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FDEP

Date: February 20, 2006
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SULFUR DIOXIDE MODELING ANALYSES FOR THE CLEWISTON MILL

UNITED STATES SUGAR CORPORATION

Prepared For:
United States Sugar Corporation
Clewiston, Florida

Prepared By:

Golder Associates Inc.
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Gainesville, Florida 32653-1500

February 2006
0537636

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1.0 INTRODUCTION

United States Sugar Corporation (U.S. Sugar) owns and operates a sugar mill and sugar refinery located in Clewiston, Florida, Hendry County. Five bagasse/oil-fired boilers are operated to support the Mill and refinery operations (Boiler Nos. 1, 2 4, 7 and 8). Currently, the Title V operating permit for the Mill (Permit No. 0510003-017-AV) limits fuel oil burning and steam production during the crop season (October through April) and off-season (May through September) for certain boilers.

For Boiler Nos. 1 to 4, fuel oil burning during the crop season is limited to 16,200 gallons (gal) during any 3-hour period and to 88,800 gal during any 24-hour period. During the off-season, fuel oil burning is limited to 11,700 gal for any 3-hour period and to 54,000 gal during any 24-hour period.

For Boiler Nos. 1 and 2, the sulfur content in the fuel oil is limited to 2.50 percent during the crop season and 1.60 percent during the off-season. Both Boiler Nos. 4, 7, and 8 can operate year-around at maximum fuel burning capacity but the sulfur contents of the fuel oil fired in the boilers are limited to 0.7, 0.05, and 0.05 percent, respectively. Boiler No. 3 is now shutdown.

In addition, steam production at the Mill is limited in the off-season for the 3-hour and 24-hour averaging periods to allow only certain boilers to operate at any one time.

The majority of these limitations were predicated upon the air quality impacts associated with high-sulfur No. 6 fuel oil burning in the boilers. Air quality impacts for sulfur dioxide (SO_2) must be limited in both the crop season and during the off-season in order not to exceed ambient air quality standards (AAQS) and allowable prevention of significant deterioration (PSD) increments for SO_2.

U.S. Sugar has now implemented the fuel oil firing systems to accommodate the use of low sulfur distillate oil (0.05 percent sulfur maximum) in Boiler Nos. 1, 2, 4, and 7. The new Boiler No. 8 is permitted to burn 0.05-percent sulfur as well. Boiler No. 3 was shutdown due to the startup of Boiler No. 8. As a result of these changes in the fuel oil sulfur content fired in the boilers, many of the above limitations could be removed with burning fuel oil up to each unit's maximum capacity.

An air quality impact analysis was conducted to determine if the proposed relaxations in fuel oil burning rates would cause or contribute to a violation of the national or Florida AAQS and allowable PSD increments for SO_2. The modeling was performed based on the worst-case operating scenarios

that included burning of bagasse, and modeling SO_2 emissions for the Mill for the 3-hour, 24-hour and annual averaging times.

The existing applicable national and Florida AAQS are presented in Table 1-1. Primary national AAQS were promulgated to protect the public health, and secondary national AAQS were promulgated to protect the public welfare from any known or anticipated adverse effects associated with the presence of pollutants in the ambient air. The allowable PSD Class II and I increments are also presented in Table 1-1.

Florida has adopted state AAQS in Rule 62-204.240. These standards are the same as the national AAQS, except in the case of SO_2. For SO_2, Florida has adopted the former 24-hour secondary standard of 260 micrograms per cubic meter ($\mu g/m^3$), and former annual average secondary standard of 60 $\mu g/m^3$.

Based on the analyses presented herein, the air quality impacts due to the proposed changes will not result in ambient concentrations above the AAQS or the PSD Class II and Class I allowable increments for SO_2. As a result, the project will not cause or contribute to any adverse impacts on air quality.

This report is divided into four major sections, including this introduction, as shown below:

- Section 2.0 presents a description of the U.S. Sugar Clewiston Mill facility, along with source emission rates and stack parameters;
- Section 3.0 presents the air modeling methodology, emissions inventories and data used in the analysis; and
- Section 4.0 presents the results that demonstrate compliance of the U.S. Sugar Clewiston Mill with the SO_2 AAQS and PSD increments.

TABLE 1-1
NATIONAL AND STATE AAQS, ALLOWABLE PSD INCREMENTS, AND SIGNIFICANT IMPACT LEVELS

		AAQS ($\mu g/m^3$)			PSD Increments ($\mu g/m^3$)		Significant Impact Levels[d] ($\mu g/m^3$)	
Pollutant	**Averaging Time**	**National Primary Standard**	**National Secondary Standard**	**State of Florida**	**Class I**	**Class II**	**Class I**	**Class II**
Particulate Matter[a]	Annual Arithmetic Mean	50	50	50	4	17	0.2	1
*PM_{10}	24-Hour Maximum	150[b]	150[b]	150[b]	8	30	0.3	5
Sulfur Dioxide	Annual Arithmetic Mean	80	NA	60	2	20	0.1	1
	24-Hour Maximum	365[b]	NA	260[b]	5	91	0.2	5
	3-Hour Maximum	NA	1,300[b]	1,300[b]	25	512	0.3	25
Carbon Monoxide	8-Hour Maximum	10,000[b]	10,000[b]	10,000[b]	NA	NA	NA	500
	1-Hour Maximum	40,000[b]	40,000[b]	40,000[b]	NA	NA	NA	2,000
Nitrogen Dioxide	Annual Arithmetic Mean	100	100	100	2.5	25	0.1	1
Ozone[a]	1-Hour Maximum	235[c]	235[c]	235[c]	NA	NA	NA	NA
Lead	Calendar Quarter Arithmetic Mean	1.5	1.5	1.5	NA	NA	NA	NA

Note: Particulate matter (PM_{10}) = particulate matter with aerodynamic diameter less than or equal to 10 micrometers.
NA = Not applicable, i.e., no standard exists.

[a] On July 18, 1997, EPA promulgated revised AAQS for particulate matter and ozone. For particulate matter, $PM_{2.5}$ standards were introduced with a 24-hour standard of 65 $\mu g/m^3$ (3-year average of 98th percentile) and an annual standard of 15 $\mu g/m^3$ (3-year average at community monitors). Implementation of these standards is many years away. The ozone standard was modified to be 0.08 ppm for 8-hour average; achieved when 3-year average of 99th percentile is 0.08 ppm or less. FDEP has not yet adopted these standards.

[b] Short-term maximum concentrations are not to be exceeded more than once per year.

[c] Achieved when the expected number of days per year with concentrations above the standard is fewer than 1.

[d] Maximum concentrations. EPA has proposed Class I significant impact levels.

Sources: Federal Register, Vol. 43, No. 118, June 19, 1978. 40 CFR 50. 40 CFR 52.21. Rule 62-204, F.A.C.

2.0 PROJECT DESCRIPTION

2.1 Maximum SO_2 Emissions for the Boilers

U.S. Sugar owns and operates a raw sugar mill and sugar refinery located in Clewiston, Hendry County, Florida. The Clewiston Mill currently consists of five bagasse/oil-fired boilers (Boiler Nos. 1, 2, 4, 7, and 8), which provide steam to the sugar mill and refinery. The primary fuel for all boilers is bagasse, while fuel oil is used for startup, shutdown, malfunction, and as a supplemental fuel. For economic reasons, fuel oil burning is minimized to the extent possible.

Currently, the Title V operating permit for the Mill (Permit No. 0510003-017-AV) limits fuel oil burning in the boilers to the following:

- Boiler Nos. 1 through 4, Crop Season: 16,200 total gallons during any 3-hour period, 88,800 total gallons during any 24-hour period;
- Boiler Nos. 1 through 4, Off-season: 11,700 total gallons during any 3-hour period, 54,000 total gallons during any 24-hour period;
- Boiler Nos. 1 through 3, Crop Season: fuel oil fired shall contain no more than 2.5-percent sulfur;
- Boiler Nos. 1 through 3, Off-season: fuel oil fired shall contain no more than 1.6-percent sulfur;
- Boiler No. 4, Year-round: fuel oil fired shall contain no more than 0.7-percent sulfur; and
- Boiler No. 7, Year-round: fuel oil fired shall contain no more than 0.05-percent sulfur.

In addition, steam production at the Mill is limited to the following:

- Boiler Nos. 1 through 4, Off-season: no more than three of these four boilers can operate at any one time;
- Boiler Nos. 1 through 4, Off-season: 1,845,000 total lbs steam during any 3-hour period (615,000 lb/hr); and
- Boiler Nos. 1 through 3, Off-season: 10,800,000 total lbs steam during any 24-hour period (450,000 lb/hr).

In addition to these limitations, the permit requires an extensive amount of recordkeeping to ensure that the limitations are not exceeded.

As previously discussed, the majority of these limitations were predicated upon the air quality impacts associated with high-sulfur fuel oil burning in the boilers. Air quality impacts for SO_2 must be limited in both the crop season and during the off-season in order not to exceed SO_2 AAQS and allowable PSD increments.

U.S. Sugar has recently completed implementing fuel oil firing systems to accommodate the use of low sulfur distillate oil (0.05 percent sulfur maximum) in Boiler Nos. 1, 2, 4, and 7. The new Boiler No. 8 is permitted to burn 0.05-percent sulfur as well. Boiler No. 3 was shutdown due to the startup of Boiler No. 8.

As a result of these changes in the fuel oil sulfur content fired in the boilers, many of the above limitations could be removed, and burning fuel oil up to each unit's maximum capacity could be allowed.

2.2 Proposed and Baseline SO_2 Emissions for the Boilers

The estimated maximum hourly emissions for the boilers for the 3-hour and 24-hour averaging periods during the crop season are shown in Tables 2-1 and 2-2, respectively. The bases for the maximum emissions are shown in the footnotes to the tables. Two emission cases are provided for each averaging period. Case A provides the maximum SO_2 emissions with the maximum fuel oil burning in each boiler, with bagasse firing for the remaining heat input to the boilers. Case B provides the maximum SO_2 emissions based on the maximum bagasse firing supplying the total heat input to the boilers. As shown in these tables, the maximum short-term SO_2 emissions occur when burning 100-percent carbonaceous fuel.

For modeling purposes, the maximum 3-hour average SO_2 emission rates for maximum bagasse burning (Case B) was selected to produce a conservative estimate of air quality impacts. In addition, these emission rates were assumed to occur during the off-season even though fuel usage and, therefore, SO_2 emission rates, would be lower for the off-season due to the restrictions on total Mill steam production during the off-season.

The baseline SO_2 emissions for the boilers that were in existence in the baseline years of 1974 to 1975 are presented in Table 2-3. These emissions are consistent with previous analyses performed for the Clewiston Mill when addressing PSD increment consumption. A summary of the SO_2 emissions considered in the modeling for the future operations is also presented in Table 2-3.

2.3 Site Layout and Structures

The general location of the U.S Sugar Clewiston Mill is presented in Figure 2-1. The plot plan of the Mill, showing stack locations and property boundaries, is presented in Figures 2-2 and 2-3. The dimensions of the major buildings and structures are presented in Section 3.0.

2.4 Stack Parameters

The stack and operating parameters for the boilers for the future and baseline operations are presented in Table 2-4.

TABLE 2-1

U.S. SUGAR CLEWISTON MILL MAXIMUM SO_2 EMISSIONS - FUTURE CROP SEASON OPERATION - 3-HR AVERAGING TIME BOILERS 1, 2, 4, 7, AND 8 @ 0.05% SULFUR FUEL OIL

Boiler	Total Maximum Heat Input (MMBtu/hr)	Maximum Heat Input From Fuel Oil (MMBtu/hr)	Rate For Scenario			SO_2 Emissions			
			Fuel Oil		Bagasse	Fuel Oil[b]	Bagasse[c]	Total	
			gal/hr[a]	MMBtu/hr	(MMBtu/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(g/s)
CASE A: MAXIMUM FUEL OIL BURNING									
1	495.6	208	1,541	208	287.6	11.1	17.3	28.3	3.57
2	447.0	208	1,541	208	239.0	11.1	14.3	25.4	3.20
4	633.0	326	2,415	326	307.0	17.4	18.4	35.8	4.51
7	812.0	326	2,415	326	486.0	17.4	82.6	100.0	12.60
8	1,030.0	562	4,163	562	468.0	30.0	28.1	58.1	7.31
Totals	3,417.6	1,630	12,074	1;630	1,787.6	86.9	160.7	247.6	31.2
CASE B: MAXIMUM BAGASSE BURNING									
1	495.6	208	0	0	495.6	0.0	29.7	29.7	3.75
2	447.0	208	0	0	447.0	0.0	26.8	26.8	3.38
4	633.0	326	0	0	633.0	0.0	38.0	38.0	4.79
7	812.0	326	0	0	812.0	0.0	138.0	138.0	17.39
8	1,030.0	562	0	0	1,030.0	0.0	61.8	61.8	7.79
Totals	3,417.6	1,630	0	0	3,417.6	0.0	294.4	294.4	37.1

[a] Based on maximum capacity of fuel oil burners.

[b] No. 2 fuel oil @ 0.05 % sulfur and 7.2 lb/gal.

[c] Based on 0.06 lb/MMBtu SO_2 due to bagasse firing, based on industry test data, except Boiler No. 7 based on permit limit of 0.17 lb/MMBtu, and Boiler No. 8 based on permit limit of 0.06 lb/MMBtu.

TABLE 2-2

U.S. SUGAR CLEWISTON MILL MAXIMUM SO_2 EMISSIONS - FUTURE CROP SEASON OPREATION 24-HR AVERAGING TIME BOILERS 1, 2, 4, 7, AND 8 @ 0.05% SULFUR FUEL OIL

Boiler	Total Maximum Heat Input (MMBtu/hr)	Maximum Heat Input From Fuel Oil[a] (MMBtu/hr)	Rates For Scenario			SO_2 Emissions			
			Fuel Oil		Bagasse	Fuel Oil[b]	Bagasse[c]	Total	
			gal/hr[a]	MMBtu/hr	(MMBtu/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(g/s)
			CASE A: MAXIMUM FUEL OIL BURNING						
1	495.6	208	1,541	208	287.6	11.1	17.3	28.3	3.57
2	447.0	208	1,541	208	239.0	11.1	14.3	25.4	3.20
4	600.0	326	2,415	326	274.0	17.4	16.4	33.8	4.26
7	738.0	326	2,415	326	412.0	17.4	70.0	87.4	11.02
8	936.0	562	4,163	562	374.0	30.0	22.4	52.4	6.60
Totals	3,216.6	1,630	12,074	1,630	1,586.6	86.9	140.5	227.4	28.7
			CASE B: MAXIMUM BAGASSE BURNING						
1	495.6	208	0	0	495.6	0.0	29.7	29.7	3.75
2	447.0	208	0	0	447.0	0.0	26.8	26.8	3.38
4	600.0	326	0	0	600.0	0.0	36.0	36.0	4.54
7	738.0	326	0	0	738.0	0.0	125.5	125.5	15.81
8	936.0	562	0	0	936.0	0.0	56.2	56.2	7.08
Totals	3,216.6	1,630	0	0	3,216.6	0.0	274.2	274.2	34.5

[a] Based on maximum capacity of fuel oil burners.

[b] No. 2 fuel oil @ 0.05 % sulfur and 7.2 lb/gal.

[c] Based on 0.06 lb/MMBtu SO_2 due to bagasse firing, based on industry test data, except Boiler No. 7 based on permit limit of 0.17 lb/MMBtu, and Boiler No. 8 based on permit limit of 0.06 lb/MMBtu.

TABLE 2-3
SO_2 EMISSION RATES FOR FUTURE AND BASELINE SOURCES USED IN THE MODELING ANALYSIS

Emission Unit	Model ID	SO_2 Emission Rates [a] lb/hr	g/s
Future			
Boiler No. 1	USSBLR1	29.7	3.75
Boiler No. 2	USSBLR2	26.8	3.38
Boiler No. 4	USSBLR4	38.0	4.79
Boiler No. 7	USSBLR7	138.0	17.39
Boiler No. 8	USSBLR8	61.8	7.79
1974 Baseline			
Boiler No. 1	USSBLR1B	-462.0	-58.21
Boiler No. 2	USSBLR2B	-462.0	-58.21
Boiler No. 3	USSBLR3B	-263.5	-33.2
East Pellet Plant	EPELLET	-81.7	-10.3
West Pellet Plant	WPELLET	-81.7	-10.3

[a] SO_2 emissions for the future operations based on the future crop season operation for the 3-hour averaging period with maximum bagasse burning (Case B, Table 2-1). Baseline emissions modeled as negative emissions for the PSD increment analysis.

TABLE 2-4
STACK AND OPERATING PARAMETERSE AND LOCATIONS FOR FUTURE ADN BASELINE SOURCES USED IN THE MODELING ANALYSIS

Emission Unit	Model ID	UTM Coordinates [a] East (m)	UTM Coordinates [a] North (m)	Relative Location X ft	Relative Location X m	Relative Location Y ft	Relative Location Y m	Stack Data [b] Height ft	Stack Data [b] Height m	Stack Data [b] Diameter ft	Stack Data [b] Diameter m	Operating Data [b] Temperature °F	Operating Data [b] Temperature °K	Operating Data [b] Flow acfm	Operating Data [b] Velocity ft/s	Operating Data [b] Velocity m/s
Future																
Boiler No. 1	USSBLR1	506,184.6	2,956,934.8	185	56	-5	-1.5	213	64.9	8.0	2.44	150	339	250,000	82.9	25.3
Boiler No. 2	USSBLR2	506,171.8	2,956,934.8	143	44	-5	-1.5	213	64.9	8.0	2.44	150	339	250,000	82.9	25.3
Boiler No. 4	USSBLR4	506,128.2	2,956,936.3	0	0	0	0.0	150	45.7	8.2	2.50	160	344	281,000	88.7	27.0
Boiler No. 7	USSBLR7	506,095.7	2,956,956.1	-107	-33	65	19.8	225	68.6	8.0	2.44	335	441	285,000	94.5	28.8
Boiler No. 8	USSBLR8	506,046.2	2,956,987.3	-269	-82	167	51.0	199	60.7	10.9	3.33	265	403	425,400	75.7	23.1
Baseline																
Boiler No. 1	USSBLR1B	506,184.6	2,956,934.8	185	56	-5	-1.5	75.8	23.1	6.10	1.86	160	344	173,600	99.0	30.2
Boiler No. 2	USSBLR2B	506,171.8	2,956,934.8	143	44	-5	-1.5	75.8	23.1	6.10	1.86	158	343	205,200	117.0	35.7
Boiler No. 3	USSBLR3B	506,157.2	2,956,941.8	95	29	18	5.5	90.0	27.4	7.51	2.29	156	342	128,200	48.2	14.7
East Pellet Plant	EPELLET	506,109.9	2,956,987.5	-60	-18	168	51.2	40.0	12.2	5.00	1.52	165	347	33,000	28.0	8.54
West Pellet Plant	WPELLET	506,109.9	2,956,987.5	-60	-18	168	51.2	51.5	15.7	5.00	1.52	165	347	33,000	28.0	8.54

[a] Universal transverse coordinates, zone 17.

[b] Stack and operating data for future sources based on Title V renewal application (2005).

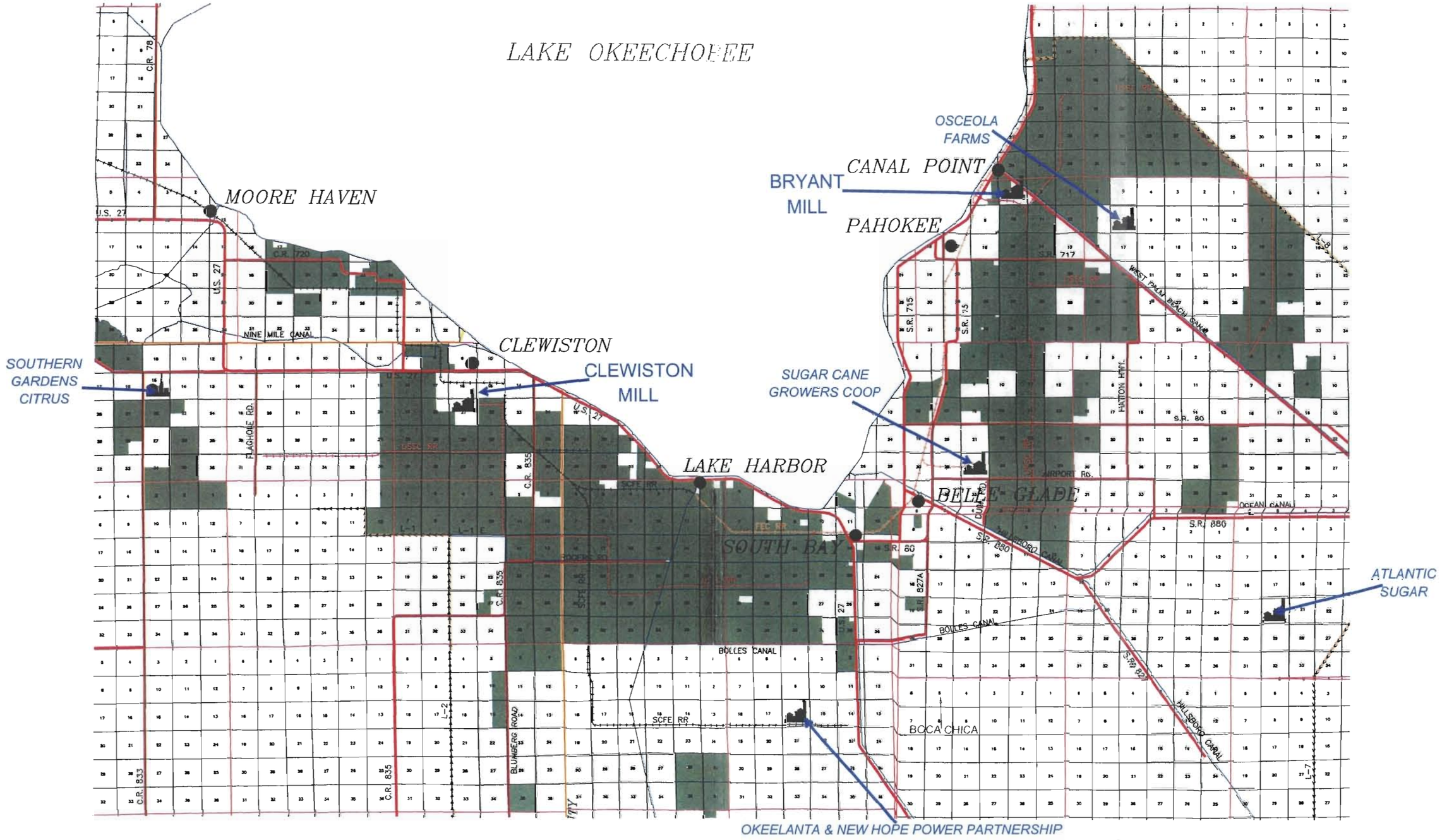

FIGURE 2-1
U.S. SUGAR FACILITY LOCATION

Source: Golder, 2005.

0537636/4.2/Figure 2-1

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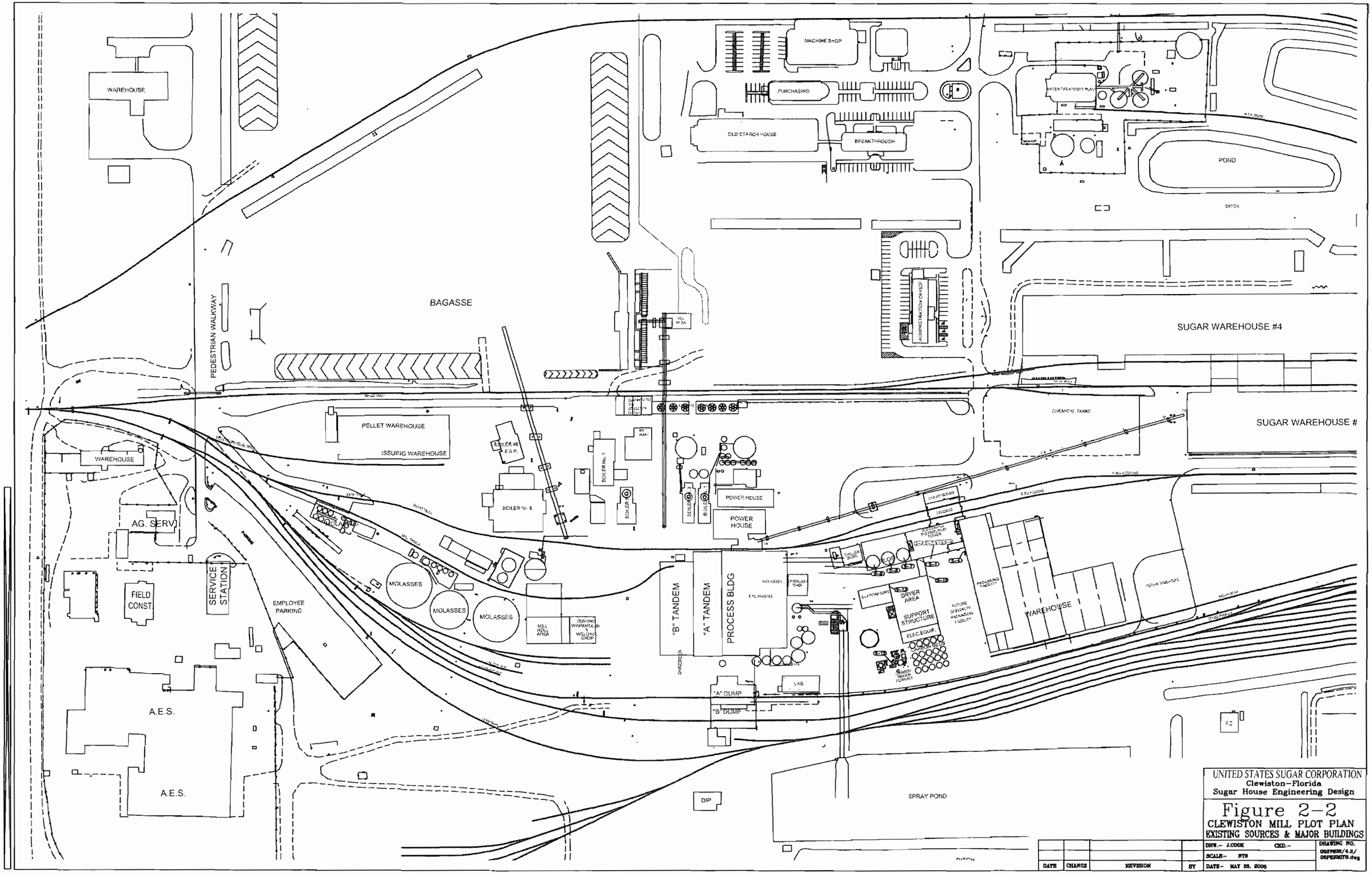
WAREHOUSE
MACHINE SHOP
PURCHASING
OLD STARCH HOUSE
BREAKTHROUGH
WATER TREATMENT PLANT
POND
DITCH
BAGASSE
PEDESTRIAN WALKWAY
ADMINISTRATION OFFICE
SUGAR WAREHOUSE #4
CHEMICAL TANKS
SUGAR WAREHOUSE #
PELLET WAREHOUSE
ISSUING WAREHOUSE
BOILER No. 6
BOILER No. 7
POWER HOUSE
POWER HOUSE
WAREHOUSE
AG. SERV.
FIELD CONST.
SERVICE STATION
EMPLOYEE PARKING
MOLASSES
MOLASSES
MOLASSES
MILL ROLL AREA
ISSUING WAREHOUSE & WELDING SHOP
"B" TANDEM
"A" TANDEM
PROCESS BLDG
DRYER AREA
SUPPORT STRUCTURE
ELEC.EQUIP.
CARBON BEDS
WAREHOUSE
LAB
"A" DUMP
"B" DUMP
A.E.S.
A.E.S.
DIP
SPRAY POND
DITCH
UNITED STATES SUGAR CORPORATION
Clewiston–Florida
Sugar House Engineering Design
Figure 2–2
CLEWISTON MILL PLOT PLAN
EXISTING SOURCES & MAJOR BUILDINGS
DRW.– J.COOK
CKD.–
SCALE– NTS
DATE– MAY 25, 2005
DRAWING NO.
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05PERMITS.dwg
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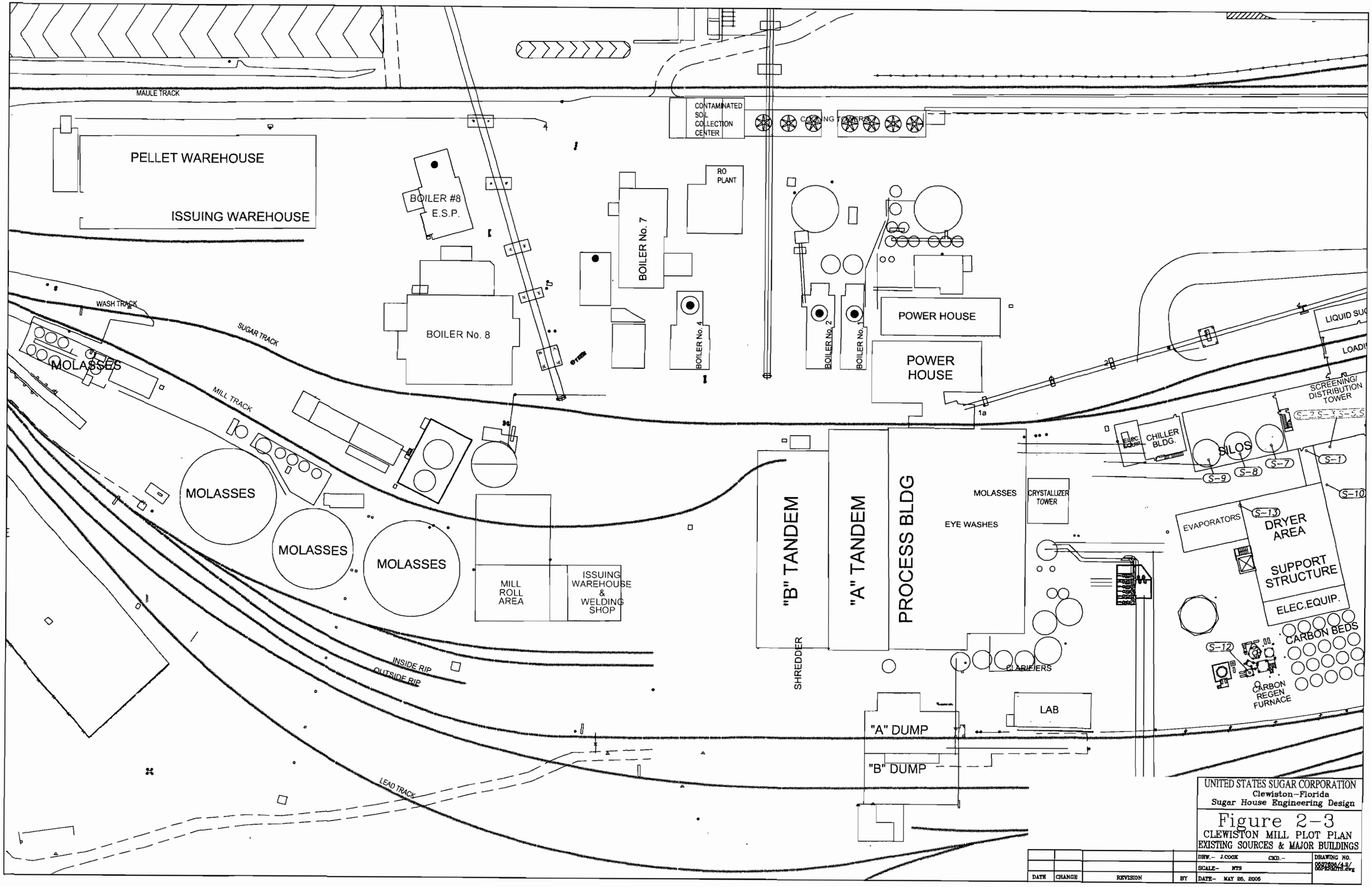
MAULE TRACK
PELLET WAREHOUSE
ISSUING WAREHOUSE
BOILER #8
E.S.P.
BOILER No. 8
BOILER No. 7
RO
PLANT
CONTAMINATED
SOIL
COLLECTION
CENTER
COOLING TOWERS
BOILER No. 4
BOILER No. 2
BOILER No. 1
POWER HOUSE
POWER
HOUSE
WASH TRACK
SUGAR TRACK
MILL TRACK
MOLASSES
MOLASSES
MOLASSES
MOLASSES
MILL
ROLL
AREA
ISSUING
WAREHOUSE
&
WELDING
SHOP
"B" TANDEM
"A" TANDEM
PROCESS BLDG
SHREDDER
MOLASSES
EYE WASHES
CRYSTALLIZER
TOWER
CLARIFIERS
LAB
"A" DUMP
"B" DUMP
INSIDE RIP
OUTSIDE RIP
LEAD TRACK
LIQUID SUG
LOADI
SCREENING/
DISTRIBUTION
TOWER
CHILLER
BLDG.
SILOS
S-1
S-2
S-3
S-5
S-7
S-8
S-9
S-10
S-12
S-13
EVAPORATORS
DRYER
AREA
SUPPORT
STRUCTURE
ELEC.EQUIP.
CARBON BEDS
CARBON
REGEN
FURNACE
UNITED STATES SUGAR CORPORATION
Clewiston–Florida
Sugar House Engineering Design
Figure 2–3
CLEWISTON MILL PLOT PLAN
EXISTING SOURCES & MAJOR BUILDINGS
DRW.– J.COOK
CKD.–
SCALE– NTS
DATE– MAY 25, 2005
DRAWING NO.
DATE
CHANGE
REVISION
BY

3.0 AIR QUALITY IMPACT ANALYSIS METHODOLOGY

3.1 Significant Impact Analysis

The general modeling approach followed the U.S. Environmental Protection Agency (EPA) and Florida Department of Environmental Protection (FDEP) modeling guidelines for determining compliance with AAQS and PSD increments. For all criteria pollutants that will be emitted in excess of the PSD significant emission rate due to a proposed project, a significant impact analysis is performed to determine whether the emission and/or stack configuration changes due to the project alone will result in predicted impacts that are in excess of the EPA significant impact levels at any location beyond the plant's restricted boundaries.

Because this project did not involve increasing SO_2 emission rates from the boilers, a significant impact analysis was not performed. However, for modeling purposes, the significant impact area was assumed to extend out to 10 kilometers (km) for determining compliance with the AAQS and PSD Class II increment analyses and for determining the inventory of background air emission sources to be included in the analyses.

3.2 AAQS and PSD Class II Increment Analyses

In general, when 5 years of meteorological data are used, the highest annual and the highest-second-highest (H2H) short-term concentrations are compared to the applicable SO_2 AAQS and allowable PSD Class II increments. The H2H short-term concentration is calculated for a receptor field by:

1. Eliminating the highest concentration predicted at each receptor,
2. Identifying the second-highest concentration at each receptor, and
3. Selecting the highest concentration among these second-highest concentrations.

This approach is consistent with most air quality standards and all allowable PSD increments, which permit a short-term average concentration to be exceeded once per year at each receptor.

For the AAQS analysis, the future emissions of the Mill are modeled together with background emission facilities. The total air quality concentration is estimated by adding the maximum concentrations from all modeled sources to a non-modeled background concentration. The maximum annual and short-term total air quality concentrations are then compared to the AAQS.

For the PSD Class II increment analysis, the PSD increment consuming and expanding sources at the U.S. Sugar Clewiston Mill site were modeled with background PSD consuming or expanding

sources. The maximum annual and short-term concentrations are compared to the allowable PSD Class II increments.

For addressing compliance with the AAQS and PSD Class II increments, these analyses used screening and refinement phases to determine the maximum pollutant impacts associated with the U.S. Sugar Clewiston Mill. The difference between the two modeling phases is the density of the receptor grid spacing used when predicting concentrations.

For the screening phase, concentrations are predicted in a receptor grid that extends over a large area centered on the mill, using a 5-year meteorological data record. The receptor grid consisted of receptors located at varying distances from the mill with a denser grid spacing in areas near the property boundary.

For the refinement phase, concentrations are predicted in a receptor grid with receptor spacing of 100 meters (m) or less. The location of the refined receptor grid is determined from the location at which the maximum concentration is predicted from the screening phase. The area of a refined receptor grid extends to adjacent screening grid receptors, surrounding the receptor at which the maximum concentration is predicted. If the maximum concentration in the screening phase is predicted in an area in which the receptor spacing is 100 m or less, additional modeling for the refinement phase is not needed.

Concentrations are predicted for all receptors in the refined grid, for the entire year of meteorology during which the maximum concentration was predicted in the screening phase.

3.3 PSD Class I Increment Analysis

The nearest PSD Class I area to the Clewiston Mill site is the Everglades National Park (NP), located about 102 km (60 miles) to the south. There are no other PSD Class I areas located within 200 km of the site.

For the PSD Class I increment analysis, the PSD increment consuming and expanding sources at the U.S. Sugar Clewiston Mill were modeled with background PSD consuming or expanding sources located within 200 km of the ENP. The maximum annual and short-term concentrations were compared to the allowable PSD Class I increments.

3.4 Model Selection

The selection of an air quality model to predict air quality impacts for the proposed projects was based on the ability of the model to simulate impacts in areas surrounding the projects as well as at the PSD Class I areas. Two air quality dispersion models were selected and used in these analyses to address air quality impacts for these projects. These models were:

- The American Meteorological Society and EPA Regulatory Model (AERMOD) dispersion model, and;
- The California Puff Model (CALPUFF).

The AERMOD dispersion model (Version 04300) is available on the EPA's Internet web site, Support Center for Regulatory Air Models (SCRAM), within the Technical Transfer Network (TTN). A listing of AERMOD model features is presented in Table 3-1.

On November 9, 2005, the EPA implemented AERMOD into its *Guideline of Air Quality Models (Appendix W to 40 CFR Part 51)* as the recommended model for regulatory modeling applications. The FDEP is allowing the use of AERMOD for air permitting projects as a replacement for the Industrial Source Complex Short-Term Model (ISCST3) which will no longer be in effect as of December 2006.

The EPA and FDEP recommend that the AERMOD model be used to predict pollutant concentrations at receptors located within 50 km from a source. The AERMOD model calculates hourly concentrations based on hourly meteorological data. The AERMOD model is applicable for most applications since it is recognized as containing the latest scientific algorithms for simulating plume behavior in all types of terrain. For evaluating plume behavior within the building wake of structures, the AERMOD model incorporates the Plume Rise Model Enhancement (PRIME) downwash algorithm developed by the Electric Power Research Institute (EPRI). AERMOD can predict pollutant concentrations for averaging times of annual and 24-, 8-, 3-, and 1-hours.

The AERMOD model was used to predict the maximum pollutant concentrations for the project in nearby areas surrounding the U.S. Sugar Clewiston Mill and at the PSD Class I area located within 50 km from the mill (i.e., Everglades NP). The predicted concentrations were then compared to applicable PSD Class II significant impact levels. The AERMOD model was also used to predict the maximum pollutant concentrations due to each project's emissions together with appropriate background sources. The predicted concentrations were then compared to the applicable AAQS and PSD Class II increments.

For this analysis, the EPA regulatory default options were used to predict all maximum impacts. These options include:

- Final plume rise at all receptor locations
- Stack-tip downwash
- Buoyancy-induced dispersion
- Default wind speed profile coefficients
- Default vertical potential temperature gradients
- Calm wind processing

At distances beyond 50 km from a source, the CALPUFF model, Version 5.711a (EPA, 2004), is recommended for use by the EPA and FDEP. The CALPUFF model is a long-range transport Lagrangian puff model applicable for estimating the air quality impacts. The methods and assumptions used in the CALPUFF model were based on the latest recommendations for a refined analysis as presented in the Interagency Workgroup on Air Quality Materials (IWAQM) Phase 2 Summary Report and the FLAG document. This model is also maintained by the EPA on the Support Center for Regulatory Air Models (SCRAM) website. A listing of CALPUFF model features is presented in Table 3-2.

The CALPUFF model was used to assess impacts from the project at the PSD Class I area of the Everglades NP located about 102 km from the Mill. The predicted concentrations were then compared to applicable PSD Class I increments.

More detailed descriptions of the assumptions and methods used for the CALPUFF model are presented in Appendix A.

3.5 Meteorological Data

Meteorological data used in the AERMOD model to determine air quality impacts consisted of a concurrent 5-year period of hourly surface weather observations and twice-daily upper air soundings from the National Weather Service (NWS) office located at the Palm Beach International Airport. Concentrations were predicted using 5 years of hourly meteorological data from 1987 through 1991. The NWS office at Palm Beach International Airport is located approximately 82 km (51 miles) east of the Clewiston Mill site and is the closest primary weather station to the study area considered to have meteorological data representative of the site. The meteorological data from this NWS station have been used for numerous air modeling studies within the sugar industry and for the Clewiston Mill.

The data for these stations were processed into a format that can be input to the AERMOD model using the meteorological preprocessor program AERMET. The data were processed using the Lakes Environmental graphical interface using the latest version of AERMET (04300). The hourly surface data were obtained from the Solar and Meteorological Observation Network (SAMSON) CD. Upper air sounding data were obtained in the required NCDC TD-6201 format from the Lakes website (www.webmet.com).

A unique feature of AERMOD is its incorporation of land use parameters for the processing of boundary layer parameters used for the dispersion. Based on the most recent regulatory guidance, the land use parameters should be representative of the data measurement site (i.e., Tallahassee). Land use data, representing the average surface roughness, albedo, and Bowen ratio that exist within a 3-km radius of the NWS station at Tallahassee were extracted from 1-degree land use files from the U.S. Geographical Survey (USGS) using the AERSURFACE program. AERSURFACE currently extracts land use data in 12 wind direction sectors covering 360 degrees. The land use values for each wind direction sector were input into Stage 3 of the AERMET preprocessor program to create the surface and profile meteorological files that AERMOD requires.

CALMET, the meteorological preprocessor to CALPUFF, was used to develop a 3-dimensional wind field necessary to perform the air modeling analysis to evaluate pollutant impacts at the ENP. The modeling domain consisted of a rectangular 3-dimensional grid extending 440 km in the east-west (x) direction and 460 km in the north-south (y) direction. The southwest corner of the domain is the origin and is located at 23.8 degrees north latitude and 83.5 degrees west longitude. This location is in the Gulf of Mexico approximately 110 km west of Venice, Florida. The modeling domain includes the following meteorological and land use parameters:

- Surface weather data,
- Upper air data,
- A 1-degree land use data,
- A 1-degree Digital Elevation Model (DEM) terrain data,
- Mesoscale Model - Generations 4 and 5 (MM4 and MM5) data (for initializing the wind field), and
- Hourly precipitation data.

These data were obtained and processed for 1990, 1992, and 1996, the years for which MM4 and MM5 data are available. It should be noted that MM4 data are available for 1990 while MM5 data

are available for 1992 and 1996. The CALMET wind field and the CALPUFF model options used were consistent with the suggestions of the Federal Land Managers (FLMs). Meteorological data used with the CALPUFF model consist of a CALMET-developed wind field covering south Florida. More detailed descriptions of the assumptions and methods used for processing the meteorological data and establishing the model domain are presented in Appendix A.

3.6 Emission Inventory

3.6.1 U.S. Sugar Clewiston Mill

As previously discussed, the future SO_2 emissions for the boilers for the 3-hour and 24-hour averaging periods at the U.S. Sugar Clewiston Mill are presented in Tables 2-1 and 2-2, respectively. The PSD baseline emissions for SO_2 are presented in Table 2-3.

Future and baseline stack parameters and source locations are presented in Tables 2-4. The future source emissions and operating parameters were used for the AAQS modeling analysis, while the future and baseline source emissions and parameters were used for the PSD Class II and Class I increment analyses.

3.6.2 Other Emission Sources

The SO_2 emission inventories for background facilities were developed from databases obtained from the FDEP, from previous air modeling studies performed by Golder, and from air permit data. Background sources in these inventories that were located within the project's modeling area (defined as the PSD Class II significant impact area) were included in the modeling.

For sources located in the screening area (defined as 50 km beyond the modeling area), a technique was used for eliminating sources in the modeling analyses if the source's emissions are below a specified criterion. This technique, which is approved for use by the FDEP and the EPA, is the *Screening Threshold* method, developed by the North Carolina Department of Natural Resources and Community Development. The method is designed to objectively eliminate from the emission inventory those sources that are unlikely to have a significant interaction with the source undergoing evaluation. In general, sources that should be considered in the modeling analyses are those with emissions greater than a screening threshold value [(in tons per year (TPY)] that is calculated by the following criteria:

$$Q = 20 \times D$$

where: Q = the screening threshold value (TPY), and

D = the distance (km) from the source or project undergoing evaluation to the background source for short-term analysis, or the distance (km) from the edge of the project's significant impact area to the background source for long-term (annual) analysis.

For this analysis, the long-term criterion was used since fewer facilities would be eliminated than with the short-term criterion. Also, the total emissions from a facility were used rather than emissions from individual sources for comparison to the screening threshold value. These methods result in a more conservative approach to produce higher-than-expected concentrations. Those facilities with maximum or allowable emissions that are below the calculated *screening threshold* were eliminated from further consideration in the AAQS and PSD increment modeling analyses.

A summary of SO_2 emitting facilities considered for inclusion in the AAQS and PSD Class II increment modeling analysis is provided in Table 3-3. This summary identifies those facilities located within the project's modeling area (10 km) and screening area (10 to 60 km). The facilities that were not included in the modeling analyses because their emissions were less than the *screening threshold* criteria are also identified. Facilities located beyond 60 km but within 100 km with very large emissions were also included in the modeling.

The individual source emissions, stack, and operating parameters for the AAQS and PSD Class II modeling analyses were developed and are presented in Appendix B. Each source includes a description of the source, the identification name of the source used in the air modeling analysis, and a determination of whether the source consumes or expands PSD increment. It should be noted that facilities with PSD-affecting sources may have baseline sources. Baseline sources may no longer operate but did operate during the SO_2 PSD baseline period of 1974 to 1975. These sources expand PSD increment and are represented in the PSD increment air modeling analyses as negative emission sources.

A summary of SO_2-emitting facilities considered for inclusion in the PSD Class I increment modeling analysis is provided in Table 3-4. This summary identifies those facilities located within 200 km of the Everglades NP. The individual source emissions, stack, and operating parameters for the PSD Class I modeling analyses were developed and are presented in Appendix B.

3.7 Building Downwash Effects

Based on the building dimensions associated with buildings and structures at the plant, all stacks at the U.S. Sugar Clewiston Mill will comply with the good engineering practice (GEP) stack height regulations. However, these stacks are less than GEP height. Therefore, the potential for building downwash to occur was considered in the air modeling analysis for these stacks.

The building dimensions considered in the air modeling analysis for the U.S. Sugar Clewiston Mill are presented in Table 3-5. The location of the buildings and stacks can be found on the site plot plan (Figure 2-2). At the U.S. Sugar Clewiston Mill, one or more buildings can cause building downwash effects at several stacks. For the modeling analysis, direction-specific building dimensions are input for H_b and l_b for 36 radial directions, with each direction representing a 10-degree sector. All direction-specific building parameters were calculated with the Building Profile Input Program (BPIP), Version 00101. The BPIP program was used to generate building data for the ISCST3 model input.

A detailed listing of direction-specific building data used in the air modeling analysis is provided in Appendix C.

3.8 Receptor Locations

For predicting maximum concentrations in the vicinity of the Clewiston Mill, more than 3,000 receptors located at the Mill's restricted property line and at offsite receptors were used. The receptors were modeled using the Universal Transverse Mercator (UTM) coordinate system from 17, North American Datum 1927 (NAD27). To determine relative locations of predicted impacts, a model origin was assumed to be at the stack location for Boiler No. 4. The origin was assigned X and Y coordinates of 0.0 m each and east and north UTM coordinates of 506,128.2 and 2,956,936.3 km, respectively.

Nested Cartesian receptor grids were used in addition to discrete Cartesian receptors along the Mill fence line. The significant impact analysis used the following receptor spacing:

- 5-m intervals along the fence line,
- 100-m intervals beyond the fence line to 2 km from the Mill,
- 250-m intervals from 2 to 5 km from the Mill, and
- 1,000-m intervals from 5 to 10 km from the Mill.

Receptor elevations and hill scale heights for all receptors were obtained from 7.5-minute USGS Digital Elevation Model (DEM) data using the AERMOD terrain preprocessor program AERMAP, Version 03107.

SO_2 concentrations were also predicted at receptors located at the PSD Class I area of the ENP. Listings of the Class I receptors are presented in Appendix C. Due to the large distance from the U.S. Sugar Clewiston Mill to this PSD Class I area, additional receptor refinements were not performed for this area.

3.9 Background Concentrations

Total air quality impacts were predicted for the AAQS analysis by adding the maximum annual and H2H short-term concentrations due to all modeled sources to estimated background concentrations. Background concentrations are concentrations due to sources not explicitly included in the modeling analysis. These concentrations consist of two components:

- Impacts due to other non-modeled emission sources (i.e., point sources not explicitly included in the modeling inventory), and
- Natural and fugitive emission sources.

Background concentrations are necessary to determine total ambient air quality impacts to demonstrate compliance with the AAQS. Background concentrations are defined as concentrations due to sources other than those specifically included in the modeling analysis. For all pollutants, background would include other point sources not included in the modeling (i.e., distant sources or small sources), fugitive emission sources, and natural background sources.

A summary of ambient SO_2 data for the ambient monitor located nearest to the U.S. Sugar Clewiston Mill, is presented in Table 3-6 This monitor is located in Riviera Beach, Palm Beach County, about 90 km to the east of the Mill. Data are presented from 2002 through mid-2005. The monitoring data show that ambient SO_2 concentrations were well below the 3-hour, 24-hour, and annual average SO_2 AAQS of 1,300; 260; and 60 $\mu g/m^3$, respectively. For purposes of the modeling analysis, the H2H short-term and maximum annual average values were selected to represent ambient SO_2 background concentration for the respective averaging times.

