 9 burns are of pecan wastes, place them into unspecified orchard crops (AP-42) and use 33 acres per burn (Dona Ana County has 17,600 acres of pecans divided by 535 orchards = 32.9 acres per orchard); and 2) Two of the 9 burns were for salt cedar. Use unspecified forest residues (AP-42), and since the salt cedars were on vacant lots, assume 1 acre lots.

Pecans:

33 x 7 = 231 acres

231 acres x 1.6 tons/acre = 369.6 tons of fuel

CO: 369.6 tons x 52 lbs/ton = 19,219.2 lbs of CO (9.61 tons)

VOC: 369.6 tons x 8 lbs/ton = 2956.8 lbs of VOC (1.48 tons)

Salt Cedar:

2 acres x 70 tons/acre = 140 tons of fuel

CO: 140 tons x 140 lbs/ton = 19,600.0 lbs of CO (9.80 tons)

VOC: 140 tons x 19 lbs/ton = 2660.0 lbs of VOC (1.33 tons)

G.5. Summary of Emissions from Agricultural Burning

Table 2.5-E. Summary of emissions from agricultural burning.

VEGETATION TYPE	EMISSIONS IN TONS/YEAR		
	CO	NOx	VOC
Weeds			
Tumbleweeds	0.25	na	nil
Other	31.28	na	3.31
Grass	14.78	na	2.19
Leaves	13.80	na	3.45
Woody			
Pecans	9.61	na	1.48
Salt Cedar	9.80	na	1.33
TOTALS	79.52	na	11.76
OZONE SEASON DAY	0.367 (734.0 lbs)	na	0.0543 (108.6 lbs)

na - not available (i.e. no data in AP-42)

Ozone season day calculations are based on 7 days/week and 42% of the activity in the ozone season.

H. Summary of Emissions From All Open Burning Sources.

Agricultural burning and open burning of trash account for 97% of CO, essentially all of the NOx, and 98% of VOC emitted within the nonattainment area.

Table 2.5-F. Summary of emissions from all open burning sources. TPY = tons/year; PPD = pounds/day.

OPEN BURNING SOURCE	CO		NOx		VOC	
	TPY	PPD	TPY	PPD	TPY	PPD
Household trash	66.79	366.0	4.72	26.0	23.58	129.4
Structures	0.0156	0.0857	0.00036	0.00198	0.00286	0.0157
Grass	4.60	30.37	-----	-----	0.684	4.51
Orchard heaters	0.0	0.0	0.0	0.0	0.0	0.0
Forest fires	0.0	0.0	0.0	0.0	0.0	0.0
Agriculture	79.52	734.0	-----	-----	11.76	108.6
TOTALS	150.92	1130.46 (0.565 tons)	4.72	26.00 (0.013 tons)	36.03	242.52 (0.121 tons)

SUMMARY OF ALL AREA COMBUSTION SOURCES

Open burning accounts for 96% of CO, 16% of NOx, and 97% of VOC emissions. As already seen, agricultural burning and trash burning account for most of the open burning.

Table 2.5-G. Summary of all area combustion sources. TPY = tons/year; TPD = tons/day.

COMBUSTION SOURCE	CO		NOX		VOC	
	TPY	TPD	TPY	TPD	TPY	TPD
Industrial	2.495	0.00772	12.93	0.0400	0.380	0.00117
Commercial	0.808	0.00259	3.538	0.0113	0.176	0.00056
Residential	3.721	0.0102	9.210	0.0253	0.675	0.00185
Open burning	150.92	0.565	4.72	0.013	36.03	0.121
TOTALS	157.94	0.586	30.40	0.0896	37.26	0.124

2.5.2 - EVAPORATIVE EMISSION SOURCES

Evaporative emission sources include a wide variety of source types that emit VOC. Such sources may include aircraft refueling, bioprocess (i.e. bakeries), surface coating operations, dry cleaning, pesticide application, solvent use, and wastewater treatment, to name a few. For this emissions inventory the following list of source types were surveyed for both their presence and level of emissions within the Sunland Park ozone nonattainment area. This list was recommended by the US EPA and is the same list used by the TNRCC in conducting the El Paso, TX 1990 base year inventory. This list is as follows:

AIRCRAFT REFUELING
ASPHALT (CUTBACK AND EMULSIFIED)
BIOPROCESS (BAKERIES, BREWERIES, DISTILLERIES, WINERIES)
CATASTROPHIC/ACCIDENTAL RELEASES
COATINGS
- APPLIANCES
- ARCHITECTURAL
- AUTOMOBILES (NEW)
- AUTO REFINISHING
- ELECTRICAL INSULATION
- FURNITURE AND FIXTURES
- HIGH PERFORMANCE MAINTENANCE COATINGS
- MACHINERY AND EQUIPMENT
- MARINE COATINGS
- METAL CONTAINERS
- MISCELLANEOUS OTHER SPECIAL PRODUCTS
- SHEET, STRIP, AND COIL MATERIALS
- TRAFFIC MARKINGS
- TRANSPORTATION EQUIPMENT (OTHER)
- WOOD, FACTORY FINISHED

DRY CLEANING
GRAPHIC ARTS
LEAKING UNDERGROUND STORAGE TANKS
MISCELLANEOUS OTHER SOURCES
OIL AND GAS PRODUCTION
PESTICIDE APPLICATION

SERVICE (GASOLINE) STATIONS
SOLVENT USE
SURFACE CLEANING
SYNTHETIC ORGANIC CHEMICAL STORAGE TANKS
TANK BREATHING LOSSES
TANK, TANK TRUCK, RAIL CAR, BARGE, AND DRUM CLEANING
TANK TRUCK UNLOADING
TANK TRUCKS IN TRANSIT
VEHICLE REFUELING
WASTE TREATMENT
    INDUSTRIAL WASTEWATER
    MUNICIPAL LANDFILLS
    MUNICIPAL WASTEWATER (POTW)
    WASTEWATER PACKAGE PLANTS

Each source type will be examined and summarized individually.

Aircraft Refueling

Monthly fuel consumption figures were obtained from the Santa Teresa Airport Manager and then the AP-42 emission factor for kerosene, via splash filling, was used to calculate emissions.

Airport	Fuel (gal/month)	AP-42 emission factor (lbs VOC/1000 gal)	VOC Emissions Annual lbs/year	VOC Emissions Annual tons/year	VOC Emissions Daily lbs/day
Santa Teresa	5000	0.04	2.40	0.0012	
Cielo Dorado	700	0.04	0.336	0.000168	
Totals			2.736	0.001368	0.00752 ($3.7x10^{-6}$ tons)

Ozone season daily emissions are based on 7 days/week operation and 25% activity per season.

Asphalt Paving

Data were not available on the quantities of asphalt used in paving roads and parking lots, etc. so an

EPA per capita emission factor was used. This factor, for cutback asphalt, is 0.37 lbs of VOC per person per year. Calculating:

(0.37 lbs/person) x 12,752 persons = 4718.24 lbs (2.36 tons) of VOC annually

Daily emissions are 12.96 lbs/day (0.00648 tons/day) and based on 7 days/week and 25% of annual activity in the ozone season.

Bioprocess

Bioprocess sources include bakeries, wineries, breweries and distilleries. Of these four, there is only one bakery within the nonattainment area. The bakery is small, employing only 10 people and VOC emissions are not known. So, the EPA emission factor in guidance documents of 0.11 tons VOC per employee was used.

10 employees x 0.11 tons/employee = 1.1 tons of VOC annually

Daily emissions are 4.84 lbs/day (0.0024 tons/day) and based on 7 days/week operation and 20% of annual activity in the ozone season (40% winter, 20% spring, and 20% summer).

Catastrophic or Accidental Chemical Spills and Releases

The Emergency and Civil Preparedness Office, of the Dona Ana County Planning Department, was contacted regarding any chemical spills or releases in 1995. They do keep records on these and the director of the office said there were none in 1995. There was one train derailment, but with no releases of toxic or volatile chemicals.

Surface Coating Operations

Surface coating operations can include architectural coatings, auto refinishing, traffic markings, furniture and fixtures, metal containers, new automobiles, machinery and equipment, appliances, miscellaneous transportation equipment, sheet strip and coil coatings, factory finished wood, electrical insulation, high-performance maintenance coatings, marine coatings, and any other miscellaneous coatings. Largely due to the small population of the nonattainment area very few of these types of operations were identified within the Sunland Park area. Three of these surface coating operations were clearly identified though: 1) appliances, 2) architectural, and 3) auto refinishing. These will be summarized individually below.