The non-modeled background concentrations were assumed to be as follows:

Pollutant	Averaging Period	Background Concentration ($\mu g/m^3$)
SO_2	3-hour	13
	24-hour	5
	Annual	3

TABLE 3-1
MAJOR FEATURES OF THE AERMOD MODEL, VERSION 04300

AERMOD Model Features
• Plume dispersion/growth rates are determined by the profile of vertical and horizontal turbulence, vary with height, and use a continuous growth function.
• In a convective atmosphere, uses three separate algorithms to describe plume behavior as it comes in contact with the mixed layer lid; in a stable atmosphere uses a mechanically mixed layer near the surface.
• Polar or Cartesian coordinate systems for receptor locations can be included directly or by an external file reference.
• Urban model dispersion is input as a function of city size and population density; sources can also be modeled individually as urban sources.
• Stable plume rise: uses Briggs equations with winds and temperature gradients at stack top up to half-way up to plume rise. Convective plume rise: plume superimposed on random convective velocities.
• Procedures suggested by Briggs (1974) for evaluating stack-tip downwash.
• Has capability of simulating point, volume, area, and multi-sized area sources.
• Accounts for the effects of vertical variations in wind and turbulence (Brower *et al.*, 1998).
• Uses measured and computed boundary layer parameters and similarity relationships to develop vertical profiles of wind, temperature, and turbulence (Brower *et al.*, 1998).
• Concentration estimates for 1-hour to annual average times.
• Creates vertical profiles of wind, temperature, and turbulence using all available measurement levels.
• Terrain features are depicted by use of a controlling hill elevation and a receptor point elevation.
• Modeling domain surface characteristics are determined by selected direction and month/season values of surface roughness length, Albedo, and Bowen ratio.
• Contains a mechanical and convective mixed layer height, the latter based on the hourly accumulation of sensible heat flux.
• The method of Pasquill (1976) to account for buoyancy-induced dispersion.
• A default regulatory option to set various model options and parameters to EPA-recommended values.
• Contains procedures for calm-wind and missing data for the processing of short term averages.

Note: AERMOD = the American Meteorological Society and Environmental Protection Agency Regulatory Model.

Source: Paine *et al.*, 2004.

TABLE 3-2
MAJOR FEATURES OF THE CALPUFF MODEL, VERSION 5.711A

CALPUFF Model Features

- Source types: Point, line (including buoyancy effects), volume, and area (buoyant, non-buoyant)
- Non-steady-state emissions and meteorological conditions (time-dependent source and emission data; gridded 3-dimensional wind and temperature fields; spatially-variable fields of mixing heights, friction velocity, precipitation, Monin-Obukhov length; vertically and horizontally-varying turbulence and dispersion rates; time-dependent source and emission data for point, area, and volume sources; temporal or wind-dependent scaling factors for emission rates)
- Efficient sampling function (integrated puff formulation; elongated puff (slug) formation)
- Dispersion coefficient options (Pasquill-Gifford (PG) values for rural areas; McElroy-Pooler values (MP) for urban areas; CTDM values for neutral/stable; direct measurements or estimated values)
- Vertical wind shear (puff splitting; differential advection and dispersion)
- Plume rise (buoyant and momentum rise; stack-tip effects; building downwash effects; partial plume penetration above mixing layer)
- Building downwash effects (Huber-Snyder method; Schulman-Scire method)
- Complex terrain effects (steering effects in CALMET wind field; puff height adjustments using ISC model method or plume path coefficient; enhanced vertical dispersion used in CTDMPLUS)
- Subgrid scale complex terrain (CTSG option) (CTDM flow module; dividing streamline as in CTDMPLUS)
- Dry deposition (gases and particles; options for diurnal cycle per pollutant, space and time variations with a resistance model, or none)
- Overwater and coastal interaction effects (overwater boundary layer parameters; abrupt change in meteorological conditions, plume dispersion at coastal boundary; fumigation; option to use Thermal Internal Boundary Layers (TIBL) into coastal grid cells)
- Chemical transformation options (Pseudo-first-order chemical mechanisms for SO_2, SO_4, HNO_3, and NO_3; Pseudo-first-order chemical mechanisms for SO_2, SO_4, NO, NO_2, HNO_3, and NO_3 (RIVAD/ARM3 method); user-specified diurnal cycles of transformation rates; no chemical conversions)
- Wet removal (scavenging coefficient approach; removal rate as a function of precipitation intensity and type)
- Graphical user interface
- Interface utilities (scan ISC-PRIME and AUSPLUME meteorological data files for problems; translate ISC-PRIME and AUSPLUME input files to CALPUFF input files)

Note: CALPUFF = California Puff Model

Source: EPA, 2004.

TABLE 3-3
SUMMARY OF SO_2 FACILITIES CONSIDERED FOR INCLUSION IN THE AAQS AND PSD CLASS II AIR MODELING ANALYSES

APIS Number	Facility	County	UTM Coordinates East (km)	UTM Coordinates North (km)	Relative to USSC Clewiston Mill[a] x (km)	y (km)	Distance (km)	Direction (deg)	Maximum SO_2 Emissions (TPY)	Q, Emission Threshold (Dist - SID) x 20[b,c]	Include in Modeling Analysis[b]?
Modeling Area[d]											
0510003	U.S. Sugar Clewiston	Hendry	506.1	2956.9	0.0	0.0	NA	NA	7,806	NA	YES
Screening Area[d]											
0990086	Glades Correctional Institute	Palm Beach	523.4	2955.2	17.3	-1.7	17.4	96	98	47.7	YES
0510015	Southern Gardens Citrus	Hendry	487.6	2957.6	-18.5	0.7	18.5	272	423	70.3	YES
0990332	New Hope Power Partnership (Okeelanta)	Palm Beach	524.1	2940.0	18.0	-16.9	24.7	133	403	193.8	YES
0990005	Okeelanta	Palm Beach	525.0	2937.4	18.9	-19.5	27.2	136	39	243.1	NO
0990594	El Paso Belle Glade Generating Station	Palm Beach	533.5	2954.1	27.4	-2.8	27.5	96	69	250.9	NO
990026	Sugar Cane Growers	Palm Beach	534.9	2953.3	28.8	-3.6	29.0	97	1,424	280.5	YES
0990061	U.S. Sugar -Bryant	Palm Beach	537.8	2969.1	31.7	12.2	34.0	69	2,698	379.3	YES
0990019	Osceola Farms	Palm Beach	544.2	2968.0	38.1	11.1	39.7	74	1,467	493.7	YES
0990016	Atlantic Sugar	Palm Beach	552.9	2945.2	46.8	-11.7	48.2	104	954	664.8	YES
0990349	South Florida WMD--Pump Stn. G-310/S-6	Palm Beach	554.2	2940.5	48.1	-16.4	50.8	109	5	716.4	NO
0850001	FPL - Martin	Martin	543.1	2992.9	37.0	36.0	51.6	46	22,982	732.5	YES
0850102	Bechtel Indiantown	Martin	545.6	2991.5	39.5	34.6	52.5	49	2,629	750.2	YES
0990021	Pratt & Whitney (United Technologies)	Palm Beach	562.0	2960.0	55.9	3.1	56.0	87	504	819.7	NO
Beyond Screening Area out to 100 km[d]											
1110103	CPV Cana, LTD.	St. Lucie	550.9	3018.1	44.8	61.2	75.8	36	76	1216.9	NO
0990234	Palm Beach Resource Recovery	Palm Beach	585.8	2960.2	79.7	3.3	79.8	88	1,533	1295.4	YES
0710019	Lee County Resource Recovery	Lee	424.2	2945.7	-81.9	-11.2	82.7	262	163	1353.2	NO
0710000	FPL - Fort Myers[c]	Lee	422.1	2952.9	-84.0	-4.0	84.1	267	22,702	1381.9	YES
0850021	Stuart Contracting	Martin	575.2	3006.8	69.1	49.9	85.2	54	100	1404.7	NO
0990045	Lake Worth Utilities	Palm Beach	592.8	2943.7	86.7	-13.2	87.7	99	7,415	1454.0	YES
0990568	Lake Worth Generating	Palm Beach	592.8	2943.7	86.7	-13.2	87.7	99	54	1454.0	NO
0990042	FPL -Riviera Beach	Palm Beach	594.2	2960.6	88.1	3.7	88.2	88	73,475	1463.6	YES
0550018	TECO-Phillips[c]	Highlands	464.3	3035.4	-41.8	78.5	88.9	332	4,053	1478.7	YES
0990350	South Florida WMD--Pump Stn. S-9	Broward	555.9	2882.2	49.8	-74.7	89.8	146	2	1495.1	NO
0112534	Enron/Deerfield Beach Energy Center	Broward	583.1	2907.9	77.0	-49.0	91.3	122	166	1525.4	NO
0112545	El Paso Broward Energy Center	Broward	583.3	2908.0	77.2	-48.9	91.4	122	87	1527.7	NO
0110120	North Broward Resource Recovery	Broward	583.6	2907.6	77.5	-49.3	91.9	122	896	1537.0	NO
0112515	Enron/Pompano Energy Center	Broward	583.7	2905.5	77.6	-51.4	93.1	124	166	1561.6	NO
0550004	TECO-Sebring/Dinner Lake[c]	Highlands	456.8	3042.5	-49.3	85.6	98.8	330	1,313	1675.6	NO
1110003	Fort Pierce Utilities[c]	St. Lucie	566.8	3036.3	60.7	79.4	99.9	37	1,497	1698.9	NO

Note:
deg = degrees
km = kilometers
SID = significant impact distance
TPY = tons per year

[a] USSC's East and North Coordinates (km) are: 506.1 an 2956.9 , respectively.

[b] Emission inventory is limited to facilities within 130 km of the SCGC facility.
"SID" is the significant impact distance. The USSC facility's SID is estimated to be 15.0 km from the project.

[c] Based on the North Carolina Screening Threshold method, a background facility is included in the modeling analysis if the facility is beyond the modeling area and its emission rate is greater than the product of (Distance-SID) x 20.

[d] "Modeling Area" is the area in which the Project is predicted to have a significant impact. EPA recommends that all sources within this area be modeled.
"Screening Area" is the area that is 50 km beyond the modeling area. EPA recommends that sources be modeled that are expected to have a significant impact in the modeling area.
"Beyond Screening Area out to 130 km" is the area beyond the screening area and out to 130 km in which only large sources are included in the modeling.

TABLE 3-4
SUMMARY OF SO_2 FACILITIES CONSIDERED FOR INCLUSION IN THE PSD CLASS I AIR MODELING ANALYSES

APIS Number		Facility	County	UTM Coordinates East (km)	UTM Coordinates North (km)	Maximum SO_2 Emissions (TPY)
0990086	x	Glades Correctional Institute	Palm Beach	523.4	2955.2	98
0510015	x	Southern Gardens Citrus	Hendry	487.6	2957.6	423
0990332	x	New Hope Power Partnership (Okeelanta)	Palm Beach	524.1	2940.0	403
0990005	x	Okeelanta	Palm Beach	525.0	2937.4	39
0990594	x	El Paso Belle Glade Generating Station	Palm Beach	533.5	2954.1	69
990026	x	Sugar Cane Growers	Palm Beach	534.9	2953.3	1,424
0990061	x	U.S. Sugar -Bryant	Palm Beach	537.8	2969.1	2,698
0990019	x	Osceola Farms	Palm Beach	544.2	2968.0	1,467
0990016	x	Atlantic Sugar	Palm Beach	552.9	2945.2	954
0850001	x	FPL - Martin	Martin	543.1	2992.9	22,982
0850102	x	Bechtel Indiantown	Martin	545.6	2991.5	2,629
0990021	x	Pratt & Whitney (United Technologies)	Palm Beach	562.0	2960.0	504
	x	FPL- Turkey Point	Miami-Dade	567.0	2813.5	232
1110103		CPV Cana, LTD.	St. Lucie	550.9	3018.1	76
0990234	x	Palm Beach Resource Recovery	Palm Beach	585.8	2960.2	1,533
0710019	x	Lee County Resource Recovery	Lee	424.2	2945.7	163
0710000	x	FPL - Fort Myers [c]	Lee	422.1	2952.9	22,702
0990045	x	Lake Worth Utilities	Palm Beach	592.8	2943.7	7,415
0990568		Lake Worth Generating	Palm Beach	592.8	2943.7	54
0550018	x	TECO-Phillips [c]	Highlands	464.3	3035.4	4,053
0990350		South Florida WMD--Pump Stn. S-9	Broward	555.9	2882.2	2
0112545	x	El Paso Broward Energy Center	Broward	583.3	2908.0	87
0110120	x	North Broward Resource Recovery	Broward	583.6	2907.6	896
0550004	x	TECO-Sebring/Dinner Lake [c]	Highlands	456.8	3042.5	1,313
0112119	x	South Broward Resource Recovery [c]	Broward	579.6	2883.3	1,318
0110037	x	FPL -Lauderdale [c]	Broward	580.1	2883.3	47,858
0250020	x	Tarmac [c]	Dade	562.9	2861.7	2,792
0250348	x	Miami-Dade Co. Resource Recovery	Dade	564.3	2857.4	857
0610029	x	Vero Beach Power [c]	St. Lucie	567.1	3056.5	10,274

Note: TPY tons per year

TABLE 3-5

SUMMARY OF BUILDING STRUCTURES CONSIDERED IN THE AIR MODELING ANALYSIS

Structure	Height		Length		Width	
	ft	m	ft	m	ft	m
Boiler No. 8 Structures						
Boiler No. 8 Building	98.0	29.9	92.0	28.0	58.8	17.9
Boiler No. 8 ESP	69.0	21.0	69.6	21.2	46.6	14.2
Mill Expansion Buildings						
Electrical Equipment	100.0	30.5	95.6	29.1	27.6	8.4
Support Structure	130.0	39.6	95.6	29.1	76.2	23.2
Dryer Area	100.0	30.5	95.6	29.1	39.0	11.9
Screening & Distribution Towers	150.0	45.7	126.4	38.5	68.7	20.9
Specialty Packaging Facility	40.0	12.2	82.1	25.0	201.6	61.4
Packaging Facility	40.0	12.2	65.0	19.8	280.0	85.3
Warehouse	28.0	8.5	339.7	103.5	289.7	88.3
Electrical & Conditioning Equipment	24.0	7.3	59.7	18.2	52.3	15.9
Bulk Loading	40.0	12.2	84.4	25.7	53.8	16.4
Sugar Silos	136.0	41.5	111.6	34.0	68.1	20.8
Other Mill Buildings						
Pellet Warehouse	46.0	14.0	527.0	160.6	105.0	32.0
WDA	51.0	15.5	55.0	16.8	53.0	16.2
Storage and Safety mechanic	34.8	10.6	58.0	17.7	52.0	15.8
Boiler No. 4 Building	87.5	26.7	78.0	23.8	66.0	20.1
Boiler No. 5&6 Building	56.0	17.1	118.0	36.0	66.0	20.1
Boiler No. 1&2 Building	67.3	20.5	115.0	35.1	103.0	31.4
Power House	34.0	10.4	119.0	36.3	65.0	19.8
Warehouse	37.0	11.3	153.0	46.6	71.0	21.6
Machine Shop	39.0	11.9	309.0	94.2	106.0	32.3
B Mill Building	68.0	20.7	178.0	54.3	81.0	24.7
A Mill Building	69.0	21.0	243.0	74.1	67.0	20.4
Boiling House	93.7	28.6	181.0	55.2	155.0	47.2
Boiler No. 7 ESP	87.5	26.7	55.0	16.8	33.0	10.1
Boiler No. 7 Building	93.0	28.3	83.0	25.3	68.0	20.7
Sugar Warehouse #1	37.0	11.3	390.5	119.0	103.8	31.6
Sugar Warehouse #3	55.0	16.8	771.3	235.1	143.4	43.7

TABLE 3-6
SUMMARY SO_2 AMBIENT CONCENTRATION DATA
COLLECTED NEAR THE U.S. SUGAR CLEWISTON MILL

County	Site ID No.	Location	Year	Number of Observations	2nd Maximum 3-Hour Concentration		2nd Maximum 24-Hour Concentration		Annual Concentration	
					ppm	$\mu g/m^3$	ppm	$\mu g/m^3$	ppm	$\mu g/m^3$
Palm Beach	12-099-3004	Riviera Beach	2005	3,687	0.002	5	0.001	3	0.0010	3
			2004	5,804	0.002	5	0.001	3	0.0010	3
			2003	7,903	0.003	8	0.002	5	0.0010	3
			2002	8,670	0.005	13	0.002	5	0.0011	3

Note: $\mu g/m^3$ = micrograms per cubic meter
ppm = parts per million

Source: EPA, Air Quality System, Quick Look Report; 2005, 2004, 2003, 2002.

4.0 AIR MODELING ANALYSIS RESULTS

4.1 AAQS Analyses

The maximum SO_2 concentrations predicted for all sources from the screening and refined analyses are presented in Tables 4-1 and 4-2, respectively. The refined modeling results are added to a non-modeled background concentration to produce a total air quality concentration that can be compared with the AAQS. Some maximum impacts occurred at or near the U.S. Sugar Clewiston Mill property boundary, while some occurred at the edge of the receptor grid, over 10 km away. This would indicate that the maximum impacts are due to a source other than the Clewiston Mill.

As shown in Table 4-2, the maximum total 3-hour, 24-hour, and annual average SO_2 concentrations are predicted to be 83, 35 and 9.5 $\mu g/m^3$, respectively. These concentrations are all below the respective AAQS of 1,300, 260, and 60 $\mu g/m^3$ for these averaging periods.

4.2 PSD Class II Increment Analyses

The maximum SO_2 concentrations predicted for the PSD sources from the screening and refined analyses are presented in Tables 4-3 and 4-4, respectively. Many of the maximum impacts occurred at or near the U.S. Sugar Clewiston Mill property boundary. Some occurred at the edge of the receptor grid, over 10 km away. This would indicate that the maximum impacts are due to a source other than the Clewiston Mill.

As presented in Table 4-4, the maximum 3-hour, 24-hour, and annual average SO_2 Class II increment consumption concentrations are predicted to be 43, 25, and 0.2 $\mu g/m^3$, respectively. These concentrations are below the respective allowable PSD Class II increments of 512, 90, and 20 $\mu g/m^3$ for these averaging periods.

4.3 PSD Class I Increment Analyses

The maximum SO_2 concentrations predicted for the PSD sources at the PSD Class I area of the ENP are presented in Table 4-5. As shown, the maximum 3-hour, 24-hour, and annual average SO_2 Class I increment consumption concentrations are predicted to be 13, 4.6, and 0.25 $\mu g/m^3$, respectively. These concentrations are below the respective allowable PSD Class I increments of 25, 5, and 2 $\mu g/m^3$ for these averaging periods.

TABLE 4-1
MAXIMUM PREDICTED SO_2 IMPACTS DUE TO THE MODELED SOURCES FOR THE AAQS SCREENING ANALYSIS

Averaging Time	Concentration[a] ($\mu g/m^3$)	Receptor Location: UTM Coordinates (m) East	UTM Coordinates (m) North	Local Coordinates (m)[b] x	Local Coordinates (m)[b] y	Time Period (YYMMDDHH)
Annual, Highest	5.11	505,450	2,957,000	-678	64	87123124
	5.82	505,450	2,957,000	-678	64	88123124
	5.65	505,550	2,957,300	-578	364	89123124
	6.46	505,450	2,957,000	-678	64	90123124
	5.89	505,550	2,957,300	-578	364	91123124
24-Hour, HSH	29.8	505,450	2,957,000	-678	64	87123124
	29.2	505,450	2,956,900	-678	-36	88122324
	27.0	505,450	2,956,800	-678	-136	89021624
	29.3	505,450	2,956,900	-678	-36	90110824
	29.6	505,450	2,956,800	-678	-136	91102524
3-Hour, HSH	51.4	516,250	2,952,900	10,122	-4,036	87021509
	69.9	515,250	2,962,900	9,122	5,964	88043006
	69.0	516,250	2,965,900	10,122	8,964	89111506
	48.6	505,650	2,957,000	-478	64	90070712
	52.6	516,250	2,965,900	10,122	8,964	91012324

Note: YYMMDDHH = Year, Month, Day, Hour Ending
HSH= highest, second-highest
UTM = Universal Transverse Mercator: Zone 17.

[a] Based on the AERMOD model using 5 years of surface and upper air meteorological data from 1987 to 1991 from the NWS station at West Palm Beach.

[b] Relative to Boiler No. 4 stack location.

TABLE 4-2
MAXIMUM PREDICTED SO_2 IMPACTS
FOR COMPARISON TO AAQS, REFINED ANALYSES

Averaging Time	Concentration ($\mu g/m^3$) Total (C= A + B)	Modeled [a] (A)	Background [c] (B)	Receptor Location [b] Local Coordinates (m) x	y	Time Period (YYMMDDHH)	Florida AAQS ($\mu g/m^3$)
Annual, Highest	9.5	6.46	3	-678	64	90123124	60
24-Hour, HSH	34.8	29.8	5	-678	64	87123124	260
3-Hour, HSH	82.9	69.9	13	9,122	5,964	88043006	1,300

Note: YYMMDDHH = Year, Month, Day, Hour Ending
HSH= highest, second-highest
UTM = Universal Transverse Mercator: Zone 17.

[a] Based on the AERMOD model using 5 years of surface and upper air meteorological data from 1987 to 1991 from the NWS station at West Palm Beach.

[b] Relative to Boiler No. 4 stack location.

[c] Based on monitoring data (see Section 3.0); highest annual and second-highest 24-hour average concentrations.

TABLE 4-3
MAXIMUM PREDICTED SO_2 IMPACTS DUE TO THE MODELED SOURCES
FOR THE PSD CLASS II INCREMENT CONSUMPTION SCREENING ANALYSIS

Averaging Time	Concentration[a] ($\mu g/m^3$)	Receptor Location: UTM Coordinates (m) East	UTM Coordinates (m) North	Local Coordinates (m)[b] x	Local Coordinates (m)[b] y	Time Period (YYMMDDHH)
Annual, Highest	0.00	NA	NA	NA	NA	87123124
	0.12	516,250	2,966,900	10,122	9,964	88123124
	0.00	NA	NA	NA	NA	89123124
	0.16	516,250	2,966,900	10,122	9,964	90123124
	0.08	514,250	2,966,900	8,122	9,964	91123124
24-Hour, HSH	23.3	505,450	2,956,900	-678	-36	87053124
	22.5	505,250	2,956,700	-878	-236	88050324
	21.2	505,650	2,957,500	-478	564	89061524
	23.8	505,450	2,957,300	-678	364	90050324
	25.4	505,450	2,957,200	-678	264	91050924
3-Hour, HSH	38.6	506,449	2,957,392	321	456	87062612
	40.8	515,250	2,962,900	9,122	5,964	88020303
	42.5	516,250	2,965,900	10,122	8,964	89111506
	40.1	505,450	2,957,300	-678	364	90052603
	39.5	505,550	2,957,300	-578	364	91052103

Note: YYMMDDHH = Year, Month, Day, Hour Ending
HSH= highest, second-highest
UTM = Universal Transverse Mercator: Zone 17.
NA= not applicable. PSD increment consumption is less than 0.0 ug/m^3.

[a] Based on the AERMOD model using 5 years of surface and upper air meteorological data from 1987 to 1991 from the NWS station at West Palm Beach.

[b] Relative to Boiler No. 4 stack location.

TABLE 4-4
MAXIMUM PREDICTED SO_2 IMPACTS
FOR COMPARISON TO THE PSD CLASS II INCREMENT, REFINED ANALYSES

Averaging Time	Concentration[a] ($\mu g/m^3$)	Receptor Location[b] Local Coordinates (m) x	y	Time Period (YYMMDDHH)	PSD Class II Increment ($\mu g/m^3$)
Annual, Highest	0.2	10,122	9,964	90123124	20
24-Hour, HSH	25.4	-678	264	91050924	90
3-Hour, HSH	42.5	10,122	8,964	89111506	512

Note: YYMMDDHH = Year, Month, Day, Hour Ending
HSH= highest, second-highest
UTM = Universal Transverse Mercator: Zone 17.

[a] Based on the AERMOD model using 5 years of surface and upper air meteorological data from 1987 to from the NWS station at West Palm Beach.

[b] Relative to Boiler No. 4 stack location.

TABLE 4-5
MAXIMUM SO_2 IMPACTS PREDICTED FOR COMPARISON TO THE PSD CLASS I INCREMENT AT THE EVERGLADES NATIONAL PARK

Averaging Time	Highest Concentration ($\mu g/m^3$)	Receptor Location UTM Coordinates (km) East	North	Time Period (YYMMDDHH)	PSD Class I Increment ($\mu g/m^3$)
Annual, Highest	0.25	548.054	2,848.386	90123124	2
	0.11	548.054	2,848.386	92123124	
	0.22	548.054	2,848.386	96123124	
24-Hour, HSH	4.63	548.065	2,845.617	90121024	5
	4.12	533.011	2,848.340	92111524	
	3.94	548.054	2,848.386	96101324	
3-Hour, HSH	11.0	548.054	2,848.386	90102706	25
	11.9	538.026	2,848.353	92120606	
	12.9	515.461	2,848.307	96012512	

Note: YYMMDDHH = Year, Month, Day, Hour Ending
UTM = Universal Transverse Mercator: Zone 17.

[a] Based on the CALPUFF model using 3 years of CALMET meteorological data for 1990, 1992, and 19

APPENDIX A

DESCRIPTION OF THE CALPUFF MODELING SYSTEM

APPENDIX A

CALPUFF MODEL DESCRIPTION AND METHODOLOGY

1.0 INTRODUCTION

As part of the new source review requirements under Prevention of Significant Deterioration (PSD) regulations, new major sources or major modifications to existing sources are required to address air quality impacts at PSD Class I areas. As part of the air construction permit revision application submitted to the Florida Department of Environmental Protection (FDEP) for the proposed use of low sulfur distillate oil (0.05 percent sulfur content maximum) at the boilers at the United States Sugar Corporation (U.S. Sugar) sugar mill and sugar refinery (Mill) located in Clewiston, Hendry County, Florida, the air quality impacts due to the potential changes for this project are required to be addressed at the PSD Class I areas within 200 kilometers (km) of the Mill. The closest PSD Class I area within 200 km of the Mill is the Everglades National Park (NP), located approximately 102 km south of the Mill. The Everglades NP is the only PSD Class I area within 200 km of the Mill.

The evaluation of air quality impacts are only concerned with determining compliance with PSD Class I increments and not with assessing a source's impact on Air Quality Related Values (AQRVs), such as regional haze, since there will be reductions in sulfur dioxide (SO_2) emissions from the Mill. Since the emissions of other pollutants are not changing due to the proposed use of low sulfur distillate oil, air impacts were performed only for SO_2 emissions. Further, compliance with PSD Class I increments can be evaluated by determining if the source's impacts are less than the proposed U.S. Environmental Protection Agency (EPA) Class I significant impact levels. The significant impact levels are threshold levels that are used to determine the type of air impact analyses needed for the facility. If the new or modified source's impacts are predicted to be less than significant, then the source's impacts are assumed not to have a significant adverse affect on air quality and additional modeling with other sources is not required. However, if the source's impacts are predicted to be greater than the significant impact levels, additional modeling with other sources is required to demonstrate compliance with Class I increments.

Currently, there are several air quality modeling approaches recommended by the Interagency Workgroup on Air Quality Models (IWAQM) to perform these analyses. The IWAQM consist of the EPA and Federal Land Managers (FLM) of Class I areas who are responsible for ensuring that

AQRVs are not adversely impacted by new and existing sources. These recommendations have been summarized in two documents:

- *Interagency Workgroup on Air Quality Models (IWAQM), Phase 2 Summary Report and Recommendations for Modeling Long Range Transport Impacts* (EPA, 1998), referred to as the IWAQM Phase 2 report.

- *Federal Land Managers' Air Quality Related Values Workgroup (FLAG), Phase I Report,* USFS, NPS, USFWS (12/00), referred to as the FLAG documents.

For the Mill sources, air quality analyses were performed that assess the Mill's impacts in the PSD Class I area of the Everglades NP using the refined modeling approach from the IWAQM Phase 2 report for SO_2 PSD Class I increment analysis.

The refined analysis approach was used instead of the screening analysis approach since the air quality impacts are based on generally more realistic assumptions, include more detailed meteorological data, and are estimated at locations at the Class I area.

2.0 GENERAL AIR MODELING APPROACH

The general modeling approach was based on using the long-range transport model, California Puff model (CALPUFF, Version 5.711a). At distances beyond 50 km, the ISCST3 model is considered to over-predict air quality impacts, because it is a steady-state model. At those distances, the CALPUFF model is recommended for use. The FLM have requested that air quality impacts, such as regional haze for a source located more than 50 km from a Class I area, be predicted using the CALPUFF model. As a result, the regional haze and sulfur and nitrogen deposition analyses were performed using the CALPUFF model to assess the project's impacts at the Everglades NP.

The methods and assumptions used in the CALPUFF model were based on the latest recommendations for a refined analysis as presented in the IWAQM Phase 2 Summary Report and the FLAG documents.

The following sections present the methods and assumptions used to assess the refined significant impact and regional haze analyses performed for the proposed project. The results of these analyses are presented in Sections 6.0 and 7.0 of the PSD report.

3.0 MODEL SELECTION AND SETTINGS

The California Puff (CALPUFF, version 5.711a) air modeling system was used to model to assess the Mill's impacts at the PSD Class I area for comparison to the PSD Class I significant impact levels and PSD Class I allowable increments. CALPUFF is a non-steady state Lagrangian Gaussian puff long-range transport model that includes algorithms for building downwash effects as well as chemical transformations (important for visibility controlling pollutants), and wet/dry deposition. The CALPUFF meteorological and geophysical data preprocessor (CALMET, Version 5.53a), a preprocessor to CALPUFF, is a diagnostic meteorological model that produces a three-dimensional field of wind and temperature and a two-dimensional field of other meteorological parameters. CALMET was designed to process raw meteorological, terrain and land-use databases to be used in the air modeling analysis. The CALPUFF modeling system uses a number of FORTRAN preprocessor programs that extract data from large databases and converts the data into formats suitable for input to CALMET. The processed data produced from CALMET was input to CALPUFF to assess the pollutant-specific impact. Both CALMET and CALPUFF were used in a manner that is recommended by the IWAQM Phase 2 and FLAG documents.

3.1 CALPUFF Model Approaches and Settings

The IWAQM has recommended approaches for performing Phase 2 refined modeling analyses that are presented in Table A-1. These approaches involve use of meteorological data, selection of receptors and dispersion conditions, and processing of model output.

The specific settings used in the CALPUFF model are presented in Table A-2.

3.2 Emission Inventory and Building Wake Effects

The CALPUFF model included the Mill's emission, stack, and operating data, as well as building dimensions, to account for the effects of building-induced downwash on the emission sources. Dimensions for all significant building structures were processed with the Building Profile Input Program (BPIP), Version 95086, and were included in the CALPUFF model input. The Air Modeling Analysis Report presents a listing of the facility's emissions and structures included in the analysis.

4.0 RECEPTOR LOCATIONS

For the refined analyses for addressing compliance with the PSD Class I increments, pollutant concentrations were predicted in an array of 251 discrete receptors located at the Everglades NP area. These receptors are a subset of the 901 receptors provided by the National Park Service. The 251 receptors include all of the NPS boundary receptors and an array of interior receptors with less resolution than for the NPS set.

4.1 METEOROLOGICAL DATA

4.2 Refined Analysis

CALMET was used to develop the gridded parameter fields required for the refined modeling analyses. The follow sections discuss the specific data used and processed in the CALMET model.

4.3 CALMET Settings

The CALMET settings contained in Table A-3 were used for the refined modeling analysis.

4.4 Modeling Domain

A rectangular modeling domain extending 440 km in the east-west (x) direction and 460 km in the north-south (y) direction was used for the refined modeling analysis. The southwest corner of the domain is the origin and is located at 23.8 degrees north latitude and 83.5 degrees west longitude. This location is in the Gulf of Mexico, approximately 195 km west-southwest of Key West, Florida. For the processing of meteorological and geophysical data, the domain contains 111 grid cells in the x-direction and 116 grid cells in the y-direction. The domain grid resolution is 4 km. The air modeling analysis was performed in the Universal Transverse Mercator (UTM) coordinate system.

4.5 Mesoscale Model – Generation 4 and 5 (MM4/MM5) Data

Pennsylvania State University, in conjunction with the NCAR Assessment Laboratory, developed the MM4 and MM5 datasets, prognostic wind fields or "guess" fields, for the United States. The hourly meteorological variables used to create these datasets (wind, temperature, dew point depression, and geopotential height for eight standard levels and up to 15 significant levels) are extensive and were

developed for the MM4 data for 1990 and the MM5 data for 1992, and 1996. The analysis used the MM4 and MM5 data to initialize the CALMET wind field. The 1990 MM4 and 1992 MM5 data have horizontal spacing of 80 km while the 1996 MM5 data have horizontal spacing of 36 km. These data are used to simulate atmospheric variables within the modeling domain.

The MM4 subset domain was provided by the FDEP and consisted of a 7x7-cell rectangle, with an 80-km grid resolution, extending from the MM4 grid points (50,6 to 57,13). These data were processed to create an MM4.DAT file, for input to the CALMET model. The MM5 subset domain was provided by the National Park Service and was processed in a similar manner as the MM4 data.

The MM4 and MM5 data set used in the CALMET, although advanced, lacks the fine detail of specific temporal and spatial meteorological variables and geophysical data. These variables were processed into the appropriate format and introduced into the CALMET model through the additional data files obtained from the following sources.

4.6 Surface Data Stations and processing

The surface station data processed for the CALPUFF analyses consisted of data from eight National Weather Service (NWS) stations or Federal Aviation Administration (FAA) Flight Service stations for Orlando, Fort Myers, Daytona Beach, Vero Beach, Key West, Miami, Tampa, and West Palm Beach. A summary of the surface station information and locations are presented in Table A-4. The surface station parameters include wind speed, wind direction, cloud ceiling height, opaque cloud cover, dry bulb temperature, relative humidity, station pressure, and a precipitation code that is based on current weather conditions. The surface station data were processed by FDEP into a SURF.DAT file format for CALMET input.

Because the modeling domain extends largely over water, C-Man station data from Venice, Sombrero Key, and Lake Worth were obtained. These data were processed by the FDEP into an over-water surface station format (i.e., SEA*.DAT) for input to CALMET. The over-water station data include wind direction, wind speed and air temperature.

4.6.1 Upper Air Data Stations and Processing

The analysis included three upper air NWS stations located in Ruskin, Key West, and West Palm Beach. Data for each station were obtained from the FDEP in a format for CALMET input. The data and locations for the upper air stations are presented in Table A-4.

4.6.2 Precipitation Data stations and Processing

Precipitation data were processed from a network of hourly precipitation data files collected from primary and secondary NWS precipitation-recording stations located within the latitude and longitudinal limits of the modeling domain. Data for 23 stations were obtained in NCDC TD-3240 variable format and converted into a fixed-length format. The utility programs PXTRACT and PMERGE were then used to process the data into the format for the PRECIP.DAT file that is used by CALMET. A listing of the precipitation stations used for the modeling analysis is presented in Table A-5.

4.6.3 Geophysical Data Processing

Terrain elevations for each grid cell of the modeling domain were obtained from 1-degree Digital Elevation Model (DEM) files obtained from the U.S. Geographical Survey (USGS) Internet website. The DEM data was extracted for the modeling domain grid using the utility program TERREL. Land-use data were also extracted from 1-degree USGS files and processed using utility programs CTGCOMP and CTGPROC. Both the terrain and land use files were combined into a GEO.DAT file for input to CALMET with the MAKEGEO utility program.

TABLE A-1
REFINED MODELING ANALYSES RECOMMENDATIONS [a]

Model Input/Output	Description
Meteorology	Use CALMET (minimum 6 to 10 layers in the vertical; top layer must extend above the maximum mixing depth expected); horizontal domain extends 50 to 80 km beyond outer receptors and sources being modeled; terrain elevation and land-use data is resolved for the situation.
Receptors	Within Class I area(s) of concern; obtain regulatory concurrence on coverage.
Dispersion	1. CALPUFF with default dispersion settings. 2. Use MESOPUFF II chemistry with wet and dry deposition. 3. Define background values for ozone and ammonia for area.
Processing	1. For PSD increments: use highest, second highest 3-hour and 24-hour average SO_2 concentrations; highest, second highest 24-hour average PM_{10} concentrations; and highest annual average SO_2, PM_{10} and NO_x concentrations. 2. For haze: process, on a 24-hour basis, compute the source extinction from the maximum increase in emissions of SO_2, NO_x and PM_{10}; compute the daily relative humidity factor [f(RH)], provided from an external disk file; and compute the maximum percent change in extinction using the FLM supplied background extinction data in the FLAG documents. 3. For significant impact analysis: use highest annual and highest short-term averaging time concentrations for SO_2, PM_{10} and NO_x.

[a] IWAQM Phase II report (December, 1998) and FLAG documents (December, 2000).

TABLE A-2
CALPUFF MODEL SETTINGS

Parameter	Setting
Pollutant Species	SO_2, SO_4, NO_x, HNO_3, NO_3, and PM_{10}
Chemical Transformation	MESOPUFF II scheme, hourly ozone data from FDEP
Deposition	Include both dry and wet deposition, plume depletion
Meteorological/Land Use Input	CALMET
Plume Rise	Transitional, Stack-tip downwash, Partial plume penetration
Dispersion	Puff plume element, PG /MP coefficients, rural mode, ISC building downwash scheme
Terrain Effects	Partial plume path adjustment
Output	Create binary concentration file including output species for SO_4, NO_3, PM_{10}, SO_2, and NO_x; process for visibility change using Method 2 and FLAG background extinctions
Model Processing	• For haze: highest predicted 24-hour extinction change (%) for the year • For deposition: annual average deposition rates • For significant impact analysis: highest predicted annual and highest short-term averaging time concentrations for SO_2, NO_x, and $_{PM10}$
Background Values	Ozone: 50 ppb; Ammonia: 1 ppb

[a] Recommended values by the Florida DEP.

TABLE A-3
CALMET SETTINGS

Parameter	Setting
Horizontal Grid Dimensions	440 by 460 km, 4 km grid resolution
Vertical Grid	10 layers
Weather Station Data Inputs	• 8 surface • 3 upper air • 23 precipitation stations
Wind model options	Diagnostic wind model, no kinematic effects
Prognostic wind field model	• 1990 MM4 data and 1992 MM5 data: 80 km resolution • 1996 MM5 data: 36 km resolution; used for wind field initialization
Output	Binary hourly gridded meteorological data file for CALPUFF input

TABLE A-4
SURFACE AND UPPER AIR STATIONS USED IN THE CALPUFF ANALYSIS

Station Name	Station Symbol	WBAN Number	UTM Coordinates Easting (km)	UTM Coordinates Northing (km)	UTM Coordinates Zone	Anemometer Height (m)
Surface Stations						
Tampa	TPA	12842	349.20	3094.25	17	6.7
Daytona Beach	DAB	12834	495.14	3228.05	17	9.1
Orlando	ORL	12815	468.96	3146.88	17	10.1
Vero Beach	VER	12843	557.52	3058.36	17	6.7
Fort Myers	FMY	12835	413.65	2940.38	17	6.1
Miami	MIA	12839	566.82	2857.20	17	7.0
Key West	EYW	12836	424.03	2715.14	17	18.3
West Palm Beach	PBI	12844	587.87	2951.43	17	10.1
Upper Air Stations						
Ruskin	TBW	12842	349.20	3094.28	17	NA
West Palm Beach	PBI	12844	587.87	2951.42	17	NA
Key West	EYW	12836	424.03	2715.14	17	NA

TABLE A-5
HOURLY PRECIPITATION STATIONS USED IN THE CALPUFF ANALYSIS

Station Name	Station Number	UTM Coordinates		
		Easting (km)	Northing (km)	Zone
Belle Glade HRCN GT 4	80616	528.19	2953.03	17
Boca Raton	80845	588.75	2916.52	17
Canal Point Gate 5	81271	536.43	2971.51	17
Clewiston US Engineers	81654	546.19	2912.73	17
Fort Myers FAA/AP	83186	413.99	2940.71	17
Homestead Exp Stn	84091	550.26	2820.21	17
Key West Intl AP	84570	423.67	2715.51	17
Miami WSCMO Airport	85663	570.20	2856.17	17
Moore Haven Lock 1	85895	491.61	2967.80	17
North New River Canal #	86323	546.58	2912.48	17
Ortona Lock 2	86657	470.17	2962.27	17
Parrish	86880	366.99	3054.39	17
Pennsuco 5 WNW	86988	554.70	2867.81	17
Port Mayaca S 1 Canal	87293	538.04	2984.44	17
St Lucie New Lock 1	87859	571.04	2999.35	17
St Petersburg	87886	339.61	3071.99	17
Tamiami Trail 40 Mi BEN	88780	517.64	2849.04	17
Tampa WSCMO AP	88788	348.48	3093.67	17
Trail Glade Ranges	89010	551.57	2849.99	17
Venice	89176	357.59	2998.18	17
Venus	89184	467.27	3001.22	17
Vero Beach 4 W	89219	554.27	3056.50	17
West Palm Beach Int AP	89525	589.61	2951.63	17

APPENDIX B

SO_2 EMISSION INVENTORY OF BACKGROUND SOURCES USED IN THE AIR MODELING ANALYSES

TABLE B-1
DETAILED SUMMARY OF STACK, OPERATING, AND EMISSIONS OF FACILITIES WITH SO_2 EMISSIONS INCLUDED IN THE AAQS, PSD CLASS II, AND PSD CLASS I AIR MODELING ANALYSES

AIRS Number	Facility	Units	Modeling ID Name		UTM Coordinates East (km)	UTM Coordinates North (km)	Relative Location[a] X (m)	Relative Location[a] Y (m)	Stack and Operating Parameters Height (m)	Stack and Operating Parameters Diameter (m)	Stack and Operating Parameters Temper. (K)	Velocity (m/s)	Emission Rate(g/s) 3-Hour	Emission Rate(g/s) 24-Hour	PSD Source (EXP/CON)	Modeled in AAQS	Modeled in Class II	Modeled in Class I
0510003	US Sugar - Clewiston [c]																	
		Unit 8	USSBLR8	x	506.046	2,956.987	-82	51	60.7	3.96	403.00	23.1	22.1	22.10	CON	Yes	Yes	Yes
		PSD Baseline (On-crop season only)																
		Unit 1 PSD Baseline	USSBRL1B	x	506.185	2,956.935	56	-2	23.1	1.86	344.0	30.20	-79.86	-58.21	EXP	No	Yes	Yes
		Unit 2 PSD Baseline	USSBLR2B	x	506.172	2,956.935	44	-2	23.1	1.86	343.0	35.70	-79.86	-58.21	EXP	No	Yes	Yes
		Unit 3 PSD Baseline	USSBLR3B	x	506.157	2,956.942	29	5	27.4	2.29	342.0	14.70	-48.30	-33.20	EXP	No	Yes	Yes
		East Pellet Plant PSD Baseline	EPELLET	x	506.110	2,956.988	-18	51	12.2	1.52	347.0	8.54	-10.30	-10.30	EXP	No	Yes	Yes
		West Pellet Plant PSD Baseline	WPELLET	x	506.110	2,956.988	-18	51	15.7	1.52	347.0	8.54	-10.30	-10.30	EXP	No	Yes	Yes
		On-crop season future																
		Unit 1	USSBRL1N	x	506.185 #	2,956.935	56	-2	64.9	2.44	339.0	25.30	79.54	74.98	CON	Yes	Yes	Yes
		Unit 2	USSBLR2N	x	506.172 #	2,956.935	44	-2	64.9	2.44	339.0	25.30	79.17	74.12	CON	Yes	Yes	Yes
		Unit 3 (Shutdown with Boiler 8)	USSBLR3N	x	506.157 #	2,956.942	29	5	64.9	2.44	333.2	6.78	47.08	47.08	CON	Yes	Yes	Yes
		Unit 4	USSBLR4N	x	506.128 #	2,956.936	0	0	45.7	2.50	344.3	27.00	22.49	4.54	CON	Yes	Yes	Yes
		Unit 7	USSBLR7N	x	506.096 #	2,956.956	-32	20	68.6	2.44	441.0	28.80	17.39	15.81	CON	Yes	Yes	Yes
		Off-crop season future																
		Unit 1	USSBRL1F	x	506.185 #	2,956.935	56	-2	64.9	2.44	339.0	25.30	51.64	41.23	CON	Yes	Yes	Yes
		Unit 2	USSBLR2F	x	506.172 #	2,956.935	44	-2	64.9	2.44	339.0	25.30	51.27	37.22	CON	Yes	Yes	Yes
		Unit 3 (Shutdown with Boiler 8)	USSBLR3F	x	506.157 #	2,956.942	29	5	64.9	2.44	333.2	6.78	30.74	30.20	CON	Yes	Yes	Yes
		Unit 4	USSBLR4F	x	506.128 #	2,956.936	0	0	45.7	2.51	344.3	27.00	0.00	0.00	CON	Yes	Yes	Yes
		Unit 7	USSBLR7F	x	506.096 #	2,956.956	-32	20	68.6	2.44	441.0	28.80	15.86	15.81	CON	Yes	Yes	Yes
0990086	Glades Corr Institute		GLADCORR	x	523.4	2955.2	17,272	-1,736	9.8	0.40	389.0	11.28	2.82	2.82	NO	Yes	No	No
0510015	Southern Gardens Citrus - PSD																	
		Peel Dryer	SGARDDRY	x	487.6	2957.6	-18,528	664	38.1	1.73	316.0	7.45	5.29	5.29	CON	Yes	Yes	Yes
		Boilers 1-3	SGARDBLR	x	487.6	2957.6	-18,528	664	16.8	1.22	478.0	14.22	6.88	6.88	CON	Yes	Yes	Yes
0990332	New Hope Power Partnership (Okeelanta)																	
		Okeelanta Power Blrs 1,2,3 [b]	OKCOGENF	x	524.1	2,940.0	18,000	-16,900	60.7	3.05	450.9	19.39	57.5	57.5	CON	Yes	Yes	Yes
0990005	Okeelanta [a]																	
		Boiler 4 PSD Baseline	OKBLR4B	x	525.0	2,937.4	NA	NA	22.9	2.29	333.0	7.36	-10.95	-10.95	EXP	No	No	Yes
		Boiler 5 PSD Baseline	OKBLR5B	x	525.0	2937.4	NA	NA	22.9	2.29	333.0	12.07	-15.64	-15.64	EXP	No	No	Yes
		Boiler 6 PSD Baseline	OKBLR6B	x	525.0	2937.4	NA	NA	22.9	2.29	334.0	8.74	-15.64	-15.64	EXP	No	No	Yes
		Boiler 10 PSD Baseline	OKBLR10B	x	525.0	2937.4	NA	NA	22.9	2.29	334.0	10.35	-17.15	-17.15	EXP	No	No	Yes
		Boiler 11 PSD Baseline	OKBLR11B	x	525.0	2937.4	NA	NA	22.9	2.29	342.0	9.89	-16.79	-16.79	EXP	No	No	Yes
		Boiler 16 PSD	OKBLR16	x	525.0	2937.4	NA	NA	22.9	1.52	483.0	22.86	1.47	1.47	CON	No	No	Yes
0990016	Sugar Cane Growers [c]																	
		BOILER #1 PSD Baseline Off-crop season	BLR1BO	x	534.9	2,953.3	28,800	-3,600	24.1	1.68	474.8	15.94	-29.80	-29.80	EXP	No	Yes	Yes
		BOILER #2 PSD Baseline Off-crop season	BLR2BO	x	534.9	2,953.3	28,800	-3,600	24.1	1.68	480.4	17.88	-29.80	-29.80	EXP	No	Yes	Yes
		BOILER #3 PSD Baseline Off-crop season	BLR3BO	x	534.9	2,953.3	28,800	-3,600	24.1	1.68	516.5	16.50	-22.40	-22.40	EXP	No	Yes	Yes
		BOILER #4 PSD Baseline Off-crop season	BLR4BO	x	534.9	2,953.3	28,800	-3,600	26.2	1.62	338.2	9.88	-25.90	-25.90	EXP	No	Yes	Yes
		BOILER #5 PSD Baseline Off-crop season	BLR5BO	x	534.9	2,953.3	28,800	-3,600	24.1	2.03	527.6	28.42	-39.70	-39.70	EXP	No	Yes	Yes
		BOILER #6 PSD Baseline Off-crop season	BLR6BO	x	534.9	2,953.3	28,800	-3,600	12.2	1.52	605.4	6.53	-18.60	-18.60	EXP	No	Yes	Yes
		BOILER #7 PSD Baseline Off-crop season	BLR7BO	x	534.9	2,953.3	28,800	-3,600	12.2	1.52	605.6	17.20	-44.60	-44.60	EXP	No	Yes	Yes

TABLE B-1
DETAILED SUMMARY OF STACK, OPERATING, AND EMISSIONS OF FACILITIES WITH SO_2 EMISSIONS INCLUDED IN THE AAQS, PSD CLASS II, AND PSD CLASS I AIR MODELING ANALYSES