A. Appliance coatings. There was one appliance coating operation that primarily does final touch up painting to swamp (evaporative) coolers. The company estimated that they use 1500 gallons of paint per year. The AP-42 general emission factor (for VOC) for paint is: 560 kg/Mg (1120 lbs/ton). The emission calculation:

1500 gal x (5.66 kg/gal) = 8490 kg = 8.49 Mg

8490 kg x (1 Mg/10^3 kg) x (560 kg/Mg) = 4754 kg of VOC (10,507 lbs or 5.25 tons)

Daily emissions are 14.68 lbs/day (0.00734 tons/day) and based on 5.5 days/week operation and 10% activity in the fall ozone season (20% winter, 45% spring, 25% summer).

B. Architectural Coatings. Three sources frequently use paints and thinners: the Sunland Park horse racetrack, a door painting and finishing operation, and a company that prefabricates building frames. In addition, a per capita emission factor was used for all other non-industrial surface coatings (e.g. painting of private homes, commercial businesses etc.).

B.1. Horse racetrack. To repeat, the AP-42 VOC general emission factor for paint is 560 kg/Mg. The racetrack facility consumes 600 gal of paint and 110 gal of thinner per year. All of the thinner is assumed to eventually volatilize. The calculations:

600 gal paint x (5.66 kg/gal) = 3396 kg

3396 kg x (1 Mg/10^3 kg) x (560 kg/Mg) = 1902 kg VOC

110 gal thinner x (3 kg/gal) = 330 kg VOC

Total VOC emissions are: 2232 kg (4933 lbs or 2.47 tons)

B.2. Door painting/finishing operation. Annually they use: 96 gal of paint, 24 gal of thinner, and 60 gal of lacquer. Again, the simplest approach is to assume that all of the thinner and lacquer volatilizes. The calculations:

Paint: 96 gal x (5.66 kg/gal) = 543 kg

543 kg x (1 Mg/10^3 kg) x (560 kg/Mg) = 304 kg of VOC

Thinner: 24 gal x (3 kg/gal) = 72 kg of VOC

Lacquer: 60 gal x (5.66 kg/gal) = 340 kg

340 kg x (1 Mg/10^3 kg) x (770 kg/Mg) = 262 kg of VOC

Total VOC from door painting: 304 + 72 + 262 = 638 kg (1410 lbs or 0.70 tons)

B.3. Prefabricated building frames. They use 240 gal of primer per year. The calculations:

240 gal x (5.66 kg/gal) = 1358 kg

1358 kg x (1 Mg/10^3 kg) x (660 kg/Mg) = 896 kg of VOC (1980 lbs or 0.99 tons)

The total VOC for these three architectural coating sources is:

2232 + 638 + 896 = 3766 kg (8323 lbs or 4.16 tons)

B.4. Non-industrial surface coating. This includes non-manufacturing emissions and would cover painting of private homes and commercial offices. The per capita architectural surface coating emission factor (from AP-42) for these activities is 2.09 kg/yr (4.6 lbs/yr). The nonattainment area population is 12, 752. The calculation:

12,752 x 2.09 kg/yr = 26,652 kg/yr (58,634 lbs/yr or 29.32 tons/yr)

Summary of all sources within architectural coatings:

4.16 + 29.32 = 33.48 tons of VOC

Daily emissions are 183.96 lbs/day (0.0920 tons/day) and based on 7 days/week (since non-industrial is the largest portion) and 25% activity in the fall ozone season (17% winter, 25% spring, 33% summer).

C. Auto Refinishing. There were two very small auto body shops that used paints and solvents to refinish cars.

C.1. Body Shop No. 1:

48 gal solvent/yr x (3 kg/gal) = 144 kg of VOC

36 gal paint/yr x (5.66 kg/gal) = 204 kg

204 kg paint x (1 Mg/10^3 kg) x (560 kg/Mg) = 114 kg of VOC

Total VOC = 144 kg + 114 kg = 258 kg

C.2. Body Shop No. 2:

They said they did not use paint or solvents, but to be conservative it was assumed they used the same quantities as Body Shop No. 1 (258 kg).

Both body shops combined would then be emitting 516 kg VOC (1140 lbs or 0.57 tons) per year. Daily emissions are 4.38 lbs/day (0.00219 tons/day) and are based on 5 days/week operation and 25% of annual activity in the ozone season.

NOTE: If the EPA per capita figure (0.84 kg/yr or 1.9 lbs/yr) for auto refinishing emissions was used for the nonattainment area then a much larger figure would result: 12,752 x 0.84 = 10,712 kg/yr = 23,673 lbs/yr = 11.8 tons/yr. Since what was observed in the actual inventory is a much more accurate representation of how many autobody shops there were, this technique would significantly over estimate reality (11.8 tons vs. 0.57 tons).

Dry Cleaning.

There were no dry cleaning operations within the nonattainment area.

Graphic Arts.

There was only one source identified as such, but no data were obtained as the owner/operator was unable to be contacted. Using an EPA per capita VOC emission factor (0.4 kg/year) yields the following calculation:

(0.4 kg/yr) x (12,752 people) = 4920 kg/yr of VOC (10,873 lbs/yr or 5.4 tons/yr)

Daily emissions are 41.82 lbs/day (0.0209 tons/day) and is based on 5 days/week and 25% activity in the ozone season.

Leaking Underground Storage Tanks.

The El Paso, Texas, 1990 base year inventory reported that removal of leaking tanks is what is of importance here. El Paso removed 19 in 1990. El Paso's 1990 inventory used a Radian Corp. emission factor of 28 lbs VOC/day per event (i.e. tank removal) in a 1992 report. The Underground Storage Tank Bureau (USTB) of the NMED currently has records of 5 tanks operating in the Sunland Park nonattainment area:

A grocery/gas station	3	tanks
A hospital	1	tank
Santa Teresa Airport	1	tank

From a list of both past and present leaking tanks (list dated Aug. 22, 1996) the NMED-USTB reports the following:

Grocery/gas station (Sunland Park) - pre-investigation stage and suspected release, but apparently nothing has been done as of yet. Last report dated June 28, 1996.

A distribution company (Santa Teresa) - Based on a report dated June 26, 1989 no further action was taken, but the case was not closed. This company was not identified as being in the area for this SIP inventory.

Since any suspected leaking tanks are still in the ground and have not been removed, this emission source will be considered insignificant since there is a grand total of only 5-6 tanks, in which 1-3 of them "might" be leaking.

Miscellaneous Other Sources

A facility that sterilizes medical supplies has been estimated to emit 354 lbs of VOC per year (AIRS database). This translates into 0.177 tons/year with a rule effectiveness calculation (default of 80%) of 0.212 tons/year. Daily emissions are 0.972 lbs/day (0.000486 tons/day) and is based on 7 days/week and 25% activity during the ozone season.

Oil and Gas Production.

There are no oil and gas production facilities within the nonattainment area.

Pesticide Application

This source of VOC includes pesticides used in agriculture, on golf courses, sod farms, and in greenhouses and nurseries. Dona Ana County is an important agricultural area within New Mexico and most of the county's agriculture is located near the Rio Grande. A large portion of the nonattainment area is rural and agricultural, especially the northern half. Agricultural pesticide use is the largest component in this emission category.

A. Agricultural Pesticide Application - Basic Calculation Procedures. In the EPA guidance document: Procedures for the Preparation of Emission Inventories for Carbon Monoxide and Precursors of Ozone (1991), VOC emissions were based on the following national figures:

1. The amount of solvent or carrier (i.e. the inert) portion of pesticides was considered 1.45 times the amount of active ingredient (a.i.). In other words, 59% of the total content of a pesticide formulation was inert.

2. The total potential VOC emissions is 2.45 times the amount of active ingredient (a.i.).

Data on pesticide use in New Mexico was obtained from the National Center for Food and Agricultural Policy. Agricultural crop data for Dona Ana County were obtained from the State Agriculture Department in Las Cruces. Volatility (vapor pressure) data were also necessary to do VOC emission calculations. Data on the volatility of pesticides were obtained from a variety of sources starting with AP-42. Vapor pressure data in AP-42 are extremely limited and only the most commonly used chemicals are listed. Other sources of vapor pressure data (e.g. the Merck Index) are listed in the references. Since pesticide use data, by crop, were only available on a statewide basis, such data had to be apportioned down to the nonattainment area based on crops grown in the area. Crop data were available by county. The first step was to take pesticide use data and to apportion them down to Dona Ana County based on what crops were grown in the county and what percentage of state production they accounted for. Secondly, these figures had to be apportioned down to the nonattainment area. There were two options for doing this:

1. Take the nonattainment area as a fraction of all of Dona Ana County.

2. Take the nonattainment area as a fraction of all lands in Dona Ana County in the vicinity of the Rio Grande.

The second option was presumed to generate a more accurate estimation of agriculture in the nonattainment area. Dona Ana County is large compared to the nonattainment area and most of the county is arid and not under crop production. Most of the agricultural land in Dona Ana County is located near the Rio Grande and the nonattainment area is entirely located near the Rio Grande. The Rio Grande extends 80 miles (north to south) within Dona Ana County of which 18 miles is within the nonattainment area. Hence, agriculture within the nonattainment area was estimated to represent 22.5% (18/80 = 0.225) of agriculture within the county.

The following demonstrates how pesticide use (using metribuzin as an example) was apportioned down to: 1) the county level, then 2) down to the level of the Sunland Park nonattainment area:

LBS A.I./YEAR USED IN NEW MEXICO	CROP THAT CHEMICAL IS APPLIED TO	PERCENT OF CROP IN DONA ANA COUNTY	NON-ATTAINMENT AREA AS A PERCENT OF COUNTY	LBS A.I./YEAR USED IN THE NON-ATTAINMENT AREA
6250	alfalfa	6.28	22.5	88.3
2448	potatoes	0.0	22.5	0.0
8698	TOTALS			88.3

The following is an example calculation using the pesticide metribuzin.

88.3 lbs a.i./year used in the nonattainment area

88.3 x 1.45 (inert portion factor) = 128.0 lbs of inert ingredients used/year

Calculating VOC from inert ingredients: Since data on pesticide formulations (e.g. emulsifiable concentrate, wettable powder, etc.) were not readily available for pesticides used in this area, an average VOC content was used. From AP-42: the average VOC content of 18 formulations of inert ingredients = 32% by weight. The calculation:

128.0 lbs inert ingredients/year x 0.32 = 41.0 lbs of VOC emitted from inert ingredients in metribuzin

Calculating VOC from active ingredients: Since data were not available on whether surface application or soil incorporation techniques were used on the various pesticides, all determinations were based on the worst case scenario of surface application. Pesticides applied to the soil surface will volatilize more quickly and to a greater extent when compared to soil incorporation. Metribuzin, which has a vapor pressure of < 1×10^{-5} mm Hg, has a surface application VOC emission factor of 350 kg/Mg or 700 lbs/ton. This means that 35% of the active ingredient may volatilize.

88.3 lbs a.i./year used in the nonattainment area

88.3 x 0.35 = 30.9 lbs of VOC emitted from a.i. in metribuzin

Summing VOC from inert and a.i.: 41.0 + 30.9 = 71.9 lbs of total VOC emitted from metribuzin.

Tables 2.5-H, I and J summarize VOC emissions from all agricultural pesticide use in the nonattainment area. A grand total of 50,789 lbs (25.4 tons) of pesticide active ingredients (a.i.) were estimated to be used within the nonattainment area annually. This results in VOC emissions of 7.62 tons per year.

Sixty-one percent of these emissions come from the moderately volatile pesticide group (Table 2.5-I). This group also has the greatest use in terms of tons of a.i. per year. The most volatile pesticide group (Table 2.5-J) accounted for 32% of VOC emissions

TABLE 2.5-H PESTICIDES WITH VAPOR PRESSURES <1 x 10^{-6} mmHg. SURFACE APPLICATION EMISSION FACTOR ASSUMED		
PESTICIDE	**LBS. of Active Ingredient (a.i.) used in the Nonattainment Area**	**LBS. VOC EMITTED (Lbs a.i. multiplied by the emission factor - 0.068)**
2,4 - DB	70.6	4.80
ANILAZINE	23.7	1.61
ATRAZINE	164.6	11.2
BENSULIDE	191.7	13.0
BIFENTHRIN	3.77	0.26
CARBOFURAN	445.69	30.3
CYANAZINE	1045.76	71.1
CYPERMETHRIN	95.8	6.51
DIURON	227.7	15.5
ENDOSULFAN	615.1	41.8
ENDOTHALL	97.8	6.65
ESFENVALERATE	6.35	0.43
ETHEPHON	278.6	18.9
GLYPHOSATE	905.12	61.5
IPRODIONE	67.2	4.57
LAMDACYHALOTHRIN	15.2	1.03
MALEIC HYDRAZIDE	108.7	7.39
MANCOZEB	51.3	3.49
MANEB	164.0	11.2
MEPIQUAT CHLORIDE	25.6	1.74
MSMA	337.3	22.9
NAPROPAMIDE	29.5	2.01
NORFLURAZON	21.8	1.48
ORYZALIN	43.8	2.98

PARAQUAT	0.219	0.01

TABLE 2.5-H (CONTINUED)

PESTICIDE	LBS. of a.i. used in the Nonattainment Area	LBS. VOC EMITTED (Lbs a.i. multiplied by factor - 0.068)
PERMETHRIN	368.6	25.1
PICLORAM	2653.8	180.4
PROFENOFOS	3.39	0.23
SETHOXYDIM	168.6	11.5
SODIUM CHLORATE	7382.2	502.0
SULPROFOS	33.7	2.29
TERBACIL	113.0	7.68
THIDIAZURON	113.3	7.70
THIODICARB	12.1	0.82
34 CHEMICALS	15,885.599	1080.08 (0.540 tons)

TABLE 2.5-I PESTICIDES WITH VAPOR PRESSURES 1×10^{-4} to 1×10^{-6} mmHg.
SURFACE APPLICATION EMISSION FACTOR ASSUMED

PESTICIDE	**LBS. of Active Ingredient (a.i.) used in the Nonattainment Area**	**LBS. VOC EMITTED (LBS. a.i. multiplied by the emission factor - 0.35)**
2, 4 - D	13,967.57	4888.6
ACEPHATE	8.40	2.94
ALACHLOR	125.78	44.0
ALDICARB	449.2	157.2
BENEFIN	374.8	131.2
BROMOXYNIL	165.1	57.8
CHLORPYRIFOS	1153.3	403.6
CYFLUTHRIN	10.1	3.54
DCPA	2559.8	895.9
DICAMBA	29.91	10.5
DIMETHOATE	310.4	108.6
ETHALFLURALIN	7.51	2.63
ETHYL PARATHION	4.38	1.53
FLUAZIFOP	104.6	36.6
MALATHION	0.498	0.17
METALAXYL	69.0	24.2
METHOMYL	1997.8	699.2
METHYL PARATHION	237.89	83.3
METOLACHLOR	469.43	164.3
METRIBUZIN	88.3	30.9
OXYDEMETON-METHYL	25.40	8.89
PENDIMETHALIN	1049.09	367.2
PROMETRYN	1235.4	432.4
PRONAMIDE	276.2	96.7

TABLE 2.5-I PESTICIDES WITH VAPOR PRESSURES 1×10^{-4} to 1×10^{-6} mmHg. SURFACE APPLICATION EMISSION FACTOR ASSUMED		
PESTICIDE	**LBS. of Active Ingredient (a.i.) used in the Nonattainment Area**	**LBS. VOC EMITTED (LBS. a.i. multiplied by the emission factor - 0.35)**
TRIBUFOS	1720.1	602.0
25 CHEMICALS	26,439.968	9253.90 (4.627 tons)

TABLE 2.5-J PESTICIDES WITH VAPOR PRESSURES >1×10^{-4} mmHg. SURFACE APPLICATION EMISSION FACTOR ASSUMED		
PESTICIDE	**LBS. of Active Ingredient (a.i.) used in the Nonattainment Area**	**LBS. VOC EMITTED (LBS. a.i. multiplied by the emission factor - 0.58)**
1,3 -D	5059.0	2934.2
CHLOROTHALONIL	0.0	0.0
DICROTOPHOS	278.2	161.4
DISULFOTON	44.45	25.8
EPTC	413.1	239.6
PCNB	134.9	78.2
PHORATE	2.19	1.27
PROPARGITE	123.5	71.6
TRIFLURALIN	2408.70	1397.0
	8464.04	4909.07 (2.454 tons)

VOC Emissions summary of Tables 2.5-H, I, and J:

2.5-H: 0.540 tons
2.5-I: 4.627 tons
2.5-J: 2.454 tons

Grand Total 7.621 tons of VOC from pesticide a.i.(active ingredients)

and the remaining 7% from the least volatile group (Table 2.5-H). AP-42 lists emission factors based on pesticide vapor pressure and mode of application (surface or soil incorporated). Again, surface application factors were used as a worst case scenario. Vapor pressures were determined for each pesticide. Each pesticide was placed in one of the three vapor pressure ranges ($< 1 \times 10^{-6}$, 1×10^{-4} to 1×10^{-6}, and $>1 \times 10^{-4}$ mmHg) according to AP-42. Pesticides with no identifiable vapor pressures were placed into the lowest range ($<1 \times 10^{-6}$ mmHg). Unfortunately, although AP-42 lists emission factors for these three vapor pressure ranges for soil incorporation, it does not list an emission factor for $<1 \times 10^{-6}$ mmHg under surface application. This is an apparent oversight or deficiency in AP-42. Although $<1 \times 10^{-6}$ mmHg is a lower vapor pressure range, surface application emissions are well known to be greater than that of soil incorporation. Consequently, NMED staff estimated an emission factor for pesticides $<1 \times 10^{-6}$ mmHg applied at the surface as follows:

Soil incorporation emission factor	Surface application emission factor
42 / 104 = 0.404	700 / 1160 = 0.603
5.4 / 42 = 0.128	X / 700 = Y
0.128 / 0.404 = 0.317 (31.7%)	

The objective was to make comparable the relative drop in emissions from high vapor pressures to low vapor pressures similar between soil incorporation and surface application. Hence, Y should be calculated to be 32% (round off 31.7% since this is an estimation) of 0.603, meaning, Y = 0.193. This will result in X = 135 lbs of VOC emitted per ton of pesticide applied. By examining all of these emission factors in AP-42 one should see that this figure is a reasonable estimate.