AIRS Number	Facility	Units	Modeling ID Name		UTM Coordinates East (km)	UTM Coordinates North (km)	Relative Location[a] X (m)	Relative Location[a] Y (m)	Stack and Operating Parameters Height (m)	Diameter (m)	Temper. (K)	Velocity (m/s)	Emission Rate(g/s) 3-Hour	Emission Rate(g/s) 24-Hour	PSD Source (EXP/CON)	Modeled in AAQS	Modeled in Class II	Modeled in Class I
		BOILER #1 PSD Baseline On-crop season	BLR1BF	x	534.9	2,953.3	28,800	-3,600	24.1	1.68	474.8	15.94	-18.90	-18.90	EXP	No	Yes	Yes
		BOILER #2 PSD Baseline On-crop season	BLR2BF	x	534.9	2,953.3	28,800	-3,600	24.1	1.68	480.4	17.88	-18.90	-18.90	EXP	No	Yes	Yes
		BOILER #3 PSD Baseline On-crop season	BLR3BF	x	534.9	2,953.3	28,800	-3,600	24.1	1.68	516.5	16.50	-14.20	-14.20	EXP	No	Yes	Yes
		BOILER #4 PSD Baseline On-crop season	BLR4BF	x	534.9	2,953.3	28,800	-3,600	26.2	1.62	338.2	9.88	-25.90	-25.90	EXP	No	Yes	Yes
		BOILER #5 PSD Baseline On-crop season	BLR5BF	x	534.9	2,953.3	28,800	-3,600	24.1	2.03	527.6	28.42	0.00	0.00	EXP	No	Yes	Yes
		BOILER #6 PSD Baseline On-crop season	BLR6BF	x	534.9	2,953.3	28,800	-3,600	12.2	1.52	605.4	6.53	0.00	0.00	EXP	No	Yes	Yes
		BOILER #7 PSD Baseline On-crop season	BLR7BF	x	534.9	2,953.3	28,800	-3,600	12.2	1.52	605.6	17.20	-15.30	-15.30	EXP	No	Yes	Yes
		BOILER #1 Future On-crop season	BLR1FO	x	534.9	2,953.3	28,800	-3,600	45.7	2.13	338.7	17.90	44.80	32.20	CON	Yes	Yes	Yes
		BOILER #2 Future On-crop season	BLR2FO	x	534.9	2,953.3	28,800	-3,600	45.7	2.13	338.7	21.41	44.80	13.50	CON	Yes	Yes	Yes
		BOILER #3 Future On-crop season	BLR3FO	x	534.9	2,953.3	28,800	-3,600	54.9	2.11	338.7	16.74	30.70	1.70	CON	Yes	Yes	Yes
		BOILER #4 Future On-crop season	BLR4FO	x	534.9	2,953.3	28,800	-3,600	54.9	2.88	338.7	19.28	76.60	4.30	CON	Yes	Yes	Yes
		BOILER #5Future On-crop season	BLR5FO	x	534.9	2,953.3	28,800	-3,600	45.7	2.13	338.7	28.10	58.90	3.30	CON	Yes	Yes	Yes
		BOILER #8 Future On-crop season	BLR8FO	x	534.9	2,953.3	28,800	-3,600	47.2	2.90	338.7	15.16	49.80	3.80	CON	Yes	Yes	Yes
0990594	El Paso Belle Glade																	
		Combined Cycle CT CC-1	EPBGLCT	x	533.5	2954.1	NA	NA	41.1	5.79	359.3	18.63	0.46	0.46	CON	No	No	Yes
		Simple Cycle SC-1	EPBGSC1	x	534.9	2953.3	NA	NA	41.1	5.79	862.0	44.79	0.46	0.46	CON	No	No	Yes
		Simple Cycle SC-2	EPBGSC2	x	537.8	2969.1	NA	NA	41.1	5.79	862.0	44.79	0.46	0.46	CON	No	No	Yes
		Simple Cycle SC-3	EPBGSC3	x	544.2	2968.0	NA	NA	41.1	5.79	862.0	44.79	0.46	0.46	CON	No	No	Yes
0990061	US Sugar-Bryant[a]																	
		Unit 5 PSD	USSBRY5	x	537.8	2,969.1	31,700	12,200	45.7	2.90	345.0	14.80	62.40	62.40	CON	Yes	Yes	Yes
		Unit 5 AAQS	USSBRY5	x	537.8	2,969.1	31,700	12,200	42.7	2.90	345.0	11.49	77.25	77.25	No	Yes	No	No
		Unit 1,2&3 PSD	USBRY123	x	537.8	2,969.1	31,700	12,200	19.8	1.64	342.0	36.40	160.68	160.68	CON	Yes	Yes	Yes
		Unit 1,2&3 AAQS	USBRY123	x	537.8	2,969.1	31,700	12,200	19.8	1.64	342.0	36.40	199.71	199.71	No	Yes	No	No
		Unit 1 PSD Baseline	USSBRY1B	x	537.8	2,969.1	31,700	12,200	19.8	1.68	494.0	44.30	-36.50	-36.50	EXP	No	Yes	Yes
		Unit 2&3 PSD Baseline	USBRY23B	x	537.8	2,969.1	31,700	12,200	19.8	1.68	344.0	37.90	-73.00	-73.00	EXP	No	Yes	Yes
0990019	Osceola Farms PSD Baseline[a]																	
		Unit 1 PSD Baseline	OSBLR1B	x	544.2	2,968.0	38,100	11,100	22.0	1.52	342.0	18.18	-5.07	-5.07	EXP	No	Yes	Yes
		Unit 2 PSD Baseline	OSBLR2B	x	544.2	2,968.0	38,100	11,100	22.0	1.52	341.0	18.10	-16.32	-16.32	EXP	No	Yes	Yes
		Unit 3 PSD Baseline	OSBLR3B	x	544.2	2,968.0	38,100	11,100	22.0	1.93	341.0	14.50	-7.26	-7.26	EXP	No	Yes	Yes
		Unit 4 PSD Baseline	OSBLR4B	x	544.2	2,968.0	38,100	11,100	22.0	1.83	341.0	18.80	-13.61	-13.61	EXP	No	Yes	Yes
		Unit 2	OSBLR2	x	544.2	2,968.0	38,100	11,100	27.4	1.52	341.0	15.82	17.12	5.87	CON	Yes	Yes	Yes
		Unit 3	OSBLR3	x	544.2	2,968.0	38,100	11,100	27.4	1.91	342.0	16.86	30.74	6.39	CON	Yes	Yes	Yes
		Unit 4	OSBLR4	x	544.2	2,968.0	38,100	11,100	27.4	1.83	340.7	16.67	12.70	12.51	CON	Yes	Yes	Yes
		Unit 5a	OSBLR5A	x	544.2	2,968.0	38,100	11,100	27.4	1.52	340.7	16.48	6.33	6.26	CON	Yes	Yes	Yes
		Unit 5b	OSBLR5B	x	544.2	2,968.0	38,100	11,100	27.4	1.52	340.7	16.48	6.33	6.26	CON	Yes	Yes	Yes
		Unit 6	OSBLR6	x	544.2	2,968.0	38,100	11,100	27.4	1.88	341.0	18.19	33.39	2.08	CON	Yes	Yes	Yes
0990016	Atlantic Sugar[a]																	
		Unit 1	ATLSUG1	x	552.9	2,945.2	46,800	-11,700	27.4	1.83	346.0	17.97	16.28	16.28	CON	Yes	Yes	Yes
		Unit 2	ATLSUG2	x	552.9	2,945.2	46,800	-11,700	27.4	1.83	350.0	23.36	16.28	16.28	CON	Yes	Yes	Yes
		Unit 3	ATLSUG3	x	552.9	2,945.2	46,800	-11,700	27.4	1.83	350.0	21.56	16.02	16.02	CON	Yes	Yes	Yes
		Unit 4	ATLSUG4	x	552.9	2,945.2	46,800	-11,700	27.4	1.83	344.0	25.16	16.21	16.21	CON	Yes	Yes	Yes
		Unit 5 PSD[b]	ATLSUG5	x	552.9	2,945.2	46,800	-11,700	27.4	1.68	339.0	19.24	8.41	8.04	CON	Yes	Yes	Yes
		Unit 1 PSD Baseline	ATLSUG1B	x	552.9	2,945.2	46,800	-11,700	18.9	1.92	506.0	12.70	-17.24	-17.24	EXP	No	Yes	Yes

TABLE B-1
DETAILED SUMMARY OF STACK, OPERATING, AND EMISSIONS OF FACILITIES WITH SO_2 EMISSIONS INCLUDED IN THE AAQS, PSD CLASS II, AND PSD CLASS I AIR MODELING ANALYSES

AIRS Number	Facility	Units	Modeling ID Name		UTM Coordinates East (km)	UTM Coordinates North (km)	Relative Location[a] X (m)	Relative Location[a] Y (m)	Stack and Operating Parameters Height (m)	Diameter (m)	Temper. (K)	Velocity (m/s)	Emission Rate(g/s) 3-Hour	Emission Rate(g/s) 24-Hour	PSD Source (EXP/CON)	Modeled in AAQS	Modeled in Class II	Modeled in Class I
		Unit 2 PSD Baseline	ATLSUG2B	x	552.9	2,945.2	46,800	-11,700	18.9	1.92	511.0	10.90	-22.50	-22.50	EXP	No	Yes	Yes
		Unit 3 PSD Baseline	ATLSUG3B	x	552.9	2,945.2	46,800	-11,700	21.9	1.83	522.0	17.50	-16.88	-16.88	EXP	No	Yes	Yes
		Unit 4 PSD Baseline	ATLSUG4B	x	552.9	2,945.2	46,800	-11,700	18.3	1.83	344.0	15.00	-10.76	-10.76	EXP	No	Yes	Yes
990021	Pratt & Whitney (United Technologies)																	
		Heater	PRATARCH	x	562.0	2960.0	NA	NA	15.2	0.91	810.9	143.73	13.99	13.99	CON	No	No	Yes
		Boiler BO-12, -1, -2, -14, -3	PRATBO12	x	562.0	2,960.0	NA	NA	4.6	0.76	533.2	6.92	0.012	0.012	CON	No	No	Yes
0850001	FPL Martin																	
		Units 1&2	MART12		543.1	2,992.9	37,000	36,000	152.1	7.99	420.9	21.03	1743.79	1743.79	NO	Yes	No	No
		Aux Blr PSD	MARTAUX	x	543.1	2,992.9	37,000	36,000	18.3	1.10	535.4	15.24	12.90	12.90	CON	Yes	Yes	Yes
		Diesel Gens PSD	MARTGEN	x	543.1	2,992.9	37,000	36,000	7.6	0.30	785.9	39.62	0.51	0.51	CON	Yes	Yes	Yes
		Units 3&4 PSD	MART34	x	543.1	2,992.9	37,000	36,000	64.9	6.10	410.9	18.90	470.40	470.40	CON	Yes	Yes	Yes
		Unit 8	MART8OIL	x	543.1	2,992.9	37,000	36,000	36.6	5.79	420.0	22.40	51.96	51.96	CON	Yes	Yes	Yes
0850102	Bechtel Indiantown PSD																	
			BECHTIND	x	545.6	2,991.5	39,500	34,600	150.9	4.88	333.2	30.50	75.64	75.64	CON	Yes	Yes	Yes
	FPL- Turkey Point																	
			FPLTPCT	x	567.0	2,813.5	NA	NA	39.9	5.79	360.0	18.60	6.68	6.68	CON	No	No	Yes
0250348	Miami-Dade County RRF																	
		Units 1&2	DCRRF12	x	564.3	2857.4	NA	NA	76.2	3.66	405.4	15.86	26.41	12.32	CON	No	No	Yes
		Units 3&4	DCRRF34	x	564.3	2857.4	NA	NA	76.2	3.66	405.4	15.86	26.41	12.32	CON	No	No	Yes
0250020	Titan (formerly Tarmac)																	
		Kiln 1 PSD Baseline	TARMK1B	x	562.9	2861.7	NA	NA	61.0	2.44	465.0	12.84	-5.71	-5.71	EXP	No	Yes	Yes
		Kiln 2 PSD Baseline	TARMK2B	x	562.9	2861.7	NA	NA	61.0	2.44	465.0	12.84	-5.71	-5.71	EXP	No	Yes	Yes
		Kiln 3 PSD Baseline	TARMK3B	x	562.9	2861.7	NA	NA	61.0	4.57	472.0	10.78	-2.76	-2.76	EXP	No	Yes	Yes
		Kiln 2 PSD	TABMK2	x	562.9	2861.7	NA	NA	61.0	2.44	422.0	9.10	24.57	24.57	CON	Yes	Yes	Yes
		Kiln 3 PSD	TARMK3	x	562.9	2861.7	NA	NA	61.0	4.57	450.0	11.04	51.43	51.43	CON	Yes	Yes	Yes
0112119	South Broward Resource Recovery [c]																	
			SBCRRF	x	579.6	2883.3	NA	NA	59.4	3.96	381.0	18.01	37.91	37.91	CON	No	No	Yes
0110037	FPL - Lauderdale																	
		CTs 1-4 PSD	LAUDU45	x	580.1	2883.3	NA	NA	45.7	5.49	438.7	14.60	271.15	271.15	CON	Yes	Yes	Yes
		4&5 PSD Baseline	FTLAU45B	x	580.1	2883.3	NA	NA	46.0	4.27	422.0	14.63	-457.00	-457.00	EXP	No	Yes	Yes
0110120	North Broward RRF PSD																	
			NBCRRF	x	583.6	2907.6	NA	NA	58.5	3.96	381.0	18.01	35.40	35.40	CON	No	No	Yes
0710019	Lee County RRF PSD																	
			LEECORRF	x	424.2	2945.7	NA	NA	83.8	1.88	388.5	19.81	14.00	14.00	CON	No	No	Yes
0990234	Palm Beach Co. Resource Recovery																	
		1&2 PSD	PBCRRF	x	585.8	2,960.2	79,700	3,300	76.2	2.04	505.2	24.90	85.05	85.05	CON	Yes	Yes	Yes
0710000	FPL Fort Myers																	
		Unit 1 PSD	FMU1	x	422.1	2,952.9	-84,000	-4,000	91.8	2.90	422.0	29.90	-585.50	-585.50	EXP	No	Yes	Yes

TABLE B-1
DETAILED SUMMARY OF STACK, OPERATING, AND EMISSIONS OF FACILITIES WITH SO_2 EMISSIONS INCLUDED IN THE AAQS, PSD CLASS II, AND PSD CLASS I AIR MODELING ANALYSES

AIRS Number	Facility	Units	Modeling ID Name		UTM Coordinates East (km)	UTM Coordinates North (km)	Relative Location[a] X (m)	Relative Location[a] Y (m)	Stack and Operating Parameters Height (m)	Stack and Operating Parameters Diameter (m)	Stack and Operating Parameters Temper. (K)	Velocity (m/s)	Emission Rate(g/s) 3-Hour	Emission Rate(g/s) 24-Hour	PSD Source (EXP/CON)	Modeled in AAQS	Modeled in Class II	Modeled in Class I
		Unit 2 PSD	FMU2	x	422.1	2,952.9	-84,000	-4,000	121.2	5.52	408.0	19.20	-1334	-1334.0	EXP	No	Yes	Yes
		HRSGs 1 - 6	FMYHR1_6	x	422.1	2,952.9	-84,000	-4,000	38.1	5.79	377.6	14.2	3.86	3.9	CON	Yes	Yes	Yes
0990568	Lake Worth Utilities																	
		Unit 3, S-3	LAKWTHU3		592.8	2,943.7	86,700	-13,200	34.4	2.13	418.0	15.70	100.70	100.70	NO	Yes	No	No
		Unit 4, S-4	LAKWTHU4		592.8	2,943.7	86,700	-13,200	35.1	2.29	418.2	17.00	129.85	129.85	NO	Yes	No	No
		Unit 5, S-5	LAKWTHU5	x	592.8	2,943.7	86,700	-13,200	22.9	3.05	481.0	27.80	14.37	14.37	CON	Yes	Yes	Yes
0990042	FPL Riviera[c]																	
		Units 3&4 at 2.5%s fuel oil	RIVU34		594.2	2,960.6	NA	NA	90.8	4.88	401.5	18.90	2113.65	2113.65	NO	Yes	No	No
0550018	TECO-Phillips[c]																	
		Steam Boiler	TECOPHSB		464.3	3,035.4	-41.8	78.5	18.90	0.67	ND	ND	0.7	0.7	NO	No	No	No
		Diesel Generator Unit 1	TECOPH1	x	464.3	3,035.4	-41.8	78.5	45.72	1.83	441.0	24.1	58.0	29.0	CON	Yes	Yes	Yes
		Diesel Generator Unit 2	TECOPH2	x	464.3	3,035.4	-41.8	78.5	45.72	1.83	450.0	24.1	58.0	29.0	CON	Yes	Yes	Yes
0112545	El Paso Broward																	
		Combined Cycle CT CC-1	EPBRCT1	x	583.3	2,908.0	NA	NA	41.1	5.79	359.3	61.13	0.46	0.46	CON	No	No	Yes
		Simple Cycle SC-1	EPBRSC1	x	583.3	2,908.0	NA	NA	41.1	5.79	862.0	146.96	0.46	0.46	CON	No	No	Yes
		Simple Cycle SC-2	EPBRSC2	x	583.3	2,908.0	NA	NA	41.1	5.79	862.0	146.96	0.46	0.46	CON	No	No	Yes
		Simple Cycle SC-3	EPBRSC3	x	583.3	2,908.0	NA	NA	41.1	5.79	862.0	146.96	0.46	0.46	CON	No	No	Yes
0610029	Vero Beach Power[c]																	
		Unit 5 Simple Cycle CT	VERBU5	x	567.1	3056.5	NA	NA	38.10	3.35	416.5	19.56	15.50	15.50	CON	Yes	Yes	Yes
0550004	TECO-Sebring/Dinner Lake[c]																	
		Steam Boiler	TECOSEBR	x	456.8	3042.5	NA	NA	22.9	1.83	394.3	5.79	37.78	37.78	CON	Yes	Yes	Yes

Note: EXP = PSD expanding source
CON = PSD consuming source

[a] Facilities or sources within facilities that operate only during the October 1 through April 30 crop season.

[b] Sugar mill sources that operate all year.

[c] Represents worst case emissions for May 1 through September 31 off-crop season operation, and October 1-April 30 for on-crop season.

APPENDIX C

DIRECTION-SPECIFIC BUILDING INFORMATION FOR THE AIR MODELING ANALYSIS AND AIR MODEL INPUTS

```
'1987 USSUGAR CLEWISTON MILL, BLR 8 & BLR 3- NO2 SIL  06/02/03'
'P'
'METERS'  1.00000000
'UTMY'  0.0000
11
'PEL. WHS'  1          0.000
    4          14.000
           505920.326     2957000.918
           506080.956     2957000.918
           506080.956     2956968.914
           505920.326     2956968.914
'WDA'  1          0.000
    4          15.500
           506102.292     2956982.934
           506118.446     2956982.934
           506118.446     2956966.170
           506102.292     2956966.170
'S&SAFETY'  1          0.000
    4          10.600
           506102.292     2956948.492
           506102.292     2956966.170
           506118.446     2956966.170
           506118.446     2956948.492
'BLR 1&2'  1          0.000
    4          20.500
           506158.680     2956940.872
           506193.732     2956940.872
           506193.732     2956909.478
           506158.680     2956909.478
'BLR 5&6'  1          0.000
    4          17.100
           506138.563     2956907.344
           506138.563     2956943.310
           506158.680     2956943.310
           506158.680     2956907.344
'PWRHSE'  1          0.000
    8          10.400
           506193.732     2956915.269
           506193.732     2956929.290
           506230.003     2956929.290
           506230.003     2956912.221
           506218.116     2956912.221
           506218.116     2956909.478
           506206.229     2956909.478
           506206.229     2956915.269
'W-HOSE'  1          0.000
    6          11.300
           506098.634     2956900.029
           506145.269     2956900.029
           506145.269     2956882.655
           506130.029     2956882.655
           506130.029     2956878.388
           506098.634     2956878.388
'SHOP'  1          0.000
    6          11.900
           506054.743     2956852.175
           506110.826     2956852.175
           506110.826     2956864.672
           506148.926     2956864.672
           506148.926     2956832.363
           506054.743     2956832.363
'B MILL'  1          0.000
    4          20.700
           506151.974     2956877.169
           506176.663     2956877.169
           506176.663     2956822.914
           506151.974     2956822.914
'A MILL'  1          0.000
    4          21.000
           506176.663     2956822.914
           506176.663     2956896.981
           506197.085     2956896.981
           506197.085     2956822.914
'BOILING'  1          0.000
    6          28.600
           506197.085     2956840.898
           506197.085     2956882.655
           506244.329     2956882.655
           506244.329     2956827.486
           506223.298     2956827.486
           506223.298     2956840.898
```

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7
'BLR3B'          6.000          27.400          506157.160      2956941.790
'BLR1B'          6.000          23.100          506184.588      2956934.776
'BLR2B'          6.000          23.100          506171.786      2956934.776
'EPELLET'          6.000          12.200          506109.910      2956987.510
'WPELLET'          6.000          15.700          506109.910      2956987.510
'BLR5B'          6.000          23.100          506151.970      2956943.920
'BLR6B'          6.000          23.100          506140.390      2956943.920
```

```
'1987 USSUGAR CLEWISTON MILL, BLR 8 & BLR 3- NO2 SIL  06/02/03'
'P'
'METERS'  1.00000000
'UTMY'  0.0000
24
'ELECTEQU'  1          6.000
    4          30.500
           506320.318     2956831.427
           506318.570     2956839.654
           506347.071     2956845.712
           506348.820     2956837.486
'SUPPORTS'  1          6.000
    4          39.600
           506313.741     2956862.374
           506342.242     2956868.432
           506347.071     2956845.714
           506318.570     2956839.656
'DRYER AR'  1          6.000
    4          30.500
           506313.741     2956862.374
           506311.269     2956874.002
           506339.772     2956880.060
           506342.243     2956868.432
'SCREENIG'  1          6.000
    4          45.700
           506324.122     2956911.166
           506361.808     2956919.176
           506366.161     2956898.696
           506328.476     2956890.686
'SPECPACK'  1          6.000
    4          12.200
           506346.879     2956869.046
           506371.357     2956874.249
           506384.133     2956814.142
           506359.655     2956808.939
'PACKING'  1          6.000
    4          12.200
           506379.550     2956835.698
           506361.806     2956919.176
           506381.195     2956923.297
           506398.938     2956839.819
'SUGAR SI'  1          6.000
    4          41.450
           506324.122     2956911.166
           506328.475     2956890.684
           506295.203     2956883.612
           506290.832     2956904.183
'PEL. WHS'  1          6.000
    4          14.000
           505920.326     2957000.918
           506000.326     2957000.918
           506000.326     2956968.914
           505920.326     2956968.914
'WDA'  1          6.000
    4          15.540
           506102.292     2956982.934
           506118.446     2956982.934
           506118.446     2956966.170
           506102.292     2956966.170
'S&SAFETY'  1          6.000
    4          10.600
           506102.292     2956940.872
           506102.292     2956966.170
           506118.446     2956966.170
           506118.446     2956940.872
'BLR 4 BL'  1          6.000
    4          26.670
           506118.446     2956932.338
           506138.563     2956932.338
           506138.563     2956908.563
           506118.446     2956908.563
'BLR 5&6'  1          6.000
    4          17.070
           506138.563     2956907.344
           506138.563     2956943.310
           506158.680     2956943.310
           506158.680     2956907.344
'BLR 1&2'  1          6.000
    4          20.500
           506158.680     2956940.872
           506193.732     2956940.872
```

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          506193.732     2956909.478
          506158.680     2956909.478
'PWRHSE'  1           6.000
    8         10.360
          506193.732     2956915.269
          506193.732     2956929.290
          506230.003     2956929.290
          506230.003     2956912.221
          506218.116     2956912.221
          506218.116     2956909.478
          506206.229     2956909.478
          506206.229     2956915.269
'W-HOSE'  1           6.000
    6         11.300
          506098.634     2956900.029
          506145.269     2956900.029
          506145.269     2956882.655
          506130.029     2956882.655
          506130.029     2956878.388
          506098.634     2956878.388
'SHOP'  1           6.000
    6         11.900
          506054.743     2956852.175
          506110.826     2956852.175
          506110.826     2956864.672
          506148.926     2956864.672
          506148.926     2956832.363
          506054.743     2956832.363
'B MILL'  1           6.000
    4         20.700
          506151.974     2956891.494
          506176.663     2956891.494
          506176.663     2956822.914
          506151.974     2956822.914
'A MILL'  1           6.000
    4         21.000
          506176.663     2956822.914
          506176.663     2956896.981
          506197.085     2956896.981
          506197.085     2956822.914
'BOILING'  1           6.000
    6         28.600
          506197.085     2956840.898
          506197.085     2956882.655
          506244.329     2956882.655
          506244.329     2956827.486
          506223.298     2956827.486
          506223.298     2956840.898
'BLR 7 ES'  1           6.000
    4         26.700
          506090.710     2956940.872
          506090.710     2956957.636
          506100.768     2956957.636
          506100.768     2956940.872
'BLR 7 BL'  1           6.000
    4         25.300
          506087.662     2956940.872
          506118.446     2956940.872
          506118.446     2956908.563
          506087.662     2956908.563
'SUGARWHS'  1           6.000
    4         16.800
          506525.659     2957005.916
          506760.751     2957005.916
          506760.751     2956962.208
          506525.659     2956962.208
'BLR 8 ES'  1           6.000
    4         21.000
          506040.663     2956975.110
          506046.455     2956954.688
          506060.171     2956958.346
          506054.379     2956978.767
'BLR 8 BL'  1           6.000
    4         29.900
          506048.708     2956938.738
          506066.630     2956938.738
          506066.630     2956910.697
          506048.708     2956910.697
21
'BLR4'          6.000          45.700      506128.200     2956936.300
'S1'            6.000          19.800      506334.230     2956889.420
```

'S2'	6.000	19.800	506342.450	2956890.340
'S3'	6.000	19.800	506342.450	2956890.340
'S4'	6.000	18.300	506364.850	2956895.230
'S5'	6.000	22.000	506342.450	2956890.340
'S6'	6.000	22.000	506342.450	2956890.340
'S7'	6.000	39.600	506320.850	2956890.710
'S8'	6.000	39.600	506311.140	2956888.350
'S9'	6.000	39.600	506300.620	2956886.020
'S10'	6.000	22.900	506341.310	2956877.980
'S11'	6.000	3.100	506753.920	2956999.530
'S12'	6.000	9.100	506311.780	2956815.410
'S13'	6.000	39.600	506319.700	2956900.420
'S14'	6.000	39.600	506309.000	2956898.050
'S15'	6.000	39.600	506300.430	2956896.160
'S16'	6.000	16.800	506363.110	2956856.110
'BLR1'	6.000	64.900	506184.588	2956934.776
'BLR2'	6.000	64.900	506171.786	2956934.776
'BLR7'	6.000	68.580	506095.739	2956956.112
'BLR8'	6.000	60.660	506046.209	2956987.293

AERBOB RELEASE 020304

AERMOD OUTPUT FILE NUMBER 1 :so2aqs.o87
AERMOD OUTPUT FILE NUMBER 2 :so2aqs.o88
AERMOD OUTPUT FILE NUMBER 3 :so2aqs.o89
AERMOD OUTPUT FILE NUMBER 4 :so2aqs.o90
AERMOD OUTPUT FILE NUMBER 5 :so2aqs.o91
First title for last output file is: 1987 USSC CLEWISTON LOW SULFUR/ AERMOD, SO2 AAQS ANALYSIS 1/18/06
Second title for last output file is: 1987-1991 FORT MYERS/TAMPA AERMET

AVERAGING TIME	YEAR	CONC (ug/m3)	X (m)	Y (m)	PERIOD ENDING (YYMMDDHH)
SOURCE GROUP ID:	ALL				
Annual					
	1987	5.106	505450.	2957000.	87123124
	1988	5.822	505450.	2957000.	88123124
	1989	5.654	505550.	2957300.	89123124
	1990	6.456	505450.	2957000.	90123124
	1991	5.890	505550.	2957300.	91123124
HIGH 24-Hour					
	1987	30.289	505450.	2957000.	87111624
	1988	30.653	505450.	2957000.	88122024
	1989	31.340	505450.	2956800.	89021724
	1990	30.748	505450.	2956900.	90011624
	1991	30.700	505550.	2957200.	91052124
HSH 24-Hour					
	1987	29.794	505450.	2957000.	87123124
	1988	29.180	505450.	2956900.	88122324
	1989	26.996	505450.	2956800.	89021624
	1990	29.288	505450.	2956900.	90110824
	1991	29.635	505450.	2956800.	91102524
HIGH 3-Hour					
	1987	67.029	516250.	2951900.	87021509
	1988	79.094	515250.	2962900.	88030121
	1989	98.371	513250.	2962900.	89112806
	1990	87.686	515250.	2963900.	90120406
	1991	72.641	512250.	2966900.	91012324
HSH 3-Hour					
	1987	51.369	516250.	2952900.	87021509
	1988	69.884	515250.	2962900.	88043006
	1989	68.998	516250.	2965900.	89111506
	1990	48.606	505650.	2957000.	90070712
	1991	52.630	516250.	2965900.	91012324

All receptor computations reported with respect to a user-specified origin

GRID	0.00	0.00
DISCRETE	0.00	0.00

```
CO STARTING
   TITLEONE 1987  USSC CLEWISTON LOW SULFUR/ AERMOD, SO2 AAQS ANALYSIS  1/18/06
   TITLETWO 1987-1991 FORT MYERS/TAMPA AERMET
   MODELOPT DFAULT CONC
   AVERTIME PERIOD 24 3
   POLLUTID SO2
   EVENTFIL EVSO2AQS.I87 SOCONT
   RUNORNOT RUN
CO FINISHED
**
*****************************************
** ISCST3 Source Pathway
*****************************************
**
**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **

** US SUGAR CORP - CLEWISTON
SO LOCATION USSBLR1   POINT   506184.6 2956934.8 6
SO LOCATION USSBLR2   POINT   506171.8 2956934.8 6
SO LOCATION USSBLR4   POINT   506128.2 2956936.3 6
SO LOCATION USSBLR7   POINT   506095.7 2956956.1 6
SO LOCATION USSBLR8   POINT   506046.2 2956987.3 6

** SOUTHERN GARDENS CITRUS PSD
SO LOCATION SGARDDRY  POINT   487600.0 2957600.0  4
SO LOCATION SGARDBLR  POINT   487600.0 2957600.0  4

**SUGAR CANE GROWERS
** FUTURE ON CROP SEASON
SO LOCATION SCG1FO    POINT    534900.0  2953300.0   4
SO LOCATION SCG2FO    POINT    534900.0  2953300.0   4
SO LOCATION SCG3FO    POINT    534900.0  2953300.0   4
SO LOCATION SCG4FO    POINT    534900.0  2953300.0   4
SO LOCATION SCG5FO    POINT    534900.0  2953300.0   4
SO LOCATION SCG8FO    POINT    534900.0  2953300.0   4

**US SUGAR BRYANT
SO LOCATION USSBRY5   POINT    537800.0  2969100.0   4
SO LOCATION USBRY123  POINT    537800.0  2969100.0   4

**OSCEOLA FARMS
SO LOCATION OSBLR2    POINT    544200.0  2968000.0   4
SO LOCATION OSBLR3    POINT    544200.0  2968000.0   4
SO LOCATION OSBLR4    POINT    544200.0  2968000.0   4
SO LOCATION OSBLR5A   POINT    544200.0  2968000.0   4
SO LOCATION OSBLR5B   POINT    544200.0  2968000.0   4
SO LOCATION OSBLR6    POINT    544200.0  2968000.0   4

**ATLANTIC SUGAR
SO LOCATION ATLSUG1   POINT    552900.0  2945200.0  5
SO LOCATION ATLSUG2   POINT    552900.0  2945200.0  5
SO LOCATION ATLSUG3   POINT    552900.0  2945200.0  5
SO LOCATION ATLSUG4   POINT    552900.0  2945200.0  5
SO LOCATION ATLSUG5   POINT    552900.0  2945200.0  5

**FPL MARTIN
SO LOCATION MART12    POINT    543100.0  2992900.0  9
SO LOCATION MARTAUX   POINT    543100.0  2992900.0  9
SO LOCATION MARTGEN   POINT    543100.0  2992900.0  9
SO LOCATION MART34    POINT    543100.0  2992900.0  9
SO LOCATION MART8OIL  POINT    543100.0  2992900.0  9

**BECHTEL INDIANTOWN PSD
SO LOCATION BECHTIND  POINT    545600.0  2991500.0  9

**FPL FORT MYERS
SO LOCATION FMYHR1_6  POINT    422100.0  2952900.0  2

**TECO-PHILLIPS
SO LOCATION TECOPH1   POINT    464300.0  3035400.0  19
SO LOCATION TECOPH2   POINT    464300.0  3035400.0  19

**LAKE WORTH UTILITIES
SO LOCATION LAKWTHU3  POINT   592800.0  2943700.0    8
SO LOCATION LAKWTHU4  POINT   592800.0  2943700.0    8
SO LOCATION LAKWTHU5  POINT   592800.0  2943700.0    8

**NEW HOPE POWER PARTNERSHIP (OKEELANTA)
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SO LOCATION OKCOGENF  POINT   524100.0  2937400.0    4

**GLADES COORECTIONAL INSTITUTE
SO LOCATION GLADCORR  POINT   523400.0  2955200.0  4


**FPL RIVERIA
SO LOCATION RIVU34   POINT     594200.0  2960600.0   4

**PALM BEACH CO RR
SO LOCATION PBCRRF  POINT     585800.0  2960200.0  5

**US SUGAR-CLEWISTON - MAX 3-HOUR EMISSIONS
SO SRCPARAM USSBLR1      3.75     64.9 339 25.3 2.44
SO SRCPARAM USSBLR2      3.38     64.9 339 25.3 2.44
SO SRCPARAM USSBLR4      4.79     45.7 344 27.0 2.50
SO SRCPARAM USSBLR7     17.39     68.6 441 28.8 2.44
SO SRCPARAM USSBLR8      7.79     60.7 403 23.1 3.33
**
**SUGAR CANE GROWERS
SO SRCPARAM  SCG1FO  44.8    45.7    338.7   17.9    2.13
SO SRCPARAM  SCG2FO  44.8    45.7    338.7   21.41   2.13
SO SRCPARAM  SCG3FO  30.7    54.9    338.7   16.74   2.11
SO SRCPARAM  SCG4FO  76.6    54.9    338.7   19.28   2.88
SO SRCPARAM  SCG5FO  58.9    45.7    338.7   28.1    2.13
SO SRCPARAM  SCG8FO  49.8    47.2    338.7   15.16   2.9

** Atlantic Sugar-
SO SRCPARAM ATLSUG1    16.28    27.4    346.0   17.97     1.83
SO SRCPARAM ATLSUG2    16.28    27.4    350.0   23.36     1.83
SO SRCPARAM ATLSUG3    16.02    27.4    350.0   21.56     1.83
SO SRCPARAM ATLSUG4    16.21    27.4    344.0   25.16     1.83
SO SRCPARAM ATLSUG5     8.41    27.4    339.0   19.24     1.68

**US SUGAR BRYANT
SO SRCPARAM  USSBRY5      77.25      42.7     345.0    14.8      2.90
SO SRCPARAM  USBRY123     199.71     19.8     342.0    36.40     1.64

**SOUTHERN GARDENS CITRUS - PSD
SO SRCPARAM SGARDDRY  5.29 38.1  316.0  7.45  1.73
SO SRCPARAM SGARDBLR  6.88 16.8  478.0 14.22  1.22

**OSCEOLA FARMS
SO SRCPARAM OSBLR2       17.12      27.4     341.0    15.82      1.52
SO SRCPARAM OSBLR3       30.74      27.4     342.0    16.86      1.91
SO SRCPARAM OSBLR4       12.70      27.4     340.7    16.67      1.83
SO SRCPARAM OSBLR5A      6.33       27.4     340.7    16.48      1.52
SO SRCPARAM OSBLR5B      6.33       27.4     340.7    16.48      1.52
SO SRCPARAM OSBLR6       33.39      27.4     341.0    18.19      1.88

** NEW HOPE POWER PARTNERSHIP (OKEELANTA)
SO SRCPARAM OKCOGENF    57.5       60.7    450.9   19.39   3.05

**FPL MARTIN
SO SRCPARAM MART12       1743.79    152.1    420.9   21.03   7.99
SO SRCPARAM MARTAUX      12.90      18.3     535.4    15.24      1.10
SO SRCPARAM MARTGEN      0.51       7.6      785.9    39.62      0.30
SO SRCPARAM MART34       470.40     64.9     410.9    18.90      6.10
SO SRCPARAM MART8OIL     51.96      36.6     420.0    22.40      5.79

**BECHTEL INDIANTOWN PSD
SO SRCPARAM BECHTIND     75.64      150.9    333.2    30.50      4.88

**PALM BEACH CO RR
SO SRCPARAM PBCRRF       85.05      76.2     505.2    24.90      2.04

**FPL FORT MYERS
SO SRCPARAM  FMYHR1_6     3.86       38.1     377.6    14.20      5.79

**GLADES CORRECTIONAL INSTITUTE
SO SRCPARAM  GLADCORR     2.82       9.8      389.0    11.28      0.40

**TECO-PHILLIPS
SO SRCPARAM  TECOPH1      57.96      45.7     441.0    24.08      1.83
SO SRCPARAM  TECOPH2      57.96      45.7     450.0    24.08      1.83

**LAKE WORTH UTILITIES
SO SRCPARAM   LAKWTHU3    100.70  34.4    418.0   15.70   2.13
SO SRCPARAM   LAKWTHU4    129.85  35.1    418.2   17.00   2.29
SO SRCPARAM   LAKWTHU5     14.37   22.9    481.0   27.80   3.05
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**FPL RIVERIA
SO SRCPARAM   RIVU34  2113.65   90.8    401.5   18.90   4.88

SO BUILDHGT USSBLR4      26.67   26.67   26.67   26.67   26.67   29.90
SO BUILDHGT USSBLR4      29.90   29.90   29.90   29.90   26.70   26.70
SO BUILDHGT USSBLR4      26.70   26.70   26.70   26.67   26.67   26.67
SO BUILDHGT USSBLR4      26.67   26.67   26.67   26.67   26.67   29.90
SO BUILDHGT USSBLR4      29.90   26.70   39.60   41.45   41.45   39.60
SO BUILDHGT USSBLR4      28.60   28.60   28.60   26.67   26.67   26.67
SO BUILDWID USSBLR4      55.65   27.04   29.31   30.69   31.14   33.25
SO BUILDWID USSBLR4      32.48   30.73   28.04   30.73   61.91   66.68
SO BUILDWID USSBLR4      69.42   70.05   68.55   27.04   45.64   47.85
SO BUILDWID USSBLR4      55.65   27.04   29.31   30.69   31.14   33.25
SO BUILDWID USSBLR4      32.48   42.04   79.52   46.59   56.20   90.49
SO BUILDWID USSBLR4      62.36   63.03   61.79   27.04   45.64   47.85
SO BUILDLEN USSBLR4      45.26   29.22   30.65   31.14   30.69   29.54
SO BUILDLEN USSBLR4      26.43   22.52   17.92   22.52   48.19   44.02
SO BUILDLEN USSBLR4      38.51   33.00   33.25   29.22   56.64   49.07
SO BUILDLEN USSBLR4      45.26   29.22   30.65   31.14   30.69   29.54
SO BUILDLEN USSBLR4      26.43   59.42   75.33   75.14   72.66   77.94
SO BUILDLEN USSBLR4      71.65   72.63   71.40   29.22   56.64   49.07
SO XBADJ    USSBLR4     -29.01  -29.40  -28.90  -27.52  -25.30  -81.64
SO XBADJ    USSBLR4     -83.45  -82.73  -79.49  -78.71  -75.53  -70.06
SO XBADJ    USSBLR4     -62.46  -52.96  -41.86    0.39  -27.52  -21.34
SO XBADJ    USSBLR4     -16.25    0.18   -1.75   -3.63   -5.39   52.10
SO XBADJ    USSBLR4      57.02   23.31 -237.96 -240.88 -236.47 -234.84
SO XBADJ    USSBLR4    -158.90 -158.00 -152.30  -29.61  -29.12  -27.74
SO YBADJ    USSBLR4      12.80   -5.71   -8.19  -10.42  -12.34   25.23
SO YBADJ    USSBLR4      13.24    0.84  -11.58  -23.65  -20.29  -28.58
SO YBADJ    USSBLR4     -36.00  -42.33  -47.37   -5.13  -13.30  -13.56
SO YBADJ    USSBLR4     -12.80    5.71    8.19   10.42   12.34  -25.23
SO YBADJ    USSBLR4     -13.24   -6.50   56.88   -0.41  -35.71  -56.73
SO YBADJ    USSBLR4      -2.37  -22.96  -42.85    5.13   13.30   13.56

SO BUILDHGT USSBLR1      21.00   21.00   20.70   20.70   26.67   26.67
SO BUILDHGT USSBLR1      26.67   29.90   29.90   26.70   26.70   20.50
SO BUILDHGT USSBLR1      28.60   28.60   28.60   28.60   28.60   28.60
SO BUILDHGT USSBLR1      21.00   21.00   20.70   20.70   26.67   26.67
SO BUILDHGT USSBLR1      26.67   26.67   39.60   41.45   41.45   41.45
SO BUILDHGT USSBLR1      39.60   28.60   28.60   28.60   28.60   28.60
SO BUILDWID USSBLR1      32.97   44.52   55.67   63.00   31.14   30.65
SO BUILDWID USSBLR1      29.22   30.73   28.04   55.27   61.91   44.71
SO BUILDWID USSBLR1      62.36   63.03   61.79   58.68   53.78   47.24
SO BUILDWID USSBLR1      32.97   44.52  111.99   63.00   31.14   30.65
SO BUILDWID USSBLR1      29.22   26.91   79.52   46.59   56.20   64.10
SO BUILDWID USSBLR1      88.71   63.03   61.79   58.68   53.78   47.24
SO BUILDLEN USSBLR1      76.49   76.58   71.74   68.41   30.69   29.31
SO BUILDLEN USSBLR1      27.04   22.52   17.92   50.90   48.19   46.05
SO BUILDLEN USSBLR1      71.65   72.63   71.40   68.00   62.53   55.17
SO BUILDLEN USSBLR1      76.49   76.58   97.91   68.41   30.69   29.31
SO BUILDLEN USSBLR1      27.04   23.94   75.33   75.14   72.66   67.98
SO BUILDLEN USSBLR1      80.66   72.63   71.40   68.00   62.53   55.17
SO XBADJ    USSBLR1    -111.54 -107.83 -113.18 -106.66  -67.52  -70.39
SO XBADJ    USSBLR1     -71.12 -138.00 -135.88 -134.50 -129.04  -25.49
SO XBADJ    USSBLR1      43.08   47.96   51.39   53.25   53.50   52.12
SO XBADJ    USSBLR1      35.05   31.24   15.27   38.25   36.82   41.08
SO XBADJ    USSBLR1      44.08   45.75 -181.57 -185.08 -182.96 -175.29
SO XBADJ    USSBLR1    -181.72 -120.59 -122.79 -121.25 -116.03 -107.29
SO YBADJ    USSBLR1     -15.25  -27.74  -21.23  -34.33   25.08   15.64
SO YBADJ    USSBLR1       5.72   12.13  -10.06  -19.68  -38.14  -12.51
SO YBADJ    USSBLR1     -32.70  -19.25   -5.22    8.97   22.89   36.12
SO YBADJ    USSBLR1      15.25   27.74   49.39   34.34  -25.08  -15.64
SO YBADJ    USSBLR1      -5.72    4.37   55.36    7.88  -17.85  -43.05
SO YBADJ    USSBLR1     -57.61   19.25    5.22   -8.97  -22.89  -36.12


SO BUILDHGT USSBLR2      20.70   20.70   20.70   26.67   26.67   26.67
SO BUILDHGT USSBLR2      29.90   29.90   29.90   29.90   26.70   28.60
SO BUILDHGT USSBLR2      28.60   28.60   21.00   21.00   28.60   21.00
SO BUILDHGT USSBLR2      20.70   20.70   20.70   26.67   26.67   26.67
SO BUILDHGT USSBLR2      26.67   26.67   39.60   41.45   41.45   41.45
SO BUILDHGT USSBLR2      28.60   28.60   28.60   28.60   28.60   21.00
SO BUILDWID USSBLR2      36.22   46.66   55.67   30.69   31.14   30.65
SO BUILDWID USSBLR2      32.48   30.73   28.04   30.73   61.91   59.78
SO BUILDWID USSBLR2      62.36   63.03   54.72   44.52   53.78   67.67
SO BUILDWID USSBLR2     102.07   46.66   55.67   30.69   31.14   30.65
SO BUILDWID USSBLR2      29.22   26.91   79.52   46.59   56.20   64.10
SO BUILDWID USSBLR2      62.36   63.03   61.79   58.68   53.78   67.67
SO BUILDLEN USSBLR2      71.83   72.89   71.74   31.14   30.69   29.31
SO BUILDLEN USSBLR2      26.43   22.52   17.92   22.52   48.19   68.50
SO BUILDLEN USSBLR2      71.65   72.63   74.35   76.58   62.53   74.07
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SO BUILDLEN USSBLR2      80.78   72.89   71.74   31.14   30.69   29.31
SO BUILDLEN USSBLR2      27.04   23.94   75.33   75.14   72.66   67.98
SO BUILDLEN USSBLR2      71.65   72.63   71.40   68.00   62.53   74.07
SO XBADJ    USSBLR2    -113.60 -111.89 -106.78  -54.37  -57.71  -59.30
SO XBADJ    USSBLR2    -123.89 -125.39 -123.08 -121.90 -117.01   47.97
SO XBADJ    USSBLR2      52.88   56.19   35.17   37.18   55.72   37.79
SO XBADJ    USSBLR2      32.83   39.00   35.04   23.22   27.02   29.99
SO XBADJ    USSBLR2      32.05   33.14 -194.38 -197.69 -194.99 -186.37
SO XBADJ    USSBLR2    -124.54 -128.82 -129.19 -125.63 -118.26 -111.86
SO YBADJ    USSBLR2      -6.12  -19.51  -32.32   23.95   16.85    9.23
SO YBADJ    USSBLR2      29.58    9.91  -10.06  -29.72  -33.77  -38.76
SO YBADJ    USSBLR2     -24.48   -9.45  -24.35  -11.41   35.50   38.71
SO YBADJ    USSBLR2      39.04   19.51   32.32  -23.95  -16.85   -9.23
SO YBADJ    USSBLR2      -1.34    6.59   55.36    5.66  -22.23  -49.45
SO YBADJ    USSBLR2      24.48    9.45   -5.87  -21.00  -35.50  -38.71

SO BUILDHGT USSBLR7      26.67   29.90   29.90   29.90   29.90   29.90
SO BUILDHGT USSBLR7      29.90   29.90   26.70   26.70   26.70   26.70
SO BUILDHGT USSBLR7      26.70   26.70   26.70   26.70   26.67   26.67
SO BUILDHGT USSBLR7      26.67   29.90   29.90   29.90   29.90   29.90
SO BUILDHGT USSBLR7      29.90   29.90   26.70   41.45   41.45   28.60
SO BUILDHGT USSBLR7      28.60   28.60   26.70   26.70   26.67   26.67
SO BUILDWID USSBLR7      55.65   26.43   29.54   31.75   33.00   33.25
SO BUILDWID USSBLR7      32.48   30.73   46.94   55.27   61.91   66.68
SO BUILDWID USSBLR7      69.42   70.05   68.55   64.97   45.64   47.85
SO BUILDWID USSBLR7      55.65   26.43   29.54   31.75   33.00   33.25
SO BUILDWID USSBLR7      32.48   30.73   46.94   46.59   56.20   59.78
SO BUILDWID USSBLR7      62.36   63.03   68.55   64.97   45.64   47.85
SO BUILDLEN USSBLR7      45.26   32.48   33.25   33.00   31.75   29.54
SO BUILDLEN USSBLR7      26.43   22.52   52.06   50.90   48.19   44.02
SO BUILDLEN USSBLR7      38.51   33.00   33.25   35.87   56.64   49.07
SO BUILDLEN USSBLR7      45.26   32.48   33.25   33.00   31.75   29.54
SO BUILDLEN USSBLR7      26.43   22.52   52.06   75.14   72.66   68.50
SO BUILDLEN USSBLR7      71.65   72.63   33.25   35.87   56.64   49.07
SO XBADJ    USSBLR7     -42.88  -58.76  -62.85  -65.02  -65.22  -63.44
SO XBADJ    USSBLR7     -59.73  -54.20  -47.03  -43.30  -38.25  -32.04
SO XBADJ    USSBLR7     -24.86  -16.92   -8.47   -3.15   -2.37   -1.52
SO XBADJ    USSBLR7      -2.37   26.28   29.60   32.02   33.47   33.90
SO XBADJ    USSBLR7      33.30   31.68   -5.03 -276.28 -273.75 -193.00
SO XBADJ    USSBLR7    -196.51 -194.05  -24.78  -32.72  -54.26  -47.55
SO YBADJ    USSBLR7     -22.61   25.04   17.27    8.98    0.42   -8.15
SO YBADJ    USSBLR7     -16.48  -24.31  -21.95  -25.26  -27.80  -29.51
SO YBADJ    USSBLR7     -30.31  -30.19  -29.16  -27.24   15.22   18.90
SO YBADJ    USSBLR7      22.61  -25.04  -17.27   -8.98   -0.42    8.15
SO YBADJ    USSBLR7      16.48   24.31   21.95   13.47  -28.19   19.21
SO YBADJ    USSBLR7      -8.06  -35.09   29.16   27.24  -15.22  -18.90

SO BUILDHGT USSBLR8      29.90   21.00   21.00   21.00   21.00   21.00
SO BUILDHGT USSBLR8      21.00   21.00   21.00   21.00   26.70   26.70
SO BUILDHGT USSBLR8      26.70   26.70   29.90   29.90   25.30   25.30
SO BUILDHGT USSBLR8      29.90   21.00   21.00   21.00   21.00   21.00
SO BUILDHGT USSBLR8      21.00   21.00   21.00   21.00   26.70   26.70
SO BUILDHGT USSBLR8      26.70   26.70   29.90   29.90   29.90   25.30
SO BUILDWID USSBLR8      22.52   24.07   25.28   25.72   25.38   24.27
SO BUILDWID USSBLR8      22.43   22.34   24.08   25.09   61.91   66.68
SO BUILDWID USSBLR8      69.42   70.05   27.37   26.43   73.92   69.74
SO BUILDWID USSBLR8      22.52   24.07   25.28   25.72   25.38   24.27
SO BUILDWID USSBLR8      22.43   22.34   24.08   25.09   61.91   66.68
SO BUILDWID USSBLR8      69.42   70.05   27.37   26.43   22.52   69.74
SO BUILDLEN USSBLR8      30.73   25.34   24.82   23.54   21.55   18.90
SO BUILDLEN USSBLR8      15.68   16.30   19.51   22.12   48.19   44.02
SO BUILDLEN USSBLR8      38.51   33.00   33.25   32.48   41.83   32.31
SO BUILDLEN USSBLR8      30.73   25.34   24.82   23.54   21.55   18.90
SO BUILDLEN USSBLR8      15.68   16.30   19.51   22.12   48.19   44.02
SO BUILDLEN USSBLR8      38.51   33.00   33.25   32.48   30.73   32.31
SO XBADJ    USSBLR8     -75.00  -30.55  -28.11  -24.82  -20.77  -16.09
SO XBADJ    USSBLR8     -10.92   -7.58   -5.55   -3.35   18.96   26.44
SO XBADJ    USSBLR8      33.12   38.80   43.30   46.48   48.25   46.42
SO XBADJ    USSBLR8      44.27    5.22    3.30    1.28   -0.78   -2.81
SO XBADJ    USSBLR8      -4.76   -8.72  -13.96  -18.78  -67.15  -70.46
SO XBADJ    USSBLR8     -71.63  -71.80  -76.54  -78.96  -78.98  -78.73
SO YBADJ    USSBLR8     -22.15  -10.99  -13.93  -16.44  -18.46  -19.91
SO YBADJ    USSBLR8     -20.76  -20.98  -20.57  -19.52  -40.17  -31.74
SO YBADJ    USSBLR8     -22.36  -12.29  -21.36  -10.63   26.12   37.37
SO YBADJ    USSBLR8      22.15   10.99   13.93   16.44   18.46   19.91
SO YBADJ    USSBLR8      20.76   20.98   20.57   19.52   40.17   31.74
SO YBADJ    USSBLR8      22.36   12.29   21.36   10.63   -0.42  -37.37
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**SUGAR CANE GROWERS (7/04)
SO EMISFACT SCG1FO-SCG8FO    MONTH 1 1 1 1 1 0 0 0 0 1 1 1

**US SUGAR BRYANT
SO EMISFACT USSBRY5     MONTH 1 1 1 1 0 0 0 0 0 1 1 1
SO EMISFACT USBRY123    MONTH 1 1 1 1 0 0 0 0 0 1 1 1

**OSCEOLA FARMS
SO EMISFACT OSBLR2     MONTH 1 1 1 1 0 0 0 0 0 1 1 1
SO EMISFACT OSBLR3     MONTH 1 1 1 1 0 0 0 0 0 1 1 1
SO EMISFACT OSBLR4     MONTH 1 1 1 1 0 0 0 0 0 1 1 1
SO EMISFACT OSBLR5A    MONTH 1 1 1 1 0 0 0 0 0 1 1 1
SO EMISFACT OSBLR5B    MONTH 1 1 1 1 0 0 0 0 0 1 1 1
SO EMISFACT OSBLR6     MONTH 1 1 1 1 0 0 0 0 0 1 1 1

   SRCGROUP ALL
SO FINISHED
**
****************************************
** ISCST3 Receptor Pathway
****************************************
**
**
RE STARTING
** BEGIN OF RISK GRID RECEPTORS
** X Grid Origin = 506250.00
** Y Grid Origin = 2956900.00
** No. of Tiers = 4
** Tier 1: Segment Distance = 2000.00
** Tier 1: Tier Spacing = 100.00
** Tier 2: Segment Distance = 5000.00
** Tier 2: Tier Spacing = 250.00
** Tier 3: Segment Distance = 10000.00
** Tier 3: Tier Spacing = 1000.00
** ----------
RE INCLUDED CLEW10.ROU
RE FINISHED
**
****************************************
** ISCST3 Meteorology Pathway
****************************************
**
**
ME STARTING
ME SURFFILE C:\AMODMET\PBIPBI87.SFC
ME PROFFILE C:\AMODMET\PBIPBI87.PFL
ME SURFDATA  12844  1987 WEST_PALM_BEACH/INT'L_ARPT
ME UAIRDATA  12844  1987 WEST_PALM_BEACH/INT'L_ARPT
ME PROFBASE  15 FEET
ME FINISHED
**
****************************************
** ISCST3 Output Pathway
****************************************
**
**
OU STARTING
   RECTABLE ALLAVE FIRST SECOND
** PLOTFILE 3 ALL 2ND SO2AQS03.P87
** PLOTFILE 24 ALL 2ND SO2AQS24.P87
OU FINISHED
```