Calculation for total inert VOC emissions:

50,789.6 lbs a.i. used in the nonattainment area for all pesticides

50,789.6 x 1.45 = 73,644.9 lbs of inert ingredients used

73,644.9 x 0.32 = 23,566.4 lbs of VOC from inert ingredients (11.78 tons)

B. Nursery and greenhouse operation. They estimated pesticide use at about 1 quart per year of malathion. Not knowing how much per gallon the formulation weighs and to be conservative, use 10 lbs/gal.

1 qt x (1 gal/4 qts) x (10 lbs/gal) = 2.50 lbs.

Given: 1) vapor pressure of malathion is 8.0 x 10^{-6} mm Hg, 2) that average VOC content for 18 formulations is 32% (from AP-42), and 3) the VOC content of the active part is 35%, go with an overall VOC content of 33%.

2.50 lbs x 0.33 = 0.825 lbs

Since 1 qt per year seemed like a very small amount, this was increased by a factor of 5:

0.825 x 5 = 4.12 lbs of VOC (0.002 tons)

This is still a very small quantity.

C. Golf Course. The golf course uses Round-Up (glyphosate), Super Trimec (dicamba + 2,4-D), Four (a fungicide), and Lebanon.

Round-up: 50 gal/yr (10 lbs/gal) = 500 lbs/yr

500 lbs x 0.59 (inert fraction) = 295 lbs inert (Leaving 205 lbs active)

295 x 0.32 (VOC in inert fraction) = 94.4 lbs of VOC

205   x   0.068 (fraction of VOC in a.i.) = 13.9 lbs of VOC

108.3 lbs of VOC from Round-Up (0.054 tons)

Super Trimec: 40 gal/yr (10 lbs/gal) = 400 lbs/yr

Since both a.i. are at 35% VOC and the inert portion is at 32%, use an overall figure of 33%

400   x   0.33 = 132 lbs of VOC (0.066 tons)

Four fungicide: 2 bags at 2.5 lbs each per year

5 lbs   x   0.33 = 1.65 lbs of VOC (0.0008 tons)

Lebanon: 30 bags at 5 lbs each per year

150 lbs   x   0.33 = 49.5 lbs of VOC (0.025 tons)

Sum of all four pesticides for the golf course: 291.45 lbs or 0.146 tons

D. Sod Farm. They use Round-Up, Bectril, Super Trimec, and 3 different spreaders or surfactants.

Round-up: 10 gal/yr   x   10 lbs/gal = 100 lbs/yr

59 lbs inert   x   0.32 = 18.88 lbs of VOC

41 lbs active   x   0.068 = 2.79 lbs of VOC

21.67 lbs of VOC total (0.0108 tons)

Bectril: 5 gal/yr   x   10 lbs/gal = 50 lbs

50 lbs   x   0.33 = 16.5 lbs of VOC (0.008 tons)

Super Trimec: 10 gal/yr   x   10 lbs/gal = 100 lbs

100 lbs x 0.33 = 33 lbs of VOC (0.017 tons)

3 different spreaders/surfactants: 30 gal/yr x 10 lbs/gal = 300 lbs

300 lbs x 0.33 = 99 lbs of VOC (0.050 tons)

Sum of VOC emitted from the sod farm is: 170.2 lbs (0.085 tons)

Total for these 3 sources (B., C. and D.) is: 0.002 tons + 0.146 tons + 0.085 tons = 0.233 tons

E. Summary of all VOC Emissions from Pesticide Use.

VOC emissions from agricultural pesticide use dominates over other pesticide sources. VOC from agriculture accounts for 99% of the total. Emissions from the nursery, golf course, and sod farm can be considered insignificant.

Table 2.5-K. Summary of annual VOC emissions from pesticide use.

	SOURCES				
	AGRICULTURE		NURSERY	GOLF COURSE	SOD FARM
	ACTIVE INGREDIENTS	INERT INGREDIENTS			
VOC EMISSIONS (TONS)	7.62	11.78	0.002	0.146	0.085

GRAND TOTAL VOC FROM PESTICIDES: 19.63 Tons

Daily emissions were calculated as 116.48 lbs/day (0.0582 tons/day) and based on 7 days/week operation and 27% of annual activity in the ozone season (10% winter, 30% spring, 33% summer).

Service (Gasoline) Stations.

Vehicle refueling emissions from gasoline service stations is a component of the EPA's Mobile 5 model and hence is included under Section 2.6 - On-Road Mobile Sources within this report.

Solvent Use.

Commercial and consumer solvent use can be calculated using EPA AP-42 per capita emission factors (4.2 kg/yr or 9.2 lbs/yr).

4.2 kg/yr x 12,752 people = 53,558 kg of VOC (117,828 lbs or 58.92 tons)

Since 31% of this is considered nonreactive, multiply the above figure by 69%, leaving 40.66 tons of VOC emitted annually. Guidance and emission factors in the draft EIIP (Emissions Inventory Improvement Program) yields similar results (7.99 lbs/person/year): 101,888 lbs or 50.94 tons per year.

Solvent use can also be determined on a source by source basis through this inventory. Care must be taken to keep from counting some emission sources twice because sources in this category may overlap with others such as surface coatings, graphic arts, surface cleaning, etc. Hence, any sources in which VOC emissions were counted and classified elsewhere were not counted in this category. A total of eight commercial sources were identified as potential solvent users for this category. For the most part, all solvents used were presumed to entirely volatilize as a worst case estimate of emissions. The EIIP per capita method is also broken down into different source types. So as to cover consumer/household emissions but not to overlap with identified commercial sources, 2 of the EIIP per capita factors were used: 1) personal care products, and 2) other household products. Hence, these are listed as two additional source types in this inventory. Calculations by sources are as follows:

[Note: 7 lbs/gal was used as a representative weight for most solvents, in the absence of specific data, since many of the following chemicals and solvents were not specifically identified.]

A. Automobile mechanic shop #1:

12 gal of auto degreaser/yr x 7 lbs/gal = 84 lbs/yr of VOC

B. Automobile mechanic shop #2:

15 gal of solvent/yr x 7 lbs/gal = 105 lbs of VOC

C. Automobile mechanic shop #3

8 gal/yr of mineral spirits x 7 lbs/gal = 56 lbs/yr of VOC

D. Automobile mechanic shop #4:

10 gal/yr of parts cleaner x 7 lbs/gal = 70 lbs/yr of VOC

E. A small chemical distributor (one employee): Examples of some of the chemicals used are: glycol ether, mineral spirits, acintol, isopropanol, steol, ninol diethanolamine, triethanolamine, and xylene.

13 - 55 gal. Drums of HAPs: 13 x 55 = 715 gal

1 - 55 gal drum is only 40% VOC, hence only 22 gal of VOC

715 gal + 22 gal = 737 gal

737 gal x 7 lbs/gal = 5159 lbs/yr of VOC

F. Furniture manufacturing shop:

500 gal of HAP materials/yr x 7 lbs/gal = 3500 lbs/yr of VOC

G. A heating/cooling system company:

300 gal/yr of insulation glue x (3.78 l/gal) = 1134 liters

1134 liters x (543 g VOC/l) = 615,762 g VOC = 615.8 kg (1361 lbs)

H. Personal care products: The EIIP per capita emission factor for personal care products is 2.34 lbs/person/year:

2.34 lbs/person/yr x 12,752 people = 29,839.7 lbs (14.92 tons)

I. Other household products: The EIIP per capita emission factor for other household products is 0.74 lbs/person/year:

0.74 lbs/person/yr x 12,752 people = 9436.5 lbs (4.72 tons)

J. A tire company:

55 gal cleaner/4 months x 3 = 165 gal/yr

165 gal/yr x 7 lbs/gal = 1155 lbs/yr of VOC

K. Summary of Commercial/Consumer Solvent Use.

1. Per Capita Method: 40.66 or 50.94 tons/year based on method used (AP-42 or EIIP). The per capita method is a combination of both commercial and household use.

2. By Source Method: Commercial use is assessed source by source. Household consumer use is done via the EIIP per capita method for: 1) personal care products, and 2) other household products.

Table 2.5-L. Summary of annual VOC emissions from commercial/consumer solvent use.

SOURCE	VOC EMISSIONS IN LBS
Automobile mechanic shop #1	84
Automobile mechanic shop #2	105
Automobile mechanic shop #3	56
Automobile mechanic shop #4	70
Chemical distributor	5159
Furniture manufacturer	3500
Heating/cooling company	1361
Household products	9436
Personal care products	29,840
Tire company	1155
TOTALS	50,766 (25.38 tons)
DAILY EMISSIONS (lbs)	139.47 (0.0697 tons)

The source by source method represents only about one-half of the emissions of the per capita method. Since the source by source method is based on field surveys it is deemed to be a more accurate estimation of solvent use rather than the overall per capita calculation. Hence, this inventory is using the source by source method rather than the per capita method. Daily ozone season emissions are based on 7 days/week and 25% activity in each of the four seasons.

Surface Cleaning

The automobile repair shops and body shops could be included here but since they have been included elsewhere (e.g surface coatings and solvent use) they should not be counted here in order to prevent double counting. No other types of surface cleaning operations were identified.

Synthetic Organic Chemical Storage Tanks

None of these were identified.

Tank Breathing Losses

This category applies to fuel or other chemical storage tanks. The general equation for this determination is L_T (total losses) = L_S (standing losses) + L_W (working losses). The following tanks were identified:

SOURCE	TANK CONTENTS	TANK SIZE (gallons)
Grocery/gas station	gasoline	3 @ 2000 = 6000
Plumbing/heating/air conditioning company	gasoline	500
Cemetery and crematory	gasoline	200
Cemetery and crematory	diesel	200
Dairy operation	diesel	250

TOTALS		6700 gal - gasoline 450 gal - diesel

Considering no specific data on these tanks were available, such as tank design and frequency of refilling, some assumptions were made. Assume each tank is refilled once per month (which may or may not be an overestimate). Use the AP-42 underground tank breathing loss emission factor (1 lb of VOC/10^3 gal of throughput) as no factor is available for aboveground tanks. To adjust for potentially greater emissions from an aboveground tank, double (100% increase) this emission factor to 2 lbs/10^3 gal of throughput.

A. Grocery/gas station. These tanks are below ground.

6000 gal x 12 months = 72,000 gal/yr = 72 x 10^3 gal/yr

72 x 10^3 gal/yr x 1 lb/10^3 gal = 72 lbs of VOC/yr (0.04 tons)

B. Aboveground gasoline tanks (the plumbing/heating co. and the cemetery/crematory)

700 gal x 12 months = 8400 gal/yr = 8.4 x 10^3 gal/yr

8.4 x 10^3 gal/yr x 2 lbs/10^3 gal = 16.8 lbs of VOC/yr (0.008 tons)

C. Aboveground diesel tanks (the cemetery/crematory and the dairy)

450 gal x 12 months = 5400 gal/yr = 5.4 x 10^3 gal/yr

5.4 x 10^3 gal/yr x 2 lbs/10^3 gal = 10.8 lbs of VOC/yr (0.005 tons)

D. Summary of Tank Breathing Losses.

0.04 tons + 0.008 tons + 0.005 tons = 0.053 tons of VOC (106.0 lbs)

Ozone season day emissions were calculated to be 0.291 lbs/day (0.000146 tons/day). This was based on 7 days/week operation and 25% activity in the ozone season.

Tank, Tank Truck, Rail Car, Barge, and Drum Cleaning

None of these activities were identified within the nonattainment area.

Tank Truck Unloading - Tank Loading

This category also applies to fuel or other chemical storage tanks. The following tanks were identified (same tanks as listed under Tank Breathing Losses):

SOURCE	TANK CONTENTS	TANK SIZE (gallons)
Grocery/gas station	gasoline	3 @ 2000 = 6000
Plumbing/heating company	gasoline	500
Cemetery/crematory	gasoline	200
Cemetery/crematory	diesel	200
Dairy operation	diesel	250
TOTALS		6700 gal - gasoline 450 gal - diesel

Considering no specific data on these tanks were available, such as tank design and frequency of refilling, some assumptions were made. Assume each tank is refilled once per month (which may or may not be an overestimate). From AP-42, use as a worst case estimate, the splash fill emission factor (11.5 lb of VOC/10^3 gal of throughput) .

A. Grocery/gas station. These tanks are below ground.

6000 gal x 12 months = 72,000 gal/yr = 72 x 10^3 gal/yr

72 x 10^3 gal/yr x 11.5 lb/10^3 gal = 828 lbs of VOC/yr (0.414 tons)

B. Aboveground gasoline tanks (the plumbing/heating co. and the cemetery/crematory)

700 gal x 12 months = 8400 gal/yr = 8.4 x 10^3 gal/yr

8.4 x 10^3 gal/yr x 11.5 lbs/10^3 gal = 96.6 lbs of VOC/yr (0.048 tons)

C. Aboveground diesel tanks (the cemetery/crematory and the dairy)

450 gal x 12 months = 5400 gal/yr = 5.4 x 10^3 gal/yr

5.4 x 10^3 gal/yr x 11.5 lbs/10^3 gal = 62.1 lbs of VOC/yr (0.031 tons)

D. Summary of Tank Unloading/Loading Emissions.

0.414 tons + 0.048 tons + 0.031 tons = 0.493 tons of VOC (986.0 lbs)

Ozone season daily emissions were calculated to be 3.16 lbs/day (0.00158 tons/day). This was based on 6 days/week operation and 25% activity during the ozone season.

Waste Treatment Facilities

This category includes municipal landfills, industrial and municipal wastewater, and wastewater package plants. Of these, there is one large municipal landfill and one wastewater treatment facility.

A. Camino Real Landfill. These data were obtained from design capacity and NMOC reports submitted by the landfill to fulfill NSPS (40 CFR Part 60 Subpart WWW) requirements.

LANDFILL	Average Annual Acceptance Rate		Years Operating	Tier I NMOC Mg/yr
	Tons	Mg		
Camino Real, Sunland Park	129,000	117,000	19	461.3 (508.6 tons)

Using AP-42 input values in the US EPA Landfill Air Emissions Model resulted in an NMOC emission value of 41.1 Mg/yr (45.3 tons), ten times smaller than the Tier I method. See the Appendix to this report for AP-42 versus Tier I inputs and results.

This landfill is currently working on Tier II site specific monitoring to more accurately determine NMOC (VOC) emissions. The Tier I calculation method is used as a screening method by the EPA to identify landfills potentially emitting large quantities of VOC. Landfills are encouraged to do more specific and accurate Tier II and Tier III methods. Hence, for this inventory report, the Tier I method will be reported as a "worst" case situation, while the AP-42 calculation will be reported as a "best" case situation. Daily ozone season emissions were based on 7 days/week and 25% of annual activity during the ozone season and calculated to be the following:

Worst case	Best case
1.40 tons/day (2794.5 lbs/day)	0.124 tons/day (248.9 lbs/day)

B. Municipal Wastewater - Sunland Park City Wastewater Treatment Plant. For comparison purposes El Paso, Texas reported only 1.5-5.6 lbs/year of VOC emissions from individual plants (that report had a figure of about 20 lbs/year total from all wastewater treatment plants in El Paso). El Paso used the EPA SIMS model. This model is no longer supported by EPA and has been replaced by the WATERS model. Using EPA national default values to estimate emissions, Texas reported 5.76 tons/year for the whole county of El Paso. EPA's general emission factor is 1.1×10^{-4} lbs VOC/gal of treated wastewater. VOC emissions are directly proportional to industrial effluent (the national default is 16% of wastewater is industrial in origin). The Sunland Park treatment plant handles 498,000 gal/day. So the calculation is as follows:

498,000 gal/day x 365 days x 1.1×10^{-4} lbs VOC/gal x 0.16 x 1 ton/2000 lbs =

1.60 tons/year of VOC (3200 lbs)

Ozone season day emissions were calculated as 0.00440 tons/day (8.79 lbs/day). These are based on 7 days/week operation and 25% activity in the fall (15% winter, 25% spring, and 35% summer).

Summary of all Evaporative Emission Sources

From summary data in Table 2.5-M (below) the most significant evaporative sources of VOC are: 1) the landfill, 2) architectural coatings, 3) solvent use, and 4) pesticide use. These four sources combined account for 97% of all emissions under the worst case situation and 88% under the best case situation. Worst and best case situations were based on different methods for estimating emissions from the landfill. Under the worst case the landfill accounts for 84% of all evaporative emissions. Under the best case the landfill accounts for only 32% of emissions.

Table 2.5-M. Summary of all evaporative emission sources. TPY = tons/year; PPD = pounds/day.