AERBOB RELEASE 020304

AERMOD OUTPUT FILE NUMBER 1 :so2cl2.o87
AERMOD OUTPUT FILE NUMBER 2 :so2cl2.o88
AERMOD OUTPUT FILE NUMBER 3 :so2cl2.o89
AERMOD OUTPUT FILE NUMBER 4 :so2cl2.o90
AERMOD OUTPUT FILE NUMBER 5 :so2cl2.o91
First title for last output file is: 1987 USSC CLEWISTON LOW SULFUR/ AERMOD,SO2 CLASS II ANALYSIS 1/19/06
Second title for last output file is: 1987-1991 FORT MYERS/TAMPA AERMET

AVERAGING TIME	YEAR	CONC (ug/m3)	X (m)	Y (m)	PERIOD ENDING (YYMMDDHH)
SOURCE GROUP ID:	ALL				
Annual					
	1987	0.000	0.	0.	87123124
	1988	0.117	516250.	2966900.	88123124
	1989	0.000	0.	0.	89123124
	1990	0.164	516250.	2966900.	90123124
	1991	0.077	514250.	2966900.	91123124
HIGH 24-Hour					
	1987	27.095	505450.	2957400.	87051824
	1988	25.332	505350.	2956800.	88050324
	1989	25.220	505350.	2957200.	89092924
	1990	25.413	505450.	2957300.	90050424
	1991	30.584	505550.	2957200.	91052124
HSH 24-Hour					
	1987	23.322	505450.	2956900.	87053124
	1988	22.511	505250.	2956700.	88050324
	1989	21.183	505650.	2957500.	89061524
	1990	23.849	505450.	2957300.	90050324
	1991	25.368	505450.	2957200.	91050924
HIGH 3-Hour					
	1987	40.928	505450.	2956900.	87053103
	1988	45.793	515250.	2962900.	88030121
	1989	45.226	513250.	2962900.	89112806
	1990	42.317	505650.	2957000.	90070712
	1991	44.971	505650.	2957100.	91082912
HSH 3-Hour					
	1987	38.586	506449.	2957392.	87062612
	1988	40.805	515250.	2962900.	88020303
	1989	42.457	516250.	2965900.	89111506
	1990	40.124	505450.	2957300.	90052603
	1991	39.461	505550.	2957300.	91052103

All receptor computations reported with respect to a user-specified origin

GRID	0.00	0.00
DISCRETE	0.00	0.00

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CO STARTING
   TITLEONE 1991 USSC CLEWISTON LOW SULFUR/ AERMOD,SO2 CLASS II ANALYSIS 1/19/06
   TITLETWO 1987-1991 FORT MYERS/TAMPA AERMET
   MODELOPT DFAULT CONC
   AVERTIME PERIOD 24 3
   POLLUTID SO2
   EVENTFIL EVSO2CL2.I91 SOCONT
   RUNORNOT RUN
CO FINISHED
**
****************************************
** ISCST3 Source Pathway
****************************************
**
**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **

** US SUGAR CORP - CLEWISTON
SO LOCATION USSBLR1   POINT   506184.6 2956934.8 6
SO LOCATION USSBLR2   POINT   506171.8 2956934.8 6
SO LOCATION USSBLR4   POINT   506128.2 2956936.3 6
SO LOCATION USSBLR7   POINT   506095.7 2956956.1 6
SO LOCATION USSBLR8   POINT   506046.2 2956987.3 6

**US SUGAR-CLEWISTON
**BASELINE SOURCES
**PSD Baseline on-crop season
SO LOCATION USSBLR1B  POINT   506184.6 2956934.8 6
SO LOCATION USSBLR2B  POINT   506171.8 2956934.8 6
SO LOCATION USSBLR3B  POINT   506157.2 2956941.8 6
SO LOCATION EPELLET   POINT   506109.9 2956987.5 6
SO LOCATION WPELLET   POINT   506109.9 2956987.5 6

** SOUTHERN GARDENS CITRUS PSD
SO LOCATION SGARDDRY  POINT   487600.0 2957600.0  4
SO LOCATION SGARDBLR  POINT   487600.0 2957600.0  4

**SUGAR CANE GROWERS
** FUTURE ON CROP SEASON
SO LOCATION SCG1FO    POINT    534900.0  2953300.0   4
SO LOCATION SCG2FO    POINT    534900.0  2953300.0   4
SO LOCATION SCG3FO    POINT    534900.0  2953300.0   4
SO LOCATION SCG4FO    POINT    534900.0  2953300.0   4
SO LOCATION SCG5FO    POINT    534900.0  2953300.0   4
SO LOCATION SCG8FO    POINT    534900.0  2953300.0   4

**SUGAR CANE GROWERS PSD Baseline Sources for On Crop Season
SO LOCATION SCG1BO    POINT    534900.0  2953300.0   4
SO LOCATION SCG2BO    POINT    534900.0  2953300.0   4
SO LOCATION SCG3BO    POINT    534900.0  2953300.0   4
SO LOCATION SCG4BO    POINT    534900.0  2953300.0   4
SO LOCATION SCG5BO    POINT    534900.0  2953300.0   4
SO LOCATION SCG6BO    POINT    534900.0  2953300.0   4
SO LOCATION SCG7BO    POINT    534900.0  2953300.0   4

** SUGAR CANE GROWERS PSD Baseline Sources for Off Crop Season
SO LOCATION SCG1BF    POINT    534900.0  2953300.0   4
SO LOCATION SCG2BF    POINT    534900.0  2953300.0   4
SO LOCATION SCG3BF    POINT    534900.0  2953300.0   4
SO LOCATION SCG4BF    POINT    534900.0  2953300.0   4
SO LOCATION SCG5BF    POINT    534900.0  2953300.0   4
SO LOCATION SCG6BF    POINT    534900.0  2953300.0   4
SO LOCATION SCG7BF    POINT    534900.0  2953300.0   4

**US SUGAR BRYANT
SO LOCATION USSBRY5   POINT    537800.0  2969100.0   4
SO LOCATION USBRY123  POINT    537800.0  2969100.0   4
SO LOCATION USSBRY1B  POINT    537800.0  2969100.0   4
SO LOCATION USBRY23B  POINT    537800.0  2969100.0   4

**OSCEOLA FARMS
SO LOCATION OSBLR2    POINT    544200.0  2968000.0   4
SO LOCATION OSBLR3    POINT    544200.0  2968000.0   4
SO LOCATION OSBLR4    POINT    544200.0  2968000.0   4
SO LOCATION OSBLR5A   POINT    544200.0  2968000.0   4
SO LOCATION OSBLR5B   POINT    544200.0  2968000.0   4
SO LOCATION OSBLR6    POINT    544200.0  2968000.0   4
SO LOCATION OSBLR1B   POINT    544200.0  2968000.0   4
SO LOCATION OSBLR2B   POINT    544200.0  2968000.0   4
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SO LOCATION OSBLR3B   POINT    544200.0  2968000.0   4
SO LOCATION OSBLR4B   POINT    544200.0  2968000.0   4

**ATLANTIC SUGAR
SO LOCATION ATLSUG1   POINT    552900.0  2945200.0  5
SO LOCATION ATLSUG2   POINT    552900.0  2945200.0  5
SO LOCATION ATLSUG3   POINT    552900.0  2945200.0  5
SO LOCATION ATLSUG4   POINT    552900.0  2945200.0  5
SO LOCATION ATLSUG5   POINT    552900.0  2945200.0  5
**ATLANTIC SUGAR PSD BASELINE
SO LOCATION ATLSUG1B  POINT    552900.0  2945200.0  5
SO LOCATION ATLSUG2B  POINT    552900.0  2945200.0  5
SO LOCATION ATLSUG3B  POINT    552900.0  2945200.0  5
SO LOCATION ATLSUG4B  POINT    552900.0  2945200.0  5

**FPL MARTIN
SO LOCATION MARTAUX   POINT    543100.0  2992900.0  9
SO LOCATION MARTGEN   POINT    543100.0  2992900.0  9
SO LOCATION MART34    POINT    543100.0  2992900.0  9
SO LOCATION MART8OIL  POINT    543100.0  2992900.0  9

**BECHTEL INDIANTOWN PSD
SO LOCATION BECHTIND  POINT    545600.0  2991500.0  9

**FPL FORT MYERS
SO LOCATION FMYHR1_6  POINT    422100.0  2952900.0  2
** FPL FORT MYERS PSD BASELINE
SO LOCATION FMU1      POINT    422100.0  2952900.0  2
SO LOCATION FMU2      POINT    422100.0  2952900.0  2

**TECO-PHILLIPS
SO LOCATION TECOPH1   POINT    464300.0  3035400.0  19
SO LOCATION TECOPH2   POINT    464300.0  3035400.0  19

**LAKE WORTH UTILITIES
SO LOCATION LAKWTHU5  POINT   592800.0  2943700.0    8

**NEW HOPE POWER PARTNERSHIP (OKEELANTA)
SO LOCATION OKCOGENF  POINT   524100.0  2937400.0    4

**PALM BEACH CO RR
SO LOCATION PBCRRF  POINT     585800.0  2960200.0  5

**US SUGAR-CLEWISTON - MAX 3-HOUR EMISSIONS
SO SRCPARAM USSBLR1      3.75     64.9 339 25.3 2.44
SO SRCPARAM USSBLR2      3.38     64.9 339 25.3 2.44
SO SRCPARAM USSBLR4      4.79     45.7 344 27.0 2.50
SO SRCPARAM USSBLR7     17.39     68.6 441 28.8 2.44
SO SRCPARAM USSBLR8      7.79     60.7 403 23.1 3.33
**
**US SUGAR-CLEWISTON - PSD Baseline on-crop season - 24-HOUR MAX EMISSIONS
SO SRCPARAM USSBLR1B    -58.21     23.1     344.0    30.20      1.86
SO SRCPARAM USSBLR2B    -58.21     23.1     343.0    35.70      1.86
SO SRCPARAM USSBLR3B    -33.20     27.4     342.0    14.70      2.29
SO SRCPARAM EPELLET     -10.30     12.2     347.0    8.54       1.52
SO SRCPARAM WPELLET     -10.30     15.7     347.0    8.54       1.52

**SUGAR CANE GROWERS
SO SRCPARAM  SCG1FO  44.8    45.7    338.7   17.9    2.13
SO SRCPARAM  SCG2FO  44.8    45.7    338.7   21.41   2.13
SO SRCPARAM  SCG3FO  30.7    54.9    338.7   16.74   2.11
SO SRCPARAM  SCG4FO  76.6    54.9    338.7   19.28   2.88
SO SRCPARAM  SCG5FO  58.9    45.7    338.7   28.1    2.13
SO SRCPARAM  SCG8FO  49.8    47.2    338.7   15.16   2.9

**SUGAR CANE GROWERS PSD Baseline Sources for ON-Crop Season
SO SRCPARAM  SCG1BO  -29.8   24.1    474.8   15.94   1.68
SO SRCPARAM  SCG2BO  -29.8   24.1    480.4   17.88   1.68
SO SRCPARAM  SCG3BO  -22.4   24.1    516.5   16.5    1.68
SO SRCPARAM  SCG4BO  -25.9   26.2    338.2   9.88    1.62
SO SRCPARAM  SCG5BO  -39.7   24.1    527.6   28.42   2.03
SO SRCPARAM  SCG6BO  -18.6   12.2    605.4   6.53    1.52
SO SRCPARAM  SCG7BO  -44.6   12.2    605.6   17.2    1.52

**SUGAR CANE GROWERS PSD Baseline Sources for OFF-Crop Season
SO SRCPARAM  SCG1BF  -18.9   24.1    474.8   15.94   1.68
SO SRCPARAM  SCG2BF  -18.9   24.1    480.4   17.88   1.68
SO SRCPARAM  SCG3BF  -14.2   24.1    516.5   16.5    1.68
SO SRCPARAM  SCG4BF  -25.9   26.2    338.2   9.88    1.62
SO SRCPARAM  SCG5BF  0       24.1    527.6   28.42   2.03
SO SRCPARAM  SCG6BF  0       12.2    605.4   6.53    1.52
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SO SRCPARAM  SCG7BF  -15.3   12.2    605.6   17.2    1.52

** Atlantic Sugar-
SO SRCPARAM ATLSUG1    16.28    27.4    346.0   17.97     1.83
SO SRCPARAM ATLSUG2    16.28    27.4    350.0   23.36     1.83
SO SRCPARAM ATLSUG3    16.02    27.4    350.0   21.56     1.83
SO SRCPARAM ATLSUG4    16.21    27.4    344.0   25.16     1.83
SO SRCPARAM ATLSUG5     8.41    27.4    339.0   19.24     1.68
** Atlantic Sugar PSD Baseline
SO SRCPARAM ATLSUG1B  -17.24    18.9    506.0   12.70     1.92
SO SRCPARAM ATLSUG2B  -22.50    18.9    511.0   10.90     1.92
SO SRCPARAM ATLSUG3B  -16.88    21.9    522.0   17.50     1.83
SO SRCPARAM ATLSUG4B  -10.76    18.3    344.0   15.00     1.83

**US SUGAR BRYANT
SO SRCPARAM  USSBRY5      77.25     42.7     345.0    14.8       2.90
SO SRCPARAM  USBRY123    199.71     19.8     342.0    36.40      1.64
SO SRCPARAM  USSBRY1B    -36.50     19.8     494.0    44.30      1.68
SO SRCPARAM  USBRY23B    -73.00     19.8     344.0    37.90      1.68

**SOUTHERN GARDENS CITRUS - PSD
SO SRCPARAM SGARDDRY  5.29 38.1  316.0  7.45  1.73
SO SRCPARAM SGARDBLR  6.88 16.8  478.0 14.22  1.22

**OSCEOLA FARMS
SO SRCPARAM OSBLR2        17.12      27.4     341.0    15.82      1.52
SO SRCPARAM OSBLR3        30.74      27.4     342.0    16.86      1.91
SO SRCPARAM OSBLR4        12.70      27.4     340.7    16.67      1.83
SO SRCPARAM OSBLR5A        6.33      27.4     340.7    16.48      1.52
SO SRCPARAM OSBLR5B        6.33      27.4     340.7    16.48      1.52
SO SRCPARAM OSBLR6        33.39      27.4     341.0    18.19      1.88
** OSCEOLA FARMS PSD BASELINE
SO SRCPARAM OSBLR1B       -5.07      22.0     342.0    18.18      1.52
SO SRCPARAM OSBLR2B      -16.32      22.0     341.0    18.10      1.52
SO SRCPARAM OSBLR3B       -7.26      22.0     341.0    14.50      1.93
SO SRCPARAM OSBLR4B      -13.61      22.0     341.0    18.80      1.83

** NEW HOPE POWER PARTNERSHIP (OKEELANTA)
SO SRCPARAM OKCOGENF    57.5       60.7    450.9   19.39   3.05

**FPL MARTIN
SO SRCPARAM MARTAUX       12.90      18.3     535.4    15.24      1.10
SO SRCPARAM MARTGEN        0.51       7.6     785.9    39.62      0.30
SO SRCPARAM MART34       470.40      64.9     410.9    18.90      6.10
SO SRCPARAM MART8OIL      51.96      36.6     420.0    22.40      5.79

**BECHTEL INDIANTOWN PSD
SO SRCPARAM BECHTIND      75.64     150.9     333.2    30.50      4.88

**PALM BEACH CO RR
SO SRCPARAM PBCRRF        85.05      76.2     505.2    24.90      2.04

**FPL FORT MYERS
SO SRCPARAM  FMYHR1_6      3.86       38.1     377.6    14.20      5.79
** FPL FORT MYERS PSD BASELINE
SO SRCPARAM FMU1        -585.50     91.8     422.0    29.90      2.90
SO SRCPARAM FMU2       -1334.00    121.2     408.0    19.20      5.52

**TECO-PHILLIPS
SO SRCPARAM  TECOPH1      57.96      45.7     441.0    24.08      1.83
SO SRCPARAM  TECOPH2      57.96      45.7     450.0    24.08      1.83

**LAKE WORTH UTILITIES
SO SRCPARAM   LAKWTHU5     14.37   22.9    481.0   27.80   3.05

SO BUILDHGT USSBLR4       26.67   26.67   26.67   26.67   26.67   29.90
SO BUILDHGT USSBLR4       29.90   29.90   29.90   29.90   26.70   26.70
SO BUILDHGT USSBLR4       26.70   26.70   26.70   26.67   26.67   26.67
SO BUILDHGT USSBLR4       26.67   26.67   26.67   26.67   26.67   29.90
SO BUILDHGT USSBLR4       29.90   26.70   39.60   41.45   41.45   39.60
SO BUILDHGT USSBLR4       28.60   28.60   28.60   26.67   26.67   26.67
SO BUILDWID USSBLR4       55.65   27.04   29.31   30.69   31.14   33.25
SO BUILDWID USSBLR4       32.48   30.73   28.04   30.73   61.91   66.68
SO BUILDWID USSBLR4       69.42   70.05   68.55   27.04   45.64   47.85
SO BUILDWID USSBLR4       55.65   27.04   29.31   30.69   31.14   33.25
SO BUILDWID USSBLR4       32.48   42.04   79.52   46.59   56.20   90.49
SO BUILDWID USSBLR4       62.36   63.03   61.79   27.04   45.64   47.85
SO BUILDLEN USSBLR4       45.26   29.22   30.65   31.14   30.69   29.54
SO BUILDLEN USSBLR4       26.43   22.52   17.92   22.52   48.19   44.02
SO BUILDLEN USSBLR4       38.51   33.00   33.25   29.22   56.64   49.07
SO BUILDLEN USSBLR4       45.26   29.22   30.65   31.14   30.69   29.54
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SO	BUILDLEN	USSBLR4	26.43	59.42	75.33	75.14	72.66	77.94
SO	BUILDLEN	USSBLR4	71.65	72.63	71.40	29.22	56.64	49.07
SO	XBADJ	USSBLR4	-29.01	-29.40	-28.90	-27.52	-25.30	-81.64
SO	XBADJ	USSBLR4	-83.45	-82.73	-79.49	-78.71	-75.53	-70.06
SO	XBADJ	USSBLR4	-62.46	-52.96	-41.86	0.39	-27.52	-21.34
SO	XBADJ	USSBLR4	-16.25	0.18	-1.75	-3.63	-5.39	52.10
SO	XBADJ	USSBLR4	57.02	23.31	-237.96	-240.88	-236.47	-234.84
SO	XBADJ	USSBLR4	-158.90	-158.00	-152.30	-29.61	-29.12	-27.74
SO	YBADJ	USSBLR4	12.80	-5.71	-8.19	-10.42	-12.34	25.23
SO	YBADJ	USSBLR4	13.24	0.84	-11.58	-23.65	-20.29	-28.58
SO	YBADJ	USSBLR4	-36.00	-42.33	-47.37	-5.13	-13.30	-13.56
SO	YBADJ	USSBLR4	-12.80	5.71	8.19	10.42	12.34	-25.23
SO	YBADJ	USSBLR4	-13.24	-6.50	56.88	-0.41	-35.71	-56.73
SO	YBADJ	USSBLR4	-2.37	-22.96	-42.85	5.13	13.30	13.56
SO	BUILDHGT	USSBLR1	21.00	21.00	20.70	20.70	26.67	26.67
SO	BUILDHGT	USSBLR1	26.67	29.90	29.90	26.70	26.70	20.50
SO	BUILDHGT	USSBLR1	28.60	28.60	28.60	28.60	28.60	28.60
SO	BUILDHGT	USSBLR1	21.00	21.00	20.70	20.70	26.67	26.67
SO	BUILDHGT	USSBLR1	26.67	26.67	39.60	41.45	41.45	41.45
SO	BUILDHGT	USSBLR1	39.60	28.60	28.60	28.60	28.60	28.60
SO	BUILDWID	USSBLR1	32.97	44.52	55.67	63.00	31.14	30.65
SO	BUILDWID	USSBLR1	29.22	30.73	28.04	55.27	61.91	44.71
SO	BUILDWID	USSBLR1	62.36	63.03	61.79	58.68	53.78	47.24
SO	BUILDWID	USSBLR1	32.97	44.52	111.99	63.00	31.14	30.65
SO	BUILDWID	USSBLR1	29.22	26.91	79.52	46.59	56.20	64.10
SO	BUILDWID	USSBLR1	88.71	63.03	61.79	58.68	53.78	47.24
SO	BUILDLEN	USSBLR1	76.49	76.58	71.74	68.41	30.69	29.31
SO	BUILDLEN	USSBLR1	27.04	22.52	17.92	50.90	48.19	46.05
SO	BUILDLEN	USSBLR1	71.65	72.63	71.40	68.00	62.53	55.17
SO	BUILDLEN	USSBLR1	76.49	76.58	97.91	68.41	30.69	29.31
SO	BUILDLEN	USSBLR1	27.04	23.94	75.33	75.14	72.66	67.98
SO	BUILDLEN	USSBLR1	80.66	72.63	71.40	68.00	62.53	55.17
SO	XBADJ	USSBLR1	-111.54	-107.83	-113.18	-106.66	-67.52	-70.39
SO	XBADJ	USSBLR1	-71.12	-138.00	-135.88	-134.50	-129.04	-25.49
SO	XBADJ	USSBLR1	43.08	47.96	51.39	53.25	53.50	52.12
SO	XBADJ	USSBLR1	35.05	31.24	15.27	38.25	36.82	41.08
SO	XBADJ	USSBLR1	44.08	45.75	-181.57	-185.08	-182.96	-175.29
SO	XBADJ	USSBLR1	-181.72	-120.59	-122.79	-121.25	-116.03	-107.29
SO	YBADJ	USSBLR1	-15.25	-27.74	-21.23	-34.33	25.08	15.64
SO	YBADJ	USSBLR1	5.72	12.13	-10.06	-19.68	-38.14	-12.51
SO	YBADJ	USSBLR1	-32.70	-19.25	-5.22	8.97	22.89	36.12
SO	YBADJ	USSBLR1	15.25	27.74	49.39	34.34	-25.08	-15.64
SO	YBADJ	USSBLR1	-5.72	4.37	55.36	7.88	-17.85	-43.05
SO	YBADJ	USSBLR1	-57.61	19.25	5.22	-8.97	-22.89	-36.12
SO	BUILDHGT	USSBLR2	20.70	20.70	20.70	26.67	26.67	26.67
SO	BUILDHGT	USSBLR2	29.90	29.90	29.90	29.90	26.70	28.60
SO	BUILDHGT	USSBLR2	28.60	28.60	21.00	21.00	28.60	21.00
SO	BUILDHGT	USSBLR2	20.70	20.70	20.70	26.67	26.67	26.67
SO	BUILDHGT	USSBLR2	26.67	26.67	39.60	41.45	41.45	41.45
SO	BUILDHGT	USSBLR2	28.60	28.60	28.60	28.60	28.60	21.00
SO	BUILDWID	USSBLR2	36.22	46.66	55.67	30.69	31.14	30.65
SO	BUILDWID	USSBLR2	32.48	30.73	28.04	30.73	61.91	59.78
SO	BUILDWID	USSBLR2	62.36	63.03	54.72	44.52	53.78	67.67
SO	BUILDWID	USSBLR2	102.07	46.66	55.67	30.69	31.14	30.65
SO	BUILDWID	USSBLR2	29.22	26.91	79.52	46.59	56.20	64.10
SO	BUILDWID	USSBLR2	62.36	63.03	61.79	58.68	53.78	67.67
SO	BUILDLEN	USSBLR2	71.83	72.89	71.74	31.14	30.69	29.31
SO	BUILDLEN	USSBLR2	26.43	22.52	17.92	22.52	48.19	68.50
SO	BUILDLEN	USSBLR2	71.65	72.63	74.35	76.58	62.53	74.07
SO	BUILDLEN	USSBLR2	80.78	72.89	71.74	31.14	30.69	29.31
SO	BUILDLEN	USSBLR2	27.04	23.94	75.33	75.14	72.66	67.98
SO	BUILDLEN	USSBLR2	71.65	72.63	71.40	68.00	62.53	74.07
SO	XBADJ	USSBLR2	-113.60	-111.89	-106.78	-54.37	-57.71	-59.30
SO	XBADJ	USSBLR2	-123.89	-125.39	-123.08	-121.90	-117.01	47.97
SO	XBADJ	USSBLR2	52.88	56.19	35.17	37.18	55.72	37.79
SO	XBADJ	USSBLR2	32.83	39.00	35.04	23.22	27.02	29.99
SO	XBADJ	USSBLR2	32.05	33.14	-194.38	-197.69	-194.99	-186.37
SO	XBADJ	USSBLR2	-124.54	-128.82	-129.19	-125.63	-118.26	-111.86
SO	YBADJ	USSBLR2	-6.12	-19.51	-32.32	23.95	16.85	9.23
SO	YBADJ	USSBLR2	29.58	9.91	-10.06	-29.72	-33.77	-38.76
SO	YBADJ	USSBLR2	-24.48	-9.45	-24.35	-11.41	35.50	38.71
SO	YBADJ	USSBLR2	39.04	19.51	32.32	-23.95	-16.85	-9.23
SO	YBADJ	USSBLR2	-1.34	6.59	55.36	5.66	-22.23	-49.45
SO	YBADJ	USSBLR2	24.48	9.45	-5.87	-21.00	-35.50	-38.71
SO	BUILDHGT	USSBLR7	26.67	29.90	29.90	29.90	29.90	29.90
SO	BUILDHGT	USSBLR7	29.90	29.90	26.70	26.70	26.70	26.70

SO	BUILDHGT	USSBLR7	26.70	26.70	26.70	26.70	26.67	26.67
SO	BUILDHGT	USSBLR7	26.67	29.90	29.90	29.90	29.90	29.90
SO	BUILDHGT	USSBLR7	29.90	29.90	26.70	41.45	41.45	28.60
SO	BUILDHGT	USSBLR7	28.60	28.60	26.70	26.70	26.67	26.67
SO	BUILDWID	USSBLR7	55.65	26.43	29.54	31.75	33.00	33.25
SO	BUILDWID	USSBLR7	32.48	30.73	46.94	55.27	61.91	66.68
SO	BUILDWID	USSBLR7	69.42	70.05	68.55	64.97	45.64	47.85
SO	BUILDWID	USSBLR7	55.65	26.43	29.54	31.75	33.00	33.25
SO	BUILDWID	USSBLR7	32.48	30.73	46.94	46.59	56.20	59.78
SO	BUILDWID	USSBLR7	62.36	63.03	68.55	64.97	45.64	47.85
SO	BUILDLEN	USSBLR7	45.26	32.48	33.25	33.00	31.75	29.54
SO	BUILDLEN	USSBLR7	26.43	22.52	52.06	50.90	48.19	44.02
SO	BUILDLEN	USSBLR7	38.51	33.00	33.25	35.87	56.64	49.07
SO	BUILDLEN	USSBLR7	45.26	32.48	33.25	33.00	31.75	29.54
SO	BUILDLEN	USSBLR7	26.43	22.52	52.06	75.14	72.66	68.50
SO	BUILDLEN	USSBLR7	71.65	72.63	33.25	35.87	56.64	49.07
SO	XBADJ	USSBLR7	-42.88	-58.76	-62.85	-65.02	-65.22	-63.44
SO	XBADJ	USSBLR7	-59.73	-54.20	-47.03	-43.30	-38.25	-32.04
SO	XBADJ	USSBLR7	-24.86	-16.92	-8.47	-3.15	-2.37	-1.52
SO	XBADJ	USSBLR7	-2.37	26.28	29.60	32.02	33.47	33.90
SO	XBADJ	USSBLR7	33.30	31.68	-5.03	-276.28	-273.75	-193.00
SO	XBADJ	USSBLR7	-196.51	-194.05	-24.78	-32.72	-54.26	-47.55
SO	YBADJ	USSBLR7	-22.61	25.04	17.27	8.98	0.42	-8.15
SO	YBADJ	USSBLR7	-16.48	-24.31	-21.95	-25.26	-27.80	-29.51
SO	YBADJ	USSBLR7	-30.31	-30.19	-29.16	-27.24	15.22	18.90
SO	YBADJ	USSBLR7	22.61	-25.04	-17.27	-8.98	-0.42	8.15
SO	YBADJ	USSBLR7	16.48	24.31	21.95	13.47	-28.19	19.21
SO	YBADJ	USSBLR7	-8.06	-35.09	29.16	27.24	-15.22	-18.90
SO	BUILDHGT	USSBLR8	29.90	21.00	21.00	21.00	21.00	21.00
SO	BUILDHGT	USSBLR8	21.00	21.00	21.00	21.00	26.70	26.70
SO	BUILDHGT	USSBLR8	26.70	26.70	29.90	29.90	25.30	25.30
SO	BUILDHGT	USSBLR8	29.90	21.00	21.00	21.00	21.00	21.00
SO	BUILDHGT	USSBLR8	21.00	21.00	21.00	21.00	26.70	26.70
SO	BUILDHGT	USSBLR8	26.70	26.70	29.90	29.90	29.90	25.30
SO	BUILDWID	USSBLR8	22.52	24.07	25.28	25.72	25.38	24.27
SO	BUILDWID	USSBLR8	22.43	22.34	24.08	25.09	61.91	66.68
SO	BUILDWID	USSBLR8	69.42	70.05	27.37	26.43	73.92	69.74
SO	BUILDWID	USSBLR8	22.52	24.07	25.28	25.72	25.38	24.27
SO	BUILDWID	USSBLR8	22.43	22.34	24.08	25.09	61.91	66.68
SO	BUILDWID	USSBLR8	69.42	70.05	27.37	26.43	22.52	69.74
SO	BUILDLEN	USSBLR8	30.73	25.34	24.82	23.54	21.55	18.90
SO	BUILDLEN	USSBLR8	15.68	16.30	19.51	22.12	48.19	44.02
SO	BUILDLEN	USSBLR8	38.51	33.00	33.25	32.48	41.83	32.31
SO	BUILDLEN	USSBLR8	30.73	25.34	24.82	23.54	21.55	18.90
SO	BUILDLEN	USSBLR8	15.68	16.30	19.51	22.12	48.19	44.02
SO	BUILDLEN	USSBLR8	38.51	33.00	33.25	32.48	30.73	32.31
SO	XBADJ	USSBLR8	-75.00	-30.55	-28.11	-24.82	-20.77	-16.09
SO	XBADJ	USSBLR8	-10.92	-7.58	-5.55	-3.35	18.96	26.44
SO	XBADJ	USSBLR8	33.12	38.80	43.30	46.48	48.25	46.42
SO	XBADJ	USSBLR8	44.27	5.22	3.30	1.28	-0.78	-2.81
SO	XBADJ	USSBLR8	-4.76	-8.72	-13.96	-18.78	-67.15	-70.46
SO	XBADJ	USSBLR8	-71.63	-71.80	-76.54	-78.96	-78.98	-78.73
SO	YBADJ	USSBLR8	-22.15	-10.99	-13.93	-16.44	-18.46	-19.91
SO	YBADJ	USSBLR8	-20.76	-20.98	-20.57	-19.52	-40.17	-31.74
SO	YBADJ	USSBLR8	-22.36	-12.29	-21.36	-10.63	26.12	37.37
SO	YBADJ	USSBLR8	22.15	10.99	13.93	16.44	18.46	19.91
SO	YBADJ	USSBLR8	20.76	20.98	20.57	19.52	40.17	31.74
SO	YBADJ	USSBLR8	22.36	12.29	21.36	10.63	-0.42	-37.37

** PSD BASELINE DOWNWASH

SO	BUILDHGT	USSBLR3B	20.70	20.50	20.50	20.50	20.50	20.50
SO	BUILDHGT	USSBLR3B	20.50	20.50	20.50	20.50	20.50	21.00
SO	BUILDHGT	USSBLR3B	20.70	20.50	20.50	20.50	20.50	20.50
SO	BUILDHGT	USSBLR3B	20.70	20.50	20.50	20.50	20.50	20.50
SO	BUILDHGT	USSBLR3B	20.50	20.50	20.50	20.50	20.50	28.60
SO	BUILDHGT	USSBLR3B	28.60	28.60	28.60	28.60	21.00	20.70
SO	BUILDWID	USSBLR3B	33.74	43.68	46.05	47.03	46.58	44.71
SO	BUILDWID	USSBLR3B	41.49	37.00	31.39	37.00	41.49	85.57
SO	BUILDWID	USSBLR3B	105.13	47.03	46.05	43.68	39.97	35.05
SO	BUILDWID	USSBLR3B	99.58	43.68	46.05	47.03	46.58	44.71
SO	BUILDWID	USSBLR3B	41.49	37.00	31.39	37.00	41.49	59.78
SO	BUILDWID	USSBLR3B	62.36	63.03	61.79	58.68	32.97	24.69
SO	BUILDLEN	USSBLR3B	57.72	41.49	44.71	46.58	47.03	46.05
SO	BUILDLEN	USSBLR3B	43.68	39.97	35.05	39.97	43.68	93.35
SO	BUILDLEN	USSBLR3B	102.68	46.58	44.71	41.49	37.00	31.39
SO	BUILDLEN	USSBLR3B	80.78	41.49	44.71	46.58	47.03	46.05
SO	BUILDLEN	USSBLR3B	43.68	39.97	35.05	39.97	43.68	68.50
SO	BUILDLEN	USSBLR3B	71.65	72.63	71.40	68.00	76.49	54.26
SO	XBADJ	USSBLR3B	-117.97	-29.84	-27.22	-23.78	-19.61	-14.84

SO XBADJ	USSBLR3B	-9.62	-4.11	1.52	1.66	1.74	39.29
SO XBADJ	USSBLR3B	37.56	1.68	1.56	1.38	1.17	0.92
SO XBADJ	USSBLR3B	37.20	-11.65	-17.49	-22.80	-27.43	-31.21
SO XBADJ	USSBLR3B	-34.05	-35.86	-36.57	-41.63	-45.42	-132.64
SO XBADJ	USSBLR3B	-140.25	-143.59	-142.57	-137.22	-124.00	-118.88
SO YBADJ	USSBLR3B	-22.98	-23.58	-24.80	-25.27	-24.97	-23.91
SO YBADJ	USSBLR3B	-22.13	-19.67	-16.61	-13.06	-9.10	-50.41
SO YBADJ	USSBLR3B	-41.83	3.91	8.19	12.21	15.87	19.05
SO YBADJ	USSBLR3B	55.90	23.58	24.80	25.27	24.97	23.91
SO YBADJ	USSBLR3B	22.13	19.67	16.61	13.06	9.10	37.52
SO YBADJ	USSBLR3B	20.45	2.75	-15.03	-32.35	-15.05	-7.16
SO BUILDHGT	USSBLR1B	21.00	21.00	20.70	20.50	20.50	20.50
SO BUILDHGT	USSBLR1B	20.50	20.50	20.50	20.50	20.50	20.50
SO BUILDHGT	USSBLR1B	28.60	28.60	28.60	28.60	28.60	28.60
SO BUILDHGT	USSBLR1B	21.00	21.00	20.70	20.50	20.50	20.50
SO BUILDHGT	USSBLR1B	20.50	20.50	20.50	20.50	20.50	20.50
SO BUILDHGT	USSBLR1B	28.60	28.60	28.60	28.60	28.60	28.60
SO BUILDWID	USSBLR1B	32.97	44.52	48.51	47.03	46.58	44.71
SO BUILDWID	USSBLR1B	41.49	37.00	31.39	37.00	41.49	44.71
SO BUILDWID	USSBLR1B	62.36	63.03	61.79	58.68	53.78	47.24
SO BUILDWID	USSBLR1B	32.97	44.52	104.82	47.03	46.58	44.71
SO BUILDWID	USSBLR1B	41.49	37.00	31.39	37.00	41.49	44.71
SO BUILDWID	USSBLR1B	62.36	63.03	61.79	58.68	53.78	47.24
SO BUILDLEN	USSBLR1B	76.49	76.58	59.33	46.58	47.03	46.05
SO BUILDLEN	USSBLR1B	43.68	39.97	35.05	39.97	43.68	46.05
SO BUILDLEN	USSBLR1B	71.65	72.63	71.40	68.00	62.53	55.17
SO BUILDLEN	USSBLR1B	76.49	76.58	97.91	46.58	47.03	46.05
SO BUILDLEN	USSBLR1B	43.68	39.97	35.05	39.97	43.68	46.05
SO BUILDLEN	USSBLR1B	71.65	72.63	71.40	68.00	62.53	55.17
SO XBADJ	USSBLR1B	-111.54	-107.83	-113.18	-36.03	-36.11	-35.09
SO XBADJ	USSBLR1B	-33.00	-29.91	-25.91	-26.57	-26.43	-25.48
SO XBADJ	USSBLR1B	43.08	47.96	51.39	53.25	53.50	52.12
SO XBADJ	USSBLR1B	35.05	31.24	15.27	-10.55	-10.92	-10.97
SO XBADJ	USSBLR1B	-10.68	-10.06	-9.14	-13.40	-17.24	-20.57
SO XBADJ	USSBLR1B	-114.73	-120.59	-122.79	-121.25	-116.03	-107.29
SO YBADJ	USSBLR1B	-15.25	-27.74	-24.81	0.25	-1.97	-4.12
SO YBADJ	USSBLR1B	-6.16	-8.00	-9.60	-10.91	-11.89	-12.51
SO YBADJ	USSBLR1B	-32.70	-19.25	-5.22	8.97	22.89	36.12
SO YBADJ	USSBLR1B	15.25	27.74	52.97	-0.25	1.97	4.12
SO YBADJ	USSBLR1B	6.16	8.00	9.60	10.91	11.89	12.51
SO YBADJ	USSBLR1B	32.70	19.25	5.22	-8.97	-22.89	-36.12
SO BUILDHGT	USSBLR2B	20.70	20.70	20.50	20.50	20.50	20.50
SO BUILDHGT	USSBLR2B	20.50	20.50	20.50	20.50	20.50	28.60
SO BUILDHGT	USSBLR2B	28.60	28.60	21.00	21.00	28.60	21.00
SO BUILDHGT	USSBLR2B	20.70	20.70	20.50	20.50	20.50	20.50
SO BUILDHGT	USSBLR2B	20.50	20.50	20.50	20.50	20.50	28.60
SO BUILDHGT	USSBLR2B	28.60	28.60	28.60	28.60	28.60	21.00
SO BUILDWID	USSBLR2B	33.74	41.76	46.05	47.03	46.58	44.71
SO BUILDWID	USSBLR2B	41.49	37.00	31.39	37.00	41.49	59.78
SO BUILDWID	USSBLR2B	62.36	63.03	54.72	44.52	53.78	67.67
SO BUILDWID	USSBLR2B	99.58	103.78	46.05	47.03	46.58	44.71
SO BUILDWID	USSBLR2B	41.49	37.00	31.39	37.00	41.49	59.78
SO BUILDWID	USSBLR2B	62.36	63.03	61.79	58.68	53.78	67.67
SO BUILDLEN	USSBLR2B	57.72	59.43	44.71	46.58	47.03	46.05
SO BUILDLEN	USSBLR2B	43.68	39.97	35.05	39.97	43.68	68.50
SO BUILDLEN	USSBLR2B	71.65	72.63	74.35	76.58	62.53	74.07
SO BUILDLEN	USSBLR2B	80.78	87.73	44.71	46.58	47.03	46.05
SO BUILDLEN	USSBLR2B	43.68	39.97	35.05	39.97	43.68	68.50
SO BUILDLEN	USSBLR2B	71.65	72.63	71.40	68.00	62.53	74.07
SO XBADJ	USSBLR2B	-113.60	-111.89	-28.46	-27.80	-26.30	-24.00
SO XBADJ	USSBLR2B	-20.97	-17.30	-13.11	-13.97	-14.40	47.97
SO XBADJ	USSBLR2B	52.88	56.19	35.17	37.18	55.72	37.79
SO XBADJ	USSBLR2B	32.83	24.17	-16.25	-18.78	-20.73	-22.05
SO XBADJ	USSBLR2B	-22.71	-22.67	-21.95	-26.01	-29.27	-116.47
SO XBADJ	USSBLR2B	-124.54	-128.82	-129.19	-125.63	-118.26	-111.86
SO YBADJ	USSBLR2B	-7.36	-21.96	-8.63	-9.56	-10.20	-10.52
SO YBADJ	USSBLR2B	-10.53	-10.22	-9.60	-8.69	-7.51	-38.76
SO YBADJ	USSBLR2B	-24.48	-9.45	-24.35	-11.41	35.50	38.71
SO YBADJ	USSBLR2B	40.28	52.97	8.63	9.56	10.20	10.52
SO YBADJ	USSBLR2B	10.53	10.22	9.60	8.69	7.51	38.76
SO YBADJ	USSBLR2B	24.48	9.45	-5.87	-21.00	-35.50	-38.71
SO BUILDHGT	EPELLET	15.50	15.50	15.50	15.50	15.50	15.50
SO BUILDHGT	EPELLET	15.50	15.50	15.50	15.50	15.50	15.50
SO BUILDHGT	EPELLET	15.50	15.50	15.50	15.50	15.50	15.50
SO BUILDHGT	EPELLET	15.50	15.50	15.50	15.50	15.50	15.50

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SO BUILDHGT EPELLET    15.50   15.50   15.50   15.50   15.50   20.50
SO BUILDHGT EPELLET    28.60   28.60   28.60   20.50   15.50   15.50
SO BUILDWID EPELLET    18.82   20.91   22.37   23.15   23.23   22.60
SO BUILDWID EPELLET    21.28   19.31   16.76   19.31   21.28   22.60
SO BUILDWID EPELLET    23.23   23.15   22.37   20.91   18.82   16.15
SO BUILDWID EPELLET    18.82   20.91   22.37   23.15   23.23   22.60
SO BUILDWID EPELLET    21.28   19.31   16.76   19.31   21.28   44.71
SO BUILDWID EPELLET    62.36   63.03   61.79   56.38   18.82   16.15
SO BUILDLEN EPELLET    19.31   21.28   22.60   23.23   23.15   22.37
SO BUILDLEN EPELLET    20.91   18.82   16.15   18.82   20.91   22.37
SO BUILDLEN EPELLET    23.15   23.23   22.60   21.28   19.31   16.76
SO BUILDLEN EPELLET    19.31   21.28   22.60   23.23   23.15   22.37
SO BUILDLEN EPELLET    20.91   18.82   16.15   18.82   20.91   46.05
SO BUILDLEN EPELLET    71.65   72.63   71.40  123.98   19.31   16.76
SO XBADJ    EPELLET   -22.34  -22.66  -22.29  -21.24  -19.55  -17.27
SO XBADJ    EPELLET   -14.46  -11.21   -7.62   -6.71   -5.59   -4.31
SO XBADJ    EPELLET    -2.89   -1.39    0.15    1.69    3.18    4.58
SO XBADJ    EPELLET     3.02    1.38   -0.31   -1.98   -3.60   -5.10
SO XBADJ    EPELLET    -6.46   -7.61   -8.54  -12.11  -15.32 -111.61
SO XBADJ    EPELLET  -205.83 -208.99 -205.79 -184.49  -22.50  -21.34
SO YBADJ    EPELLET    -2.70   -4.86   -6.88   -8.68  -10.22  -11.45
SO YBADJ    EPELLET   -12.33  -12.84  -12.96  -12.68  -12.02  -10.99
SO YBADJ    EPELLET    -9.63   -7.98   -6.08   -4.00   -1.80    0.46
SO YBADJ    EPELLET     2.70    4.86    6.88    8.68   10.22   11.45
SO YBADJ    EPELLET    12.33   12.84   12.96   12.68   12.02   20.84
SO YBADJ    EPELLET    25.10   -4.06  -33.09  -34.62    1.80   -0.46

SO BUILDHGT WPELLET    15.50   15.50   15.50   15.50   15.50   15.50
SO BUILDHGT WPELLET    15.50   15.50   15.50   15.50   15.50   15.50
SO BUILDHGT WPELLET    15.50   15.50   15.50   15.50   15.50   15.50
SO BUILDHGT WPELLET    15.50   15.50   15.50   15.50   15.50   15.50
SO BUILDHGT WPELLET    15.50   15.50   15.50   15.50   15.50   20.50
SO BUILDHGT WPELLET    28.60   28.60   28.60   20.50   15.50   15.50
SO BUILDWID WPELLET    18.82   20.91   22.37   23.15   23.23   22.60
SO BUILDWID WPELLET    21.28   19.31   16.76   19.31   21.28   22.60
SO BUILDWID WPELLET    23.23   23.15   22.37   20.91   18.82   16.15
SO BUILDWID WPELLET    18.82   20.91   22.37   23.15   23.23   22.60
SO BUILDWID WPELLET    21.28   19.31   16.76   19.31   21.28   44.71
SO BUILDWID WPELLET    62.36   63.03   61.79   56.38   18.82   16.15
SO BUILDLEN WPELLET    19.31   21.28   22.60   23.23   23.15   22.37
SO BUILDLEN WPELLET    20.91   18.82   16.15   18.82   20.91   22.37
SO BUILDLEN WPELLET    23.15   23.23   22.60   21.28   19.31   16.76
SO BUILDLEN WPELLET    19.31   21.28   22.60   23.23   23.15   22.37
SO BUILDLEN WPELLET    20.91   18.82   16.15   18.82   20.91   46.05
SO BUILDLEN WPELLET    71.65   72.63   71.40  123.98   19.31   16.76
SO XBADJ    WPELLET   -22.34  -22.66  -22.29  -21.24  -19.55  -17.27
SO XBADJ    WPELLET   -14.46  -11.21   -7.62   -6.71   -5.59   -4.31
SO XBADJ    WPELLET    -2.89   -1.39    0.15    1.69    3.18    4.58
SO XBADJ    WPELLET     3.02    1.38   -0.31   -1.98   -3.60   -5.10
SO XBADJ    WPELLET    -6.46   -7.61   -8.54  -12.11  -15.32 -111.61
SO XBADJ    WPELLET  -205.83 -208.99 -205.79 -184.49  -22.50  -21.34
SO YBADJ    WPELLET    -2.70   -4.86   -6.88   -8.68  -10.22  -11.45
SO YBADJ    WPELLET   -12.33  -12.84  -12.96  -12.68  -12.02  -10.99
SO YBADJ    WPELLET    -9.63   -7.98   -6.08   -4.00   -1.80    0.46
SO YBADJ    WPELLET     2.70    4.86    6.88    8.68   10.22   11.45
SO YBADJ    WPELLET    12.33   12.84   12.96   12.68   12.02   20.84
SO YBADJ    WPELLET    25.10   -4.06  -33.09  -34.62    1.80   -0.46

**US SUGAR CLEWISTON PSD BASELINE SOURCES
SO EMISFACT USSBLR1B-USSBLR3B MONTH 1 1 1 1 0 0 0 0 0 1 1 1
SO EMISFACT EPELLET    MONTH 1 1 1 1 0 0 0 0 0 1 1 1
SO EMISFACT WPELLET    MONTH 1 1 1 1 0 0 0 0 0 1 1 1

**SUGAR CANE GROWERS
SO EMISFACT SCG1FO-SCG8FO    MONTH 1 1 1 1 1 0 0 0 0 1 1 1
SO EMISFACT SCG1BO-SCG7BO    MONTH 1 1 1 1 0 0 0 0 0 1 1 1
SO EMISFACT SCG1BF-SCG7BF    MONTH 0 0 0 0 1 1 1 1 1 0 0 0

**US SUGAR BRYANT
SO EMISFACT USSBRY5     MONTH 1 1 1 1 0 0 0 0 0 1 1 1
SO EMISFACT USBRY123    MONTH 1 1 1 1 0 0 0 0 0 1 1 1
SO EMISFACT USSBRY1B    MONTH 1 1 1 1 0 0 0 0 0 1 1 1
SO EMISFACT USBRY23B    MONTH 1 1 1 1 0 0 0 0 0 1 1 1

**OSCEOLA FARMS
SO EMISFACT OSBLR2     MONTH 1 1 1 1 0 0 0 0 0 1 1 1
SO EMISFACT OSBLR3     MONTH 1 1 1 1 0 0 0 0 0 1 1 1
SO EMISFACT OSBLR4     MONTH 1 1 1 1 0 0 0 0 0 1 1 1
SO EMISFACT OSBLR5A    MONTH 1 1 1 1 0 0 0 0 0 1 1 1
```

```
SO EMISFACT OSBLR5B    MONTH 1 1 1 1 0 0 0 0 0 1 1 1
SO EMISFACT OSBLR6     MONTH 1 1 1 1 0 0 0 0 0 1 1 1
SO EMISFACT OSBLR1B    MONTH 1 1 1 1 0 0 0 0 0 1 1 1
SO EMISFACT OSBLR2B    MONTH 1 1 1 1 0 0 0 0 0 1 1 1
SO EMISFACT OSBLR3B    MONTH 1 1 1 1 0 0 0 0 0 1 1 1
SO EMISFACT OSBLR4B    MONTH 1 1 1 1 0 0 0 0 0 1 1 1

**ATLANTIC SUGAR
SO EMISFACT ATLSUG1-ATLSUG4    MONTH 1 1 1 1 0 0 0 0 0 1 1 1
SO EMISFACT ATLSUG1B-ATLSUG4B  MONTH 1 1 1 1 0 0 0 0 0 1 1 1
   SRCGROUP ALL
SO FINISHED
**
*****************************************
** ISCST3 Receptor Pathway
*****************************************
**
**
RE STARTING
** BEGIN OF RISK GRID RECEPTORS
** X Grid Origin = 506250.00
** Y Grid Origin = 2956900.00
** No. of Tiers = 4
** Tier 1: Segment Distance = 2000.00
** Tier 1: Tier Spacing = 100.00
** Tier 2: Segment Distance = 5000.00
** Tier 2: Tier Spacing = 250.00
** Tier 3: Segment Distance = 10000.00
** Tier 3: Tier Spacing = 1000.0
** ----------
RE INCLUDED CLEW10.ROU
RE FINISHED
**
*****************************************
** ISCST3 Meteorology Pathway
*****************************************
**
**
ME STARTING
ME SURFFILE C:\AMODMET\PBIPBI91.SFC
ME PROFFILE C:\AMODMET\PBIPBI91.PFL
ME SURFDATA  12844  1991 WEST_PALM_BEACH/INT'L_ARPT
ME UAIRDATA  12844  1991 WEST_PALM_BEACH/INT'L_ARPT
ME PROFBASE  15 FEET
ME FINISHED
**
*****************************************
** ISCST3 Output Pathway
*****************************************
**
**
OU STARTING
   RECTABLE ALLAVE FIRST SECOND
** PLOTFILE 3 ALL 2ND SO2CL203.P87
** PLOTFILE 24 ALL 2ND SO2CL224.P87
OU FINISHED
```

```
1990 USSC CLEWISTON LOW SULFUR/ CALPUFF, SO2 CLASS I ANALYSIS 1/23/06
PSD CLASS I ANALYSIS, ALL PSD BASELINE SOURCES
4-km grid, using MM4 DATA, SOUTH FLORIDA DOMAIN, 1990, ENP RECEPTORS
---------------- Run title (3 lines) ------------------------------------------

                  CALPUFF MODEL CONTROL FILE
                  --------------------------

------------------------------------------------------------------------------

INPUT GROUP: 0 -- Input and Output File Names

--------------
Default Name  Type          File Name
------------  ----          ---------
CALMET.DAT    input    * METDAT =             *
   or
ISCMET.DAT    input    * ISCDAT =             *
   or
PLMMET.DAT    input    * PLMDAT =             *
   or
PROFILE.DAT   input    * PRFDAT =             *
SURFACE.DAT   input    * SFCDAT =             *
RESTARTB.DAT  input    * RSTARTB=             *
------------------------------------------------------------------------------
CALPUFF.LST   output   ! PUFLST =SO2C1BAS.LST !
CONC.DAT      output   ! CONDAT =SO2C1BAS.CON !
DFLX.DAT      output   * DFDAT  =             *
WFLX.DAT      output   * WFDAT  =             *

VISB.DAT      output   * VISDAT =             *
RESTARTE.DAT  output   * RSTARTE=             *
------------------------------------------------------------------------------
Emission Files
--------------
PTEMARB.DAT   input    * PTDAT  =             *
VOLEMARB.DAT  input    * VOLDAT =             *
BAEMARB.DAT   input    * ARDAT  =             *
LNEMARB.DAT   input    * LNDAT  =             *
------------------------------------------------------------------------------
Other Files
-----------
OZONE.DAT     input    * OZDAT  =             *
VD.DAT        input    * VDDAT  =             *
CHEM.DAT      input    * CHEMDAT=             *
H2O2.DAT      input    * H2O2DAT=             *
HILL.DAT      input    * HILDAT=             *
HILLRCT.DAT   input    * RCTDAT=             *
COASTLN.DAT   input    * CSTDAT=             *
FLUXBDY.DAT   input    * BDYDAT=             *
BCON.DAT      input    * BCNDAT=             *
DEBUG.DAT     output   * DEBUG =             *
MASSFLX.DAT   output   * FLXDAT=             *
MASSBAL.DAT   output   * BALDAT=             *
FOG.DAT       output   * FOGDAT=             *
------------------------------------------------------------------------------
All file names will be converted to lower case if LCFILES = T
Otherwise, if LCFILES = F, file names will be converted to UPPER CASE
        T = lower case      ! LCFILES = T !
        F = UPPER CASE
NOTE: (1) file/path names can be up to 70 characters in length


Provision for multiple input files
----------------------------------

    Number of CALMET.DAT files for run (NMETDAT)
                                  Default: 1       ! NMETDAT =   12  !