SOURCES		VOC EMISSIONS	
		TPY	PPD
AIRCRAFT REFUELING		0.001368	0.00752
ASPHALT		2.36	12.96
BIOPROCESS		1.1	4.84
CATASTROPHIC RELEASES		0.0	0.0
SURFACE COATING	APPLIANCES	5.25	14.68
	ARCHITECTURAL	33.48	183.96
	AUTO REFINISHING	0.57	4.38
DRY CLEANING		0.0	0.0
GRAPHIC ARTS		5.4	41.82
LEAKING UNDERGROUND STORAGE TANKS		0.0 (considered not significant)	0.0
MISCELLANEOUS OTHER SOURCES		0.212	0.972
OIL AND GAS OPERATIONS		0.0	0.0
PESTICIDE USE		19.63	116.48
SERVICE (GASOLINE) STATIONS		in Mobile 5 model	in Mobile 5 model
SOLVENT USE		25.38	139.47
SURFACE CLEANING		0.0	0.0
SYNTHETIC ORGANIC CHEMICAL STORAGE TANKS		0.0	0.0
TANK BREATHING LOSSES		0.053	0.291
TANK, TANK TRUCK, RAIL CAR, BARGE, AND DRUM CLEANING		0.0	0.0
TANK TRUCK UNLOADING/LOADING		0.493	3.16

WASTE TREATMENT	LANDFILLS	508.6 (worst case); 45.3 (best case)*	2794.5 (worst case) 248.9 (best case)*
	WASTE WATER	1.6	8.79
GRAND TOTAL		604.13 (worst case); 140.83 (best case)	3326.31 (worst) (1.663 tons) 780.71 (best) (0.390 tons)

* "Worst" and "best" case figures were based on which technique was used to estimate emissions from the municipal solid waste landfill.

SECTION 2.6 - ON - ROAD MOBILE SOURCES

These sources include automobiles, trucks and all vehicles that travel on established roads. Emissions from these sources can be estimated using a computer model recommended by the U.S. EPA called Mobile 5. There is a complex set of input data and variables that must go into this model in order to arrive at a reasonable determination of pollutant emissions. Some of this input information includes: fraction of vehicles within eight different vehicle classes, vehicle miles traveled (VMT), VMT mix (which distributes VMT by the eight vehicle classes), air temperature, vehicle speeds, types of roads within the area, directional splits (variations in the direction of traffic movement), Highway Performance Monitoring System (HPMS) traffic data factors, time of day, season of year, etc. Since the TNRCC and TXDOT (Texas Department of Transportation) have been conducting this type of modeling for several years for their several nonattainment areas, including El Paso, the NMED has taken advantage of this experience in obtaining emission data for Sunland Park. TNRCC and TXDOT have been contracting this modeling work with the Texas Transportation Institute at Texas A&M University. Mobile source modeling currently being conducted for El Paso has included the Sunland Park nonattainment area. TXDOT conducted traffic counts within the Sunland Park nonattainment area in 1996 in order to obtain data for their modeling efforts. The Texas modeling effort includes a series of four computer programs as follows: POLFAC5A, PREPIN, IMPSUM, and SUMALL. POLFAC5A contains the Mobile 5b model embedded within it and is used to obtain emission factors for each vehicle class, each vehicle speed from 3-65 mph, and for each of the three pollutants, CO, NOx, and VOC. Hence this program generates 1512 different emission factors (8 x 63 x 3 = 1512). Separate calculations are performed for each of four daily time periods: peak morning (7:15 am - 8:15 am), midday (8:15 am - 4:45 pm), peak afternoon (4:45 pm - 5:45 pm), and overnight (5:45 pm - 7:15 am). PREPIN does several things, including making seasonal adjustments, making adjustments for vehicle operational speeds, using 24-hour trip data, accounting for time-of-day factors, and adjusting traffic counts to HPMS VMT. IMPSUM applies the emission factors to VMT mixes and speed estimates based on the various roadway types. SUMALL summarizes all of the data into daily CO, NOx, and VOC emissions. The computer run obtained from Texas was for the year 1994 (the year they are currently involved with modeling). The model run was parceled out into two components, one for El Paso and one for Sunland Park. These output data were factored up for Sunland Park's base year inventory of 1995. The 1994 emission data for Sunland Park were increased by 3.71%, which is the calculated annual population increase for the Sunland Park area (see Section One - Introduction). TXDOT did take actual traffic counts within Sunland Park (for 1996), but vehicle distribution by class was assumed to be similar to El Paso. Also, the model was run with the vehicle inspection/maintenance (I/M) and tampering variables turned off. These are generally only turned on for enhanced I/M programs. One other consideration is that the model was run for a June, July and August ozone season while this report has defined Sunland Park's season to be August, September and October. Hence some of Sunland Park's emissions could possibly be under-estimated (e.g. CO) or over-estimated (e.g. NOx). But due to Sunland Park's small size (in both area and population) and that there is a one month overlap (August), this difference is not anticipated to be significant. Table 2.6-A, below, summarizes daily summer-time emissions generated by the model for the Sunland Park nonattainment area. Some of the 1994 model output data can be found in the Appendix (just the summary of emissions as the entire computer printout package is several hundred pages long).

Table 2.6-A. Summary of emissions from on-road mobile sources in the Sunland Park nonattainment area. See table footnote for vehicle class abbreviations.

VEHICLE CLASS*	DAILY SUMMER-TIME EMISSIONS IN POUNDS		
	CO	NOx	VOC
LDGV	3698.1	643.2	366.3
LDGT1	1267.8	212.7	127.0
LDGT2	480.2	72.9	49.0
HDGV	467.6	64.1	27.1
LDDV	1.2	2.3	0.5
LDDT	0.5	0.8	0.3
HDDV	107.2	276.2	23.8
MC	18.8	2.2	5.3
TOTALS	6041.4 (3.021 tons)	1274.4 (0.637 tons)	599.3 (0.300 tons)

* Vehicle class abbreviations are as follows: LDGV = light duty gasoline powered vehicles; LDGT1 = light duty gasoline powered trucks, from 0-6000 lbs gross vehicle weight; LDGT2 = light duty gasoline powered trucks, from 6001-8500 lbs gross vehicle weight; HDGV = heavy duty gasoline powered vehicles; LDDV = light duty diesel powered vehicles, from 0-6000 lbs gross vehicle weight; LDDT = light duty diesel powered trucks; HDDV = heavy duty diesel powered vehicles; and MC = motorcycles.

To arrive at a gross estimate of annual emissions for summary and comparative purposes (in Sections 2.1 and 2.2 of this report) the above figures were multiplied by 365 days. Gross annual estimates are as follows:

CO: $\geq$1102.67 tons

NOx: $\leq$232.50 tons

VOC: $\geq$109.50

These figures are inexact because emissions can vary seasonally. CO and VOC emissions might be expected to be greater in cooler months (due to incomplete combustion), hence the annual figures might be under-estimates. NOx emissions might be expected to be greater in warmer months, hence the annual figure might be an over-estimate. In any case, these figures are just being used to make gross approximations and comparisons.

SECTION 2.7 - NON-ROAD MOBILE SOURCE EMISSIONS

Non-road mobile sources include railroads, aircraft, ships and watercraft, and many other miscellaneous sources such as agricultural vehicles, construction vehicles, light commercial use vehicles, and lawn and garden equipment. These types of sources can be hard to inventory and quantify. For this inventory, data were obtained or derived for three categories: 1) railroads, 2) aircraft, and 3) miscellaneous. Ships and watercraft were not considered because the Rio Grande is essentially unnavigable and there are no large lakes or reservoirs in the nonattainment area.

Railroads

Data on railroad traffic were obtained from a proposed environmental impact assessment (EIA) regarding a merger of Southern Pacific and Union Pacific Railroads (report dated Nov. 30, 1995). Data in this report showed estimated increases in emissions of hydrocarbons (taken to be VOC), carbon monoxide, and nitrogen oxides (as well as other pollutants) along various rail segments in several western states. The rail segment that runs from El Paso, TX to Lordsburg, NM is the one that runs through the Sunland Park nonattainment area. This segment is 148 miles long with 12.5 miles lying within the nonattainment area. The 12.5 miles was determined from examining maps from the New Mexico State Highway and Transportation Department.

The following steps show how emissions were calculated.

1. The fraction of the rail segment lying within the nonattainment area:

$12.5 \div 148 \times 100 = 8.44\%$

2. From the EIA report: Estimated increases in emissions along the entire rail segment:

Carbon monoxide	154.02 tons/year
Hydrocarbons (VOC)	49.54 tons/year
Nitrogen oxides	1152.93 tons/year

3. Emissions increases for the fraction of rail segment within the nonattainment area:

CO: 154.02 x 0.0844 = 13.00 tons/year

VOC: 49.54 x 0.0844 = 4.18 tons/year

NOx: 1152.93 x 0.0844 = 97.31 tons/year

4. The report states the increases are due to a 29.4 % increase in fuel consumption. Assume a 29.4 % increase in air emissions to correspond with the increased fuel consumption.