    Number of PTEMARB.DAT files for run (NPTDAT)
                                  Default: 0       ! NPTDAT =  0  !

    Number of BAEMARB.DAT files for run (NARDAT)
                                  Default: 0       ! NARDAT =  0  !

    Number of VOLEMARB.DAT files for run (NVOLDAT)
                                  Default: 0       ! NVOLDAT =  0  !

!END!

-------------
```

Subgroup (0a)

The following CALMET.DAT filenames are processed in sequence if NMETDAT>1

Default Name	Type	File Name
CALMET.DAT	input	! METDAT =D:\calmet\ENP90\JAN90.DAT ! !END!
CALMET.DAT	input	! METDAT =D:\calmet\ENP90\FEB90.DAT ! !END!
CALMET.DAT	input	! METDAT =D:\calmet\ENP90\MAR90.DAT ! !END!
CALMET.DAT	input	! METDAT =D:\calmet\ENP90\APR90.DAT ! !END!
CALMET.DAT	input	! METDAT =D:\calmet\ENP90\MAY90.DAT ! !END!
CALMET.DAT	input	! METDAT =D:\calmet\ENP90\JUN90.DAT ! !END!
CALMET.DAT	input	! METDAT =D:\calmet\ENP90\JUL90.DAT ! !END!
CALMET.DAT	input	! METDAT =D:\calmet\ENP90\AUG90.DAT ! !END!
CALMET.DAT	input	! METDAT =D:\calmet\ENP90\SEP90.DAT ! !END!
CALMET.DAT	input	! METDAT =D:\calmet\ENP90\OCT90.DAT ! !END!
CALMET.DAT	input	! METDAT =D:\calmet\ENP90\NOV90.DAT ! !END!
CALMET.DAT	input	! METDAT =D:\calmet\ENP90\DEC90.DAT ! !END!

INPUT GROUP: 1 -- General run control parameters

Option to run all periods found
in the met. file (METRUN) Default: 0 ! METRUN = 0 !

METRUN = 0 - Run period explicitly defined below
METRUN = 1 - Run all periods in met. file

Starting date: Year (IBYR) -- No default ! IBYR = 1990 !
(used only if Month (IBMO) -- No default ! IBMO = 1 !
METRUN = 0) Day (IBDY) -- No default ! IBDY = 6 !
Hour (IBHR) -- No default ! IBHR = 1 !

Base time zone (XBTZ) -- No default ! XBTZ = 5 !
PST = 8., MST = 7.
CST = 6., EST = 5.

Length of run (hours) (IRLG) -- No default ! IRLG = 8615 !

Number of chemical species (NSPEC)
Default: 5 ! NSPEC = 6 !

Number of chemical species
to be emitted (NSE) Default: 3 ! NSE = 4 !

Flag to stop run after
SETUP phase (ITEST) Default: 2 ! ITEST = 2 !
(Used to allow checking
of the model inputs, files, etc.)
ITEST = 1 - STOPS program after SETUP phase
ITEST = 2 - Continues with execution of program
after SETUP

Restart Configuration:

Control flag (MRESTART) Default: 0 ! MRESTART = 0 !

0 = Do not read or write a restart file
1 = Read a restart file at the beginning of
the run
2 = Write a restart file during run
3 = Read a restart file at beginning of run
and write a restart file during run

Number of periods in Restart
output cycle (NRESPD) Default: 0 ! NRESPD = 0 !

0 = File written only at last period
>0 = File updated every NRESPD periods

Meteorological Data Format (METFM)
Default: 1 ! METFM = 1 !

METFM = 1 - CALMET binary file (CALMET.MET)
METFM = 2 - ISC ASCII file (ISCMET.MET)
METFM = 3 - AUSPLUME ASCII file (PLMMET.MET)
METFM = 4 - CTDM plus tower file (PROFILE.DAT) and

```
                    surface parameters file (SURFACE.DAT)

     PG sigma-y is adjusted by the factor (AVET/PGTIME)**0.2
     Averaging Time (minutes) (AVET)
                                  Default: 60.0    ! AVET = 60.   !
     PG Averaging Time (minutes) (PGTIME)
                                  Default: 60.0    ! PGTIME = 60. !


!END!


------------------------------------------------------------------------------

INPUT GROUP: 2 -- Technical options
--------------


     Vertical distribution used in the
     near field (MGAUSS)                  Default: 1     ! MGAUSS =  1   !
        0 = uniform
        1 = Gaussian

     Terrain adjustment method
     (MCTADJ)                             Default: 3     ! MCTADJ =  3   !
        0 = no adjustment
        1 = ISC-type of terrain adjustment
        2 = simple, CALPUFF-type of terrain
            adjustment
        3 = partial plume path adjustment

     Subgrid-scale complex terrain
     flag (MCTSG)                         Default: 0     ! MCTSG =  0   !
        0 = not modeled
        1 = modeled

     Near-field puffs modeled as
     elongated 0 (MSLUG)                  Default: 0     ! MSLUG =  0   !
        0 = no
        1 = yes (slug model used)

     Transitional plume rise modeled ?
     (MTRANS)                             Default: 1     ! MTRANS =  1   !
        0 = no  (i.e., final rise only)
        1 = yes (i.e., transitional rise computed)

     Stack tip downwash? (MTIP)           Default: 1     ! MTIP =  1  !
        0 = no  (i.e., no stack tip downwash)
        1 = yes (i.e., use stack tip downwash)

     Method used to simulate building
     downwash? (MBDW)                     Default: 1     ! MBDW =  1   !
        1 = ISC method
        2 = PRIME method

     Vertical wind shear modeled above
     stack top? (MSHEAR)                  Default: 0     ! MSHEAR =  0  !
        0 = no  (i.e., vertical wind shear not modeled)
        1 = yes (i.e., vertical wind shear modeled)

     Puff splitting allowed? (MSPLIT)     Default: 0     ! MSPLIT =  0  !
        0 = no (i.e., puffs not split)
        1 = yes (i.e., puffs are split)

     Chemical mechanism flag (MCHEM)      Default: 1     ! MCHEM =  1   !
        0 = chemical transformation not
            modeled
        1 = transformation rates computed
            internally (MESOPUFF II scheme)
        2 = user-specified transformation
            rates used
        3 = transformation rates computed
            internally (RIVAD/ARM3 scheme)
        4 = secondary organic aerosol formation
            computed (MESOPUFF II scheme for OH)

     Aqueous phase transformation flag (MAQCHEM)
     (Used only if MCHEM = 1, or 3)       Default: 0     ! MAQCHEM =  0   !
        0 = aqueous phase transformation
            not modeled
        1 = transformation rates adjusted
```

```
       for aqueous phase reactions

Wet removal modeled ? (MWET)          Default: 1     ! MWET =  1   !
   0 = no
   1 = yes

Dry deposition modeled ? (MDRY)       Default: 1     ! MDRY =  1   !
   0 = no
   1 = yes
   (dry deposition method specified
    for each species in Input Group 3)

Method used to compute dispersion
coefficients (MDISP)                  Default: 3     ! MDISP =  3   !

   1 = dispersion coefficients computed from measured values
       of turbulence, sigma v, sigma w
   2 = dispersion coefficients from internally calculated
       sigma v, sigma w using micrometeorological variables
       (u*, w*, L, etc.)
   3 = PG dispersion coefficients for RURAL areas (computed using
       the ISCST multi-segment approximation) and MP coefficients in
       urban areas
   4 = same as 3 except PG coefficients computed using
       the MESOPUFF II eqns.
   5 = CTDM sigmas used for stable and neutral conditions.
       For unstable conditions, sigmas are computed as in
       MDISP = 3, described above.  MDISP = 5 assumes that
       measured values are read

Sigma-v/sigma-theta, sigma-w measurements used? (MTURBVW)
(Used only if MDISP = 1 or 5)         Default: 3     ! MTURBVW =  3  !
   1 = use sigma-v or sigma-theta measurements
       from PROFILE.DAT to compute sigma-y
       (valid for METFM = 1, 2, 3, 4)
   2 = use sigma-w measurements
       from PROFILE.DAT to compute sigma-z
       (valid for METFM = 1, 2, 3, 4)
   3 = use both sigma-(v/theta) and sigma-w
       from PROFILE.DAT to compute sigma-y and sigma-z
       (valid for METFM = 1, 2, 3, 4)
   4 = use sigma-theta measurements
       from PLMMET.DAT to compute sigma-y
       (valid only if METFM = 3)

Back-up method used to compute dispersion
when measured turbulence data are
missing (MDISP2)                      Default: 3     ! MDISP2 =  3  !
(used only if MDISP = 1 or 5)
   2 = dispersion coefficients from internally calculated
       sigma v, sigma w using micrometeorological variables
       (u*, w*, L, etc.)
   3 = PG dispersion coefficients for RURAL areas (computed using
       the ISCST multi-segment approximation) and MP coefficients in
       urban areas
   4 = same as 3 except PG coefficients computed using
       the MESOPUFF II eqns.

PG sigma-y,z adj. for roughness?      Default: 0     ! MROUGH =  0  !
(MROUGH)
   0 = no
   1 = yes

Partial plume penetration of          Default: 1     ! MPARTL =  1  !
elevated inversion?
(MPARTL)
   0 = no
   1 = yes

Strength of temperature inversion     Default: 0     ! MTINV =  0  !
provided in PROFILE.DAT extended records?
(MTINV)
   0 = no (computed from measured/default gradients)
   1 = yes

PDF used for dispersion under convective conditions?
                                      Default: 0     ! MPDF =  0  !
(MPDF)
   0 = no
   1 = yes
```

```
     Sub-Grid TIBL module used for shore line?
                                        Default: 0     ! MSGTIBL = 0  !
     (MSGTIBL)
        0 = no
        1 = yes

     Boundary conditions (concentration) modeled?
                                        Default: 0     ! MBCON = 0  !
     (MBCON)
        0 = no
        1 = yes, using formatted BCON.DAT file
        2 = yes, using unformatted CONC.DAT file

     Note:  MBCON > 0 requires that the last species modeled
            be 'BCON'.  Mass is placed in species BCON when
            generating boundary condition puffs so that clean
            air entering the modeling domain can be simulated
            in the same way as polluted air.  Specify zero
            emission of species BCON for all regular sources.


     Analyses of fogging and icing impacts due to emissions from
     arrays of mechanically-forced cooling towers can be performed
     using CALPUFF in conjunction with a cooling tower emissions
     processor (CTEMISS) and its associated postprocessors.  Hourly
     emissions of water vapor and temperature from each cooling tower
     cell are computed for the current cell configuration and ambient
     conditions by CTEMISS. CALPUFF models the dispersion of these
     emissions and provides cloud information in a specialized format
     for further analysis. Output to FOG.DAT is provided in either
     'plume mode' or 'receptor mode' format.

     Configure for FOG Model output?
                                        Default: 0     ! MFOG =  0   !
     (MFOG)
        0 = no
        1 = yes  - report results in PLUME Mode format
        2 = yes  - report results in RECEPTOR Mode format


     Test options specified to see if
     they conform to regulatory
     values? (MREG)                     Default: 1     ! MREG =  1   !

        0 = NO checks are made
        1 = Technical options must conform to USEPA
            Long Range Transport (LRT) guidance
                      METFM    1 or 2
                      AVET     60. (min)
                      PGTIME   60. (min)
                      MGAUSS   1
                      MCTADJ   3
                      MTRANS   1
                      MTIP     1
                      MCHEM    1 or 3 (if modeling SOx, NOx)
                      MWET     1
                      MDRY     1
                      MDISP    2 or 3
                      MPDF     0 if MDISP=3
                               1 if MDISP=2
                      MROUGH   0
                      MPARTL   1
                      SYTDEP   550. (m)
                      MHFTSZ   0

!END!

--------------------------------------------------------------------------------

INPUT GROUP: 3a, 3b -- Species list
-------------------

------------
Subgroup (3a)
------------

  The following species are modeled:

! CSPEC =          SO2 !         !END!
```

```
! CSPEC =          SO4 !          !END!
! CSPEC =          NOX !          !END!
! CSPEC =         HNO3 !          !END!
! CSPEC =          NO3 !          !END!
! CSPEC =         PM10 !          !END!
```

SPECIES NAME (Limit: 12 Characters in length)	MODELED (0=NO, 1=YES)	EMITTED (0=NO, 1=YES)	Dry DEPOSITED (0=NO, 1=COMPUTED-GAS, 2=COMPUTED-PARTICLE, 3=USER-SPECIFIED)	OUTPUT GROUP NUMBER (0=NONE, 1=1st CGRUP, 2=2nd CGRUP, 3= etc.)
SO2 =	1,	1,	1,	0 !
SO4 =	1,	1,	2,	0 !
NOX =	1,	1,	1,	0 !
HNO3 =	1,	0,	1,	0 !
NO3 =	1,	0,	2,	0 !
PM10 =	1,	1,	2,	0 !

```
!END!

-------------
Subgroup (3b)
-------------
  The following names are used for Species-Groups in which results
  for certain species are combined (added) prior to output.  The
  CGRUP name will be used as the species name in output files.
  Use this feature to model specific particle-size distributions
  by treating each size-range as a separate species.
  Order must be consistent with 3(a) above.


INPUT GROUP: 4 -- Map Projection and Grid control parameters
--------------

     Projection for all (X,Y):
     -------------------------

     Map projection
     (PMAP)                    Default: UTM    ! PMAP = UTM  !

         UTM :  Universal Transverse Mercator
         TTM :  Tangential Transverse Mercator
         LCC :  Lambert Conformal Conic
          PS :  Polar Stereographic
          EM :  Equatorial Mercator
        LAZA :  Lambert Azimuthal Equal Area

     False Easting and Northing (km) at the projection origin
     (Used only if PMAP= TTM, LCC, or LAZA)
     (FEAST)                   Default=0.0     ! FEAST  = 0.000  !
     (FNORTH)                  Default=0.0     ! FNORTH = 0.000  !

     UTM zone (1 to 60)
     (Used only if PMAP=UTM)
     (IUTMZN)                  No Default      ! IUTMZN =  17   !

     Hemisphere for UTM projection?
     (Used only if PMAP=UTM)
     (UTMHEM)                  Default: N      ! UTMHEM = N  !
         N   :  Northern hemisphere projection
         S   :  Southern hemisphere projection

     Latitude and Longitude (decimal degrees) of projection origin
     (Used only if PMAP= TTM, LCC, PS, EM, or LAZA)
     (RLAT0)                   No Default      ! RLAT0 =  48.7N !
     (RLON0)                   No Default      ! RLON0 = 138.8W !

         TTM :  RLON0 identifies central (true N/S) meridian of projection
                RLAT0 selected for convenience
         LCC :  RLON0 identifies central (true N/S) meridian of projection
                RLAT0 selected for convenience
          PS :  RLON0 identifies central (grid N/S) meridian of projection
                RLAT0 selected for convenience
         EM  :  RLON0 identifies central meridian of projection
                RLAT0 is REPLACED by 0.0N (Equator)
         LAZA:  RLON0 identifies longitude of tangent-point of mapping plane
                RLAT0 identifies latitude of tangent-point of mapping plane

     Matching parallel(s) of latitude (decimal degrees) for projection
```

```
(Used only if PMAP= LCC or PS)
(XLAT1)                  No Default      ! XLAT1 = 30N  !
(XLAT2)                  No Default      ! XLAT2 = 60N  !

    LCC :  Projection cone slices through Earth's surface at XLAT1 and XLAT2
    PS  :  Projection plane slices through Earth at XLAT1
           (XLAT2 is not used)

----------
Note:  Latitudes and longitudes should be positive, and include a
       letter N,S,E, or W indicating north or south latitude, and
       east or west longitude.  For example,
       35.9  N Latitude  =  35.9N
       118.7 E Longitude = 118.7E


Datum-region
------------

The Datum-Region for the coordinates is identified by a character
string.  Many mapping products currently available use the model of the
Earth known as the World Geodetic System 1984 (WGS-G ).  Other local
models may be in use, and their selection in CALMET will make its output
consistent with local mapping products.  The list of Datum-Regions with
official transformation parameters is provided by the National Imagery and
Mapping Agency (NIMA).

NIMA Datum - Regions(Examples)
------------------------------------------------------------------------------
WGS-G     WGS-84 GRS 80 Spheroid, Global coverage (WGS84)
NAS-C     NORTH AMERICAN 1927 Clarke 1866 Spheroid, MEAN FOR CONUS (NAD27)
NWS-27    NWS 6370KM Radius, Sphere
NWS-84    NWS 6370KM Radius, Sphere
ESR-S     ESRI REFERENCE 6371KM Radius, Sphere

Datum-region for output coordinates
(DATUM)                  Default: WGS-G     ! DATUM = NAS-C !

METEOROLOGICAL Grid:

         No. X grid cells (NX)      No default     ! NX =  111   !
         No. Y grid cells (NY)      No default     ! NY =  116   !
      No. vertical layers (NZ)      No default     ! NZ =  10    !

        Grid spacing (DGRIDKM)      No default     ! DGRIDKM = 4. !
                                    Units: km

            Cell face heights
                (ZFACE(nz+1))       No defaults
                                    Units: m
  ! ZFACE = 0.,20.,40.,80.,160.,300.,600.,1000.,1500.,2200.,3000. !

          Reference Coordinates
        of SOUTHWEST corner of
             grid cell(1, 1):

         X coordinate (XORIGKM)     No default     ! XORIGKM = 250. !
         Y coordinate (YORIGKM)     No default     ! YORIGKM = 2628. !
                                   Units: km

COMPUTATIONAL Grid:

    The computational grid is identical to or a subset of the MET. grid.
    The lower left (LL) corner of the computational grid is at grid point
    (IBCOMP, JBCOMP) of the MET. grid.  The upper right (UR) corner of the
    computational grid is at grid point (IECOMP, JECOMP) of the MET. grid.
    The grid spacing of the computational grid is the same as the MET. grid.

      X index of LL corner (IBCOMP)      No default     ! IBCOMP =  1   !
                (1 <= IBCOMP <= NX)

      Y index of LL corner (JBCOMP)      No default     ! JBCOMP =  1   !
                (1 <= JBCOMP <= NY)


      X index of UR corner (IECOMP)      No default     ! IECOMP =  111  !
                (1 <= IECOMP <= NX)

      Y index of UR corner (JECOMP)      No default     ! JECOMP =  116  !
```

(1 <= JECOMP <= NY)

SAMPLING Grid (GRIDDED RECEPTORS):

The lower left (LL) corner of the sampling grid is at grid point (IBSAMP, JBSAMP) of the MET. grid. The upper right (UR) corner of the sampling grid is at grid point (IESAMP, JESAMP) of the MET. grid. The sampling grid must be identical to or a subset of the computational grid. It may be a nested grid inside the computational grid. The grid spacing of the sampling grid is DGRIDKM/MESHDN.

Logical flag indicating if gridded receptors are used (LSAMP) (T=yes, F=no)	Default: T	! LSAMP = F !
X index of LL corner (IBSAMP) (IBCOMP <= IBSAMP <= IECOMP)	No default	! IBSAMP = 1 !
Y index of LL corner (JBSAMP) (JBCOMP <= JBSAMP <= JECOMP)	No default	! JBSAMP = 1 !
X index of UR corner (IESAMP) (IBCOMP <= IESAMP <= IECOMP)	No default	! IESAMP = 111 !
Y index of UR corner (JESAMP) (JBCOMP <= JESAMP <= JECOMP)	No default	! JESAMP = 116 !
Nesting factor of the sampling grid (MESHDN) (MESHDN is an integer >= 1)	Default: 1	! MESHDN = 1 !

!END!

INPUT GROUP: 5 -- Output Options

FILE	DEFAULT VALUE *	VALUE THIS RUN *
Concentrations (ICON)	1	! ICON = 1 !
Dry Fluxes (IDRY)	1	! IDRY = 0 !
Wet Fluxes (IWET)	1	! IWET = 0 !
Relative Humidity (IVIS) (relative humidity file is required for visibility analysis)	1	! IVIS = 0 !
Use data compression option in output file? (LCOMPRS)	Default: T	! LCOMPRS = T !

* 0 = Do not create file, 1 = create file

DIAGNOSTIC MASS FLUX OUTPUT OPTIONS:

Mass flux across specified boundaries for selected species reported hourly? (IMFLX) 0 = no 1 = yes (FLUXBDY.DAT and MASSFLX.DAT filenames are specified in Input Group 0)	Default: 0	! IMFLX = 0 !
Mass balance for each species reported hourly? (IMBAL) 0 = no 1 = yes (MASSBAL.DAT filename is specified in Input Group 0)	Default: 0	! IMBAL = 0 !

LINE PRINTER OUTPUT OPTIONS:

Print concentrations (ICPRT)	Default: 0	! ICPRT = 0 !

```
      Print dry fluxes (IDPRT)        Default: 0         ! IDPRT =  0   !
      Print wet fluxes (IWPRT)        Default: 0         ! IWPRT =  0   !
      (0 = Do not print, 1 = Print)

      Concentration print interval
      (ICFRQ) in hours                Default: 1         ! ICFRQ =  24   !
      Dry flux print interval
      (IDFRQ) in hours                Default: 1         ! IDFRQ =  1   !
      Wet flux print interval
      (IWFRQ) in hours                Default: 1         ! IWFRQ =  1   !

      Units for Line Printer Output
      (IPRTU)                         Default: 1         ! IPRTU =  3   !
                    for              for
                Concentration    Deposition
          1 =       g/m**3          g/m**2/s
          2 =      mg/m**3         mg/m**2/s
          3 =      ug/m**3         ug/m**2/s
          4 =      ng/m**3         ng/m**2/s
          5 =     Odour Units

      Messages tracking progress of run
      written to the screen ?
      (IMESG)                         Default: 2         ! IMESG =  2   !
        0 = no
        1 = yes (advection step, puff ID)
        2 = yes (YYYYJJJHH, # old puffs, # emitted puffs)


    SPECIES (or GROUP for combined species) LIST FOR OUTPUT OPTIONS

                 ---- CONCENTRATIONS ----   ------ DRY FLUXES ------   ------ WET FLUXES ------   -- MASS FLUX --
 SPECIES
 /GROUP    PRINTED? SAVED ON DISK? PRINTED?  SAVED ON DISK?   PRINTED?  SAVED ON DISK?   SAVED ON DISK?
 -------   ------------------------ ------------------------   ------------------------   ---------------
!          SO2 =     0,           1,           0,           0,           0,           0,           0  !
!          SO4 =     0,           1,           0,           0,           0,           0,           0  !
!          NOX =     0,           1,           0,           0,           0,           0,           0  !
!         HNO3 =     0,           1,           0,           0,           0,           0,           0  !
!          NO3 =     0,           1,           0,           0,           0,           0,           0  !
!         PM10 =     0,           1,           0,           0,           0,           0,           0  !

  Note:  Species BCON (for MBCON > 0) does not need to be saved on disk.


    OPTIONS FOR PRINTING "DEBUG" QUANTITIES (much output)

      Logical for debug output
      (LDEBUG)                                Default: F     ! LDEBUG = F !

      First puff to track
      (IPFDEB)                                Default: 1     ! IPFDEB =  1  !

      Number of puffs to track
      (NPFDEB)                                Default: 1     ! NPFDEB =  1  !

      Met. period to start output
      (NN1)                                   Default: 1     ! NN1 =  1   !

      Met. period to end output
      (NN2)                                   Default: 10    ! NN2 =  10  !

!END!


-------------------------------------------------------------------------------


INPUT GROUP: 6a, 6b, & 6c -- Subgrid scale complex terrain inputs
-------------------------

---------------
Subgroup (6a)
---------------
      Number of terrain features (NHILL)      Default: 0     ! NHILL =  0   !

      Number of special complex terrain
      receptors  (NCTREC)                     Default: 0     ! NCTREC =  0   !

      Terrain and CTSG Receptor data for
      CTSG hills input in CTDM format ?
```

```
      (MHILL)                                   No Default     ! MHILL =  2   !
      1 = Hill and Receptor data created
          by CTDM processors & read from
          HILL.DAT and HILLRCT.DAT files
      2 = Hill data created by OPTHILL &
          input below in Subgroup (6b);
          Receptor data in Subgroup (6c)

      Factor to convert horizontal dimensions  Default: 1.0   ! XHILL2M = 1. !
      to meters (MHILL=1)

      Factor to convert vertical dimensions    Default: 1.0   ! ZHILL2M = 1. !
      to meters (MHILL=1)

      X-origin of CTDM system relative to      No Default     ! XCTDMKM = 0.0E00 !
      CALPUFF coordinate system, in Kilometers (MHILL=1)

      Y-origin of CTDM system relative to      No Default     ! YCTDMKM = 0.0E00 !
      CALPUFF coordinate system, in Kilometers (MHILL=1)

! END !

---------------
Subgroup (6b)
---------------

                    1 **
     HILL information

HILL          XC       YC      THETAH  ZGRID  RELIEF    EXPO 1    EXPO 2   SCALE 1    SCALE 2    AMAX1     AMAX2
 NO.         (km)     (km)     (deg.)   (m)     (m)      (m)       (m)       (m)        (m)       (m)       (m)
----         ----     ----     ------  -----  ------    ------    ------   -------    -------    -----     -----

---------------
Subgroup (6c)
---------------

    COMPLEX TERRAIN RECEPTOR INFORMATION

                     XRCT        YRCT        ZRCT         XHH
                     (km)        (km)         (m)
                    ------      -----       ------        ----


-------------------
1
     Description of Complex Terrain Variables:
          XC, YC  = Coordinates of center of hill
          THETAH  = Orientation of major axis of hill (clockwise from
                    North)
          ZGRID   = Height of the  0  of the grid above mean sea
                    level
          RELIEF  = Height of the crest of the hill above the grid elevation
          EXPO 1  = Hill-shape exponent for the major axis
          EXPO 2  = Hill-shape exponent for the major axis
          SCALE 1 = Horizontal length scale along the major axis
          SCALE 2 = Horizontal length scale along the minor axis
          AMAX    = Maximum allowed axis length for the major axis
          BMAX    = Maximum allowed axis length for the major axis

          XRCT, YRCT = Coordinates of the complex terrain receptors
          ZRCT    = Height of the ground (MSL) at the complex terrain
                    Receptor
          XHH     = Hill number associated with each complex terrain receptor
                    (NOTE: MUST BE ENTERED AS A REAL NUMBER)

   **
     NOTE: DATA for each hill and CTSG receptor are treated as a separate
           input subgroup and therefore must end with an input group terminator.

-------------------------------------------------------------------------------


INPUT GROUP: 7 -- Chemical parameters for dry deposition of gases
--------------

      SPECIES     DIFFUSIVITY      ALPHA STAR      REACTIVITY  MESOPHYLL RESISTANCE     HENRY'S LAW COEFFICIENT
       NAME        (cm**2/s)                                        (s/cm)                 (dimensionless)
      -------     -----------      ----------      ----------  ------------------     ----------------------
  !    SO2 =        0.1509,         1000.,           8.,            0.,                      .04 !
```

```
  !    NOX =         0.1656,          1.,          8.,          5.,          3.5 !
  !   HNO3 =         0.1628,          1.,         18.,          0.,         8E-8 !

!END!

------------------------------------------------------------------------------


INPUT GROUP: 8 -- Size parameters for dry deposition of particles
--------------

     For SINGLE SPECIES, the mean and standard deviation are used to
     compute a deposition velocity for NINT (see group 9) size-ranges,
     and these are then averaged to obtain a mean deposition velocity.

     For GROUPED SPECIES, the size distribution should be explicitly
     specified (by the 'species' in the group), and the standard deviation
     for each should be entered as 0.  The model will then use the
     deposition velocity for the stated mean diameter.

      SPECIES      GEOMETRIC MASS MEAN        GEOMETRIC STANDARD
       NAME             DIAMETER                 DEVIATION
                         (microns)                (microns)
      -------      ------------------        ------------------
!         SO4 =         0.48,                      2.   !
!         NO3 =         0.48,                      2.   !
!        PM10 =         0.05,                      0.   !

!END!

------------------------------------------------------------------------------


INPUT GROUP: 9 -- Miscellaneous dry deposition parameters
--------------

     Reference cuticle resistance (s/cm)
     (RCUTR)                          Default: 30    !  RCUTR = 30.0 !
     Reference ground resistance  (s/cm)
     (RGR)                            Default: 10    !    RGR = 10.0 !
     Reference pollutant reactivity
     (REACTR)                         Default: 8     ! REACTR = 8.0 !

     Number of particle-size intervals used to
     evaluate effective particle deposition velocity
     (NINT)                           Default: 9     !   NINT =  9  !

     Vegetation state in unirrigated areas
     (IVEG)                           Default: 1     !   IVEG =  1  !
        IVEG=1 for active and unstressed vegetation
        IVEG=2 for active and stressed vegetation
        IVEG=3 for inactive vegetation

!END!

------------------------------------------------------------------------------


INPUT GROUP: 10 -- Wet Deposition Parameters
---------------

                     Scavenging Coefficient -- Units: (sec)**(-1)

       Pollutant      Liquid Precip.       Frozen Precip.
       ---------      --------------       --------------
!         SO2 =         3.0E-05,              0.0E00 !
!         SO4 =         1.0E-04,             3.0E-05 !
!        HNO3 =         6.0E-05,              0.0E00 !
!         NO3 =         1.0E-04,             3.0E-05 !
!        PM10 =         1.0E-04,             3.0E-05 !

!END!

------------------------------------------------------------------------------
```

```
INPUT GROUP: 11 -- Chemistry Parameters
---------------

     Ozone data input option (MOZ)     Default: 1            ! MOZ =  0   !
     (Used only if MCHEM = 1, 3, or 4)
        0 = use a monthly background ozone value
        1 = read hourly ozone concentrations from
            the OZONE.DAT data file

     Monthly ozone concentrations
     (Used only if MCHEM = 1, 3, or 4 and
      MOZ = 0 or MOZ = 1 and all hourly O3 data missing)
     (BCKO3) in ppb                    Default: 12*80.
     !  BCKO3 = 12*50. !

     Monthly ammonia concentrations
     (Used only if MCHEM = 1, or 3)
     (BCKNH3) in ppb                   Default: 12*10.
     !  BCKNH3 = 12*1. !

     Nighttime SO2 loss rate (RNITE1)
     in percent/hour                   Default: 0.2          ! RNITE1 = .2 !

     Nighttime NOx loss rate (RNITE2)
     in percent/hour                   Default: 2.0          ! RNITE2 = 2.0 !

     Nighttime HNO3 formation rate (RNITE3)
     in percent/hour                   Default: 2.0          ! RNITE3 = 2.0 !

     H2O2 data input option (MH2O2)    Default: 1            ! MH2O2 =  1   !
     (Used only if MAQCHEM = 1)
        0 = use a monthly background H2O2 value
        1 = read hourly H2O2 concentrations from
            the H2O2.DAT data file

     Monthly H2O2 concentrations
     (Used only if MQACHEM = 1 and
      MH2O2 = 0 or MH2O2 = 1 and all hourly H2O2 data missing)
     (BCKH2O2) in ppb                  Default: 12*1.
     !  BCKH2O2 = 12*1 !


 --- Data for SECONDARY ORGANIC AEROSOL (SOA) Option
     (used only if MCHEM = 4)

     The SOA module uses monthly values of:
          Fine particulate concentration in ug/m^3 (BCKPMF)
          Organic fraction of fine particulate     (OFRAC)
          VOC / NOX ratio (after reaction)         (VCNX)
     to characterize the air mass when computing
     the formation of SOA from VOC emissions.
     Typical values for several distinct air mass types are:

        Month    1    2    3    4    5    6    7    8    9   10   11   12
                Jan  Feb  Mar  Apr  May  Jun  Jul  Aug  Sep  Oct  Nov  Dec

     Clean Continental
        BCKPMF   1.   1.   1.   1.   1.   1.   1.   1.   1.   1.   1.   1.
        OFRAC  .15  .15  .20  .20  .20  .20  .20  .20  .20  .20  .20  .15
        VCNX    50.  50.  50.  50.  50.  50.  50.  50.  50.  50.  50.  50.

     Clean Marine (surface)
        BCKPMF  .5   .5   .5   .5   .5   .5   .5   .5   .5   .5   .5   .5
        OFRAC  .25  .25  .30  .30  .30  .30  .30  .30  .30  .30  .30  .25
        VCNX    50.  50.  50.  50.  50.  50.  50.  50.  50.  50.  50.  50.

     Urban - low biogenic (controls present)
        BCKPMF  30.  30.  30.  30.  30.  30.  30.  30.  30.  30.  30.  30.
        OFRAC  .20  .20  .25  .25  .25  .25  .25  .25  .20  .20  .20  .20
        VCNX     4.   4.   4.   4.   4.   4.   4.   4.   4.   4.   4.   4.

     Urban - high biogenic (controls present)
        BCKPMF  60.  60.  60.  60.  60.  60.  60.  60.  60.  60.  60.  60.
        OFRAC  .25  .25  .30  .30  .30  .55  .55  .55  .35  .35  .35  .25
        VCNX    15.  15.  15.  15.  15.  15.  15.  15.  15.  15.  15.  15.

     Regional Plume
        BCKPMF  20.  20.  20.  20.  20.  20.  20.  20.  20.  20.  20.  20.
        OFRAC  .20  .20  .25  .35  .25  .40  .40  .40  .30  .30  .30  .20
        VCNX    15.  15.  15.  15.  15.  15.  15.  15.  15.  15.  15.  15.
```

```
     Urban - no controls present
        BCKPMF 100. 100. 100. 100. 100. 100. 100. 100. 100. 100. 100. 100.
        OFRAC  .30  .30  .35  .35  .35  .55  .55  .55  .35  .35  .35  .30
        VCNX     2.   2.   2.   2.   2.   2.   2.   2.   2.   2.   2.   2.

     Default: Clean Continental
     !  BCKPMF = 1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.00 !
     !  OFRAC  = 0.15, 0.15, 0.20, 0.20, 0.20, 0.20, 0.20, 0.20, 0.20, 0.20, 0.20, 0.15 !
     !  VCNX   = 50.00, 50.00, 50.00, 50.00, 50.00, 50.00, 50.00, 50.00, 50.00, 50.00, 50.00, 50.00 !


!END!

-------------------------------------------------------------------------------


INPUT GROUP: 12 -- Misc. Dispersion and Computational Parameters
----------------

     Horizontal size of puff (m) beyond which
     time-dependent dispersion equations (Heffter)
     are used to determine sigma-y and
     sigma-z (SYTDEP)                          Default: 550.   ! SYTDEP = 5.5E02 !

     Switch for using Heffter equation for sigma z
     as above (0 = Not use Heffter; 1 = use Heffter
     (MHFTSZ)                                  Default: 0      ! MHFTSZ =  0   !

     Stability class used to determine plume
     growth rates for puffs above the boundary
     layer (JSUP)                              Default: 5      ! JSUP =  5   !

     Vertical dispersion constant for stable
     conditions (k1 in Eqn. 2.7-3)  (CONK1)    Default: 0.01   ! CONK1 = .01 !

     Vertical dispersion constant for neutral/
     unstable conditions (k2 in Eqn. 2.7-4)
     (CONK2)                                   Default: 0.1    ! CONK2 = .1 !

     Factor for determining Transition-point from
     Schulman-Scire to Huber-Snyder Building Downwash
     scheme (SS used for Hs < Hb + TBD * HL)
     (TBD)                                     Default: 0.5    ! TBD = .5 !
        TBD < 0   ==> always use Huber-Snyder
        TBD = 1.5 ==> always use Schulman-Scire
        TBD = 0.5 ==> ISC Transition-point

     Range of land use categories for which
     urban dispersion is assumed
     (IURB1, IURB2)                            Default: 10     ! IURB1 =  10  !
                                                        19     ! IURB2 =  19  !

     Site characterization parameters for single-point Met data files ---------
     (needed for METFM = 2,3,4)

        Land use category for modeling domain
        (ILANDUIN)                             Default: 20     ! ILANDUIN =  20  !

        Roughness length (m) for modeling domain
        (ZOIN)                                 Default: 0.25   ! ZOIN = .25 !

        Leaf area index for modeling domain
        (XLAIIN)                               Default: 3.0    ! XLAIIN = 3.0 !

        Elevation above sea level (m)
        (ELEVIN)                               Default: 0.0    ! ELEVIN = .0 !

        Latitude (degrees) for met location
        (XLATIN)                               Default: -999.  ! XLATIN = -999.0 !

        Longitude (degrees) for met location
        (XLONIN)                               Default: -999.  ! XLONIN = -999.0 !

     Specialized information for interpreting single-point Met data files -----

        Anemometer height (m) (Used only if METFM = 2,3)
        (ANEMHT)                               Default: 10.    ! ANEMHT = 10.0 !

        Form of lateral turbulance data in PROFILE.DAT file
        (Used only if METFM = 4 or MTURBVW = 1 or 3)
```

```
   (ISIGMAV)                              Default: 1      ! ISIGMAV =  1  !
       0 = read sigma-theta
       1 = read sigma-v

   Choice of mixing heights (Used only if METFM = 4)
   (IMIXCTDM)                             Default: 0      ! IMIXCTDM =  0  !
       0 = read PREDICTED mixing heights
       1 = read OBSERVED mixing heights

Maximum length of a slug (met. grid units)
(XMXLEN)                                  Default: 1.0    ! XMXLEN = 1.0 !

Maximum travel distance of a puff/slug (in
grid units) during one sampling step
(XSAMLEN)                                 Default: 1.0    ! XSAMLEN = 1.0 !

Maximum Number of slugs/puffs release from
one source during one time step
(MXNEW)                                   Default: 99     ! MXNEW =  99   !

Maximum Number of sampling steps for
one puff/slug during one time step
(MXSAM)                                   Default: 99     ! MXSAM =  99   !

Number of iterations used when computing
the transport wind for a sampling step
that includes gradual rise (for CALMET
and PROFILE winds)
(NCOUNT)                                  Default: 2      ! NCOUNT =  2   !

Minimum sigma y for a new puff/slug (m)
(SYMIN)                                   Default: 1.0    ! SYMIN = 1.0  !

Minimum sigma z for a new puff/slug (m)
(SZMIN)                                   Default: 1.0    ! SZMIN = 1.0  !

Default minimum turbulence velocities
sigma-v and sigma-w for each
stability class (m/s)
(SVMIN(6) and SWMIN(6))      Default SVMIN : .50,  .50,  .50,  .50,  .50,  .50
                             Default SWMIN : .20,  .12,  .08,  .06,  .03,  .016

                           Stability Class :  A     B     C     D     E     F
                                              ---   ---   ---   ---   ---   ---
                                  ! SVMIN = 0.500, 0.500, 0.500, 0.500, 0.500, 0.500!
                                  ! SWMIN = 0.200, 0.120, 0.080, 0.060, 0.030, 0.016!

Divergence criterion for dw/dz across puff
used to initiate adjustment for horizontal
convergence (1/s)
Partial adjustment starts at CDIV(1), and
full adjustment is reached at CDIV(2)
(CDIV(2))                                 Default: 0.0,0.0  ! CDIV = .0, .0 !

Minimum wind speed (m/s) allowed for
non-calm conditions. Also used as minimum
speed returned when using power-law
extrapolation toward surface
(WSCALM)                                  Default: 0.5    ! WSCALM = .5 !

Maximum mixing height (m)
(XMAXZI)                                  Default: 3000.  ! XMAXZI = 3000.0 !

Minimum mixing height (m)
(XMINZI)                                  Default: 50.    ! XMINZI = 50.0 !

Default wind speed classes --
5 upper bounds (m/s) are entered;
the 6th class has no upper limit
(WSCAT(5))                    Default   :
                              ISC RURAL : 1.54, 3.09, 5.14, 8.23, 10.8 (10.8+)

                          Wind Speed Class :  1     2     3     4     5
                                              ---   ---   ---   ---   ---
                                    ! WSCAT = 1.54, 3.09, 5.14, 8.23, 10.80 !

Default wind speed profile power-law
exponents for stabilities 1-6
(PLXO(6))                     Default   : ISC RURAL values
                              ISC RURAL : .07, .07, .10, .15, .35, .55
                              ISC URBAN : .15, .15, .20, .25, .30, .30
```

```
                          Stability Class :  A     B     C     D     E     F
                                             ---   ---   ---   ---   ---   ---
                                   ! PLX0 = 0.07, 0.07, 0.10, 0.15, 0.35, 0.55 !

Default potential temperature gradient
for stable classes E, F (degK/m)
(PTG0(2))                        Default: 0.020, 0.035
                                   ! PTG0 = 0.020,   0.035 !

Default plume path coefficients for
each stability class (used when option
for partial plume height terrain adjustment
is selected -- MCTADJ=3)
(PPC(6))                   Stability Class :  A     B     C     D     E     F
                              Default  PPC :  .50,  .50,  .50,  .50,  .35,  .35
                                             ---   ---   ---   ---   ---   ---
                                   !  PPC = 0.50, 0.50, 0.50, 0.50, 0.35, 0.35 !

Slug-to-puff transition criterion factor
equal to sigma-y/length of slug
(SL2PF)                              Default: 10.        ! SL2PF = 10.0 !

Puff-splitting control variables ------------------------

  VERTICAL SPLIT
  --------------

  Number of puffs that result every time a puff
  is split - nsplit=2 means that 1 puff splits
  into 2
  (NSPLIT)                           Default:   3        ! NSPLIT =  3  !

  Time(s) of a day when split puffs are eligible to
  be split once again; this is typically set once
  per day, around sunset before nocturnal shear develops.
  24 values: 0 is midnight (00:00) and 23 is 11 PM (23:00)
  0=do not re-split    1=eligible for re-split
  (IRESPLIT(24))                     Default:  Hour 17 = 1
  !  IRESPLIT = 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,1,0,0,0,0,0,0 !

  Split is allowed only if last hour's mixing
  height (m) exceeds a minimum value
  (ZISPLIT)                          Default: 100.       ! ZISPLIT = 100.0 !

  Split is allowed only if ratio of last hour's
  mixing ht to the maximum mixing ht experienced
  by the puff is less than a maximum value (this
  postpones a split until a nocturnal layer develops)
  (ROLDMAX)                          Default: 0.25       ! ROLDMAX = 0.25 !


  HORIZONTAL SPLIT
  ----------------

  Number of puffs that result every time a puff
  is split - nsplith=5 means that 1 puff splits
  into 5
  (NSPLITH)                          Default:   5        ! NSPLITH =  5  !

  Minimum sigma-y (Grid Cells Units) of puff
  before it may be split
  (SYSPLITH)                         Default:  1.0       ! SYSPLITH = 1.0 !

  Minimum puff elongation rate (SYSPLITH/hr) due to
  wind shear, before it may be split
  (SHSPLITH)                         Default:  2.        ! SHSPLITH = 2.0 !

  Minimum concentration (g/m^3) of each
  species in puff before it may be split
  Enter array of NSPEC values; if a single value is
  entered, it will be used for ALL species
  (CNSPLITH)                         Default:  1.0E-07   ! CNSPLITH = 1.0E-07 !

Integration control variables ------------------------

  Fractional convergence criterion for numerical SLUG
  sampling integration
  (EPSSLUG)                          Default:   1.0e-04  ! EPSSLUG = 1.0E-04 !

  Fractional convergence criterion for numerical AREA
```

```
      source integration
      (EPSAREA)                          Default:   1.0e-06  ! EPSAREA = 1.0E-06 !

      Trajectory step-length (m) used for numerical rise
      integration
      (DSRISE)                           Default:   1.0      ! DSRISE = 1.0 !

    Boundary Condition (BC) Puff control variables ------------------------

      Minimum height (m) to which BC puffs are mixed as they are emitted
      (MBCON=2 ONLY).  Actual height is reset to the current mixing height
      at the release point if greater than this minimum.
      (HTMINBC)                          Default:   500.     ! HTMINBC = 500. !

      Search radius (km) about a receptor for sampling nearest BC puff.
      BC puffs are typically emitted with a spacing of one grid cell
      length, so the search radius should be greater than DGRIDKM.
      (RSAMPBC)                          Default:   10.      ! RSAMPBC = 10. !

      Near-Surface depletion adjustment to concentration profile used when
      sampling BC puffs?
      (MDEPBC)                           Default:   1        ! MDEPBC = 1. !
         0 = Concentration is NOT adjusted for depletion
         1 = Adjust Concentration for depletion

!END!

-------------------------------------------------------------------------------


INPUT GROUPS: 13a, 13b, 13c, 13d -- Point source parameters
--------------------------------

---------------
Subgroup (13a)
---------------

     Number of point sources with
     parameters provided below      (NPT1)  No default  !  NPT1 =  40!

     Units used for point source
     emissions below                (IPTU)  Default: 1  !  IPTU =   1  !
           1 =        g/s
           2 =       kg/hr
           3 =       lb/hr
           4 =     tons/yr
           5 =     Odour Unit * m**3/s  (vol. flux of odour compound)
           6 =     Odour Unit * m**3/min
           7 =     metric tons/yr

     Number of source-species
     combinations with variable
     emissions scaling factors
     provided below in (13d)        (NSPT1) Default: 0  !  NSPT1 = 29  !

     Number of point sources with
     variable emission parameters
     provided in external file      (NPT2)  No default  !  NPT2 =  0  !

     (If NPT2 > 0, these point
     source emissions are read from
     the file: PTEMARB.DAT)

!END!

---------------
Subgroup (13b)
---------------
                                        a
          POINT SOURCE: CONSTANT DATA
          ----------------------------
                                                                                b          c
  Source      X UTM      Y UTM     Stack   Base     Stack    Exit  Exit    Bldg.  Emission
   No.     Coordinate Coordinate Height Elevation Diameter  Vel.  Temp.   Dwash   Rates
              (km)       (km)       (m)      (m)       (m)  (m/s) (deg. K)
  ------   ---------- ---------- ------  ------   -------- ----- -------- ----- --------
       6  ! SRCNAM = USSBLR1B   !
       6  ! X =   506.1846,  2956.9348,   23.10,    6.00,    1.86,   30.20,  344.0, 1.0,    0.582E+02 !  !END!
       7  ! SRCNAM = USSBLR2B   !
       7  ! X =   506.1718,  2956.9348,   23.10,    6.00,    1.86,   35.70,  343.0, 1.0,    0.582E+02 !  !END!
```

```
 8  ! SRCNAM = USSBLR3B   !
 8  ! X =   506.1572,  2956.9417,   27.40,    6.00,    2.29,    14.70,  342.0, 1.0,    0.332E+02 !  !END!
 9  ! SRCNAM = EPELLET    !
 9  ! X =   506.1099,  2956.9875,   12.20,    6.00,    1.52,     8.54,  347.0, 1.0,    0.103E+02 !  !END!
10  ! SRCNAM = WPELLET    !
10  ! X =   506.1099,  2956.9875,   15.70,    6.00,    1.52,     8.54,  347.0, 1.0,    0.103E+02 !  !END!
17  ! SRCNAM = OKBLR4B    !
17  ! X =   525.0000,  2937.3999,   22.90,    4.00,    2.29,     7.36,  333.0, 0.0,    0.109E+02 !  !END!
18  ! SRCNAM = OKBLR5B    !
18  ! X =   525.0000,  2937.3999,   22.90,    4.00,    2.29,    12.07,  333.0, 0.0,    0.156E+02 !  !END!
19  ! SRCNAM = OKBLR6B    !
19  ! X =   525.0000,  2937.3999,   22.90,    4.00,    2.29,     8.74,  334.0, 0.0,    0.156E+02 !  !END!
20  ! SRCNAM = OKBLR10B   !
20  ! X =   525.0000,  2937.3999,   22.90,    4.00,    2.29,    10.35,  334.0, 0.0,    0.171E+02 !  !END!
21  ! SRCNAM = OKBLR11B   !
21  ! X =   525.0000,  2937.3999,   22.90,    4.00,    2.29,     9.89,  342.0, 0.0,    0.168E+02 !  !END!
19  ! SRCNAM = SCG1BO     !
19  ! X =   534.9000,  2953.3000,   24.10,    4.00,    1.68,    15.94,  474.8, 0.0,    0.298E+02 !  !END!
20  ! SRCNAM = SCG2BO     !
20  ! X =   534.9000,  2953.3000,   24.10,    4.00,    1.68,    17.88,  480.4, 0.0,    0.298E+02 !  !END!
21  ! SRCNAM = SCG3BO     !
21  ! X =   534.9000,  2953.3000,   24.10,    4.00,    1.68,    16.50,  516.5, 0.0,    0.224E+02 !  !END!
22  ! SRCNAM = SCG4BO     !
22  ! X =   534.9000,  2953.3000,   26.20,    4.00,    1.62,     9.88,  338.2, 0.0,    0.259E+02 !  !END!
23  ! SRCNAM = SCG5BO     !
23  ! X =   534.9000,  2953.3000,   24.10,    4.00,    2.03,    28.42,  527.6, 0.0,    0.397E+02 !  !END!
24  ! SRCNAM = SCG6BO     !
24  ! X =   534.9000,  2953.3000,   12.20,    4.00,    1.52,     6.53,  605.4, 0.0,    0.186E+02 !  !END!
25  ! SRCNAM = SCG7BO     !
25  ! X =   534.9000,  2953.3000,   12.20,    4.00,    1.52,    17.20,  605.6, 0.0,    0.446E+02 !  !END!
26  ! SRCNAM = SCG1BF     !
26  ! X =   534.9000,  2953.3000,   24.10,    4.00,    1.68,    15.94,  474.8, 0.0,    0.189E+02 !  !END!
27  ! SRCNAM = SCG2BF     !
27  ! X =   534.9000,  2953.3000,   24.10,    4.00,    1.68,    17.88,  480.4, 0.0,    0.189E+02 !  !END!
28  ! SRCNAM = SCG3BF     !
28  ! X =   534.9000,  2953.3000,   24.10,    4.00,    1.68,    16.50,  516.5, 0.0,    0.142E+02 !  !END!
29  ! SRCNAM = SCG4BF     !
29  ! X =   534.9000,  2953.3000,   26.20,    4.00,    1.62,     9.88,  338.2, 0.0,    0.259E+02 !  !END!
30  ! SRCNAM = SCG5BF     !
30  ! X =   534.9000,  2953.3000,   24.10,    4.00,    2.03,    28.42,  527.6, 0.0,    0.000E+00 !  !END!
31  ! SRCNAM = SCG6BF     !
31  ! X =   534.9000,  2953.3000,   12.20,    4.00,    1.52,     6.53,  605.4, 0.0,    0.000E+00 !  !END!
32  ! SRCNAM = SCG7BF     !
32  ! X =   534.9000,  2953.3000,   12.20,    4.00,    1.52,    17.20,  605.6, 0.0,    0.153E+02 !  !END!
35  ! SRCNAM = USSBRY1B   !
35  ! X =   537.8000,  2969.1001,   19.80,    4.00,    1.68,    44.30,  494.0, 0.0,    0.365E+02 !  !END!
36  ! SRCNAM = USBRY23B   !
36  ! X =   537.8000,  2969.1001,   19.80,    4.00,    1.68,    37.90,  344.0, 0.0,    0.730E+02 !  !END!
43  ! SRCNAM = OSBLR1B    !
43  ! X =   544.2000,  2968.0000,   22.00,    4.00,    1.52,    18.18,  342.0, 0.0,    0.507E+01 !  !END!
44  ! SRCNAM = OSBLR2B    !
44  ! X =   544.2000,  2968.0000,   22.00,    4.00,    1.52,    18.10,  341.0, 0.0,    0.163E+02 !  !END!
45  ! SRCNAM = OSBLR3B    !
45  ! X =   544.2000,  2968.0000,   22.00,    4.00,    1.93,    14.50,  341.0, 0.0,    0.726E+01 !  !END!
46  ! SRCNAM = OSBLR4B    !
46  ! X =   544.2000,  2968.0000,   22.00,    4.00,    1.83,    18.80,  341.0, 0.0,    0.136E+02 !  !END!
52  ! SRCNAM = ATLSUG1B   !
52  ! X =   552.9000,  2945.2000,   18.90,    5.00,    1.92,    12.70,  506.0, 0.0,    0.172E+02 !  !END!
53  ! SRCNAM = ATLSUG2B   !
53  ! X =   552.9000,  2945.2000,   18.90,    5.00,    1.92,    10.90,  511.0, 0.0,    0.225E+02 !  !END!
54  ! SRCNAM = ATLSUG3B   !
54  ! X =   552.9000,  2945.2000,   21.90,    5.00,    1.83,    17.50,  522.0, 0.0,    0.169E+02 !  !END!
55  ! SRCNAM = ATLSUG4B   !
55  ! X =   552.9000,  2945.2000,   18.30,    5.00,    1.83,    15.00,  344.0, 0.0,    0.108E+02 !  !END!
 3  ! SRCNAM = TARMK1B    !
 3  ! X =   562.9000,  2861.7000,   61.00,    2.00,    2.44,    12.84,  465.0, 0.0,    0.571E+01 !  !END!
 4  ! SRCNAM = TARMK2B    !
 4  ! X =   562.9000,  2861.7000,   61.00,    2.00,    2.44,    12.84,  465.0, 0.0,    0.571E+01 !  !END!
 5  ! SRCNAM = TARMK3B    !
 5  ! X =   562.9000,  2861.7000,   61.00,    2.00,    4.57,    10.78,  472.0, 0.0,    0.276E+01 !  !END!
10  ! SRCNAM = FTLAU45B   !
10  ! X =   580.1000,  2883.3000,   46.00,    2.00,    4.27,    14.63,  422.0, 0.0,    0.457E+03 !  !END!
24  ! SRCNAM = FMU1       !
24  ! X =   422.1000,  2952.8999,   91.80,    2.00,    2.90,    29.90,  422.0, 0.0,    0.586E+03 !  !END!
25  ! SRCNAM = FMU2       !
25  ! X =   422.1000,  2952.8999,  121.20,    2.00,    5.52,    19.20,  408.0, 0.0,    0.133E+04 !  !END!
```

a
Data for each source are treated as a separate input subgroup
and therefore must end with an input group terminator.

SRCNAM is a 12-character name for a source
(No default)
X is an array holding the source data listed by the column headings
(No default)
SIGYZI is an array holding the initial sigma-y and sigma-z (m)
(Default: 0.,0.)
FMFAC is a vertical momentum flux factor (0. or 1.0) used to represent the effect of rain-caps or other physical configurations that reduce momentum rise associated with the actual exit velocity.
(Default: 1.0 -- full momentum used)

b
0. = No building downwash modeled, 1. = downwash modeled
NOTE: must be entered as a REAL number (i.e., with decimal point)

c
An emission rate must be entered for every pollutant modeled.
Enter emission rate of zero for secondary pollutants that are modeled, but not emitted. Units are specified by IPTU
(e.g. 1 for g/s).

Subgroup (13c)

BUILDING DIMENSION DATA FOR SOURCES SUBJECT TO DOWNWASH

Source a
No. Effective building width and height (in meters) every 10 degrees

```
       6  ! SRCNAM = USSBLR1B   !
       6  !  HEIGHT =  21.00,  21.00,  20.70,  20.50,  20.50,  20.50,
                 20.50,  20.50,  20.50,  20.50,  20.50,  20.50,
                 28.60,  28.60,  28.60,  28.60,  28.60,  28.60,
                 21.00,  21.00,  20.70,  20.50,  20.50,  20.50,
                 20.50,  20.50,  20.50,  20.50,  20.50,  20.50,
                 28.60,  28.60,  28.60,  28.60,  28.60,  28.60 !
       6  !  WIDTH =   32.97,  44.52,  48.51,  47.03,  46.58,  44.71,
                 41.49,  37.00,  31.39,  37.00,  41.49,  44.71,
                 62.36,  63.03,  61.79,  58.68,  53.78,  47.24,
                 32.97,  44.52, 104.82,  47.03,  46.58,  44.71,
                 41.49,  37.00,  31.39,  37.00,  41.49,  44.71,
                 62.36,  63.03,  61.79,  58.68,  53.78,  47.24 !
!END!

       7  ! SRCNAM = USSBLR2B   !
       7  !  HEIGHT =  20.70,  20.70,  20.50,  20.50,  20.50,  20.50,
                 20.50,  20.50,  20.50,  20.50,  20.50,  28.60,
                 28.60,  28.60,  21.00,  21.00,  28.60,  21.00,
                 20.70,  20.70,  20.50,  20.50,  20.50,  20.50,
                 20.50,  20.50,  20.50,  20.50,  20.50,  28.60,
                 28.60,  28.60,  28.60,  28.60,  28.60,  21.00 !
       7  !  WIDTH =   33.74,  41.76,  46.05,  47.03,  46.58,  44.71,
                 41.49,  37.00,  31.39,  37.00,  41.49,  59.78,
                 62.36,  63.03,  54.72,  44.52,  53.78,  67.67,
                 99.58, 103.78,  46.05,  47.03,  46.58,  44.71,
                 41.49,  37.00,  31.39,  37.00,  41.49,  59.78,
                 62.36,  63.03,  61.79,  58.68,  53.78,  67.67 !

!END!

       8  ! SRCNAM = USSBLR3B   !
       8  !  HEIGHT =  20.70,  20.50,  20.50,  20.50,  20.50,  20.50,
                 20.50,  20.50,  20.50,  20.50,  20.50,  21.00,
                 20.70,  20.50,  20.50,  20.50,  20.50,  20.50,
                 20.70,  20.50,  20.50,  20.50,  20.50,  20.50,
                 20.50,  20.50,  20.50,  20.50,  20.50,  28.60,
                 28.60,  28.60,  28.60,  28.60,  21.00,  20.70 !
       8  !  WIDTH =   33.74,  43.68,  46.05,  47.03,  46.58,  44.71,
                 41.49,  37.00,  31.39,  37.00,  41.49,  85.57,
                105.13,  47.03,  46.05,  43.68,  39.97,  35.05,
                 99.58,  43.68,  46.05,  47.03,  46.58,  44.71,
                 41.49,  37.00,  31.39,  37.00,  41.49,  59.78,
                 62.36,  63.03,  61.79,  58.68,  32.97,  24.69 !

!END!

       9  ! SRCNAM = EPELLET    !
       9  !  HEIGHT =  15.50,  15.50,  15.50,  15.50,  15.50,  15.50,
                 15.50,  15.50,  15.50,  15.50,  15.50,  15.50,
                 15.50,  15.50,  15.50,  15.50,  15.50,  15.50,
```

```
                15.50,  15.50,  15.50,  15.50,  15.50,  15.50,
                15.50,  15.50,  15.50,  15.50,  15.50,  20.50,
                28.60,  28.60,  28.60,  20.50,  15.50,  15.50 !
       9  !  WIDTH =   18.82,  20.91,  22.37,  23.15,  23.23,  22.60,
                21.28,  19.31,  16.76,  19.31,  21.28,  22.60,
                23.23,  23.15,  22.37,  20.91,  18.82,  16.15,
                18.82,  20.91,  22.37,  23.15,  23.23,  22.60,
                21.28,  19.31,  16.76,  19.31,  21.28,  44.71,
                62.36,  63.03,  61.79,  56.38,  18.82,  16.15 !

!END!
      10  ! SRCNAM = WPELLET    !
      10  !  HEIGHT =  15.50,  15.50,  15.50,  15.50,  15.50,  15.50,
                15.50,  15.50,  15.50,  15.50,  15.50,  15.50,
                15.50,  15.50,  15.50,  15.50,  15.50,  15.50,
                15.50,  15.50,  15.50,  15.50,  15.50,  20.50,
                28.60,  28.60,  28.60,  20.50,  15.50,  15.50 !
      10  !  WIDTH =   18.82,  20.91,  22.37,  23.15,  23.23,  22.60,
                21.28,  19.31,  16.76,  19.31,  21.28,  22.60,
                23.23,  23.15,  22.37,  20.91,  18.82,  16.15,
                18.82,  20.91,  22.37,  23.15,  23.23,  22.60,
                21.28,  19.31,  16.76,  19.31,  21.28,  44.71,
                62.36,  63.03,  61.79,  56.38,  18.82,  16.15 !
!END!

---------------
Subgroup (13d)
---------------
                                                    a
          POINT SOURCE: VARIABLE EMISSIONS DATA
          -------------------------------------

     Use this subgroup to describe temporal variations in the emission
     rates given in 13b.  Factors entered multiply the rates in 13b.
     Skip sources here that have constant emissions.  For more elaborate
     variation in source parameters, use PTEMARB.DAT and NPT2 > 0.

     IVARY determines the type of variation, and is source-specific:
     (IVARY)                                    Default: 0
          0 =       Constant
          1 =       Diurnal cycle (24 scaling factors: hours 1-24)
          2 =       Monthly cycle (12 scaling factors: months 1-12)
          3 =       Hour & Season (4 groups of 24 hourly scaling factors,
                                   where first group is DEC-JAN-FEB)
          4 =       Speed & Stab. (6 groups of 6 scaling factors, where
                                   first group is Stability Class A,
                                   and the speed classes have upper
                                   bounds (m/s) defined in Group 12
          5 =       Temperature   (12 scaling factors, where temperature
                                   classes have upper bounds (C) of:
                                   0, 5, 10, 15, 20, 25, 30, 35, 40,
                                   45, 50, 50+)

       6  ! SRCNAM = USSBLR1B   !
       6  ! IVARY  =  2   !
       6  ! SO2    =   1.00,   1.00,   1.00,   1.00,   0.00,   0.00,
                0.00,   0.00,   0.00,   1.00,   1.00,   1.00   !
!END!
       7  ! SRCNAM = USSBLR2B   !
       7  ! IVARY  =  2   !
       7  ! SO2    =   1.00,   1.00,   1.00,   1.00,   0.00,   0.00,
                0.00,   0.00,   0.00,   1.00,   1.00,   1.00   !
!END!
       8  ! SRCNAM = USSBLR3B   !
       8  ! IVARY  =  2   !
       8  ! SO2    =   1.00,   1.00,   1.00,   1.00,   0.00,   0.00,
                0.00,   0.00,   0.00,   1.00,   1.00,   1.00   !
!END!
       9  ! SRCNAM = EPELLET    !
       9  ! IVARY  =  2   !
       9  ! SO2    =   1.00,   1.00,   1.00,   1.00,   0.00,   0.00,
                0.00,   0.00,   0.00,   1.00,   1.00,   1.00   !
!END!
      10  ! SRCNAM = WPELLET    !
      10  ! IVARY  =  2   !
      10  ! SO2    =   1.00,   1.00,   1.00,   1.00,   0.00,   0.00,
                0.00,   0.00,   0.00,   1.00,   1.00,   1.00   !
!END!
      19  ! SRCNAM = SCG1BO     !
      19  ! IVARY  =  2   !
```

```
     19  ! SO2    =   1.00,   1.00,   1.00,   1.00,   0.00,   0.00,
                0.00,   0.00,   0.00,   1.00,   1.00,   1.00   !
!END!
     20  ! SRCNAM = SCG2BO     !
     20  ! IVARY  =  2   !
     20  ! SO2    =   1.00,   1.00,   1.00,   1.00,   0.00,   0.00,
                0.00,   0.00,   0.00,   1.00,   1.00,   1.00   !
!END!
     21  ! SRCNAM = SCG3BO     !
     21  ! IVARY  =  2   !
     21  ! SO2    =   1.00,   1.00,   1.00,   1.00,   0.00,   0.00,
                0.00,   0.00,   0.00,   1.00,   1.00,   1.00   !
!END!
     22  ! SRCNAM = SCG4BO     !
     22  ! IVARY  =  2   !
     22  ! SO2    =   1.00,   1.00,   1.00,   1.00,   0.00,   0.00,
                0.00,   0.00,   0.00,   1.00,   1.00,   1.00   !
!END!
     23  ! SRCNAM = SCG5BO     !
     23  ! IVARY  =  2   !
     23  ! SO2    =   1.00,   1.00,   1.00,   1.00,   0.00,   0.00,
                0.00,   0.00,   0.00,   1.00,   1.00,   1.00   !
!END!
     24  ! SRCNAM = SCG6BO     !
     24  ! IVARY  =  2   !
     24  ! SO2    =   1.00,   1.00,   1.00,   1.00,   0.00,   0.00,
                0.00,   0.00,   0.00,   1.00,   1.00,   1.00   !
!END!
     25  ! SRCNAM = SCG7BO     !
     25  ! IVARY  =  2   !
     25  ! SO2    =   1.00,   1.00,   1.00,   1.00,   0.00,   0.00,
                0.00,   0.00,   0.00,   1.00,   1.00,   1.00   !
!END!
     26  ! SRCNAM = SCG1BF     !
     26  ! IVARY  =  2   !
     26  ! SO2    =   0.00,   0.00,   0.00,   0.00,   1.00,   1.00,
                1.00,   1.00,   1.00,   0.00,   0.00,   0.00   !
!END!
     27  ! SRCNAM = SCG2BF     !
     27  ! IVARY  =  2   !
     27  ! SO2    =   0.00,   0.00,   0.00,   0.00,   1.00,   1.00,
                1.00,   1.00,   1.00,   0.00,   0.00,   0.00   !
!END!
     28  ! SRCNAM = SCG3BF     !
     28  ! IVARY  =  2   !
     28  ! SO2    =   0.00,   0.00,   0.00,   0.00,   1.00,   1.00,
                1.00,   1.00,   1.00,   0.00,   0.00,   0.00   !
!END!
     29  ! SRCNAM = SCG4BF     !
     29  ! IVARY  =  2   !
     29  ! SO2    =   0.00,   0.00,   0.00,   0.00,   1.00,   1.00,
                1.00,   1.00,   1.00,   0.00,   0.00,   0.00   !
!END!
     30  ! SRCNAM = SCG5BF     !
     30  ! IVARY  =  2   !
     30  ! SO2    =   0.00,   0.00,   0.00,   0.00,   1.00,   1.00,
                1.00,   1.00,   1.00,   0.00,   0.00,   0.00   !
!END!
     31  ! SRCNAM = SCG6BF     !
     31  ! IVARY  =  2   !
     31  ! SO2    =   0.00,   0.00,   0.00,   0.00,   1.00,   1.00,
                1.00,   1.00,   1.00,   0.00,   0.00,   0.00   !
!END!
     32  ! SRCNAM = SCG7BF     !
     32  ! IVARY  =  2   !
     32  ! SO2    =   0.00,   0.00,   0.00,   0.00,   1.00,   1.00,
                1.00,   1.00,   1.00,   0.00,   0.00,   0.00   !
!END!
     35  ! SRCNAM = USSBRY1B   !
     35  ! IVARY  =  2   !
     35  ! SO2    =   1.00,   1.00,   1.00,   1.00,   0.00,   0.00,
                0.00,   0.00,   0.00,   1.00,   1.00,   1.00   !
!END!
     36  ! SRCNAM = USBRY23B   !
     36  ! IVARY  =  2   !
     36  ! SO2    =   1.00,   1.00,   1.00,   1.00,   0.00,   0.00,
                0.00,   0.00,   0.00,   1.00,   1.00,   1.00   !
!END!
     43  ! SRCNAM = OSBLR1B    !
     43  ! IVARY  =  2   !
     43  ! SO2    =   1.00,   1.00,   1.00,   1.00,   0.00,   0.00,
```

```
                0.00,   0.00,   0.00,   1.00,   1.00,   1.00   !
!END!
      44  ! SRCNAM = OSBLR2B    !
      44  ! IVARY  =  2   !
      44  ! SO2    =   1.00,   1.00,   1.00,   1.00,   0.00,   0.00,
                0.00,   0.00,   0.00,   1.00,   1.00,   1.00   !
!END!
      45  ! SRCNAM = OSBLR3B    !
      45  ! IVARY  =  2   !
      45  ! SO2    =   1.00,   1.00,   1.00,   1.00,   0.00,   0.00,
                0.00,   0.00,   0.00,   1.00,   1.00,   1.00   !
!END!
      46  ! SRCNAM = OSBLR4B    !
      46  ! IVARY  =  2   !
      46  ! SO2    =   1.00,   1.00,   1.00,   1.00,   0.00,   0.00,
                0.00,   0.00,   0.00,   1.00,   1.00,   1.00   !
!END!
      52  ! SRCNAM = ATLSUG1B   !
      52  ! IVARY  =  2   !
      52  ! SO2    =   1.00,   1.00,   1.00,   1.00,   0.00,   0.00,
                0.00,   0.00,   0.00,   1.00,   1.00,   1.00   !
!END!
      53  ! SRCNAM = ATLSUG2B   !
      53  ! IVARY  =  2   !
      53  ! SO2    =   1.00,   1.00,   1.00,   1.00,   0.00,   0.00,
                0.00,   0.00,   0.00,   1.00,   1.00,   1.00   !
!END!
      54  ! SRCNAM = ATLSUG3B   !
      54  ! IVARY  =  2   !
      54  ! SO2    =   1.00,   1.00,   1.00,   1.00,   0.00,   0.00,
                0.00,   0.00,   0.00,   1.00,   1.00,   1.00   !
!END!
      55  ! SRCNAM = ATLSUG4B   !
      55  ! IVARY  =  2   !
      55  ! SO2    =   1.00,   1.00,   1.00,   1.00,   0.00,   0.00,
                0.00,   0.00,   0.00,   1.00,   1.00,   1.00   !
!END!
```

---

a
Data for each species are treated as a separate input subgroup
and therefore must end with an input group terminator.

INPUT GROUPS: 14a, 14b, 14c, 14d -- Area source parameters

Subgroup (14a)

Number of polygon area sources with
parameters specified below (NAR1) No default ! NAR1 = 0 !

Units used for area source
emissions below (IARU) Default: 1 ! IARU = 1 !
1 = g/m**2/s
2 = kg/m**2/hr
3 = lb/m**2/hr
4 = tons/m**2/yr
5 = Odour Unit * m/s (vol. flux/m**2 of odour compound)
6 = Odour Unit * m/min
7 = metric tons/m**2/yr

Number of source-species
combinations with variable
emissions scaling factors
provided below in (14d) (NSAR1) Default: 0 ! NSAR1 = 0 !

Number of buoyant polygon area sources
with variable location and emission
parameters (NAR2) No default ! NAR2 = 0 !
(If NAR2 > 0, ALL parameter data for
these sources are read from the file: BAEMARB.DAT)

!END!

Subgroup (14b)

AREA SOURCE: CONSTANT DATA [a]

Source No.	Effect. Height (m)	Base Elevation (m)	Initial Sigma z (m)	Emission Rates [b]

---

[a] Data for each source are treated as a separate input subgroup and therefore must end with an input group terminator.

[b] An emission rate must be entered for every pollutant modeled. Enter emission rate of zero for secondary pollutants that are modeled, but not emitted. Units are specified by IARU (e.g. 1 for g/m**2/s).

Subgroup (14c)

COORDINATES (UTM-km) FOR EACH VERTEX(4) OF EACH POLYGON

Source No.	Ordered list of X followed by list of Y, grouped by source [a]

---

[a] Data for each source are treated as a separate input subgroup and therefore must end with an input group terminator.

Subgroup (14d)

AREA SOURCE: VARIABLE EMISSIONS DATA [a]

Use this subgroup to describe temporal variations in the emission rates given in 14b. Factors entered multiply the rates in 14b. Skip sources here that have constant emissions. For more elaborate variation in source parameters, use BAEMARB.DAT and NAR2 > 0.

IVARY determines the type of variation, and is source-specific:
(IVARY) Default: 0

0 =	Constant	
1 =	Diurnal cycle	(24 scaling factors: hours 1-24)
2 =	Monthly cycle	(12 scaling factors: months 1-12)
3 =	Hour & Season	(4 groups of 24 hourly scaling factors, where first group is DEC-JAN-FEB)
4 =	Speed & Stab.	(6 groups of 6 scaling factors, where first group is Stability Class A, and the speed classes have upper bounds (m/s) defined in Group 12
5 =	Temperature	(12 scaling factors, where temperature classes have upper bounds (C) of: 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 50+)

---

[a] Data for each species are treated as a separate input subgroup and therefore must end with an input group terminator.

INPUT GROUPS: 15a, 15b, 15c -- Line source parameters

Subgroup (15a)

Number of buoyant line sources
with variable location and emission
parameters (NLN2) No default ! NLN2 = 0 !

(If NLN2 > 0, ALL parameter data for
these sources are read from the file: LNEMARB.DAT)

Number of buoyant line sources (NLINES) No default ! NLINES = 0 !

Units used for line source
emissions below (ILNU) Default: 1 ! ILNU = 1 !
1 = g/s
2 = kg/hr
3 = lb/hr
4 = tons/yr
5 = Odour Unit * m**3/s (vol. flux of odour compound)
6 = Odour Unit * m**3/min
7 = metric tons/yr

Number of source-species
combinations with variable
emissions scaling factors
provided below in (15c) (NSLN1) Default: 0 ! NSLN1 = 0 !

Maximum number of segments used to model
each line (MXNSEG) Default: 7 ! MXNSEG = 7 !

The following variables are required only if NLINES > 0. They are
used in the buoyant line source plume rise calculations.

Number of distances at which Default: 6 ! NLRISE = 6 !
transitional rise is computed

Average building length (XL) No default ! XL = .0 !
(in meters)

Average building height (HBL) No default ! HBL = .0 !
(in meters)

Average building width (WBL) No default ! WBL = .0 !
(in meters)

Average line source width (WML) No default ! WML = .0 !
(in meters)

Average separation between buildings (DXL) No default ! DXL = .0 !
(in meters)

Average buoyancy parameter (FPRIMEL) No default ! FPRIMEL = .0 !
(in m**4/s**3)

!END!

Subgroup (15b)

BUOYANT LINE SOURCE: CONSTANT DATA

Source No.	Beg. X Coordinate (km)	Beg. Y Coordinate (km)	End. X Coordinate (km)	End. Y Coordinate (km)	Release Height (m)	Base Elevation (m)	Emission Rates [a]

---

a
Data for each source are treated as a separate input subgroup
and therefore must end with an input group terminator.

b
An emission rate must be entered for every pollutant modeled.
Enter emission rate of zero for secondary pollutants that are
modeled, but not emitted. Units are specified by ILNTU
(e.g. 1 for g/s).

Subgroup (15c)

BUOYANT LINE SOURCE: VARIABLE EMISSIONS DATA [a]

Use this subgroup to describe temporal variations in the emission rates given in 15b. Factors entered multiply the rates in 15b. Skip sources here that have constant emissions.

IVARY determines the type of variation, and is source-specific:
(IVARY) Default: 0

0 =	Constant	
1 =	Diurnal cycle	(24 scaling factors: hours 1-24)
2 =	Monthly cycle	(12 scaling factors: months 1-12)
3 =	Hour & Season	(4 groups of 24 hourly scaling factors, where first group is DEC-JAN-FEB)
4 =	Speed & Stab.	(6 groups of 6 scaling factors, where first group is Stability Class A, and the speed classes have upper bounds (m/s) defined in Group 12
5 =	Temperature	(12 scaling factors, where temperature classes have upper bounds (C) of: 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 50+)

---
[a] Data for each species are treated as a separate input subgroup and therefore must end with an input group terminator.

INPUT GROUPS: 16a, 16b, 16c -- Volume source parameters

Subgroup (16a)

Number of volume sources with parameters provided in 16b,c (NVL1) No default ! NVL1 = 0 !

Units used for volume source emissions below in 16b (IVLU) Default: 1 ! IVLU = 1 !

1 =	g/s
2 =	kg/hr
3 =	lb/hr
4 =	tons/yr
5 =	Odour Unit * m**3/s (vol. flux of odour compound)
6 =	Odour Unit * m**3/min
7 =	metric tons/yr

Number of source-species combinations with variable emissions scaling factors provided below in (16c) (NSVL1) Default: 0 ! NSVL1 = 0 !

Number of volume sources with variable location and emission parameters (NVL2) No default ! NVL2 = 0 !

(If NVL2 > 0, ALL parameter data for these sources are read from the VOLEMARB.DAT file(s))

!END!

Subgroup (16b)

VOLUME SOURCE: CONSTANT DATA [a]

X UTM Coordinate	Y UTM Coordinate	Effect. Height	Base Elevation	Initial Sigma y	Initial Sigma z	Emission Rates [b]

(km)	(km)	(m)	(m)	(m)	(m)	

---

a
Data for each source are treated as a separate input subgroup
and therefore must end with an input group terminator.

b
An emission rate must be entered for every pollutant modeled.
Enter emission rate of zero for secondary pollutants that are
modeled, but not emitted. Units are specified by IVLU
(e.g. 1 for g/s).

Subgroup (16c)
---

a
VOLUME SOURCE: VARIABLE EMISSIONS DATA

Use this subgroup to describe temporal variations in the emission
rates given in 16b. Factors entered multiply the rates in 16b.
Skip sources here that have constant emissions. For more elaborate
variation in source parameters, use VOLEMARB.DAT and NVL2 > 0.

IVARY determines the type of variation, and is source-specific:
(IVARY) Default: 0

0 =	Constant	
1 =	Diurnal cycle	(24 scaling factors: hours 1-24)
2 =	Monthly cycle	(12 scaling factors: months 1-12)
3 =	Hour & Season	(4 groups of 24 hourly scaling factors, where first group is DEC-JAN-FEB)
4 =	Speed & Stab.	(6 groups of 6 scaling factors, where first group is Stability Class A, and the speed classes have upper bounds (m/s) defined in Group 12
5 =	Temperature	(12 scaling factors, where temperature classes have upper bounds (C) of: 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 50+)

---

a
Data for each species are treated as a separate input subgroup
and therefore must end with an input group terminator.

INPUT GROUPS: 17a & 17b -- Non-gridded (discrete) receptor information

---
Subgroup (17a)

Number of non-gridded receptors (NREC) No default ! NREC = 251 !

!END!

Subgroup (17b)
---

a
NON-GRIDDED (DISCRETE) RECEPTOR DATA

Receptor No.	X UTM Coordinate (km)	Y UTM Coordinate (km)	Ground Elevation (m)	Height Above Ground (m) b	
251 RECEPTORS INCLUDES ALL NPS ENP BOUNARY RECEPTORS WITH LESS RESOLUTION IN THE INTERIOR					
1 ! X =	515.576,	2748.652,	0.000,	0.000!	!END!
2 ! X =	510.522,	2751.415,	0.000,	0.000!	!END!
3 ! X =	513.047,	2751.417,	0.000,	0.000!	!END!
4 ! X =	515.572,	2751.420,	0.000,	0.000!	!END!

```
 5 ! X =     518.098,   2751.423,      0.000,      0.000!   !END!
 6 ! X =     520.623,   2751.426,      0.000,      0.000!   !END!
 7 ! X =     507.995,   2754.181,      0.000,      0.000!   !END!
 8 ! X =     510.520,   2754.183,      0.000,      0.000!   !END!
 9 ! X =     520.619,   2754.194,      0.000,      0.000!   !END!
10 ! X =     523.143,   2754.198,      0.000,      0.000!   !END!
11 ! X =     525.668,   2754.203,      0.000,      0.000!   !END!
12 ! X =     505.469,   2756.948,      0.000,      0.000!   !END!
13 ! X =     507.993,   2756.949,      0.000,      0.000!   !END!
14 ! X =     525.663,   2756.971,      0.000,      0.000!   !END!
15 ! X =     528.187,   2756.976,      0.000,      0.000!   !END!
16 ! X =     530.712,   2756.981,      0.000,      0.000!   !END!
17 ! X =     502.944,   2759.715,      0.000,      0.000!   !END!
18 ! X =     505.468,   2759.716,      0.000,      0.000!   !END!
19 ! X =     518.087,   2759.727,      0.000,      0.000!   !END!
20 ! X =     530.705,   2759.749,      0.000,      0.000!   !END!
21 ! X =     533.229,   2759.755,      0.000,      0.000!   !END!
22 ! X =     500.421,   2762.483,      0.000,      0.000!   !END!
23 ! X =     502.944,   2762.483,      0.000,      0.000!   !END!
24 ! X =     533.222,   2762.523,      0.000,      0.000!   !END!
25 ! X =     535.746,   2762.530,      0.000,      0.000!   !END!
26 ! X =     538.269,   2762.537,      0.000,      0.000!   !END!
27 ! X =     497.898,   2765.251,      0.000,      0.000!   !END!
28 ! X =     500.420,   2765.251,      0.000,      0.000!   !END!
29 ! X =     538.261,   2765.305,      0.000,      0.000!   !END!
30 ! X =     540.784,   2765.312,      0.000,      0.000!   !END!
31 ! X =     543.307,   2765.320,      0.000,      0.000!   !END!
32 ! X =     495.376,   2768.020,      0.000,      0.000!   !END!
33 ! X =     497.898,   2768.020,      0.000,      0.000!   !END!
34 ! X =     505.465,   2768.020,      0.000,      0.000!   !END!
35 ! X =     518.076,   2768.031,      0.000,      0.000!   !END!
36 ! X =     525.642,   2768.043,      0.000,      0.000!   !END!
37 ! X =     533.209,   2768.060,      0.000,      0.000!   !END!
38 ! X =     543.298,   2768.088,      0.000,      0.000!   !END!
39 ! X =     545.820,   2768.096,      0.000,      0.000!   !END!
40 ! X =     548.342,   2768.105,      0.000,      0.000!   !END!
41 ! X =     495.377,   2770.788,      0.000,      0.000!   !END!
42 ! X =     548.333,   2770.873,      0.000,      0.000!   !END!
43 ! X =     492.857,   2773.557,      0.000,      0.000!   !END!
44 ! X =     495.378,   2773.556,      0.000,      0.000!   !END!
45 ! X =     548.323,   2773.641,      0.000,      0.000!   !END!
46 ! X =     550.844,   2773.650,      1.000,      0.000!   !END!
47 ! X =     490.337,   2776.327,      0.000,      0.000!   !END!
48 ! X =     492.858,   2776.326,      0.000,      0.000!   !END!
49 ! X =     505.461,   2776.325,      0.000,      0.000!   !END!
50 ! X =     518.065,   2776.336,      0.000,      0.000!   !END!
51 ! X =     525.627,   2776.348,      0.000,      0.000!   !END!
52 ! X =     533.189,   2776.364,      1.000,      0.000!   !END!
53 ! X =     540.751,   2776.385,      0.000,      0.000!   !END!
54 ! X =     548.313,   2776.409,      0.000,      0.000!   !END!
55 ! X =     550.834,   2776.419,      0.000,      0.000!   !END!
56 ! X =     553.354,   2776.428,      0.000,      0.000!   !END!
57 ! X =     487.819,   2779.097,      0.000,      0.000!   !END!
58 ! X =     490.339,   2779.095,      0.000,      0.000!   !END!
59 ! X =     553.344,   2779.196,      0.000,      0.000!   !END!
60 ! X =     555.864,   2779.207,      0.000,      0.000!   !END!
61 ! X =     485.302,   2781.868,      0.000,      0.000!   !END!
62 ! X =     487.822,   2781.865,      0.000,      0.000!   !END!
63 ! X =     555.852,   2781.975,      1.000,      0.000!   !END!
64 ! X =     558.372,   2781.985,      0.000,      0.000!   !END!
65 ! X =     482.786,   2784.639,      0.000,      0.000!   !END!
66 ! X =     485.305,   2784.636,      0.000,      0.000!   !END!
67 ! X =     492.863,   2784.630,      1.000,      0.000!   !END!
68 ! X =     505.458,   2784.629,      1.000,      0.000!   !END!
69 ! X =     518.054,   2784.640,      1.000,      0.000!   !END!
70 ! X =     525.611,   2784.652,      1.000,      0.000!   !END!
71 ! X =     533.168,   2784.669,      1.000,      0.000!   !END!
72 ! X =     540.726,   2784.689,      0.000,      0.000!   !END!
73 ! X =     548.283,   2784.714,      0.000,      0.000!   !END!
74 ! X =     555.841,   2784.743,      1.000,      0.000!   !END!
75 ! X =     558.360,   2784.754,      0.000,      0.000!   !END!
76 ! X =     560.879,   2784.765,      0.000,      0.000!   !END!
77 ! X =     482.790,   2787.407,      0.000,      0.000!   !END!
78 ! X =     555.830,   2787.511,      0.000,      0.000!   !END!
79 ! X =     480.275,   2790.179,      0.000,      0.000!   !END!
80 ! X =     482.793,   2790.175,      0.000,      0.000!   !END!
81 ! X =     555.818,   2790.280,      0.000,      0.000!   !END!
82 ! X =     480.279,   2792.947,      0.000,      0.000!   !END!
83 ! X =     482.797,   2792.944,      0.000,      0.000!   !END!
84 ! X =     492.867,   2792.935,      1.000,      0.000!   !END!
85 ! X =     505.455,   2792.934,      0.000,      0.000!   !END!
```

```
 86 ! X =     518.043,   2792.945,       1.000,       0.000!   !END!
 87 ! X =     525.595,   2792.957,       1.000,       0.000!   !END!
 88 ! X =     533.148,   2792.973,       1.000,       0.000!   !END!
 89 ! X =     540.701,   2792.994,       1.000,       0.000!   !END!
 90 ! X =     548.254,   2793.019,       1.000,       0.000!   !END!
 91 ! X =     555.807,   2793.048,       1.000,       0.000!   !END!
 92 ! X =     482.800,   2795.712,       0.000,       0.000!   !END!
 93 ! X =     540.693,   2795.762,       1.000,       0.000!   !END!
 94 ! X =     543.210,   2795.770,       1.000,       0.000!   !END!
 95 ! X =     545.727,   2795.778,       1.000,       0.000!   !END!
 96 ! X =     548.244,   2795.787,       1.000,       0.000!   !END!
 97 ! X =     550.761,   2795.796,       1.000,       0.000!   !END!
 98 ! X =     553.278,   2795.806,       1.000,       0.000!   !END!
 99 ! X =     555.795,   2795.816,       1.000,       0.000!   !END!
100 ! X =     482.804,   2798.480,       0.000,       0.000!   !END!
101 ! X =     540.684,   2798.530,       1.000,       0.000!   !END!
102 ! X =     482.807,   2801.248,       0.000,       0.000!   !END!
103 ! X =     492.871,   2801.239,       0.000,       0.000!   !END!
104 ! X =     505.451,   2801.238,       1.000,       0.000!   !END!
105 ! X =     518.032,   2801.249,       1.000,       0.000!   !END!
106 ! X =     525.580,   2801.262,       1.000,       0.000!   !END!
107 ! X =     533.128,   2801.278,       1.000,       0.000!   !END!
108 ! X =     540.676,   2801.299,       1.000,       0.000!   !END!
109 ! X =     482.811,   2804.016,       0.000,       0.000!   !END!
110 ! X =     540.668,   2804.067,       1.000,       0.000!   !END!
111 ! X =     482.814,   2806.785,       0.000,       0.000!   !END!
112 ! X =     540.659,   2806.835,       1.000,       0.000!   !END!
113 ! X =     482.818,   2809.553,       0.000,       0.000!   !END!
114 ! X =     492.876,   2809.544,       1.000,       0.000!   !END!
115 ! X =     505.448,   2809.543,       1.000,       0.000!   !END!
116 ! X =     518.020,   2809.554,       1.000,       0.000!   !END!
117 ! X =     525.564,   2809.566,       1.000,       0.000!   !END!
118 ! X =     533.107,   2809.583,       1.000,       0.000!   !END!
119 ! X =     540.651,   2809.603,       1.000,       0.000!   !END!
120 ! X =     482.821,   2812.321,       0.000,       0.000!   !END!
121 ! X =     540.642,   2812.372,       1.000,       0.000!   !END!
122 ! X =     480.311,   2815.093,       0.000,       0.000!   !END!
123 ! X =     482.825,   2815.089,       0.000,       0.000!   !END!
124 ! X =     540.634,   2815.140,       1.000,       0.000!   !END!
125 ! X =     480.315,   2817.861,       0.000,       0.000!   !END!
126 ! X =     492.880,   2817.849,       1.000,       0.000!   !END!
127 ! X =     505.445,   2817.848,       1.000,       0.000!   !END!
128 ! X =     518.009,   2817.859,       1.000,       0.000!   !END!
129 ! X =     525.548,   2817.871,       1.000,       0.000!   !END!
130 ! X =     533.087,   2817.888,       1.000,       0.000!   !END!
131 ! X =     540.626,   2817.908,       1.000,       0.000!   !END!
132 ! X =     477.807,   2820.633,       0.000,       0.000!   !END!
133 ! X =     480.320,   2820.630,       1.000,       0.000!   !END!
134 ! X =     540.617,   2820.677,       1.000,       0.000!   !END!
135 ! X =     543.130,   2820.685,       1.000,       0.000!   !END!
136 ! X =     477.812,   2823.402,       0.000,       0.000!   !END!
137 ! X =     543.121,   2823.453,       1.000,       0.000!   !END!
138 ! X =     475.305,   2826.174,       0.000,       0.000!   !END!
139 ! X =     477.816,   2826.170,       0.000,       0.000!   !END!
140 ! X =     485.350,   2826.160,       1.000,       0.000!   !END!
141 ! X =     492.884,   2826.154,       0.000,       0.000!   !END!
142 ! X =     505.441,   2826.153,       1.000,       0.000!   !END!
143 ! X =     517.998,   2826.164,       1.000,       0.000!   !END!
144 ! X =     525.532,   2826.176,       1.000,       0.000!   !END!
145 ! X =     533.066,   2826.193,       1.000,       0.000!   !END!
146 ! X =     538.089,   2826.206,       1.000,       0.000!   !END!
147 ! X =     543.112,   2826.221,       1.000,       0.000!   !END!
148 ! X =     472.799,   2828.948,       0.000,       0.000!   !END!
149 ! X =     475.310,   2828.943,       0.000,       0.000!   !END!
150 ! X =     543.103,   2828.990,       1.000,       0.000!   !END!
151 ! X =     472.805,   2831.716,       0.000,       0.000!   !END!
152 ! X =     492.887,   2831.690,       1.000,       0.000!   !END!
153 ! X =     495.398,   2831.689,       1.000,       0.000!   !END!
154 ! X =     497.908,   2831.688,       1.000,       0.000!   !END!
155 ! X =     500.418,   2831.688,       1.000,       0.000!   !END!
156 ! X =     502.929,   2831.689,       1.000,       0.000!   !END!
157 ! X =     505.439,   2831.689,       1.000,       0.000!   !END!
158 ! X =     507.949,   2831.691,       1.000,       0.000!   !END!
159 ! X =     510.460,   2831.692,       1.000,       0.000!   !END!
160 ! X =     512.970,   2831.695,       1.000,       0.000!   !END!
161 ! X =     515.480,   2831.697,       1.000,       0.000!   !END!
162 ! X =     543.094,   2831.758,       1.000,       0.000!   !END!
163 ! X =     545.604,   2831.766,       1.000,       0.000!   !END!
164 ! X =     470.301,   2834.490,       0.000,       0.000!   !END!
165 ! X =     472.811,   2834.484,       0.000,       0.000!   !END!
166 ! X =     482.850,   2834.468,       1.000,       0.000!   !END!
```

167	! X =	492.889,	2834.458,	1.000,	0.000!	!END!
168	! X =	515.477,	2834.466,	1.000,	0.000!	!END!
169	! X =	517.987,	2834.469,	1.000,	0.000!	!END!
170	! X =	525.516,	2834.481,	1.000,	0.000!	!END!
171	! X =	533.046,	2834.498,	1.000,	0.000!	!END!
172	! X =	538.065,	2834.511,	1.000,	0.000!	!END!
173	! X =	543.085,	2834.526,	1.000,	0.000!	!END!
174	! X =	467.798,	2837.264,	0.000,	0.000!	!END!
175	! X =	470.307,	2837.258,	0.000,	0.000!	!END!
176	! X =	490.381,	2837.228,	1.000,	0.000!	!END!
177	! X =	492.890,	2837.227,	1.000,	0.000!	!END!
178	! X =	515.474,	2837.234,	1.000,	0.000!	!END!
179	! X =	543.076,	2837.295,	1.000,	0.000!	!END!
180	! X =	545.585,	2837.303,	1.000,	0.000!	!END!
181	! X =	548.095,	2837.312,	1.000,	0.000!	!END!
182	! X =	465.296,	2840.039,	0.000,	0.000!	!END!
183	! X =	467.804,	2840.032,	0.000,	0.000!	!END!
184	! X =	475.331,	2840.016,	1.000,	0.000!	!END!
185	! X =	487.874,	2839.999,	1.000,	0.000!	!END!
186	! X =	490.383,	2839.997,	1.000,	0.000!	!END!
187	! X =	515.471,	2840.002,	1.000,	0.000!	!END!
188	! X =	548.085,	2840.080,	1.000,	0.000!	!END!
189	! X =	462.795,	2842.814,	0.000,	0.000!	!END!
190	! X =	465.303,	2842.807,	0.000,	0.000!	!END!
191	! X =	487.877,	2842.767,	1.000,	0.000!	!END!
192	! X =	515.467,	2842.771,	1.000,	0.000!	!END!
193	! X =	517.976,	2842.774,	1.000,	0.000!	!END!
194	! X =	525.500,	2842.786,	1.000,	0.000!	!END!
195	! X =	533.025,	2842.803,	1.000,	0.000!	!END!
196	! X =	538.042,	2842.816,	1.000,	0.000!	!END!
197	! X =	543.058,	2842.832,	1.000,	0.000!	!END!
198	! X =	548.075,	2842.849,	1.000,	0.000!	!END!
199	! X =	460.295,	2845.590,	0.000,	0.000!	!END!
200	! X =	462.802,	2845.582,	0.000,	0.000!	!END!
201	! X =	470.326,	2845.563,	1.000,	0.000!	!END!
202	! X =	482.864,	2845.541,	1.000,	0.000!	!END!
203	! X =	485.372,	2845.538,	1.000,	0.000!	!END!
204	! X =	487.879,	2845.536,	1.000,	0.000!	!END!
205	! X =	515.464,	2845.539,	1.000,	0.000!	!END!
206	! X =	548.065,	2845.617,	1.000,	0.000!	!END!
207	! X =	457.796,	2848.366,	0.000,	0.000!	!END!
208	! X =	460.303,	2848.358,	0.000,	0.000!	!END!
209	! X =	477.853,	2848.317,	1.000,	0.000!	!END!
210	! X =	480.360,	2848.313,	1.000,	0.000!	!END!
211	! X =	482.868,	2848.309,	1.000,	0.000!	!END!
212	! X =	515.461,	2848.307,	1.000,	0.000!	!END!
213	! X =	517.968,	2848.311,	1.000,	0.000!	!END!
214	! X =	520.475,	2848.314,	1.000,	0.000!	!END!
215	! X =	522.982,	2848.318,	1.000,	0.000!	!END!
216	! X =	525.490,	2848.323,	1.000,	0.000!	!END!
217	! X =	527.997,	2848.328,	1.000,	0.000!	!END!
218	! X =	530.504,	2848.334,	1.000,	0.000!	!END!
219	! X =	533.011,	2848.340,	1.000,	0.000!	!END!
220	! X =	535.518,	2848.346,	1.000,	0.000!	!END!
221	! X =	538.026,	2848.353,	1.000,	0.000!	!END!
222	! X =	540.533,	2848.360,	1.000,	0.000!	!END!
223	! X =	543.040,	2848.368,	1.000,	0.000!	!END!
224	! X =	545.547,	2848.377,	1.000,	0.000!	!END!
225	! X =	548.054,	2848.386,	1.000,	0.000!	!END!
226	! X =	455.298,	2851.142,	0.000,	0.000!	!END!
227	! X =	457.805,	2851.134,	0.000,	0.000!	!END!
228	! X =	465.325,	2851.112,	1.000,	0.000!	!END!
229	! X =	472.845,	2851.095,	1.000,	0.000!	!END!
230	! X =	475.351,	2851.090,	1.000,	0.000!	!END!
231	! X =	477.858,	2851.085,	1.000,	0.000!	!END!
232	! X =	450.295,	2853.929,	0.000,	0.000!	!END!
233	! X =	452.801,	2853.920,	0.000,	0.000!	!END!
234	! X =	455.307,	2853.911,	0.000,	0.000!	!END!
235	! X =	472.850,	2853.863,	1.000,	0.000!	!END!
236	! X =	450.305,	2856.697,	0.000,	0.000!	!END!
237	! X =	452.811,	2856.688,	0.000,	0.000!	!END!
238	! X =	457.822,	2856.671,	1.000,	0.000!	!END!
239	! X =	460.328,	2856.663,	1.000,	0.000!	!END!
240	! X =	462.834,	2856.656,	0.000,	0.000!	!END!
241	! X =	465.339,	2856.649,	1.000,	0.000!	!END!
242	! X =	472.856,	2856.631,	1.000,	0.000!	!END!
243	! X =	452.821,	2859.456,	1.000,	0.000!	!END!
244	! X =	455.326,	2859.448,	1.000,	0.000!	!END!
245	! X =	457.831,	2859.439,	1.000,	0.000!	!END!
246	! X =	465.346,	2859.418,	1.000,	0.000!	!END!
247	! X =	467.852,	2859.411,	1.000,	0.000!	!END!