Calculation of current emissions is as follows: (CE = current emissions)

CO:	13.00 = 0.294 x CE	CE = 44.22 tons/yr
VOC:	4.18 = 0.294 x CE	CE = 14.22 tons/yr
NOx:	97.31 = 0.294 x CE	CE = 330.99 tons/yr

<u>Aircraft</u>

To determine emissions from aircraft, both the types and sizes of planes and the frequency of landings and take-offs (LTO) must be known. A letter was sent to the Santa Teresa Airport asking for this information. Both the Santa Teresa Airport and a private airport called Cielo Dorado receive only small general aviation craft with 100-150 horse power engines. This information was received via a phone call from the Santa Teresa Airport manager. Although the Santa Teresa Airport is technically not fully within the nonattainment area, since most of it is just outside the boundary, it has been included for inventory purposes anyway. The EPA's fleet averaging procedure was used to calculate emissions as follows:

1. Data needed for calculation:

   LTO data: Santa Teresa 20 LTO/day

   Cielo Dorado 6 LTO/day

   Emission factors (for fleet averaging): CO - 12.014 lbs/LTO

   NOx - 0.065 lbs/LTO

   VOC - 0.394 lbs/LTO

2. Calculation:

   (LTO/day) x (lbs/LTO) = lbs/day

   (lbs/day) x (365 days) x (2000 lbs/ton) = tons/yr

Table 2.7-A. Emissions from aircraft.

Airport	CO		NOx		VOC	
	lbs/day	tons/yr	lbs/day	tons/yr	lbs/day	tons/yr
Santa Teresa	240.28	43.85	1.3	0.24	7.88	1.44
Cielo Dorado	72.084	13.16	0.39	0.071	2.364	0.43

Miscellaneous Other Sources

Determining emissions from other non-road equipment such as lawn and garden equipment can be difficult. Consequently, the per capita frequency and occurrence of miscellaneous other non-road mobile sources (e.g. weed-eaters, lawn mowers, etc.) used in the Sunland Park area was assumed to be similar to El Paso, Texas. El Paso's 1990 non-road mobile source inventory was used as a basis for calculation. Since the frequency of such sources is largely based on population size, Sunland Park's emissions were calculated as a population ratio of El Paso. From 1990 census data the population of what is now the Sunland Park nonattainment area (communities of Sunland Park, Santa Teresa, and La Union) was 10,705. The formula for the ratio is:

$$\frac{10{,}705}{591{,}610} = \frac{X}{\text{El Paso emissions (CO, NOx, or VOC)}} \qquad X = 0.0181 \text{ or } 1.81\%$$

Hence, 1990 Sunland Park emissions were calculated as 1.81% of El Paso. Next, these emissions had to be increased based on Sunland Park population growth from 1990 to 1995. Estimated population within the Sunland Park nonattainment area in 1994 was 12,295 (up 14.85% from 1990, or 3.71% per year). Assuming another 3.71% increase from 1994 to 1995 yields a population of 12,752 (which amounts to a total increase of 19.12% from 1990). Finally, 1990 estimated emissions were increased by 19.12% to arrive at 1995 estimated emissions. Unlike El Paso, no special seasonal emission factor was used in calculating Sunland Park's daily emissions (since Sunland Park's ozone season is August-October and El Paso's was June-August). Sunland Park's annual figure was simply divided by 365 days (25% of annual activity in each season, 7 days/week operation).

Table 2.7-B. Determination of Sunland Park non-road mobile source emissions from El Paso, TX emissions.

Pollutant	El Paso, Texas 1990	Sunland Park, 1990	Sunland Park, 1995	
	tons/year	tons/year	tons/year	tons/day
CO	33,829.00	612.30	729.37	1.998
NOx	3950.00	71.50	85.17	0.233
VOC	3262.00	59.04	70.33	0.193

Summary of Non-Road Emissions

Miscellaneous sources account for 88% of carbon monoxide (CO) and 81% of volatile organic compounds (VOC), while railroads account for 79% of nitrogen oxides (NOx) emissions in the Sunland Park ozone nonattainment area. Daily ozone season emissions are based on 7 days/week operation and 25% of annual activity in the ozone season.

Table 2.7-C. Summary of non-road mobile source emissions for Sunland Park for 1995. TPY = tons/year; TPD = tons/day.

SOURCE CATEGORIES	CO		NOx		VOC	
	TPY	TPD	TPY	TPD	TPY	TPD
Railroads	44.22	0.121	330.99	0.907	14.22	0.0390
Santa Teresa Airport (small planes)	43.85	0.120	0.24	0.00066	1.44	0.0039

Cielo Dorado Airport (small private planes)	13.16	0.036	0.071	0.00019	0.43	0.0012
All other sources	729.37	1.998	85.17	0.233	70.33	0.193
TOTALS	830.60	2.275	416.471	1.141	86.42	0.237

SECTION 2.8 - BIOGENIC EMISSIONS

This section summarizes emissions from biogenic sources. These are primarily VOC emissions from vegetation but also includes nitrogen oxides (mainly nitrous oxide, NO) from soil microbes. Emissions from these sources can be estimated by using U.S. EPA's biogenic emissions model called PCBEIS. There are four types of information needed to determine biogenic emissions according to U.S. EPA guidance in order to run the current version of PCBEIS:

1. The top ten hourly ozone days over a three year period.
2. Weather data for determining the maximum temperature for the top ten ozone days.
3. Hourly:
   a. Air temperature
   b. Cloud cover fraction
   c. Photosynthetically active radiation (PAR)
4. Site information:
   a. County FIP codes
   b. Latitude and longitude
   c. Time zone
   d. Month, day, and year of selected input

<u>Ten highest ozone days and ranking based on temperature</u>

The ten highest ozone days were selected from AIRS data for the Sunland Park City Yard monitor (AIRS code # 35-013-0017) for the three years: 1993, 1994, and 1995. Maximum air temperature data were also extracted from AIRS since the Sunland Park site also has a meteorological monitoring station. The ten highest ozone days are shown below along with the maximum temperature for that day.

Table 2.8-A. Ten highest ozone days over the period 1993-1995.

Dates	Max. Hourly Ozone Concentration (ppm)	Maximum Air Temperature	
		° C	Time
9-7-93	0.140	33.0	1500
8-2-94	0.137	36.8	1400
9-6-95	0.137	39.5	1400
6-24-94	0.136	41.6	1500
10-28-95	0.135	29.4	1500
8-24-93	0.131	37.6	1500
8-30-95	**0.131**	**38.3**	**1300**
8-12-93	0.129	37.3	1300
11-30-93	0.127	21.9	1500
6-30-94	0.124	43.9	1400

The next step was to pick the day with the fourth highest air temperature; this day was August 30, 1995. Hourly air temperature and cloud cover fraction for this day were the inputs to the PCBEIS model. Since air temperature data are collected at the Sunland Park monitoring site these data were used for input. Cloud cover data were obtained from the National Oceanic and Atmospheric Administration (NOAA) - National Weather Service station in El Paso, Texas. The following codes for cloud cover were translated to approximate numerical figures as follows:

	Percent cover
CLR = clear sky (< 1/10 of sky covered)	0

SCT = scattered clouds (0 - 5/10 of sky covered) 25

BKN = broken clouds (6/10 - 9/10 of sky covered) 75

The other variable called for in the current version of PCBEIS, PAR (photosynthetically active radiation), is calculated by the model from other input data (namely the cloud cover data) when actual PAR data are not available. PAR is the fraction of sunlight actually utilized by plants in photosynthesis. Output from the PCBEIS model is shown in the Appendix. These data are county-wide emissions and must be apportioned down for the Sunland Park nonattainment area.

Table 2.8-B. County-wide biogenic emissions for Doña Ana County within a 24 hour period (output from PCBEIS model).

Units	Isoprene	Monoterpenes	Other VOC	NO
kg	9121.94	21,834.54	16,654.41	9095.21
Lbs	20,159.487	48,254.333	36,806.246	20,100.414
tons	10.08	24.13	18.40	10.05

The Sunland Park nonattainment area is approximately 42 square miles in area. This area can be divided into the following two portions: 1) the northern (narrower) portion, running from the north boundary at latitude 32° 00' southwards to about latitude 31° 49', is 3.5 miles wide by 6.25 miles high = 21.88 sq. miles; and 2) the southern (wider) portion, running from 31° 49' southwards to the Mexico border, is about 8 miles wide by 2.5 miles high = 20.00 sq. miles). Next, dividing 42 sq. miles by 3804 total square miles within Dona Ana County makes the nonattainment area only 1.10% of the county-wide area.

Finally, taking 1.10% of the emission figures in the table above results in the following emissions for the Sunland Park nonattainment area (per day):

Isoprene: 0.111 tons

Monoterpenes: 0.265 tons

Other VOC: 0.202 tons

NO: 0.110 tons

All VOC emissions (isoprene + monoterpenes + other VOC) are 0.578 tons/day.

Assuming no emissions or insignificant emissions during cooler dormant seasons of the year, (assumed to be the four months from November to February), daily emissions were multiplied by 240 days (the 8 months from March to October) resulting in the following annual emissions:

VOC: 138.72 tons/yr

NO: 26.40 tons/yr

SECTION 2.9 - SOURCES EMITTING ^{3} 25 TONS OF NOx OR VOC.

Section 182(a) of the 1990 Clean Air Act Amendments (CAAA) describes requirements for marginal ozone nonattainment areas. Under Section 182(a)(3)(B)(i) are requirements that owners or operators of stationary sources of NOx and VOC, located within the nonattainment area, must submit statements of actual emissions to the state (i.e. New Mexico in this case) within 3 years of area designation. This means that these statements will be due to the New Mexico Environment Department on July 12, 1998. These requirements are also spelled out in the Federal Register notice, dated June 12, 1995, that designated the Sunland Park area as a marginal ozone nonattainment area. These emission statements will have to be submitted annually thereafter. Section 182(a)(3)(B)(ii) states that these requirements may be waived for sources emitting less than 25 tons per year of NOx or VOC if the state estimates emissions from such sources using factors established by the administrator (i.e. U.S. EPA). The State of New Mexico will waive these requirements for NOx and VOC sources emitting less than 25 tons. New Mexico also reserves the right to request sources emitting between 10 and 25 tons of NOx or VOC to submit annual reports. This is because New Mexico currently has an emissions inventory rule (20 NMAC 2.73) which requires sources emitting over 10 tons annually, of criteria pollutants, to submit reports. This inventory report is using U.S. EPA AP-42 emission factors and other EPA emissions guidance to calculate emissions from sources emitting less than 25 tons.

In addition, emission statements shall be certified by the person(s) submitting them and that they are accurate to the best knowledge of the person submitting the certified statements. These requirements have been spelled out in the amended version of to 20 NMAC 2.73 - Notification of Intent and Emissions Inventory Requirements, which is a component of this report revising the state implementation plan for New Mexico.

In summary, stationary sources, emitting greater than 25 tons per year of NOx or VOC (as well as CO), that are located within the Sunland Park ozone nonattainment area, must submit actual emissions statements by July 12, 1998. These sources will also have to submit emissions statements annually thereafter.

SECTION THREE

REGULATORY COMPONENT

Section 3.1 - Amended Part 73

Notice of Intent and Emissions Inventory Requirements

Amendments primarily dealt with the certification of emission inventory reports, more detailed outlining of reporting requirements, and additional requirements for sources within ozone nonattainment areas (Sections 301, 302, 303, and 304).

[Please see a separately attached copy of the final rule]

Section 3.2 - Proposed Part 79

Permits - Nonattainment Areas

This was a one-line amendment to Section 112.C.1 setting the emissions offset limit to at least 10% (1:1.1).

[Please see a separately attached copy of the final rule]

SECTION FOUR

WAIVERS

SECTION FOUR - WAIVERS UNDER SECTIONS 179B AND 182(f) OF THE CLEAN AIR ACT

Request of a Section 179B Waiver for the Sunland Park Ozone Nonattainment Area

When an area is designated as nonattainment it has a set amount of time in which to attain the standard. The more "serious" the classification of the area the longer the time allowed to attain the standard. The classifications are (from least serious to most serious): marginal (e.g. Sunland Park, NM), moderate, serious (e.g. El Paso, TX), severe, and extreme (e.g. Los Angeles, CA). These classifications and the time periods allowed for attaining the standards are found in Section 181 of the Clean Air Act. Sunland Park, classified as a marginal nonattainment area has three years after designation to attain the standard. Since the designation became official on July 12, 1995 the attainment date is then July 12, 1998. If an area does not attain the standard within the required time period it is automatically reclassified to the next worst level. Hence, if Sunland Park does not attain the standard by July 12, 1998 it will then become a moderate nonattainment area and become subject to many more regulatory oversight programs (e.g. a vehicle inspection and maintenance program).

Section 179B of the Clean Air Act is entitled "International Border Areas." The language in this section was first written as Section 818 of the 1990 Clean Air Act Amendments, prior to its incorporation into the main body of the air act. Hence, this waiver is also often referred to as a Section 818 waiver. Section 179B(a) states that if a state implementation plan or plan revision meets all federal (i.e. U.S. EPA) requirements under the Clean Air Act and such state demonstrates to EPA that the plan would be "adequate to attain and maintain the relevant national ambient air quality standards by the attainment date specified.......but for emissions emanating from outside the United States" then such plan shall be approved. In other words, if it can be demonstrated that Sunland Park would be in attainment of the ozone standard if not for emissions from outside the U.S. (e.g. Juarez, Mexico) then it would not get reclassified to a moderate status and avoid the additional regulatory requirements.

In order to make such a demonstration, emissions budgets for both Sunland Park and Juarez, Mexico would have to be compared and air movement patterns would have to be examined. Through computer based air quality modeling programs, these emissions budgets and air movement patterns would be used to examine contributions to ambient air concentrations occurring within Sunland Park. This is a very large task. The Texas Natural Resource Conservation Commission (TNRCC) has performed such modeling and analysis for the El Paso, Texas serious ozone nonattainment area. The TNRCC used urban airshed modeling (UAM) for this demonstration. Since emissions data for Juarez, Mexico were lacking, they used U.S. sources only. Taking into consideration their required 15% rate of progress (ROP) emission reductions and projecting to the year 1996, they were able to show that they would be in attainment, but for emissions emanating from Juarez. The New Mexico counties of Dona Ana and Otero were included in this modeling. The state of Texas prepared a report and applied for a Section 179B (Section 818) waiver in July, 1994 and review by EPA is still in progress. Since Sunland Park has technically been considered a component of the El Paso metropolitan area and has already been included in modeling efforts, it is logical that a Section 179B waiver, if formally granted to El Paso, should likewise be granted to Sunland Park. Hence, New Mexico is requesting of EPA that the modeling work used for the 179B waiver, that El Paso has already applied for, be used to demonstrate that Sunland Park, New Mexico would be in attainment of the ozone NAAQS but for emissions from Juarez, Mexico.

The appropriateness of a Section 179B waiver for Sunland Park is apparent and logical based not only on the air quality modeling performed by TNRCC, but also on data presented within the emissions inventory report in Section Two of this SIP revision. Sunland Park's significantly lower population and lower total overall emissions as compared to El Paso, Texas should make such a waiver logical and reasonable. New Mexico understands that air modeling in the El Paso/Juarez/Sunland Park area is an ongoing process. New Mexico is committed to supporting efforts to continue such area-wide modeling and to gathering necessary data to run these models.

Request of a Section 182(f) Waiver for the Sunland Park Ozone Nonattainment Area

Under this Section of the Clean Air Act, requirements to reduce NOx emissions can be waived if it can be shown that net air quality benefits are greater in the absence of reductions. In other words, such reductions would not improve air quality or aid in attaining the standard. This waiver is not connected to being reclassified to a more serious nonattainment level but does give some regulatory relief for major stationary sources (emitting 100 tons/year or more) and relief for federally funded projects (under the general and transportation conformity regulations). Since Sunland Park is a marginal nonattainment area, with no special NOx reductions required at this time, this waiver may have more benefit regarding road building projects. Under the conformity rules road projects must pass a “build/no build” test. Apparently it can be difficult to pass this test for both NOx and VOC.

As with a Section 179B waiver, a 182(f) waiver can only be granted after extensive air quality modeling has been conducted to demonstrate that controls of NOx would not attain the standard. TNRCC used UAM modeling for this waiver as well and showed that VOC reductions alone would achieve attainment (exclusive of emissions from Juarez).   TNRCC's application for this waiver was conditionally granted on November 21, 1994. EPA review of this application is on-going. Again, Sunland Park is a natural extension of the El Paso metropolitan area and it does not make a lot of sense for Sunland Park to be modeled independently from El Paso. The State of New Mexico also requests of EPA that modeling data used for the El Paso NOx waiver be used to demonstrate that NOx controls and reductions would not improve air quality or aid in attaining the ozone standard in Sunland Park.

SECTION FIVE

REFERENCES AND APPENDICES

SECTION 5.1 - REFERENCES

U.S. EPA Documents

Emissions Inventory Requirements for Ozone State Implementation Plans. U.S. EPA-OAQPS. EPA-450/4-91- 010. March 1991.

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<u>References Regarding New Mexico Data</u>

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<u>Texas Documents</u>

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SECTION 5.2 - APPENDICES

These data are arranged in the same sequence of topics as presented in the body of this report. The purpose of this section is to supply supporting information beyond what is included in the Reference section.

A. Demographic data
B. Ozone data
C. Inventory questionnaire
D. Point source data
E. Area source information and data
F. On-road mobile sources
G. Non-road mobile sources
H. Biogenic supporting data

[The Appendix is attached as a separate document and is only available as a hard copy]