```
   248 ! X =     470.357,   2859.405,       1.000,       0.000!   !END!
   249 ! X =     472.862,   2859.400,       1.000,       0.000!   !END!
   250 ! X =     455.335,   2862.216,       1.000,       0.000!   !END!
   251 ! X =     457.840,   2862.208,       1.000,       0.000!   !END!
-------------
```

a
Data for each receptor are treated as a separate input subgroup
and therefore must end with an input group terminator.

b
Receptor height above ground is optional. If no value is entered,

```
1990 USSC CLEWISTON LOW SULFUR/ CALPUFF, SO2 CLASS I ANALYSIS 1/23/06
ALL FUTURE PSD SOURCES
4-km grid, using MM4 DATA, SOUTH FLORIDA DOMAIN, 1990, ENP RECEPTORS
---------------- Run title (3 lines) ------------------------------------------

                    CALPUFF MODEL CONTROL FILE
                    --------------------------

------------------------------------------------------------------------------

INPUT GROUP: 0 -- Input and Output File Names

--------------
Default Name  Type          File Name
------------  ----          ---------
CALMET.DAT    input    * METDAT =             *
    or
ISCMET.DAT    input    * ISCDAT =             *
    or
PLMMET.DAT    input    * PLMDAT =             *
    or
PROFILE.DAT   input    * PRFDAT =             *
SURFACE.DAT   input    * SFCDAT =             *
RESTARTB.DAT  input    * RSTARTB=             *
------------------------------------------------------------------------------
CALPUFF.LST   output   ! PUFLST =SO2C1FUT.LST !
CONC.DAT      output   ! CONDAT =SO2C1FUT.CON !
DFLX.DAT      output   * DFDAT  =             *
WFLX.DAT      output   * WFDAT  =             *

VISB.DAT      output   * VISDAT =             *
RESTARTE.DAT  output   * RSTARTE=             *
------------------------------------------------------------------------------
Emission Files
--------------
PTEMARB.DAT   input    * PTDAT  =             *
VOLEMARB.DAT  input    * VOLDAT =             *
BAEMARB.DAT   input    * ARDAT  =             *
LNEMARB.DAT   input    * LNDAT  =             *
------------------------------------------------------------------------------
Other Files
-----------
OZONE.DAT     input    * OZDAT  =             *
VD.DAT        input    * VDDAT  =             *
CHEM.DAT      input    * CHEMDAT=             *
H2O2.DAT      input    * H2O2DAT=             *
HILL.DAT      input    * HILDAT=              *
HILLRCT.DAT   input    * RCTDAT=              *
COASTLN.DAT   input    * CSTDAT=              *
FLUXBDY.DAT   input    * BDYDAT=              *
BCON.DAT      input    * BCNDAT=              *
DEBUG.DAT     output   * DEBUG =              *
MASSFLX.DAT   output   * FLXDAT=              *
MASSBAL.DAT   output   * BALDAT=              *
FOG.DAT       output   * FOGDAT=              *
------------------------------------------------------------------------------
All file names will be converted to lower case if LCFILES = T
Otherwise, if LCFILES = F, file names will be converted to UPPER CASE
         T = lower case      ! LCFILES = T !
         F = UPPER CASE
NOTE: (1) file/path names can be up to 70 characters in length


Provision for multiple input files
----------------------------------

     Number of CALMET.DAT files for run (NMETDAT)
                                    Default: 1       ! NMETDAT =   12  !

     Number of PTEMARB.DAT files for run (NPTDAT)
                                    Default: 0       ! NPTDAT =  0  !

     Number of BAEMARB.DAT files for run (NARDAT)
                                    Default: 0       ! NARDAT =  0  !

     Number of VOLEMARB.DAT files for run (NVOLDAT)
                                    Default: 0       ! NVOLDAT =  0  !

!END!

--------------
```

```
Subgroup (0a)
-------------

  The following CALMET.DAT filenames are processed in sequence if NMETDAT>1

Default Name  Type          File Name
------------  ----          ---------
CALMET.DAT    input    ! METDAT =d:\calmet\ENP90\JAN90.DAT ! !END!
CALMET.DAT    input    ! METDAT =d:\calmet\ENP90\FEB90.DAT ! !END!
CALMET.DAT    input    ! METDAT =d:\calmet\ENP90\MAR90.DAT ! !END!
CALMET.DAT    input    ! METDAT =d:\calmet\ENP90\APR90.DAT ! !END!
CALMET.DAT    input    ! METDAT =d:\calmet\ENP90\MAY90.DAT ! !END!
CALMET.DAT    input    ! METDAT =d:\calmet\ENP90\JUN90.DAT ! !END!
CALMET.DAT    input    ! METDAT =d:\calmet\ENP90\JUL90.DAT ! !END!
CALMET.DAT    input    ! METDAT =d:\calmet\ENP90\AUG90.DAT ! !END!
CALMET.DAT    input    ! METDAT =d:\calmet\ENP90\SEP90.DAT ! !END!
CALMET.DAT    input    ! METDAT =d:\calmet\ENP90\OCT90.DAT ! !END!
CALMET.DAT    input    ! METDAT =d:\calmet\ENP90\NOV90.DAT ! !END!
CALMET.DAT    input    ! METDAT =d:\calmet\ENP90\DEC90.DAT ! !END!

------------------------------------------------------------------------------

INPUT GROUP: 1 -- General run control parameters
--------------

    Option to run all periods found
    in the met. file     (METRUN)   Default: 0       ! METRUN =   0  !

        METRUN = 0 - Run period explicitly defined below
        METRUN = 1 - Run all periods in met. file

     Starting date:   Year (IBYR) -- No default       ! IBYR =  1990 !
     (used only if   Month (IBMO) -- No default       ! IBMO =  1    !
      METRUN = 0)      Day (IBDY) -- No default       ! IBDY =  6    !
                      Hour (IBHR) -- No default       ! IBHR =  1    !

     Base time zone        (XBTZ) -- No default       ! XBTZ =  5    !
        PST = 8., MST = 7.
        CST = 6., EST = 5.

     Length of run (hours) (IRLG) -- No default       ! IRLG = 8615 !

     Number of chemical species (NSPEC)
                                  Default: 5       ! NSPEC = 6    !

     Number of chemical species
     to be emitted  (NSE)         Default: 3       ! NSE =   4    !

     Flag to stop run after
     SETUP phase (ITEST)          Default: 2       ! ITEST =  2   !
     (Used to allow checking
     of the model inputs, files, etc.)
           ITEST = 1 - STOPS program after SETUP phase
           ITEST = 2 - Continues with execution of program
                       after SETUP

    Restart Configuration:

       Control flag (MRESTART)    Default: 0       ! MRESTART =  0   !

          0 = Do not read or write a restart file
          1 = Read a restart file at the beginning of
              the run
          2 = Write a restart file during run
          3 = Read a restart file at beginning of run
              and write a restart file during run

       Number of periods in Restart
       output cycle (NRESPD)      Default: 0       ! NRESPD =  0   !

          0 = File written only at last period
         >0 = File updated every NRESPD periods

     Meteorological Data Format (METFM)
                                  Default: 1       ! METFM =  1   !

          METFM = 1 - CALMET binary file (CALMET.MET)
          METFM = 2 - ISC ASCII file (ISCMET.MET)
          METFM = 3 - AUSPLUME ASCII file (PLMMET.MET)
          METFM = 4 - CTDM plus tower file (PROFILE.DAT) and
```

surface parameters file (SURFACE.DAT)

PG sigma-y is adjusted by the factor (AVET/PGTIME)**0.2
Averaging Time (minutes) (AVET)
Default: 60.0 ! AVET = 60. !
PG Averaging Time (minutes) (PGTIME)
Default: 60.0 ! PGTIME = 60. !

!END!

INPUT GROUP: 2 -- Technical options

Vertical distribution used in the
near field (MGAUSS) Default: 1 ! MGAUSS = 1 !
0 = uniform
1 = Gaussian

Terrain adjustment method
(MCTADJ) Default: 3 ! MCTADJ = 3 !
0 = no adjustment
1 = ISC-type of terrain adjustment
2 = simple, CALPUFF-type of terrain
adjustment
3 = partial plume path adjustment

Subgrid-scale complex terrain
flag (MCTSG) Default: 0 ! MCTSG = 0 !
0 = not modeled
1 = modeled

Near-field puffs modeled as
elongated 0 (MSLUG) Default: 0 ! MSLUG = 0 !
0 = no
1 = yes (slug model used)

Transitional plume rise modeled ?
(MTRANS) Default: 1 ! MTRANS = 1 !
0 = no (i.e., final rise only)
1 = yes (i.e., transitional rise computed)

Stack tip downwash? (MTIP) Default: 1 ! MTIP = 1 !
0 = no (i.e., no stack tip downwash)
1 = yes (i.e., use stack tip downwash)

Method used to simulate building
downwash? (MBDW) Default: 1 ! MBDW = 1 !
1 = ISC method
2 = PRIME method

Vertical wind shear modeled above
stack top? (MSHEAR) Default: 0 ! MSHEAR = 0 !
0 = no (i.e., vertical wind shear not modeled)
1 = yes (i.e., vertical wind shear modeled)

Puff splitting allowed? (MSPLIT) Default: 0 ! MSPLIT = 0 !
0 = no (i.e., puffs not split)
1 = yes (i.e., puffs are split)

Chemical mechanism flag (MCHEM) Default: 1 ! MCHEM = 1 !
0 = chemical transformation not
modeled
1 = transformation rates computed
internally (MESOPUFF II scheme)
2 = user-specified transformation
rates used
3 = transformation rates computed
internally (RIVAD/ARM3 scheme)
4 = secondary organic aerosol formation
computed (MESOPUFF II scheme for OH)

Aqueous phase transformation flag (MAQCHEM)
(Used only if MCHEM = 1, or 3) Default: 0 ! MAQCHEM = 0 !
0 = aqueous phase transformation
not modeled
1 = transformation rates adjusted

```
       for aqueous phase reactions

Wet removal modeled ? (MWET)          Default: 1     ! MWET =  1   !
   0 = no
   1 = yes

Dry deposition modeled ? (MDRY)       Default: 1     ! MDRY =  1   !
   0 = no
   1 = yes
   (dry deposition method specified
    for each species in Input Group 3)

Method used to compute dispersion
coefficients (MDISP)                  Default: 3     ! MDISP =  3   !

   1 = dispersion coefficients computed from measured values
       of turbulence, sigma v, sigma w
   2 = dispersion coefficients from internally calculated
       sigma v, sigma w using micrometeorological variables
       (u*, w*, L, etc.)
   3 = PG dispersion coefficients for RURAL areas (computed using
       the ISCST multi-segment approximation) and MP coefficients in
       urban areas
   4 = same as 3 except PG coefficients computed using
       the MESOPUFF II eqns.
   5 = CTDM sigmas used for stable and neutral conditions.
       For unstable conditions, sigmas are computed as in
       MDISP = 3, described above.  MDISP = 5 assumes that
       measured values are read

Sigma-v/sigma-theta, sigma-w measurements used? (MTURBVW)
(Used only if MDISP = 1 or 5)         Default: 3     ! MTURBVW =  3  !
   1 = use sigma-v or sigma-theta measurements
       from PROFILE.DAT to compute sigma-y
       (valid for METFM = 1, 2, 3, 4)
   2 = use sigma-w measurements
       from PROFILE.DAT to compute sigma-z
       (valid for METFM = 1, 2, 3, 4)
   3 = use both sigma-(v/theta) and sigma-w
       from PROFILE.DAT to compute sigma-y and sigma-z
       (valid for METFM = 1, 2, 3, 4)
   4 = use sigma-theta measurements
       from PLMMET.DAT to compute sigma-y
       (valid only if METFM = 3)

Back-up method used to compute dispersion
when measured turbulence data are
missing (MDISP2)                      Default: 3     ! MDISP2 =  3  !
(used only if MDISP = 1 or 5)
   2 = dispersion coefficients from internally calculated
       sigma v, sigma w using micrometeorological variables
       (u*, w*, L, etc.)
   3 = PG dispersion coefficients for RURAL areas (computed using
       the ISCST multi-segment approximation) and MP coefficients in
       urban areas
   4 = same as 3 except PG coefficients computed using
       the MESOPUFF II eqns.

PG sigma-y,z adj. for roughness?      Default: 0     ! MROUGH =  0  !
(MROUGH)
   0 = no
   1 = yes

Partial plume penetration of          Default: 1     ! MPARTL =  1  !
elevated inversion?
(MPARTL)
   0 = no
   1 = yes

Strength of temperature inversion     Default: 0     ! MTINV =  0  !
provided in PROFILE.DAT extended records?
(MTINV)
   0 = no (computed from measured/default gradients)
   1 = yes

PDF used for dispersion under convective conditions?
                                      Default: 0     ! MPDF =  0  !
(MPDF)
   0 = no
   1 = yes
```

```
     Sub-Grid TIBL module used for shore line?
                                        Default: 0     ! MSGTIBL = 0  !
     (MSGTIBL)
        0 = no
        1 = yes

     Boundary conditions (concentration) modeled?
                                        Default: 0     ! MBCON = 0  !
     (MBCON)
        0 = no
        1 = yes, using formatted BCON.DAT file
        2 = yes, using unformatted CONC.DAT file

     Note:  MBCON > 0 requires that the last species modeled
            be 'BCON'.  Mass is placed in species BCON when
            generating boundary condition puffs so that clean
            air entering the modeling domain can be simulated
            in the same way as polluted air.  Specify zero
            emission of species BCON for all regular sources.


     Analyses of fogging and icing impacts due to emissions from
     arrays of mechanically-forced cooling towers can be performed
     using CALPUFF in conjunction with a cooling tower emissions
     processor (CTEMISS) and its associated postprocessors.  Hourly
     emissions of water vapor and temperature from each cooling tower
     cell are computed for the current cell configuration and ambient
     conditions by CTEMISS. CALPUFF models the dispersion of these
     emissions and provides cloud information in a specialized format
     for further analysis. Output to FOG.DAT is provided in either
     'plume mode' or 'receptor mode' format.

     Configure for FOG Model output?
                                        Default: 0     ! MFOG =  0   !
     (MFOG)
        0 = no
        1 = yes  - report results in PLUME Mode format
        2 = yes  - report results in RECEPTOR Mode format


     Test options specified to see if
     they conform to regulatory
     values? (MREG)                     Default: 1     ! MREG =  1   !

        0 = NO checks are made
        1 = Technical options must conform to USEPA
            Long Range Transport (LRT) guidance
                       METFM    1 or 2
                       AVET     60. (min)
                       PGTIME   60. (min)
                       MGAUSS   1
                       MCTADJ   3
                       MTRANS   1
                       MTIP     1
                       MCHEM    1 or 3 (if modeling SOx, NOx)
                       MWET     1
                       MDRY     1
                       MDISP    2 or 3
                       MPDF     0 if MDISP=3
                                1 if MDISP=2
                       MROUGH   0
                       MPARTL   1
                       SYTDEP   550. (m)
                       MHFTSZ   0

!END!

-------------------------------------------------------------------------------

INPUT GROUP: 3a, 3b -- Species list
-----------------

------------
Subgroup (3a)
------------

  The following species are modeled:

! CSPEC =          SO2 !         !END!
```

```
! CSPEC =          SO4 !          !END!
! CSPEC =          NOX !          !END!
! CSPEC =         HNO3 !          !END!
! CSPEC =          NO3 !          !END!
! CSPEC =         PM10 !          !END!

                                                    Dry                 OUTPUT GROUP
    SPECIES          MODELED          EMITTED      DEPOSITED                NUMBER
     NAME         (0=NO, 1=YES)    (0=NO, 1=YES)   (0=NO,                (0=NONE,
   (Limit: 12                                       1=COMPUTED-GAS        1=1st CGRUP,
    Characters                                      2=COMPUTED-PARTICLE   2=2nd CGRUP,
    in length)                                      3=USER-SPECIFIED)     3= etc.)

!          SO2  =        1,              1,          1,                  0   !
!          SO4  =        1,              1,          2,                  0   !
!          NOX  =        1,              1,          1,                  0   !
!         HNO3  =        1,              0,          1,                  0   !
!          NO3  =        1,              0,          2,                  0   !
!         PM10  =        1,              1,          2,                  0   !

!END!

-------------
Subgroup (3b)
-------------
  The following names are used for Species-Groups in which results
  for certain species are combined (added) prior to output.  The
  CGRUP name will be used as the species name in output files.
  Use this feature to model specific particle-size distributions
  by treating each size-range as a separate species.
  Order must be consistent with 3(a) above.


INPUT GROUP: 4 -- Map Projection and Grid control parameters
--------------

     Projection for all (X,Y):
     -------------------------

     Map projection
     (PMAP)                     Default: UTM    ! PMAP = UTM  !

         UTM :  Universal Transverse Mercator
         TTM :  Tangential Transverse Mercator
         LCC :  Lambert Conformal Conic
          PS :  Polar Stereographic
          EM :  Equatorial Mercator
        LAZA :  Lambert Azimuthal Equal Area

     False Easting and Northing (km) at the projection origin
     (Used only if PMAP= TTM, LCC, or LAZA)
     (FEAST)                    Default=0.0     ! FEAST  = 0.000  !
     (FNORTH)                   Default=0.0     ! FNORTH = 0.000  !

     UTM zone (1 to 60)
     (Used only if PMAP=UTM)
     (IUTMZN)                   No Default      ! IUTMZN =  17   !

     Hemisphere for UTM projection?
     (Used only if PMAP=UTM)
     (UTMHEM)                   Default: N      ! UTMHEM = N  !
         N   :  Northern hemisphere projection
         S   :  Southern hemisphere projection

     Latitude and Longitude (decimal degrees) of projection origin
     (Used only if PMAP= TTM, LCC, PS, EM, or LAZA)
     (RLATO)                    No Default      ! RLATO =  48.7N !
     (RLONO)                    No Default      ! RLONO = 138.8W !

         TTM :  RLONO identifies central (true N/S) meridian of projection
                RLATO selected for convenience
         LCC :  RLONO identifies central (true N/S) meridian of projection
                RLATO selected for convenience
         PS  :  RLONO identifies central (grid N/S) meridian of projection
                RLATO selected for convenience
         EM  :  RLONO identifies central meridian of projection
                RLATO is REPLACED by 0.0N (Equator)
         LAZA:  RLONO identifies longitude of tangent-point of mapping plane
                RLATO identifies latitude of tangent-point of mapping plane

     Matching parallel(s) of latitude (decimal degrees) for projection
```

```
(Used only if PMAP= LCC or PS)
(XLAT1)                  No Default      ! XLAT1 = 30N  !
(XLAT2)                  No Default      ! XLAT2 = 60N  !

    LCC :  Projection cone slices through Earth's surface at XLAT1 and XLAT2
    PS  :  Projection plane slices through Earth at XLAT1
           (XLAT2 is not used)

----------
Note:  Latitudes and longitudes should be positive, and include a
       letter N,S,E, or W indicating north or south latitude, and
       east or west longitude.  For example,
       35.9  N Latitude  =  35.9N
       118.7 E Longitude = 118.7E


Datum-region
------------

The Datum-Region for the coordinates is identified by a character
string.  Many mapping products currently available use the model of the
Earth known as the World Geodetic System 1984 (WGS-G ).  Other local
models may be in use, and their selection in CALMET will make its output
consistent with local mapping products.  The list of Datum-Regions with
official transformation parameters is provided by the National Imagery and
Mapping Agency (NIMA).

NIMA Datum - Regions(Examples)
------------------------------------------------------------------------------
WGS-G     WGS-84 GRS 80 Spheroid, Global coverage (WGS84)
NAS-C     NORTH AMERICAN 1927 Clarke 1866 Spheroid, MEAN FOR CONUS (NAD27)
NWS-27    NWS 6370KM Radius, Sphere
NWS-84    NWS 6370KM Radius, Sphere
ESR-S     ESRI REFERENCE 6371KM Radius, Sphere

Datum-region for output coordinates
(DATUM)                  Default: WGS-G     ! DATUM = NAS-C !

METEOROLOGICAL Grid:

          No. X grid cells (NX)      No default     ! NX =  111   !
          No. Y grid cells (NY)      No default     ! NY =  116   !
       No. vertical layers (NZ)      No default     ! NZ =  10    !

         Grid spacing (DGRIDKM)      No default     ! DGRIDKM = 4. !
                                     Units: km

              Cell face heights
                  (ZFACE(nz+1))      No defaults
                                     Units: m
   ! ZFACE = 0.,20.,40.,80.,160.,300.,600.,1000.,1500.,2200.,3000. !

           Reference Coordinates
          of SOUTHWEST corner of
               grid cell(1, 1):

           X coordinate (XORIGKM)    No default     ! XORIGKM = 250. !
           Y coordinate (YORIGKM)    No default     ! YORIGKM = 2628. !
                                    Units: km

COMPUTATIONAL Grid:

     The computational grid is identical to or a subset of the MET. grid.
     The lower left (LL) corner of the computational grid is at grid point
     (IBCOMP, JBCOMP) of the MET. grid.  The upper right (UR) corner of the
     computational grid is at grid point (IECOMP, JECOMP) of the MET. grid.
     The grid spacing of the computational grid is the same as the MET. grid.

       X index of LL corner (IBCOMP)      No default     ! IBCOMP =  1   !
                 (1 <= IBCOMP <= NX)

       Y index of LL corner (JBCOMP)      No default     ! JBCOMP =  1   !
                 (1 <= JBCOMP <= NY)


       X index of UR corner (IECOMP)      No default     ! IECOMP =  111  !
                 (1 <= IECOMP <= NX)

       Y index of UR corner (JECOMP)      No default     ! JECOMP =  116  !
```

(1 <= JECOMP <= NY)

SAMPLING Grid (GRIDDED RECEPTORS):

The lower left (LL) corner of the sampling grid is at grid point (IBSAMP, JBSAMP) of the MET. grid. The upper right (UR) corner of the sampling grid is at grid point (IESAMP, JESAMP) of the MET. grid. The sampling grid must be identical to or a subset of the computational grid. It may be a nested grid inside the computational grid. The grid spacing of the sampling grid is DGRIDKM/MESHDN.

Logical flag indicating if gridded receptors are used (LSAMP) (T=yes, F=no)	Default: T	! LSAMP = F !
X index of LL corner (IBSAMP) (IBCOMP <= IBSAMP <= IECOMP)	No default	! IBSAMP = 1 !
Y index of LL corner (JBSAMP) (JBCOMP <= JBSAMP <= JECOMP)	No default	! JBSAMP = 1 !
X index of UR corner (IESAMP) (IBCOMP <= IESAMP <= IECOMP)	No default	! IESAMP = 111 !
Y index of UR corner (JESAMP) (JBCOMP <= JESAMP <= JECOMP)	No default	! JESAMP = 116 !
Nesting factor of the sampling grid (MESHDN) (MESHDN is an integer >= 1)	Default: 1	! MESHDN = 1 !

!END!

INPUT GROUP: 5 -- Output Options

FILE	DEFAULT VALUE *	VALUE THIS RUN *
Concentrations (ICON)	1	! ICON = 1 !
Dry Fluxes (IDRY)	1	! IDRY = 0 !
Wet Fluxes (IWET)	1	! IWET = 0 !
Relative Humidity (IVIS) (relative humidity file is required for visibility analysis)	1	! IVIS = 0 !
Use data compression option in output file? (LCOMPRS)	Default: T	! LCOMPRS = T !

* 0 = Do not create file, 1 = create file

DIAGNOSTIC MASS FLUX OUTPUT OPTIONS:

Mass flux across specified boundaries for selected species reported hourly? (IMFLX) 0 = no 1 = yes (FLUXBDY.DAT and MASSFLX.DAT filenames are specified in Input Group 0)	Default: 0	! IMFLX = 0 !
Mass balance for each species reported hourly? (IMBAL) 0 = no 1 = yes (MASSBAL.DAT filename is specified in Input Group 0)	Default: 0	! IMBAL = 0 !

LINE PRINTER OUTPUT OPTIONS:

Print concentrations (ICPRT)	Default: 0	! ICPRT = 0 !

```
      Print dry fluxes (IDPRT)        Default: 0         ! IDPRT =  0   !
      Print wet fluxes (IWPRT)        Default: 0         ! IWPRT =  0   !
      (0 = Do not print, 1 = Print)

      Concentration print interval
      (ICFRQ) in hours                Default: 1         ! ICFRQ =  24   !
      Dry flux print interval
      (IDFRQ) in hours                Default: 1         ! IDFRQ =  1   !
      Wet flux print interval
      (IWFRQ) in hours                Default: 1         ! IWFRQ =  1   !

      Units for Line Printer Output
      (IPRTU)                         Default: 1         ! IPRTU =  3   !
                    for            for
               Concentration    Deposition
          1 =       g/m**3         g/m**2/s
          2 =      mg/m**3        mg/m**2/s
          3 =      ug/m**3        ug/m**2/s
          4 =      ng/m**3        ng/m**2/s
          5 =     Odour Units

      Messages tracking progress of run
      written to the screen ?
      (IMESG)                         Default: 2         ! IMESG =  2   !
        0 = no
        1 = yes (advection step, puff ID)
        2 = yes (YYYYJJJHH, # old puffs, # emitted puffs)


    SPECIES (or GROUP for combined species) LIST FOR OUTPUT OPTIONS

                 ---- CONCENTRATIONS ----   ------ DRY FLUXES ------   ------ WET FLUXES ------   -- MASS FLUX --
 SPECIES
 /GROUP    PRINTED? SAVED ON DISK? PRINTED?  SAVED ON DISK?   PRINTED?  SAVED ON DISK?   SAVED ON DISK?
 -------   ------------------------ ------------------------   ------------------------   ---------------
!          SO2 =     0,          1,          0,          0,          0,          0,          0  !
!          SO4 =     0,          1,          0,          0,          0,          0,          0  !
!          NOX =     0,          1,          0,          0,          0,          0,          0  !
!         HNO3 =     0,          1,          0,          0,          0,          0,          0  !
!          NO3 =     0,          1,          0,          0,          0,          0,          0  !
!         PM10 =     0,          1,          0,          0,          0,          0,          0  !

  Note:  Species BCON (for MBCON > 0) does not need to be saved on disk.


    OPTIONS FOR PRINTING "DEBUG" QUANTITIES (much output)

      Logical for debug output
      (LDEBUG)                                Default: F     ! LDEBUG = F !

      First puff to track
      (IPFDEB)                                Default: 1     ! IPFDEB =  1  !

      Number of puffs to track
      (NPFDEB)                                Default: 1     ! NPFDEB =  1  !

      Met. period to start output
      (NN1)                                   Default: 1     ! NN1 =  1   !

      Met. period to end output
      (NN2)                                   Default: 10    ! NN2 =  10  !

!END!


-------------------------------------------------------------------------------


INPUT GROUP: 6a, 6b, & 6c -- Subgrid scale complex terrain inputs
-------------------------

---------------
Subgroup (6a)
---------------
      Number of terrain features (NHILL)      Default: 0     ! NHILL =  0   !

      Number of special complex terrain
      receptors  (NCTREC)                     Default: 0     ! NCTREC =  0   !

      Terrain and CTSG Receptor data for
      CTSG hills input in CTDM format ?
```

```
      (MHILL)                                  No Default     ! MHILL =  2   !
      1 = Hill and Receptor data created
          by CTDM processors & read from
          HILL.DAT and HILLRCT.DAT files
      2 = Hill data created by OPTHILL &
          input below in Subgroup (6b);
          Receptor data in Subgroup (6c)

      Factor to convert horizontal dimensions  Default: 1.0   ! XHILL2M = 1. !
      to meters (MHILL=1)

      Factor to convert vertical dimensions    Default: 1.0   ! ZHILL2M = 1. !
      to meters (MHILL=1)

      X-origin of CTDM system relative to      No Default     ! XCTDMKM = 0.0E00 !
      CALPUFF coordinate system, in Kilometers (MHILL=1)

      Y-origin of CTDM system relative to      No Default     ! YCTDMKM = 0.0E00 !
      CALPUFF coordinate system, in Kilometers (MHILL=1)

! END !

---------------
Subgroup (6b)
---------------

                    1 **
     HILL information

HILL          XC        YC       THETAH  ZGRID  RELIEF    EXPO 1    EXPO 2   SCALE 1    SCALE 2    AMAX1     AMAX2
 NO.         (km)      (km)      (deg.)  (m)     (m)       (m)       (m)       (m)        (m)       (m)       (m)
----         ----      ----      ------  -----  ------    ------    ------   -------    -------    -----     -----

---------------
Subgroup (6c)
---------------

    COMPLEX TERRAIN RECEPTOR INFORMATION

                    XRCT        YRCT        ZRCT         XHH
                    (km)        (km)        (m)
                   ------      -----      ------        ----


-------------------
1
     Description of Complex Terrain Variables:
          XC, YC  = Coordinates of center of hill
          THETAH  = Orientation of major axis of hill (clockwise from
                    North)
          ZGRID   = Height of the  0  of the grid above mean sea
                    level
          RELIEF  = Height of the crest of the hill above the grid elevation
          EXPO 1  = Hill-shape exponent for the major axis
          EXPO 2  = Hill-shape exponent for the major axis
          SCALE 1 = Horizontal length scale along the major axis
          SCALE 2 = Horizontal length scale along the minor axis
          AMAX    = Maximum allowed axis length for the major axis
          BMAX    = Maximum allowed axis length for the major axis

          XRCT, YRCT = Coordinates of the complex terrain receptors
          ZRCT    = Height of the ground (MSL) at the complex terrain
                    Receptor
          XHH     = Hill number associated with each complex terrain receptor
                    (NOTE: MUST BE ENTERED AS A REAL NUMBER)

   **
     NOTE: DATA for each hill and CTSG receptor are treated as a separate
           input subgroup and therefore must end with an input group terminator.

-------------------------------------------------------------------------------


INPUT GROUP: 7 -- Chemical parameters for dry deposition of gases
--------------

     SPECIES     DIFFUSIVITY      ALPHA STAR      REACTIVITY  MESOPHYLL RESISTANCE     HENRY'S LAW COEFFICIENT
      NAME        (cm**2/s)                                        (s/cm)                 (dimensionless)
     -------     -----------      ----------      ----------  -------------------     ----------------------
  !   SO2 =        0.1509,         1000.,            8.,            0.,                      .04 !
```

```
  !    NOX =        0.1656,          1.,          8.,          5.,          3.5 !
  !   HNO3 =        0.1628,          1.,         18.,          0.,         8E-8 !

!END!

-------------------------------------------------------------------------------

INPUT GROUP: 8 -- Size parameters for dry deposition of particles
--------------

     For SINGLE SPECIES, the mean and standard deviation are used to
     compute a deposition velocity for NINT (see group 9) size-ranges,
     and these are then averaged to obtain a mean deposition velocity.

     For GROUPED SPECIES, the size distribution should be explicitly
     specified (by the 'species' in the group), and the standard deviation
     for each should be entered as 0.  The model will then use the
     deposition velocity for the stated mean diameter.

      SPECIES      GEOMETRIC MASS MEAN        GEOMETRIC STANDARD
       NAME             DIAMETER                  DEVIATION
                        (microns)                 (microns)
      -------      -------------------        ------------------
!          SO4 =        0.48,                      2.   !
!          NO3 =        0.48,                      2.   !
!         PM10 =        0.48,                      2.   !

!END!

-------------------------------------------------------------------------------

INPUT GROUP: 9 -- Miscellaneous dry deposition parameters
--------------

     Reference cuticle resistance (s/cm)
     (RCUTR)                          Default: 30    !  RCUTR = 30.0 !
     Reference ground resistance  (s/cm)
     (RGR)                            Default: 10    !    RGR = 10.0 !
     Reference pollutant reactivity
     (REACTR)                         Default: 8     ! REACTR = 8.0 !

     Number of particle-size intervals used to
     evaluate effective particle deposition velocity
     (NINT)                           Default: 9     !   NINT =  9  !

     Vegetation state in unirrigated areas
     (IVEG)                           Default: 1     !   IVEG =  1   !
        IVEG=1 for active and unstressed vegetation
        IVEG=2 for active and stressed vegetation
        IVEG=3 for inactive vegetation

!END!

-------------------------------------------------------------------------------

INPUT GROUP: 10 -- Wet Deposition Parameters
---------------

                     Scavenging Coefficient -- Units: (sec)**(-1)

       Pollutant      Liquid Precip.       Frozen Precip.
       ---------      --------------       --------------
!          SO2 =        3.0E-05,             0.0E00 !
!          SO4 =        1.0E-04,            3.0E-05 !
!         HNO3 =        6.0E-05,             0.0E00 !
!          NO3 =        1.0E-04,            3.0E-05 !
!         PM10 =        1.0E-04,            3.0E-05 !

!END!

-------------------------------------------------------------------------------
```

```
INPUT GROUP: 11 -- Chemistry Parameters
----------------

     Ozone data input option (MOZ)     Default: 1            ! MOZ =  0  !
     (Used only if MCHEM = 1, 3, or 4)
        0 = use a monthly background ozone value
        1 = read hourly ozone concentrations from
            the OZONE.DAT data file

     Monthly ozone concentrations
     (Used only if MCHEM = 1, 3, or 4 and
      MOZ = 0 or MOZ = 1 and all hourly O3 data missing)
     (BCKO3) in ppb                    Default: 12*80.
     !  BCKO3 = 12*50. !

     Monthly ammonia concentrations
     (Used only if MCHEM = 1, or 3)
     (BCKNH3) in ppb                   Default: 12*10.
     !  BCKNH3 = 12*1. !

     Nighttime SO2 loss rate (RNITE1)
     in percent/hour                   Default: 0.2          ! RNITE1 = .2 !

     Nighttime NOx loss rate (RNITE2)
     in percent/hour                   Default: 2.0          ! RNITE2 = 2.0 !

     Nighttime HNO3 formation rate (RNITE3)
     in percent/hour                   Default: 2.0          ! RNITE3 = 2.0 !

     H2O2 data input option (MH2O2)    Default: 1            ! MH2O2 =  1   !
     (Used only if MAQCHEM = 1)
        0 = use a monthly background H2O2 value
        1 = read hourly H2O2 concentrations from
            the H2O2.DAT data file

     Monthly H2O2 concentrations
     (Used only if MQACHEM = 1 and
      MH2O2 = 0 or MH2O2 = 1 and all hourly H2O2 data missing)
     (BCKH2O2) in ppb                  Default: 12*1.
     !  BCKH2O2 = 12*1 !


--- Data for SECONDARY ORGANIC AEROSOL (SOA) Option
     (used only if MCHEM = 4)

     The SOA module uses monthly values of:
          Fine particulate concentration in ug/m^3 (BCKPMF)
          Organic fraction of fine particulate     (OFRAC)
          VOC / NOX ratio (after reaction)         (VCNX)
     to characterize the air mass when computing
     the formation of SOA from VOC emissions.
     Typical values for several distinct air mass types are:

        Month    1.   2    3    4    5    6    7    8    9   10   11   12
                Jan  Feb  Mar  Apr  May  Jun  Jul  Aug  Sep  Oct  Nov  Dec

     Clean Continental
        BCKPMF   1.   1.   1.   1.   1.   1.   1.   1.   1.   1.   1.   1.
        OFRAC  .15  .15  .20  .20  .20  .20  .20  .20  .20  .20  .20  .15
        VCNX    50.  50.  50.  50.  50.  50.  50.  50.  50.  50.  50.  50.

     Clean Marine (surface)
        BCKPMF  .5   .5   .5   .5   .5   .5   .5   .5   .5   .5   .5   .5
        OFRAC  .25  .25  .30  .30  .30  .30  .30  .30  .30  .30  .30  .25
        VCNX    50.  50.  50.  50.  50.  50.  50.  50.  50.  50.  50.  50.

     Urban - low biogenic (controls present)
        BCKPMF  30.  30.  30.  30.  30.  30.  30.  30.  30.  30.  30.  30.
        OFRAC  .20  .20  .25  .25  .25  .25  .25  .25  .20  .20  .20  .20
        VCNX     4.   4.   4.   4.   4.   4.   4.   4.   4.   4.   4.   4.

     Urban - high biogenic (controls present)
        BCKPMF  60.  60.  60.  60.  60.  60.  60.  60.  60.  60.  60.  60.
        OFRAC  .25  .25  .30  .30  .30  .55  .55  .55  .35  .35  .35  .25
        VCNX    15.  15.  15.  15.  15.  15.  15.  15.  15.  15.  15.  15.

     Regional Plume
        BCKPMF  20.  20.  20.  20.  20.  20.  20.  20.  20.  20.  20.  20.
        OFRAC  .20  .20  .25  .35  .25  .40  .40  .40  .30  .30  .30  .20
        VCNX    15.  15.  15.  15.  15.  15.  15.  15.  15.  15.  15.  15.
```

```
     Urban - no controls present
        BCKPMF 100. 100. 100. 100. 100. 100. 100. 100. 100. 100. 100. 100.
        OFRAC  .30  .30  .35  .35  .35  .55  .55  .55  .35  .35  .35  .30
        VCNX     2.   2.   2.   2.   2.   2.   2.   2.   2.   2.   2.   2.

     Default: Clean Continental
     !  BCKPMF = 1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.00 !
     !  OFRAC  = 0.15, 0.15, 0.20, 0.20, 0.20, 0.20, 0.20, 0.20, 0.20, 0.20, 0.20, 0.15 !
     !  VCNX   = 50.00, 50.00, 50.00, 50.00, 50.00, 50.00, 50.00, 50.00, 50.00, 50.00, 50.00, 50.00 !


!END!

------------------------------------------------------------------------------


INPUT GROUP: 12 -- Misc. Dispersion and Computational Parameters
----------------

     Horizontal size of puff (m) beyond which
     time-dependent dispersion equations (Heffter)
     are used to determine sigma-y and
     sigma-z (SYTDEP)                          Default: 550.   ! SYTDEP = 5.5E02 !

     Switch for using Heffter equation for sigma z
     as above (0 = Not use Heffter; 1 = use Heffter
     (MHFTSZ)                                  Default: 0      ! MHFTSZ =  0   !

     Stability class used to determine plume
     growth rates for puffs above the boundary
     layer (JSUP)                              Default: 5      ! JSUP =  5   !

     Vertical dispersion constant for stable
     conditions (k1 in Eqn. 2.7-3)  (CONK1)    Default: 0.01   ! CONK1 = .01 !

     Vertical dispersion constant for neutral/
     unstable conditions (k2 in Eqn. 2.7-4)
     (CONK2)                                   Default: 0.1    ! CONK2 = .1 !

     Factor for determining Transition-point from
     Schulman-Scire to Huber-Snyder Building Downwash
     scheme (SS used for Hs < Hb + TBD * HL)
     (TBD)                                     Default: 0.5    ! TBD = .5 !
        TBD < 0   ==> always use Huber-Snyder
        TBD = 1.5 ==> always use Schulman-Scire
        TBD = 0.5 ==> ISC Transition-point

     Range of land use categories for which
     urban dispersion is assumed
     (IURB1, IURB2)                            Default: 10     ! IURB1 =  10  !
                                                        19     ! IURB2 =  19  !

     Site characterization parameters for single-point Met data files ---------
     (needed for METFM = 2,3,4)

        Land use category for modeling domain
        (ILANDUIN)                             Default: 20     ! ILANDUIN =  20  !

        Roughness length (m) for modeling domain
        (ZOIN)                                 Default: 0.25   ! ZOIN = .25 !

        Leaf area index for modeling domain
        (XLAIIN)                               Default: 3.0    ! XLAIIN = 3.0 !

        Elevation above sea level (m)
        (ELEVIN)                               Default: 0.0    ! ELEVIN = .0 !

        Latitude (degrees) for met location
        (XLATIN)                               Default: -999.  ! XLATIN = -999.0 !

        Longitude (degrees) for met location
        (XLONIN)                               Default: -999.  ! XLONIN = -999.0 !

     Specialized information for interpreting single-point Met data files -----

        Anemometer height (m) (Used only if METFM = 2,3)
        (ANEMHT)                               Default: 10.    ! ANEMHT = 10.0 !

        Form of lateral turbulance data in PROFILE.DAT file
        (Used only if METFM = 4 or MTURBVW = 1 or 3)
```

```
   (ISIGMAV)                                Default: 1      ! ISIGMAV =  1  !
       0 = read sigma-theta
       1 = read sigma-v

   Choice of mixing heights (Used only if METFM = 4)
   (IMIXCTDM)                               Default: 0      ! IMIXCTDM =  0  !
       0 = read PREDICTED mixing heights
       1 = read OBSERVED mixing heights

Maximum length of a slug (met. grid units)
(XMXLEN)                                    Default: 1.0    ! XMXLEN = 1.0 !

Maximum travel distance of a puff/slug (in
grid units) during one sampling step
(XSAMLEN)                                   Default: 1.0    ! XSAMLEN = 1.0 !

Maximum Number of slugs/puffs release from
one source during one time step
(MXNEW)                                     Default: 99     ! MXNEW =  99   !

Maximum Number of sampling steps for
one puff/slug during one time step
(MXSAM)                                     Default: 99     ! MXSAM =  99   !

Number of iterations used when computing
the transport wind for a sampling step
that includes gradual rise (for CALMET
and PROFILE winds)
(NCOUNT)                                    Default: 2      ! NCOUNT =  2   !

Minimum sigma y for a new puff/slug (m)
(SYMIN)                                     Default: 1.0    ! SYMIN = 1.0  !

Minimum sigma z for a new puff/slug (m)
(SZMIN)                                     Default: 1.0    ! SZMIN = 1.0  !

Default minimum turbulence velocities
sigma-v and sigma-w for each
stability class (m/s)
(SVMIN(6) and SWMIN(6))      Default SVMIN : .50,  .50,  .50,  .50,  .50,  .50
                             Default SWMIN : .20,  .12,  .08,  .06,  .03,  .016

                           Stability Class :  A     B     C     D     E     F
                                              ---   ---   ---   ---   ---   ---
                                  ! SVMIN = 0.500, 0.500, 0.500, 0.500, 0.500, 0.500!
                                  ! SWMIN = 0.200, 0.120, 0.080, 0.060, 0.030, 0.016!

Divergence criterion for dw/dz across puff
used to initiate adjustment for horizontal
convergence (1/s)
Partial adjustment starts at CDIV(1), and
full adjustment is reached at CDIV(2)
(CDIV(2))                                   Default: 0.0,0.0  ! CDIV = .0, .0 !

Minimum wind speed (m/s) allowed for
non-calm conditions. Also used as minimum
speed returned when using power-law
extrapolation toward surface
(WSCALM)                                    Default: 0.5    ! WSCALM = .5 !

Maximum mixing height (m)
(XMAXZI)                                    Default: 3000.  ! XMAXZI = 3000.0 !

Minimum mixing height (m)
(XMINZI)                                    Default: 50.    ! XMINZI = 50.0 !

Default wind speed classes --
5 upper bounds (m/s) are entered;
the 6th class has no upper limit
(WSCAT(5))                        Default   :
                                  ISC RURAL : 1.54, 3.09, 5.14, 8.23, 10.8 (10.8+)

                                Wind Speed Class :  1     2     3     4     5
                                                    ---   ---   ---   ---   ---
                                       ! WSCAT = 1.54, 3.09, 5.14, 8.23, 10.80 !

Default wind speed profile power-law
exponents for stabilities 1-6
(PLXO(6))                         Default   : ISC RURAL values
                                  ISC RURAL : .07, .07, .10, .15, .35, .55
                                  ISC URBAN : .15, .15, .20, .25, .30, .30
```

```
                          Stability Class :  A     B     C     D     E     F
                                             ---   ---   ---   ---   ---   ---
                                  ! PLXO = 0.07, 0.07, 0.10, 0.15, 0.35, 0.55 !

Default potential temperature gradient
for stable classes E, F (degK/m)
(PTGO(2))                      Default: 0.020, 0.035
                                  ! PTGO = 0.020,   0.035 !

Default plume path coefficients for
each stability class (used when option
for partial plume height terrain adjustment
is selected -- MCTADJ=3)
(PPC(6))                  Stability Class :  A     B     C     D     E     F
                             Default  PPC : .50,  .50,  .50,  .50,  .35,  .35
                                            ---   ---   ---   ---   ---   ---
                                  !  PPC = 0.50, 0.50, 0.50, 0.50, 0.35, 0.35 !

Slug-to-puff transition criterion factor
equal to sigma-y/length of slug
(SL2PF)                              Default: 10.        ! SL2PF = 10.0 !

Puff-splitting control variables ------------------------

  VERTICAL SPLIT
  --------------

  Number of puffs that result every time a puff
  is split - nsplit=2 means that 1 puff splits
  into 2
  (NSPLIT)                           Default:   3        ! NSPLIT =  3  !

  Time(s) of a day when split puffs are eligible to
  be split once again; this is typically set once
  per day, around sunset before nocturnal shear develops.
  24 values: 0 is midnight (00:00) and 23 is 11 PM (23:00)
  0=do not re-split    1=eligible for re-split
  (IRESPLIT(24))                     Default:  Hour 17 = 1
  !  IRESPLIT = 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,1,0,0,0,0,0,0 !

  Split is allowed only if last hour's mixing
  height (m) exceeds a minimum value
  (ZISPLIT)                          Default: 100.       ! ZISPLIT = 100.0 !

  Split is allowed only if ratio of last hour's
  mixing ht to the maximum mixing ht experienced
  by the puff is less than a maximum value (this
  postpones a split until a nocturnal layer develops)
  (ROLDMAX)                          Default: 0.25       ! ROLDMAX = 0.25 !


  HORIZONTAL SPLIT
  ----------------

  Number of puffs that result every time a puff
  is split - nsplith=5 means that 1 puff splits
  into 5
  (NSPLITH)                          Default:   5        ! NSPLITH =  5  !

  Minimum sigma-y (Grid Cells Units) of puff
  before it may be split
  (SYSPLITH)                         Default:  1.0       ! SYSPLITH = 1.0 !

  Minimum puff elongation rate (SYSPLITH/hr) due to
  wind shear, before it may be split
  (SHSPLITH)                         Default:  2.        ! SHSPLITH = 2.0 !

  Minimum concentration (g/m^3) of each
  species in puff before it may be split
  Enter array of NSPEC values; if a single value is
  entered, it will be used for ALL species
  (CNSPLITH)                         Default:  1.0E-07   ! CNSPLITH = 1.0E-07 !

Integration control variables ------------------------

  Fractional convergence criterion for numerical SLUG
  sampling integration
  (EPSSLUG)                          Default:   1.0e-04  ! EPSSLUG = 1.0E-04 !

  Fractional convergence criterion for numerical AREA
```

```
      source integration
      (EPSAREA)                          Default:   1.0e-06  ! EPSAREA = 1.0E-06 !

      Trajectory step-length (m) used for numerical rise
      integration
      (DSRISE)                           Default:   1.0      ! DSRISE = 1.0 !

    Boundary Condition (BC) Puff control variables ------------------------

      Minimum height (m) to which BC puffs are mixed as they are emitted
      (MBCON=2 ONLY).  Actual height is reset to the current mixing height
      at the release point if greater than this minimum.
      (HTMINBC)                          Default:   500.     ! HTMINBC = 500. !

      Search radius (km) about a receptor for sampling nearest BC puff.
      BC puffs are typically emitted with a spacing of one grid cell
      length, so the search radius should be greater than DGRIDKM.
      (RSAMPBC)                          Default:   10.      ! RSAMPBC = 10. !

      Near-Surface depletion adjustment to concentration profile used when
      sampling BC puffs?
      (MDEPBC)                           Default:   1        ! MDEPBC = 1. !
         0 = Concentration is NOT adjusted for depletion
         1 = Adjust Concentration for depletion

!END!

-------------------------------------------------------------------------------


INPUT GROUPS: 13a, 13b, 13c, 13d -- Point source parameters
--------------------------------

---------------
Subgroup (13a)
---------------

    Number of point sources with
    parameters provided below      (NPT1)  No default  !  NPT1 =  59!

    Units used for point source
    emissions below                (IPTU)  Default: 1  !  IPTU =   1  !
          1 =        g/s
          2 =       kg/hr
          3 =       lb/hr
          4 =     tons/yr
          5 =     Odour Unit * m**3/s  (vol. flux of odour compound)
          6 =     Odour Unit * m**3/min
          7 =     metric tons/yr

    Number of source-species
    combinations with variable
    emissions scaling factors
    provided below in (13d)        (NSPT1) Default: 0  !  NSPT1 = 18  !

    Number of point sources with
    variable emission parameters
    provided in external file      (NPT2)  No default  !  NPT2 =  0  !

    (If NPT2 > 0, these point
    source emissions are read from
    the file: PTEMARB.DAT)

!END!

---------------
Subgroup (13b)
---------------
                                    a
         POINT SOURCE: CONSTANT DATA
         ----------------------------
                                                                          b          c
  Source      X UTM     Y UTM     Stack   Base     Stack    Exit  Exit    Bldg.  Emission
   No.     Coordinate Coordinate Height Elevation Diameter  Vel.  Temp.   Dwash   Rates
             (km)      (km)       (m)      (m)       (m)  (m/s) (deg. K)
  ------   ---------- ---------- ------  ------   -------- ----- -------- ----- --------
      1  ! SRCNAM = USSBLR1    !
      1  ! X =   506.1846,  2956.9348,   64.90,    6.00,    2.44,   25.30,  339.0, 1.0,    3.750 !  !END!
      2  ! SRCNAM = USSBLR2    !
      2  ! X =   506.1718,  2956.9348,   64.90,    6.00,    2.44,   25.30,  339.0, 1.0,    3.380 !  !END!
```

```
  3  ! SRCNAM = USSBLR4    !
  3  ! X =   506.1282,  2956.9363,   45.70,    6.00,    2.50,   27.00,  344.0, 1.0,    4.790 !  !END!
  4  ! SRCNAM = USSBLR7    !
  4  ! X =   506.0957,  2956.9561,   68.60,    6.00,    2.44,   28.80,  441.0, 1.0,   17.390 !  !END!
  5  ! SRCNAM = USSBLR8    !
  5  ! X =   506.0462,  2956.9873,   60.70,    6.00,    3.33,   23.10,  403.0, 1.0,    7.790 !  !END!
 11  ! SRCNAM = SGARDDRY   !
 11  ! X =   487.6000,  2957.6001,   38.10,    4.00,    1.73,    7.45,  316.0, 0.0,    5.290 !  !END!
 12  ! SRCNAM = SGARDBLR   !
 12  ! X =   487.6000,  2957.6001,   16.80,    4.00,    1.22,   14.22,  478.0, 0.0,    6.880 !  !END!
 13  ! SRCNAM = SCG1FO     !
 13  ! X =   534.9000,  2953.3000,   45.70,    4.00,    2.13,   17.90,  338.7, 0.0,   44.800 !  !END!
 14  ! SRCNAM = SCG2FO     !
 14  ! X =   534.9000,  2953.3000,   45.70,    4.00,    2.13,   21.41,  338.7, 0.0,   44.800 !  !END!
 15  ! SRCNAM = SCG3FO     !
 15  ! X =   534.9000,  2953.3000,   54.90,    4.00,    2.11,   16.74,  338.7, 0.0,   30.700 !  !END!
 16  ! SRCNAM = SCG4FO     !
 16  ! X =   534.9000,  2953.3000,   54.90,    4.00,    2.88,   19.28,  338.7, 0.0,   76.600 !  !END!
 17  ! SRCNAM = SCG5FO     !
 17  ! X =   534.9000,  2953.3000,   45.70,    4.00,    2.13,   28.10,  338.7, 0.0,   58.900 !  !END!
 18  ! SRCNAM = SCG8FO     !
 18  ! X =   534.9000,  2953.3000,   47.20,    4.00,    2.90,   15.16,  338.7, 0.0,   49.800 !  !END!
 49  ! SRCNAM = EPBGCT1    !
 49  ! X =   533.5000,  2954.1001,   41.10,    4.00,    5.79,   61.13,  359.3, 0.0,    0.460 !  !END!
 50  ! SRCNAM = EPBGSC1    !
 50  ! X =   533.5000,  2954.1001,   41.10,    4.00,    5.79,  146.96,  862.0, 0.0,    0.460 !  !END!
 51  ! SRCNAM = EPBGSC2    !
 51  ! X =   533.5000,  2954.1001,   41.10,    4.00,    5.79,  146.96,  862.0, 0.0,    0.460 !  !END!
 52  ! SRCNAM = EPBGSC3    !
 52  ! X =   533.5000,  2954.1001,   41.10,    4.00,    5.79,  146.96,  862.0, 0.0,    0.460 !  !END!
 33  ! SRCNAM = USSBRY5    !
 33  ! X =   537.8000,  2969.1001,   42.70,    4.00,    2.90,   14.80,  345.0, 0.0,   77.250 !  !END!
 34  ! SRCNAM = USBRY123   !
 34  ! X =   537.8000,  2969.1001,   19.80,    4.00,    1.64,   36.40,  342.0, 0.0,  199.710 !  !END!
 37  ! SRCNAM = OSBLR2     !
 37  ! X =   544.2000,  2968.0000,   27.40,    4.00,    1.52,   15.82,  341.0, 0.0,   17.120 !  !END!
 38  ! SRCNAM = OSBLR3     !
 38  ! X =   544.2000,  2968.0000,   27.40,    4.00,    1.91,   16.86,  342.0, 0.0,   30.740 !  !END!
 39  ! SRCNAM = OSBLR4     !
 39  ! X =   544.2000,  2968.0000,   27.40,    4.00,    1.83,   16.67,  340.7, 0.0,   12.700 !  !END!
 40  ! SRCNAM = OSBLR5A    !
 40  ! X =   544.2000,  2968.0000,   27.40,    4.00,    1.52,   16.48,  340.7, 0.0,    6.330 !  !END!
 41  ! SRCNAM = OSBLR5B    !
 41  ! X =   544.2000,  2968.0000,   27.40,    4.00,    1.52,   16.48,  340.7, 0.0,    6.330 !  !END!
 42  ! SRCNAM = OSBLR6     !
 42  ! X =   544.2000,  2968.0000,   27.40,    4.00,    1.88,   18.19,  341.0, 0.0,   33.390 !  !END!
 47  ! SRCNAM = ATLSUG1    !
 47  ! X =   552.9000,  2945.2000,   27.40,    5.00,    1.83,   17.97,  346.0, 0.0,   16.280 !  !END!
 48  ! SRCNAM = ATLSUG2    !
 48  ! X =   552.9000,  2945.2000,   27.40,    5.00,    1.83,   23.36,  350.0, 0.0,   16.280 !  !END!
 49  ! SRCNAM = ATLSUG3    !
 49  ! X =   552.9000,  2945.2000,   27.40,    5.00,    1.83,   21.56,  350.0, 0.0,   16.020 !  !END!
 50  ! SRCNAM = ATLSUG4    !
 50  ! X =   552.9000,  2945.2000,   27.40,    5.00,    1.83,   25.16,  344.0, 0.0,   16.210 !  !END!
 51  ! SRCNAM = ATLSUG5    !
 51  ! X =   552.9000,  2945.2000,   27.40,    5.00,    1.68,   19.24,  339.0, 0.0,    8.410 !  !END!
 22  ! SRCNAM = OKBLR16    !
 22  ! X =   525.0000,  2937.3999,   22.90,    4.00,    1.52,   22.86,  483.0, 0.0,    1.470 !  !END!
 67  ! SRCNAM = OKCOGENF   !
 67  ! X =   524.1000,  2937.3999,   60.70,    4.00,    3.05,   19.39,  450.9, 0.0,   57.500 !  !END!
 82  ! SRCNAM = PRATARCH   !
 82  ! X =   562.0000,  2960.0000,   15.20,    6.00,    0.91,  143.73,  810.9, 0.0,   13.990 !  !END!
 83  ! SRCNAM = PRATBO12   !
 83  ! X =   562.0000,  2960.0000,    4.60,    6.00,    0.76,    6.92,  533.2, 0.0,  0.100E-01 !  !END!
 60  ! SRCNAM = BECHTIND   !
 60  ! X =   545.6000,  2991.5000,  150.90,    9.00,    4.88,   30.50,  333.2, 0.0,   75.640 !  !END!
 56  ! SRCNAM = MARTAUX    !
 56  ! X =   543.1000,  2992.8999,   18.30,    9.00,    1.10,   15.24,  535.4, 0.0,   12.900 !  !END!
 57  ! SRCNAM = MARTGEN    !
 57  ! X =   543.1000,  2992.8999,    7.60,    9.00,    0.30,   39.62,  785.9, 0.0,    0.510 !  !END!
 58  ! SRCNAM = MART34     !
 58  ! X =   543.1000,  2992.8999,   64.90,    9.00,    6.10,   18.90,  410.9, 0.0,  470.400 !  !END!
 59  ! SRCNAM = MART8OIL   !
 59  ! X =   543.1000,  2992.8999,   36.60,    9.00,    5.79,   22.40,  420.0, 0.0,   51.960 !  !END!
1000  ! SRCNAM = FPLTPCT   !
1000  ! X =   567.0000,  2813.5000,   39.90,    2.00,    5.79,   18.60,  360.0, 0.0,    6.680 !  !END!
  1  ! SRCNAM = DCRRF12    !
  1  ! X =   564.3000,  2857.3999,   76.20,    2.00,    3.66,   15.86,  405.4, 0.0,   26.410 !  !END!
  2  ! SRCNAM = DCRRF34    !
  2  ! X =   564.3000,  2857.3999,   76.20,    2.00,    3.66,   15.86,  405.4, 0.0,   26.410 !  !END!
  6  ! SRCNAM = TARMK2     !
```

```
      6  ! X =   562.9000,  2861.7000,   61.00,    2.00,    2.44,    9.10,  422.0, 0.0,   24.570 !  !END!
      7  ! SRCNAM = TARMK3     !
      7  ! X =   562.9000,  2861.7000,   61.00,    2.00,    4.57,   11.04,  450.0, 0.0,   51.430 !  !END!
      8  ! SRCNAM = SBCRRF     !
      8  ! X =   579.6000,  2883.3000,   59.40,    2.00,    3.96,   18.01,  381.0, 0.0,   37.910 !  !END!
      9  ! SRCNAM = LAUDU45    !
      9  ! X =   580.1000,  2883.3000,   45.70,    2.00,    5.49,   14.60,  438.7, 0.0,  271.150 !  !END!
     11  ! SRCNAM = NBCRRF     !
     11  ! X =   583.6000,  2907.6001,   58.50,    3.00,    3.96,   18.01,  381.0, 0.0,   35.400 !  !END!
     12  ! SRCNAM = EPBRCT1    !
     12  ! X =   583.3000,  2908.0000,   41.10,    3.00,    5.79,   61.13,  359.3, 0.0,    0.460 !  !END!
     13  ! SRCNAM = EPBRSC1    !
     13  ! X =   583.3000,  2908.0000,   41.10,    3.00,    5.79,  146.96,  862.0, 0.0,    0.460 !  !END!
     14  ! SRCNAM = EPBRSC2    !
     14  ! X =   583.3000,  2908.0000,   41.10,    3.00,    5.79,  146.96,  862.0, 0.0,    0.460 !  !END!
     15  ! SRCNAM = EPBRSC3    !
     15  ! X =   583.3000,  2908.0000,   41.10,    3.00,    5.79,  146.96,  862.0, 0.0,    0.460 !  !END!
     16  ! SRCNAM = LEECORRF   !
     16  ! X =   424.2000,  2945.7000,   83.80,    2.00,    1.88,   19.81,  388.5, 0.0,   14.000 !  !END!
     68  ! SRCNAM = PBCRRF     !
     68  ! X =   585.8000,  2960.2000,   76.20,    5.00,    2.04,   24.90,  505.2, 0.0,   85.050 !  !END!
     61  ! SRCNAM = FMYHR1_6   !
     61  ! X =   422.1000,  2952.8999,   38.10,    2.00,    5.79,   14.20,  377.6, 0.0,    3.860 !  !END!
     64  ! SRCNAM = TECOPH1    !
     64  ! X =   464.3000,  3035.3999,   45.70,   19.00,    1.83,   24.08,  441.0, 0.0,   57.960 !  !END!
     65  ! SRCNAM = TECOPH2    !
     65  ! X =   464.3000,  3035.3999,   45.70,   19.00,    1.83,   24.08,  450.0, 0.0,   57.960 !  !END!
     66  ! SRCNAM = LAKWTHU5   !
     66  ! X =   592.8000,  2943.7000,   22.90,    8.00,    3.05,   27.80,  481.0, 0.0,   14.370 !  !END!
     67  ! SRCNAM = VERBU5    !
     67  ! X =   567.1000,  3056.5000,   38.10,    7.00,    3.35,   19.56,  416.5, 0.0,   15.500 !  !END!
     68  ! SRCNAM = TECOSEBR !
     68  ! X =   456.8000,  3042.5000,   22.90,   38.00,    1.83,    5.79,  394.3, 0.0,   37.780 !  !END!
```

---

a
Data for each source are treated as a separate input subgroup
and therefore must end with an input group terminator.

SRCNAM is a 12-character name for a source
(No default)
X is an array holding the source data listed by the column headings
(No default)
SIGYZI is an array holding the initial sigma-y and sigma-z (m)
(Default: 0.,0.)
FMFAC is a vertical momentum flux factor (0. or 1.0) used to represent
the effect of rain-caps or other physical configurations that
reduce momentum rise associated with the actual exit velocity.
(Default: 1.0 -- full momentum used)

b
0. = No building downwash modeled, 1. = downwash modeled
NOTE: must be entered as a REAL number (i.e., with decimal point)

c
An emission rate must be entered for every pollutant modeled.
Enter emission rate of zero for secondary pollutants that are
modeled, but not emitted. Units are specified by IPTU
(e.g. 1 for g/s).

Subgroup (13c)

BUILDING DIMENSION DATA FOR SOURCES SUBJECT TO DOWNWASH

Source No. — Effective building width and height (in meters) every 10 degrees [a]

```
      1  ! SRCNAM = USSBLR1    !
      1  !  HEIGHT =  21.00,  21.00,  20.70,  20.70,  26.67,  26.67,
                26.67,  29.90,  29.90,  26.70,  26.70,  20.50,
                28.60,  28.60,  28.60,  28.60,  28.60,  28.60,
                21.00,  21.00,  20.70,  20.70,  26.67,  26.67,
                26.67,  26.67,  39.60,  41.45,  41.45,  41.45,
                39.60,  28.60,  28.60,  28.60,  28.60,  28.60 !
      1  !  WIDTH =   32.97,  44.52,  55.67,  63.00,  31.14,  30.65,
                29.22,  30.73,  28.04,  55.27,  61.91,  44.71,
                62.36,  63.03,  61.79,  58.68,  53.78,  47.24,
                32.97,  44.52, 111.99,  63.00,  31.14,  30.65,
```

```
                29.22,  26.91,  79.52,  46.59,  56.20,  64.10,
                88.71,  63.03,  61.79,  58.68,  53.78,  47.24 !

!END!
      2  ! SRCNAM = USSBLR2    !
      2  !  HEIGHT =  20.70,  20.70,  20.70,  26.67,  26.67,  26.67,
                29.90,  29.90,  29.90,  29.90,  26.70,  28.60,
                28.60,  28.60,  21.00,  21.00,  28.60,  21.00,
                20.70,  20.70,  20.70,  26.67,  26.67,  26.67,
                26.67,  26.67,  39.60,  41.45,  41.45,  41.45,
                28.60,  28.60,  28.60,  28.60,  28.60,  21.00 !
      2  !  WIDTH =   36.22,  46.66,  55.67,  30.69,  31.14,  30.65,
                32.48,  30.73,  28.04,  30.73,  61.91,  59.78,
                62.36,  63.03,  54.72,  44.52,  53.78,  67.67,
               102.07,  46.66,  55.67,  30.69,  31.14,  30.65,
                29.22,  26.91,  79.52,  46.59,  56.20,  64.10,
                62.36,  63.03,  61.79,  58.68,  53.78,  67.67 !

!END!
      3  ! SRCNAM = USSBLR4    !
      3  !  HEIGHT =  26.67,  26.67,  26.67,  26.67,  26.67,  29.90,
                29.90,  29.90,  29.90,  29.90,  26.70,  26.70,
                26.70,  26.70,  26.70,  26.67,  26.67,  26.67,
                26.67,  26.67,  26.67,  26.67,  26.67,  29.90,
                29.90,  26.70,  39.60,  41.45,  41.45,  39.60,
                28.60,  28.60,  28.60,  26.67,  26.67,  26.67 !
      3  !  WIDTH =   55.65,  27.04,  29.31,  30.69,  31.14,  33.25,
                32.48,  30.73,  28.04,  30.73,  61.91,  66.68,
                69.42,  70.05,  68.55,  27.04,  45.64,  47.85,
                55.65,  27.04,  29.31,  30.69,  31.14,  33.25,
                32.48,  42.04,  79.52,  46.59,  56.20,  90.49,
                62.36,  63.03,  61.79,  27.04,  45.64,  47.85 !

!END!
      4  ! SRCNAM = USSBLR7    !
      4  !  HEIGHT =  26.67,  29.90,  29.90,  29.90,  29.90,  29.90,
                29.90,  29.90,  26.70,  26.70,  26.70,  26.70,
                26.70,  26.70,  26.70,  26.70,  26.67,  26.67,
                26.67,  29.90,  29.90,  29.90,  29.90,  29.90,
                29.90,  29.90,  26.70,  41.45,  41.45,  28.60,
                28.60,  28.60,  26.70,  26.70,  26.67,  26.67 !
      4  !  WIDTH =   55.65,  26.43,  29.54,  31.75,  33.00,  33.25,
                32.48,  30.73,  46.94,  55.27,  61.91,  66.68,
                69.42,  70.05,  68.55,  64.97,  45.64,  47.85,
                55.65,  26.43,  29.54,  31.75,  33.00,  33.25,
                32.48,  30.73,  46.94,  46.59,  56.20,  59.78,
                62.36,  63.03,  68.55,  64.97,  45.64,  47.85 !

!END!
      5  ! SRCNAM = USSBLR8    !
      5  !  HEIGHT =  29.90,  21.00,  21.00,  21.00,  21.00,  21.00,
                21.00,  21.00,  21.00,  21.00,  26.70,  26.70,
                26.70,  26.70,  29.90,  29.90,  25.30,  25.30,
                29.90,  21.00,  21.00,  21.00,  21.00,  21.00,
                21.00,  21.00,  21.00,  21.00,  26.70,  26.70,
                26.70,  26.70,  29.90,  29.90,  29.90,  25.30 !
      5  !  WIDTH =   22.52,  24.07,  25.28,  25.72,  25.38,  24.27,
                22.43,  22.34,  24.08,  25.09,  61.91,  66.68,
                69.42,  70.05,  27.37,  26.43,  73.92,  69.74,
                22.52,  24.07,  25.28,  25.72,  25.38,  24.27,
                22.43,  22.34,  24.08,  25.09,  61.91,  66.68,
                69.42,  70.05,  27.37,  26.43,  22.52,  69.74 !

!END!

Subgroup (13d)
     13  ! SRCNAM = SCG1FO     !
     13  ! IVARY  =  2   !
     13  ! SO2    =   1.00,   1.00,   1.00,   1.00,   1.00,   0.00,
                0.00,   0.00,   0.00,   1.00,   1.00,   1.00   !
!END!
     14  ! SRCNAM = SCG2FO     !
     14  ! IVARY  =  2   !
     14  ! SO2    =   1.00,   1.00,   1.00,   1.00,   1.00,   0.00,
                0.00,   0.00,   0.00,   1.00,   1.00,   1.00   !
!END!
     15  ! SRCNAM = SCG3FO     !
     15  ! IVARY  =  2   !
     15  ! SO2    =   1.00,   1.00,   1.00,   1.00,   1.00,   0.00,
                0.00,   0.00,   0.00,   1.00,   1.00,   1.00   !
!END!
```

```
      16  ! SRCNAM = SCG4FO     !
      16  ! IVARY  =  2   !
      16  ! SO2    =   1.00,   1.00,   1.00,   1.00,   1.00,   0.00,
                0.00,   0.00,   0.00,   1.00,   1.00,   1.00   !
!END!
      17  ! SRCNAM = SCG5FO     !
      17  ! IVARY  =  2   !
      17  ! SO2    =   1.00,   1.00,   1.00,   1.00,   1.00,   0.00,
                0.00,   0.00,   0.00,   1.00,   1.00,   1.00   !
!END!
      18  ! SRCNAM = SCG8FO     !
      18  ! IVARY  =  2   !
      18  ! SO2    =   1.00,   1.00,   1.00,   1.00,   1.00,   0.00,
                0.00,   0.00,   0.00,   1.00,   1.00,   1.00   !
!END!
      33  ! SRCNAM = USSBRY5    !
      33  ! IVARY  =  2   !
      33  ! SO2    =   1.00,   1.00,   1.00,   1.00,   0.00,   0.00,
                0.00,   0.00,   0.00,   1.00,   1.00,   1.00   !
!END!
      34  ! SRCNAM = USBRY123   !
      34  ! IVARY  =  2   !
      34  ! SO2    =   1.00,   1.00,   1.00,   1.00,   0.00,   0.00,
                0.00,   0.00,   0.00,   1.00,   1.00,   1.00   !
!END!
      37  ! SRCNAM = OSBLR2     !
      37  ! IVARY  =  2   !
      37  ! SO2    =   1.00,   1.00,   1.00,   1.00,   0.00,   0.00,
                0.00,   0.00,   0.00,   1.00,   1.00,   1.00   !
!END!
      38  ! SRCNAM = OSBLR3     !
      38  ! IVARY  =  2   !
      38  ! SO2    =   1.00,   1.00,   1.00,   1.00,   0.00,   0.00,
                0.00,   0.00,   0.00,   1.00,   1.00,   1.00   !
!END!
      39  ! SRCNAM = OSBLR4     !
      39  ! IVARY  =  2   !
      39  ! SO2    =   1.00,   1.00,   1.00,   1.00,   0.00,   0.00,
                0.00,   0.00,   0.00,   1.00,   1.00,   1.00   !
!END!
      40  ! SRCNAM = OSBLR5A    !
      40  ! IVARY  =  2   !
      40  ! SO2    =   1.00,   1.00,   1.00,   1.00,   0.00,   0.00,
                0.00,   0.00,   0.00,   1.00,   1.00,   1.00   !
!END!
      41  ! SRCNAM = OSBLR5B    !
      41  ! IVARY  =  2   !
      41  ! SO2    =   1.00,   1.00,   1.00,   1.00,   0.00,   0.00,
                0.00,   0.00,   0.00,   1.00,   1.00,   1.00   !
!END!
      42  ! SRCNAM = OSBLR6     !
      42  ! IVARY  =  2   !
      42  ! SO2    =   1.00,   1.00,   1.00,   1.00,   0.00,   0.00,
                0.00,   0.00,   0.00,   1.00,   1.00,   1.00   !
!END!
      47  ! SRCNAM = ATLSUG1    !
      47  ! IVARY  =  2   !
      47  ! SO2    =   1.00,   1.00,   1.00,   1.00,   0.00,   0.00,
                0.00,   0.00,   0.00,   1.00,   1.00,   1.00   !
!END!
      48  ! SRCNAM = ATLSUG2    !
      48  ! IVARY  =  2   !
      48  ! SO2    =   1.00,   1.00,   1.00,   1.00,   0.00,   0.00,
                0.00,   0.00,   0.00,   1.00,   1.00,   1.00   !
!END!
      49  ! SRCNAM = ATLSUG3    !
      49  ! IVARY  =  2   !
      49  ! SO2    =   1.00,   1.00,   1.00,   1.00,   0.00,   0.00,
                0.00,   0.00,   0.00,   1.00,   1.00,   1.00   !
!END!
      50  ! SRCNAM = ATLSUG4    !
      50  ! IVARY  =  2   !
      50  ! SO2    =   1.00,   1.00,   1.00,   1.00,   0.00,   0.00,
                0.00,   0.00,   0.00,   1.00,   1.00,   1.00   !
!END!
```

---

[a] Data for each species are treated as a separate input subgroup and therefore must end with an input group terminator.

INPUT GROUPS: 14a, 14b, 14c, 14d -- Area source parameters

Subgroup (14a)

Number of polygon area sources with parameters specified below (NAR1) No default ! NAR1 = 0 !

Units used for area source emissions below (IARU) Default: 1 ! IARU = 1 !

1 = g/m**2/s
2 = kg/m**2/hr
3 = lb/m**2/hr
4 = tons/m**2/yr
5 = Odour Unit * m/s (vol. flux/m**2 of odour compound)
6 = Odour Unit * m/min
7 = metric tons/m**2/yr

Number of source-species combinations with variable emissions scaling factors provided below in (14d) (NSAR1) Default: 0 ! NSAR1 = 0 !

Number of buoyant polygon area sources with variable location and emission parameters (NAR2) No default ! NAR2 = 0 !
(If NAR2 > 0, ALL parameter data for these sources are read from the file: BAEMARB.DAT)

!END!

Subgroup (14b)

AREA SOURCE: CONSTANT DATA [a]

Source No.	Effect. Height (m)	Base Elevation (m)	Initial Sigma z (m)	Emission Rates [b]

---

[a] Data for each source are treated as a separate input subgroup and therefore must end with an input group terminator.

[b] An emission rate must be entered for every pollutant modeled. Enter emission rate of zero for secondary pollutants that are modeled, but not emitted. Units are specified by IARU (e.g. 1 for g/m**2/s).

Subgroup (14c)

COORDINATES (UTM-km) FOR EACH VERTEX(4) OF EACH POLYGON

Source No.	Ordered list of X followed by list of Y, grouped by source [a]

---

[a] Data for each source are treated as a separate input subgroup and therefore must end with an input group terminator.

Subgroup (14d)

---

[a]

AREA SOURCE: VARIABLE EMISSIONS DATA

Use this subgroup to describe temporal variations in the emission rates given in 14b. Factors entered multiply the rates in 14b. Skip sources here that have constant emissions. For more elaborate variation in source parameters, use BAEMARB.DAT and NAR2 > 0.

IVARY determines the type of variation, and is source-specific:
(IVARY) Default: 0

- 0 = Constant
- 1 = Diurnal cycle (24 scaling factors: hours 1-24)
- 2 = Monthly cycle (12 scaling factors: months 1-12)
- 3 = Hour & Season (4 groups of 24 hourly scaling factors, where first group is DEC-JAN-FEB)
- 4 = Speed & Stab. (6 groups of 6 scaling factors, where first group is Stability Class A, and the speed classes have upper bounds (m/s) defined in Group 12
- 5 = Temperature (12 scaling factors, where temperature classes have upper bounds (C) of: 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 50+)

---

a

Data for each species are treated as a separate input subgroup and therefore must end with an input group terminator.

INPUT GROUPS: 15a, 15b, 15c -- Line source parameters

Subgroup (15a)

Number of buoyant line sources with variable location and emission parameters (NLN2) No default ! NLN2 = 0 !

(If NLN2 > 0, ALL parameter data for these sources are read from the file: LNEMARB.DAT)

Number of buoyant line sources (NLINES) No default ! NLINES = 0 !

Units used for line source emissions below (ILNU) Default: 1 ! ILNU = 1 !

- 1 = g/s
- 2 = kg/hr
- 3 = lb/hr
- 4 = tons/yr
- 5 = Odour Unit * m**3/s (vol. flux of odour compound)
- 6 = Odour Unit * m**3/min
- 7 = metric tons/yr

Number of source-species combinations with variable emissions scaling factors provided below in (15c) (NSLN1) Default: 0 ! NSLN1 = 0 !

Maximum number of segments used to model each line (MXNSEG) Default: 7 ! MXNSEG = 7 !

The following variables are required only if NLINES > 0. They are used in the buoyant line source plume rise calculations.

Number of distances at which transitional rise is computed Default: 6 ! NLRISE = 6 !

Average building length (XL) No default ! XL = .0 ! (in meters)

Average building height (HBL) No default ! HBL = .0 ! (in meters)

Average building width (WBL) No default ! WBL = .0 !

(in meters)

Average line source width (WML) No default ! WML = .0 !
(in meters)

Average separation between buildings (DXL) No default ! DXL = .0 !
(in meters)

Average buoyancy parameter (FPRIMEL) No default ! FPRIMEL = .0 !
(in m**4/s**3)

!END!

Subgroup (15b)

BUOYANT LINE SOURCE: CONSTANT DATA

Source No.	Beg. X Coordinate (km)	Beg. Y Coordinate (km)	End. X Coordinate (km)	End. Y Coordinate (km)	Release Height (m)	Base Elevation (m)	Emission Rates [a]

---

a
Data for each source are treated as a separate input subgroup
and therefore must end with an input group terminator.

b
An emission rate must be entered for every pollutant modeled.
Enter emission rate of zero for secondary pollutants that are
modeled, but not emitted. Units are specified by ILNTU
(e.g. 1 for g/s).

Subgroup (15c)

BUOYANT LINE SOURCE: VARIABLE EMISSIONS DATA [a]

Use this subgroup to describe temporal variations in the emission
rates given in 15b. Factors entered multiply the rates in 15b.
Skip sources here that have constant emissions.

IVARY determines the type of variation, and is source-specific:
(IVARY) Default: 0

0 =	Constant	
1 =	Diurnal cycle	(24 scaling factors: hours 1-24)
2 =	Monthly cycle	(12 scaling factors: months 1-12)
3 =	Hour & Season	(4 groups of 24 hourly scaling factors, where first group is DEC-JAN-FEB)
4 =	Speed & Stab.	(6 groups of 6 scaling factors, where first group is Stability Class A, and the speed classes have upper bounds (m/s) defined in Group 12
5 =	Temperature	(12 scaling factors, where temperature classes have upper bounds (C) of: 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 50+)

---

a
Data for each species are treated as a separate input subgroup
and therefore must end with an input group terminator.

INPUT GROUPS: 16a, 16b, 16c -- Volume source parameters

Subgroup (16a)

```
     Number of volume sources with
     parameters provided in 16b,c (NVL1)     No default  !  NVL1 =  0   !

     Units used for volume source
     emissions below in 16b       (IVLU)     Default: 1  !  IVLU =   1  !
           1 =        g/s
           2 =       kg/hr
           3 =       lb/hr
           4 =     tons/yr
           5 =     Odour Unit * m**3/s  (vol. flux of odour compound)
           6 =     Odour Unit * m**3/min
           7 =     metric tons/yr

     Number of source-species
     combinations with variable
     emissions scaling factors
     provided below in (16c)      (NSVL1)    Default: 0  !  NSVL1 =  0  !

     Number of volume sources with
     variable location and emission
     parameters                   (NVL2)     No default  !  NVL2 =   0   !

     (If NVL2 > 0, ALL parameter data for
      these sources are read from the VOLEMARB.DAT file(s) )

!END!

----------------
Subgroup (16b)
----------------
                                        a
          VOLUME SOURCE: CONSTANT DATA
          ----------------------------
                                                                        b
       X UTM      Y UTM      Effect.    Base     Initial    Initial    Emission
     Coordinate  Coordinate  Height   Elevation  Sigma y    Sigma z     Rates
        (km)       (km)        (m)       (m)       (m)        (m)
     ----------  ----------  ------   ---------  --------   --------   --------


---------
    a
     Data for each source are treated as a separate input subgroup
     and therefore must end with an input group terminator.

    b
     An emission rate must be entered for every pollutant modeled.
     Enter emission rate of zero for secondary pollutants that are
     modeled, but not emitted.  Units are specified by IVLU
     (e.g. 1 for g/s).

----------------
Subgroup (16c)
----------------
                                              a
          VOLUME SOURCE: VARIABLE EMISSIONS DATA
          --------------------------------------

     Use this subgroup to describe temporal variations in the emission
     rates given in 16b.  Factors entered multiply the rates in 16b.
     Skip sources here that have constant emissions.  For more elaborate
     variation in source parameters, use VOLEMARB.DAT and NVL2 > 0.

     IVARY determines the type of variation, and is source-specific:
     (IVARY)                                  Default: 0
           0 =       Constant
           1 =       Diurnal cycle (24 scaling factors: hours 1-24)
           2 =       Monthly cycle (12 scaling factors: months 1-12)
           3 =       Hour & Season (4 groups of 24 hourly scaling factors,
                                    where first group is DEC-JAN-FEB)
           4 =       Speed & Stab. (6 groups of 6 scaling factors, where
                                    first group is Stability Class A,
                                    and the speed classes have upper
                                    bounds (m/s) defined in Group 12
           5 =       Temperature   (12 scaling factors, where temperature
                                    classes have upper bounds (C) of:
                                    0, 5, 10, 15, 20, 25, 30, 35, 40,
                                    45, 50, 50+)
```

---
a
Data for each species are treated as a separate input subgroup
and therefore must end with an input group terminator.

INPUT GROUPS: 17a & 17b -- Non-gridded (discrete) receptor information

---
Subgroup (17a)

Number of non-gridded receptors (NREC) No default ! NREC = 251 !

!END!

Subgroup (17b)
---

a
NON-GRIDDED (DISCRETE) RECEPTOR DATA

Receptor No.	X UTM Coordinate (km)	Y UTM Coordinate (km)	Ground Elevation (m)	Height b Above Ground (m)	
251 RECEPTORS INCLUDES ALL NPS ENP BOUNARY RECEPTORS WITH LESS RESOLUTION IN THE INTERIOR					
1 ! X =	515.576,	2748.652,	0.000,	0.000!	!END!
2 ! X =	510.522,	2751.415,	0.000,	0.000!	!END!
3 ! X =	513.047,	2751.417,	0.000,	0.000!	!END!
4 ! X =	515.572,	2751.420,	0.000,	0.000!	!END!
5 ! X =	518.098,	2751.423,	0.000,	0.000!	!END!
6 ! X =	520.623,	2751.426,	0.000,	0.000!	!END!
7 ! X =	507.995,	2754.181,	0.000,	0.000!	!END!
8 ! X =	510.520,	2754.183,	0.000,	0.000!	!END!
9 ! X =	520.619,	2754.194,	0.000,	0.000!	!END!
10 ! X =	523.143,	2754.198,	0.000,	0.000!	!END!
11 ! X =	525.668,	2754.203,	0.000,	0.000!	!END!
12 ! X =	505.469,	2756.948,	0.000,	0.000!	!END!
13 ! X =	507.993,	2756.949,	0.000,	0.000!	!END!
14 ! X =	525.663,	2756.971,	0.000,	0.000!	!END!
15 ! X =	528.187,	2756.976,	0.000,	0.000!	!END!
16 ! X =	530.712,	2756.981,	0.000,	0.000!	!END!
17 ! X =	502.944,	2759.715,	0.000,	0.000!	!END!
18 ! X =	505.468,	2759.716,	0.000,	0.000!	!END!
19 ! X =	518.087,	2759.727,	0.000,	0.000!	!END!
20 ! X =	530.705,	2759.749,	0.000,	0.000!	!END!
21 ! X =	533.229,	2759.755,	0.000,	0.000!	!END!
22 ! X =	500.421,	2762.483,	0.000,	0.000!	!END!
23 ! X =	502.944,	2762.483,	0.000,	0.000!	!END!
24 ! X =	533.222,	2762.523,	0.000,	0.000!	!END!
25 ! X =	535.746,	2762.530,	0.000,	0.000!	!END!
26 ! X =	538.269,	2762.537,	0.000,	0.000!	!END!
27 ! X =	497.898,	2765.251,	0.000,	0.000!	!END!
28 ! X =	500.420,	2765.251,	0.000,	0.000!	!END!
29 ! X =	538.261,	2765.305,	0.000,	0.000!	!END!
30 ! X =	540.784,	2765.312,	0.000,	0.000!	!END!
31 ! X =	543.307,	2765.320,	0.000,	0.000!	!END!
32 ! X =	495.376,	2768.020,	0.000,	0.000!	!END!
33 ! X =	497.898,	2768.020,	0.000,	0.000!	!END!
34 ! X =	505.465,	2768.020,	0.000,	0.000!	!END!
35 ! X =	518.076,	2768.031,	0.000,	0.000!	!END!
36 ! X =	525.642,	2768.043,	0.000,	0.000!	!END!
37 ! X =	533.209,	2768.060,	0.000,	0.000!	!END!
38 ! X =	543.298,	2768.088,	0.000,	0.000!	!END!
39 ! X =	545.820,	2768.096,	0.000,	0.000!	!END!
40 ! X =	548.342,	2768.105,	0.000,	0.000!	!END!
41 ! X =	495.377,	2770.788,	0.000,	0.000!	!END!
42 ! X =	548.333,	2770.873,	0.000,	0.000!	!END!
43 ! X =	492.857,	2773.557,	0.000,	0.000!	!END!
44 ! X =	495.378,	2773.556,	0.000,	0.000!	!END!
45 ! X =	548.323,	2773.641,	0.000,	0.000!	!END!
46 ! X =	550.844,	2773.650,	1.000,	0.000!	!END!
47 ! X =	490.337,	2776.327,	0.000,	0.000!	!END!
48 ! X =	492.858,	2776.326,	0.000,	0.000!	!END!
49 ! X =	505.461,	2776.325,	0.000,	0.000!	!END!

```
 50 ! X =     518.065,   2776.336,      0.000,      0.000!   !END!
 51 ! X =     525.627,   2776.348,      0.000,      0.000!   !END!
 52 ! X =     533.189,   2776.364,      1.000,      0.000!   !END!
 53 ! X =     540.751,   2776.385,      0.000,      0.000!   !END!
 54 ! X =     548.313,   2776.409,      0.000,      0.000!   !END!
 55 ! X =     550.834,   2776.419,      0.000,      0.000!   !END!
 56 ! X =     553.354,   2776.428,      0.000,      0.000!   !END!
 57 ! X =     487.819,   2779.097,      0.000,      0.000!   !END!
 58 ! X =     490.339,   2779.095,      0.000,      0.000!   !END!
 59 ! X =     553.344,   2779.196,      0.000,      0.000!   !END!
 60 ! X =     555.864,   2779.207,      0.000,      0.000!   !END!
 61 ! X =     485.302,   2781.868,      0.000,      0.000!   !END!
 62 ! X =     487.822,   2781.865,      0.000,      0.000!   !END!
 63 ! X =     555.852,   2781.975,      1.000,      0.000!   !END!
 64 ! X =     558.372,   2781.985,      0.000,      0.000!   !END!
 65 ! X =     482.786,   2784.639,      0.000,      0.000!   !END!
 66 ! X =     485.305,   2784.636,      0.000,      0.000!   !END!
 67 ! X =     492.863,   2784.630,      1.000,      0.000!   !END!
 68 ! X =     505.458,   2784.629,      1.000,      0.000!   !END!
 69 ! X =     518.054,   2784.640,      1.000,      0.000!   !END!
 70 ! X =     525.611,   2784.652,      1.000,      0.000!   !END!
 71 ! X =     533.168,   2784.669,      1.000,      0.000!   !END!
 72 ! X =     540.726,   2784.689,      0.000,      0.000!   !END!
 73 ! X =     548.283,   2784.714,      0.000,      0.000!   !END!
 74 ! X =     555.841,   2784.743,      1.000,      0.000!   !END!
 75 ! X =     558.360,   2784.754,      0.000,      0.000!   !END!
 76 ! X =     560.879,   2784.765,      0.000,      0.000!   !END!
 77 ! X =     482.790,   2787.407,      0.000,      0.000!   !END!
 78 ! X =     555.830,   2787.511,      0.000,      0.000!   !END!
 79 ! X =     480.275,   2790.179,      0.000,      0.000!   !END!
 80 ! X =     482.793,   2790.175,      0.000,      0.000!   !END!
 81 ! X =     555.818,   2790.280,      0.000,      0.000!   !END!
 82 ! X =     480.279,   2792.947,      0.000,      0.000!   !END!
 83 ! X =     482.797,   2792.944,      0.000,      0.000!   !END!
 84 ! X =     492.867,   2792.935,      1.000,      0.000!   !END!
 85 ! X =     505.455,   2792.934,      0.000,      0.000!   !END!
 86 ! X =     518.043,   2792.945,      1.000,      0.000!   !END!
 87 ! X =     525.595,   2792.957,      1.000,      0.000!   !END!
 88 ! X =     533.148,   2792.973,      1.000,      0.000!   !END!
 89 ! X =     540.701,   2792.994,      1.000,      0.000!   !END!
 90 ! X =     548.254,   2793.019,      1.000,      0.000!   !END!
 91 ! X =     555.807,   2793.048,      1.000,      0.000!   !END!
 92 ! X =     482.800,   2795.712,      0.000,      0.000!   !END!
 93 ! X =     540.693,   2795.762,      1.000,      0.000!   !END!
 94 ! X =     543.210,   2795.770,      1.000,      0.000!   !END!
 95 ! X =     545.727,   2795.778,      1.000,      0.000!   !END!
 96 ! X =     548.244,   2795.787,      1.000,      0.000!   !END!
 97 ! X =     550.761,   2795.796,      1.000,      0.000!   !END!
 98 ! X =     553.278,   2795.806,      1.000,      0.000!   !END!
 99 ! X =     555.795,   2795.816,      1.000,      0.000!   !END!
100 ! X =     482.804,   2798.480,      0.000,      0.000!   !END!
101 ! X =     540.684,   2798.530,      1.000,      0.000!   !END!
102 ! X =     482.807,   2801.248,      0.000,      0.000!   !END!
103 ! X =     492.871,   2801.239,      0.000,      0.000!   !END!
104 ! X =     505.451,   2801.238,      1.000,      0.000!   !END!
105 ! X =     518.032,   2801.249,      1.000,      0.000!   !END!
106 ! X =     525.580,   2801.262,      1.000,      0.000!   !END!
107 ! X =     533.128,   2801.278,      1.000,      0.000!   !END!
108 ! X =     540.676,   2801.299,      1.000,      0.000!   !END!
109 ! X =     482.811,   2804.016,      0.000,      0.000!   !END!
110 ! X =     540.668,   2804.067,      1.000,      0.000!   !END!
111 ! X =     482.814,   2806.785,      0.000,      0.000!   !END!
112 ! X =     540.659,   2806.835,      1.000,      0.000!   !END!
113 ! X =     482.818,   2809.553,      0.000,      0.000!   !END!
114 ! X =     492.876,   2809.544,      1.000,      0.000!   !END!
115 ! X =     505.448,   2809.543,      1.000,      0.000!   !END!
116 ! X =     518.020,   2809.554,      1.000,      0.000!   !END!
117 ! X =     525.564,   2809.566,      1.000,      0.000!   !END!
118 ! X =     533.107,   2809.583,      1.000,      0.000!   !END!
119 ! X =     540.651,   2809.603,      1.000,      0.000!   !END!
120 ! X =     482.821,   2812.321,      0.000,      0.000!   !END!
121 ! X =     540.642,   2812.372,      1.000,      0.000!   !END!
122 ! X =     480.311,   2815.093,      0.000,      0.000!   !END!
123 ! X =     482.825,   2815.089,      0.000,      0.000!   !END!
124 ! X =     540.634,   2815.140,      1.000,      0.000!   !END!
125 ! X =     480.315,   2817.861,      0.000,      0.000!   !END!
126 ! X =     492.880,   2817.849,      1.000,      0.000!   !END!
127 ! X =     505.445,   2817.848,      1.000,      0.000!   !END!
128 ! X =     518.009,   2817.859,      1.000,      0.000!   !END!
129 ! X =     525.548,   2817.871,      1.000,      0.000!   !END!
130 ! X =     533.087,   2817.888,      1.000,      0.000!   !END!
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131 ! X =     540.626,   2817.908,     1.000,     0.000!   !END!
132 ! X =     477.807,   2820.633,     0.000,     0.000!   !END!
133 ! X =     480.320,   2820.630,     1.000,     0.000!   !END!
134 ! X =     540.617,   2820.677,     1.000,     0.000!   !END!
135 ! X =     543.130,   2820.685,     1.000,     0.000!   !END!
136 ! X =     477.812,   2823.402,     0.000,     0.000!   !END!
137 ! X =     543.121,   2823.453,     1.000,     0.000!   !END!
138 ! X =     475.305,   2826.174,     0.000,     0.000!   !END!
139 ! X =     477.816,   2826.170,     0.000,     0.000!   !END!
140 ! X =     485.350,   2826.160,     1.000,     0.000!   !END!
141 ! X =     492.884,   2826.154,     0.000,     0.000!   !END!
142 ! X =     505.441,   2826.153,     1.000,     0.000!   !END!
143 ! X =     517.998,   2826.164,     1.000,     0.000!   !END!
144 ! X =     525.532,   2826.176,     1.000,     0.000!   !END!
145 ! X =     533.066,   2826.193,     1.000,     0.000!   !END!
146 ! X =     538.089,   2826.206,     1.000,     0.000!   !END!
147 ! X =     543.112,   2826.221,     1.000,     0.000!   !END!
148 ! X =     472.799,   2828.948,     0.000,     0.000!   !END!
149 ! X =     475.310,   2828.943,     0.000,     0.000!   !END!
150 ! X =     543.103,   2828.990,     1.000,     0.000!   !END!
151 ! X =     472.805,   2831.716,     0.000,     0.000!   !END!
152 ! X =     492.887,   2831.690,     1.000,     0.000!   !END!
153 ! X =     495.398,   2831.689,     1.000,     0.000!   !END!
154 ! X =     497.908,   2831.688,     1.000,     0.000!   !END!
155 ! X =     500.418,   2831.688,     1.000,     0.000!   !END!
156 ! X =     502.929,   2831.689,     1.000,     0.000!   !END!
157 ! X =     505.439,   2831.689,     1.000,     0.000!   !END!
158 ! X =     507.949,   2831.691,     1.000,     0.000!   !END!
159 ! X =     510.460,   2831.692,     1.000,     0.000!   !END!
160 ! X =     512.970,   2831.695,     1.000,     0.000!   !END!
161 ! X =     515.480,   2831.697,     1.000,     0.000!   !END!
162 ! X =     543.094,   2831.758,     1.000,     0.000!   !END!
163 ! X =     545.604,   2831.766,     1.000,     0.000!   !END!
164 ! X =     470.301,   2834.490,     0.000,     0.000!   !END!
165 ! X =     472.811,   2834.484,     0.000,     0.000!   !END!
166 ! X =     482.850,   2834.468,     1.000,     0.000!   !END!
167 ! X =     492.889,   2834.458,     1.000,     0.000!   !END!
168 ! X =     515.477,   2834.466,     1.000,     0.000!   !END!
169 ! X =     517.987,   2834.469,     1.000,     0.000!   !END!
170 ! X =     525.516,   2834.481,     1.000,     0.000!   !END!
171 ! X =     533.046,   2834.498,     1.000,     0.000!   !END!
172 ! X =     538.065,   2834.511,     1.000,     0.000!   !END!
173 ! X =     543.085,   2834.526,     1.000,     0.000!   !END!
174 ! X =     467.798,   2837.264,     0.000,     0.000!   !END!
175 ! X =     470.307,   2837.258,     0.000,     0.000!   !END!
176 ! X =     490.381,   2837.228,     1.000,     0.000!   !END!
177 ! X =     492.890,   2837.227,     1.000,     0.000!   !END!
178 ! X =     515.474,   2837.234,     1.000,     0.000!   !END!
179 ! X =     543.076,   2837.295,     1.000,     0.000!   !END!
180 ! X =     545.585,   2837.303,     1.000,     0.000!   !END!
181 ! X =     548.095,   2837.312,     1.000,     0.000!   !END!
182 ! X =     465.296,   2840.039,     0.000,     0.000!   !END!
183 ! X =     467.804,   2840.032,     0.000,     0.000!   !END!
184 ! X =     475.331,   2840.016,     1.000,     0.000!   !END!
185 ! X =     487.874,   2839.999,     1.000,     0.000!   !END!
186 ! X =     490.383,   2839.997,     1.000,     0.000!   !END!
187 ! X =     515.471,   2840.002,     1.000,     0.000!   !END!
188 ! X =     548.085,   2840.080,     1.000,     0.000!   !END!
189 ! X =     462.795,   2842.814,     0.000,     0.000!   !END!
190 ! X =     465.303,   2842.807,     0.000,     0.000!   !END!
191 ! X =     487.877,   2842.767,     1.000,     0.000!   !END!
192 ! X =     515.467,   2842.771,     1.000,     0.000!   !END!
193 ! X =     517.976,   2842.774,     1.000,     0.000!   !END!
194 ! X =     525.500,   2842.786,     1.000,     0.000!   !END!
195 ! X =     533.025,   2842.803,     1.000,     0.000!   !END!
196 ! X =     538.042,   2842.816,     1.000,     0.000!   !END!
197 ! X =     543.058,   2842.832,     1.000,     0.000!   !END!
198 ! X =     548.075,   2842.849,     1.000,     0.000!   !END!
199 ! X =     460.295,   2845.590,     0.000,     0.000!   !END!
200 ! X =     462.802,   2845.582,     0.000,     0.000!   !END!
201 ! X =     470.326,   2845.563,     1.000,     0.000!   !END!
202 ! X =     482.864,   2845.541,     1.000,     0.000!   !END!
203 ! X =     485.372,   2845.538,     1.000,     0.000!   !END!
204 ! X =     487.879,   2845.536,     1.000,     0.000!   !END!
205 ! X =     515.464,   2845.539,     1.000,     0.000!   !END!
206 ! X =     548.065,   2845.617,     1.000,     0.000!   !END!
207 ! X =     457.796,   2848.366,     0.000,     0.000!   !END!
208 ! X =     460.303,   2848.358,     0.000,     0.000!   !END!
209 ! X =     477.853,   2848.317,     1.000,     0.000!   !END!
210 ! X =     480.360,   2848.313,     1.000,     0.000!   !END!
211 ! X =     482.868,   2848.309,     1.000,     0.000!   !END!
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   212 ! X =     515.461,   2848.307,       1.000,       0.000!   !END!
   213 ! X =     517.968,   2848.311,       1.000,       0.000!   !END!
   214 ! X =     520.475,   2848.314,       1.000,       0.000!   !END!
   215 ! X =     522.982,   2848.318,       1.000,       0.000!   !END!
   216 ! X =     525.490,   2848.323,       1.000,       0.000!   !END!
   217 ! X =     527.997,   2848.328,       1.000,       0.000!   !END!
   218 ! X =     530.504,   2848.334,       1.000,       0.000!   !END!
   219 ! X =     533.011,   2848.340,       1.000,       0.000!   !END!
   220 ! X =     535.518,   2848.346,       1.000,       0.000!   !END!
   221 ! X =     538.026,   2848.353,       1.000,       0.000!   !END!
   222 ! X =     540.533,   2848.360,       1.000,       0.000!   !END!
   223 ! X =     543.040,   2848.368,       1.000,       0.000!   !END!
   224 ! X =     545.547,   2848.377,       1.000,       0.000!   !END!
   225 ! X =     548.054,   2848.386,       1.000,       0.000!   !END!
   226 ! X =     455.298,   2851.142,       0.000,       0.000!   !END!
   227 ! X =     457.805,   2851.134,       0.000,       0.000!   !END!
   228 ! X =     465.325,   2851.112,       1.000,       0.000!   !END!
   229 ! X =     472.845,   2851.095,       1.000,       0.000!   !END!
   230 ! X =     475.351,   2851.090,       1.000,       0.000!   !END!
   231 ! X =     477.858,   2851.085,       1.000,       0.000!   !END!
   232 ! X =     450.295,   2853.929,       0.000,       0.000!   !END!
   233 ! X =     452.801,   2853.920,       0.000,       0.000!   !END!
   234 ! X =     455.307,   2853.911,       0.000,       0.000!   !END!
   235 ! X =     472.850,   2853.863,       1.000,       0.000!   !END!
   236 ! X =     450.305,   2856.697,       0.000,       0.000!   !END!
   237 ! X =     452.811,   2856.688,       0.000,       0.000!   !END!
   238 ! X =     457.822,   2856.671,       1.000,       0.000!   !END!
   239 ! X =     460.328,   2856.663,       1.000,       0.000!   !END!
   240 ! X =     462.834,   2856.656,       0.000,       0.000!   !END!
   241 ! X =     465.339,   2856.649,       1.000,       0.000!   !END!
   242 ! X =     472.856,   2856.631,       1.000,       0.000!   !END!
   243 ! X =     452.821,   2859.456,       1.000,       0.000!   !END!
   244 ! X =     455.326,   2859.448,       1.000,       0.000!   !END!
   245 ! X =     457.831,   2859.439,       1.000,       0.000!   !END!
   246 ! X =     465.346,   2859.418,       1.000,       0.000!   !END!
   247 ! X =     467.852,   2859.411,       1.000,       0.000!   !END!
   248 ! X =     470.357,   2859.405,       1.000,       0.000!   !END!
   249 ! X =     472.862,   2859.400,       1.000,       0.000!   !END!
   250 ! X =     455.335,   2862.216,       1.000,       0.000!   !END!
   251 ! X =     457.840,   2862.208,       1.000,       0.000!   !END!
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a
Data for each receptor are treated as a separate input subgroup
and therefore must end with an input group terminator.

b
Receptor height above ground is optional. If no value is entered,